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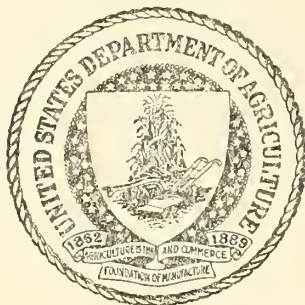
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**HYDROLOGIC DATA
FOR
EXPERIMENTAL AGRICULTURAL
WATERSHEDS IN THE
UNITED STATES
1956-59**

Miscellaneous Publication No. 945

**Agricultural Research Service
U. S. DEPARTMENT OF AGRICULTURE
In Cooperation With
State Agricultural Experiment Stations**

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Hydrologic Data
for
Experimental Agricultural Watersheds
in the United States
1956-59

Compiled and Assembled by
HAROLD W. HOBBS
Research Hydraulic Engineer
Soil and Water Conservation Research Division

Miscellaneous Publication No. 945

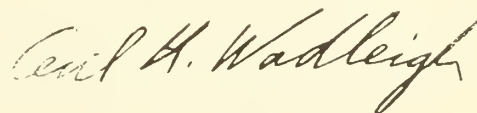
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FOREWORD

This publication presents basic data on monthly precipitation and runoff; annual maximum discharges and volumes of runoff; and selected runoff events with associated data on rainfall, land use, and antecedent conditions for agricultural watersheds where research studies were in progress in the period 1956-59. Its presentation is a continuation of the activity of processing and releasing hydrologic data of general interest gathered cooperatively with other agencies. Throughout the life of the watershed studies the State agricultural experiment stations have collaborated in the selection, planning, and operation of the research studies. In several cases, the U.S. Geological Survey and State and local agencies, such as State water boards and highway departments or local drainage and conservation districts, have assisted in the work. The Soil Conservation Service has carried out most of the field surveys upon which the classification and correlation of soils and evaluation of other watershed characteristics in the descriptions have been based.

The data included here are primarily in response to a request by the Soil Conservation Service, but the information will also be useful to other governmental agencies, private engineers, and others concerned with the development and conservation of the Nation's water resources.



Director, Soil and Water Conservation
Research Division

CONTENTS

| | Page |
|---|--------------|
| Publications of Earlier Data | 1 |
| Form of Data Presentation | 1 |
| Continuing watersheds | 1 |
| New watersheds | 2 |
| Watershed Descriptions | 2 |
| Standard Symbols for Tabular Data | 5 |
| Personnel Responsible for Compilations | 5 |
| Additional Publications by Location | 5 |
| Watershed Data by Location Number and Decimal Paging (5.6-1 to 67.2-4, a total of 660 data sheets) | 11 |
| Location of Experimental Watersheds—Map | Cover Page 3 |

The decimal system of paging is used to index the watershed data. Pages are numbered at the bottom according to location and watershed number, and the data for each watershed are given on one or more pages. For example, page 5.6-2 is location 5 (College Park, Md.), watershed 6 (W-6 at College Park), and page 2 of the data for that watershed.

In table 1, page 8, discontinued watersheds are listed by State, locality, number of units, record period, and location number. Table 2, page 9, shows list of continuing or new watersheds by State, locality, watershed units, and assigned location numbers that are reported for 1956-59 in this publication.

HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59

This publication presents selected hydrologic data for the calendar years 1956-59, inclusive. The data include monthly precipitation and runoff for 157 watersheds, annual maximum discharges and annual maximum volumes of runoff for 142 of the watersheds for time-intervals of 1, 2, 6, and 12 hours and for 1, 2, and 8 days, and detailed information for one or more selected typical storm events for 134 of them. Page numbers for older watersheds at the various locations are the same as those given in three previous publications (see next section), so that old records and general descriptions can be readily consulted. New watersheds—the 45 not included in the previous publications—were generally assigned higher location numbers.

Information on selected storm events includes (1) tabular data for the 30-day antecedent rainfall and runoff prior to the events; and, for the storms, (2) data on rainfall and runoff intensity or rate and on accumulated depths of rainfall and runoff, (3) description of watershed conditions at the time of the selected events, (4) graphs of hydrographs and rainfall histograms, (5) watershed maps, and (6), for some of the larger drainage areas, isohyetal maps of storm rainfall distribution.

For newly established watersheds, descriptions of watershed physical characteristics, instrumentation, graphs, maps, land management, and recommended area of application of the results are also given.

PUBLICATIONS OF EARLIER DATA

Hydrologic data for past years on many of the currently operating experimental agricultural watersheds have been previously summarized in three looseleaf publications by the Agricultural Research Service of the U.S. Department of Agriculture. These reports are listed and summarized below as references 1, 2, and 3 to simplify citations to them in this publication:

Reference 1.—MONTHLY PRECIPITATION AND RUNOFF FOR SMALL AGRICULTURAL WATERSHEDS IN THE UNITED STATES. Soil and Water Conservation Research Branch, 691 pp. June 1957. (Includes physical descriptions and land use of 334 experimental agricultural watersheds at 60 locations in 27 States for the period 1923-

57. Many of these watersheds had been discontinued prior to 1955.)

Reference 2.—ANNUAL MAXIMUM FLOWS FROM SMALL AGRICULTURAL WATERSHEDS IN THE UNITED STATES. Soil and Water Conservation Research Division, 330 pp. June 1958. (Includes records from 322 watersheds at 59 locations in 27 States for the period 1923-57. Many of these watersheds had been discontinued prior to 1958.)

Reference 3.—SELECTED RUNOFF EVENTS FOR SMALL AGRICULTURAL WATERSHEDS IN THE UNITED STATES. Soil and Water Conservation Research Division, 374 pp. January 1960. (Includes a sampling of one to six typical runoff events from 68 watersheds at 40 locations in 25 States for the period 1933-59. The publication presents maps of each watershed, watershed conditions for each event, including the 30-day antecedent rainfall and runoff, and tabular as well as graphical data on each storm.)

The above three publications have been furnished to the Soil Conservation Service and to other governmental agencies—Federal, State, and local. They have also been distributed to State agricultural experiment stations, university libraries, and engineering departments, and, when requested, to private engineers and individuals.

FORM OF DATA PRESENTATION

The data in this volume are presented for each watershed in the following order: (1) watershed description, if not previously published; (2) monthly precipitation and runoff; (3) local monthly normal precipitation, if not previously published; (4) annual maximum flows; (5) tabulations of data for selected runoff events; (6) graphs of selected runoff events; (7) watershed maps, if not previously published or if revised; and (8) isohyetal maps (in some cases) of storm rainfall distribution for selected runoff events.

CONTINUING WATERSHEDS

Since the descriptions of 112 of the current watersheds have been published in *Reference 1*, the tabular data presentation for them begins at the top of the first page. Above the

border at the left, the month and year of data preparation are given.

In the space to the right of the first table title MONTHLY PRECIPITATION AND RUNOFF (inches), the location *name*, watershed *number* (or designation), and watershed *size* are given. In the table, for each current *calendar year*, the *precipitation* (P) in inches is listed in the monthly columns, with the yearly total given in the last column headed "Year." In the line below, the corresponding *runoff* (Q) in inches is similarly listed for each month and year.

In the second table, entitled ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS, data are also given for the *calendar years* listed in the first column. Under the *maximum discharge* heading, the date column shows the day and month the instantaneous peak rate in inches per hour occurred. In computing the rate, corrections were made for any significant pondage above the runoff-measuring device. Under the *maximum volume* heading, the date refers to the day and month on which the interval began; for example, if the interval began on August 30 at 11:59p, the entry in the date column will be 8-30. The depths for 1 hour to 8 days are the annual maximum values recorded, without regard to even clock hours or days; thus, if the 6-hour interval began at 1:32p, the interval would end exactly 6 hours later at 7:32p. The volume given is in inches of average depth over the watershed for each of the seven selected time-intervals (1, 2, 6, and 12 hours, and 1, 2, and 8 days).

Notes and footnotes of explanation of the data given below the first two tables include (1) a statement on the quality of records based on the following criteria: *excellent* indicates in general that the records are probably accurate within 5 percent, *good* within 10 percent, *fair* within 15 percent, and *poor* that the records may be in error by over 15 percent; (2) a general statement as to watershed conditions and other physical changes for the period covered; (3) corrections for previously reported data; and (4) other pertinent material or explanations of the hydrologic data in the two tables.

The tabular data for *selected runoff events* begin in the remaining space on the first page and then are carried forward on continuation sheets until completed. One to five storm runoff events were chosen, from data available, for presentation. In general, the *selected runoff events* were those in which runoff was produced by a relatively uniform rainfall excess of short duration. The information for each event includes tabulation of (1) *antecedent* daily rainfall and runoff for 30 days before the event, (2) rainfall *intensities* and *accumulated amounts* for the event, (3) runoff *rates* and *accumulated amounts* for the event, and (4)

specific *watershed conditions* at the time of the event. Simple graphs of the rates of rainfall and runoff are shown for all events on pages following the tabular data. Maps follow the graphs unless previously published in *Reference 3* or if they were shown herein on the map of another watershed. Isohyetal maps, if any, generally follow the regular maps.

In the "Notes" space at the bottom of the first page for runoff events, the multiplier to convert runoff rates in inches per hour to cubic feet per second is given, followed by references to maps, if required, and explanatory notes or footnotes relating to the tabular data. Below the bottom border and above the first page number the cooperating agencies are listed. The notes on continuation pages contain the statement on the multiplier and similar explanations of the data on each page.

NEW WATERSHEDS

For the 45 watersheds installed in recent years that have not been reported previously, the presentation begins with the watershed description in the upper part of the first page. The explanations and definitions upon which the description is based are given in the next section.

The first line, centered at the top of the sheet, gives the *project location*, which is the nearest city or town, and the *number* or *name* of the watershed as used locally. The descriptive material is then given under the 12 major topics listed down the left side of the sheet: *Location, Area, Shape, Slopes, Soils, Erosion, Land Capability, Surface Drainage, Character of Flow, Instrumentation, Watershed Conditions, and Generally Represents*.

After this description, the tabular data are then summarized in the first two tables and notes as previously described for "Continuing Watersheds," except that the local monthly normal precipitation figures, based on the nearest Weather Bureau gage of long record, are given on the last line of the table MONTHLY PRECIPITATION AND RUNOFF (inches). The tabular data for SELECTED RUNOFF EVENTS then commence on the second page of the series for the particular watershed, and the rest of the material follows in the same order as previously indicated.

WATERSHED DESCRIPTIONS

The following definitions and explanations were used in describing watershed location, watershed characteristics, instrumentation, land management, and recommended area of application of the hydrologic data:

LOCATION gives county and State, distance and direction of the runoff gaging station from the nearest city or town, and the major river

basin in which it lies. When two or more basins are involved, the tributary or subbasin is given first, followed by the major basin.

AREA of watershed is given in acres if under 640 acres, in both acres and square miles (in parentheses) if over one square mile. If areas are revised, additional values are given with notes on date of change.

SHAPE is described in simple terms with overall dimensions in feet or miles, depending on size.

SLOPES are given in terms of the ranges commonly used in soil survey work in the locality. The percentages of the watershed lying in each slope class are listed. As an example, "8% is in 0-2% class" means that 8 percent of the watershed area has slopes ranging from 0 to 2 percent. The "Aspect" refers to the general direction of the slope; a watershed having a southeast (SE) aspect would slope downstream from *northwest to southeast*.

SOILS are described briefly, according to definitions from the U.S. Department of Agriculture SOIL SURVEY MANUAL, Agriculture Handbook 18, published in 1951.

Soil texture refers to the relative proportions of the various size groups (or separates) of individual soil grains in a mass of soil. Specifically, it refers to the proportions of clay, silt, and sand below 2 millimeters in diameter. The various classes of texture in order of increasing percentages of the smaller size groups and decreasing percentages of the larger size groups are (1) sands, (2) loamy sands, (3) sandy loams, (4) loam, (5) silt loam, (6) silt, (7) sandy clay loam, (8) clay loam, (9) silty clay loam, (10) sandy clay, (11) silty clay, and (12) clay. In some of the descriptions, the broader classification of coarse, moderately coarse, medium, moderately fine, and fine has been used—the coarse soils are the sands and the fine soils the clays.

Soil structure refers to the aggregation of primary soil particles into compound particles, or clusters of primary particles, that are separated from adjoining aggregates by surfaces of weakness. Structure *grade*, or the durability of the aggregates when subjected to disturbance, is described as structureless, weak, moderate, or strong. The *size* of the aggregates is described as very fine, fine, medium, coarse, and very coarse. Structure *shape* is described as being platy, prismatic, columnar, angular blocky, subangular blocky, granular, or crumb.

Permeability is the quality of a soil that enables it to transmit water or air. This quality is described by the terms "very slow," "slow," "moderately slow," "moderate," "moderately rapid," "rapid," and "very rapid."

Internal soil drainage is the quality of a soil that permits the downward flow of excess water through it. Internal drainage is reflected in the frequency and duration of periods of saturation

with water. It is determined by the texture, structure, and other characteristics of the soil profile and of underlying layers and by the height of the water table, either permanent or perched, in relation to the water added to the soil. Internal soil drainage is described as none, very slow, slow, medium, rapid, and very rapid.

EROSION conditions on the watershed are described in accordance with the classification for water and wind erosion, also briefed from Agriculture Handbook 18. The percentage of the watershed in the following erosion classes is given.

Class 1.—The soil has a few rills or places with thin A horizons that give evidence of accelerated erosion, but not to an extent to alter greatly the thickness and character of the A horizon. Except for soils having very thin A horizons (less than 8 inches), the surface soil consists entirely of A horizon throughout nearly all of the delineated areas. Up to about 25 percent of the original A horizon, or original plowed layer in soils with thin A horizons, has been removed from most of the area. This class also includes the areas of no erosion.

Class 2.—The soil has been eroded to the extent that ordinary tillage implements reach through the remaining A horizon or well below the depth of the original plowed layer in soils with thin A horizons. Generally, the plow layer consists of a mixture of the original A horizon and the underlying horizons. Mapped areas of eroded soil usually have patches in which the plow layer consists wholly of the original A horizon and others in which it consists wholly of underlying horizons. Shallow gullies may be present. Approximately 25 to 75 percent of the original A horizon or surface soil may have been lost from most of the area.

Class 3.—The soil has been eroded to the extent that all or practically all of the original surface soil, or A horizon, has been removed. The plow layer consists essentially of materials from the B or other underlying horizons. Patches in which the plow layer is a mixture of the original A horizon and the B horizon or other underlying horizons may be included within mapped areas. Shallow gullies, or a few deep ones, are common in some soil types. More than about 75 percent of the original surface soil, or A horizon, and commonly part or all of the B horizon or other underlying horizons has been lost from most of the area.

Class 4.—The land has been eroded until it has an intricate pattern of moderately deep or deep gullies. Soil profiles have been destroyed except in small areas between the gullies. Such land is not useful for crops in its present condition. Reclamation for crop production or for improved pasture is difficult but may be practicable if other characteristics of the soil are favorable and erosion can be controlled.

Class +5.—Recent alluvial and colluvial deposition.

LAND CAPABILITY is given as classified by Klingebiel and Montgomery in U.S. Department of Agriculture LAND-CAPABILITY CLASSIFICATION, Agriculture Handbook 210, published in 1961. The classification expresses the suitability of land for use without deterioration. The eight land-capability classes are distinguished according to the risk of land damage or difficulty of land use. The following classes I to IV are suitable for cultivation and other uses, whereas classes V to VIII are not suitable for cultivation.

Class I.—Very good land for cultivation; nearly level and productive; not subject to erosion; needs only ordinary good farming methods.

Class II.—Good land for cultivation; mostly gently sloping, not more than moderately subject to erosion; some land may be rather wet; can be farmed safely with easily applied practices.

Class III.—Moderately good land for cultivation; mostly moderately sloping; some areas too wet or too dry; can be farmed safely with practical conservation measures, carefully applied; usually a combination of two or more measures is needed.

Class IV.—Fairly good land, suitable for occasional cultivation; generally strongly sloping; often shallow or very sandy; often found in dry climate.

Class V.—Land very well suited for grazing or forestry; requires good range or woodland management.

Class VI.—Land well suited for grazing or forestry; steeply sloping land, stony or shallow soil, eroded land, droughty land, or wet land; requires careful management.

Class VII.—Land fairly well suited for grazing or forestry; severely limited in use by such factors as very steep slope, shallow or droughty soil, wetness, severe erosion, or excessive salinity; requires very careful management.

Class VIII.—Land not suitable for cultivation, grazing, or forestry; may be useful for wildlife, recreation, or protection of water supplies.

SURFACE DRAINAGE refers to the ease with which excess water flows from the watershed area. The length of principal waterway is the distance from the gaging station to the most remote point on the watershed boundary, measured along the flood plain of the watercourse.

CHARACTER OF FLOW describes the flow of the principal watercourse with respect to permanence and space. The following definitions are from Meinzer's OUTLINE OF GROUND-WATER HYDROLOGY, U.S. Geological Survey Water-Supply Paper 494, published in 1923.

With respect to permanence, streams may be

divided into perennial streams, intermittent streams, and ephemeral streams.

A *perennial stream*, or stretch of a stream, is one that flows continuously. Perennial streams are generally fed in part by springs, and their upper surfaces generally stand lower than the water table in the localities through which they flow.

Intermittent streams may be divided, with respect to the source of their water, into spring-fed intermittent streams and surface-fed intermittent streams. They also flow in direct response to precipitation.

A *spring-fed intermittent stream*, or stretch of a stream, is one that flows only at certain times when it receives water from springs. The intermittent character of streams of this type is generally caused by fluctuations of the water table whereby the stream channels stand a part of the time below and part of the time above the water table. This is the ordinary type of intermittent stream.

A *surface-fed intermittent stream*, or stretch of a stream, is one that flows during protracted periods when it receives water from some surface source, generally the gradual and long-continued melting of snow in a mountainous or other cold tributary area. The term may be arbitrarily restricted to streams or stretches of streams that flow continuously during periods of at least one month.

An *ephemeral stream*, or stretch of a stream, is one that flows only in direct response to precipitation. It receives no water from springs and no long-continued supply from melting snow or other surface source. Its stream channel is at all times above the water table. The term may be arbitrarily restricted to streams or stretches of streams that do not flow continuously during periods of as much as one month.

With respect to continuity in space, streams may be divided into continuous streams and interrupted streams. An *interrupted stream* is one that contains (1) perennial stretches with intervening intermittent or ephemeral stretches or (2) intermittent stretches with intervening ephemeral stretches. These two classes of interrupted streams are designated, respectively, *perennial interrupted streams* and *intermittent interrupted streams*. A *continuous stream* is one that does not have interruptions in space. It may be perennial, intermittent, or ephemeral, but it does not habitually have wet and dry stretches.

INSTRUMENTATION describes type of runoff control or measuring device, number and type of precipitation gages, type of charts used, and snow courses, if employed.

WATERSHED CONDITIONS describes the general use and farm, forest, or range practices prior to the period of record and the conservation measures, crops, yields, and general cultural

operations and practices during the period of record. Rotation crops are listed in the order that they were grown. Operations are described with commonly used agricultural terms, and only those that appear to have a significant relationship to the hydrology of the watershed are mentioned.

GENERALLY REPRESENTS gives the broad area of application for which the data of the specific watershed are recommended. The areas named are those delineated on the map "Location of Experimental Agricultural Watersheds of the Agricultural Research Service." (See cover page 3.) The location of each project is shown by number on the Soil Conservation Service base map of numbered land resource areas in the United States prepared in January 1963. Solid red circles show the location of "continuing" or "new" watersheds, and open circles show areas where experimental studies have been discontinued, but for which records have been previously published in *References 1, 2, or 3.*

In some cases there is an apparent contradiction between the watershed location on the map and the descriptive information given under "Generally Represents." This is due to the small scale of the map; it is difficult to show many small local variations in boundaries of the land resource areas. The descriptive statements, rather than the map location, should be the guide to the application of the data.

STANDARD SYMBOLS FOR TABULAR DATA

The following letters have been used as standard symbols throughout this volume to designate specific items or meanings:

- a—used with clock time, and means before noon.
- p—similar to "a" above, but means after-noon.
- m—indicates 12:00 midnight.
- n—similar to "m" above, but signifies 12:00 noon.
- e—shows that a figure is estimated or partially estimated.
- T—denotes a trace, generally less than 0.005 inch.
- nr—used instead of a figure to indicate "no record."

PERSONNEL RESPONSIBLE FOR COMPILATIONS

At each research location many individuals have contributed to the planning and establishment of the watersheds and the collection, compilation, and analysis of the data. Some of those who made substantial contributions to the success of the research work in this publication are as follows:

| Location | Name or names |
|----------------|------------------------------------|
| 5 | Harold W. Hobbs |
| 8 | William H. Speir, John C. Stephens |
| 10 | A. P. Barnett |
| 11, 13, 15, 66 | James B. Burford |
| 21, 25, 61 | Neal E. Minshall |
| 23 | Roy L. Roberts, Jr. |
| 26 | Lloyd L. Harrold, J. L. McGuinness |
| 29, 31, 32 | Keith E. Saxton |
| 34, 42 | Walter G. Knisel, Ralph W. Baird |
| 37 | William O. Ree, Wendell R. Gwinn |
| 44 | John A. Allis, Frank J. Dragoun |
| 45, 47, 63, 64 | Herbert B. Osborn, R. V. Keppel |
| 62 | W. Russell Hamon |
| 65 | John W. Neuberger |
| 67 | George H. Comer, Martin L. Johnson |

ADDITIONAL PUBLICATIONS BY LOCATION

In *Reference 1* (see p. 1), references to other publications that presented watershed data and interpretations of results in various journals, bulletins, and periodicals were given at the end of the introduction for many of the locations. Below is a listing, by location number, of additional references published through 1959. At the end, several that could not be tied to a specific location are listed in a general group.

8. *Vero Beach, Fla.*

CRAIG, A. L., and SEALE, C. C.

1954. BLENDED SOLVENTS FOR CONTROL OF THE SUBMERGED WATER WEED NAIAD IN SOUTH FLORIDA. *Weeds* 3 (2): 160-169.

STEPHENS, J. C.

1954. REVIEW OF METHODS AND FORMULATIONS FOR AQUATIC WEED CONTROL. *Soil Sci. Soc. Fla. Proc.* 14: 122-126.

1955. DRAINAGE OF PEAT AND MUCK LANDS. *In Water, U.S. Dept. Agr. Yearbook*: 539-557.

10. *Watkinsville, Ga.*

VAN BAVEL, C. H. M., and CARREKER, J. R.

1957. AGRICULTURAL DROUGHT IN GEORGIA. *Ga. Agr. Expt. Sta. Tech. Bul. N. S. 15*, 41 pp.

13. *Blacksburg, Va.*

BURFORD, J. B., and LILLARD, J. H.

1958. RUNOFF—HOW FAST AND HOW MUCH. *Soil Conserv.* 24: 81-83.

REE, W. O., and GWINN, W. R.

1959. THE VIRGINIA V-NOTCH WEIR. *U.S. Dept. Agr. ARS* 41-10, 7 pp.

VAN BAVEL, C. H. M., and LILLARD, J. H.

1957. AGRICULTURAL DROUGHT IN VIRGINIA. *Va. Agr. Expt. Sta. Tech. Bul.* 128, 28 pp.

17. *Edwardsville, Ill.*
SHARP, A. L., HOLTAN, H. N., and MUSGRAVE, G. W.
1949. INFILTRATION IN RELATION TO RUNOFF ON SMALL WATERSHEDS. U.S. Dept. Agr. SCS TP 81, 40 pp.
23. *East Lansing, Mich.*
CRABB, G. A., JR.
1952. INSULATION: A PRIMARY FACTOR IN EVAPORATION FROM A FREE WATER SURFACE IN MICHIGAN. Mich. Agr. Expt. Sta. Quart. Bul. 35: 186-192.
1954. THE NORMAL ANNUAL PATTERN OF MEAN DAILY TEMPERATURES AT EAST LANSING, MICHIGAN. Mich. Agr. Expt. Sta. Quart. Bul. 36: 401-407.
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1953. SOIL TEMPERATURE COMPARISONS UNDER VARYING COVERS. Natl. Res. Council, Highway Res. Bd. Bul. 71: 32-80.
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1960. WINTER RUNOFF FROM SNOW AND FROZEN GROUND. Mich. Agr. Expt. Sta. Quart. Bul. 43: 154-169.
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1955. FROST DETERMINATION BY ELECTRICAL RESISTANCE. Natl. Res. Council, Highway Res. Bd. Bul. 100: 17-21.
- SMITH, J. L., and CRABB, G. A., JR.
1956. PATTERNS AND CLASSES OF RAINFALL AT EAST LANSING, MICHIGAN, AND THEIR EFFECT UPON SURFACE RUNOFF. Mich. Agr. Expt. Sta. Quart. Bul. 39: 47-62.
24. *Bethany, Mo.*
JAMISON, V. C., and THORNTON, J. E.
1959. WATER INTAKE RATES OF SHELBY-GRUNDY SOILS FROM HYDROGRAPH ANALYSIS. Amer. Soc. Agr. Engin. Trans. 2 (1): 92-94.
- ZINGG, A. W.
1944. THE DETERMINATION OF INFILTRATION-RATES ON SMALL AGRICULTURAL WATERSHEDS. Amer. Geophys. Union Trans. pt. 2: 475-480.
25. *McCredie, Mo.*
SMITH, D. D.
1955. STORAGE POND DESIGN. Agr. Engin. 36 (11): 743-746.
26. *Coshocton, Ohio.*
DREIBELBIS, F. R.
1941. A SUMMARY OF SOIL-MOISTURE DATA USEFUL IN SOIL-AND-WATER CONSERVATION INVESTIGATIONS. Amer. Geophys. Union Trans. Pt. 2: 1041-1047.
1942. AN INVENTORY OF SOIL WATER RELATIONSHIPS ON WOODLAND, PASTURE AND CULTIVATED SOILS. Soil Sci. Soc. Amer. Proc. 6: 462-473.
1944. SOME SEASONAL CHANGES IN PORE SPACE AND MOISTURE RELATIONSHIPS OF WOODLAND, PASTURE, AND CULTIVATED SOILS. Soil Sci. Soc. Amer. Proc. 8: 102-108.
1949. SOME INFLUENCES OF FROST PENETRATION ON THE HYDROLOGY OF SMALL WATERSHEDS. Amer. Geophys. Union Trans. 30: 279-282.
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1941. STUDIES ON SOIL MOISTURE RELATIONSHIPS AT THE NORTH APPALACHIAN EXPERIMENTAL WATERSHED. Soil Sci. Soc. Amer. Proc. 5: 377-385.
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1947. COMPARISON OF LYSIMETER RUNOFF, INFILTRATION, AND PERCOLATION TO STREAM-FLOW. Amer. Geophys. Union Trans. 28: 438-442.
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1957. MINIMUM WATER YIELD FROM SMALL AGRICULTURAL WATERSHEDS. Amer. Geophys. Union Trans. 38: 201-208.
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1958. EVALUATION OF AGRICULTURAL HYDROLOGY BY MONOLITH LYSIMETERS, 1944-55. U.S. Dept. Agr. Tech. Bul. 1179, 166 pp.
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TABLE 1.—*Watersheds where observations were discontinued before January 1, 1956*

[Hydrologic data were published in References 1, 2, and 3]

| State | Locality | Discontinued watershed units | | |
|----------------|------------------------|------------------------------|----------------------------|--------------|
| | | Number | Record period ¹ | Location No. |
| Alabama | Auburn | 1 | 1945-47 | 7 |
| Arkansas | Bentonville | 6 | 1933-47 (SE) | 33 |
| California | { Placerville | 1 | 1936-44 (SE) | 50 |
| | { Santa Paula | 9 | 1934-43 | 51 |
| | { Sebastopol | 2 | 1936-43 (SE) | 52 |
| | { Vacaville | 1 | 1936-42 | 53 |
| | { Watsonville | 4 | 1938-42 (SE) | 54 |
| Colorado | Colorado Springs | 4 | 1938-46 (SE) | 46 |
| Georgia | Amerieus | 4 | 1938-43 (SE) | 9 |
| Idaho | { Emmett | 2 | 1938-41 (SE) | 55 |
| | { Moscow | 2 | 1937-42 (SE) | 56 |
| Illinois | { Edwardsville | 4 | 1938-55 (SE) | 17 |
| | { Elmwood | 12 | 1945-46 | 18 |
| Indiana | Lafayette | 20 | 1940-53 (SE) | 19 |
| Iowa | { Clarinda | 5 | 1932-42 | 20 |
| | { Shenandoah | 2 | 1934-40 | 22 |
| Kansas | Hays | 2 | 1932-47 | 43 |
| Maryland | { College Park | 8 | 1939-54 (SE) | 5 |
| | { Hagerstown | 2 | 1938-47 (SE) | 6 |
| Missouri | Bethany | 8 | 1932-42 (SE) | 24 |
| Nebraska | Hastings | 15 | 1939-54 (SE) | 44 |
| New Jersey | Freehold | 3 | 1938-43 (SE) ² | 4 |
| New Mexico | { Mexican Springs | 12 | 1937-42 (SE) | 48 |
| | { Santa Fe | 3 | 1939-48 (SE) | 49 |
| New York | { Arnot Forest | 2 | 1941-47 | 1 |
| | { Cohocton | 2 | 1938-45 (SE) | 2 |
| North Carolina | { High Point | 2 | 1934-41 (SE) | 11 |
| | { Statesville | 2 | 1933-38 | 12 |
| Ohio | { Coshocton | 4 | 1937-47 (SE) | 26 |
| | { Hamilton | 4 | 1938-44 (SE) | 27 |
| | { Zanesville | 3 | 1934-45 | 28 |
| Oklahoma | { Guthrie | 11 | 1930-55 (SE) ³ | 35 |
| | { Muskogee | 3 | 1938-47 | 36 |
| Oregon | Newberg | 4 | 1938-42 (SE) | 57 |
| Texas | { Garland | 3 | 1938-47 | 38 |
| | { Riesel (Waco) | 14 | 1937-43 (SE) | 42 |
| | { Spur | 9 | 1927-45 | 39 |
| | { Tyler | 4 | 1931-44 (SE) | 40 |
| | { Vega | 2 | 1938-43 (SE) | 41 |
| Virginia | { Chatham (Danville) | 3 | 1938-48 (SE) | 14 |
| | { Staunton | 2 | 1948-55 (SE) | 15 |
| Washington | { Dayton | 1 | 1939-42 | 58 |
| | { Pullman ⁴ | 3 | 1934-40 | 59 |
| | { Pullman ⁵ | 8 | 1931-47 (SE) | 60 |
| Wisconsin | { Coon Valley | 2 | 1934-40 | 30 |
| | { La Crosse | 4 | 1933-54 ⁶ | 32 |

¹ (SE) indicates locations where selected runoff events were published in *Reference 3*.

² One watershed also operated during 1950-55.

³ Watersheds operated for varying periods of 12 to 23 years.

⁴ SCS Demonstration Project.

⁵ Soil and Water Conservation Experiment Station.

⁶ One watershed discontinued in 1942, 2 in 1947.

TABLE 2.—*Experimental agricultural watershed research locations for 1956-59 hydrologic data*

| State | Locality | Watershed units (number) | Assigned location No. |
|----------------|----------------|--------------------------|-----------------------|
| Arizona | { Safford | 4 | 45 |
| | { Tombstone | ¹ 5 | 63 |
| Florida | Vero Beach | 3 | 8 |
| Georgia | Watkinsville | 1 | 10 |
| Illinois | Monticello | 2 | 61 |
| Iowa | Iowa City | 1 | 21 |
| Maryland | College Park | 2 | 5 |
| Michigan | East Lansing | 3 | 23 |
| Mississippi | Oxford | ² 16 | 62 |
| Missouri | McCredie | 2 | 25 |
| Nebraska | Hastings | 13 | 44 |
| New Mexico | { Albuquerque | 3 | 47 |
| | { Santa Rosa | ¹ 1 | 64 |
| North Carolina | High Point | ³ 1 | 11 |
| Ohio | Coshocton | 37 | 26 |
| Oklahoma | { Cherokee | 9 | 34 |
| | { Stillwater | 3 | 37 |
| South Dakota | Newell | ¹ 15 | 65 |
| Texas | Riesel (Waco) | 16 | 42 |
| Vermont | North Danville | ¹ 2 | 67 |
| Virginia | { Blacksburg | ⁴ 6 | 13 |
| | { Staunton | 1 | 15 |
| West Virginia | Moorefield | ¹ 4 | 66 |
| Wisconsin | { Colby | 1 | 29 |
| | { Fennimore | 4 | 31 |
| | { La Crosse | 2 | 32 |

¹ New watersheds, previously unreported.

² New watersheds, but selected events for 4 previously reported.

³ Current data for 1 watershed with revised sheets for 2 discontinued watersheds.

⁴ Includes data for 2 new watersheds.



WATERSHED DATA BY LOCATION

NUMBER AND DECIMAL PAGING

[5.6-1 to 67.2-4, a total of 600 data sheets]

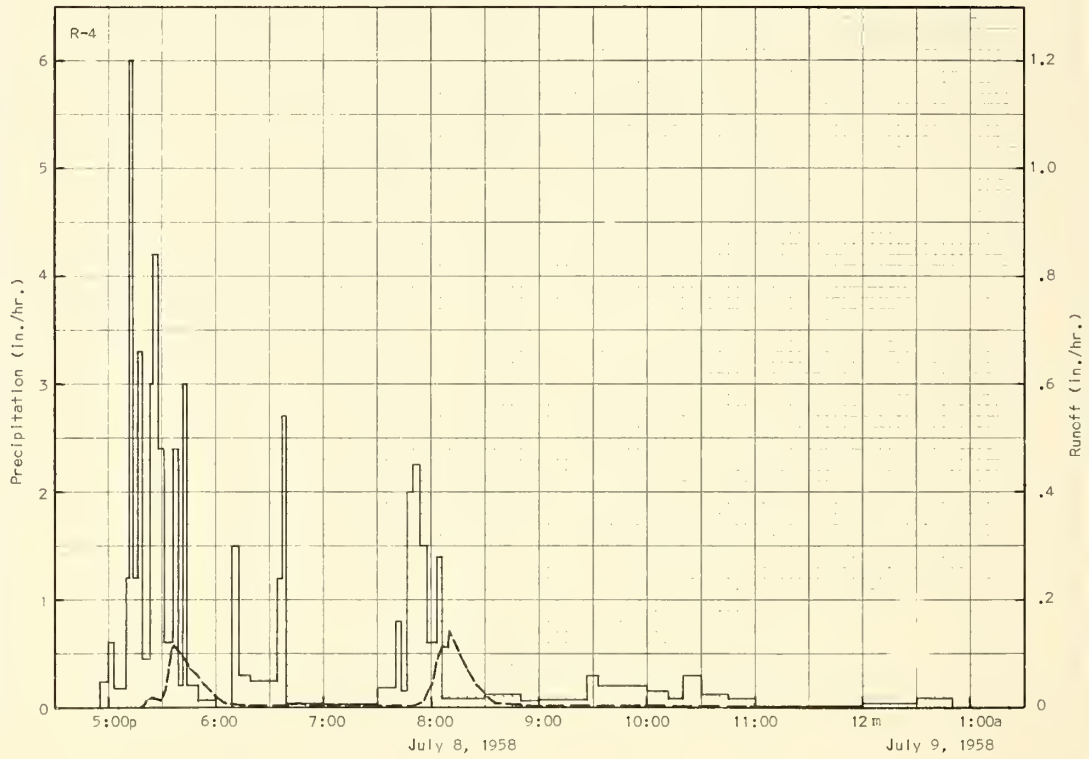
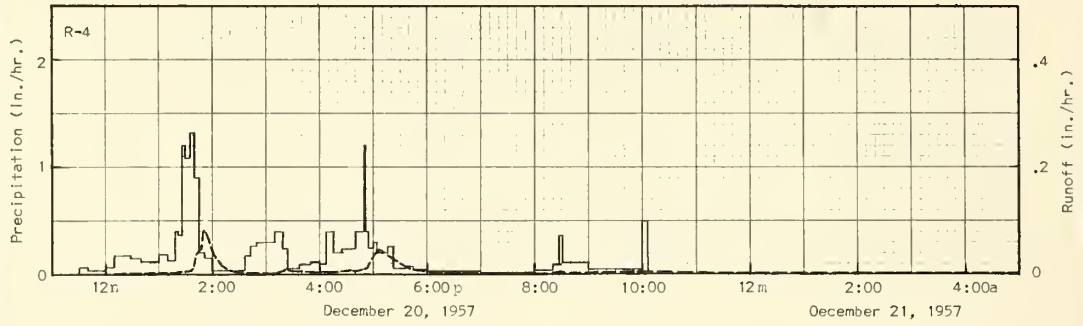


| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | College Park, Maryland, Watershed W-6 (Area - 3.53 acres) | | | | | | | | | |
|--|-------------------|-----------------|---|-------------------|---------------|---------------|--|---------------|----------|-------|-------|------|--------|-------|--------|------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year | | |
| | 1956 | P | 2.32 | 3.01 | 3.88 | 1.99 | 2.31 | 3.27 | 5.67 | 1.99 | 3.90 | 2.99 | 2.49 | 2.97 | 36.79 | |
| | Q | T | .01 | T | T | T | .01 | .01 | T | .01 | T | T | T | .04 | | |
| 1957 | P | 2.35 | 2.87 | 2.48 | 3.24 | 1.75 | 3.97 | 2.39 | 2.94 | 3.95 | 2.56 | 3.67 | 5.78 | 37.95 | | |
| | Q | T | T | .01 | .01 | .01 | .01 | .02 | .01 | .01 | .01 | .01 | .10 | .20 | | |
| 1958 | P | 2.96 | 3.42 | 6.67 | 4.42 | 3.18 | 4.11 | 6.69 | 5.22 | 1.44 | 2.22 | 2.35 | 1.39 | 44.07 | | |
| | Q | .28 | .11 | .03 | .01 | .01 | .01 | .14 | .05 | T | T | T | 0 | .64 | | |
| 1959 | P | 2.45 | 2.01 | 2.54 | 4.14 | 2.18 | 3.07 | 5.86 | 3.52 | 1.96 | 3.23 | 2.79 | 2.92 | 36.67 | | |
| | Q | T | .01 | .01 | .01 | T | .01 | .02 | .03 | T | .02 | .01 | T | .12 | | |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | College Park, Maryland, Watershed W-6 | | | | | | | | | |
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1958 | 1-25 | 0.24 | 1-25 | 0.15 | 1-25 | 0.18 | 1-24 | 0.19 | 1-24 | 0.20 | 1-24 | 0.20 | 1-24 | 0.20 | 1-21 | 0.23 |
| 1959 | 8-8 | .05 | 8-8 | .02 | 8-8 | .02 | 8-8 | .02 | 8-8 | .02 | 8-8 | .02 | 8-8 | .02 | 8-8 | .02 |
| Notes: Months of Jan. to Apr. and Oct. to Dec. may include snow and snow melt. Quality of records: monthly P and Q, excellent; annual maximum discharges and volumes, excellent. Watershed conditions: 1956-59 Pasture continuously heavily grazed by 9 to 15 head of 2-year-old steers April through October. Pasture mowed occasionally for weed control and fertilized with about 350 #/ac. 0-20-20 fertilizer each spring. | | | | | | | | | | | | | | | | |
| SELECTED RUNOFF EVENTS | | | | | | | College Park, Maryland, Watershed W-6 | | | | | | | | | |
| Antecedent conditions | | | Rainfall | | | | Runoff | | | | | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | | | | | | |
| Event of December 20-21, 1957 | | | | | | | | | | | | | | | | |
| 11-23-57 | .23 | T | 12-20-57 | Rainage | R-4 | 12-20-57 | | | | | | | | | | |
| 11-27 | .28 | 0 | 11:30a | 0 | 0 | 12:10p | 0 | 0 | | | | | | | | |
| 11-30 | .56 | .0016 | :40 | .06 | .01 | 1:24 | .0005 | .0004 | | | | | | | | |
| 12-3 | .07 s | 0 | 12:00n | .03 | .02 | :36 | .0040 | .0008 | | | | | | | | |
| 12-4 | .46 s | 0 | :10p | .06 | .03 | :38 | .010 | .0010 | | | | | | | | |
| 12-7 | .68 | 0 | :28 | .17 | .08 | :40 | .026 | .0016 | | | | | | | | |
| 12-8 | .28 | .0016 | :40 | .15 | .11 | :41 | .035 | .0021 | | | | | | | | |
| 12-9 | .61 | .0011 | 1:00 | .12 | .15 | :45 | .044 | .0047 | | | | | | | | |
| 12-11 | .12 s | 0 | :10 | .18 | .18 | :47 | .044 | .0062 | | | | | | | | |
| 12-20 | .39 1/ | .0015 1/ | :19 | .13 | .20 | :48 | .062 | .0070 | | | | | | | | |
| Watershed Conditions: Bluegrass and white clover pasture 1 to 1 1/2 inches high, mostly dormant. Had been heavily grazed April through October 1957 by 14 head of beef cattle. Snows of 12-3, 4 and 11 had completely melted before rain of 12-20. No frost in ground. | | | :22 | .40 | .22 | :49 | .079 | .0082 | | | | | | | | |
| | | | :27 | .36 | .25 | :51 | .083 | .0109 | | | | | | | | |
| | | | :30 | 1.20 | .31 | :56 | .062 | .0170 | | | | | | | | |
| | | | :35 | 1.08 | .40 | 2:00 | .044 | .0205 | | | | | | | | |
| | | | :40 | 1.32 | .51 | :04 | .029 | .0229 | | | | | | | | |
| | | | :46 | .90 | .60 | :10 | .015 | .0251 | | | | | | | | |
| | | | :52 | .20 | .62 | :16 | .008 | .0263 | | | | | | | | |
| | | | 2:00 | .15 | .64 | :22 | .0040 | .0269 | | | | | | | | |
| | | | :36 | .03 | .66 | :32 | .0013 | .0273 | | | | | | | | |
| | | | :43 | .17 | .68 | :40 | .0006 | .0274 | | | | | | | | |
| | | | :50 | .26 | .71 | 3:12 | .0006 | .0277 | | | | | | | | |
| | | | 3:00 | .30 | .76 | :15 | .003 | .0278 | | | | | | | | |
| | | | :10 | .30 | .81 | :20 | .0052 | .0282 | | | | | | | | |
| | | | :19 | .40 | .87 | :24 | .007 | .0286 | | | | | | | | |
| | | | :24 | .24 | .89 | :34 | .0040 | .0295 | | | | | | | | |
| :37 | .05 | .90 | :46 | .0021 | .0301 | | | | | | | | | | | |
| :50 | .09 | .92 | :58 | .0013 | .0304 | | | | | | | | | | | |
| 4:00 | .12 | .94 | 4:04 | .0021 | .0306 | | | | | | | | | | | |
| :07 | .09 | .95 | :20 | .0021 | .0311 | | | | | | | | | | | |
| :16 | .40 | 1.01 | :27 | .0029 | .0314 | | | | | | | | | | | |
| Notes: To convert runoff in in/hr to cfs multiply by 3.56. "s" denotes snow under antecedent precipitation. 1/ Prior to 10:00a, 12-20-57. For map of watershed, see Selected Runoff Events for Small Agricultural Watersheds in the United States, ARS, SWC, January 1960, page 5.6-6. | | | | | | | | | | | | | | | | |

| SELECTED RUNOFF EVENTS | | | | | College Park, Maryland, Watershed W-6 | | | |
|---|-------------------|-----------------|---------------|-------------------|---------------------------------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of December 20-21, 1957 - Continued | | | | | | | | |
| | | | 4:25p | .20 | 1.04 | 3:36 p | .0052 | .0320 |
| | | | :41 | .23 | 1.10 | :40 | .0040 | .0323 |
| | | | :50 | .40 | 1.16 | :48 | .007 | .0330 |
| | | | :52 | 1.20 | 1.20 | 4:51 | .010 | .0335 |
| | | | :55 | .40 | 1.22 | :54 | .011 | .0340 |
| | | | 5:00 | .24 | 1.24 | :57 | .026 | .0349 |
| | | | :04 | .30 | 1.26 | 5:01 | .035 | .0370 |
| | | | :16 | .20 | 1.30 | :06 | .047 | .0404 |
| | | | :23 | .26 | 1.33 | :15 | .035 | .0465 |
| | | | :36 | .05 | 1.34 | :25 | .024 | .0514 |
| | | | :45 | .07 | 1.35 | :39 | .011 | .0555 |
| | | | 6:00 | .04 | 1.36 | :50 | .0052 | .0570 |
| | | | 7:00 | .02 | 1.38 | 6:04 | .0021 | .0579 |
| | | | 8:00 | .01 | 1.39 | 7:20 | .0002 | .0586 |
| | | | :20 | .03 | 1.40 | 8:14 | .0002 | .0587 |
| | | | :27 | .09 | 1.41 | :28 | .0006 | .0588 |
| | | | :32 | .36 | 1.44 | :38 | .0002 | .0589 |
| | | | 9:00 | .11 | 1.49 | 10:00 | .0006 | .0595 |
| | | | 10:00 | .04 | 1.53 | 12:00m | .0002 | .0603 |
| | | | :06 | .50 | 1.57 | 12-21-57 | | |
| | | | | | | 5:00a | 0 | .0608 |
| Event of July 8-9, 1958 | | | | | | | | |
| 6-9-58 | .12 | 0 | 7-8-58 | Raingage | R-4 | 7-8-58 | | |
| 6-10 | .85 | .0027 | 4:55p | 0 | 0 | 5:18p | 0 | 0 |
| 6-11 | .41 | .0005 | 5:00 | .24 | .02 | :20 | .0040 | .0001 |
| 6-13 | .20 | 0 | :03 | .60 | .05 | :21 | .011 | .0002 |
| 6-20 | .69 | .0017 | :10 | .17 | .07 | :25 | .017 | .0011 |
| 6-21 | .82 | .0010 | :12 | 1.20 | .11 | :29 | .011 | .0021 |
| 6-22 | .02 | 0 | :14 | 6.00 | .31 | :32 | .035 | .0032 |
| 6-26 | .32 | 0 | :17 | 1.20 | .37 | :33 | .070 | .0041 |
| 7-4 | .15 | 0 | :19 | 3.30 | .48 | :35 | .103 | .0070 |
| 7-6 | .14 | 0 | :23 | .45 | .51 | :37 | .113 | .0106 |
| 7-7 | .24 <u>1/</u> | .0004 <u>2/</u> | :25 | 3.00 | .61 | :42 | .093 | .0192 |
| | | | :28 | 4.20 | .82 | :46 | .066 | .0244 |
| | | | :31 | 2.40 | .94 | :48 | .062 | .0266 |
| | | | :36 | .60 | .99 | :53 | .041 | .0308 |
| | | | :39 | 2.40 | 1.11 | :59 | .019 | .0338 |
| | | | :42 | .20 | 1.12 | 6:06 | .0052 | .0353 |
| | | | :44 | 3.00 | 1.22 | :15 | .0006 | .0357 |
| | | | :50 | .20 | 1.24 | :40 | .0002 | .0359 |
| | | | 6:00 | .06 | 1.25 | :45 | .0040 | .0360 |
| | | | ceased | - | - | :57 | .0002 | .0365 |
| | | | :09 | 0 | 1.25 | 7:00 | .0013 | .0365 |
| | | | :13 | 1.50 | 1.35 | :06 | .0013 | .0366 |
| | | | :19 | .30 | 1.38 | :24 | .0002 | .0369 |
| | | | :34 | .24 | 1.40 | :50 | .0002 | .0369 |
| | | | :37 | 1.20 | 1.46 | :56 | .011 | .0375 |
| | | | :39 | 2.70 | 1.55 | :58 | .029 | .0382 |
| | | | 7:00 | .03 | 1.56 | 8:01 | .044 | .0400 |
| | | | :30 | .02 | 1.57 | :03 | .083 | .0421 |
| | | | :40 | .18 | 1.60 | :06 | .113 | .0470 |
| | | | :43 | .80 | 1.64 | :09 | .108 | .0526 |
| | | | :47 | .15 | 1.65 | :10 | .142 | .0546 |
| | | | :50 | 2.00 | 1.75 | :15 | .103 | .0648 |
| | | | :54 | 2.25 | 1.90 | :19 | .074 | .0707 |
| | | | :58 | 1.50 | 2.00 | :23 | .047 | .0748 |
| | | | 8:00 | .60 | 2.02 | :30 | .024 | .0789 |
| | | | :03 | .60 | 2.05 | :40 | .010 | .0817 |
| | | | :06 | 1.40 | 2.12 | :49 | .0029 | .0826 |
| | | | :30 | .08 | 2.15 | 9:02 | .0002 | .0830 |
| | | | :50 | .12 | 2.19 | 12:00m | 0 | .0833 |
| | | | 9:00 | .06 | 2.20 | | | |
| <p>Notes: To convert runoff in in/hr to cfs multiply by 3.56. <u>1/</u> Rain 4:20p to 6:40p. <u>2/</u> Runoff ended 9:00p.</p> | | | | | | | | |

| SELECTED RUNOFF EVENTS | | | College Park, Maryland, Watershed W-6 | | | | | |
|--|----------------------|--------------------|---------------------------------------|----------------------|------------------|------------------|-----------------|------------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of July 8-9, 1958 - Continued</u> | | | | | | | | |
| | | | 9:27p | .07 | 2.23 | | | |
| | | | :33 | .30 | 2.26 | | | |
| | | | 10:00 | .20 | 2.35 | | | |
| | | | :12 | .15 | 2.38 | | | |
| | | | :20 | .08 | 2.39 | | | |
| | | | :30 | .30 | 2.44 | | | |
| | | | :45 | .12 | 2.47 | | | |
| | | | 11:00 | .08 | 2.49 | | | |
| | | | 12:00m | .01 | 2.50 | | | |
| | | | 7-9-58 | | | | | |
| | | | 12:30a | .04 | 2.52 | | | |
| | | | :50 | .09 | 2.55 | | | |

Notes: To convert runoff in in/hr to cfs multiply by 3.56.



COLLEGE PARK, MARYLAND WATERSHED W-6

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | | College Park, Maryland Watershed W-7 (Area - 3.52 acres) | | | | | | |
|---|-------|------|------|------|------|------|------|---|------|-------|------|------|------|-------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| | | 1956 | P | 2.32 | 3.01 | 3.88 | 1.99 | 2.31 | 3.27 | 5.67 | 1.99 | 3.90 | 2.99 | 2.49 |
| | Q | T | .04 | .13 | 0 | .01 | T | .01 | T | .03 | .01 | T | .01 | .24 |
| 1957 | P | 2.35 | 2.87 | 2.48 | 3.24 | 1.75 | 3.97 | 2.39 | 2.94 | 3.95 | 2.56 | 3.67 | 5.78 | 37.95 |
| | Q | 0 | 0 | T | .09 | T | .01 | .01 | .01 | .01 | T | .01 | .78 | .91 |
| 1958 | P | 2.96 | 3.42 | 6.67 | 4.42 | 3.18 | 4.11 | 6.69 | 5.22 | 1.44 | 2.22 | 2.35 | 1.39 | 44.07 |
| | Q | .32 | .78 | 1.29 | .09 | .03 | .01 | .28 | .09 | T | T | .01 | 0 | 2.90 |
| 1959 | P | 2.45 | 2.01 | 2.54 | 4.14 | 2.18 | 3.07 | 5.86 | 3.52 | 1.96 | 3.23 | 2.79 | 2.92 | 36.67 |
| | Q | .01 | .01 | T | .02 | T | .01 | .02 | .02 | T | .01 | .01 | T | .11 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1958 | 7-21 | 0.30 | 7-22 | .11 | 7-22 | 0.12 | 3-25 | 0.25 | 3-25 | 0.41 | 3-25 | 0.59 | 3-25 | 0.73 | 3-19 | 1.29 |
| 1959 | 8-8 | .04 | 8-8 | .02 | 8-8 | .02 | 8-8 | .02 | 8-8 | .02 | 8-8 | .02 | 8-8 | .02 | 8-8 | .02 |

Notes: Months of Jan. to Apr. and Oct. to Dec. may include snow and snow melt. Quality of records: monthly P and Q, excellent, except 11-21 to 4-26-58 which are fair due to leaky still well, and probably less than actual; annual maximum discharges and volumes, excellent, except values for 6 hours to 8 days (3-19 to 3-27-58) which are fair and probably low due to leaky still well. Watershed conditions: 6-11-56 .93 T/ac orchard grass hay cut and removed, then pastured by rotation grazing through October. 1957 and 58 rotation grazing by 9 to 14 2-year-old steers April through October. 5-26-59 .88 T/ac orchard grass hay removed, then rotation grazing through October. Spring fertilization 350 #/ac of 2-22-59. Mowed occasionally for weed and excess growth control.

SELECTED RUNOFF EVENTS

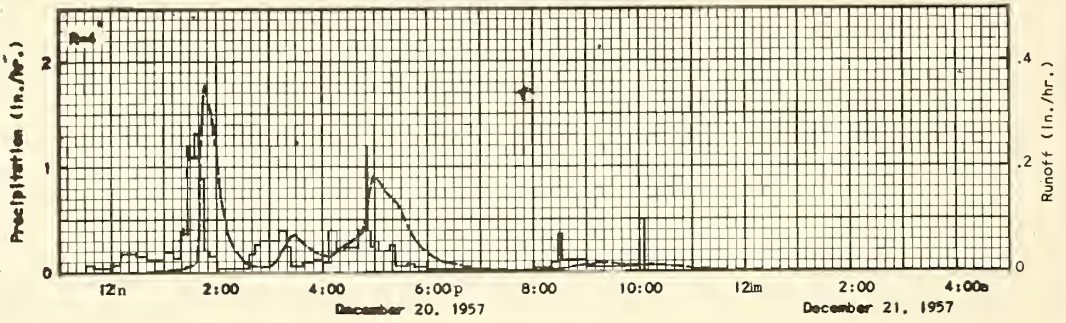
| Antecedent conditions | | | Rainfall | | | Runoff | | |
|---|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of December 20-21, 1957 | | | | | | | | |
| 11-23-57 | 0.23 | T | 12-20-57 | Rainage | R-4 | 12-20-57 | | |
| 11-28 | .28 | 0 | 11:30a | 0 | 0 | 12:42p | 0 | 0 |
| 11-30 | .56 | .0012 | :40 | .06 | .01 | 1:25 | .007 | .0014 |
| 12-3 | .07 s | 0 | 12:00n | .03 | .02 | :32 | .012 | .0024 |
| 12-4 | .46 s | 0 | :10 | .06 | .03 | :36 | .017 | .0034 |
| 12-7 | .68 | T | :28 | .17 | .08 | :37 | .038 | .0039 |
| 12-8 | .28 | .0260 | :40 | .15 | .11 | :38 | .058 | .0047 |
| 12-9 | .61 | .0383 | 1:00 | .12 | .15 | :39 | .103 | .0060 |
| 12-11 | .12 s | 0 | :10 | .18 | .18 | :40 | .189 | .0084 |
| 12-20 | .37 1/2 | 0 | :19 | .13 | .20 | :42 | .251 | .0158 |
| Watershed Conditions: Bluegrass and orchard grass pasture 1 1/2 to 2 inches high, mostly dormant. Had been heavily grazed April through October 1957 by 14 head of beef cattle. Snows of 12-3, 4 and 11 had completely melted before rain of 12-20. No frost in ground. | | | :22 | .40 | .22 | :44 | .304 | .0250 |
| | | | :27 | .36 | .25 | :45 | .344 | .0304 |
| | | | :30 | 1.20 | .31 | :46 | .355 | .0362 |
| | | | :35 | 1.08 | .40 | :50 | .324 | .0588 |
| | | | :40 | 1.32 | .51 | :54 | .287 | .0792 |
| | | | :46 | .90 | .60 | :58 | .235 | .0965 |
| | | | :52 | .20 | .62 | 2:04 | .142 | .1154 |
| | | | 2:00 | .15 | .64 | :08 | .103 | .1236 |
| | | | :36 | .03 | .66 | :12 | .074 | .1295 |
| | | | :43 | .17 | .68 | :18 | .047 | .1355 |
| | | | :50 | .26 | .71 | :26 | .027 | .1405 |
| | | | 3:00 | .30 | .76 | :32 | .017 | .1426 |
| | | | :10 | .30 | .81 | :40 | .010 | .1444 |
| | | | :19 | .40 | .87 | :48 | .007 | .1455 |
| | | | :24 | .24 | .89 | :58 | .038 | .1468 |
| | | | :37 | .05 | .90 | 3:02 | .012 | .1474 |
| | | | :50 | .09 | .92 | :08 | .022 | .1491 |
| | | | 4:00 | .12 | .94 | :14 | .041 | .1522 |
| | | | :07 | .09 | .95 | :20 | .058 | .1571 |
| | | | :16 | .40 | 1.01 | :24 | .066 | .1613 |

Notes: To convert runoff in in/hr to cfs multiply by 3.549. "s" denotes snow under antecedent precipitation. 1/ Prior to 10:00a, 12-20-57. For map of watershed, see Selected Runoff Events for Small Agricultural Watersheds in the United States, ARS, SWC, January 1960, page 5.6-6.

| SELECTED RUNOFF EVENTS | | | | | | College Park, Maryland Watershed W-7 | | | |
|---|-------------------|-----------------|---------------|-------------------|---------------|--------------------------------------|--------------|---------------|--|
| Antecedent conditions | | | Rainfall | | | Runoff | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | |
| Event of December 20-21, 1957 - Continued | | | | | | | | | |
| | | | 4:25p | .20 | 1.04 | 3:28p | .070 | .1658 | |
| | | | :41 | .23 | 1.10 | :36 | .058 | .1744 | |
| | | | :50 | .40 | 1.16 | :44 | .047 | .1814 | |
| | | | :52 | 1.20 | 1.20 | :54 | .038 | .1885 | |
| | | | :55 | .40 | 1.22 | 4:00 | .032 | .1920 | |
| | | | 5:00 | .24 | 1.24 | :08 | .029 | .1960 | |
| | | | :04 | .30 | 1.26 | :15 | .038 | .1999 | |
| | | | :16 | .20 | 1.30 | :25 | .051 | .2073 | |
| | | | :23 | .26 | 1.33 | :32 | .058 | .2137 | |
| | | | :36 | .05 | 1.34 | :40 | .062 | .2217 | |
| | | | :45 | .07 | 1.35 | :44 | .074 | .2262 | |
| | | | 6:00 | .04 | 1.36 | :48 | .093 | .2318 | |
| | | | 7:00 | .02 | 1.38 | :52 | .136 | .2394 | |
| | | | 8:00 | .01 | 1.39 | :54 | .161 | .2444 | |
| | | | :20 | .03 | 1.40 | :58 | .182 | .2558 | |
| | | | :27 | .09 | 1.41 | 5:04 | .175 | .2737 | |
| | | | :32 | .36 | 1.44 | :13 | .148 | .2979 | |
| | | | 9:00 | .11 | 1.49 | :24 | .130 | .3234 | |
| | | | 10:00 | .04 | 1.53 | :33 | .098 | .3405 | |
| | | | :06 | .50 | 1.57 | :40 | .074 | .3505 | |
| | | | | | | :50 | .051 | .3610 | |
| | | | | | | 6:00 | .035 | .3681 | |
| | | | | | | :16 | .019 | .3753 | |
| | | | | | | :36 | .010 | .3801 | |
| | | | | | | :54 | .0052 | .3824 | |
| | | | | | | 7:12 | .0030 | .3836 | |
| | | | | | | :28 | .0021 | .3843 | |
| | | | | | | 8:16 | .0006 | .3854 | |
| | | | | | | :28 | .0021 | .3856 | |
| | | | | | | :34 | .0052 | .3860 | |
| | | | | | | :44 | .007 | .3870 | |
| | | | | | | :52 | .010 | .3881 | |
| | | | | | | 9:08 | .013 | .3912 | |
| | | | | | | :12 | .015 | .3921 | |
| | | | | | | :24 | .015 | .3951 | |
| | | | | | | :36 | .013 | .3980 | |
| | | | | | | :48 | .010 | .4003 | |
| | | | | | | 10:06 | .010 | .4032 | |
| | | | | | | :14 | .012 | .4047 | |
| | | | | | | :20 | .010 | .4057 | |
| | | | | | | :30 | .010 | .4074 | |
| | | | | | | :54 | .0052 | .4104 | |
| | | | | | | 11:24 | .0021 | .4122 | |
| | | | | | | 12:00m | .0006 | .4130 | |
| | | | | | | 12-21-57 | | | |
| | | | | | | 2:10a | 0 | .4136 | |
| Event of July 8-9, 1958 | | | | | | | | | |
| 6-9-58 | .12 | 0 | 7-8-58 | Reingage | R-4 | 7-8-58 | | | |
| 6-10 | .85 | .0006 | 4:55p | 0 | 0 | 5:15p | 0 | 0 | |
| 6-11 | .41 | .0003 | 5:00 | .24 | .02 | :27 | .008 | .0010 | |
| 6-13 | .20 | 0 | :03 | .60 | .05 | :29 | .022 | .0015 | |
| 6-20 | .69 | .0017 | :10 | .17 | .07 | :31 | .038 | .0025 | |
| 6-21 | .82 | .0016 | :12 | 1.20 | .11 | :34 | .114 | .0054 | |
| 6-22 | .02 | 0 | :14 | 6.00 | .31 | :38 | .103 | .0136 | |
| 6-26 | .32 | 0 | :17 | 1.20 | .37 | :41 | .103 | .0187 | |
| 7-4 | .15 | 0 | :19 | 3.30 | .48 | :45 | .083 | .0249 | |
| 7-6 | .14 | 0 | :23 | .45 | .51 | :49 | .083 | .0305 | |
| 7-7 | .24 1/ | .0004 2/ | :25 | 3.00 | .61 | :53 | .066 | .0354 | |
| | | | :28 | 4.20 | .82 | :58 | .044 | .0400 | |
| | | | :31 | 2.40 | .94 | 6:03 | .027 | .0430 | |
| | | | :36 | .60 | .99 | :07 | .017 | .0444 | |
| | | | :39 | 2.40 | 1.11 | :14 | .008 | .0459 | |
| <p>Watershed Conditions: Bluegrass and orchard grass pasture 2 to 4 inches high. Grazed by 9 head of beef cattle beginning in April. Common fertilization. Weeds and excess growth mowed to 4-inch height late in June.</p> | | | | | | | | | |
| <p>Notes: To convert runoff in in/hr to cfs multiply by 3.549 1/ Rain 4:20p to 6:40p. 2/ Runoff ended 9:00p.</p> | | | | | | | | | |

| SELECTED RUNOFF EVENTS | | | College Park, Maryland Watershed W-7 | | | | | |
|-------------------------------------|-------------------|-----------------|--------------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of July 8-9, 1958 - Continued | | | | | | | | |
| | | | 5:42p | .20 | 1.12 | 6:18p | .007 | .0464 |
| | | | :44 | 3.00 | 1.22 | :28 | .0021 | .0471 |
| | | | :50 | .20 | 1.24 | :38 | .0013 | .0473 |
| | | | 6:00 | .06 | 1.25 | :42 | .0021 | .0474 |
| | | | ceased | - | - | :43 | .0040 | .0475 |
| | | | 6:09 | 0 | 1.25 | :47 | .007 | .0478 |
| | | | :13 | 1.50 | 1.35 | :53 | .0040 | .0484 |
| | | | :19 | .30 | 1.38 | 7:07 | .0006 | .0489 |
| | | | :34 | .24 | 1.40 | :53 | .0006 | .0492 |
| | | | :37 | 1.20 | 1.46 | :56 | .022 | .0497 |
| | | | :39 | 2.70 | 1.55 | :57 | .044 | .0502 |
| | | | 7:00 | .03 | 1.56 | 8:00 | .074 | .0532 |
| | | | :30 | .02 | 1.57 | :02 | .119 | .0564 |
| | | | :40 | .18 | 1.60 | :03 | .175 | .0588 |
| | | | :43 | .80 | 1.64 | :04 | .219 | .0621 |
| | | | :47 | .15 | 1.65 | :08 | .277 | .0786 |
| | | | :50 | 2.00 | 1.75 | :13 | .219 | .0993 |
| | | | :54 | 2.25 | 1.90 | :17 | .175 | .1124 |
| | | | :58 | 1.50 | 2.00 | :21 | .142 | .1230 |
| | | | 8:00 | .60 | 2.02 | :25 | .103 | .1317 |
| | | | :03 | .60 | 2.05 | :29 | .074 | .1370 |
| | | | :06 | 1.40 | 2.12 | :35 | .051 | .1433 |
| | | | :30 | .08 | 2.15 | :42 | .032 | .1481 |
| | | | :50 | .12 | 2.19 | :48 | .022 | .1508 |
| | | | 9:00 | .06 | 2.20 | :58 | .010 | .1534 |
| | | | :27 | .07 | 2.23 | 9:08 | .0040 | .1546 |
| | | | :33 | .30 | 2.26 | :24 | .0006 | .1552 |
| | | | 10:00 | .20 | 2.35 | 10:20 | .0002 | .1555 |
| | | | :12 | .15 | 2.38 | 12:00m | 0 | .1557 |
| | | | :20 | .08 | 2.39 | | | |
| | | | :30 | .30 | 2.44 | | | |
| | | | :45 | .12 | 2.47 | | | |
| | | | 11:00 | .08 | 2.49 | | | |
| | | | 12:00m | .01 | 2.50 | | | |
| | | | 7-9-58 | | | | | |
| | | | 12:30 a | .04 | 2.52 | | | |
| | | | :50 | .09 | 2.55 | | | |

Notes: To convert runoff in in/hr to cfs multiply by 3.549



COLLEGE PARK, MARYLAND WATERSHED W-7

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Vero Beach, Florida Watershed W-1 Area 49,915 ac. (78.0 sq. mi.) | | | | | | |
|---|------|------|------|------|------|-------|---|------|-------|-------|------|------|-------|
| Month Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 P | 0.44 | 2.58 | 0.15 | 3.71 | 1.32 | 3.30 | 6.03 | 5.70 | 9.39 | 11.29 | 0.74 | 0.45 | 49.10 |
| Q | .68 | .79 | .76 | 1.04 | .66 | .69 | 1.58 | 1.24 | 5.04 | 8.95 | 1.35 | 1.06 | 23.32 |
| 1957 P | 4.50 | 4.54 | 4.13 | 5.56 | 6.34 | 4.02 | 4.11 | 8.35 | 6.80 | 5.11 | .90 | 2.43 | 56.59 |
| Q | 2.01 | 1.74 | 2.14 | 2.14 | 2.41 | 1.44 | 1.35 | 2.55 | 3.71 | 3.21 | 1.07 | 1.00 | 25.07 |
| 1958 P | 7.32 | 1.57 | 4.33 | 3.48 | 3.64 | 5.99 | 4.07 | 3.05 | 5.20 | 2.39 | 1.64 | 3.42 | 45.30 |
| Q | 3.40 | 1.46 | 1.64 | 1.66 | 1.22 | 1.45 | 1.41 | 1.02 | 1.09 | .83 | .90 | 1.07 | 17.15 |
| 1959 P | 2.32 | .70 | 8.68 | 2.85 | 5.60 | 11.69 | 7.05 | 5.25 | 8.65 | 6.55 | 3.04 | 1.56 | 63.90 |
| Q | 1.17 | .88 | 3.42 | 1.49 | 1.73 | 6.47 | 3.60 | 2.35 | 3.94 | 4.05 | 1.89 | 1.31 | 32.30 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS Vero Beach, Florida Watershed W-1

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 10-2 | .031 | 10-2 | .031 | 10-2 | .060 | 10-2 | .178 | 10-3 | .334 | 10-3 | .478 | 10-2 | .838 | 9-30 | 1.88 |
| 1958 | 1-24 | .029 | 1-24 | .029 | 1-24 | .056 | 1-24 | .159 | 1-24 | .296 | 1-24 | .452 | 1-24 | .679 | 1-21 | 1.58 |
| 1959 | 6-18 | .078 | 6-18 | .078 | 6-18 | .155 | 6-18 | .459 | 6-18 | .835 | 6-18 | 1.44 | 6-18 | 2.79 | 6-18 | 4.94 |

Notes: Quality of records: monthly P and Q, good. Annual maximum discharge and volumes, good. Watershed conditions, (1958) Citrus, 25%, improved pasture-10%, range and forest-50%, miscellaneous-15%. Monthly precipitation Thiessen weighted using 5 raingages.

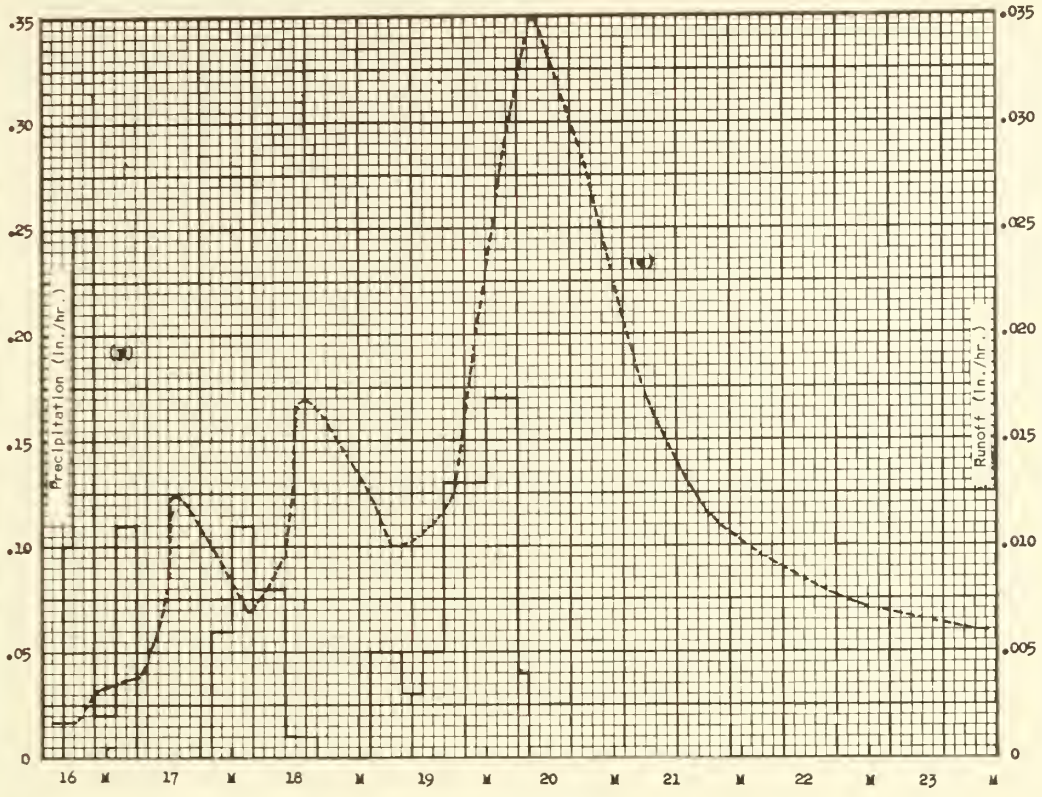
SELECTED RUNOFF EVENTS Vero Beach, Florida Watershed W-1

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|----------------------------|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of March 16-23, 1959 | | | | | | | | |
| 2-14-59 | 0 | 0.030 | 3-16-59 | (5 Raingages) | | 3-16-59 | | |
| 2-15 | 0 | .033 | 4:00p | 0 | 0 | 6:00p | 0.0016 | 0 |
| 2-16 | 0 | .033 | 6:00 | .10 | .20 | 12:00m | .0034 | .0150 |
| 2-17 | .16 | .030 | 10:00 | .25 | 1.20 | 3-17-59 | | |
| 2-18 | 0 | .029 | 3-17-59 | | | 6:00a | .0037 | .0363 |
| 2-19 | 0 | .029 | 2:00a | .02 | 1.28 | 12:00n | .0039 | .0741 |
| 2-20 | 0 | .025 | 6:00 | .11 | 1.72 | 1:00p | .0124 | .0847 |
| 2-21 | 0 | .022 | 8:00p | .00 | 1.72 | 2:00 | .0124 | .0971 |
| 2-22 | 0 | .023 | 12:00m | .06 | 1.96 | 3-18-59 | | |
| 2-23 | 0 | .028 | 3-18-59 | | | 3:00a | .0069 | .2225 |
| 2-24 | 0 | .029 | 4:00a | .11 | 2.40 | 10:30 | .0097 | .2806 |
| 2-25 | 0 | .031 | 10:00 | .08 | 2.38 | 12:00n | .0136 | .3059 |
| 2-26 | .16 | .030 | 4:00p | .01 | 2.94 | 2:00p | .0170 | .3385 |
| 2-27 | .15 | .035 | 3-19-59 | | | 6:30 | .0136 | .4037 |
| 2-28 | 1.07 | .034 | 2:00a | .00 | 2.94 | 3-19-59 | | |
| 3-1 | .30 | .120 | 8:00 | .05 | 3.24 | 6:00a | .0101 | .5579 |
| 3-2 | .01 | .040 | 12:00n | .03 | 3.35 | 12:00n | .0205 | .6200 |
| 3-3 | .01 | .031 | 4:00p | .05 | 3.55 | 6:00p | .0129 | .6905 |
| 3-4 | .01 | .032 | 12:00m | .15 | 4.60 | 3-20-59 | | |
| 3-5 | .01 | .031 | 3-20-59 | | | 3:00a | .0278 | .8737 |
| 3-6 | .02 | .032 | 6:00a | .17 | 5.62 | 9:00 | .0349 | 1.062 |
| 3-7 | 0 | .034 | 8:00 | .04 | 5.70 | 6:00p | .0285 | 1.347 |
| 3-8 | .19 | .035 | | | | 3-21-59 | | |
| 3-9 | .29 | .036 | | | | 6:00a | .0172 | 1.621 |
| 3-10 | 0 | .036 | | | | 6:00p | .0115 | 1.793 |
| 3-11 | 0 | .037 | | | | 3-22-59 | | |
| 3-12 | .53 | .039 | | | | 6:00p | .0076 | 2.022 |
| 3-13 | 0 | .044 | | | | 3-23-59 | | |
| 3-14 | 0 | .047 | | | | 10:00p 1/ | .0060 | 2.212 |
| 3-15 | 0 | .044 | | | | | | |
| 3-16 | 0 | .036 2/ | | | | | | |

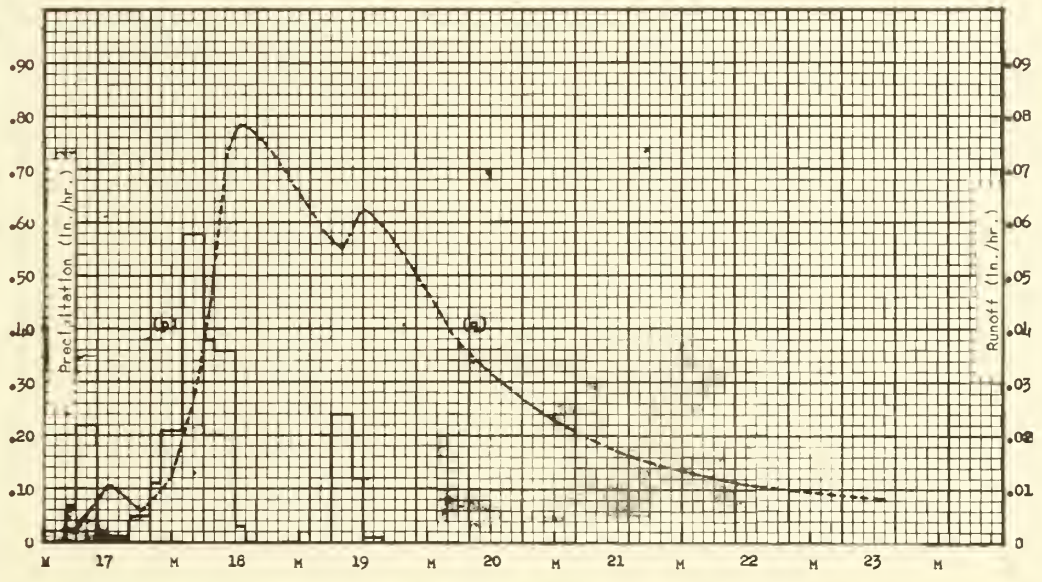
Notes: To convert runoff in in/hr to cfs, multiply by 50352. All precipitation Thiessen weighted. For map of watershed see Selected Runoff Events for Small Agricultural Watersheds in the U. S., ARS, SWC, January 1960, page 8.1-7
1/ Runoff continued at rate less than 0.01 in/hr until next event. 2/ Runoff prior to 6:00p.

| SELECTED RUNOFF EVENTS | | | | | | Vero Beach, Florida Watershed W-1 | | |
|--|-------------------|-----------------|---------------|-------------------|---------------|-----------------------------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of June 17-23, 1959 | | | | | | | | |
| 5-18-59 | 0.24 | 0.080 | 6-17-59 | (5 Rainages) | | 6-17-59 | | |
| 5-19 | .02 | .082 | 4:00a | 0 | 0 | 6:00a | 0.0022 | 0 |
| 5-20 | 0 | .051 | 6:00 | .07 | .14 | 12:00n | .0101 | .0369 |
| 5-21 | .07 | .034 | 10:00 | .22 | 1.02 | 6:00p | .0063 | .0861 |
| 5-22 | .01 | .045 | 4:00p | .01 | 1.03 | 12:00m | .0122 | .1416 |
| 5-23 | .01 | .052 | 8:00 | .05 | 1.28 | 6-18-59 | | |
| 5-24 | 0 | .049 | 10:00 | .11 | 1.50 | 6:00a | .0372 | .2398 |
| 5-25 | .06 | .041 | 6-18-59 | | | 12:00n | .0771 | .6327 |
| 5-26 | 0 | .039 | 2:00a | .21 | 2.34 | 1:00p | .0781 | .7103 |
| 5-27 | 0 | .038 | 6:00 | .58 | 4.66 | 6:00 | .0747 | 1.092 |
| 5-28 | 1.59 | .064 | 8:00 | .38 | 5.42 | 6-19-59 | | |
| 5-29 | .02 | .140 | 12:00n | .36 | 6.36 | 6:00a | .0574 | 1.835 |
| 5-30 | 0 | .075 | 2:00p | .03 | 6.92 | 8:00 | .0553 | 1.298 |
| 5-31 | 0 | .057 | 6-19-59 | | | 12:00m | .0620 | 2.234 |
| 6-1 | .13 | .046 | 6:00a | .00 | 6.92 | 6:00p | .0565 | 2.590 |
| 6-2 | .04 | .042 | 10:00 | .24 | 7.88 | 6-20-59 | | |
| 6-3 | .82 | .042 | 12:00n | .12 | 8.12 | 6:00a | .0375 | 3.154 |
| 6-4 | .08 | .090 | 4:00p | .01 | 8.16 | 12:00m | .0226 | 3.695 |
| 6-5 | .16 | .108 | | | | 6-21-59 | | |
| 6-6 | .16 | .101 | | | | 6:00p | .0149 | 4.033 |
| 6-7 | .17 | .112 | | | | 6-22-59 | | |
| 6-8 | .03 | .052 | | | | 12:00n | .0114 | 4.270 |
| 6-9 | 0 | .045 | | | | 6-23-59 | | |
| 6-10 | 0 | .051 | | | | 2:00p 1/ | .0082 | 4.525 |
| 6-11 | 0 | .054 | | | | | | |
| 6-12 | 0 | .047 | | | | | | |
| 6-13 | .04 | .041 | | | | | | |
| 6-14 | .51 | .040 | | | | | | |
| 6-15 | .20 | .066 | | | | | | |
| 6-16 | .76 | .054 | | | | | | |
| 6-17 | 0 | .032 2/ | | | | | | |
| <p>Watershed Conditions: Citrus 34%; range and forest 34%; miscellaneous roads, canals, cities, etc. 22%; and improved pasture 10%. (Approximate figures from SCS).</p> | | | | | | | | |
| <p>Notes: To convert runoff in in/hr to cfs, multiply by 50332. 1/ Runoff continued at rate less than 0.01 in/hr until next event. 2/ Runoff prior to 6:00a.</p> | | | | | | | | |

Runoff is graphical sum of discharge from 3 outlet canals.



March 16-23, 1959



June 17-23, 1959

VERO BEACH, FLORIDA, WATERSHED W-1

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Vero Beach, Florida Watershed W-2 1/ Area 63,100 ac. (98.6 sq. mi.) | | | | | | |
|---|------|------|------|------|------|-------|--|------|-------|-------|------|------|-------|
| Year \ Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 P | 0.25 | 0.79 | 1.53 | 4.28 | 5.71 | 5.53 | 4.13 | 4.88 | 8.45 | 12.21 | 0.18 | 0.36 | 48.40 |
| 1956 Q | .04 | .01 | .01 | 0 | .66 | .28 | .30 | .02 | 2.53 | 9.78 | .22 | .40 | 14.35 |
| 1957 P | 1.52 | 3.76 | 4.31 | 5.51 | 7.38 | 4.91 | 7.00 | 9.12 | 10.52 | 1.20 | .45 | 4.15 | 60.03 |
| 1957 Q | .06 | .07 | .71 | .91 | 2.24 | 1.48 | 2.48 | 5.26 | 6.37 | 1.45 | .09 | .26 | 21.38 |
| 1958 P | 6.06 | 1.01 | 6.08 | 1.79 | 3.80 | 5.27 | 6.82 | 7.40 | 5.24 | 3.46 | .44 | 2.52 | 49.99 |
| 1958 Q | 2.50 | .46 | 1.89 | .44 | .17 | .09 | 2.16 | 1.73 | 1.19 | .49 | .11 | .13 | 11.39 |
| 1959 P | 3.26 | .71 | 7.48 | 2.11 | 5.49 | 12.49 | 6.12 | 3.81 | 6.38 | 8.55 | 3.33 | 1.45 | 51.78 |
| 1959 Q | .48 | .30 | 3.30 | .32 | .16 | 9.31 | 1.42 | .75 | 2.76 | 4.56 | 1.92 | .40 | 25.68 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS Vero Beach, Florida Watershed W-2

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 9-8 | .015 | 9-8 | .015 | 9-8 | .030 | 9-8 | .090 | 9-8 | .180 | 9-8 | .340 | 9-7 | .669 | 9-5 | 2.19 |
| 1958 | 1-26 | .013 | 1-26 | .013 | 1-26 | .026 | 1-26 | .076 | 1-26 | .148 | 1-26 | .293 | 1-26 | .358 | 1-24 | 1.60 |
| 1959 | 6-19 | .070 | 6-19 | .070 | 6-19 | .139 | 6-19 | .412 | 6-19 | .810 | 6-20 | 1.60 | 6-19 | 3.08 | 6-18 | 7.16 |

Notes: Quality of records: monthly P and Q, good. Annual maximum discharge and volumes, good. Watershed conditions, (1958) Improved pasture-10%, semi-improved-10%, unimproved-45%, range and forest-20%, miscellaneous-15%. Monthly precipitation Thiessen weighted using 7 raingages. 1/ Upper Taylor Creek.

SELECTED RUNOFF EVENTS Vero Beach, Florida Watershed W-2

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|----------------------------|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of March 16-23, 1959 | | | | | | | | |
| 2-15-59 | 0.01 | .006 | 3-16-59 | (7 Raingages) | | 3-18-59 | | |
| 2-16 | .01 | .006 | 4:00p | 0 | 0 | 6:00p | .0025 | 0 |
| 2-17 | .07 | .006 | 8:00 | .22 | .88 | 3-19-59 | | |
| 2-18 | 0 | .005 | 10:00 | .07 | 1.02 | 12:00n | .0046 | .0639 |
| 2-19 | 0 | .005 | 3-17-59 | | | 3-20-59 | | |
| 2-20 | 0 | .004 | 2:00a | .02 | 1.10 | 6:00a | .0086 | .1827 |
| 2-21 | 0 | .004 | 6:00 | .06 | 1.34 | 12:00m | .0164 | .4077 |
| 2-22 | 0 | .004 | 12:00m | .00 | 1.34 | 3-21-59 | | |
| 2-23 | 0 | .004 | 3-18-59 | | | 12:00n | .0209 | .6315 |
| 2-24 | 0 | .003 | 10:00a | .10 | 2.24 | 9:00p | .0221 | .8250 |
| 2-25 | 0 | .003 | 4:00p | .02 | 2.46 | 3-22-59 | | |
| 2-26 | 0 | .003 | 3-19-59 | | | 12:00n | .0206 | 1.145 |
| 2-27 | .25 | .005 | 2:00a | .00 | 2.46 | 3-23-59 | | |
| 2-28 | 1.43 | .004 | 6:00 | .06 | 2.70 | 6:00a | .0175 | 1.488 |
| 3-1 | .39 | .014 | 10:00 | .14 | 3.26 | 12:00m | .0146 | 1.777 |
| 3-2 | 0 | .027 | 4:00p | .07 | 3.68 | 3-24-59 | | |
| 3-3 | 0 | .027 | 12:00n | .08 | 4.32 | 6:00p | .0122 | 2.018 |
| 3-4 | 0 | .025 | 3-20-59 | | | 3-25-59 | | |
| 3-5 | 0 | .023 | 6:00a | .06 | 4.68 | 12:00n | .0102 | 2.220 |
| 3-6 | .02 | .022 | | | | 3-26-59 | | |
| 3-7 | 0 | .020 | | | | 6:00a | .0086 | 2.389 |
| 3-8 | .11 | .018 | | | | 12:00m | .0072 | 2.531 |
| 3-9 | .17 | .017 | | | | 3-27-59 | | |
| 3-10 | 0 | .015 | | | | 6:00p | .0061 | 2.651 |
| 3-11 | 0 | .012 | | | | 3-28-59 | | |
| 3-12 | .18 | .009 | | | | 12:00n 1/ | .0051 | 2.752 |
| 3-13 | .01 | .008 | | | | | | |
| 3-14 | 0 | .007 | | | | | | |
| 3-15 | 0 | .006 | | | | | | |
| 3-16 | 0 | .003 2/ | | | | | | |

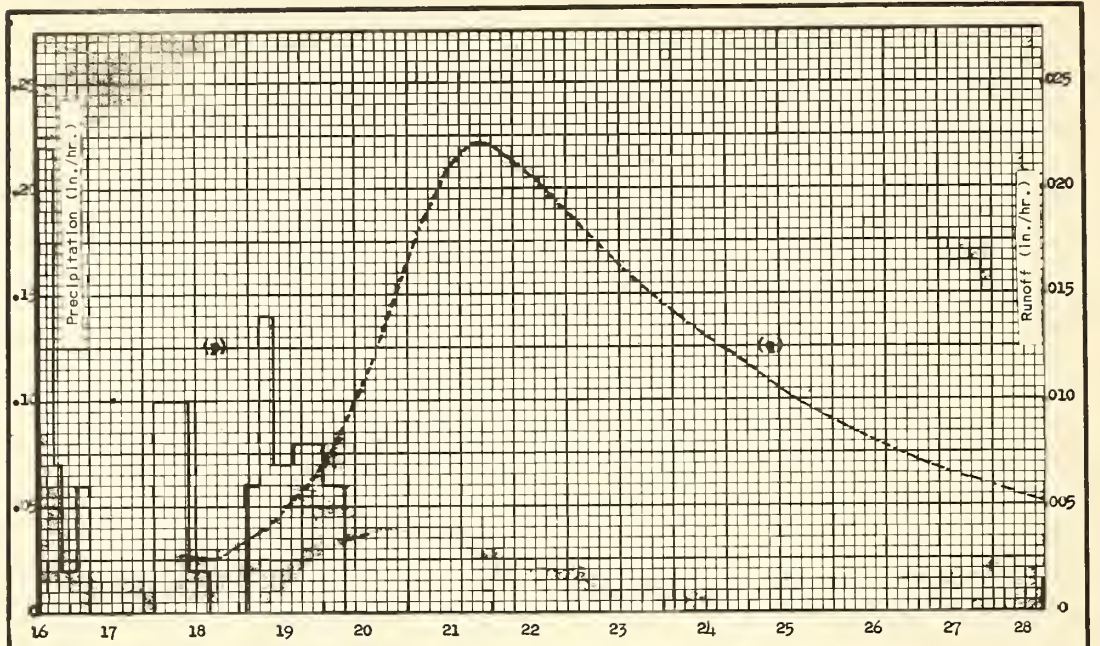
Watershed Conditions: Same as for event of June 17-25, 1959.

Notes: To convert runoff in in/hr to cfs, multiply by 63857. All precipitation Thiessen weighted
 1/ Runoff continued at rate less than 0.01 in/hr until next event.
 2/ Runoff negligible to 6:00p, 3-18-59.

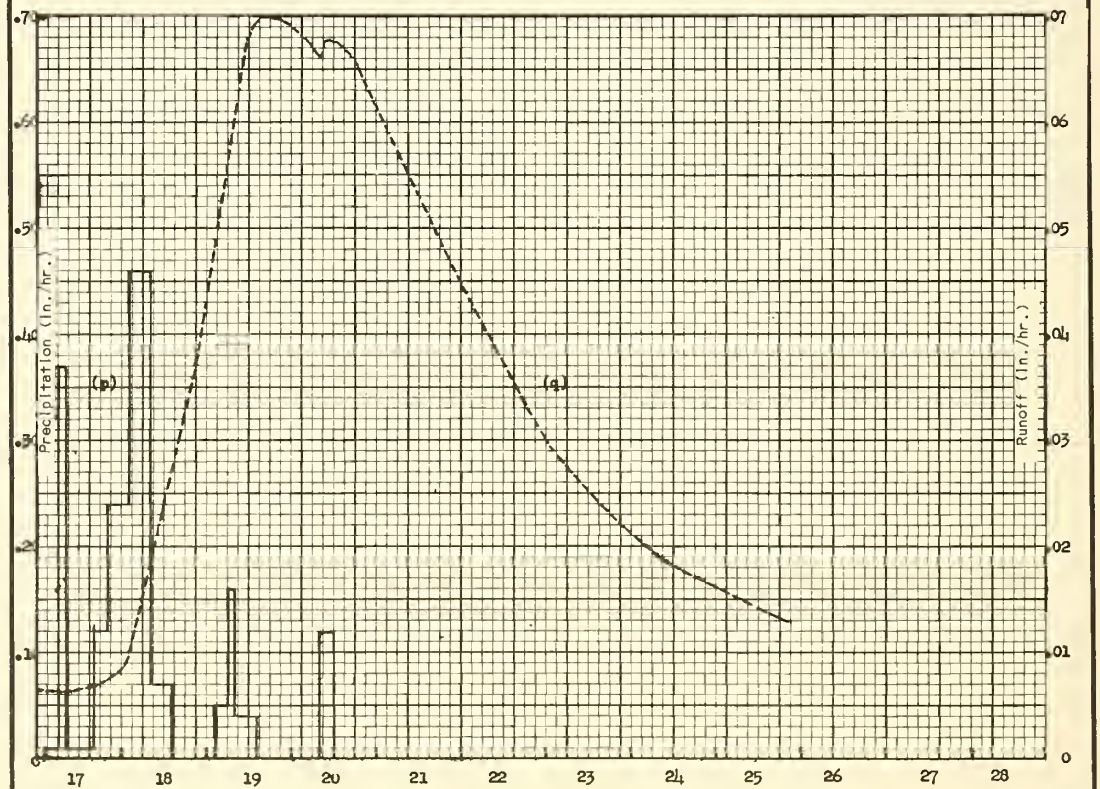
| SELECTED RUNOFF EVENTS | | | Vero Beach, Florida Watershed W-2 | | | | | |
|---------------------------|-------------------|-----------------|-----------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of June 17-25, 1952 | | | | | | | | |
| 5-18-59 | 0.08 | 0.002 | 6-17-59 | (7 Rainages) | | 6-17-59 | | |
| 5-19 | 1.11 | .002 | 2:00a | 0 | 0 | 6:00a | 0.0061 | 0 |
| 5-20 | .10 | .003 | 6:00 | .01 | .04 | 10:00p | .0079 | 1.120 |
| 5-21 | .13 | .005 | 8:00 | .37 | .78 | 6-18-59 | | |
| 5-22 | .07 | .005 | 4:00p | .01 | .86 | 2:00a | .0092 | 1.1462 |
| 5-23 | .64 | .005 | 8:00 | .12 | 1.34 | 12:00n | .0226 | 1.3052 |
| 5-24 | 0 | .005 | 6-18-59 | | | 10:00p | .0370 | 1.6032 |
| 5-25 | 0 | .004 | 2:00a | .24 | 2.78 | 6-19-59 | | |
| 5-26 | 0 | .004 | 8:00 | .46 | 5.54 | 12:00n | .0679 | 1.338 |
| 5-27 | 0 | .004 | 2:00p | .07 | 5.96 | 5:00n | .0700 | 1.683 |
| 5-28 | 2.19 | .008 | 6-19-59 | | | 6-20-59 | | |
| 5-29 | .11 | .021 | 2:00a | .00 | 5.96 | 6:00a | .0673 | 2.575 |
| 5-30 | 0 | .028 | 6:00 | .05 | 6.16 | 9:00 | .0658 | 2.775 |
| 5-31 | 0 | .027 | 8:00 | .16 | 6.14 | 10:00 | .0673 | 2.841 |
| 6-1 | 0 | .029 | 2:00p | .04 | 6.72 | 12:00n | .0676 | 2.976 |
| 6-2 | 0 | .032 | 6-20-59 | | | 6:00p | .0658 | 3.376 |
| 6-3 | .02 | .032 | 8:00a | .00 | 6.72 | 6-21-59 | | |
| 6-4 | .10 | .030 | 12:00n | .12 | 7.20 | 12:00n | .0150 | 5.038 |
| 6-5 | 0 | .025 | | | | 6-22-59 | | |
| 6-6 | .08 | .021 | | | | 12:00m | .0300 | 5.938 |
| 6-7 | 1.99 | .020 | | | | 6-21-59 | | |
| 6-8 | .82 | .030 | | | | 6:00a | .0295 | 6.680 |
| 6-9 | 0 | .027 | | | | 6-25-59 | | |
| 6-10 | 0 | .127 | | | | 6:00p 1/ | .0135 | 7.274 |
| 6-11 | 0 | .147 | | | | | | |
| 6-12 | 0 | .135 | | | | | | |
| 6-13 | 0 | .110 | | | | | | |
| 6-14 | 1.34 | .093 | | | | | | |
| 6-15 | .22 | .135 | | | | | | |
| 6-16 | .20 | .14 | | | | | | |
| 6-17 | 0 | .040 2/ | | | | | | |

Watershed Conditions: Unimproved pasture 47%; Improved pasture 24%; miscellaneous roads, canals, cities, etc. 15%; and range and forest 14%. (Approximate figures from SCS).

Notes: To convert runoff in in/hr to cfs, multiply by 63857.
 1/ Runoff continued at rate less than 0.01 in/hr until next event.
 2/ Runoff prior to 6:00a.

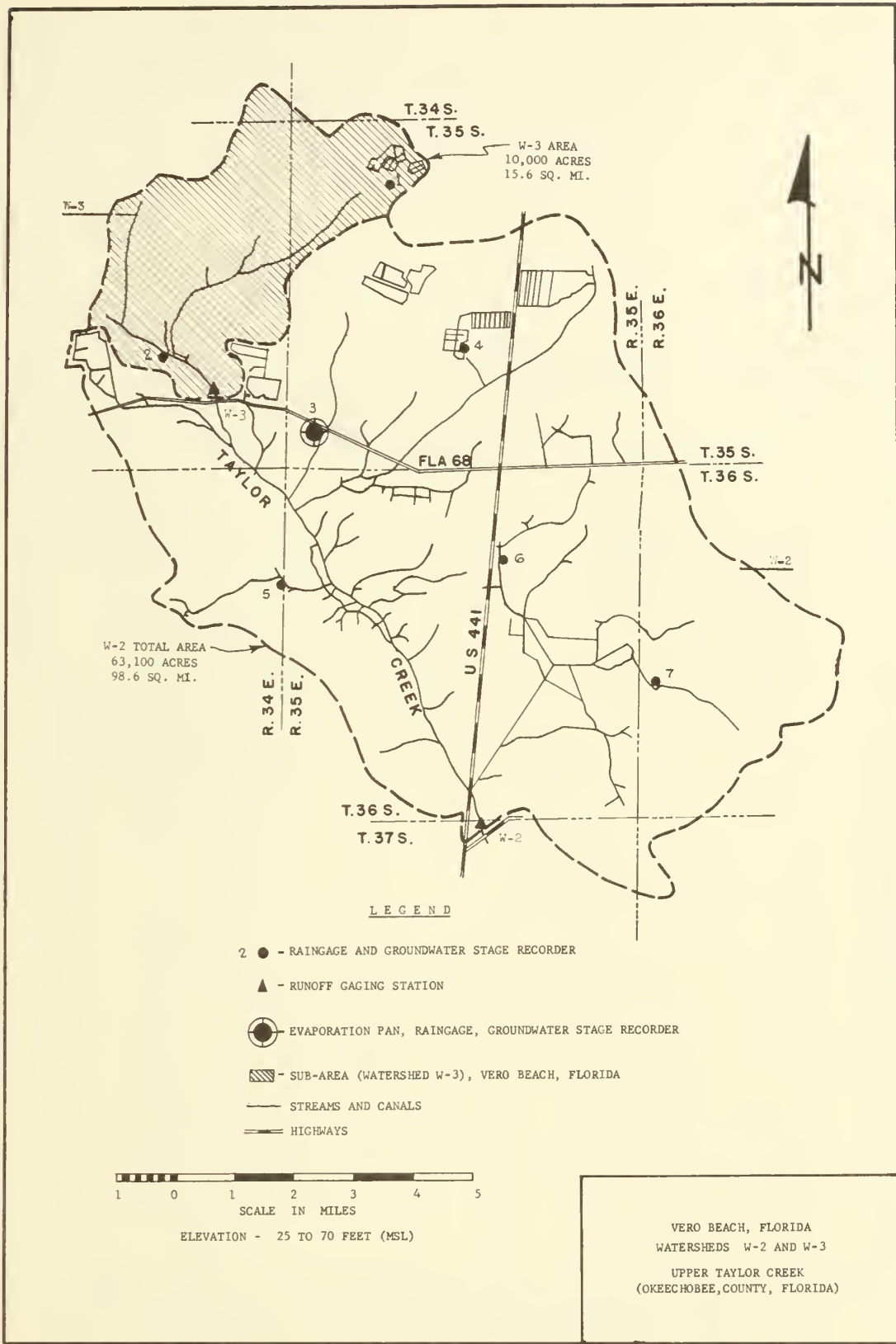


March 16-28, 1959



June 17-28, 1959

VERO BEACH, FLORIDA, WATERSHED W-2



| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Vero Beach, Florida Watershed W-3 ^{1/} Area 10,000 ac. (15.6 sq. mi.) | | | | | | |
|---|------------------|-------------|--------------|-------------|--------------|--------------|---|--------------|--------------|---------------|-------------|-------------|----------------|
| Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 | P 0.39 Q .04 | 1.04 .02 | 1.11 .01 | 6.20 .16 | 3.91 1.14 | 4.77 .04 | 2.72 .05 | 6.63 .09 | 8.28 3.30 | 13.50 9.19 | 0.12 .08 | 0.11 .02 | 48.78 14.14 |
| 1957 | P 1.42 Q .04 | 2.90 .04 | 6.27 .55 | 5.95 .85 | 6.45 .78 | 3.70 .90 | 7.05 1.12 | 8.53 3.43 | 8.57 5.45 | 1.64 .95 | .26 .01 | 3.67 .16 | 56.41 11.28 |
| 1958 | P 5.88 Q 2.27 | 1.23 .29 | 6.39 2.10 | 2.71 .62 | 3.40 .17 | 7.34 .08 | 5.74 1.59 | 7.26 .85 | 4.68 .76 | 3.54 .59 | .58 .06 | 2.49 .07 | 51.24 9.45 |
| 1959 | P 3.37 Q .48 | 1.11 .17 | 7.35 3.35 | 1.78 .17 | 5.41 .45 | 9.21 5.28 | 3.46 .16 | 4.47 .39 | 4.56 .41 | 9.12 6.10 | 2.64 .59 | 1.85 .44 | 54.33 17.99 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS Vero Beach, Florida Watershed W-3

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 9-17 | .058 | 9-17 | .058 | 9-17 | .116 | 9-17 | .336 | 9-17 | .633 | 9-17 | 1.09 | 9-16 | 1.63 | 9-15 | 3.16 |
| 1958 | 1-24 | .029 | 1-24 | .029 | 1-24 | .057 | 1-24 | .166 | 1-24 | .320 | 1-24 | .559 | 1-24 | .852 | 1-22 | 1.65 |
| 1959 | 6-18 | .094 | 6-18 | .094 | 6-18 | .183 | 6-18 | .538 | 6-18 | .998 | 6-18 | 1.70 | 6-18 | 2.97 | 6-18 | 4.57 |

Notes: Quality of records: monthly P and Q, good. Annual maximum discharge and volumes, good. Watershed conditions, (1958) Improved pasture-10%, semi-improved-10%, unimproved-45%, range and forest-20%, miscellaneous-15%. Monthly precipitation Thiessen weighted using 2 raingages. ^{1/} Sub-area of Upper Taylor Creek.

SELECTED RUNOFF EVENTS

Vero Beach, Florida Watershed W-3

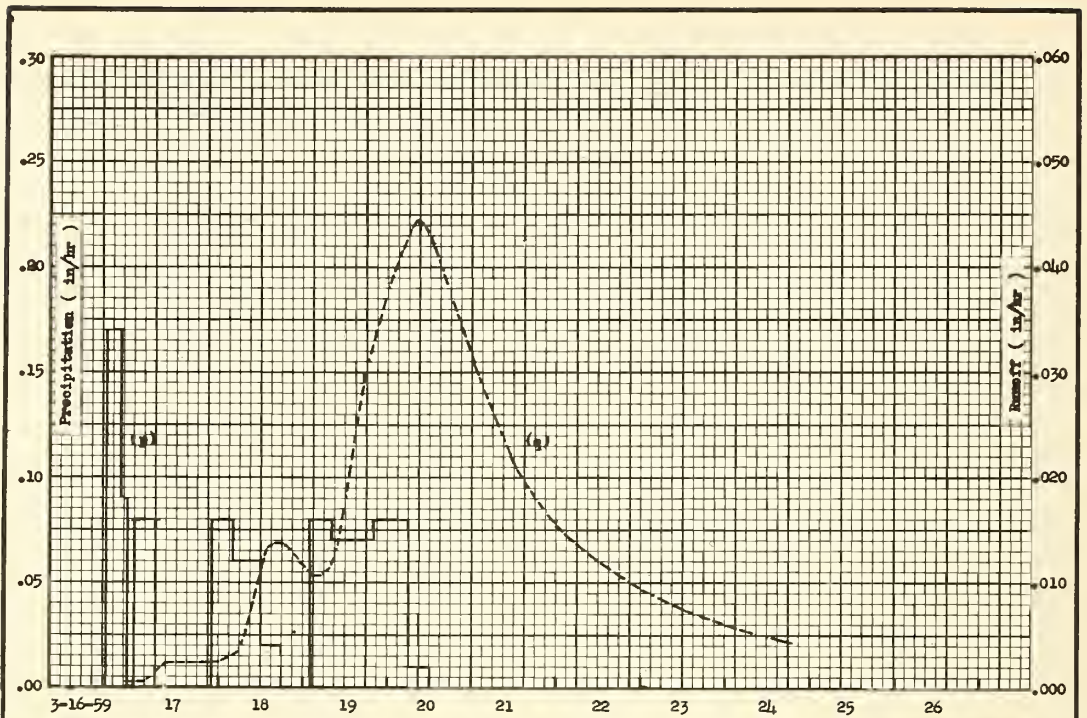
| Antecedent conditions | | | Rainfall | | | Runoff | | |
|----------------------------|-------------------|--------------------|---------------|-------------------|---------------|---------------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of March 16-24, 1959 | | | | | | | | |
| 2-14-59 | 0 | 0.005 | 3-16-59 | (2 Raingages) | 0 | 3-16-59 | | 0 |
| 2-15 | 0 | .004 | 4:00p | 0 | 0 | 6:00p | 0.0003 | |
| 2-16 | 0 | .004 | 8:00 | .17 | .68 | 3-17-59 | | |
| 2-17 | .04 | .004 | 10:00 | .09 | .86 | 3:00a | .0007 | .0045 |
| 2-18 | 0 | .004 | 12:00 | .00 | .86 | 9:00 | .0021 | .0129 |
| 2-19 | 0 | .003 | 3-17-59 | | | 12:00m | .0026 | .0181 |
| 2-20 | 0 | .003 | 6:00a | .08 | 1.34 | 3-18-59 | | |
| 2-21 | 0 | .003 | 10:00p | .00 | 1.34 | 6:00a | .0038 | .0673 |
| 2-22 | 0 | .003 | 3-18-59 | | | 3:00p | .0137 | .1461 |
| 2-23 | 0 | .002 | 4:00a | .08 | 1.82 | 3-19-59 | | |
| 2-24 | 0 | .002 | 12:00 | .06 | 2.30 | 3:00a | .0109 | .2937 |
| 2-25 | 0 | .002 | 6:00p | .02 | 2.42 | 8:00 | .0116 | .3499 |
| 2-26 | 0 | .002 | 3-19-59 | | | 6:00p | .0298 | .5569 |
| 2-27 | .39 | .002 | 2:00a | .00 | 2.42 | 12:00m | .0378 | .7597 |
| 2-28 | 1.10 | .005 | 8:00 | .08 | 2.90 | 3-20-59 | | |
| 3-1 | .58 | .064 | 8:00p | .07 | 3.74 | 6:00a | .0430 | 1.002 |
| 3-2 | 0 | .055 | 3-20-59 | | | 8:00 | .0441 | 1.089 |
| 3-3 | 0 | .036 | 6:00a | .08 | 4.54 | 12:00 | .0423 | 1.262 |
| 3-4 | 0 | .023 | 12:00m | .01 | 4.60 | 12:00m | .0316 | 1.705 |
| 3-5 | 0 | .015 | | | | 3-21-59 | | |
| 3-6 | .02 | .011 | | | | 12:00m | .0212 | 2.022 |
| 3-7 | 0 | .009 | | | | 12:00m | .0155 | 2.212 |
| 3-8 | .16 | .007 | | | | 3-23-59 | | |
| 3-9 | .11 | .039 | | | | 6:00p | .0102 | 2.474 |
| 3-10 | 0 | .007 | | | | 3-23-59 | | |
| 3-11 | 0 | .006 | | | | 12:00m | .0078 | 2.636 |
| 3-12 | .72 | .008 | | | | 3-24-59 | | |
| 3-13 | 0 | .017 | | | | 6:00p ^{1/} | .0042 | 2.816 |
| 3-14 | 0 | .011 | | | | | | |
| 3-15 | 0 | .008 ^{2/} | | | | | | |

Watershed Conditions: Same as for event of June 17-24, 1959.

Notes: To convert runoff in in/hr, multiply by 10081. All precipitation Thiessen weighted. ^{1/} Runoff continued at rate less than 0.01 in/hr. until next event. ^{2/} Runoff negligible to 6:00p, 3-16-59. See map page 8.2-4

| SELECTED RUNOFF EVENTS | | | Vero Beach, Florida Watershed W-3 | | | | | |
|---|-------------------|-----------------|-----------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of June 17-24, 1959 | | | | | | | | |
| 5-18-59 | 0.13 | 0 | 6-17-59 | (2 Rainages) | | 6-17-59 | | |
| 5-19 | .22 | | 2:00a | 0 | 0 | 6:00a | 0.0005 | 0 |
| 5-20 | .11 | .001 | 6:00 | .01 | .01 | 6:00p | .0010 | .0090 |
| 5-21 | .14 | .001 | 8:00 | .24 | .52 | 9:00 | .0034 | .0156 |
| 5-22 | .14 | .006 | 4:00p | .01 | .60 | 12:00 | .0091 | .0344 |
| 5-23 | 1.35 | .006 | 8:00 | .14 | 1.16 | 6-18-59 | | |
| 5-24 | 0 | .038 | 6-18-59 | | | 3:00a | .0185 | .0758 |
| 5-25 | 0 | .029 | 2:00a | .25 | 2.66 | 8:00 | .0788 | .3190 |
| 5-26 | 0 | .020 | 4:00 | .67 | 4.00 | 9:00 | .0880 | .4024 |
| 5-27 | 0 | .012 | 8:00 | .34 | 5.36 | 11:00 | .0941 | .5945 |
| 5-28 | 2.38 | .026 | 10:00 | .10 | 5.56 | 5:00p | .0782 | 1.101 |
| 5-29 | .12 | .136 | 6-20-59 | | | 6-19-59 | | |
| 5-30 | 0 | .100 | 6:00a | .90 | 5.56 | 6:00a | .0562 | 1.975 |
| 5-31 | 0 | .069 | 10:00a | .08 | 5.38 | 6:00 | .0421 | 2.565 |
| 6-1 | 0 | .048 | 12:00m | .00 | 5.88 | 12:00m | .0398 | 2.811 |
| 6-2 | 0 | .033 | 6-21-59 | | | 6-20-59 | | |
| 6-3 | 0 | .024 | 2:00a | .12 | 6.12 | 6:00a | .0302 | 3.021 |
| 6-4 | .36 | .016 | 12:00m | .00 | 6.12 | 12:00m | .0258 | 3.525 |
| 6-5 | 0 | .010 | 2:00p | .14 | 6.40 | 6-21-59 | | |
| 6-6 | .25 | .008 | | | | 6:00p | .0119 | 3.864 |
| 6-7 | 1.34 | .043 | | | | 12:00m | .0126 | 3.938 |
| 6-8 | .15 | .155 | | | | 6-22-59 | | |
| 6-9 | 0 | .075 | | | | 6:00a | .0124 | 4.013 |
| 6-10 | 0 | .038 | | | | 6-23-59 | | |
| 6-11 | 0 | .024 | | | | 12:00n | .0059 | 4.287 |
| 6-12 | 0 | .014 | | | | 6-24-59 | | |
| 6-13 | 0 | .009 | | | | 6:00p 1/ | .0031 | 4.422 |
| 6-14 | .45 | .007 | | | | | | |
| 6-15 | .17 | .011 | | | | | | |
| 6-16 | .22 | .013 | | | | | | |
| 6-17 | 0 | .009 2/ | | | | | | |
| Watershed Conditions: Improved pasture 50%; range and forest 20%; unimproved pasture 15%; and miscellaneous roads, canals, cities, etc. 15%. (Approximate values from SCS). | | | | | | | | |

Notes: To convert runoff in in/hr to cfs, multiply by 10081.
1/ Runoff continued at rate less than 0.01 in/hr until next event.
2/ Runoff prior to 6:00a.



March 16-24, 1959



June 17-25, 1959

VERO BEACH, FLORIDA, WATERSHED W-3

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Watkinsville, Georgia Watershed W-1 (Area - 19.2 acres) | | | | | | |
|---|------|------|------|------|------|------|--|------|-------|------|------|------|-------|
| Month Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 P | 2.21 | 5.68 | 5.95 | 6.01 | 1.56 | 3.22 | 5.09 | 0.56 | 6.22 | 2.66 | 2.02 | 3.84 | 45.02 |
| Q | 0 | T | .19 | .06 | 0 | 0 | T | 0 | .02 | 0 | 0 | 0 | .27 |
| 1957 P | 4.94 | 3.36 | 4.12 | 4.03 | 5.78 | 2.78 | 3.26 | 1.08 | 5.58 | 3.92 | 8.19 | 3.40 | 50.44 |
| Q | T | T | T | .10 | .05 | .04 | .02 | 0 | T | .01 | .74 | T | .96 |
| 1958 P | 3.74 | 4.76 | 6.21 | 5.05 | 2.88 | 1.08 | 5.68 | 3.70 | 1.29 | .72 | 1.39 | 3.04 | 39.54 |
| Q | .01 | .03 | .03 | .02 | 0 | 0 | .01 | .42 | 0 | 0 | 0 | 0 | .52 |
| 1959 P | 2.65 | 5.14 | 6.15 | 2.08 | 6.88 | 2.94 | 6.40 | 1.42 | 2.85 | 6.08 | 2.08 | 2.86 | 47.53 |
| Q | .04 | .30 | .27 | .13 | .41 | .21 | .16 | 0 | T | T | T | T | 1.52 |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | Watkinsville, Georgia Watershed W-1 | | | | | | |
|---|--|--|--|--|--|--|-------------------------------------|--|--|--|--|--|--|
|---|--|--|--|--|--|--|-------------------------------------|--|--|--|--|--|--|

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 11-19 | .77 | 11-19 | 0.36 | 11-19 | 0.46 | 11-18 | 0.53 | 11-18 | 0.53 | 11-18 | 0.53 | 11-18 | 0.53 | 11-18 | 0.74 |
| 1958 | 8-13 | 1.42 | 8-13 | .43 | 8-13 | .43 | 8-13 | .43 | 8-13 | .43 | 8-13 | .43 | 8-13 | .43 | 8-13 | .43 |
| 1959 | 5-30 | .40 | 5-30 | .12 | 5-30 | .14 | 5-30 | .16 | 2-12 | .21 | 2-12 | .26 | 5-30 | .34 | 5-30 | .54 |

Notes: Quality of records: all excellent except July 1959 which is fair. Cropping and management history: Watershed used for pasture; 1956, Kudzu-rescue grass; 1957, Kudzu pasture, bench terraces removed and field smoothed in fall and rye planted; 1958, rye for silage then Coastal Bermuda; 1959, Coastal Bermuda. Overall fertility level high (approx. 1000 lb/ac 6-12-12 + 160 lb. N annually).

| SELECTED RUNOFF EVENTS | | | | | | | Watkinsville, Georgia Watershed W-1 | | | | | | |
|------------------------|--|--|--|--|--|--|-------------------------------------|--|--|--|--|--|--|
|------------------------|--|--|--|--|--|--|-------------------------------------|--|--|--|--|--|--|

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|-------------------------------|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of July 11, 1941</u> | | | | | | | | |
| 6-11-41 | 0.03 | 0 | 7-11-41 | Raingage | R1-W1 | 7-11-41 | | |
| 6-12 | .09 | 0 | 10:35a | 0 | 0 | 10:36a | 0 | 0 |
| 6-13 | .12 | 0 | :40 | 2.76 | .23 | :38 | .0076 | .0001 |
| 6-14 | .06 | 0 | :45 | 1.80 | .38 | :40 | .0041 | .0003 |
| 6-16 | .06 | 0 | :47 | .90 | .41 | :43 | .0215 | .0009 |
| 6-22 | .12 | 0 | :57 | .12 | .43 | :44 | .0513 | .0015 |
| 6-23 | 1.73 | .0656 | 11:00 | 1.00 | .48 | :45 | .0565 | .0024 |
| 6-24 | .22 | 0 | :05 | 1.08 | .57 | :46 | .0510 | .0033 |
| 6-25 | .66 | .0968 | :10 | 2.52 | .78 | :48 | .0503 | .0050 |
| 6-26 | .47 | .1483 | :12 | 5.40 | .96 | :50 | .0616 | .0069 |
| 7-1 | .34 | .0142 | :15 | 5.00 | 1.21 | :53 | .0981 | .0109 |
| 7-3 | .26 | .0045 | :20 | 2.40 | 1.41 | :56 | .1225 | .0164 |
| 7-4 | .02 | 0 | :25 | 3.12 | 1.67 | :59 | .1169 | .0224 |
| 7-5 | 1.19 | .3085 | :30 | 2.40 | 1.87 | 11:02 | .1141 | .0282 |
| 7-6 | 2.27 | 1.0487 | :35 | .96 | 1.95 | :07 | .1121 | .0376 |
| 7-8 | .06 | 0 | :39 | 1.80 | 2.07 | :09 | .1410 | .0418 |
| | | | :49 | .54 | 2.16 | :11 | .2041 | .0476 |
| | | | :55 | 1.60 | 2.32 | :13 | .3213 | .0564 |
| | | | 12:00n | .84 | 2.39 | :14 | .436 | .0627 |
| | | | :10 | .42 | 2.46 | :15 | .557 | .0710 |
| | | | 1:10 | .01 | 2.47 | :16 | .655 | .0811 |
| | | | 2:10 | .01 | 2.48 | :17 | .736 | .0927 |
| | | | 3:10 | .01 | 2.49 | :18 | .873 | .1061 |
| | | | 3:40 | .02 | 2.50 | :19 | 1.011 | .1218 |
| | | | | | | :20 | 1.165 | .1399 |
| | | | | | | :21 | 1.305 | .1605 |
| | | | | | | :22 | 1.408 | .1831 |
| | | | | | | :23 | 1.513 | .2074 |
| | | | | | | :24 | 1.663 | .2338 |
| | | | | | | :25 | 1.778 | .2624 |

Notes: To convert runoff in in/hr to cfs multiply by 19.3599

| SELECTED RUNOFF EVENTS | | | | Watkinaville, Georgia Watershed W-1 | | | | |
|--|-------------------|-----------------|---------------|-------------------------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of July 11, 1941 - Continued</u> | | | | | | | | |
| | | | | | | :26a | 1.838 | .2925 |
| | | | | | | :27 | 1.936 | .3239 |
| | | | | | | :28 | 1.960 | .3564 |
| | | | | | | :29 | 1.944 | .3889 |
| | | | | | | :30 | 1.932 | .4212 |
| | | | | | | :31 | 1.888 | .4530 |
| | | | | | | :32 | 1.853 | .4842 |
| | | | | | | :33 | 1.790 | .5146 |
| | | | | | | :34 | 1.744 | .5440 |
| | | | | | | :36 | 1.630 | .6002 |
| | | | | | | :38 | 1.528 | .6528 |
| | | | | | | :40 | 1.394 | .7015 |
| | | | | | | :42 | 1.262 | .7457 |
| | | | | | | :45 | 1.103 | .8049 |
| | | | | | | :48 | .956 | .8564 |
| | | | | | | :51 | .830 | .9010 |
| | | | | | | :54 | .750 | .9405 |
| | | | | | | :57 | .719 | .9772 |
| | | | | | | 12:00m | .708 | 1.0129 |
| | | | | | | :03 | .653 | 1.0469 |
| | | | | | | :09 | .604 | 1.1097 |
| | | | | | | :15 | .468 | 1.1633 |
| | | | | | | :21 | .338 | 1.2036 |
| | | | | | | :27 | .236 | 1.2323 |
| | | | | | | :33 | .174 | 1.2528 |
| | | | | | | :39 | .127 | 1.2678 |
| | | | | | | :45 | .092 | 1.2788 |
| | | | | | | :51 | .0687 | 1.2868 |
| | | | | | | :57 | .0527 | 1.2929 |
| | | | | | | 1:03p | .0416 | 1.2976 |
| | | | | | | 1:09 | .0317 | 1.3013 |
| | | | | | | :21 | .0211 | 1.3066 |
| | | | | | | :33 | .0150 | 1.3102 |
| | | | | | | :45 | .0102 | 1.3127 |
| | | | | | | 2:05 | .0063 | 1.3154 |
| | | | | | | :25 | .0034 | 1.3170 |
| | | | | | | :45 | .0022 | 1.3179 |
| | | | | | | 3:05 | .0012 | 1.3185 |
| | | | | | | :25 | .0007 | 1.3188 |
| | | | | | | :45 | .0003 | 1.3190 |
| | | | | | | 4:05 | 0 | 1.3191 |
| <u>Event of May 15, 1942</u> | | | | | | | | |
| 5-4-42 | .28 | 0 | 5-15-42 | Raingage | R1-W1 | 5-15-42 | | |
| 5-5 | .02 | 0 | 2:24a | 0 | 0 | 2:26a | 0 | 0 |
| 5-6 | .02 | 0 | :30 | 3.40 | .34 | :28 | .023 | .0004 |
| 5-7 | .02 | 0 | :35 | 3.84 | .66 | :29 | .022 | .0008 |
| 5-12 | .14 | 0 | :37 | .90 | .69 | :30 | .008 | .0011 |
| 5-13 | 1.18 | T | :43 | 1.90 | .88 | :32 | .018 | .0015 |
| 5-14 | 1.16 | .01 | :48 | .12 | .89 | :34 | .044 | .0025 |
| | | | :53 | 2.28 | 1.08 | :35 | .078 | .0035 |
| | | | :58 | 3.36 | 1.36 | :36 | .116 | .0051 |
| | | | 3:04 | .30 | 1.39 | :37 | .225 | .0079 |
| | | | :06 | .60 | 1.41 | :38 | .431 | .0134 |
| | | | :12 | 1.40 | 1.55 | :39 | .567 | .0217 |
| | | | :17 | .48 | 1.59 | :40 | .683 | .0321 |
| | | | :23 | 1.70 | 1.76 | :41 | .820 | .0446 |
| | | | :29 | 1.30 | 1.89 | :42 | .802 | .0581 |
| | | | :31 | 2.40 | 1.97 | :43 | .816 | .0716 |
| | | | :35 | .30 | 1.99 | :44 | .778 | .0849 |
| | | | | | | :45 | .775 | .0979 |
| | | | | | | :46 | .718 | .1103 |
| | | | | | | :47 | .702 | .1221 |
| <p><u>Watershed Conditions:</u> Cotton 2-3 inches high, soil loose and without vegetative cover. Fair stand. Rows on contour between bench terraces. Cotton part of a cowpea-cotton cropping system on this watershed.</p> | | | | | | | | |
| <p>Notes: To convert runoff in in/hr to cfs multiply by 19.3599</p> | | | | | | | | |

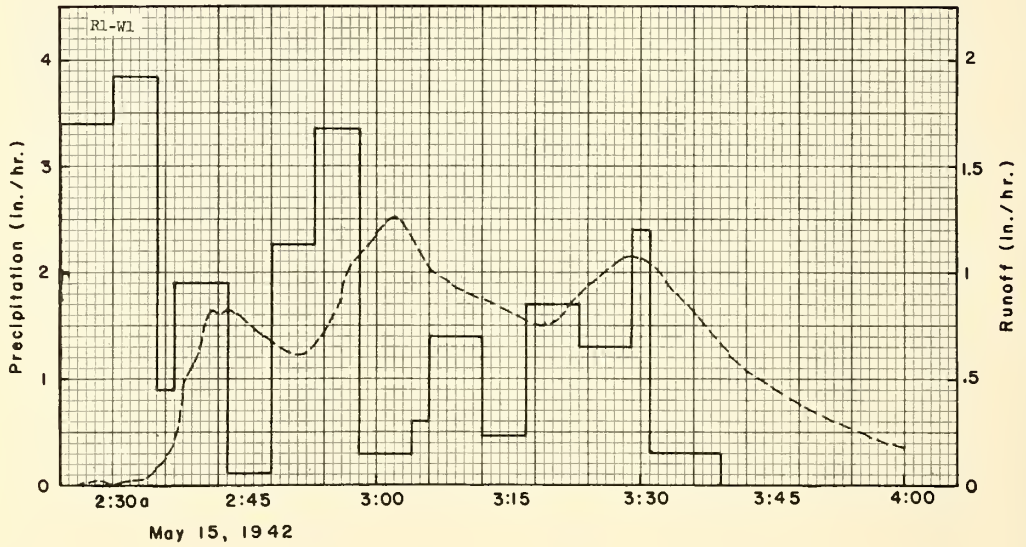
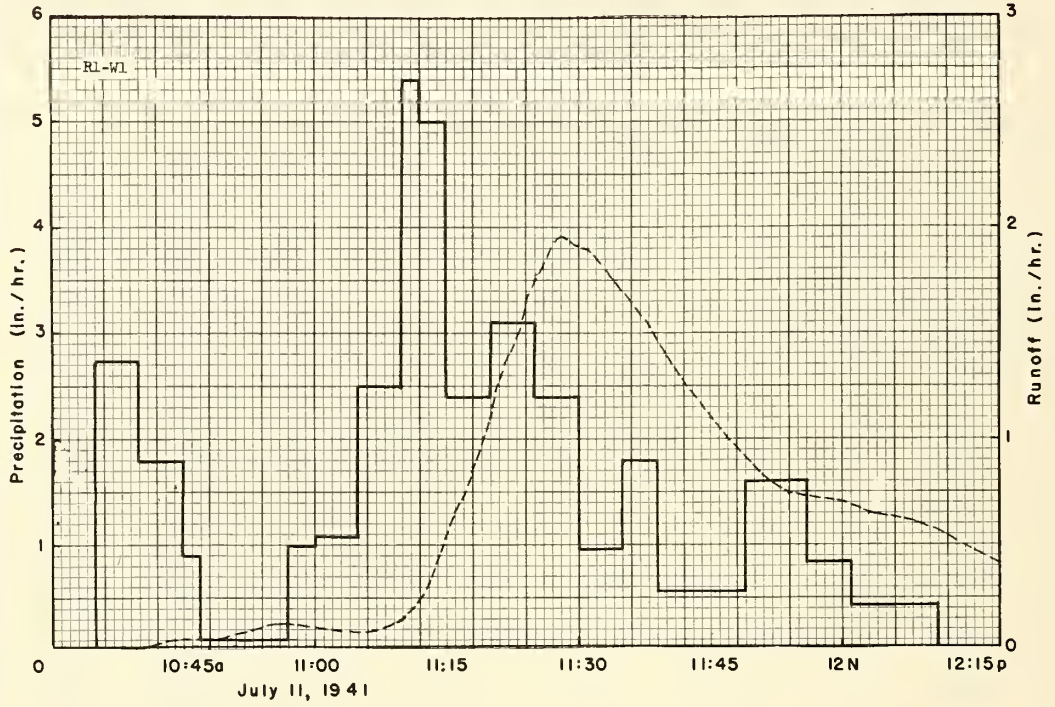
| SELECTED RUNOFF EVENTS | | | Watkinsville, Georgia Watershed W-1 | | | | | |
|--|-------------------|-----------------|-------------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of May 15, 1942 - Continued | | | | | | | | |
| | | | | | | :48a | .671 | .1336 |
| | | | | | | :50 | .630 | .1553 |
| | | | | | | :52 | .625 | .1763 |
| | | | | | | :54 | .708 | .1983 |
| | | | | | | :56 | .878 | .2249 |
| | | | | | | :57 | 1.033 | .2408 |
| | | | | | | :58 | 1.064 | .2583 |
| | | | | | | :59 | 1.131 | .2766 |
| | | | | | | 3:00 | 1.183 | .2959 |
| | | | | | | :01 | 1.240 | .3161 |
| | | | | | | :02 | 1.260 | .3369 |
| | | | | | | :03 | 1.240 | .3577 |
| | | | | | | :06 | 1.002 | .4137 |
| | | | | | | :09 | .924 | .4619 |
| | | | | | | :12 | .894 | .5073 |
| | | | | | | :15 | .842 | .5507 |
| | | | | | | :18 | .754 | .5906 |
| | | | | | | :19 | .764 | .6033 |
| | | | | | | :20 | .775 | .6161 |
| | | | | | | :22 | .857 | .6433 |
| | | | | | | :24 | .950 | .6734 |
| | | | | | | :26 | 1.007 | .7060 |
| | | | | | | :28 | 1.074 | .7407 |
| | | | | | | :30 | 1.063 | .7763 |
| | | | | | | :33 | .945 | .8265 |
| | | | | | | 3:36 | .826 | .8707 |
| | | | | | | :39 | .677 | .9083 |
| | | | | | | :42 | .537 | .9387 |
| | | | | | | :45 | .464 | .9637 |
| | | | | | | :48 | .373 | .9846 |
| | | | | | | :51 | .321 | 1.0018 |
| | | | | | | :54 | .271 | 1.0166 |
| | | | | | | :57 | .232 | 1.0291 |
| | | | | | | 4:00 | .198 | 1.0398 |
| | | | | | | :06 | .154 | 1.0574 |
| | | | | | | :12 | .118 | 1.0710 |
| | | | | | | :18 | .093 | 1.0816 |
| | | | | | | :24 | .080 | 1.0902 |
| | | | | | | :36 | .056 | 1.1038 |
| | | | | | | :48 | .042 | 1.1134 |
| | | | | | | 5:00 | .033 | 1.1210 |
| | | | | | | :20 | .019 | 1.1297 |
| | | | | | | :40 | .012 | 1.1347 |
| | | | | | | 6:00 | .008 | 1.1380 |
| | | | | | | :20 | .005 | 1.1400 |
| | | | | | | :40 | .002 | 1.1413 |
| | | | | | | 7:00 | .001 | 1.1418 |
| | | | | | | :30 | .0015 | 1.1424 |
| Event of November 26-30, 1948 | | | | | | | | |
| 10-31-48 | .02 | 0 | 11-26-48 | Raingage | R1-W1 | 11-26-48 | | |
| 11-1 | .13 | 0 | 1:10p | 0 | 0 | 3:04p | 0 | 0 |
| 11-2,3 | 1.39 | 0 | :40 | .18 | .06 | :36 | .0008 | .0002 |
| 11-6 | .99 | .0003 | 2:15 | .10 | .12 | 4:06 | .0023 | .0010 |
| 11-10 | .03 | 0 | 3:15 | .37 | .49 | :36 | .0081 | .0036 |
| 11-13 | .03 | 0 | :45 | .48 | .73 | 5:06 | .0106 | .0083 |
| 11-16,17 | .69 | 0 | 5:15 | .32 | 1.22 | :22 | .0136 | .0113 |
| 11-19,22 | 1.70 | .0010 | :45 | .72 | 1.58 | :36 | .0256 | .0160 |
| 11-23,24 | 2.85 | .6104 | 6:15 | .74 | 1.95 | :51 | .0547 | .0261 |
| | | | 7:00 | .32 | 2.20 | 6:06 | .0775 | .0426 |
| Watershed Conditions: Five-year old kudzu. Dense cover over entire area. Kudzu was not utilized; therefore all growth for several years was on the land. | | | :30 | .52 | 2.46 | :21 | .1121 | .0663 |
| | | | 8:00 | .38 | 2.65 | :36 | .1472 | .0987 |
| | | | :35 | .67 | 3.04 | :51 | .1834 | .1400 |
| | | | 9:15 | .74 | 3.24 | 7:06 | .1989 | .1878 |
| | | | 10:00 | .20 | 3.40 | :21 | .2169 | .2398 |

Notes: To convert runoff in in/hr to cfs multiply by 19.3599

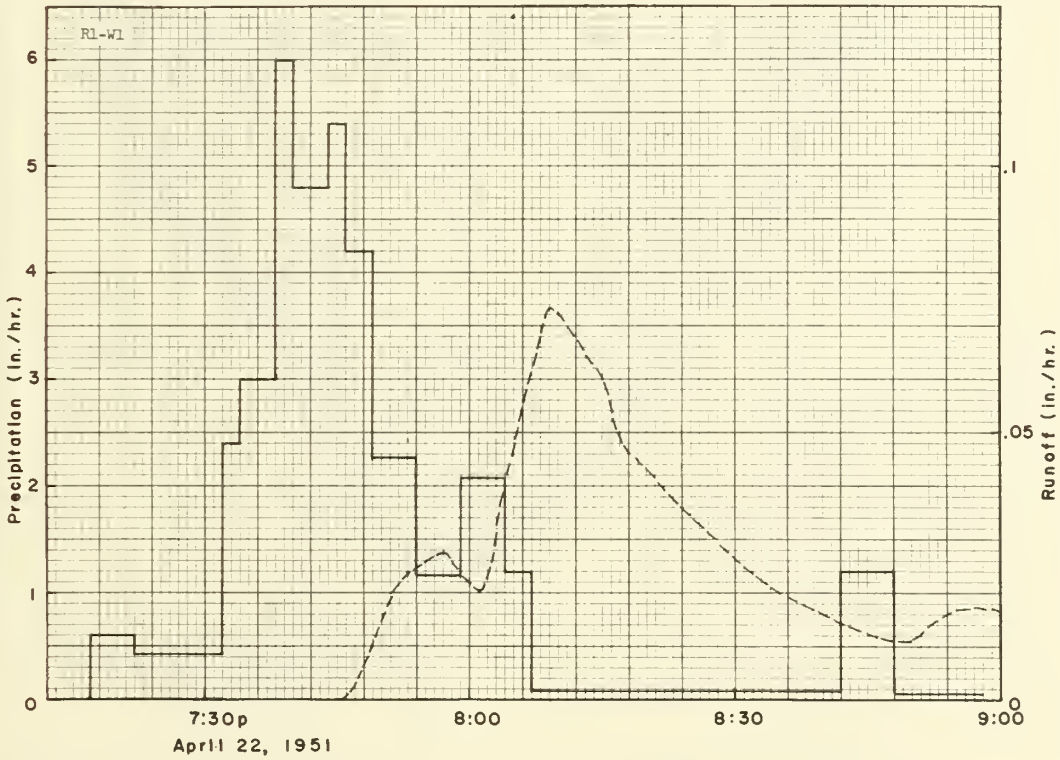
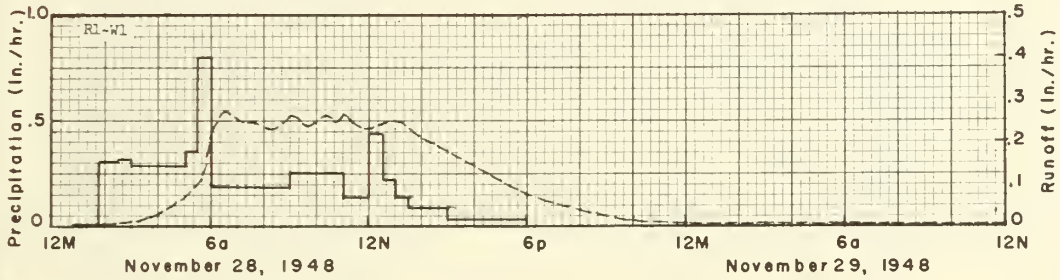
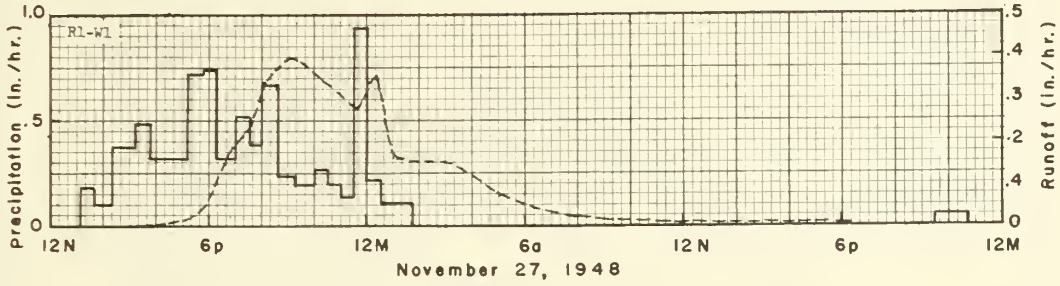
| SELECTED RUNOFF EVENTS | | | Watkinsville, Georgia Watershed W-1 | | | | | |
|--|-------------------|-----------------|-------------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of November 26-30, 1948 - Continued</u> | | | | | | | | |
| | | | :30p | .27 | 3.56 | :36p | .2479 | .2979 |
| | | | 11:00 | .20 | 3.66 | :51 | .2820 | .3641 |
| | | | :30 | .14 | 3.73 | 8:06 | .3042 | .4374 |
| | | | 12:00m | .94 | 4.20 | :36 | .3755 | .6073 |
| | | | 11-27-48 | | | 9:06 | .4013 | .8015 |
| | | | 12:30a | .22 | 4.32 | 10:06 | .3585 | 1.1814 |
| | | | 1:45 | .11 | 4.40 | 11:06 | .3114 | 1.5164 |
| | | | 9:30p | 0 | 4.40 | :36 | .2748 | 1.6630 |
| | | | 10:45 | .05 | 4.46 | :51 | .3042 | 1.7354 |
| | | | 11-28-48 | | | 11-27-48 | | |
| | | | 12:45a | 0 | 4.46 | 12:06a | .3414 | 1.8161 |
| | | | 1:45 | .02 | 4.48 | :26 | .3585 | 1.9328 |
| | | | 2:30 | .31 | 4.71 | 1:06 | .1642 | 2.1071 |
| | | | 3:00 | .32 | 4.87 | 3:06 | .1570 | 2.4283 |
| | | | 5:00 | .28 | 5.42 | 5:06 | .0687 | 2.6539 |
| | | | :30 | .36 | 5.60 | 7:06 | .0344 | 2.7571 |
| | | | 6:00 | .80 | 6.00 | 9:06 | .0197 | 2.8113 |
| | | | 9:00 | .19 | 6.57 | 11:06 | .0136 | 2.8445 |
| | | | 11:00 | .26 | 7.08 | 12:06p | .0106 | 2.8566 |
| | | | 12:00m | .14 | 7.22 | 6:06 | .0047 | 2.9022 |
| | | | | | | 11-28-48 | | |
| | | | 12:30p | .44 | 7.44 | 1:49a | .0027 | 2.9291 |
| | | | 1:00 | .22 | 7.55 | 2:06 | .0047 | 2.9303 |
| | | | :30 | .14 | 7.62 | :36 | .0073 | 2.9333 |
| | | | 3:00 | .09 | 7.76 | 3:06 | .0136 | 2.9385 |
| | | | 6:00 | .03 | 7.86 | :36 | .0211 | 2.9472 |
| | | | | | | 4:06 | .0307 | 2.9602 |
| | | | | | | :36 | .0473 | 2.9792 |
| | | | | | | :51 | .0573 | 2.9923 |
| | | | | | | 5:06 | .0775 | 3.0091 |
| | | | | | | :21 | .0956 | 3.0308 |
| | | | | | | :36 | .1121 | 3.0568 |
| | | | | | | :51 | .1777 | 3.0930 |
| | | | | | | 6:06 | .2355 | 3.1446 |
| | | | | | | :36 | .2748 | 3.2722 |
| | | | | | | 7:06 | .2546 | 3.3956 |
| | | | | | | :36 | .2422 | 3.5198 |
| | | | | | | :41 | .2479 | 3.5402 |
| | | | | | | 8:11 | .2422 | 3.6620 |
| | | | | | | 9:06 | .2608 | 3.9004 |
| | | | | | | :36 | .2422 | 4.0262 |
| | | | | | | 10:21 | .2608 | 4.2209 |
| | | | | | | :38 | .2546 | 4.2940 |
| | | | | | | 11:06 | .2670 | 4.4174 |
| | | | | | | :36 | .2479 | 4.5461 |
| | | | | | | 12:04p | .2293 | 4.6654 |
| | | | | | | :31 | .2422 | 4.7697 |
| | | | | | | 1:06 | .2479 | 4.9141 |
| | | | | | | 2:06 | .2169 | 5.1465 |
| | | | | | | 3:06 | .1777 | 5.3438 |
| | | | | | | 4:06 | .1384 | 5.5018 |
| | | | | | | 6:06 | .0775 | 5.7178 |
| | | | | | | 8:06 | .0405 | 5.8358 |
| | | | | | | 10:06 | .0240 | 5.9002 |
| | | | | | | 11-29-48 | | |
| | | | | | | 12:06a | .0159 | 5.9402 |
| | | | | | | 6:06 | .0052 | 6.0038 |
| | | | | | | 12:06p | .0008 | 6.0218 |
| | | | | | | 6:06 | .0007 | 6.0266 |
| | | | | | | 11-30-48 | | |
| | | | | | | 12:06a | .0001 | 6.0290 |
| | | | | | | 6:06 | 0 | 6.0298 |

Notes: To convert runoff in in/hr to cfs multiply by 19.3599

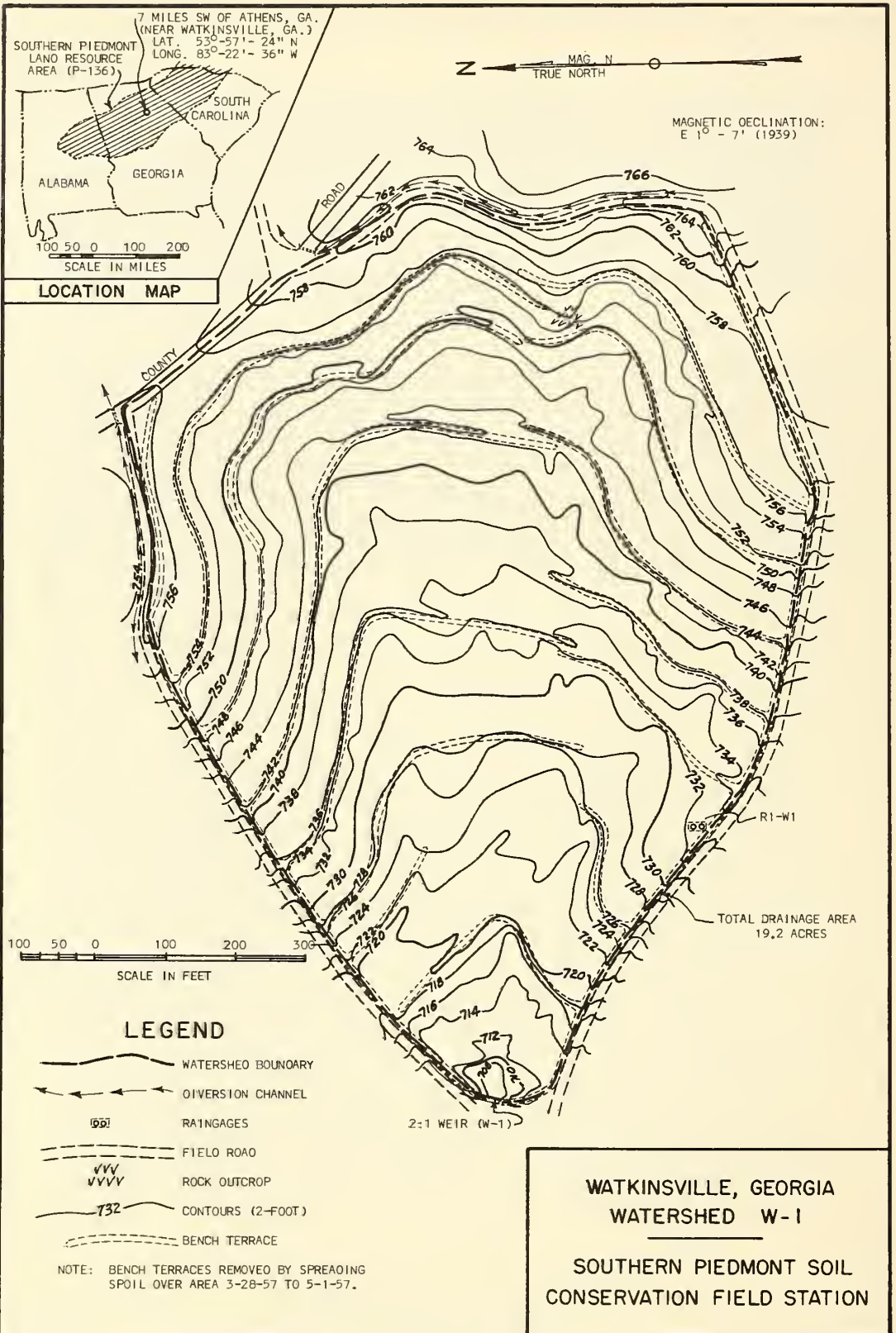
| SELECTED RUNOFF EVENTS | | | Watkinsville, Georgia Watershed W-1 | | | | | |
|--|----------------------|--------------------|-------------------------------------|----------------------|------------------|------------------|-----------------|------------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of April 22-23, 1951</u> | | | | | | | | |
| 3-24-51 | .01 | 0 | 4-22-51 | Raingage | R1-W1 | 4-22-51 | | |
| 3-28,30 | 2.18 | .0014 | 7:17p | 0 | 0 | 7:45p | 0 | 0 |
| 4-2 | .50 | 0 | :22 | .60 | .05 | :46 | .0007 | 0 |
| 4-7 | .66 | 0 | :32 | .42 | .12 | :47 | .0032 | 0 |
| 4-12 | .27 | 0 | :34 | 2.40 | .20 | :49 | .0112 | .0003 |
| 4-16 | .03 | 0 | :36 | 3.00 | .30 | :51 | .0200 | .0008 |
| 4-19 | .37 | 0 | :38 | 3.00 | .40 | :53 | .0244 | .0015 |
| 4-20 | .70 | 0 | :40 | 6.00 | .60 | :55 | .0260 | .0023 |
| | | | :42 | 4.80 | .76 | :57 | .0277 | .0031 |
| | | | :44 | 4.80 | .92 | :59 | .0229 | .0039 |
| | | | :46 | 5.40 | 1.10 | 8:01 | .0200 | .0046 |
| | | | :49 | 4.20 | 1.31 | :03 | .0313 | .0054 |
| | | | :54 | 2.28 | 1.50 | :05 | .0483 | .0067 |
| | | | :59 | 1.08 | 1.59 | :07 | .0638 | .0085 |
| | | | 8:04 | 2.04 | 1.76 | :09 | .0738 | .0108 |
| | | | 8:07p | 1.20 | 1.80 | 8:11p | .0689 | .0132 |
| | | | :42 | .04 | 1.82 | :13 | .0636 | .0154 |
| | | | :48 | 1.20 | 1.94 | :15 | .0609 | .0174 |
| | | | :58 | .30 | 1.99 | :17 | .0478 | .0192 |
| | | | | | | :19 | .0450 | .0201 |
| | | | | | | :34 | .0213 | .0284 |
| | | | | | | :49 | .0116 | .0325 |
| | | | | | | :54 | .0161 | .0337 |
| | | | | | | :59 | .0173 | .0351 |
| | | | | | | 9:04 | .0123 | .0364 |
| | | | | | | :34 | .0091 | .0419 |
| | | | | | | 10:04 | .0053 | .0455 |
| | | | | | | :19 | .0059 | .0469 |
| | | | | | | :34 | .0082 | .0487 |
| | | | | | | :49 | .0082 | .0507 |
| | | | | | | 11:04 | .0075 | .0527 |
| | | | | | | 4-23-51 | | |
| | | | | | | 12:04a | .0053 | .0591 |
| | | | | | | 2:04 | .0033 | .0677 |
| | | | | | | 4:04 | .0016 | .0725 |
| | | | | | | 6:04 | .0007 | .0749 |
| | | | | | | 8:04 | .0003 | .0759 |
| | | | | | | 10:04 | .0001 | .0763 |
| | | | | | | 12:04p | 0 | .0765 |
| Notes: To convert runoff in in/hr to cfs multiply by 19.3599 | | | | | | | | |



WATKINSVILLE, GEORGIA WATERSHED W-1



WATKINSVILLE, GEORGIA WATERSHED W-1



| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | | High Point, N. C. West Fork Deep River Watershed Area - 20,544 ac. (32.1 sq.mi.) | | | | | | |
|---|-------|------|------|------|------|------|------|---|------|-------|------|------|------|-------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| | | 1953 | P | 4.10 | 6.30 | 4.44 | 2.72 | 1.17 | 8.76 | 1.27 | 2.96 | 3.52 | 0.67 | 0.37 |
| | Q | 2.42 | 3.36 | 2.70 | 1.00 | .46 | 1.58 | .26 | .17 | .25 | .18 | .21 | .99 | 13.58 |
| 1954 | P | 6.15 | 1.62 | 5.84 | 3.73 | 2.56 | .82 | 3.39 | 6.16 | .28 | 6.99 | 4.01 | 3.78 | 45.33 |
| | Q | 3.78 | .70 | 1.85 | 1.42 | .54 | .40 | .21 | .60 | .09 | 2.09 | 1.36 | 2.19 | 15.23 |
| 1955 | P | 1.83 | 4.33 | 2.11 | 5.42 | 2.67 | 1.25 | 6.34 | 7.07 | 3.78 | 1.40 | 2.00 | .51 | 38.71 |
| | Q | .73 | 2.07 | 1.06 | 1.75 | .56 | .25 | .57 | 2.58 | .33 | .71 | .40 | .36 | 11.37 |
| 1956 | P | 1.10 | 6.07 | 2.59 | 3.82 | 2.00 | 3.30 | 3.68 | 1.36 | 6.40 | 3.88 | 2.06 | 2.85 | 39.11 |
| | Q | .37 | 2.76 | .86 | 1.46 | 1.09 | .62 | .51 | .41 | 1.72 | .46 | .65 | 1.20 | 12.11 |
| 1957 | P | 3.32 | 5.30 | 2.41 | 4.54 | 1.45 | 9.77 | 4.00 | 2.38 | 5.66 | 2.41 | 6.09 | 2.96 | 50.29 |
| | Q | 1.88 | 2.68 | 1.14 | 1.84 | 1.42 | 1.37 | .37 | .20 | .45 | .41 | 2.42 | 1.27 | 14.45 |
| 1958 | P | 3.27 | 3.27 | 2.86 | 6.47 | 5.82 | 2.99 | 3.44 | 4.29 | 1.37 | | | | |
| | Q | 1.55 | 1.40 | 1.21 | 2.24 | 1.37 | | .76 | .50 | .20 | | | | |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS High Point, N. C. West Fork Deep River Watershed

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1956 | 9-26 | 0.06 | 9-26 | 0.06 | 9-26 | 0.12 | 9-26 | 0.34 | 9-26 | 0.65 | 9-26 | 1.14 | 9-26 | 1.44 | 2-3 | 1.70 |
| 1957 | 1-31 | .11 | 1-31 | .11 | 1-31 | .21 | 1-31 | .53 | 1-31 | .88 | 1-31 | 1.46 | 1-31 | 2.21 | 1-29 | 2.84 |
| 1958 | 1-25 | .04 | 1-25 | .04 | 1-25 | .07 | 1-25 | .21 | 1-24 | .39 | 1-24 | .60 | 1-24 | .71 | 4-27 | 1.17 |

Notes: Quality of records: Monthly P & Q and Annual Max. Discharges and Vols. - good. Monthly Precipitation taken from USWB Annual Summaries for High Point, N.C. Runoff station discontinued 9-30-58. Watershed conditions: Cropland 36%; idle land 9%; pasture 8%; woodland 46%; farmyards and urban areas 1%. (From 1935 SCS Survey). 1/ Jan. through Sept. monthly P & Q's repeated from previous publication to complete the year.

SELECTED RUNOFF EVENTS High Point, N. C. West Fork Deep River Watershed

| Antecedent conditions | | | Rainfall | | | Runoff 5/ | | |
|-----------------------------|----------------------|--------------------|---------------|---------------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall 2/ (inches) | Runoff 3/ (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of September 25, 1956 | | | | | | | | |
| 8-27-56 | 0 | .0064 | 9-25-56 | Average of 2 raingages 4/ | | 9-26-56 | | |
| 8-28 | 0 | .0070 | 4:00p | 0 | 0 | 1:00a | 0.0003 | 0 |
| 8-29 | .22 | .0116 | 5:00 | .01 | .01 | 2:00 | .0003 | .0003 |
| 8-30 | 0 | .0064 | 6:00 | .02 | .03 | 4:00 | .0004 | .0011 |
| 8-31 | 0 | .0061 | 8:00 | .04 | .11 | 6:45 | .0007 | .0025 |
| 9-1 | 0 | .0054 | 9:00 | .06 | .17 | 7:30 | .0610 | .0031 |
| 9-2 | 0 | .0054 | 10:00 | .07 | .24 | 9:00 | .0016 | .0051 |
| 9-3 | 0 | .0076 | 11:00 | .10 | .34 | 10:00 | .0058 | .0084 |
| 9-4 | .09 | .0127 | 12:00m | .08 | .42 | 11:00 | .0155 | .0190 |
| 9-5 | 0 | .0072 | 9-26-56 | | | 12:30p | .0198 | .0454 |
| 9-6 | .15 | .0107 | 1:00 | .06 | .48 | 2:30 | .0249 | .0902 |
| 9-7 | .25 | .0095 | 2:00 | .10 | .58 | 4:30 | .0338 | .1483 |
| 9-8 | 0 | .0066 | 3:00 | .13 | .71 | 7:00 | .0485 | .2512 |
| 9-9 | 0 | .0051 | 4:00 | .18 | .89 | 9:00 | .0585 | .3597 |
| 9-10 | 0 | .0051 | 5:00 | .16 | 1.05 | 4:45 | .0599 | .4041 |
| 9-11 | 0 | .0051 | 6:00 | .19 | 1.24 | 11:00p | .0585 | .4781 |
| 9-12 | 0 | .0049 | 7:00 | .42 | 1.66 | 9-27-56 | | |
| 9-13 | 0 | .0049 | 8:00 | .36 | 2.02 | 1:45a | .0543 | .6332 |
| 9-14 | 0 | .0043 | 9:00 | .28 | 2.30 | 6:45 | .0508 | .8962 |
| 9-15 | 0 | .0041 | 10:00 | .30 | 2.60 | 7:30 | .0499 | .9340 |
| 9-16 | 0 | .0041 | 11:00 | .14 | 2.74 | 10:00 | .0450 | 1.0525 |
| 9-17 | 0 | .0037 | 12:00n | .16 | 2.90 | 1:30p | .0346 | 1.1924 |
| 9-18 | 0 | .0037 | 1:00 | .21 | 3.11 | 4:30 | .0249 | 1.2806 |
| 9-19 | 0 | .0039 | 2:00 | .16 | 3.27 | 6:15 | .0198 | 1.3188 |
| 9-20 | .72 | .0094 | 3:00 | .18 | 3.45 | 9:00 | .0142 | 1.3654 |
| 9-21 | 0 | .0041 | 4:00 | .39 | 3.84 | 11:00p | .0095 | 1.3888 |
| 9-22 | 0 | .0041 | 5:00 | .16 | 4.00 | 12:00m | .0084 | 1.3978 |
| 9-23 | 0 | .0041 | 6:00 | .12 | 4.12 | 9-28-56 | | |
| 9-24 | .33 | .0185 | 7:00 | .08 | 4.20 | 3:00a | .0062 | 1.4197 |
| 9-25 | .13 | .0093 | 8:00 | .09 | 4.29 | 4:00p | .0026 | 1.4753 |
| 9-26 | 0 | .0003 6/ | | | | | | |

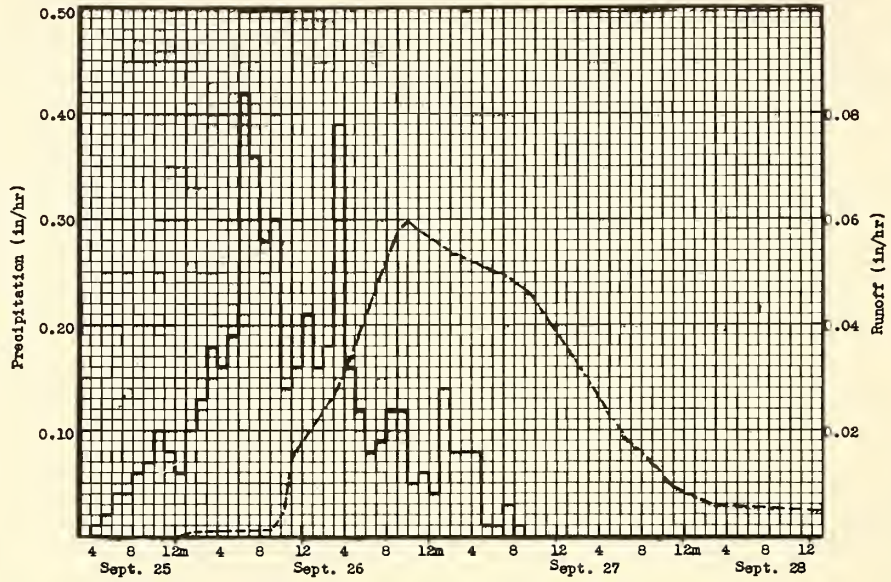
Notes: To convert runoff in in/hr to cfs multiply by 20,716.8 2/ Antecedent rainfall taken from USWB Climatological Data for High Point, N.C. 3/ Antecedent runoff taken from USGS Water Supply Papers. 4/ Rainfall from USWB Hourly Precipitation Data, N.C. (average of Greensboro WB Airport & Lexington 7N). 5/ Runoff tabulated from recorder charts. 6/ Runoff prior to 1:00a. (Tabulated). See map page 11.1-5.

| SELECTED RUNOFF EVENTS | | | | High Point, N. C. West Fork Deep River Watershed | | | | |
|--|------------------------------------|----------------------------------|---|--|------------------|----------------------|-----------------|------------------|
| Antecedent conditions | | | Rainfall | | | Runoff ^{4/} | | |
| Date | Rainfall ^{1/} (inches) | Runoff ^{2/} (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of September 25, 1956 - continued | | | | | | | | |
| Watershed Conditions: Cropland - 36%; idle land - 9%; pasture - 8%; woodland - 46%; farmyards and urban areas - 1%. (Note - information taken from 1935 survey as reported in USDA-SCS-TP-48.) | | | 9:00 | .12 | 4.41 | 11:00p | .0020 | 1.4913 |
| | | | 11:00 | .05 | 4.51 | 9-29-56 | | |
| | | | 12:00m | .06 | 4.57 | 12:00n | .0014 | 1.5139 |
| | | | 9-27-56 | | | 12:00m | .0011 | 1.5289 |
| | | | 1:00a | .04 | 4.61 | | | |
| | | | 2:00 | .14 | 4.75 | | | |
| | | | 3:00 | .08 | 4.83 | | | |
| | | | 4:00 | .08 | 4.91 | | | |
| | | | 6:00 | .01 | 4.93 | | | |
| | | | 8:00 | .03 | 4.99 | | | |
| | | | 9:00 | .01 | 5.00 | | | |
| Event of April 8, 1957 | | | | | | | | |
| 3-9-57 | 0 | .0313 | 4-8-57 | Average of 2 raingages ^{3/} | | 4-8-57 | | |
| 3-10 | 0 | .0255 | 10:00a | 0 | 0 | 12:00n | .0016 | 0 |
| 3-11 | 0 | .0232 | 11:00 | .01 | .01 | 1:00 | .0017 | .0016 |
| 3-12 | 0 | .0232 | 12:00n | .14 | .15 | 2:00 | .0019 | .0034 |
| 3-13 | 0 | .0220 | 1:00 | .06 | .21 | 3:00 | .0023 | .0055 |
| 3-14 | .33 | .0290 | 2:00 | .14 | .35 | 3:30 | .0031 | .0069 |
| 3-15 | .10 | .0290 | 3:00 | .24 | .59 | 4:30 | .0170 | .0163 |
| 3-16 | 0 | .0243 | 4:00 | .08 | .67 | 5:30 | .0297 | .0408 |
| 3-17 | 0 | .0220 | 7:00 | .01 | .70 | 6:00 | .0313 | .0558 |
| 3-18 | 0 | .0209 | 8:00 | 0 | .70 | 7:00 | .0352 | .0890 |
| 3-19 | .37 | .0313 | | | | 7:30 | .0398 | .1078 |
| 3-20 | 0 | .0243 | | | | 8:00 | .0416 | .1282 |
| 3-21 | 0 | .0209 | | | | 8:30 | .0420 | .1491 |
| 3-22 | .79 | .0718 | | | | 9:00 | .0407 | .1697 |
| 3-23 | 0 | .0510 | | | | 12:00m | .0302 | .2754 |
| 3-24 | 0 | .0336 | | | | 4-9-57 | | |
| 3-25 | .39 | .0718 | | | | 1:00a | .0261 | .3036 |
| 3-26 | 0 | .0440 | | | | 3:00 | .0178 | .3471 |
| 3-27 | 0 | .0336 | | | | 6:00 | .0098 | .3877 |
| 3-28 | .02 | .0278 | | | | 8:00 | .0070 | .4043 |
| 3-29 | 0 | .0255 | | | | 10:00 | .0055 | .4146 |
| 3-30 | 0 | .0232 | | | | 11:00 | .0051 | .4220 |
| 3-31 | 0 | .0220 | | | | 4:00p | .0040 | .4445 |
| 4-1 | .12 | .0220 | | | | 11:00 | .0029 | .4683 |
| 4-2 | .17 | .0255 | | | | 4-10-57 | | |
| 4-3 | 0 | .0220 | | | | 4:15a | .0026 | .4825 |
| 4-4 | 0 | .0209 | | | | 12:00 | .0022 | .5013 |
| 4-5 | 2.05 | .5387 | | | | 12:00m | .0018 | .5247 |
| 4-6 | 0 | .1842 | Watershed Conditions: Same as Event of September 25, 1956. | | | | | |
| 4-7 | 0 | .0556 | | | | | | |
| 4-8 | 0 | .0017 ^{5/} | | | | | | |
| Event of January 24, 1958 | | | | | | | | |
| 12-25-57 | T | 0.0197 | 1-24-58 | Average of 3 raingages ^{6/} | | 1-24-58 | | |
| 12-26 | .67 | .1251 | 6:00a | 0 | 0 | 12:00n | .0013 | 0 |
| 12-27 | 0 | .0475 | 8:00 | .04 | .08 | 1:00 | .0014 | .0013 |
| 12-28 | T | .0336 | 9:00 | .02 | .10 | 2:00 | .0020 | .0030 |
| 12-29 | 0 | .0278 | 10:00 | .05 | .15 | 3:00 | .0077 | .0072 |
| 12-30 | 0 | .0243 | 11:00 | .09 | .24 | 4:00 | .0170 | .0196 |
| 12-31 | 0 | .0220 | 12:00n | .10 | .34 | 5:00 | .0198 | .0380 |
| 1-1-58 | 0 | .0232 | 1:00 | .12 | .46 | 5:45 | .0220 | .0540 |
| 1-2 | 0 | .0197 | 2:00 | .22 | .68 | 7:00 | .0222 | .0816 |
| 1-3 | 0 | .0197 | 3:00 | .04 | .72 | 8:30 | .0220 | .1147 |
| 1-4 | 0 | .0185 | 4:00 | .07 | .79 | 9:00 | .0229 | .1259 |
| 1-5 | 0 | .0197 | 5:00 | .03 | .82 | 10:30 | .0289 | .1652 |
| 1-6 | 0 | .0209 | 7:00 | .02 | .84 | 12:00m | .0315 | .2111 |
| 1-7 | .25 | .0185 | 8:00 | .12 | .96 | 1-25-58 | | |
| 1-8 | 0 | .0185 | 9:00 | .20 | 1.10 | 2:30a | .0362 | .2957 |

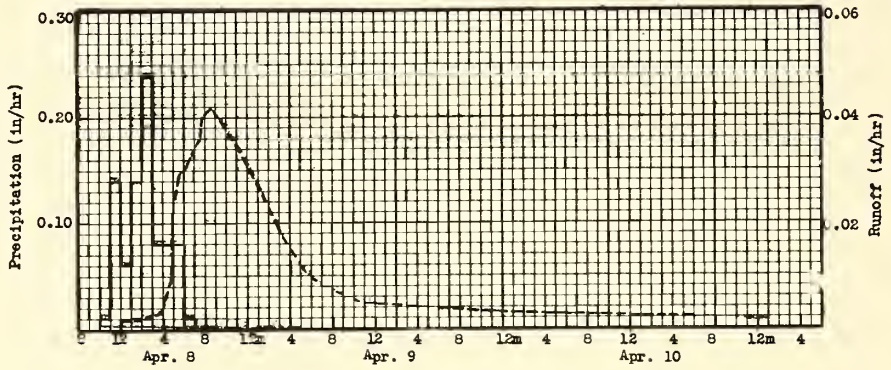
Notes: To convert runoff in in/hr to cfs multiply by 20,716.8 1/ Antecedent rainfall from USWB Climatological Data for High Point, N.C. 2/ Antecedent runoff from USGS Water Supply Papers. 3/ Rainfall from USWB Hourly Data, N.C. (average of Greensboro WB Airport & Lexington TN). 4/ Runoff tabulated and computed from stage recorder charts. 5/ Runoff prior to 12:00n (Tabulated). 6/ Rainfall from Hourly Data for gages under (3/) plus Winston-Salem WB Airport.

| SELECTED RUNOFF EVENTS | | | High Point, N. C. West Fork Deep River Watershed | | | | | |
|---|------------------------------------|----------------------------------|--|----------------------|------------------|----------------------|-----------------|------------------|
| Antecedent conditions | | | Rainfall ^{3/} | | | Runoff ^{4/} | | |
| Date | Rainfall ^{1/} (inches) | Runoff ^{2/} (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of January 24, 1958 - continued | | | | | | | | |
| 1-9-58 | 0 | .0174 | 10:00p | .15 | 1.25 | 3:30a | .0368 | .3323 |
| 1-10 | 0 | .0139 | 11:00 | .01 | 1.26 | 4:30 | .0362 | .3689 |
| 1-11 | 0 | .0139 | | | | 7:00 | .0319 | .4543 |
| 1-12 | 0 | .0139 | | | | 9:00 | .0265 | .5127 |
| 1-13 | .06 | .0209 | | | | 12:00n | .0153 | .5732 |
| 1-14 | .79 | .1031 | | | | 3:00 | .0092 | .6094 |
| 1-15 | 0 | .0452 | | | | 4:15 | .0077 | .6198 |
| 1-16 | T | .0324 | | | | 8:30 | .0051 | .6466 |
| 1-17 | 0 | .0255 | | | | 10:00 | .0048 | .6541 |
| 1-18 | 0 | .0220 | | | | 1-26-58 | | |
| 1-19 | 0 | .0197 | | | | 6:00a | .0035 | .6866 |
| 1-20 | 0 | .0197 | | | | 7:00p | .0025 | .7251 |
| 1-21 | .67 | .0463 | | | | 1-27-58 | | |
| 1-22 | .07 | .0649 | | | | 2:00a | .0022 | .7419 |
| 1-23 | 0 | .0313 | | | | 3:00p | .0018 | .7676 |
| 1-24 | 0 | .0012 ^{5/} | | | | 12:00m | .0016 | .7832 |
| Watershed Conditions: Same as Event of September 25, 1956. | | | | | | | | |

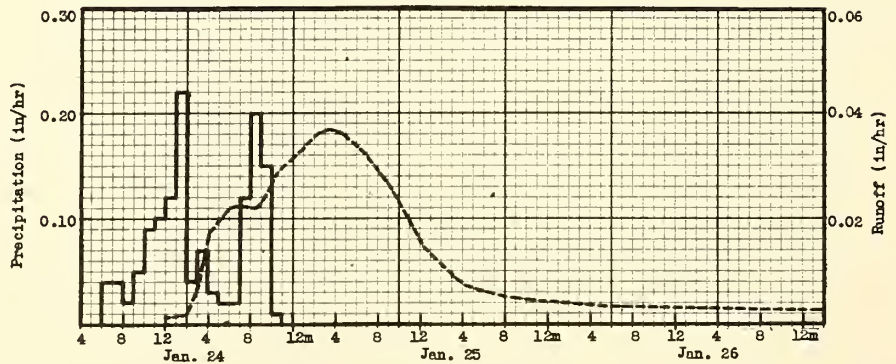
Notes: To convert runoff in in/hr to cfs multiply by 20,716.8 ^{1/} Antecedent rainfall from USWB Climatological Data for High Point, N.C. ^{2/} Antecedent runoff taken from USGS Water Supply Papers. ^{3/} Rainfall from USWB Hourly Data (average of Greensboro WB Airport, Lexington TN, & Winston-Salem WB Airport). ^{4/} Runoff tabulated and computed from USGS stage recorder charts. ^{5/} Runoff prior to 12:00n (Computed).



September 25, 1956

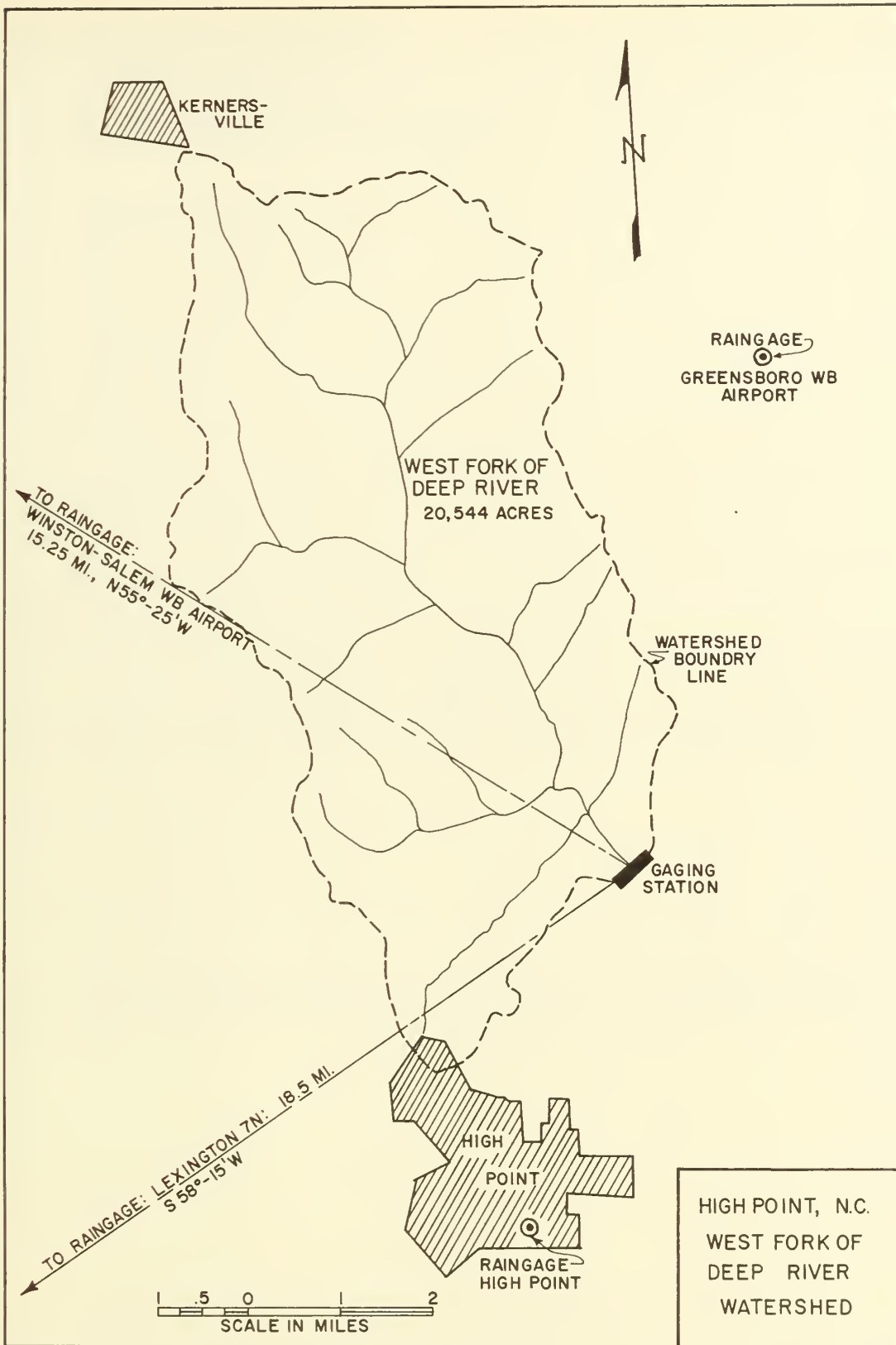


April 8, 1957



January 24, 1958

HIGH POINT, NORTH CAROLINA WEST FORK DEEP RIVER WATERSHED



| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | | | | High Point, North Carolina Muddy Creek Watershed Area - 10,350 ac. (16.2 sq. mi.) | | | | |
|---|-------|--------|--------|--------|--------|--------|--------|--------|--------|--|--------|--------|--------|---------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| | | 1934 | P | | | | | | h 3.28 | h 7.92 | h 3.10 | 8.71 | 1.86 | 4.48 |
| | Q | | | | | | 2.13 | .36 | .02 | .97 | .41 | .69 | 1.86 | 6.44 |
| 1935 | P | 1.30 | 2.92 | 6.67 | 3.90 | 4.13 | 1.50 | 5.08 | 1.69 | 4.50 | 1.52 | 3.14 | 2.62 | 38.97 |
| | Q | 1.78 | 1.45 | 3.65 | 3.05 | 1.19 | .22 | .42 | .03 | .12 | .04 | .28 | .26 | 12.49 |
| 1936 | P | 7.18 | 3.76 | 5.13 | 5.84 | .13 | 4.81 | 7.07 | 5.79 | 5.77 | 6.04 | 1.81 | 5.38 | 58.71 |
| | Q | 5.88 | 4.00 | 3.10 | 4.92 | .13 | .30 | .42 | 1.87 | .88 | 2.97 | .42 | 2.25 | 27.14 |
| 1937 | P | 8.87 | 2.96 | 1.37 | 5.05 | 3.18 | 2.53 | 3.51 | 6.90 | 1.90 | 3.50 | 2.04 | 1.72 | 43.53 |
| | Q | 6.78 | 1.87 | 1.28 | 1.93 | 1.06 | .11 | .19 | .58 | .22 | .81 | .53 | .62 | 15.98 |
| 1938 | P | 2.84 | 1.03 | 2.42 | 2.39 | 2.42 | 7.19 | 7.79 | 4.30 | 2.02 | .98 | 4.39 | 4.02 | 41.79 |
| | Q | 1.44 | .57 | 1.00 | .76 | .14 | 1.81 | 2.63 | .68 | .07 | .05 | .72 | 1.68 | 11.55 |
| 1939 | P | 3.44 | 7.26 | 4.75 | 2.95 | 2.22 | 2.94 | 8.42 | 7.63 | .07 | 2.51 | 1.68 | 2.92 | 46.79 |
| | Q | 1.75 | 5.72 | 2.69 | .94 | .56 | .15 | .86 | 1.42 | .10 | .13 | .14 | .44 | 14.90 |
| 1940 | P | 2.82 | 2.50 | 2.44 | 2.85 | 6.70 | 3.94 | 4.40 | 8.00 | 1.20 | h 1.35 | h 6.17 | h 3.91 | 46.28 |
| | Q | .90 | 2.23 | 1.29 | 1.10 | 2.17 | 1.05 | .28 | 2.13 | .11 | .05 | 1.68 | .97 | 13.96 |
| 1941 | P | h 1.90 | h 1.03 | h 3.78 | h 3.23 | h 1.53 | h 3.49 | h 9.96 | h 1.56 | h 1.76 | h .65 | h .53 | h 3.28 | h 32.70 |
| | Q | 1.34 | .55 | 1.30 | 1.45 | .18 | .11 | .80 | .04 | .05 | 0 | .01 | .11 | 5.94 |
| **Av. | P | 4.05 | 3.07 | 3.79 | 3.74 | 2.90 | 3.77 | 6.60 | 5.13 | 2.46 | 2.37 | 2.82 | 3.41 | 44.11 |
| **Av. | Q | 2.84 | 2.34 | 2.04 | 2.02 | .78 | .54 | .80 | .96 | .22 | .58 | .54 | .90 | 14.56 |
| Normal | P | 3.40 | 3.60 | 4.30 | 3.60 | 3.80 | 4.40 | 5.00 | 4.40 | 3.00 | 2.50 | 2.20 | 3.60 | 43.80 |

Notes: * Partially estimated. ** Does not include the part year amounts for 1934. † Part of January 1935 runoff resulted from the thawing of frozen rain occurring December 31, 1934. ^h Precipitation taken from USWB Climatological Data as given for High Point, N. C. Other precipitation values are the averages of 2 to 6 raingages in operation during the period. Normal P based on 34 yr. record (1921-40, 1942-55) at High Point, N. C. Quality of records: P- Good, Q- Good.

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | | | | High Point, North Carolina Muddy Creek Watershed | | | | | | |
|---|-------------------|------|---|------|---------|------|---------|------|----------|--|-------|------|--------|------|--------|------|
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1934 | 6-7 | 0.06 | 6-7 | 0.06 | 6-7 | 0.12 | 12-1 | 0.33 | 12-1 | 0.60 | 11-30 | 0.82 | 6-5 | 1.08 | 6-1 | 1.84 |
| 1935 | 3-12 | .06 | 3-12 | .06 | 3-12 | .11 | 3-12 | .32 | 3-12 | .56 | 3-12 | .80 | 3-12 | .94 | 3-25 | 1.85 |
| 1936 | 8-7 | .19 | 8-7 | .19 | 8-7 | .37 | 8-7 | .89 | 8-7 | 1.30 | 4-6 | 1.71 | 4-6 | 2.16 | 4-2 | 3.87 |
| 1937 | 1-19 | .08 | 1-19 | .08 | 1-19 | .16 | 1-19 | .43 | 1-19 | .68 | 1-19 | 1.11 | 1-19 | 1.64 | 1-15 | 2.76 |
| 1938 | 6-28 | .21 | 6-28 | .20 | 6-28 | .39 | 6-28 | .93 | 6-28 | 1.16 | 7-23 | 1.26 | 7-23 | 1.46 | 7-18 | 2.04 |
| 1939 | 2-26 | .09 | 2-26 | .09 | 2-26 | .17 | 2-26 | .47 | 2-9 | .75 | 2-9 | .99 | 2-9 | 1.20 | 2-26 | 2.88 |
| 1940 | 5-30 | .17 | 5-30 | .16 | 5-30 | .32 | 5-30 | .73 | 5-29 | 1.01 | 5-29 | 1.48 | 5-29 | 1.79 | 5-29 | 1.99 |
| 1941 | 7-10 | .04 | 7-10 | .04 | 7-10 | .08 | 7-10 | .16 | 3-28 | .25 | 3-27 | .32 | 3-28 | .39 | 3-28 | .78 |

Notes: Records began 5-19-34. Quality of records: Good, except for 1934 and 1941, which are fair. ^{1/} Determined from runoff compilations using gage heights tabulated from recorder charts. Watershed area of 16.2 sq. mi. used for all years of records.

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | High Point, N. C. Uharie (Uwharrie) River Watershed Area - 7,230 ac. (11.3 sq. mi.) | | | | | | | |
|---|-------|-------------------|-------------------|-------------------|-------------------|-------------------|--|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1934 | P | | | | | | 3.28 | ^h 7.92 | ^h 3.10 | 7.18 | 1.88 | 3.97 | 3.17 | 30.50 |
| | Q | | | | | | 2.10 | .85 | .20 | .11 | .41 | .47 | 1.29 | 5.43 |
| 1935 | P | 1.44 | 2.65 | 6.35 | 3.75 | 4.16 | 1.49 | 6.07 | 1.59 | 3.95 | 1.81 | 3.46 | 2.24 | 38.96 |
| | Q | 1.37 | 1.36 | 3.01 | 2.33 | 1.00 | .25 | .75 | .09 | .35 | .12 | .50 | .30 | 11.43 |
| 1936 | P | 8.03 | 3.85 | 4.74 | 5.73 | .14 | 3.35 | 5.80 | 4.36 | 6.12 | 5.35 | 1.59 | 5.24 | 54.30 |
| | Q | 5.29 | 3.62 | 2.42 | 4.42 | .30 | .24 | .38 | .93 | .77 | 2.32 | .35 | 1.98 | 23.02 |
| 1937 | P | 8.06 | 2.83 | 1.61 | 5.05 | 3.22 | 2.23 | 3.06 | 7.01 | 1.72 | 4.20 | 2.00 | 1.75 | 42.74 |
| | Q | 5.57 | *1.48 | *1.10 | 2.10 | .94 | .24 | .30 | .69 | .20 | .46 | .37 | .48 | 14.03 |
| 1938 | P | 2.67 | .93 | 2.16 | 2.67 | 3.12 | 8.05 | 6.23 | 3.00 | 1.99 | .95 | 4.84 | 3.84 | 40.45 |
| | Q | *1.04 | .43 | .87 | .64 | .19 | .62 | 1.29 | .51 | .10 | .07 | .88 | 1.52 | 8.16 |
| 1939 | P | 3.46 | 6.65 | 4.81 | 2.16 | 2.28 | 2.41 | 6.31 | 7.55 | .14 | 2.63 | 1.83 | 2.71 | 42.94 |
| | Q | 1.58 | 4.98 | 2.27 | .74 | .44 | .22 | .70 | 1.83 | .13 | .30 | .19 | .50 | 13.88 |
| 1940 | P | *2.73 | 2.36 | 2.46 | 2.81 | 6.54 | 2.20 | 4.33 | 9.03 | 1.13 | ^h 1.35 | ^h 6.17 | ^h 3.91 | 45.02 |
| | Q | .83 | 1.74 | 1.10 | 1.02 | 2.31 | .44 | .44 | 2.57 | .17 | .09 | 1.44 | .79 | 12.94 |
| 1941 | P | ^h 1.90 | ^h 1.03 | ^h 3.78 | ^h 3.23 | ^h 1.53 | ^h 3.49 | ^h 9.96 | ^h 1.56 | ^h 1.76 | ^h .65 | ^h .53 | ^h 3.28 | 32.70 |
| | Q | 1.22 | .48 | 1.27 | 1.12 | .30 | .25 | 1.53 | .08 | .03 | .01 | .04 | .17 | 6.50 |
| **Av. | P | 4.04 | 2.90 | 3.70 | 3.63 | 3.00 | 3.32 | 5.96 | 4.87 | 2.40 | 2.42 | 2.92 | 3.28 | 42.44 |
| **Av. | Q | 2.43 | 2.01 | 1.72 | 1.77 | .78 | .32 | .77 | .96 | .25 | .48 | .54 | .82 | 12.85 |
| Normal | P | 3.40 | 3.60 | 4.30 | 3.60 | 3.80 | 4.40 | 5.00 | 4.40 | 3.00 | 2.50 | 2.20 | 3.60 | 43.80 |

Notes: * Partially estimated. ** Does not include the part year amounts for 1934. ^h Precipitation taken from USWB Climatological Data as given for High Point, North Carolina. Other precipitation values are the averages of 2 to 5 raingages in operation during the period. Normal P based on 34 yr. record (1921-40, 1942-55) at High Point, N. C. Quality of records: P - Good, Q - Good.

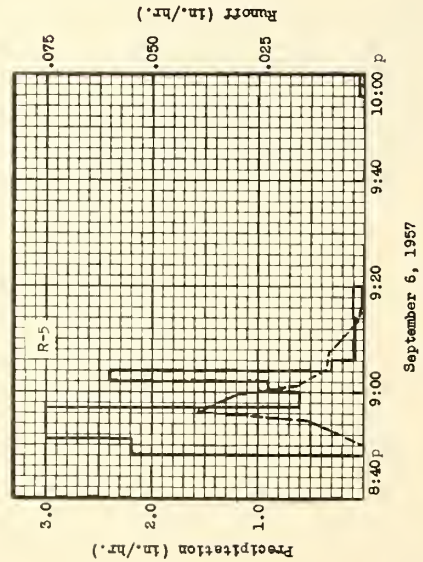
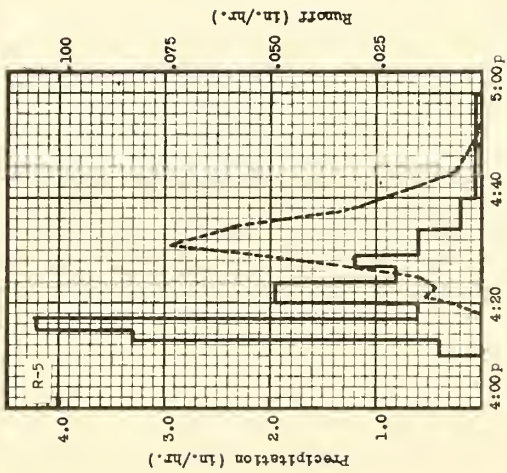
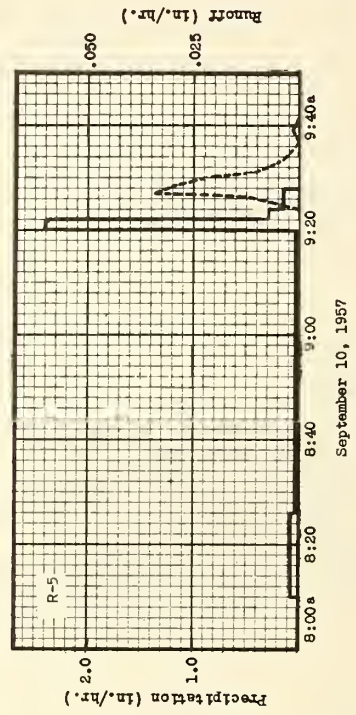
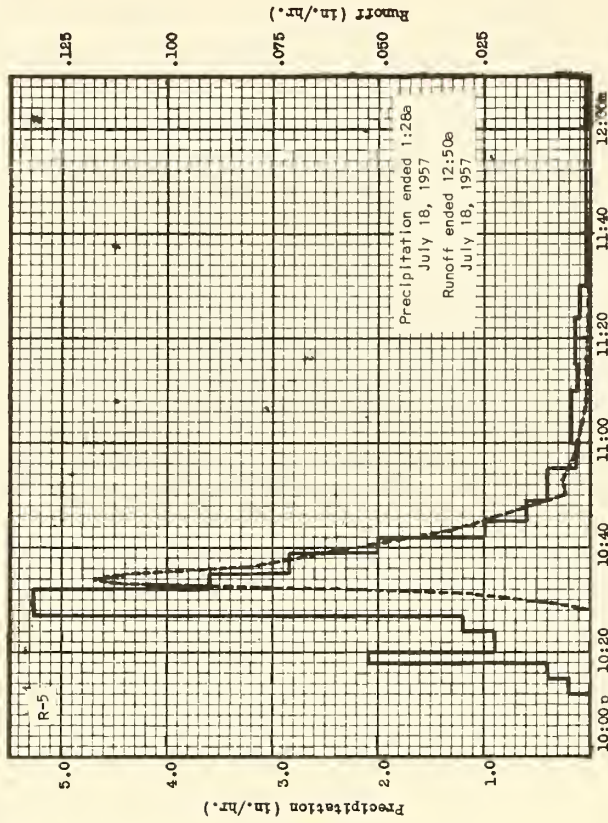
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | High Point, N. C. Uharie (Uwharrie) River Watershed | | | | | | | | | |
|---|-------------------|------------------|---|------------------|---------|------------------|---|------------------|----------|-------------------|-------|-------------------|--------|-------------------|--------|-------------------|
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL ^{1/} | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1934 | 6-6 | 0.10 | 6-6 | 0.10 | 6-6 | 0.19 | 6-6 | 0.42 | 6-6 | 0.52 | 6-6 | 0.60 | 6-5 | 0.99 | 6-1 | 1.86 |
| 1935 | 7-13 | .10 | 7-13 | .09 | 7-13 | .19 | 3-12 | .40 | 3-12 | .70 | 3-12 | .92 | 3-12 | 1.05 | 3-6 | 1.43 |
| 1936 | 10-8 | .21 | 10-8 | .20 | 4-6 | .38 | 4-6 | .96 | 4-6 | 1.27 | 4-6 | 1.64 | 4-6 | 1.98 | 4-2 | 3.48 |
| 1937 | 1-19 | .14 | 1-19 | .14 | 1-19 | .26 | 1-19 | .57 | 1-19 | .78 | 1-19 | 1.20 | 1-19 | 1.63 | 1-15 | 2.56 |
| 1938 | 7-23 | .08 | 7-23 | .08 | 7-23 | .15 | 12-26 | .33 | 12-26 | .45 | 12-26 | .54 | 7-23 | .62 | 7-23 | 1.02 |
| 1939 | 2-26 | .14 | 2-26 | .13 | 2-26 | .26 | 2-26 | .60 | 2-26 | .78 | 2-26 | .91 | 2-25 | 1.02 | 2-25 | 2.63 |
| 1940 | 5-14 | .29 | 5-14 | .28 | 5-14 | .51 | 3-14 | .85 | 3-14 | .94 | 3-14 | 1.75 | 8-14 | 2.05 | 8-13 | 2.36 |
| 1941 | 7-17 | ^e .30 | 7-17 | ^e .30 | 7-17 | ^e .54 | 7-16 | ^e .93 | 7-16 | ^e 1.03 | 7-16 | ^e 1.09 | 7-16 | ^e 1.12 | 7-16 | ^e 1.28 |

Notes: Records began 5-16-34. ^e Partially estimated. Quality of records: Good except for 1935, which are fair, and 1941, which are poor. ^{1/} Determined from runoff compilations using gage heights tabulated from recorder charts.

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Blacksburg, Virginia Watershed W-III Area - 19.3 acres | | | | | | | | | |
|---|-------------------|-----------------|---|-------------------|---------------|---------------|---|---------------|-------------|-------------|-------------|-----------|--------------|--------------|--------|------|
| Month Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year | | | |
| 1956 | P Q 0 | 4.58 .01 | 2.71 T | 3.96 T | 2.22 T | 4.58 .02 | 3.66 T | 2.33 .02 | 4.68 T | 3.14 T | 1.76 T | 2.11 T | 36.33 .05 | | | |
| 1957 | P Q .02 | 5.62 .01 | 1.46 T | 4.37 .03 | 1.89 T | 4.70 .01 | 3.03 .02 | 1.00 T | 8.29 .05 | 1.99 T | 3.96 .01 | 2.84 T | 44.31 .15 | | | |
| 1958 | P Q .01 | 2.29 .08 | 4.13 T | 3.99 T | 5.79 .02 | 2.43 0 | 2.89 T | 2.52 T | 2.13 0 | 1.05 0 | 1.91 0 | 4.44 T | 36.13 .11 | | | |
| 1959 | P Q T | 2.26 0 | 1.62 0 | 3.18 0 | 4.70 T | 2.35 0 | 1.67 0 | 2.57 T | 4.55 T | 7.62 .14 | 3.93 T | 2.54 T | 2.79 T | 39.78 .14 | | |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | Blacksburg, Virginia Watershed W-III | | | | | | | | | |
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 1-29 | 0.09 | 7-17 | 0.02 | 7-17 | 0.02 | 7-17 | 0.02 | 1-29 | 0.02 | 1-29 | 0.02 | 1-29 | 0.02 | 4-2 | 0.03 |
| 1958 | 5-5 | .06 | 5-5 | .01 | 5-5 | .01 | 2-24 | .03 | 2-24 | .05 | 2-24 | .08 | 2-24 | .08 | 2-24 | .08 |
| 1959 | 9-30 | .81 | 9-30 | .13 | 9-30 | .13 | 9-30 | .13 | 9-30 | .13 | 9-29 | .14 | 9-29 | .14 | 9-29 | .14 |
| Notes: Quality of records: Monthly P & Q and Annual Max. Discharges and Vols. - excellent. Watershed Conditions: Crop yields: Corn (1956-1959) consistent averaged 80-85 bushels per acre; wheat (1956) about 20 bushels, (1957-1959) about 8-10 bushels per acre; clover hay (1956-1959) between 1.1-1.5 tons per acre. | | | | | | | | | | | | | | | | |
| SELECTED RUNOFF EVENTS | | | | | | | Blacksburg, Virginia Watershed W-III | | | | | | | | | |
| Antecedent conditions | | | Rainfall | | | | Runoff | | | | | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | | | | | | |
| Event of August 18, 1956 | | | | | | | | | | | | | | | | |
| 7-19-56 | 0.16 | 0 | 8-18-56 | Raingage | R-5 | 8-18-56 | | | | | | | | | | |
| 7-20 | .75 | T | 4:10p | 0 | 0 | 4:18p | 0 | 0 | | | | | | | | |
| 7-23 | .39 | T | :13 | .40 | .02 | :20 | .007 | T | | | | | | | | |
| 7-24 | .22 | T | :15 | 3.30 | .13 | :21 | .013 | T | | | | | | | | |
| 7-25 | .29 | T | :17 | 4.20 | .27 | :23 | .011 | .001 | | | | | | | | |
| 7-27 | .48 | T | :20 | .60 | .30 | :25 | .014 | .001 | | | | | | | | |
| 7-29 | .05 | 0 | :24 | 1.95 | .43 | :29 | .051 | .003 | | | | | | | | |
| 7-30 | .03 | 0 | :27 | .80 | .47 | :31 | .073 | .005 | | | | | | | | |
| 8-4 | .07 | 0 | :29 | 1.20 | .51 | :34 | .060 | .009 | | | | | | | | |
| 8-11 | .07 | 0 | :34 | .60 | .56 | :37 | .035 | .011 | | | | | | | | |
| Watershed Conditions: The cultivated portion, 89% of the watershed, was in contour strip crops with a rotation of (barley & clover) 31%; (corn) 48% and (soybeans & sudan grass) 10%. Barley was harvested June 29. On Aug. 18, corn was approx. 10 ft. high, clover was 14". 9% of area was in pasture & 2% woods. | | | :40 | .20 | .58 | :38 | .030 | .012 | | | | | | | | |
| | | | :50 | .06 | .59 | :45 | .007 | .014 | | | | | | | | |
| | | | 5:00 | .06 | .60 | :52 | T | .014 | | | | | | | | |
| | | | | | | :56 | 0 | .014 | | | | | | | | |
| Event of July 17-18, 1957 | | | | | | | | | | | | | | | | |
| 6-17-57 | 0.08 | 0 | 7-17-57 | Raingage | R-5 | 7-17-57 | | | | | | | | | | |
| 6-22 | .15 | 0 | 10:12p | 0 | 0 | 10:28p | 0 | 0 | | | | | | | | |
| 6-23 | .35 | 0 | :15 | .20 | .01 | :29 | .007 | T | | | | | | | | |
| 6-24 | .13 | 0 | :18 | .40 | .03 | :31 | .027 | .001 | | | | | | | | |
| 6-25 | .10 | 0 | :20 | 2.10 | .10 | :32 | .067 | .002 | | | | | | | | |
| 6-26 | .03 | 0 | :22 | .90 | .13 | :33 | .114 | .003 | | | | | | | | |
| 6-28 | .21 | 0 | :24 | .90 | .16 | :34 | .118 | .005 | | | | | | | | |
| 7-9 | .33 | 0 | :27 | 1.20 | .22 | :35 | .107 | .007 | | | | | | | | |
| 7-17 | .67 1/2 | T 1/2 | :32 | 5.28 | .66 | :36 | .081 | .008 | | | | | | | | |
| | | | :35 | 3.60 | .84 | :36 | .033 | .015 | | | | | | | | |
| | | | :39 | 2.85 | 1.03 | :50 | .006 | .017 | | | | | | | | |
| | | | :42 | 2.00 | 1.13 | :53 | .007 | .017 | | | | | | | | |
| | | | :45 | 1.00 | 1.18 | 11:00 | .003 | .018 | | | | | | | | |
| | | | :49 | .60 | 1.22 | :07 | .001 | .018 | | | | | | | | |
| | | | :52 | .40 | 1.24 | :15 | .001 | .018 | | | | | | | | |
| Notes: To convert runoff in in/hr to cfs, multiply by 19.4544. 1/2 Prior to event beginning 8:12p. For map of watershed, see Selected Runoff Events for Small Agricultural Watersheds in the United States, ARS, SWS, January 1960, page 13.2-4. | | | | | | | | | | | | | | | | |

| SELECTED RUNOFF EVENTS | | | Blacksburg, Virginia Watershed W-III | | | | | | | | |
|--|-------------------|-----------------|--------------------------------------|-------------------|---------------|---------------|--------------|---------------|-----|---|------|
| Antecedent conditions | | | Rainfall | | | Runoff | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | |
| <u>Event of July 17-18, 1957 - Continued</u> | | | | | | | | | | | |
| <p>Watershed Conditions: The cultivated portion (89%) was in contour strips with a rotation of wheat, soybeans and clover. 45% of area was in wheat harvested July 5-12. 13% of area was in soybeans 26" high on event date and 31% of area was in clover, second growth 5"-8" high. 9% of area was in pasture and 2% in woods.</p> | | | 10:55p | .40 | 1.26 | 11:34p | T | .018 | | | |
| | | | 11:00 | .12 | 1.27 | 7-18-57 | | | | | |
| | | | :10 | .18 | 1.30 | 12:50e | O | .018 | | | |
| | | | :15 | .12 | 1.31 | | | | | | |
| | | | :24 | .13 | 1.33 | | | | | | |
| | | | :30 | .10 | 1.34 | | | | | | |
| | | | 7-18-57 | | | | | | | | |
| | | | 12:20a | .01 | 1.35 | | | | | | |
| | | | 1:28 | .02 | 1.37 | | | | | | |
| <u>Event of September 6, 1957</u> | | | | | | | | | | | |
| 8-15-57 | 0.31 | O | 9-6-57 | Raingage | R-5 | 9-6-57 | | | | | |
| 8-18 | .38 | O | 8:48p | 0 | 0 | 8:50p | O | O | | | |
| 8-19 | .02 | O | :51 | 2.20 | .11 | :54 | .012 | T | | | |
| 9-2 | .06 | O | :53 | 3.00 | .21 | :56 | .039 | .001 | | | |
| 9-6 | .28 1/ | T 1/ | :55 | 3.00 | .31 | :59 | .031 | .003 | | | |
| <p>Watershed Conditions: The cultivated portion (89%) of the watershed was in the clover phase of a wheat, clover and soybean rotation. 31% of the area was in clover, 9" - 11" high on event date. 45% of area was in wheat stubble with new clover 5" - 7" high. 13% of area was in soybean stubble with clover 10" high. 9% of the area was in pasture & 2% in woods.</p> | | | :57 | 3.00 | .41 | 9:01 | .016 | .004 | | | |
| | | | 9:00 | .60 | .44 | :04 | .009 | .004 | | | |
| | | | :02 | .90 | .47 | :07 | .008 | .005 | | | |
| | | | :04 | 2.40 | .55 | :14 | .001 | .005 | | | |
| | | | :06 | .30 | .56 | :20 | 0 | .005 | | | |
| | | | :14 | .08 | .57 | | | | | | |
| | | | :20 | .10 | .58 | | | | | | |
| :56 | 0 | 0 | 10:10 | .04 | .59 | | | | | | |
| | | | :28 | .03 | .60 | | | | | | |
| <u>Event of September 10, 1957</u> | | | | | | | | | | | |
| 8-15-57 | 0.31 | O | 9-10-57 | Raingage | R-5 | 9-10-57 | | | | | |
| 8-18 | .38 | O | 8:10a | 0 | 0 | 9:24a | O | O | | | |
| 8-19 | .02 | O | :26 | .08 | .02 | :26 | .012 | T | | | |
| 9-2 | .06 | O | 9:20 | .01 | .03 | :27 | .034 | .001 | | | |
| 9-6 | .95 | T | :22 | 2.40 | .11 | :28 | .031 | .001 | | | |
| 9-7 | .05 | O | :24 | .30 | .12 | :30 | .022 | .002 | | | |
| 9-8 | .40 | T | :28 | .15 | .13 | :31 | .011 | .002 | | | |
| 9-9 | .18 | O | | | | :33 | .005 | .002 | | | |
| <p>Watershed Conditions: The cultivated portion (89%) of the watershed was in the clover phase of a wheat, clover and soybean rotation. 31% of the area was in clover 11-14" high on event date. 45% of area was in wheat stubble with new clover 8-10" high. 13% of area was in soybean stubble with clover 12" high. 9% of the area was in pasture and 2% in woods.</p> | | | | | | :37 | 0 | .003 | | | |
| | | | | | | :39 | T | .003 | | | |
| | | | | | | | | | :41 | O | .003 |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

Notes: To convert runoff in in/hr to cfs, multiply by 19.4544. 1/ Prior to event beginning 8:48p.



BLACKSBURG, VIRGINIA WATERSHED W-III

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | | Blacksburg, Virginia Watershed W-IV Area - 3.49 acres | | | | | | | | |
|--|-------------------|-----------------|---|-------------------|---------------|---------------|--------------|--|-------------|-------------|-------------|-------------|-------------|--------------|-----------|--------------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year | | |
| | | 1956 | P Q | 0.66 0 | 4.60 0 | 2.86 0 | 3.91 0 | 1.96 0 | 5.77 .06 | 3.75 T | 2.86 .05 | 4.33 .08 | 2.63 0 | 1.61 0 | 2.06 T | 37.00 .19 |
| 1957 | P Q | 5.75 .18 | 4.62 T | 1.12 0 | 4.39 .08 | 1.68 0 | 5.35 T | 2.51 .02 | .89 0 | 9.66 .03 | 1.75 0 | 3.47 C | 2.64 0 | 43.83 .31 | | |
| 1958 | P Q | 2.04 .03 | 2.11 .09 | 3.69 0 | 4.16 T | 5.82 .24 | 2.93 T | 2.70 .01 | 2.43 0 | 1.94 T | 1.18 0 | 2.10 0 | 3.32 .03 | 34.42 .40 | | |
| 1959 | P Q | 2.29 .02 | 1.44 0 | 3.22 0 | 4.31 0 | 2.51 0 | 1.70 0 | 4.16 .01 | 3.65 .01 | 6.77 .11 | 3.73 0 | 2.64 T | 2.74 .01 | 39.16 .16 | | |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | | Blacksburg, Virginia Watershed W-IV | | | | | | | | |
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 1-29 | 0.18 | 1-29 | 0.07 | 1-29 | 0.10 | 1-29 | 0.16 | 1-29 | 0.18 | 1-29 | 0.18 | 1-29 | 0.18 | 1-29 | 0.18 |
| 1958 | 5-5 | .75 | 5-5 | .21 | 5-5 | .21 | 5-5 | .23 | 5-5 | .24 | 5-5 | .24 | 5-5 | .24 | 5-5 | .24 |
| 1959 | 9-30 | .28 | 9-30 | .11 | 9-30 | .11 | 9-30 | .11 | 9-30 | .11 | 9-30 | .11 | 9-30 | .11 | 9-30 | .11 |
| Notes: Quality of records: Monthly P & Q and Annual Maximum Discharges and Vols. - excellent. Watershed Conditions: Crop Yields: Corn (1956-1959) 82.0-92.0 bushels per acre; Clover hay (1956-1959) 1.3-1.5 tons per acre; Wheat (1956) 23.0 bushels per acre, (1957-1959) 11.0-12.0 bushels per acre. | | | | | | | | | | | | | | | | |
| SELECTED RUNOFF EVENTS | | | | | | | | | | | | | | | | |
| Antecedent conditions | | | | Rainfall | | | | Runoff | | | | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| Notes: | | | | | | | | | | | | | | | | |

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | | Blacksburg, Virginia Watershed W-V Area - 6.08 acres | | | | | | |
|---|--------|-------------|-------------|-----------|-----------|-------------|-----------|---|-----------|-------------|-------------|-------------|-------------|--------------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| | | 1956 | P Q | 0.66 0 | 4.60 0 | 2.86 0 | 3.91 0 | 1.96 0 | 5.77 T | 3.75 0 | 2.86 .02 | 4.33 .01 | 2.63 0 | 1.61 T |
| 1957 | P Q | 5.75 .06 | 4.62 T | 1.12 0 | 4.39 T | 1.68 T | 5.35 T | 2.51 .01 | .89 0 | 9.66 .02 | 1.75 0 | 3.47 0 | 2.64 T | 43.83 .09 |
| 1958 | P Q | 2.04 .02 | 2.11 .19 | 3.69 0 | 4.16 T | 5.82 .18 | 2.93 T | 2.70 T | 2.43 T | 1.94 0 | 1.18 0 | 2.10 T | 3.32 .05 | 34.42 .44 |
| 1959 | P Q | 2.29 .01 | 1.44 0 | 3.22 0 | 4.31 0 | 2.51 0 | 1.70 0 | 4.16 0 | 3.65 0 | 6.77 .08 | 3.73 0 | 2.64 .04 | 2.74 0 | 39.16 .13 |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | | Blacksburg, Virginia Watershed W-V | | | | | | | | |
|---|-------------------|------|---|------|---------|------|---------|------------------------------------|----------|------|-------|------|--------|------|--------|------|
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 1-29 | 0.07 | 1-29 | 0.03 | 1-29 | 0.04 | 1-29 | 0.05 | 1-29 | 0.06 | 1-29 | 0.06 | 1-29 | 0.06 | 1-29 | 0.06 |
| 1958 | 5-5 | .76 | 5-5 | .15 | 5-5 | .16 | 2-26 | .17 | 5-5 | .18 | 5-5 | .18 | 2-24 | .18 | 2-23 | .18 |
| 1959 | 9-30 | .28 | 9-30 | .08 | 9-30 | .08 | 9-30 | .08 | 9-30 | .08 | 9-30 | .08 | 9-30 | .08 | 9-30 | .08 |

Notes: Quality of records: Monthly P & Q and Annual Max. Discharges and Vols. - excellent. Watershed Conditions: Crop Yields: Corn (1956) 83.0 bushels per acre, (1957) 95.4 bushels per acre, (1958) 64.2 bushels per acre, (1959) 90.9 bushels per acre; Wheat (1956) 15.5 bushels per acre, (1957-1958) 8.0 bushels per acre, (1959) 3.6 bushels per acre; Clover hay (1956-1959) 1.3-1.4 tons per acre.

| SELECTED RUNOFF EVENTS | | | | | | | | | |
|------------------------|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|--|
| Antecedent conditions | | | Rainfall | | | Runoff | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | |
| | | | | | | | | | |

Notes:

BLACKSBURG, VA. Thorne Creek Watershed W-I

LOCATION: Pulaski Co., Va.; $3\frac{1}{2}$ mi. W. of Dublin, Va., Peak Creek, New River.

AREA: 3,054 acres (4.77 sq. mi.)

SHAPE: Roughly oval, about 3.8 mi. long by 1.7 mi. wide. Made up of two fan-shaped subareas with channel confluence about 1800 ft. above gaging station.

SLOPES: 4% is in 0-2%; 31% is in 2-7%; 32% is in 7-15%; 28% is in 15-25%; 5% is in 25-45%. Aspect E - SE.

SOILS: Residual, derived from dolomitic limestones, sandstones and shales. 1 Groeclose silt loam 30%; 2 Lodi loam 17%; 3 Frederick silt loam 14%; 4 Litz silt loam 12%; 5 Nine miscellaneous silt loams 12%; 6 Greendale silt loam 8%; 7 Four other silt loams 7%. Topsoil - weak very fine granular structure, 1 & 2; weak fine granular to subangular blocky, 4 & 6; weak medium subangular blocky, 3; range in depth - 8 to 16 in., 1 & 3; 5 to 25 in., 2; 2 to 12 in., 4; 5 to 10 in., 6. Subsoil - weak fine subangular blocky structure, 2 & 4; weak to moderate fine subangular blocky, 1; moderate medium to coarse subangular blocky, 3; moderate medium subangular blocky, 6; range in depth below surface - 36 to 60 in., 1 & 3; 32 to 50 in., 2; 10 to 20 in., 4; 20 to 36 in., 6. Effective total depths - Nine miscellaneous silt loams, up to 36 in., 5; Four other silt loams, 16 to 30 in., 7. Permeability of topsoil and subsoil - moderate, 1; moderately rapid, 3, 4, & 5; moderate to moderately rapid, 2; moderately slow to moderate permeability, 6 & 7. Internal drainage - medium, 1, 2, 3, 5, & 6; rapid, 4; slow, 7.

EROSION: 1 - 87%; 2 - 13%.

LAND CAPABILITY: II - 30%; III - 31%; IV - 22%; VI - 12%; VII - 5%.

SURFACE DRAINAGE: Good; principal waterway about 17,600 ft. 29% of the area is above farm ponds and contributes to surface runoff during periods of excessive rainfall. 29% of area is above sinks with no contribution to surface runoff.

CHARACTER OF FLOW: Perennial, continuous.

INSTRUMENTATION: Runoff - 20.4 ft. wide by 1.55 ft. deep rectangular notch in concrete dam for flows less than about 0.04 inch per hour; for flows exceeding about 0.04 inch per hour the control is the rectangular notch combined with a concrete dam 52 ft. long. Precipitation - three recording stations.

WATERSHED CONDITIONS: Farm wood lots - 5%; cultivated - 33%, common rotation is corn, small grain and hay; pasture - 62%, usually good cover of native bluegrass combined with other grasses and clover. Conditions are consistent from year to year.

GENERALLY REPRESENTS: Complex land use practices in the Southern Appalachian Ridges and Valleys land resource area (N-128) and the Northern Appalachian Ridges and Valleys land resource area (S-147).

MONTHLY PRECIPITATION AND RUNOFF (Inches)

Blacksburg, Virginia Thorne Creek Watershed W-I

| Month Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
|----------------|----------------|-------------|--------------|--------------|--------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|----------------|
| | 1957 P Q | | | | | | 4.65 .50 | 4.47 .40 | 1.46 .30 | 8.90 .27 | 1.62 .25 | 4.16 .32 | 2.91 .52 |
| 1958 P Q | 2.28 1.08 | 2.11 .73 | 4.97 1.00 | 4.37 1.97 | 7.30 2.46 | 3.16 1.10 | 2.22 .58 | 5.43 .59 | 1.72 .35 | 2.01 .28 | 1.72 .27 | 3.39 .40 | 40.68 10.81 |
| 1959 P Q | 1.64 .41 | 1.00 .20 | 2.91 .24 | 4.21 .52 | 2.67 .49 | .59 .28 | 3.55 .23 | 4.93 .27 | 5.16 .20 | 3.78 .21 | 2.46 .19 | 2.47 .31 | 35.37 3.55 |
| Normal P | 3.03 | 2.45 | 3.41 | 2.66 | 3.49 | 3.33 | 4.48 | 3.48 | 2.43 | 2.33 | 2.20 | 2.66 | 35.95 |

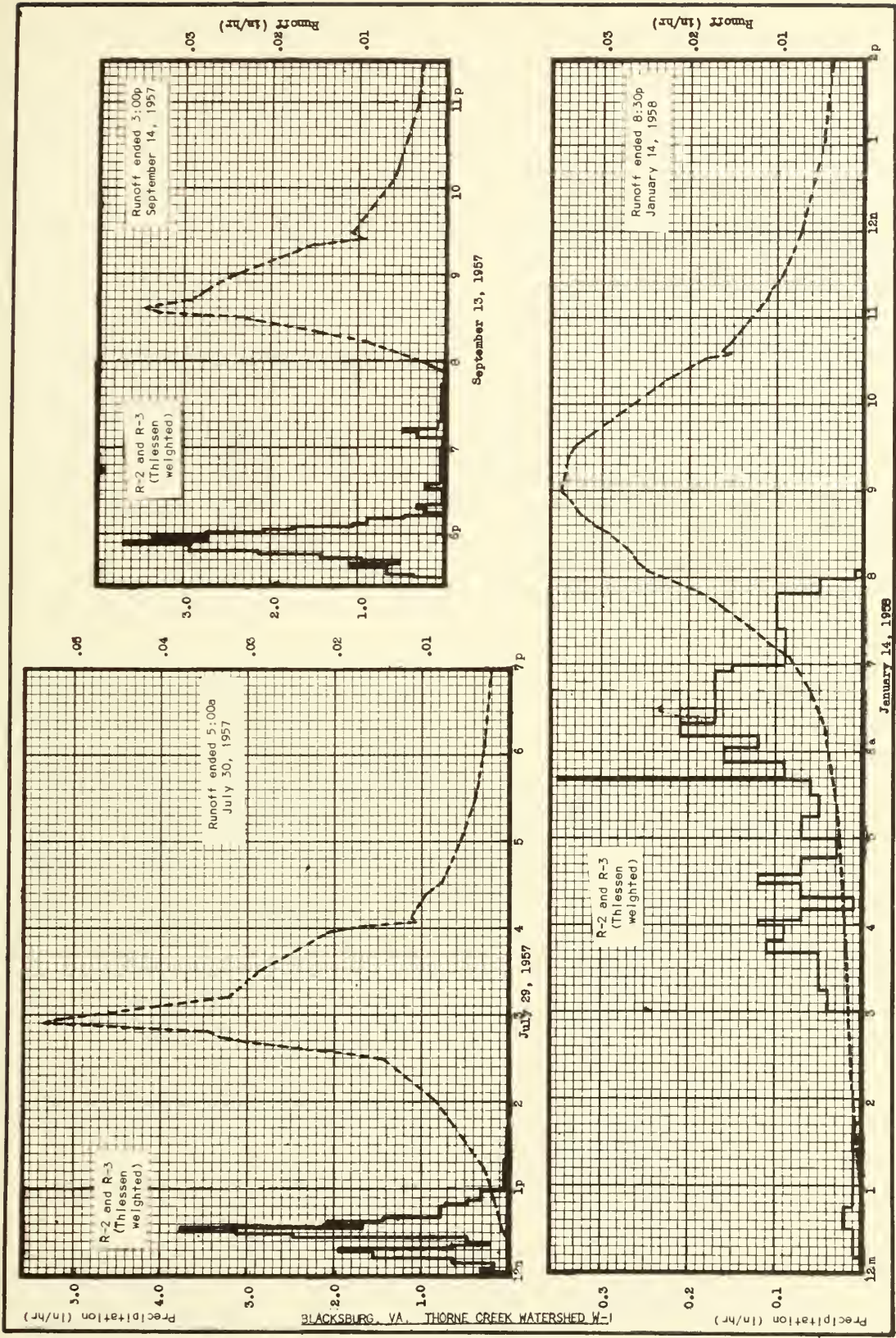
ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS

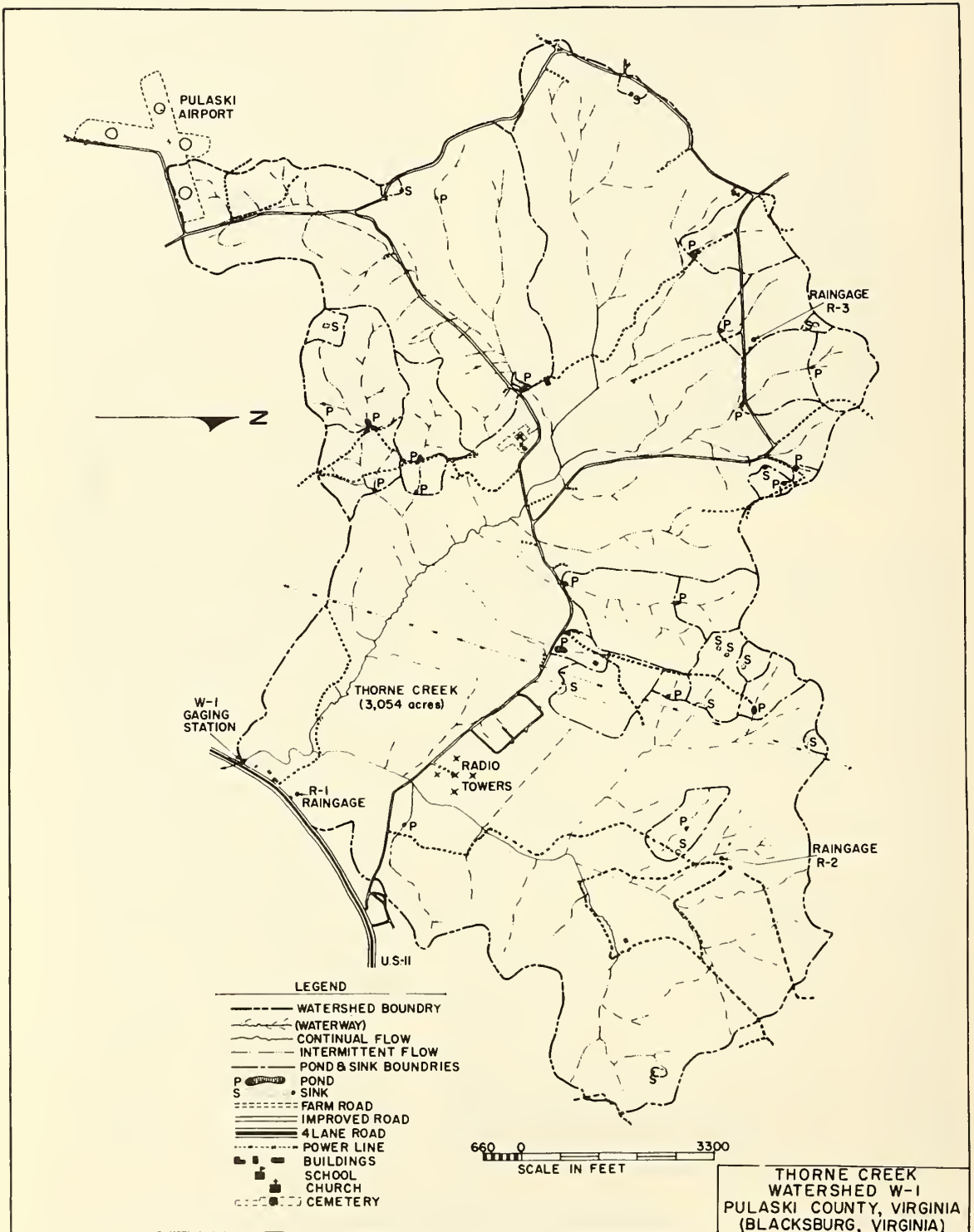
Blacksburg, Virginia Thorne Creek Watershed W-I

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 7-27 | 0.07 | 7-27 | 0.06 | 7-27 | 0.09 | 7-27 | 0.16 | 7-27 | 0.17 | 7-27 | 0.18 | 7-27 | 0.25 | 7-27 | 0.32 |
| 1958 | 5-17 | .12 | 5-17 | .10 | 5-17 | .18 | 5-17 | .30 | 5-17 | .34 | 5-17 | .38 | 5-17 | .47 | 3-30 | .93 |
| 1959 | 1-21 | .01 | 1-21 | .01 | 1-21 | .02 | 1-21 | .04 | 1-21 | .05 | 1-21 | .06 | 1-21 | .07 | 1-17 | .13 |

Notes: Records began 6-1-57. Quality of records: Monthly P - excellent, Q - fair; Annual Max. Discharges and Vols. - good. Normal P based on 53-yr. record (1907 - 1959) at Radford, Va. (Claytor Dam).

| SELECTED RUNOFF EVENTS | | | | Blacksburg, Virginia Thorne Creek Watershed W-I | | | | |
|---|------------------------------------|---------------------|------------------------|---|------------------|------------------|-----------------|------------------|
| Antecedent conditions | | | Rainfall ^{1/} | | | Runoff | | |
| Date | Rainfall ^{1/} (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of September 13-14, 1957 - Continued | | | | | | | | |
| | | | :07 | .01 | 1.25 | | | |
| | | | :11 | .33 | 1.27 | | | |
| | | | :13 | .50 | 1.29 | | | |
| | | | :18 | .07 | 1.29 | | | |
| | | | :30 | .03 | 1.30 | | | |
| | | | :45 | .03 | 1.31 | | | |
| | | | | <u>Total Rainfall</u> | | | | |
| | | | | R-2 | 1.00 | | | |
| | | | | R-3 | 1.62 | | | |
| Event of January 14, 1958 | | | | | | | | |
| 12-15-57 | O | 0.0156 | 1-14-58 | Rain gages | R-2 & R-3 | 1-14-58 | | |
| 12-16 | T | .0144 | 12:10a | 0 | 0 | 1:00a | 0.0011 | 0 |
| 12-17 | T | .0144 | :30 | .01 | 0 | 2:20 | .0012 | .0007 |
| 12-18 | .01 | .0144 | :45 | .02 | .01 | :55 | .0014 | .0015 |
| 12-19 | .34 | .0144 | 1:44 | .01 | .02 | 3:40 | .0017 | .0026 |
| 12-20 | .47 | .0176 | 3:00 | 0 | .02 | 4:18 | .0020 | .0038 |
| 12-21, 24 ^{2/} | T | .0612 | :15 | .04 | .03 | :46 | .0023 | .0048 |
| 12-25 | .34 | .0147 | :40 | .05 | .05 | 5:10 | .0026 | .0058 |
| 12-26 | .68 | .0328 | :50 | .11 | .07 | :30 | .0029 | .0067 |
| 12-27 | O | .0216 | 4:00 | .09 | .08 | :46 | .0034 | .0076 |
| 12-28 | T | .0204 | :03 | .12 | .09 | 6:00 | .0037 | .0084 |
| 12-29, 30 ^{2/} | O | .0348 | :10 | .07 | .10 | :14 | .0040 | .0093 |
| 12-31, 1-2-58 ^{3/} | T | .0504 | :20 | .01 | .10 | :24 | .0046 | .0101 |
| 1-3, 6 ^{2/} | O | .0672 | :28 | .07 | .11 | :32 | .0049 | .0107 |
| 1-7, 9 ^{2/} | T | .0504 | :35 | .12 | .12 | :40 | .0056 | .0114 |
| 1-10, 12 ^{2/} | O | .0540 | :46 | .07 | .13 | 7:06 | .0088 | .0145 |
| 1-13 | .74 | .0201 | 5:00 | .03 | .14 | :16 | .0110 | .0161 |
| 1-14 | O | .0011 ^{3/} | :15 | .07 | .16 | :24 | .0127 | .0177 |
| | | | :30 | .05 | .17 | :42 | .0166 | .0221 |
| | | | :40 | .06 | .18 | :50 | .0188 | .0244 |
| | | | :42 | .35 | .19 | 8:04 | .0243 | .0295 |
| | | | :52 | .09 | .21 | :10 | .0258 | .0320 |
| | | | 6:03 | .16 | .24 | :16 | .0262 | .0346 |
| | | | :10 | .12 | .25 | :30 | .0291 | .0410 |
| | | | :20 | .21 | .29 | :34 | .0306 | .0430 |
| | | | :30 | .17 | .31 | :38 | .0310 | .0451 |
| | | | :45 | .17 | .36 | :44 | .0324 | .0482 |
| | | | :55 | .17 | .38 | :52 | .0336 | .0526 |
| | | | :59 | .15 | .39 | :58 | .0347 | .0561 |
| | | | 7:25 | .09 | .43 | 9:05 | .0345 | .0601 |
| | | | :50 | .10 | .48 | :12 | .0342 | .0641 |
| | | | :59 | .05 | .48 | :20 | .0341 | .0687 |
| | | | 8:05 | .01 | .49 | :30 | .0333 | .0743 |
| | | | | | | :38 | .0319 | .0787 |
| | | | | <u>Total Rainfall</u> | | 10:15 | .0230 | .0956 |
| | | | | R-2 | .55 | :32 | .0180 | .1013 |
| | | | | R-3 | .47 | :35 | .0156 | .1022 |
| | | | | | | :37 | .0161 | .1027 |
| | | | | | | :40 | .0156 | .1036 |
| | | | | | | :54 | .0134 | .1069 |
| | | | | | | 11:14 | .0109 | .1110 |
| | | | | | | :28 | .0096 | .1134 |
| | | | | | | :45 | .0082 | .1159 |
| | | | | | | 12:00n | .0071 | .1178 |
| | | | | | | :22 p | .0059 | .1202 |
| | | | | | | :44 | .0050 | .1222 |
| | | | | | | 1:04 | .0046 | .1238 |
| | | | | | | :24 | .0041 | .1252 |
| | | | | | | :46 | .0037 | .1266 |
| | | | | | | 2:46 | .0029 | .1300 |
| | | | | | | 3:42 | .0025 | .1325 |
| | | | | | | 5:00 | .0022 | .1357 |
| | | | | | | 8:30 | .0019 | .1429 |
| <p>Notes: To convert runoff in in/hr to cfs, multiply by 3079.4</p> <p>^{1/} All rainfall Thiessen weighted amounts - Antecedent Rainfall for rain gages R-1, R-2, R-3 and Pulaski CAA AP daily precipitation; Main Event Rainfall for rain gages R-2 and R-3.</p> <p>^{2/} Inclusive dates. ^{3/} Prior to 1:00a.</p> | | | | | | | | |





BLACKSBURG, VA. Brush Creek Watershed W-I

LOCATION: Floyd County, Va.; 1 mi. W. of Terrys Fork, Va., Little River, New River.

AREA: 893 acres (1.40 sq. mi.)

SHAPE: Roughly fan or leaf shaped, about 1.62 mi. by 0.88 mi.

SLOPES: 10% is in 2-7%; 36% is in 7-15%; 35% is in 15-25%; 16% is in 25-45%; 3% is 45% (+). Aspect N.

SOILS: Based on 68% (mapped portion) of total area: parent material - igneous and metamorphic rocks. Watauga silt loam, 20 to 36 in. deep - 67%; Talladega silt loam, 10 to 20 in. deep - 20%; Tusquitee loam, 36 to 60 in. deep - 6% and Wehadkee silt loam and Hayesville loam, 36 to 60 in. deep - 7%. All are medium texture with moderate to rapid permeability.

EROSION: 1 - 19%; 2 - 72%; 3 - 9%.

LAND CAPABILITY: II - 3%; III - 35%; IV - 38%; VI - 6%; VII - 18%

SURFACE DRAINAGE: Good, principal waterway - 1.44 mi. Area is composed of three sub areas with the confluence of the three streams about 1000 ft. above gaging station.

CHARACTER OF FLOW: Perennial, continuous.

INSTRUMENTATION: Runoff - 10 ft. x 10 ft. concrete, box type highway culvert modified with Virginia broad-crest V-notch weir, 24 hr. chart. Precipitation - two recording stations, one with a weekly chart and one with 12 hr. chart.

WATERSHED CONDITIONS: Farm woods, a mixture of hardwoods and conifers - 29%; pasture - 60%, cultivated - 11%, in a common rotation of corn, small grain and hay. Very few soil conservation practices have been applied to area.

GENERALLY REPRESENTS: Mixed cover conditions in the Blue Ridge land resource area (N-130).

MONTHLY PRECIPITATION AND RUNOFF (Inches)

Blacksburg, Virginia Brush Creek Watershed W-I

| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
|----------|-------|----------------------------------|----------------------------------|----------------------------------|------|------|------|------|------|-------|------|------|------|-------|
| | | | | | | | | | | | | | | |
| 1957 | P | | | | | | | | 2.59 | 9.01 | 2.35 | 3.62 | 2.89 | 20.46 |
| | Q | | | | | | | | 1.24 | 2.64 | 1.93 | 2.36 | 2.62 | 10.79 |
| 1958 | P | 2.34 | 2.51 | 3.20 | 3.33 | 4.96 | 2.64 | 2.37 | 2.97 | 1.30 | 1.48 | 1.57 | 5.72 | 34.39 |
| | Q | 2.32 ¹ / ₂ | 3.09 ¹ / ₂ | 2.98 ¹ / ₂ | 2.88 | 2.53 | 1.01 | .92 | .96 | .79 | .96 | .92 | 2.67 | 22.03 |
| 1959 | P | 1.76 | 1.35 | 2.52 | 5.11 | 5.00 | 2.14 | 6.35 | 4.90 | 10.36 | 5.48 | 2.32 | 2.64 | 49.93 |
| | Q | 1.46 | 1.11 | 1.29 | 2.02 | 1.84 | 1.45 | 1.43 | 1.05 | 3.84 | 3.30 | 1.99 | 2.42 | 23.20 |
| Normal P | | 2.95 | 2.91 | 3.34 | 3.15 | 4.49 | 4.22 | 4.87 | 3.83 | 3.02 | 2.79 | 2.27 | 2.95 | 40.79 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS

Blacksburg, Virginia Brush Creek Watershed W-I

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 9-17 | 0.09 | 9-17 | 0.08 | 9-17 | 0.16 | 9-17 | 0.41 | 9-17 | 0.54 | 9-16 | 0.78 | 9-16 | 0.99 | 9-14 | 1.45 |
| 1958 | 12-29 | .15 | 12-28 | .14 | 12-28 | .29 | 12-28 | .80 | 12-28 | 1.34 | 12-28 | 1.64 | 12-28 | 1.79 | 12-23 | 2.01 |
| 1959 | 9-30 | 1.16 | 9-30 | .62 | 9-30 | .91 | 9-30 | 1.62 | 9-30 | 2.17 | 9-29 | 2.59 | 9-29 | 2.81 | 9-29 | 3.23 |

Notes: Records began 8-1-57. Quality of records: Monthly P - excellent; Q - fair prior to June, 1959, then good; Annual Max. Discharges and Vols. - good. 1/ Partially estimated due to ice formation. Normal P based on 67-yr. record (1893 - 1959) at Blacksburg, Va.

| SELECTED RUNOFF EVENTS | | | | | | Blacksburg, Virginia Brush Creek Watershed W-I | | |
|---|-------------------|---------------------|---------------|-------------------|---------------|--|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of May 30-31, 1959 | | | | | | | | |
| 4-30-59 | 0.03 | 0.0402 | 5-30-59 | Raingage | R-2 | 5-30-59 | | |
| 5-1 | .01 | .0443 | 2:00p | 0 | 0 | 1:44p | 0.0015 | 0 |
| 5-2 | 0 | .0393 | :10 | 1.68 | .28 | :54 | .0022 | .0002 |
| 5-3 | 0 | .0369 | :27 | 3.24 | 1.20 | 2:00 | .0026 | .0004 |
| 5-4 | .61 | .0573 | :30 | 3.20 | 1.36 | :12 | .0079 | .0014 |
| 5-5 | 0 | .0482 ^{5/} | :45 | .56 | 1.50 | :16 | .0142 | .0022 |
| 5-6,9 ^{2/} | 0 | .2066 ^{2/} | 3:00 | .40 | 1.60 | :18 | .0193 | .0027 |
| 5-10 | .01 | .0516 ^{2/} | :05 | .24 | 1.62 | :20 | .0279 | .0035 |
| 5-11,12 ^{2/} | 0 | .1033 ^{2/} | :30 | .09 | 1.66 | :24 | .0360 | .0056 |
| 5-13 | .59 | .0516 ^{2/} | | | | :28 | .0603 | .0089 |
| 5-14 | .01 | .0516 ^{5/} | | | | :32 | .0811 | .0136 |
| 5-15,16 ^{2/} | 0 | .0625 ^{2/} | | | | :35 | .0919 | .0179 |
| 5-17 | .01 | .0320 | | | | :40 | .1104 | .0263 |
| 5-18 | .06 | .0320 | | | | :44 | .1293 | .0343 |
| 5-19 | 0 | .0320 | | | | :52 | .1531 | .0532 |
| 5-20 | .39 | .0393 | | | | :56 | .1916 | .0646 |
| 5-21 | .05 | .0393 | | | | :58 | .2111 | .0714 |
| 5-22,25 ^{2/} | 0 | .1204 | | | | 3:00 | .2552 | .0792 |
| 5-26 | .02 | .0295 | | | | :01 | .2874 | .0837 |
| 5-27 | 1.19 | .1286 | | | | :04 | .2682 | .0976 |
| 5-28 | .04 | .0497 | | | | :06 | .2544 | .1063 |
| 5-29 | .01 | .0393 | | | | :16 | .2167 | .1456 |
| 5-30 | 0 | .0206 ^{3/} | | | | :32 | .1972 | .2008 |
| | | | | | | :38 | .1778 | .2196 |
| | | | | | | :40 | .1635 | .2253 |
| | | | | | | :48 | .1417 | .2456 |
| | | | | | | :56 | .1182 | .2629 |
| | | | | | | 4:04 | .0955 | .2772 |
| | | | | | | :08 | .0884 | .2833 |
| | | | | | | :20 | .0701 | .2992 |
| | | | | | | :40 | .0466 | .3186 |
| | | | | | | 5:00 | .0325 | .3319 |
| | | | | | | :40 | .0216 | .3499 |
| | | | | | | 6:48 | .0142 | .3522 |
| | | | | | | 8:00 | .0115 | .3677 |
| | | | | | | 9:00 | .0095 | .3782 |
| | | | | | | 11:00 | .0077 | .3954 |
| | | | | | | 12:00m | .0072 | .4028 |
| | | | | | | 5-31-59 | | |
| | | | | | | 5:00a | .0051 | .4335 |
| | | | | | | 12:36p | .0040 | .4677 |
| | | | | | | 9:00 | .0033 | .4987 |
| Event of July 22-23, 1959 | | | | | | | | |
| 6-22-59 | 0 | 0.0295 | 7-22-59 | Raingage | R-2 | 7-22-59 | | |
| 6-23 | .78 | .0635 | 4:12p | 0 | 0 | 4:00p | 0.0012 | 0 |
| 6-24 | .20 | .0401 | :20 | 5.25 | .70 | :12 | .0020 | .0002 |
| 6-25,7-10 ^{2/} | 0 | .3805 | :25 | 6.00 | 1.20 | :20 | .0072 | .0008 |
| 7-11 | .01 | .0221 | :27 | 9.00 | 1.50 | :24 | .0120 | .0014 |
| 7-12 | 0 | .0221 | :30 | 4.00 | 1.70 | :28 | .0182 | .0024 |
| 7-13 | .30 | .0236 | :37 | 2.40 | 1.98 | :32 | .0370 | .0043 |
| 7-14 | .09 | .0328 | 5:17 | .03 | 2.00 | :33 | .0498 | .0050 |
| 7-15,18 ^{2/} | 0 | .0959 | :20 | .40 | 2.02 | :35 | .0699 | .0070 |
| 7-19 | .35 | .0253 | | | | :36 | .1072 | .0084 |
| 7-20 | .68 | .0446 | | | | :40 | .1715 | .0177 |
| 7-21 | 1.04 | .0906 | | | | :44 | .1849 | .0296 |
| 7-22 | 0 | .0244 ^{4/} | | | | :48 | .2034 | .0425 |
| | | | | | | :52 | .2302 | .0570 |
| | | | | | | :56 | .2412 | .0726 |
| | | | | | | 5:00 | .2595 | .0893 |
| | | | | | | :04 | .5357 | .1159 |
| | | | | | | :05 | .8471 | .1274 |
| | | | | | | :12 | .4414 | .2026 |
| | | | | | | :20 | .3250 | .2537 |
| <p>Watershed Conditions: As described under "Watershed Conditions" on page 13.8-1. Corn planted, some up 2 in. high. Small grain 20 to 35 in., Hay 11 to 20 in. high.</p> | | | | | | | | |
| <p>Watershed Conditions: As described under "Watershed Conditions" on page 13.8-1. Corn 6 to 7 ft.; small grain harvested.</p> | | | | | | | | |
| <p>Notes: To convert runoff in in/hr to cfs, multiply by 900.43 ^{1/} Antecedent Rainfall Thiessen weighted (R₁ & R₂ gages). ^{2/} Inclusive dates. ^{3/} Prior to 1:44p. ^{4/} Prior to 4:00p. ^{5/} Ant. Runoff estimated from 5-5-59 at 11:00a to 5-15 at 2:30p - gage not in operation - weir under construction.</p> | | | | | | | | |

SELECTED RUNOFF EVENTS

Blacksburg, Virginia Brush Creek Watershed W-I

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|---------------------------------------|------------------------------------|--------------------|------------------|----------------------|------------------|------------------|-----------------|------------------|
| Date | Rainfall ^{1/} (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of July 22-23, 1959 - Continued | | | | | | | | |
| | | | | | | 5:22p | .2373 | .2630 |
| | | | | | | :24 | .2104 | .2705 |
| | | | | | | :28 | .2137 | .2846 |
| | | | | | | :32 | .2076 | .2987 |
| | | | | | | :36 | .1930 | .3120 |
| | | | | | | :40 | .1726 | .3242 |
| | | | | | | :44 | .1450 | .3347 |
| | | | | | | :48 | .1347 | .3441 |
| | | | | | | :56 | .1120 | .3770 |
| | | | | | | 6:04 | .0876 | .3903 |
| | | | | | | :08 | .0765 | .3957 |
| | | | | | | :24 | .0550 | .4132 |
| | | | | | | :36 | .0378 | .4225 |
| | | | | | | :44 | .0274 | .4268 |
| | | | | | | 7:00 | .0193 | .4331 |
| | | | | | | :16 | .0148 | .4393 |
| | | | | | | :44 | .0108 | .4453 |
| | | | | | | 8:20 | .0080 | .4509 |
| | | | | | | 9:12 | .0061 | .4571 |
| | | | | | | 10:40 | .0046 | .4595 |
| | | | | | | 12:00m | .0040 | .4653 |
| | | | | | | 7-23-59 | | |
| | | | | | | 3:00a | .0031 | .4757 |
| | | | | | | 2:00p | .0015 | .5005 |
| | | | | | | 5:00 | .0014 | .5048 |
| Event of September 6-7, 1959 | | | | | | | | |
| 8-7-59 | 0 | .0320 | 9-6-59 | Raingage | R-2 | 9-6-59 | | |
| 8-8 | .01 | .0295 | 7:07p | 0 | 0 | 7:16p | 0.0017 | 0 |
| 8-9, 14 ^{2/} | 0 | .1413 | :10 | .80 | .04 | :20 | .0024 | .0001 |
| 8-15 | .02 | .0197 | :20 | 2.76 | .50 | :30 | .0066 | .0008 |
| 8-16 | 0 | .0210 | :25 | 2.16 | .68 | :36 | .0134 | .0018 |
| 8-17 | .23 | .0202 | :32 | 1.20 | .82 | :40 | .0179 | .0029 |
| 8-18 | .02 | .0267 | 8:00 | .21 | .92 | :44 | .0329 | .0045 |
| 8-19, 20 ^{2/} | 0 | .0393 | :45 | .24 | 1.10 | :52 | .0442 | .0096 |
| 8-21 | .09 | .0205 | 9:00 | .16 | 1.14 | 8:04 | .0476 | .0188 |
| 8-22 | .02 | .0197 | :30 | .04 | 1.16 | :22 | .0567 | .0345 |
| 8-23 | 0 | .0211 | | | | :36 | .0789 | .0526 |
| 8-24 | .28 | .0257 | | | | :44 | .0862 | .0609 |
| 8-25, 27 ^{2/} | 0 | .0664 | | | | 9:16 | .0537 | .0982 |
| 8-28 | .01 | .0221 | | | | :48 | .0326 | .1211 |
| 8-29 | 1.20 | .0469 | | | | 10:24 | .0230 | .1378 |
| 8-30 | .15 | .0485 | | | | 11:17 | .0148 | .1544 |
| 8-31 | 1.44 | .1668 | | | | 12:00m | .0115 | .1638 |
| 9-1 | .48 | .0788 | | | | 9-7-59 | | |
| 9-2, 4 ^{2/} | 0 | .0950 | | | | 2:20a | .0070 | .1854 |
| 9-5 | .38 | .0338 | | | | 5:40 | .0051 | .2055 |
| 9-6 ^{3/} | .32 | .0429 | | | | 11:00 | .0037 | .2250 |
| | | | | | | 5:20p | .0028 | .2498 |
| | | | | | | 12:00m | .0026 | .2675 |

Watershed Conditions:

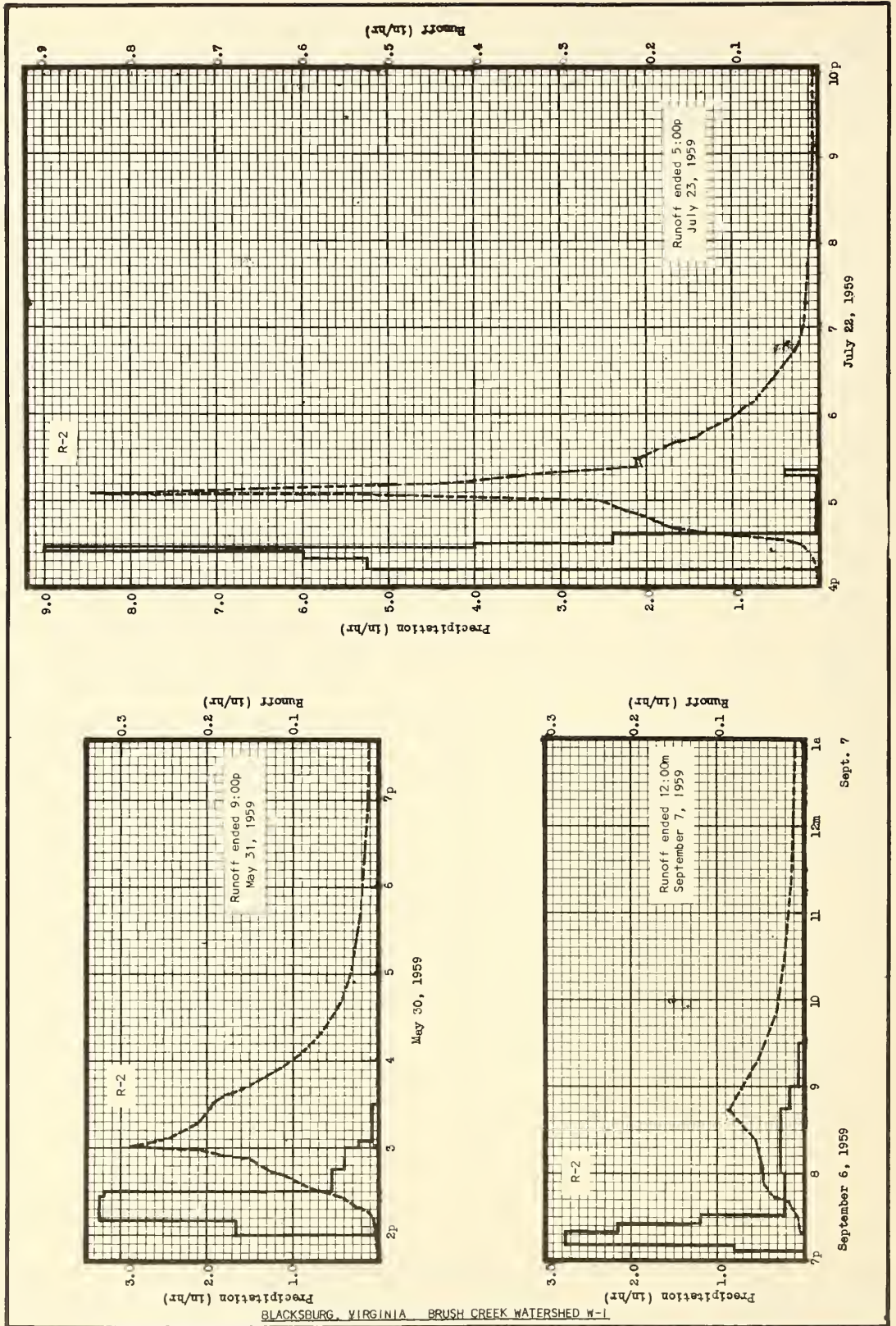
As described under "Watershed Conditions" on page 13.8-1.
Corn mature.

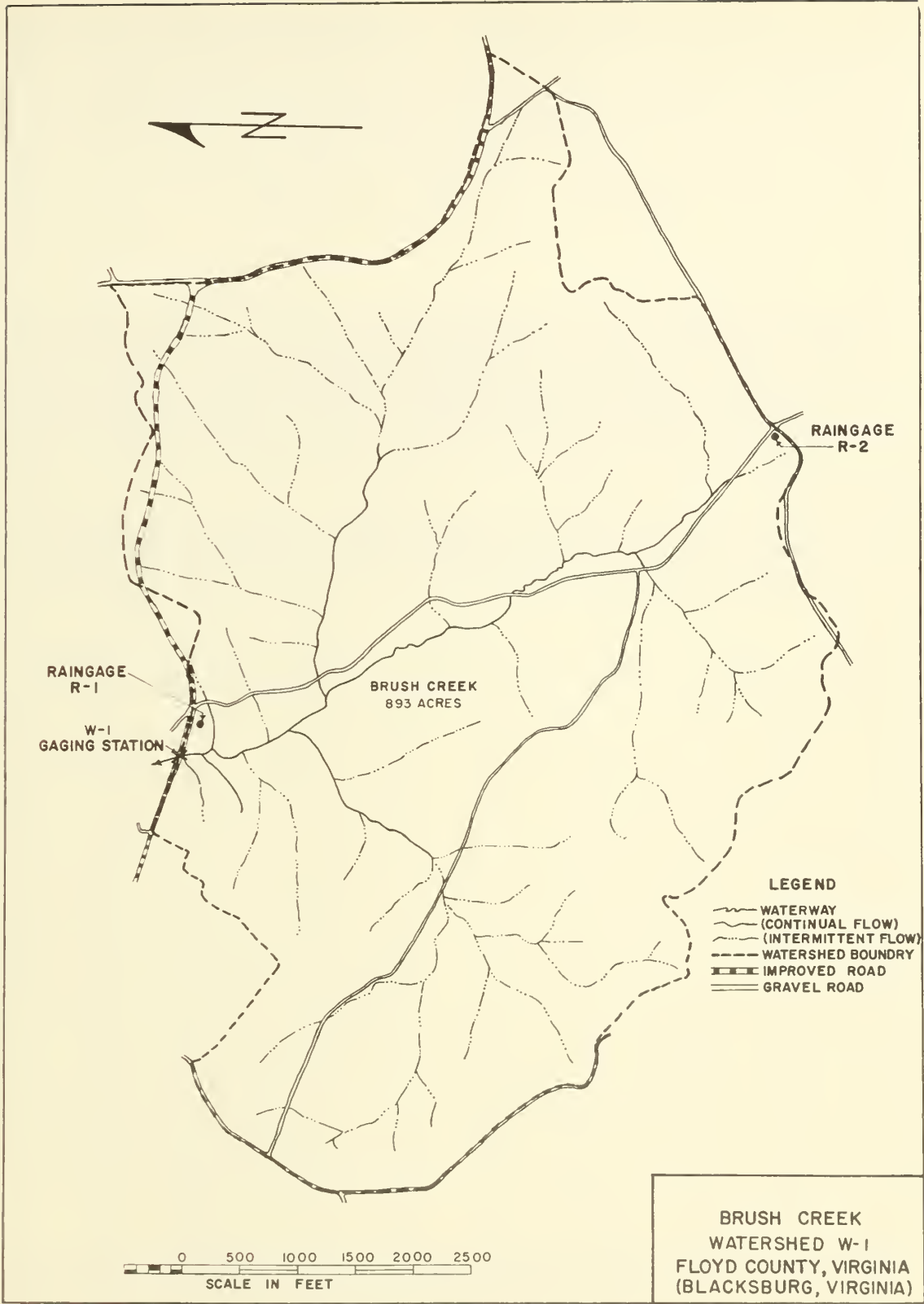
Notes: To convert runoff in in/hr to cfs, multiply by 900.43

1/ Antecedent Rainfall Thiessen weighted (R₁ & R₂ pages).

2/ Inclusive dates

3/ Rainfall prior to 4:04p, runoff prior to 7:16p.





| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | | Staunton, Virginia Bell Creek Watershed W-III Area - 6,144 acra (9.60 sq. mi.) | | | | | | | | |
|---|-------------------|------|---|------|---------|------|---------|---|----------------|------|-------|------|--------|------|--------|------|
| Month Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year | | | |
| 1955 <u>1/</u> | P 0.34 | 2.60 | 3.85 | 2.24 | 2.33 | 3.90 | 3.65 | 7.38 | 1.79 | 0.78 | 1.82 | 0.49 | 31.17 | | | |
| | Q .20 | .29 | .52 | .16 | .09 | .13 | .08 | .69 | .11 | .08 | .07 | .05 | 2.47 | | | |
| 1956 | P 1.40 | 3.45 | 3.03 | 1.61 | 1.09 | 2.28 | 4.69 | 3.92 | 4.60 <u>2/</u> | | | | 26.07 | | | |
| | Q .04 | .13 | .23 | .13 | .05 | .03 | .02 | .01 | | | | | .65 | | | |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS <u>3/</u> | | | | | | | | Staunton Virginia Bell Creek Watershed W-III | | | | | | | | |
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1955 | 8-18 | 0.10 | 8-18 | 0.09 | 8-18 | 0.15 | 8-17 | 0.27 | 8-17 | 0.37 | 8-17 | 0.44 | 8-17 | 0.48 | 8-17 | 0.59 |
| 1956 | 3-15 | T | 3-14 | T | 3-14 | .01 | 3-14 | .01 | 3-14 | .02 | 3-14 | .03 | 3-14 | .05 | 3-14 | .12 |
| <p>Notes: Quality of records: Monthly Precipitation - good; monthly Q - fair. Precipitation data taken from USWB Climatological Data as given for Staunton D. & B. Institution, Staunton, Va. Runoff data taken from USGS Water Supply Papers 1382 & 1432. <u>1/</u> To complete the calendar year, Jan. to Sept. monthly values were repeated from "Monthly Precipitation and Runoff from Small Agricultural Watersheds in the United States", June 1957. <u>2/</u> Runoff station discontinued 9-30-56. <u>3/</u> Data repeated from "Annual Maximum Flows from Small Agricultural Watersheds in the United States", June 1958.</p> | | | | | | | | | | | | | | | | |
| Notes: | | | | | | | | | | | | | | | | |

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | | Iowa City, Iowa Ralston Creek Area - 1926 ac. (3.01 sq. mi.) | | | | | | | | |
|---|-------------------|-----------------|---|-------------------|---------------|---------------|--------------|---|----------|-------|-------|------|--------|-------|--------|-------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year | | |
| | | 1958 | P | 0.64 | 0.51 | 0.33 | 1.53 | 3.32 | 3.61 | 6.33 | 2.33 | 4.02 | 3.56 | 1.81 | 0.31 | 28.30 |
| | Q | 0 | e .54 | .05 | .02 | .08 | .35 | .64 | .10 | .29 | .70 | .09 | .02 | 2.88 | | |
| 1959 | P | .60 | 1.31 | 2.95 | 5.36 | 6.41 | 3.34 | 4.09 | 4.25 | 3.22 | 4.96 | 2.13 | 2.65 | 41.27 | | |
| | Q | .01 | e3.63 | e2.62 | 1.46 | 1.73 | .31 | .38 | .38 | .07 | .83 | .58 | .91 | 12.91 | | |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | | Iowa City, Iowa Ralston Creek | | | | | | | | |
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1958 | 10-8 | 0.39 | 10-8 | 0.34 | 10-8 | 0.53 | 10-8 | 0.63 | 10-8 | 0.65 | 10-8 | 0.67 | 10-8 | 0.67 | 10-8 | 0.69 |
| 1959 | 3-19 | .18 | 3-19 | .17 | 3-19 | .33 | 3-19 | .81 | 3-19 | 1.10 | 3-19 | 1.26 | 2-23 | 1.54 | 2-22 | 3.26 |
| Notes: Quality of records: P - good; Q - good except during periods of ice effect which are fair. Watershed conditions: approximately 45% of area is cultivated, 35% in pasture and 20% in brush, timber and orchards. | | | | | | | | | | | | | | | | |
| SELECTED RUNOFF EVENTS | | | | | | | | | | | | | | | | |
| Antecedent conditions | | | Rainfall | | | | Runoff | | | | | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intenaity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| Notes: For map of watershed, see Selected Runoff Events for Small Agricultural Watersheds in the United States, ARS, SWC, January 1960, page 21.1-6. | | | | | | | | | | | | | | | | |

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | | East Lansing, Michigan Watershed A (Area - 1.98 acres) | | | | | |
|---|------|------|------|------|------|------|------|---|-------|------|------|------|-------|
| Month Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 P | 0.48 | 1.92 | 2.41 | 3.99 | 6.26 | 2.80 | 2.54 | 5.20 | 0.63 | 0.26 | 1.51 | 1.26 | 29.26 |
| Q | 0 | 1.63 | 3.65 | .06 | .48 | 0 | 0 | .48 | 0 | 0 | 0 | 0 | 6.30 |
| 1957 P | 1.31 | 1.10 | 1.81 | 3.86 | 6.12 | 2.42 | 7.22 | 1.55 | 1.28 | 3.84 | 2.43 | 2.86 | 35.80 |
| Q | .11 | 1.00 | .32 | 0 | .01 | 0 | .92 | 0 | 0 | 0 | 0 | 0 | 2.36 |
| 1958 P | 1.57 | .78 | .27 | 1.56 | 1.34 | 2.32 | 4.31 | 3.24 | 2.54 | 1.85 | 1.35 | .32 | 21.45 |
| Q | 0 | .16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .16 |
| 1959 P | 2.32 | 1.98 | 1.95 | 4.10 | 2.99 | 1.60 | 5.67 | 5.13 | 3.31 | 5.24 | 2.79 | 1.92 | 39.00 |
| Q | .02 | .58 | 5.31 | 0 | 0 | 0 | T | T | 0 | .01 | 0 | 0 | 5.92 |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | | East Lansing, Michigan Watershed A | | | | | | | | |
|---|-------------------|------|---|------|---------|------|---------|------------------------------------|----------|------|-------|------|--------|------|--------|------|
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 7-11 | 3.13 | 7-11 | 0.39 | 7-11 | 0.58 | 7-11 | 0.69 | 7-11 | 0.69 | 2-8 | 0.86 | 2-8 | 0.89 | 7-4 | 0.91 |
| 1958 | 2-25 | .03 | 2-25 | .02 | 2-25 | .04 | 2-25 | .06 | 2-24 | .11 | 2-24 | .16 | 2-24 | .16 | 2-24 | .16 |
| 1959 | 7-23 | .85 | 3-15 | .27 | 3-15 | .44 | 3-15 | .86 | 3-15 | 1.28 | 3-14 | 1.38 | 3-14 | 1.53 | 2-27 | 2.71 |

Notes: Quality of records: excellent. Watershed conditions: 1957, 1958 and 1959 - corn.
 Corrections: Q - 1948, February 2.29, Total 4.21. Q - 1950, February 0.96, March 3.90. Q - 1951, February 2.27, Total 2.48.

| SELECTED RUNOFF EVENTS | | | | | | East Lansing, Michigan Watershed A | | | |
|------------------------|-------------------|-----------------|---------------|-------------------|---------------|------------------------------------|--------------|---------------|--|
| Antecedent conditions | | | Rainfall | | | Runoff | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | |
| Event of March 5, 1959 | | | | | | | | | |
| 2-5-59 | 0.04 s | 0 | 3-5-59 | Rainage | Cult. | 3-5-59 | | | |
| 2-9 | .30 rs | 0 | 9:32p | 0 | 0 | 12:26p | 0 | 0 | |
| 2-10 | .47 rs | 0 | :42 | .12 | .02 | :30 | .0011 | 0 | |
| 2-11 | .08 rs | 0 | :56 | .09 | .04 | 3:30 | .0037 | .0059 | |
| 2-12 | .09 | 0 | | | | | | | |
| 2-13 | .02 | .11 | 11:04 | .04 | .09 | :50 | .0053 | .0074 | |
| 2-14 | .28 | .19 | :32 | 0 | .09 | 4:30 | .0053 | .0110 | |
| 2-15 | T rs | .07 | :42 | .18 | .12 | 9:40 | .0023 | .0262 | |
| 2-18 | .10 | 0 | 12:00 | .03 | .13 | 10:20 | .0144 | .0308 | |
| 2-21 | T s | 0 | 3-6-59 | | | :42 | .0306 | .0388 | |
| 2-23 | .34 rs | .03 | 12:10a | 0 | .13 | 11:00 | .0384 | .0492 | |
| 2-24 | 0 | .06 | :24 | .13 | .16 | :30 | .0471 | .0706 | |
| 2-26 | .06 rs | T | :36 | 0 | .16 | 3-6-59 | | | |
| 2-27 | T | .04 | 1:02 | .07 | .19 | 12:40a | .1172 | .1678 | |
| 2-28 | 0 | .09 | :12 | .30 | .24 | 1:06 | .1172 | .2186 | |
| 3-1 | 0 | .36 | :18 | 0 | .24 | :18 | .1483 | .2452 | |
| 3-2 | T | .46 | :26 | .23 | .27 | :31 | .1653 | .2791 | |
| 3-3 | .02 s | .40 | :36 | 0 | .27 | 2:00 | .1828 | .3625 | |
| 3-4 | 0 | .17 | :38 | .30 | .28 | :10 | .1828 | .3930 | |
| 3-5 | .03 | .02 | :44 | 0 | .28 | :28 | .1653 | .4451 | |
| | | | 2:36 | .08 | .35 | 3:00 | .1923 | .5400 | |
| | | | 3:46 | .13 | .50 | :20 | .1923 | .6041 | |
| | | | 4:08 | .03 | .51 | :30 | .2019 | .6370 | |
| | | | :24 | .08 | .53 | :36 | .2019 | .6571 | |
| | | | 7:00 | .01 | .55 | 5:12 | .0781 | .8713 | |

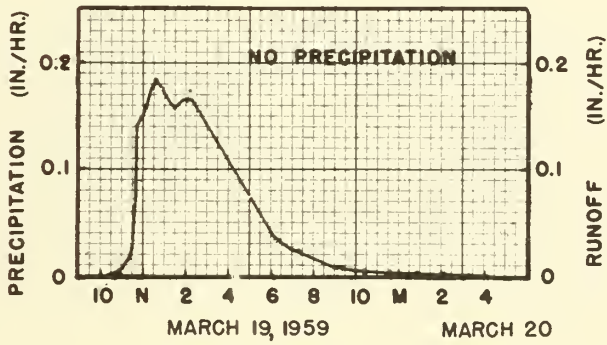
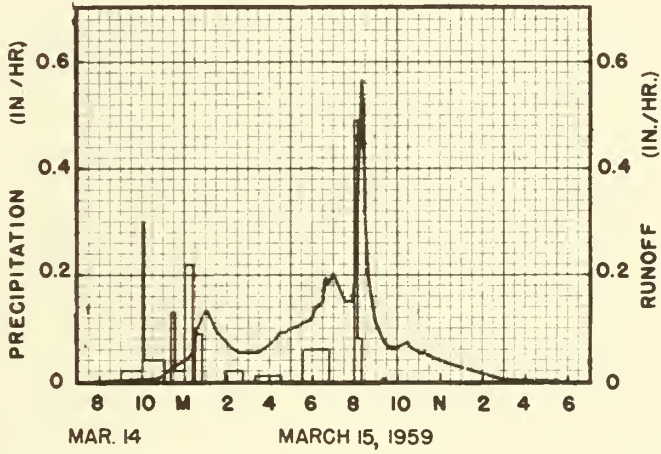
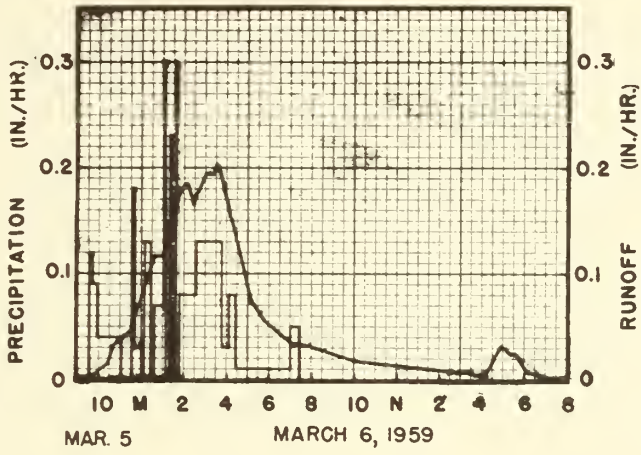
Notes: To convert runoff in in/hr to cfs, multiply by 2.00. On March 3, 1959 there was about 3 inches of water stored on the surface of the watershed in the form of snow and ice.

| SELECTED RUNOFF EVENTS | | | East Lansing, Michigan Watershed A | | | | | |
|--|-------------------|-----------------|------------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <p>Watershed conditions: Corn stubble with rye grass winter cover crop. Surface soil frozen.</p> | | | Event of March 5, 1959 - Continued | | | | | |
| | | | 7:24a | 0.05 | 0.57 | 5:46a | 0.0566 | 0.9092 |
| | | | | | | 7:00 | .0344 | .9637 |
| | | | | | | 8:00 | .0306 | .9962 |
| | | | | | | 10:06 | .0174 | 1.0463 |
| | | | | | | 2:30p | .0072 | 1.1002 |
| | | | | | | 3:20 | .0072 | 1.1062 |
| | | | | | | 4:00 | .0037 | 1.1099 |
| | | | | | | :16 | .0072 | 1.1114 |
| | | | | | | :50 | .0306 | 1.1219 |
| | | | | | | 5:22 | .0236 | 1.1363 |
| | | | | | | :38 | .0236 | 1.1426 |
| | | | | | | 6:38 | .0072 | 1.1573 |
| | | | | | | 8:06 | .0011 | 1.1620 |
| | | | | | | 11:00 | .0053 | 1.1720 |
| | | | 12:00 | .0023 | 1.1758 | | | |
| | | | 3-7-59 | | | | | |
| | | | 12:44a | 0 | 1.1770 | | | |
| | | | Event of March 14, 1959 | | | | | |
| 2-14-59 | 0.28 | 0.19 | 3-14-59 | Raingage | Cult. | 3-14-59 | | |
| 2-15 | T rs | .07 | 9:00p | 0 | 0 | 7:36p | 0 | 0 |
| 2-18 | .10 s | 0 | 10:00 | .02 | .02 | 8:40 | .0011 | .0008 |
| 2-21 | T s | 0 | :08 | .30 | .06 | 10:00 | .0011 | .0022 |
| 2-23 | .34 rs | .03 | 11:04 | .04 | .12 | :48 | .0053 | .0048 |
| 2-24 | 0 | .06 | :22 | 0 | .12 | 11:26 | .0269 | .0145 |
| 2-26 | .06 rs | T | :36 | .13 | .15 | 3-15-59 | | |
| 2-27 | T | .04 | 12:00 | .02 | .16 | 12:12a | .0426 | .0415 |
| 2-28 | 0 | .09 | 3-15-59 | | | :22 | .0566 | .0496 |
| 3-1 | 0 | .36 | 12:22a | .22 | .24 | :36 | .0972 | .0677 |
| 3-2 | T | .46 | :30 | 0 | .24 | :59 | .1322 | .1111 |
| 3-3 | .02 s | .40 | :50 | .09 | .27 | 1:07 | .1322 | .1287 |
| 3-4 | 0 | .17 | 1:52 | 0 | .27 | :30 | .0972 | .1719 |
| 3-5 | .16 | .12 | 2:42 | .02 | .29 | 2:16 | .0616 | .2314 |
| 3-6 | .45 | 1.07 | 3:20 | 0 | .29 | :34 | .0566 | .2491 |
| 3-7 | 0 | T | 4:34 | .01 | .30 | 3:26 | .0566 | .2981 |
| 3-8 | .07 s | .03 | 5:32 | 0 | .30 | 4:16 | .0781 | .3543 |
| 3-9 | T s | 0 | 6:48 | .06 | .37 | :26 | .0907 | .3684 |
| 3-12 | T s | 0 | 7:56 | 0 | .37 | :42 | .0907 | .3926 |
| 3-13 | .02 s | 0 | 8:12 | .49 | .50 | :52 | .0972 | .4082 |
| | | | :20 | .08 | .51 | 5:54 | .1172 | .5164 |
| | | | | | | 6:10 | .1322 | .5496 |
| | | | | | | :28 | .1483 | .5917 |
| | | | | | | :39 | .1923 | .6229 |
| | | | | | | :42 | .1828 | .6322 |
| | | | | | | 7:00 | .2019 | .6896 |
| | | | | | | :32 | .1483 | .7814 |
| | | | | | | :50 | .1483 | .8259 |
| | | | | | | 8:03 | .2019 | .8622 |
| | | | | | | :11 | .3106 | .8957 |

Notes: To convert runoff in in/hr to cfs, multiply by 2.00. On March 3, 1959 there was about 3 inches of water stored on the surface of the watershed in the form of snow and ice.

| SELECTED RUNOFF EVENTS | | | East Lansing, Michigan Watershed A | | | | | | | | |
|--|-------------------|-----------------|-------------------------------------|-------------------|---------------|---------------|--------------|---------------|--------|--------|--------|
| Antecedent conditions | | | Rainfall | | | Runoff | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | |
| <p>Watershed conditions: Corn stubble with rye grass winter cover crop. Surface soil frozen.</p> | | | Event of March 14, 1959 - Continued | | | | | | | | |
| | | | | | | | | 8:21a | 0.5610 | 0.9603 | |
| | | | | | | | | | :25 | .4468 | .9942 |
| | | | | | | | | | :30 | .3231 | 1.0254 |
| | | | | | | | | | :40 | .2019 | 1.0681 |
| | | | | | | | | | :57 | .1172 | 1.1117 |
| | | | | | | | | | 9:20 | .0781 | 1.1488 |
| | | | | | | | | | :34 | .0671 | 1.1658 |
| | | | | | | | | | :42 | .0616 | 1.1743 |
| | | | | | | | | | :54 | .0616 | 1.1867 |
| | | | | | | | | | 10:20 | .0726 | 1.2158 |
| | | | | | | | | | :30 | .0726 | 1.2279 |
| | | | | | | | | | :32 | .0671 | 1.2303 |
| | | | | | | | | | 11:04 | .0566 | 1.2633 |
| | | | | | | | | | :12 | .0566 | 1.2708 |
| | | | | | | 12:16p | .0384 | 1.3209 | | | |
| | | | | | | 2:30 | .0093 | 1.3754 | | | |
| | | | | | | 3:00 | .0037 | 1.3787 | | | |
| | | | | | | :40 | .0023 | 1.3807 | | | |
| | | | | | | 5:37 | 0 | 1.3839 | | | |
| | | | Event of March 19, 1959 | | | | | | | | |
| 2-21-59 | T s | 0 | | Raingage | Cult. | 3-19-59 | | | | | |
| 2-23 | .34 rs | .03 | | | | 10:21a | 0 | 0 | | | |
| 2-24 | 0 | .06 | | | | :56 | .0053 | .0015 | | | |
| 2-26 | .06 rs | T | | | | 11:22 | .0174 | .0060 | | | |
| 2-27 | T | .04 | | | | :28 | .0236 | .0081 | | | |
| 2-28 | 0 | .09 | | | | :40 | .0781 | .0161 | | | |
| 3-1 | 0 | .36 | | | | :45 | .1403 | .0259 | | | |
| 3-2 | T | .46 | | | | :51 | .1483 | .0403 | | | |
| 3-3 | .02 s | .40 | | No precipitation | | 12:06p | .1568 | .0784 | | | |
| 3-4 | 0 | .17 | | | | :24 | .1738 | .1279 | | | |
| 3-5 | .16 | .12 | | | | :40 | .1828 | .1754 | | | |
| 3-6 | .45 | 1.07 | | | | 1:28 | .1568 | .3111 | | | |
| 3-7 | 0 | T | | | | :50 | .1653 | .3702 | | | |
| 3-8 | .07 s | .03 | | | | 2:16 | .1653 | .4418 | | | |
| 3-9 | T s | 0 | | | | 6:10 | .0384 | .8302 | | | |
| 3-12 | T s | 0 | | | | :50 | .0269 | .8520 | | | |
| 3-13 | .02 s | 0 | | | | 9:00 | .0093 | .8882 | | | |
| 3-14 | .15 | .03 | | | | 10:00 | .0053 | .8955 | | | |
| 3-15 | .39 rs | 1.35 | | | | 11:40 | .0037 | .9030 | | | |
| 3-16 | 0 | .15 | | | | 3-20-59 | | | | | |
| 3-17 | .09 s | T | | | | 1:00a | .0023 | .9076 | | | |
| 3-18 | 0 | .02 | | | | 3:16 | .0011 | .9115 | | | |
| 3-19 | 0 | T | | | | :40 | .0023 | .9122 | | | |
| | | | | | | 4:19 | 0. | .9132 | | | |
| <p>Watershed conditions: Corn stubble with rye grass winter cover crop. Surface soil frozen.</p> | | | | | | | | | | | |

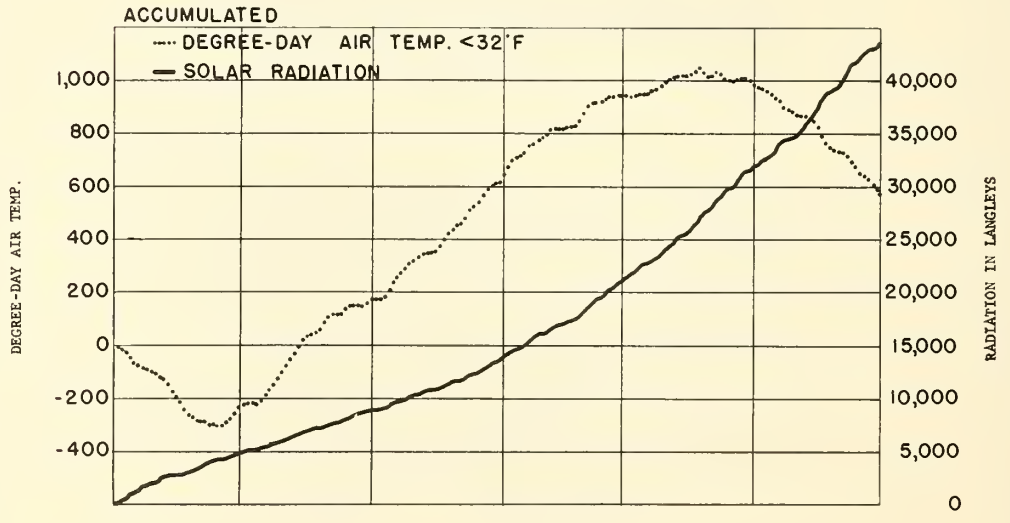
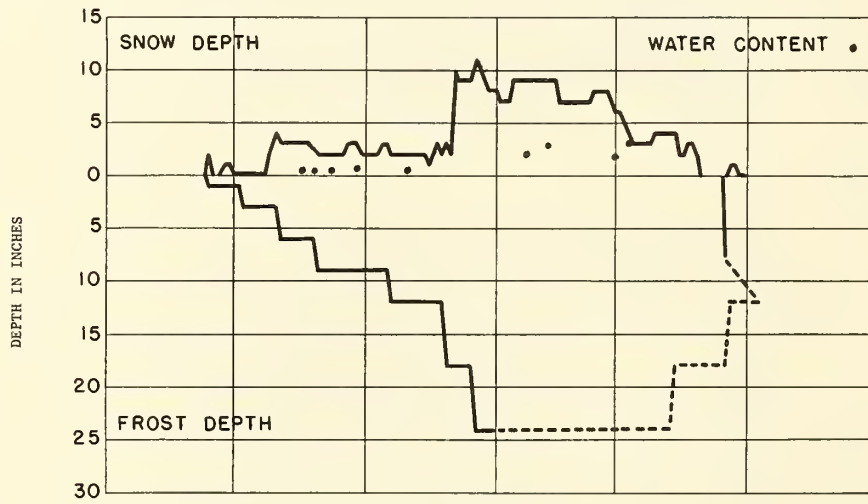
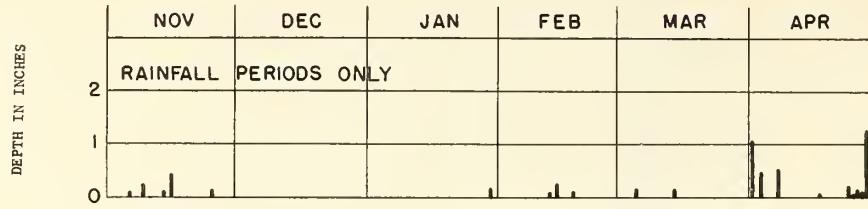
Notes: To convert runoff in in/hr to cfs, multiply by 2.00. On March 3, 1959 there was about 3 inches of water stored on the surface of the watershed in the form of snow or ice.



EAST LANSING, MICHIGAN WATERSHED A

1958

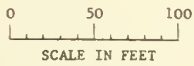
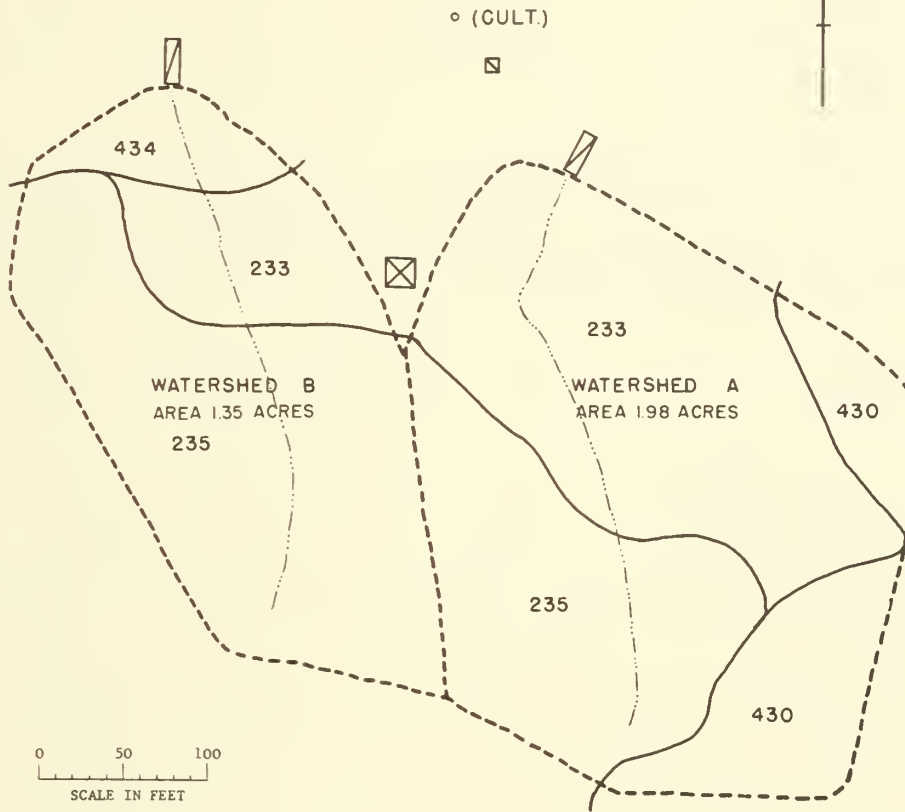
1959



EAST LANSING, MICHIGAN WATERSHED A

SLOPE DATA

| | WATERSHED | |
|----------------------------|-----------|------|
| | A | B |
| AVERAGE SLOPE OF WATERSHED | 6.0% | 6.5% |
| AVERAGE SLOPE OF WATERWAY | 4.0% | 5.2% |



SOIL LEGEND

- 233 SPINKS FINE SANDY LOAM
- 235 SPINKS LOAMY FINE SAND
- 430 HILLSDALE FINE SANDY LOAM
- 434 TUSCOLA FINE SANDY LOAM

NOTE: ALL THE ABOVE SOILS HAVE RAPID INTERNAL DRAINAGE.

LEGEND

- RECORDING RAINGAGE (CULT.)
- ◻ HYGROTHERMOGRAPH
- ⊗ PYRHELIOMETER, AND SOIL TEMPERATURE AND MOISTURE DETERMINATION CENTER
- ▤ RUNOFF AND EROSION MEASURING STATION

EAST LANSING, MICHIGAN
WATERSHEDS A & B

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | | East Lansing, Michigan Watershed B (Area - 1.35 acres) | | | | | | |
|---|-------|------|------|------|------|------|------|---|------|-------|------|------|------|-------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| | | 1956 | P | 0.48 | 1.92 | 2.41 | 3.99 | 6.26 | 2.80 | 2.54 | 5.20 | 0.63 | 0.26 | |
| | Q | 0 | .94 | 2.97 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3.91 |
| 1957 | P | 1.31 | 1.10 | 1.81 | 3.86 | 6.12 | 2.42 | 7.22 | 1.55 | 1.28 | 3.84 | 2.43 | 2.86 | 35.80 |
| | Q | 0 | .24 | .03 | 0 | 0 | 0 | .61 | 0 | 0 | 0 | 0 | 0 | .88 |
| 1958 | P | 1.57 | .78 | 0.27 | 1.56 | 1.34 | 2.32 | 4.31 | 3.24 | 2.54 | 1.85 | 1.35 | 0.32 | 21.45 |
| | Q | 0 | .18 | 0 | 0 | 0 | 0 | .01 | 0 | 0 | 0 | 0 | 0 | .19 |
| 1959 | P | 2.32 | 1.98 | 1.95 | 4.10 | 2.99 | 1.60 | 5.67 | 5.13 | 3.31 | 5.24 | 2.79 | 1.92 | 39.00 |
| | Q | .35 | 1.67 | 3.93 | .01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5.96 |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | | East Lansing, Michigan Watershed B | | | | | | | | |
|---|-------------------|------|---|------|---------|------|---------|------------------------------------|----------|------|-------|------|--------|------|--------|------|
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 7-11 | 2.37 | 7-11 | 0.28 | 7-11 | 0.37 | 7-11 | 0.45 | 7-11 | 0.45 | 7-11 | 0.45 | 7-11 | 0.45 | 7-8 | 0.61 |
| 1958 | 2-25 | .03 | 2-25 | .02 | 2-25 | .03 | 2-25 | .05 | 2-24 | .09 | 2-24 | .18 | 2-24 | .18 | 2-24 | .18 |
| 1959 | 3-15 | .51 | 3-15 | .25 | 3-6 | .40 | 3-5 | .93 | 3-14 | 1.22 | 3-14 | 1.51 | 3-14 | 1.63 | 2-27 | 3.37 |

Notes: Quality of records: excellent. Watershed conditions: 1957 - corn, 1958 - oats and 1959 - Alfalfa-Brome hay.
 Corrections: Q - 1950, February 1.24, March 2.07. Q - 1951, February 1.43, Total 1.52.

| SELECTED RUNOFF EVENTS | | | | | | East Lansing, Michigan Watershed B | | |
|------------------------|-------------------|-----------------|---------------|-------------------|---------------|------------------------------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of March 5, 1959 | | | | | | | | |
| 2-5-59 | 0.04 s | 0 | 3-5-59 | Raingage | Cult. | 3-5-59 | | |
| 2-9 | .30 rs | 0 | 9:32p | 0 | 0 | 2:44p | 0 | 0 |
| 2-10 | .47 rs | .19 | :42 | .12 | .02 | :54 | .0033 | .0003 |
| 2-11 | .08 rs | .16 | :56 | .09 | .04 | 3:26 | .0054 | .0027 |
| 2-12 | .09 | 0 | 11:04 | .04 | .09 | 5:50 | .0105 | .0218 |
| 2-13 | .02 | .26 | :32 | 0 | .09 | 6:30 | .0077 | .0279 |
| 2-14 | .28 | .33 | :42 | .18 | .12 | 8:20 | .0054 | .0399 |
| 2-15 | T rs | .13 | 12:00 | .03 | .13 | 9:50 | .0054 | .0480 |
| 2-18 | .10 | 0 | 3-6-59 | | | 10:08 | .0077 | .0499 |
| 2-21 | T s | 0 | :10a | 0 | .13 | :41 | .0212 | .0574 |
| 2-23 | .34 rs | .15 | :24 | .13 | .16 | :48 | .0299 | .0603 |
| 2-24 | 0 | .11 | :36 | 0 | .16 | 11:07 | .0759 | .0774 |
| 2-25 | 0 | .01 | 1:02 | .07 | .19 | :16 | .0830 | .0893 |
| 2-26 | .06 rs | .03 | :12 | .30 | .24 | :36 | .0904 | .1182 |
| 2-27 | T | .10 | :18 | 0 | .24 | :43 | .0984 | .1293 |
| 2-28 | 0 | .21 | :26 | .23 | .27 | :47 | .1065 | .1361 |
| 3-1 | 0 | .45 | :36 | 0 | .27 | 3-6-59 | | |
| 3-2 | T | .57 | :38 | .30 | .28 | 12:20a | .1234 | .1997 |
| 3-3 | .02 s | .46 | :44 | 0 | .28 | :26 | .1330 | .2125 |
| 3-4 | 0 | .22 | 2:36 | .08 | .35 | 1:08 | .1330 | .3056 |
| 3-5 | 0 | .02 | 3:46 | .13 | .50 | :20 | .1616 | .3351 |
| | | | 4:08 | .03 | .51 | :36 | .1939 | .3825 |
| | | | :24 | .08 | .53 | :58 | .1939 | .4535 |
| | | | 7:00 | .01 | .55 | 2:13 | .2057 | .5035 |
| | | | :24 | .05 | .57 | :24 | .1939 | .5401 |
| | | | | | | :45 | .1939 | .6080 |
| | | | | | | :54 | .2057 | .6380 |
| | | | | | | 3:20 | .2057 | .7271 |
| | | | | | | :28 | .2174 | .7553 |
| | | | | | | :36 | .2174 | .7844 |

Notes: To convert runoff in in/hr to cfs, multiply by 1.36. On March 3, 1959 there was about 3 inches of water stored on the surface of the watershed in the form of ice and snow. For map of watershed, see page 23.1-6.

Cooperative Research Project of USDA and Michigan Agricultural Experiment Station

| SELECTED RUNOFF EVENTS | | | East Lansing, Michigan Watershed B | | | | | |
|--|-------------------|-----------------|------------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| | | | Event of March 5, 1959 - Continued | | | | | |
| | | | | | | 3:50a | 0.1939 | 0.8323 |
| | | | | | | 4:26 | .1425 | .9329 |
| | | | | | | 5:13 | .0830 | 1.0198 |
| | | | | | | :22 | .0759 | 1.0317 |
| | | | | | | 6:02 | .0563 | 1.0757 |
| | | | | | | :37 | .0448 | 1.1052 |
| | | | | | | 7:14 | .0395 | 1.1312 |
| | | | | | | 8:22 | .0346 | 1.1732 |
| | | | | | | :30 | .0346 | 1.1778 |
| | | | | | | 9:20 | .0255 | 1.2029 |
| | | | | | | :36 | .0255 | 1.2097 |
| | | | | | | :45 | .0299 | 1.2138 |
| Watershed conditions: Alfalfa-Brome meadow. Surface soil frozen. | | | | | | 10:04 | .0212 | 1.2219 |
| | | | | | | :32 | .0255 | 1.2328 |
| | | | | | | :50 | .0172 | 1.2389 |
| | | | | | | 11:20 | .0172 | 1.2475 |
| | | | | | | :32 | .0212 | 1.2514 |
| | | | | | | :40 | .0172 | 1.2539 |
| | | | | | | 12:35p | .0137 | 1.2681 |
| | | | | | | 1:40 | .0105 | 1.2812 |
| | | | | | | 4:44 | .0054 | 1.3056 |
| | | | | | | 5:24 | .0054 | 1.3092 |
| | | | :42 | .0077 | 1.3112 | | | |
| | | | 6:14 | .0054 | 1.3147 | | | |
| | | | :34 | .0033 | 1.3161 | | | |
| | | | 8:30 | .0015 | 1.3207 | | | |
| | | | 10:56 | .0015 | 1.3244 | | | |
| | | | 11:04 | .0033 | 1.3247 | | | |
| | | | :27 | .0054 | 1.3261 | | | |
| | | | :40 | .0033 | 1.3270 | | | |
| | | | 12:00m | .0033 | 1.3281 | | | |
| | | | 3-7-59 | | | | | |
| | | | 12:46a | .0044 | 1.3315 | | | |
| | | | :55 | .0077 | 1.3325 | | | |
| | | | 1:16 | .0172 | 1.3368 | | | |
| | | | :22 | .0212 | 1.3387 | | | |
| | | | :34 | .0172 | 1.3426 | | | |
| | | | :52 | .0172 | 1.3477 | | | |
| | | | :57 | .0137 | 1.3493 | | | |
| | | | 2:22 | .0105 | 1.3501 | | | |
| | | | :48 | 0 | 1.3513 | | | |

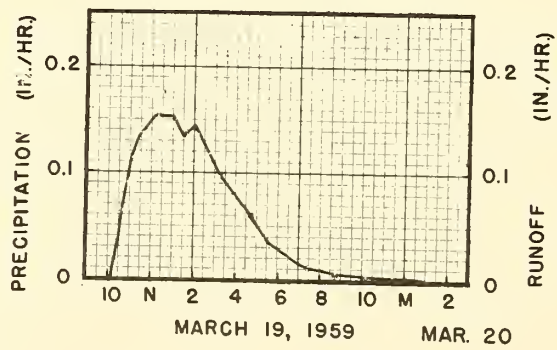
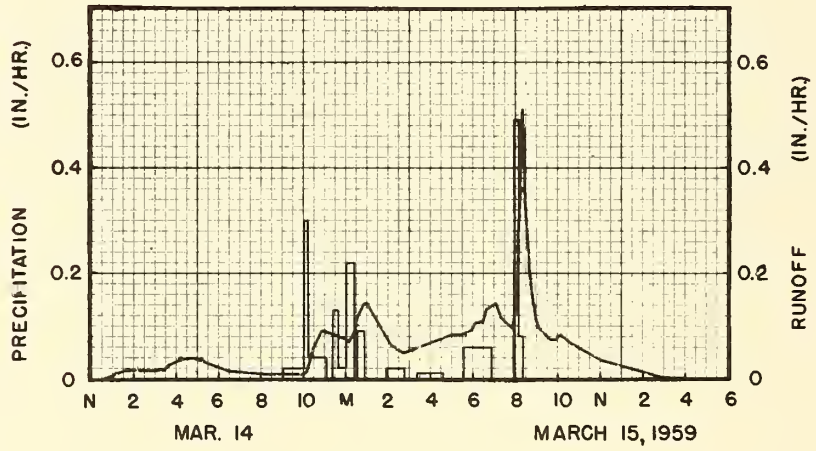
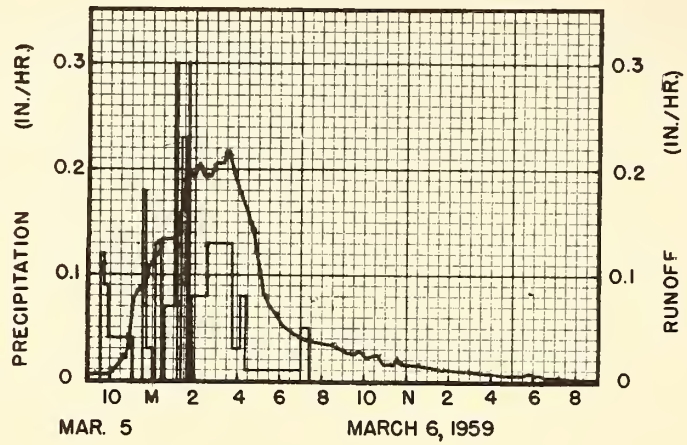
Notes: To convert runoff in in/hr to cfs, multiply by 1.36. On March 3, 1959 there was about 3 inches of water stored on the surface of the watershed in the form of snow and ice.

| SELECTED RUNOFF EVENTS | | | | | | East Lansing, Michigan Watershed B | | |
|--|-------------------|-----------------|---------------|-------------------|---------------|------------------------------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of March 14, 1959</u> | | | | | | | | |
| 2-14-59 | 0.28 | 0.33 | 3-14-59 | Raingage | Cult. | 3-14-59 | | |
| 2-15 | T rs | .13 | 9:00p | 0 | 0 | 12:34p | 0 | 0 |
| 2-18 | .10 | 0 | 10:00 | .02 | .02 | :38 | .0033 | .0001 |
| 2-21 | T s | 0 | :08 | .30 | .06 | :58 | .0054 | .0016 |
| 2-23 | .34 rs | .15 | 11:04 | .04 | .12 | 1:40 | .0172 | .0095 |
| 2-24 | 0 | .11 | :22 | 0 | .12 | 3:20 | .0172 | .0382 |
| 2-25 | 0 | .01 | :36 | .13 | .15 | :40 | .0212 | .0446 |
| 2-26 | .06 rs | .03 | 12:00 | .02 | .16 | 4:10 | .0346 | .0585 |
| 2-27 | T | .10 | 3-15-59 | | | :36 | .0395 | .0746 |
| 2-28 | 0 | .21 | 12:22 | .22 | .24 | :54 | .0395 | .0864 |
| 3-1 | 0 | .45 | :30 | 0 | .24 | 6:24 | .0172 | .1277 |
| 3-2 | T | .57 | :50 | .09 | .27 | 8:24 | .0077 | .1507 |
| 3-3 | .02 s | .46 | 1:52 | 0 | .27 | 9:54 | .0077 | .1622 |
| 3-4 | 0 | .22 | 2:42 | .02 | .29 | 10:08 | .0105 | .1644 |
| 3-5 | .16 | .18 | 3:20 | 0 | .29 | :29 | .0563 | .1747 |
| 3-6 | .45 | 1.17 | 4:34 | .01 | .30 | :53 | .0904 | .2042 |
| 3-7 | 0 | .02 | 5:32 | 0 | .30 | 11:00 | .0904 | .2148 |
| 3-8 | .07 s | .01 | 6:48 | .06 | .37 | 12:00 | .0759 | .2971 |
| 3-9 | T s | 0 | 7:56 | 0 | .37 | 3-15-59 | | |
| 3-12 | T s | .04 | 8:12 | .49 | .50 | :10 ^a | .0691 | .3092 |
| 3-13 | .02 | .10 | :20 | .08 | .51 | :20 | .0830 | .3217 |
| 3-14 | 0 | .01 | | | | :31 | .1146 | .3399 |
| | | | | | | :50 | .1425 | .3811 |
| | | | | | | 1:00 | .1425 | .4048 |
| | | | | | | 2:08 | .0625 | .5146 |
| | | | | | | :43 | .0504 | .5475 |
| | | | | | | 5:00 | .0830 | .6983 |
| | | | | | | :30 | .0830 | .7398 |
| | | | | | | :50 | .0904 | .7687 |
| | | | | | | 6:06 | .1065 | .7949 |
| | | | | | | :27 | .1065 | .8322 |
| | | | | | | :39 | .1330 | .8561 |
| | | | | | | 7:04 | .1425 | .9135 |
| | | | | | | :19 | .1146 | .9457 |
| | | | | | | :50 | .0984 | .9998 |
| | | | | | | 8:00 | .1234 | 1.0179 |
| | | | | | | :03 | .1521 | 1.0247 |
| | | | | | | :10 | .2424 | 1.0472 |
| | | | | | | :15 | .3555 | 1.0713 |
| | | | | | | :21 | .3120 | 1.1162 |
| | | | | | | :24 | .4555 | 1.1408 |
| | | | | | | :29 | .3401 | 1.1740 |
| | | | | | | :39 | .2057 | 1.2190 |
| | | | | | | :50 | .1425 | 1.2510 |
| | | | | | | :58 | .1146 | 1.2682 |
| | | | | | | 9:05 | .0984 | 1.2806 |
| | | | | | | :38 | .0759 | 1.3266 |
| | | | | | | :50 | .0759 | 1.3417 |
| | | | | | | 10:10 | .0830 | 1.3682 |
| | | | | | | :34 | .0691 | 1.3986 |
| | | | | | | 12:00 | .0395 | 1.4749 |
| | | | | | | 3:00p | .0033 | 1.5361 |
| | | | | | | :40 | .0015 | 1.5377 |
| | | | | | | 4:40 | .0015 | 1.5392 |
| | | | | | | :42 | 0 | 1.5392 |
| <p><u>Watershed conditions:</u> Alfalfa-Brome meadow. Surface soil frozen.</p> | | | | | | | | |

Notes: To convert runoff in in/hr to cfs, multiply by 1.36. On March 3, 1959 there was about 3 inches of water stored on the surface of the watershed in the form of snow and ice.

| SELECTED RUNOFF EVENTS | | | East Lansing, Michigan Watershed B | | | | | |
|---|-------------------|-----------------|------------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of March 19, 1959 | | | | | | | | |
| 2-21-59 | T s | | | Raingage | Cult. | 3-19-59 | | |
| 2-23 | .34 rs | 0.15 | | | | 10:08a | 0 | 0 |
| 2-24 | 0 | .11 | | | | :16 | .0172 | .0014 |
| 2-25 | 0 | .01 | | | | :26 | .0346 | .0057 |
| 2-26 | .06 rs | .03 | | | | :40 | .0625 | .0170 |
| 2-27 | T | .10 | | | | 11:04 | .1146 | .0523 |
| 2-28 | 0 | .21 | | | | :22 | .1330 | .0895 |
| 3-1 | 0 | .45 | | | | 12:10p | .1521 | .2032 |
| 3-2 | T | .57 | | | | 1:00 | .1521 | .3299 |
| 3-3 | .02 s | .46 | | | | :30 | .1330 | .4012 |
| 3-4 | 0 | .22 | | No precipitation | | 2:00 | .1425 | .4701 |
| 3-5 | .16 | .18 | | | | 3:18 | .0984 | .6246 |
| 3-6 | .45 | 1.17 | | | | 4:21 | .0691 | .7127 |
| 3-7 | 0 | .02 | | | | 5:32 | .0346 | .7731 |
| 3-8 | .07 s | .01 | | | | 7:00 | .0137 | .8074 |
| 3-9 | T s | 0 | | | | :20 | .0105 | .8114 |
| 3-12 | T s | .04 | | | | 8:40 | .0054 | .8220 |
| 3-13 | .02 | .10 | | | | 10:30 | .0033 | .8300 |
| 3-14 | .16 | .31 | | | | 12:00 | .0015 | .8336 |
| 3-15 | .39 rs | 1.24 | | | | 3-20-59 | | |
| 3-16 | 0 | .10 | | | | 12:50a | .0015 | .8349 |
| 3-17 | .09 s | 0 | | | | :58 | 0 | .8350 |
| 3-18 | 0 | .16 | | | | | | |
| <p>Watershed conditions: Alfalfa-Brome meadow. Surface soil frozen.</p> | | | | | | | | |

Notes: To convert runoff in in/hr to cfs, multiply by 1.36. On March 3, 1959 there was about 3 inches of water stored on the surface of the watershed in the form of snow and ice.



EAST LANSING, MICHIGAN WATERSHED B

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | East Lansing, Michigan Watershed W (Area - 1.65 acres) | | | | | | | |
|---|-------|------|------|------|------|------|---|------|------|-------|------|------|------|-------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 | P | 0.76 | 2.43 | 1.82 | 4.23 | 5.93 | 2.97 | 3.23 | 4.88 | 0.89 | 0.36 | 1.37 | 1.56 | 30.43 |
| | Q | 0 | 0 | 0 | .31 | .46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .77 |
| 1957 | P | 1.76 | 1.58 | 1.62 | 3.46 | 5.68 | 3.61 | 7.14 | 1.87 | 1.60 | 4.06 | 2.70 | 2.25 | 37.33 |
| | Q | 0 | 0 | 0 | 0 | .92 | 0 | .01 | 0 | 0 | 0 | 0 | 0 | .93 |
| 1958 | P | 0.94 | 0.49 | 0.59 | 1.68 | 1.05 | 2.15 | 3.95 | 3.40 | 2.89 | 2.34 | 1.79 | 0.50 | 21.77 |
| | Q | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1959 | P | 2.93 | 2.18 | 2.59 | 3.68 | 2.77 | 0.65 | 4.33 | 6.00 | 2.30 | 5.02 | 3.10 | 2.47 | 38.02 |
| | Q | 0 | .04 | 0 | .12 | 0 | 0 | 0 | 0 | 0 | T | 0 | 0 | .16 |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | East Lansing, Michigan Watershed W | | | | | | | | | |
|---|-------------------|------|---|------|---------|------|------------------------------------|------|----------|------|-------|------|--------|------|--------|------|
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 5-18 | 0.01 | 5-18 | 0.01 | 5-18 | 0.01 | 5-18 | 0.05 | 5-18 | 0.07 | 5-18 | 0.09 | 5-18 | 0.09 | 5-18 | 0.09 |
| 1958 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1959 | 2-12 | .01 | 4-1 | .01 | 4-1 | .02 | 4-1 | .05 | 4-1 | .08 | 4-1 | .06 | 4-1 | .12 | 4-1 | .12 |

Notes: Quality of records: excellent. Watershed condition: oak-hickory woodlot.

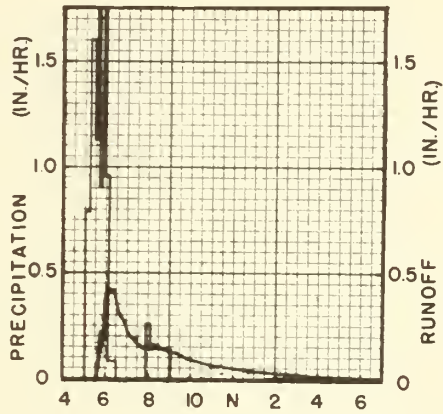
| SELECTED RUNOFF EVENTS | | | | | | East Lansing, Michigan Watershed W | | | | | |
|------------------------|-------------------|-----------------|---------------|-------------------|---------------|------------------------------------|--------------|---------------|--|--|--|
| Antecedent conditions | | | Rainfall | | | Runoff | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | |
| Event of June 2, 1943 | | | | | | | | | | | |
| 5-2-43 | 0.07 | 0 | 6-2-43 | Raingage | Woods | 6-2-43 | | | | | |
| 5-5 | .30 | 0 | 5:00a | 0 | 0 | 5:34a | 0 | 0 | | | |
| 5-8 | .81 | 0 | :16 | .78 | .21 | :41 | .0740 | .0026 | | | |
| 5-10 | .18 | 0 | :25 | 1.60 | .45 | :46½ | .2197 | .0146 | | | |
| 5-11 | 1.50 | .30 | | | | | | | | | |
| 5-15 | .12 | 0 | 5:33 | 1.13 | .60 | 5:48 | .1782 | .0194 | | | |
| 5-16 | .51 | 0 | :41 | 3.30 | 1.04 | :55 | .3732 | .0514 | | | |
| 5-17 | .07 | 0 | :47 | .90 | 1.13 | 6:08 | .4352 | .1381 | | | |
| 5-18 | .19 | 0 | :56 | 3.12 | 1.60 | :12 | .4196 | .1666 | | | |
| 5-19 | .08 | 0 | 6:06 | .96 | 1.76 | :20 | .4196 | .2225 | | | |
| 5-20 | .56 | 0 | :30 | .08 | 1.79 | :30 | .3732 | .2892 | | | |
| 5-21 | .16 | 0 | 7:51 | 0 | 1.79 | :40 | .3040 | .3540 | | | |
| 5-23 | .02 | 0 | 8:05 | .26 | 1.85 | :49 | .2661 | .3968 | | | |
| 5-24 | 1.02 | T | 9:01 | .14 | 1.98 | 7:02 | .2197 | .4492 | | | |
| 5-25 | .06 | 0 | | | | :21 | .1782 | .5120 | | | |
| 5-29 | .21 | 0 | | | | :50 | .1409 | .5885 | | | |
| 5-30 | .39 | 0 | | | | :58 | .1499 | .6079 | | | |
| 5-31 | .27 | 0 | | | | 8:08 | .1409 | .6321 | | | |
| 6-1 | .59 | 0 | | | | :16 | .1589 | .6523 | | | |
| 6-2 | .15 | 0 | | | | :26 | .1589 | .6788 | | | |
| | | | | | | :32 | .1499 | .6942 | | | |
| | | | | | | 9:34 | .1090 | .8282 | | | |
| | | | | | | :52 | .0939 | .8587 | | | |
| | | | | | | 10:55 | .0680 | .9437 | | | |
| | | | | | | 12:56 | .0367 | 1.0469 | | | |
| | | | | | | 3:50p | .0141 | 1.1201 | | | |

Notes: To convert runoff in in/hr to cfs, multiply by 1.66.

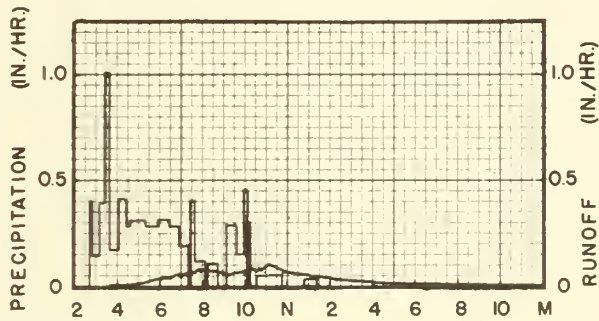
| SELECTED RUNOFF EVENTS | | | East Lansing, Michigan Watershed W | | | | | |
|---|-------------------|-----------------|------------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of June 2, 1943 - Continued | | | | | | | | |
| | | | | | | 5:52p | 0.0086 | 1.1435 |
| | | | | | | 7:01 | .0063 | 1.1521 |
| | | | | | | 8:18 | .0044 | 1.1590 |
| | | | | | | 10:05 | .0027 | 1.1654 |
| | | | | | | 6-3-43 | | |
| | | | | | | 1:44a | 0 | 1.1698 |
| Event of April 5, 1947 | | | | | | | | |
| 3-13-47 | 0.24 | 0 | 4-5-47 | Raingage | Woods | 4-5-47 | | |
| 3-14 | T | 0 | 2:43a | 0 | 0 | 3:40a | 0 | 0 |
| 3-15 | .01 s | 0 | :49 | .40 | .04 | 4:02 | .0027 | .0002 |
| 3-16 | .01 | 0 | 3:11 | .14 | .09 | :16 | .0086 | .0015 |
| 3-17 | T | 0 | :25 | .39 | .18 | :19 | .0086 | .0019 |
| 3-21 | .02 s | 0 | :41 | 1.01 | .45 | :39 | .0141 | .0057 |
| 3-23 | .25 | 0 | 4:02 | .17 | .51 | :57 | .0173 | .0104 |
| | | | :24 | .41 | .66 | 5:07 | .0209 | .0136 |
| | | | :39 | .28 | .73 | :37 | .0283 | .0259 |
| | | | 5:22 | .32 | .96 | 6:05 | .0367 | .0410 |
| | | | :54 | .28 | 1.11 | :35 | .0460 | .0616 |
| | | | 6:28 | .32 | 1.29 | :43 | .0512 | .0681 |
| | | | :52 | .28 | 1.40 | :54 | .0512 | .0775 |
| | | | 7:21 | .19 | 1.49 | 7:16 | .0565 | .0972 |
| | | | :23 | 0 | 1.49 | :34 | .0621 | .1150 |
| | | | :41 | .40 | 1.61 | :41 | .0621 | .1222 |
| | | | 8:06 | .12 | 1.66 | :45 | .0739 | .1267 |
| | | | :14 | 0 | 1.66 | 8:03 | .0739 | .1489 |
| | | | :46 | .11 | 1.72 | :56 | .0621 | .2083 |
| | | | 9:12 | 0 | 1.72 | 9:08 | .0565 | .2202 |
| | | | :36 | .28 | 1.83 | :14 | .0565 | .2259 |
| | | | :56 | .15 | 1.88 | :26 | .0621 | .2378 |
| | | | 10:04 | .45 | 1.94 | :58 | .0679 | .2725 |
| | | | :08 | 0 | 1.94 | 10:13 | .0739 | .2902 |
| | | | :12 | .30 | 1.96 | :17 | .0805 | .2953 |
| | | | :32 | 0 | 1.96 | :27 | .0739 | .3082 |
| | | | 11:44 | .10 | 2.08 | :33 | .0739 | .3156 |
| | | | 12:44p | 0 | 2.08 | :37 | .0872 | .3210 |
| | | | 1:20 | .07 | 2.12 | :45 | .0805 | .3325 |
| | | | :52 | 0 | 2.12 | 11:07 | .1010 | .3663 |
| | | | 2:56 | .04 | 2.16 | :56 | .0679 | .4331 |
| | | | | | | 2:14p | .0367 | .5519 |
| | | | | | | 3:16 | .0283 | .5852 |
| | | | | | | 4:02 | .0245 | .6054 |
| | | | | | | :32 | .0209 | .6168 |
| | | | | | | 5:18 | .0173 | .6314 |
| | | | | | | 6:00 | .0173 | .6435 |
| | | | | | | 8:20 | .0141 | .6801 |
| | | | | | | 10:44 | .0086 | .7068 |
| | | | | | | 12:00 | .0063 | .7162 |
| | | | | | | 4-6-47 | | |
| | | | | | | 2:20a | .0044 | .7287 |
| | | | | | | 3:50 | .0027 | .7340 |
| | | | | | | 5:30 | .0013 | .7373 |
| | | | | | | 9:09 | 0 | .7397 |
| Notes: To convert runoff in in/hr to cfs, multiply by 1.66. | | | | | | | | |

| SELECTED RUNOFF EVENTS | | | | | | East Lansing, Michigan Watershed W | | |
|--|-------------------|-----------------|---------------|-------------------|---------------|------------------------------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of March 19, 1948</u> | | | | | | | | |
| 2-24-48 | T | 0 | 3-19-48 | Raingage | Woods | 3-19-48 | | |
| 2-25 | .02 | 0 | 4:05a | 0 | 0 | 6:43a | 0 | 0 |
| 2-27 | .93 | 0 | :32 | .29 | .13 | :57 | .0209 | .0030 |
| 2-28 | .49 | 0 | :58 | .05 | .15 | 7:10 | .0245 | .0079 |
| 2-29 | T | 0 | 5:47 | .23 | .34 | :20 | .0245 | .0120 |
| 3-1 | .03 | 0 | 6:03 | .45 | .46 | :21 | .0367 | .0125 |
| 3-2 | .43 | 0 | :15 | 1.30 | .72 | :30 | .0412 | .0183 |
| 3-6 | .01 | 0 | :22 | .51 | .78 | :47 | .0323 | .0287 |
| 3-7 | .02 | 0 | 7:02 | .27 | .96 | :58 | .0323 | .0346 |
| 3-15 | .02 | 0 | :20 | .73 | 1.18 | 8:10 | .0283 | .0407 |
| 3-16 | .18 | 0 | 8:08 | .11 | 1.27 | :24 | .0283 | .0473 |
| 3-17 | T | 0 | :24 | 0 | 1.27 | 9:06 | .0323 | .0685 |
| | | | :48 | .10 | 1.31 | 10:30 | .0283 | .1109 |
| | | | :52 | 0 | 1.31 | :47 | .0460 | .1214 |
| | | | 9:00 | .23 | 1.34 | :51 | .0621 | .1250 |
| | | | :10 | 0 | 1.34 | 11:11 | .0872 | .1499 |
| | | | :42 | .09 | 1.39 | :15 | .1088 | .1564 |
| | | | :59 | 0 | 1.39 | :21 | .1166 | .1677 |
| | | | 10:04 | .60 | 1.44 | :31 | .1088 | .1865 |
| | | | :20 | 0 | 1.44 | :37 | .1984 | .2019 |
| | | | :35 | .48 | 1.56 | :40 | .2086 | .2121 |
| | | | :58 | .55 | 1.77 | :55 | .1779 | .2604 |
| | | | 11:16 | .73 | 1.99 | 12:54p | .1587 | .4268 |
| | | | :25 | .13 | 2.01 | 1:24 | .1244 | .4976 |
| | | | :36 | 1.58 | 2.30 | :32 | .1244 | .5142 |
| | | | :57 | .31 | 2.41 | 2:30 | .0739 | .6100 |
| | | | 12:04p | 0 | 2.41 | :52 | .0679 | .6300 |
| | | | :06 | .60 | 2.43 | 3:51 | .0412 | .6896 |
| | | | :10 | 0 | 2.43 | 5:10 | .0245 | .7239 |
| | | | :19 | .40 | 2.49 | 10:11 | .0141 | .7911 |
| | | | :42 | .23 | 2.58 | 12:00m | .0086 | .8344 |
| | | | :46 | 0 | 2.58 | 3-20-48 | | |
| | | | :56 | .24 | 2.62 | 9:00a | .0013 | .8790 |
| | | | 1:11 | 0 | 2.62 | 1:40p | 0 | .8842 |
| | | | :12 | .60 | 2.63 | | | |
| | | | :17 | 0 | 2.63 | | | |
| | | | 2:04 | .04 | 2.66 | | | |
| <u>Watershed conditions:</u> Oak-hickory woodlot. | | | | | | | | |

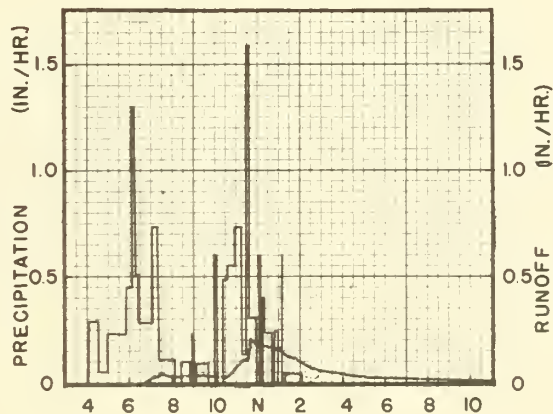
Notes: To convert runoff in in/hr to cfs, multiply by 1.66.



JUNE 2, 1943

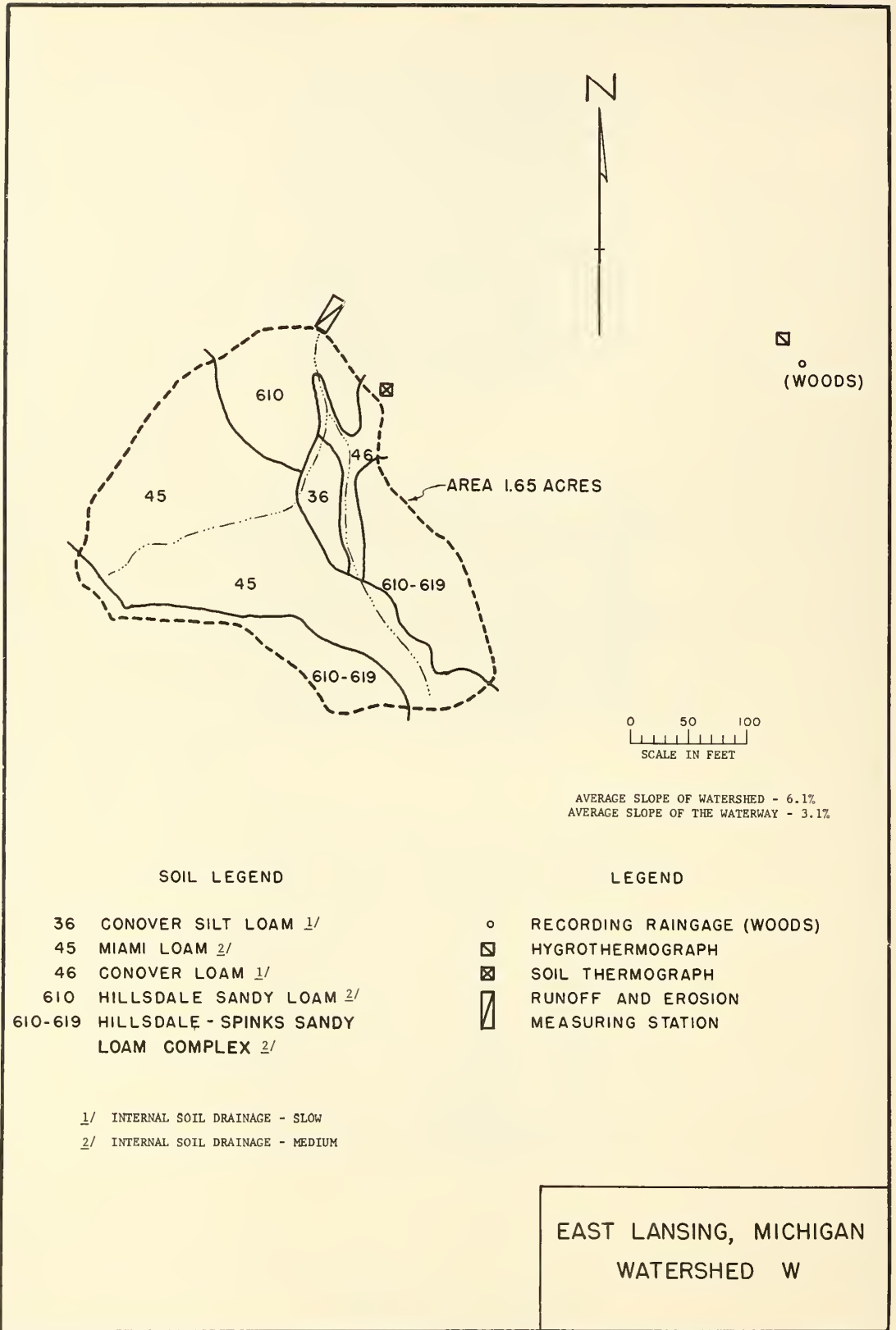


APRIL 5, 1947



MARCH 19, 1948

EAST LANSING, MICHIGAN WATERSHED μ



| SELECTED RUNOFF EVENTS | | | | | | McCredie, Missouri Station Reservoir Watershed W-1 | | |
|--|-------------------|-----------------|---------------|-------------------|---------------|--|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of October 4-5, 1941 - Continued</u> | | | | | | | | |
| | | | 3:15p | 2.20 | 3.81 | 4:00p | 0.706 | 3.4158 |
| | | | :31 | 1.01 | 4.08 | :10 | .574 | 3.5218 |
| | | | :40 | .47 | 4.15 | :20 | .486 | 3.6098 |
| | | | :48 | 1.80 | 4.39 | :25 | .455 | 3.6488 |
| | | | :59 | .60 | 4.50 | :30 | .462 | 3.6868 |
| | | | 4:12 | .05 | 4.51 | :40 | .528 | 3.7698 |
| | | | :31 | .66 | 4.72 | :50 | .587 | 3.8618 |
| | | | :39 | .53 | 4.79 | 5:00 | .680 | 3.9678 |
| | | | :52 | 1.38 | 5.09 | :05 | .720 | 4.0258 |
| | | | 5:15 | .21 | 5.17 | :15 | .633 | 4.1378 |
| | | | :52 | 1.34 | 6.00 | :20 | .653 | 4.1918 |
| | | | 6:00 | .30 | 6.04 | :30 | .950 | 4.3248 |
| | | | :37 | .05 | 6.07 | :40 | 1.14 | 4.4988 |
| | | | :49 | 1.15 | 6.30 | :50 | 1.44 | 4.7158 |
| | | | :59 | .84 | 6.44 | :55 | 1.39 | 4.8338 |
| | | | 7:09 | 2.22 | 6.81 | 6:00 | 1.19 | 4.9408 |
| | | | :15 | 3.40 | 7.15 | :15 | .757 | 5.1838 |
| | | | :28 | .42 | 7.24 | :30 | .488 | 5.3338 |
| | | | :44 | .19 | 7.29 | :45 | .336 | 5.4368 |
| | | | 8:35 | .09 | 7.37 | :50 | .462 | 5.4698 |
| | | | :46 | .22 | 7.41 | 7:00 | .757 | 5.5718 |
| | | | 9:49 | .09 | 7.50 | :10 | 1.54 | 5.7668 |
| | | | :56 | .26 | 7.53 | :20 | 2.01 | 6.0668 |
| | | | | | | :25 | 1.60 | 6.2168 |
| | | | | | | :30 | 1.35 | 6.3428 |
| | | | | R-2 | 7.50 | :40 | .958 | 6.5298 |
| | | | | R-3 | 7.33 | :50 | .663 | 6.6648 |
| | | | | R-5 | 7.40 | 8:00 | .444 | 6.7568 |
| | | | | Average | 7.46 | :30 | .275 | 6.9338 |
| | | | | | | 9:00 | .168 | 7.0428 |
| | | | | | | 11:00 | .0818 | 7.2926 |
| | | | | | | 12:00m | e .0500 | 7.3585 |
| | | | | | | 10-5-41 | | |
| | | | | | | 1:00a 1/ | e .0220 | 7.3945 |
| <u>Event of June 26, 1942</u> | | | | | | | | |
| 5-26-42 | 0.77 | 0.034 | 6-26-42 | Raingage | R-4 | 6-26-42 | | |
| 6-7 | 1.60 | .136 | 1:41a | 0 | 0 | 1:50a | 0 | 0 |
| 6-9 | .37 | 0 | :45 | 1.65 | .11 | 2:00 | .0315 | .0026 |
| 6-10 | 1.74 | .878 | :49 | 1.65 | .22 | :05 | .0787 | .0072 |
| 6-11 | .19 | 0 | :55 | .20 | .24 | :10 | .102 | .0147 |
| 6-13 | .56 | .180 | :59 | 0 | .24 | :15 | .0722 | .0220 |
| 6-15 | .05 | 0 | 2:03 | .90 | .30 | :20 | .0429 | .0268 |
| 6-18 | 1.27 | .646 | :11 | .15 | .32 | :25 | .114 | .0333 |
| 6-19 | .09 | 0 | :21 | .72 | .44 | :35 | .417 | .0767 |
| 6-20 | .06 | 0 | :28 | 1.89 | .66 | :45 | .662 | .1659 |
| 6-21 | .18 | 0 | :32 | 1.95 | .79 | :55 | .941 | .3007 |
| 6-22 | .06 | 0 | :39 | 1.03 | .91 | 3:00 | .944 | .3795 |
| 6-25 | 1.40 | .621 | :43 | 1.50 | 1.01 | :05 | .883 | .4556 |
| | | | :48 | .72 | 1.07 | :10 | .868 | .5286 |
| | | | :53 | .36 | 1.10 | :20 | .589 | .6544 |
| | | | 3:00 | .09 | 1.11 | :30 | .425 | .7377 |
| | | | :05 | .36 | 1.14 | :40 | .286 | .7965 |
| | | | :47 | .01 | 1.15 | :50 | .174 | .8344 |
| | | | :49 | .90 | 1.18 | :55 | .152 | .8480 |
| | | | :53 | 1.95 | 1.31 | 4:00 | .247 | .8648 |
| | | | :56 | .80 | 1.35 | :10 | .409 | .9181 |
| | | | 4:01 | 2.04 | 1.52 | :20 | .557 | .9986 |
| | | | :05 | .15 | 1.53 | :30 | .624 | 1.0970 |
| | | | :15 | 1.02 | 1.70 | :40 | .673 | 1.2051 |
| | | | :18 | 0 | 1.70 | :50 | .714 | 1.3207 |
| <u>Watershed Conditions</u> | | | | | | | | |
| 23% - corn, oats, soybean rotation; | | | | | | | | |
| 3% - soybean, wheat, meadow rotation; | | | | | | | | |
| 12% - pasture plots; 56% - unimproved pasture; 6% - miscellaneous roads, farmstead, & plots. | | | | | | | | |

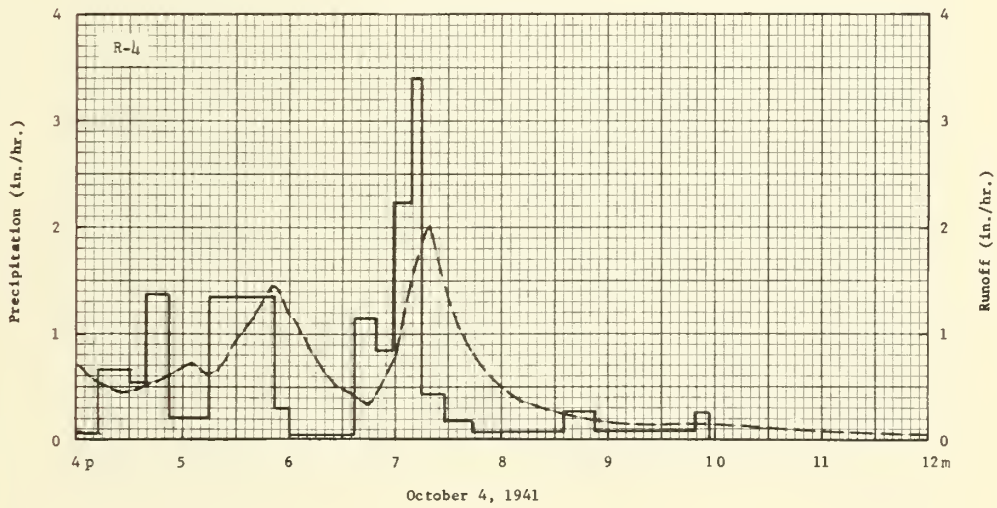
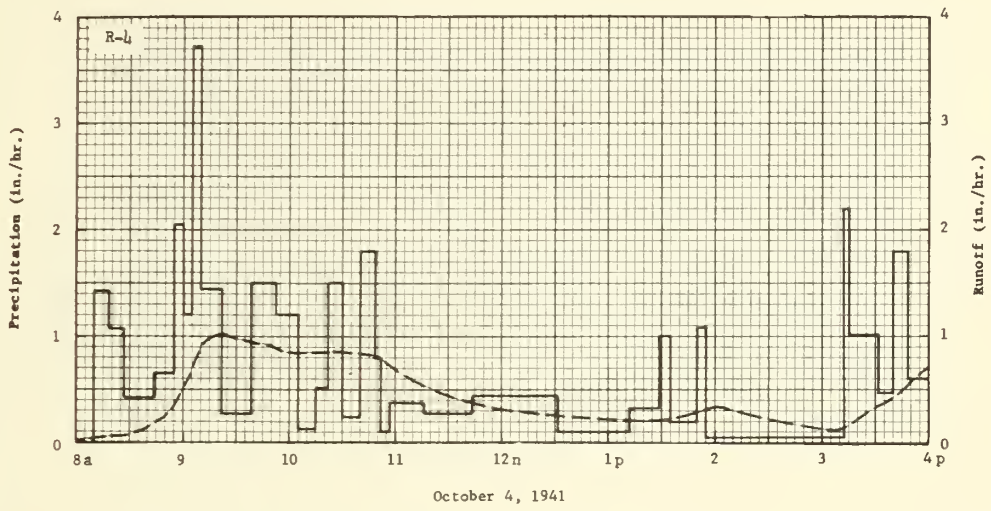
Notes: To convert runoff in in/hr to cfs, multiply by 154.274. 1/ Runoff continued at rate less than 0.02 inches per hour until next event 10-9-41.

| SELECTED RUNOFF EVENTS | | | McCredie, Missouri/ Station Reservoir Watershed W-1 | | | | | |
|------------------------------------|-------------------|-----------------|---|-------------------|---------------|---------------|-------------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| | | | <u>Event of June 26, 1942 - Continued</u> | | | | | |
| | | | 4:30a | 0.75 | 1.85 | 5:00a | 0.7400 | 1.4418 |
| | | | :35 | 1.08 | 1.94 | :10 | .575 | 1.5513 |
| | | | :40 | .72 | 2.00 | :20 | .494 | 1.6403 |
| | | | :48 | .90 | 2.12 | :30 | .381 | 1.7132 |
| | | | :55 | .26 | 2.15 | :40 | .303 | 1.7702 |
| | | | 5:30 | .12 | 2.22 | :50 | .225 | 1.8142 |
| | | | 7:00 | .05 | 2.30 | 6:00 | .178 | 1.8444 |
| | | | | | | :20 | .132 | 1.8960 |
| | | | | Std-1 | 2.00 | :40 | .0997 | 1.9346 |
| | | | | | | 7:00 | .0713 | 1.9631 |
| | | | | R-2 | 2.05 | 8:00 | .0534 | 2.0243 |
| | | | | R-3 | 2.30 | 9:00 | .0337 | 2.0703 |
| | | | | R-5 | 2.33 | 10:00 | e .0277 <u>1/</u> | 2.1006 |
| | | | | Average | 2.17 | 11:00 | e .0086 | 2.1180 |
| | | | <u>Event of June 7, 1945</u> | | | | | |
| 5-6-45 | 0.06 | 0 | 6-7-45 | Raingage | R-4 | 6-7-45 | | |
| 5-7 | .37 | 0 | 2:54a | 0 | 0 | 2:55a | 0 | 0 |
| 5-9 | .04 | 0 | 3:00 | 2.30 | .23 | 3:00 | .117 | .0049 |
| 5-14 | 1.18 | .138 | :05 | 2.52 | .44 | :10 | .171 | .0289 |
| 5-15 | .68 | .800 | :10 | 2.04 | .61 | :20 | .329 | .0705 |
| 5-16 | .98 | .701 | :15 | 1.68 | .75 | :30 | .410 | .1321 |
| 5-17 | .22 | .178 | :20 | .84 | .82 | :40 | .372 | .1973 |
| 5-24 | .13 | 0 | :30 | .06 | .83 | :50 | .314 | .2544 |
| 5-25 | .34 | 0 | :40 | .42 | .90 | 4:00 | .290 | .3045 |
| 5-27 | .16 | 0 | :48 | .15 | .92 | :10 | .353 | .3583 |
| 5-28 | .53 | .016 | :53 | 1.20 | 1.02 | :20 | .410 | .4218 |
| 5-29 | .03 | 0 | 4:05 | .55 | 1.13 | :30 | .393 | .4887 |
| 6-1 | .17 | 0 | :16 | 1.04 | 1.32 | :40 | .347 | .5503 |
| 6-5 | .43 | 0 | :30 | .17 | 1.36 | :50 | .290 | .6033 |
| 6-6 | .02 | 0 | 5:25 | .02 | 1.38 | 5:00 | .237 | .6472 |
| <u>Watershed Conditions</u> | | | :57 | .26 | 1.52 | :20 | .112 | .7040 |
| 23% corn, oats, soybean rotation; | | | 6:12 | .72 | 1.70 | :40 | .0489 | .7300 |
| 3% - soybean, wheat, meadow rota- | | | :22 | .30 | 1.75 | 6:00 | .0759 | .7461 |
| tion; 12% - pasture plots; 56% - | | | :32 | .78 | 1.88 | :10 | .115 | .7623 |
| unimproved pasture; 6% - miscel- | | | :35 | 1.60 | 1.96 | :20 | .211 | .7904 |
| laneous roads, farmstead, & plots. | | | :42 | .34 | 2.00 | :30 | .292 | .8319 |
| | | | :46 | 4.50 | 2.30 | :40 | .393 | .8676 |
| | | | :54 | 1.50 | 2.50 | :45 | .472 | .9236 |
| | | | 7:05 | .20 | 2.54 | :50 | .718 | .9732 |
| | | | :12 | .69 | 2.62 | :55 | .998 | 1.0446 |
| | | | :25 | .54 | 2.71 | 7:00 | 1.18 | 1.1353 |
| | | | :35 | .36 | 2.77 | :05 | 1.17 | 1.2331 |
| | | | :55 | .36 | 2.89 | :10 | .933 | 1.3205 |
| | | | 8:05 | .09 | 2.92 | :15 | .802 | 1.3927 |
| | | | :30 | .12 | 2.97 | :20 | .692 | 1.4549 |
| | | | :45 | .04 | 2.98 | :30 | .628 | 1.5653 |
| | | | | | | :40 | .547 | 1.6631 |
| | | | | Std-1 | 3.13 | 8:00 | .424 | 1.8250 |
| | | | | R-2 | 3.06 | :20 | .326 | 1.9481 |
| | | | | | | :40 | .207 | 2.0354 |
| | | | | R-3 | 3.00 | 9:00 | .136 | 2.0913 |
| | | | | R-5 | 2.94 | :20 | .0802 | 2.1273 |
| | | | | R-6 | 2.89 | :40 | .0528 | 2.1495 |
| | | | | Average | 3.00 | 10:00 | .0489 | 2.1664 |
| | | | | | | 11:00 | .0241 | 2.2009 |
| | | | | | | 12:00n | .0046 | 2.2152 |
| | | | | | | :30 | 0 | 2.2164 |

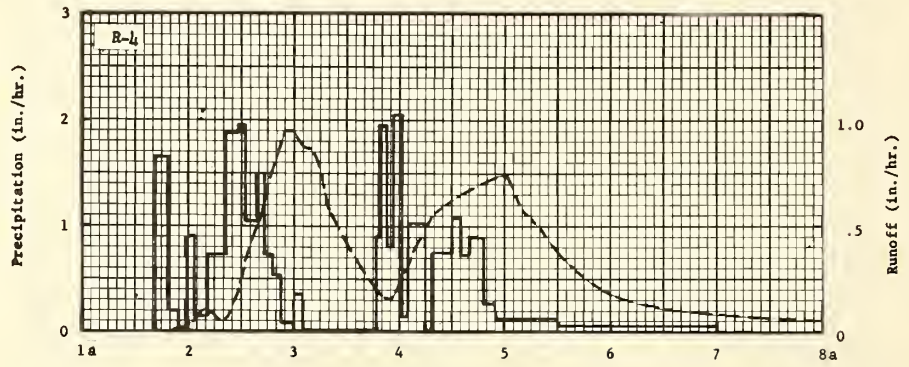
Notes: To convert runoff in in/hr to cfs, multiply by 154.274. 1/ New storm began, estimated from later recession.

| SELECTED RUNOFF EVENTS | | | McCredie, Missouri Station Reservoir Watershed W-1 | | | | | | | |
|---|-------------------|-----------------|--|-------------------|---------------|---------------|--------------|---------------|---------------|-------|
| Antecedent conditions | | | Rainfall | | | Runoff | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | |
| <u>Event of August 19, 1949</u> | | | | | | | | | | |
| 7-20-49 | 0.23 | 0 | 8-19-49 | Raingage | R-4 | 8-19-49 | | | | |
| 7-29 | .78 | 0 | 2:17p | 0 | 0 | 2:17p | 0 | 0 | | |
| 8-10 | .08 | 0 | :23 | 5.00 | .50 | :25 | .170 | .0122 | | |
| 8-12 | .37 | 0 | :29 | 5.00 | 1.00 | :35 | .322 | .0530 | | |
| 8-14 | .16 | 0 | :35 | 5.40 | 1.54 | :45 | .232 | .0981 | | |
| 8-19 | .35 <u>1/</u> | 0 | :41 | 4.60 | 2.00 | :50 | .268 | .1189 | | |
| | | | :46 | 4.80 | 2.40 | 3:00 | .359 | .1709 | | |
| | | | :53 | 2.40 | 2.68 | :10 | .344 | .2295 | | |
| | | | 3:04 | .55 | 2.78 | :30 | .290 | .3353 | | |
| | | | :45 | .03 | 2.80 | 4:00 | .173 | .4519 | | |
| <u>Watershed Conditions</u> | | | 4:10 | .12 | 2.85 | :30 | .0884 | .5157 | | |
| 23% - corn, oats, soybean rotation; 20% - corn, soybean, wheat, meadow rotation; 16% - pasture plots; 35% - unimproved pasture; 6% - miscellaneous roads, farmstead, & plots. | | | 5:00 | .04 | 2.88 | 5:00 | .0497 | .5495 | | |
| | | | | | | 6:00 | .0177 | .5811 | | |
| | | | | | | 7:00 | .0101 | .5931 | | |
| | | | | | | 8:30 | .0012 | .6012 | | |
| | | | | | | | | 9:00 | e 0 <u>2/</u> | .6015 |
| | | | | | | | R-2 | 3.17 | | |
| | | | | | | | R-3 | 2.89 | | |
| | | | | | | | R-5 | 2.86 | | |
| | | | | | | | R-6 | 3.02 | | |
| | | | | | | | Average | 2.96 | | |
| <u>Event of September 21-22, 1951</u> | | | | | | | | | | |
| 8-24-51 | 0.05 | 0 | 9-21-51 | Raingage | R-4 | 9-21-51 | | | | |
| 8-26 | .33 | 0 | 7:05p | 0 | 0 | 7:42p | 0 | 0 | | |
| 8-27 | .27 | 0 | :10 | 3.72 | .32 | :48 | .0278 | .0023 | | |
| 8-28 | .34 | 0 | :15 | 3.00 | .57 | 8:00 | .0714 | .0132 | | |
| 9-1 | .02 | 0 | :18 | .60 | .60 | :06 | .101 | .0218 | | |
| 9-2 | .04 | 0 | :40 | 0 | .60 | :18 | .0714 | .0393 | | |
| 9-3 | .16 | 0 | :47 | .86 | .70 | :24 | .0657 | .0462 | | |
| 9-4 | .78 | 0 | :55 | 1.72 | .95 | :42 | .0842 | .0687 | | |
| 9-9 | 1.47 | .087 | 8:00 | .48 | 1.03 | :54 | .144 | .0890 | | |
| 9-12 | .91 | .157 | :15 | .12 | 1.06 | 9:00 | .132 | .1029 | | |
| 9-15 | .04 | 0 | :44 | 0 | 1.06 | :06 | .174 | .1182 | | |
| | | | :50 | 2.90 | 1.35 | :12 | .150 | .1344 | | |
| | | | :58 | .22 | 1.38 | :18 | .145 | .1492 | | |
| | | | 9:37 | .02 | 1.39 | :24 | .164 | .1647 | | |
| | | | :45 | .97 | 1.52 | :30 | .182 | .1822 | | |
| <u>Watershed Conditions</u> | | | 10:20 | .01 | 1.53 | :36 | .183 | .2005 | | |
| 23% - corn, oats, soybean rotation; 20% - corn, soybean, wheat, meadow rotation; 16% - pasture plots; 35% - unimproved pasture; 6% - miscellaneous roads, farmstead, & plots. | | | :25 | 2.28 | 1.72 | :48 | .147 | .2322 | | |
| | | | :35 | .24 | 1.76 | 10:00 | .129 | .2596 | | |
| | | | | | | :12 | .148 | .2880 | | |
| | | | | | | :18 | .160 | .3030 | | |
| | | | | | | | | Std-1 | .155 | .3188 |
| | | | | | | | | R-2 | .149 | .3340 |
| | | | | | | | | | .155 | .3593 |
| | | | | | | | | Average | .150 | .3846 |
| | | | | | | | | 1.90 | .144 | .4091 |
| | | | | | | | | | :30 | .100 |
| | | | | | | 12:00m | .0754 | .5133 | | |
| | | | | | | 9-22-51 | | | | |
| | | | | | | 12:30a | .0633 | .5491 | | |
| | | | | | | 1:00 | .0507 | .5776 | | |
| | | | | | | :30 | .0255 | .5967 | | |
| | | | | | | 2:00 | .0192 | .6089 | | |
| | | | | | | 3:00 | .0128 | .6180 | | |
| | | | | | | 5:00 | 0 | .6307 | | |

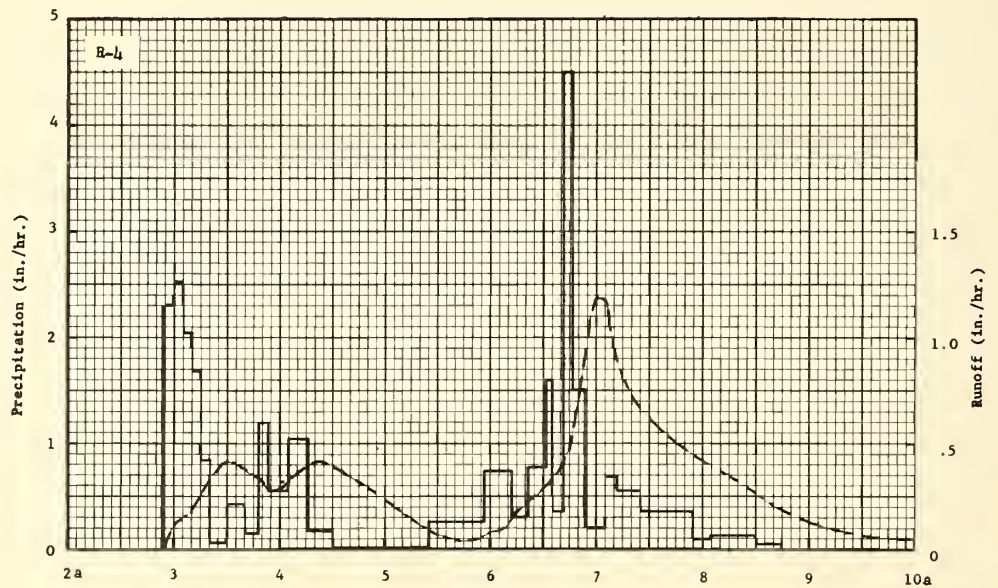
Notes: To convert runoff in in/hr to cfs, multiply by 154.274. 1/ Prior to event beginning 2:17p. 2/ New storm began, estimated from later recession.



McCREDIE, MISSOURI STATION RESERVOIR WATERSHED W-1

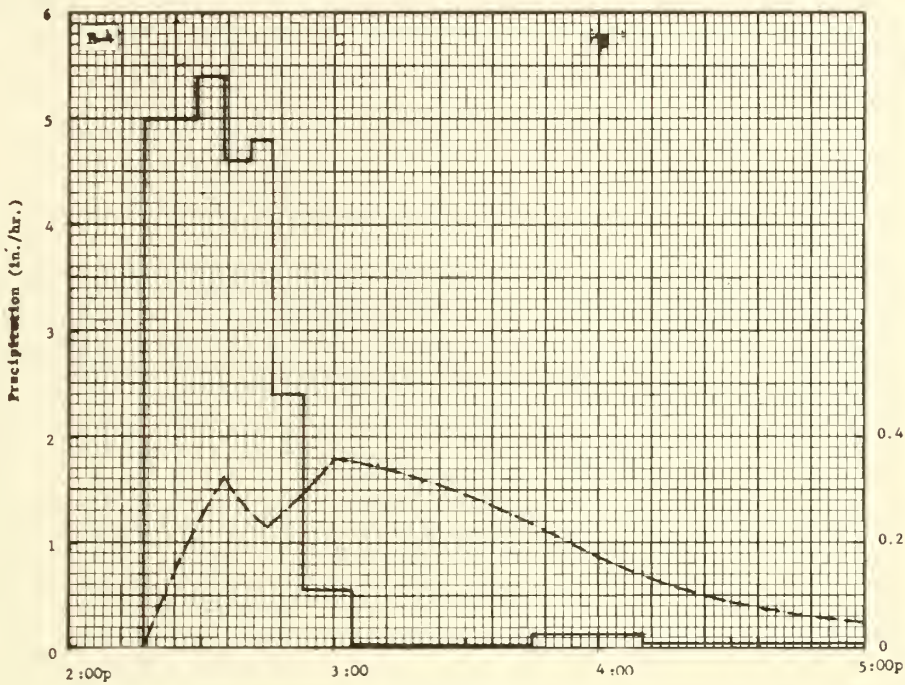


June 26, 1942

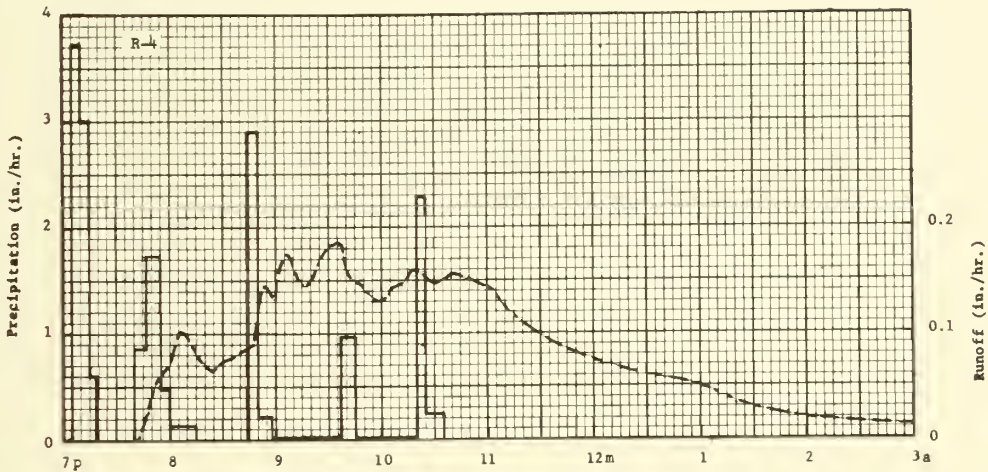


June 7, 1945

McCREDIE, MISSOURI STATION RESERVOIR WATERSHED W-1



August 19, 1949



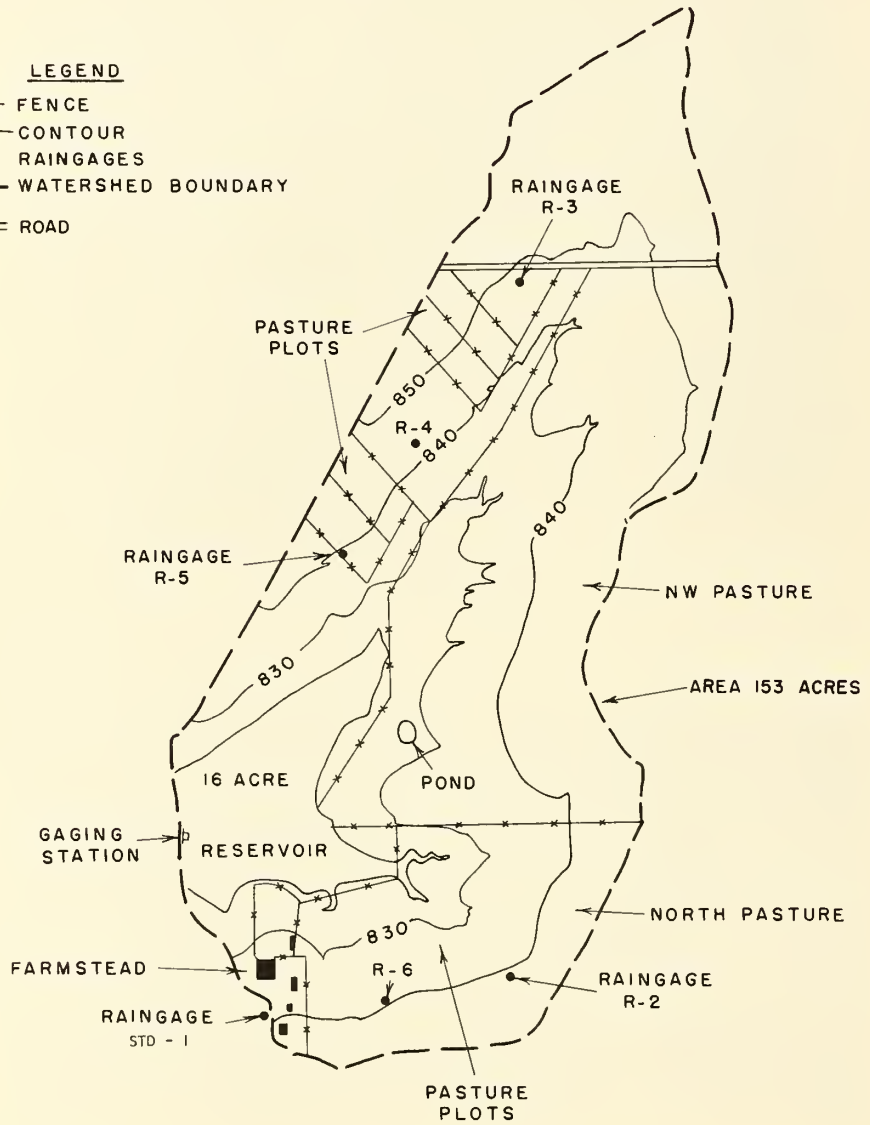
September 21, 1951

September 22, 1951

McCREDDIE, MISSOURI STATION RESERVOIR WATERSHED W-1



- LEGEND**
- x— FENCE
 - 840- CONTOUR
 - RAINGAGES
 - - - WATERSHED BOUNDARY
 - ==== ROAD



500 0 500 1000 1500 2000



SCALE IN FEET
CONTOUR INTERVAL 10 FEET

MCCREDIE, MISSOURI
WATERSHED W-1

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | McCredie, Missouri S.W. Pond No. 2 Watershed (Area - 44.3 acres) | | | | | | | |
|---|-------|------|------|------|------|------|---|------|------|-------|------|------|------|-------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| | | 1956 | P | 0.38 | 1.16 | 0.37 | 2.49 | 4.42 | 1.65 | 9.07 | 2.77 | 0.70 | 1.16 | 1.60 |
| | Q | 0 | .02 | 0 | .02 | .03 | 0 | 1.54 | .01 | 0 | T | .02 | .02 | 1.66 |
| 1957 | P | 1.33 | 2.13 | 2.74 | 5.56 | 4.27 | 6.31 | 2.66 | .40 | 1.21 | 2.76 | 1.90 | 2.79 | 34.06 |
| | Q | 0 | .36 | .33 | 1.98 | .41 | 1.41 | 0 | 0 | 0 | 0 | 0 | 0 | 4.49 |
| 1958 | P | 1.21 | 1.09 | 3.02 | 2.60 | 3.32 | 5.34 | 8.81 | 2.86 | 3.02 | 2.07 | 2.92 | .38 | 36.64 |
| | Q | 0 | .20 | 1.46 | .43 | .25 | .52 | 2.05 | .33 | 0 | .06 | .33 | 0 | 5.63 |
| 1959 | P | 1.53 | 2.72 | 2.18 | 2.45 | 5.21 | .03 | 3.37 | 2.14 | 4.62 | 5.91 | .57 | 1.91 | 32.64 |
| | Q | 0 | 2.13 | .65 | .17 | .43 | 0 | 0 | 0 | .23 | 2.42 | 0 | 0 | 6.03 |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | | | | | | | | | | McCredie, Missouri S.W. Pond No. 2 Watershed | | | |
|---|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|--|--|--|--|
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | | | | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | | | |
| 1957 ^{1/} | 6-29 | 1.33 | 6-29 | 0.55 | 6-29 | 0.73 | 6-29 | 1.16 | 6-29 | 1.39 | 6-29 | 1.39 | 6-29 | 1.39 | 6-29 | 1.39 | | | |
| 1958 | 7-19 | .17 | 7-19 | .16 | 7-19 | .25 | 7-31 | .42 | 7-31 | .56 | 7-19 | .64 | 7-30 | .83 | 7-15 | 1.14 | | | |
| 1959 | 10-10 | .97 | 10-10 | .48 | 10-10 | .75 | 2-9 | .91 | 2-9 | 1.75 | 2-9 | 2.09 | 2-9 | 2.12 | 10-4 | 2.20 | | | |

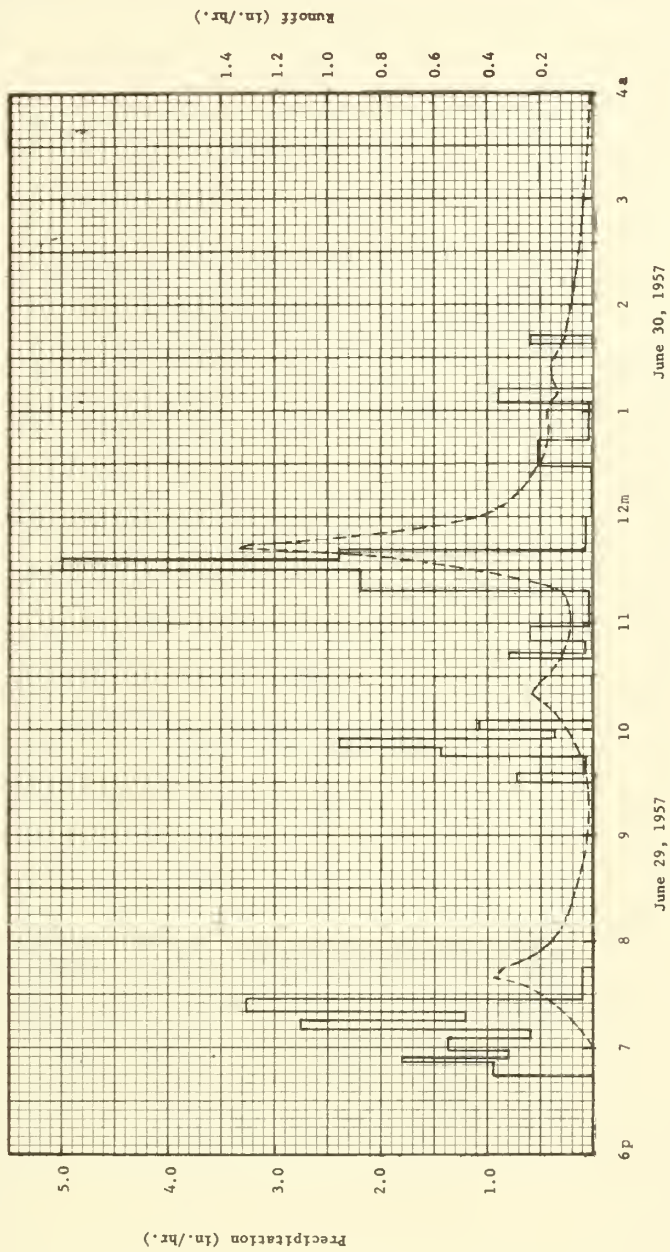
Notes: Quality of records: P - excellent; Q - good. Watershed conditions: 23% in soybeans, soybeans, corn, wheat, wheat; 20% in soybeans, soybeans, corn, corn, corn; 34% in mixed grasses and weeds; 7% in row crops; 13% in pasture; 3% in weeds. ^{1/} Maximum discharge values for 1957 are corrected and supersede those previously reported.

| SELECTED RUNOFF EVENTS | | | | | | | | | McCredie, Missouri S.W. Pond No. 2 Watershed | | |
|----------------------------------|-------------------|-----------------|--------------------|-------------------|---------------|---------------|----------------------|---------------|--|--|--|
| Antecedent conditions | | | Rainfall | | | | Runoff ^{2/} | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | |
| Event of June 29-30, 1957 | | | | | | | | | | | |
| 5-30-57 | 0.12 | 0 | 6-29-57 | Raingage | R-7 | 6-29-57 | | | | | |
| 6-1 | .15 | 0 | 6:44p | 0 | 0 | 7:00p | 0 | 0 | | | |
| 6-4 | .16 | 0 | :51 | .94 | .11 | :15 | .0780 | .009 | | | |
| 6-7 | .75 | .01 | :54 | 1.80 | .20 | :30 | .201 | .044 | | | |
| 6-8 | .36 | .01 | :58 | .60 | .24 | :35 | .260 | .063 | | | |
| 6-10 | .07 | 0 | 7:05 | 1.37 | .40 | :40 | .370 | .089 | | | |
| 6-12 | .10 | 0 | :10 | .60 | .45 | :45 | .334 | .119 | | | |
| 6-14 | .08 | 0 | :15 | 2.75 | .68 | :50 | .253 | .144 | | | |
| 6-22 | .10 | 0 | :20 | 1.20 | .78 | 8:00 | .169 | .178 | | | |
| 6-23 | .05 | 0 | :27 | 3.26 | 1.16 | :10 | .118 | .202 | | | |
| 6-26 | .32 | 0 | :45 | .10 | 1.19 | :30 | .0712 | .232 | | | |
| 6-27 | .03 | 0 | 9:30 | 0 | 1.19 | 9:00 | .0260 | .256 | | | |
| 6-28 | .06 | 0 | :35 | .72 | 1.25 | :30 | .0177 | .266 | | | |
| 6-29 | .72 ^{1/} | 0 | :45 | .06 | 1.26 | :50 | .0692 | .278 | | | |
| | | | :50 | 1.44 | 1.38 | 10:10 | .145 | .313 | | | |
| | | | :55 | 2.40 | 1.58 | :15 | .179 | .327 | | | |
| | | | 10:00 | .36 | 1.61 | :20 | .226 | .344 | | | |
| | | | :05 | 1.08 | 1.70 | :25 | .214 | .362 | | | |
| | | | :40 | 0 | 1.70 | :40 | .123 | .405 | | | |
| | | | :43 | .80 | 1.74 | :50 | .0970 | .423 | | | |
| | | | :50 | .08 | 1.75 | 11:00 | .0852 | .438 | | | |
| | | | :58 | .60 | 1.83 | :10 | .0970 | .453 | | | |
| | | | 11:18 | .03 | 1.84 | :15 | .105 | .462 | | | |
| | | | :30 | 2.20 | 2.28 | :20 | .160 | .473 | | | |
| | | | :36 | 5.00 | 2.78 | :25 | .275 | .491 | | | |
| | | | :41 | 2.40 | 2.98 | :30 | .446 | .521 | | | |
| | | | 12:00 [□] | .06 | 3.00 | :36 | .694 | .576 | | | |
| | | | 6-30-57 | | | :39 | .930 | .617 | | | |
| | | | 12:28a | .02 | 3.01 | :42 | 1.328 | .673 | | | |
| | | | :43 | .52 | 3.14 | :45 | 1.205 | .736 | | | |

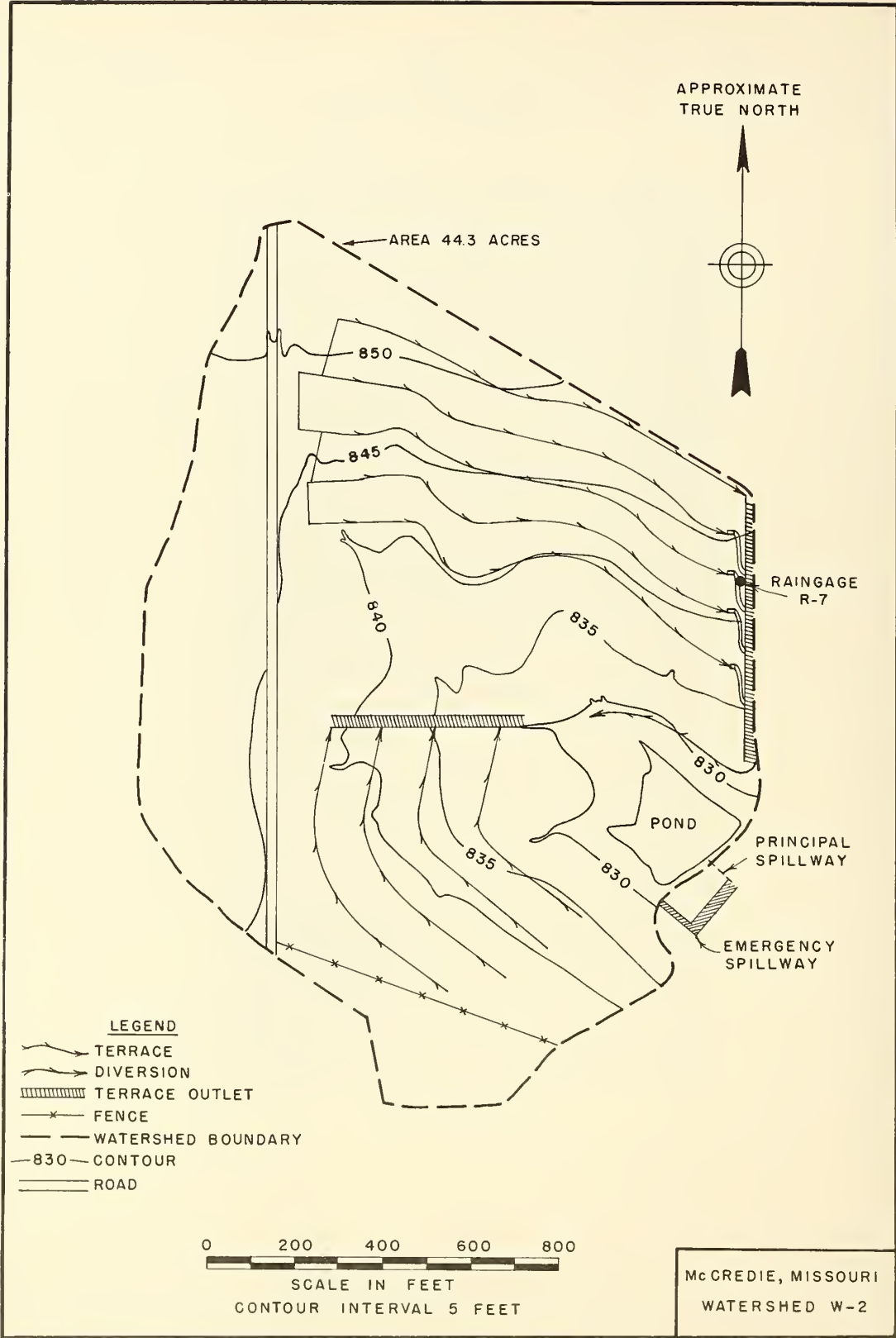
Notes: To convert runoff in in/hr to cfs, multiply by 44.699. ^{1/} Prior to event beginning 6:44p. ^{2/} All flows corrected for pondage in pond above control. For method, see Field Manual for Research in Agricultural Hydrology, U. S. Dept. Agr., Agr. Handb. No. 224, June 1962, pp 159-163.

| SELECTED RUNOFF EVENTS | | | McCredie, Missouri S.W. Pond No. 2 Watershed | | | | | |
|------------------------|-------------------|-----------------|--|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| | | | <u>Event of June 29-30, 1957 - Continued</u> | | | | | |
| | | | 6-30-57 | | | 6-29-57 | | |
| | | | 1:04a | 0.03 | 3.15 | 11:51p | 0.775 | 0.832 |
| | | | :12 | .90 | 3.27 | :54 | .618 | .867 |
| | | | :37 | 0 | 3.27 | 12:00m | .421 | .918 |
| | | | :42 | .60 | 3.32 | 6-30-57 | | |
| | | | | | | 12:06a | .338 | .955 |
| | | | | | | :12 | .302 | .988 |
| | | | | | | :25 | .233 | 1.045 |
| | | | | | | :40 | .179 | 1.097 |
| | | | | | | 1:00 | .172 | 1.156 |
| | | | | | | :10 | .140 | 1.182 |
| | | | | | | :20 | .156 | 1.206 |
| | | | | | | :30 | .153 | 1.232 |
| | | | | | | :40 | .134 | 1.256 |
| | | | | | | 2:00 | .0918 | 1.292 |
| | | | | | | :30 | .0544 | 1.328 |
| | | | | | | 3:00 | .0410 | 1.353 |
| | | | | | | :30 | .0204 | 1.366 |
| | | | | | | 4:00 | .0132 | 1.375 |
| | | | | | | 5:00 | 0 | 1.387 |

Notes: To convert runoff in in/hr to cfs, multiply by 44.699.



McCREDIE, MISSOURI S.W. POND NO. 2 WATERSHED



| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Coshocton, Ohio, Watershed 102 (Area - 1.26 acres) | | | | | | |
|---|------|------|------|------|------|-------|---|------|-------|------|------|------|-------|
| Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1957 P | | | | | 4.22 | 10.58 | 3.29 | 1.67 | | | | | 19.76 |
| Q | | | | | 0 | 2.45 | T | T | | | | | 2.45 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS
Coshocton, Ohio Watershed 102

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 6-12 | 3.64 | 6-12 | 1.31 | 6-12 | 1.32 | 6-12 | 1.32 | 6-12 | 1.32 | 6-12 | 1.33 | 6-12 | 1.33 | 6-12 | 1.33 |

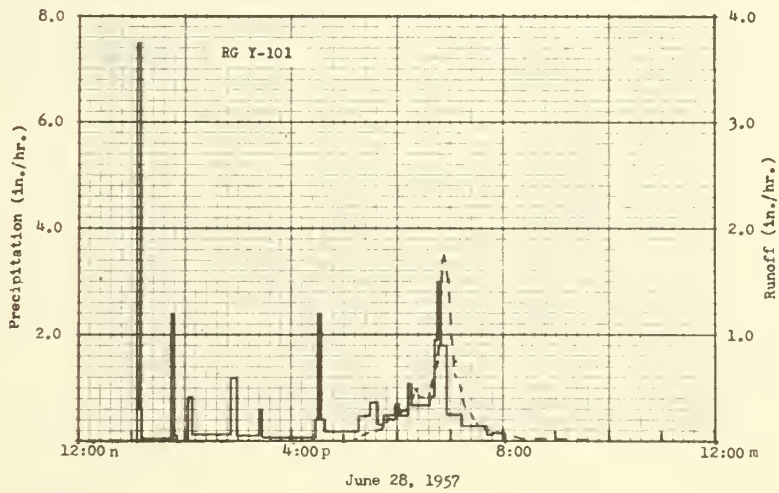
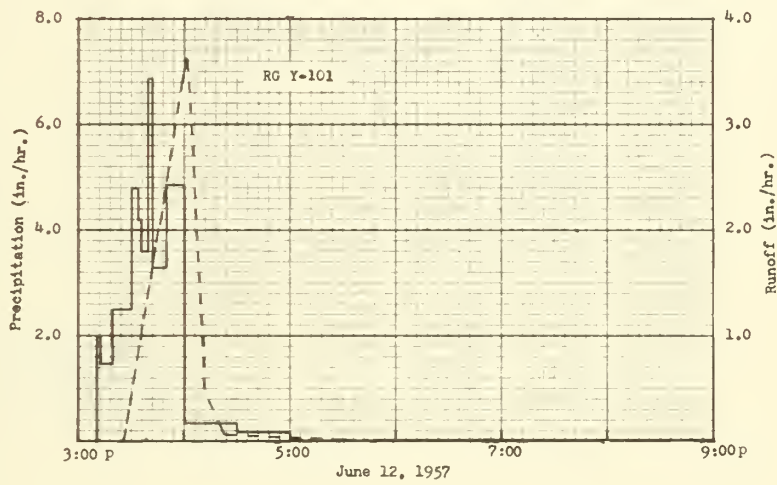
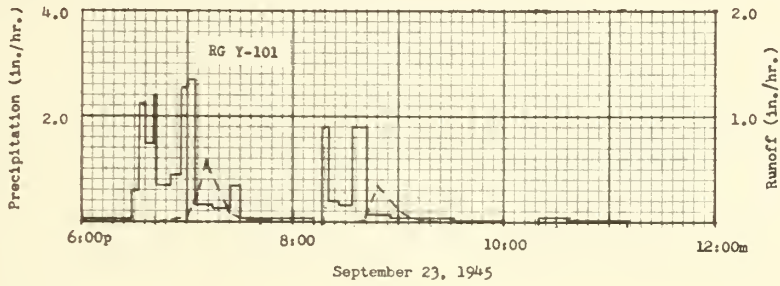
Notes: Watershed discontinued January 1, 1947 to April 30, 1957 and September 1, 1957 - December 31, 1959.
Quality of Records: Monthly P & Q, good; Annual maximum discharges and volumes, excellent. Cover 1956-1959, 100% improved practice pasture.

SELECTED RUNOFF EVENTS
Coshocton, Ohio Watershed 102

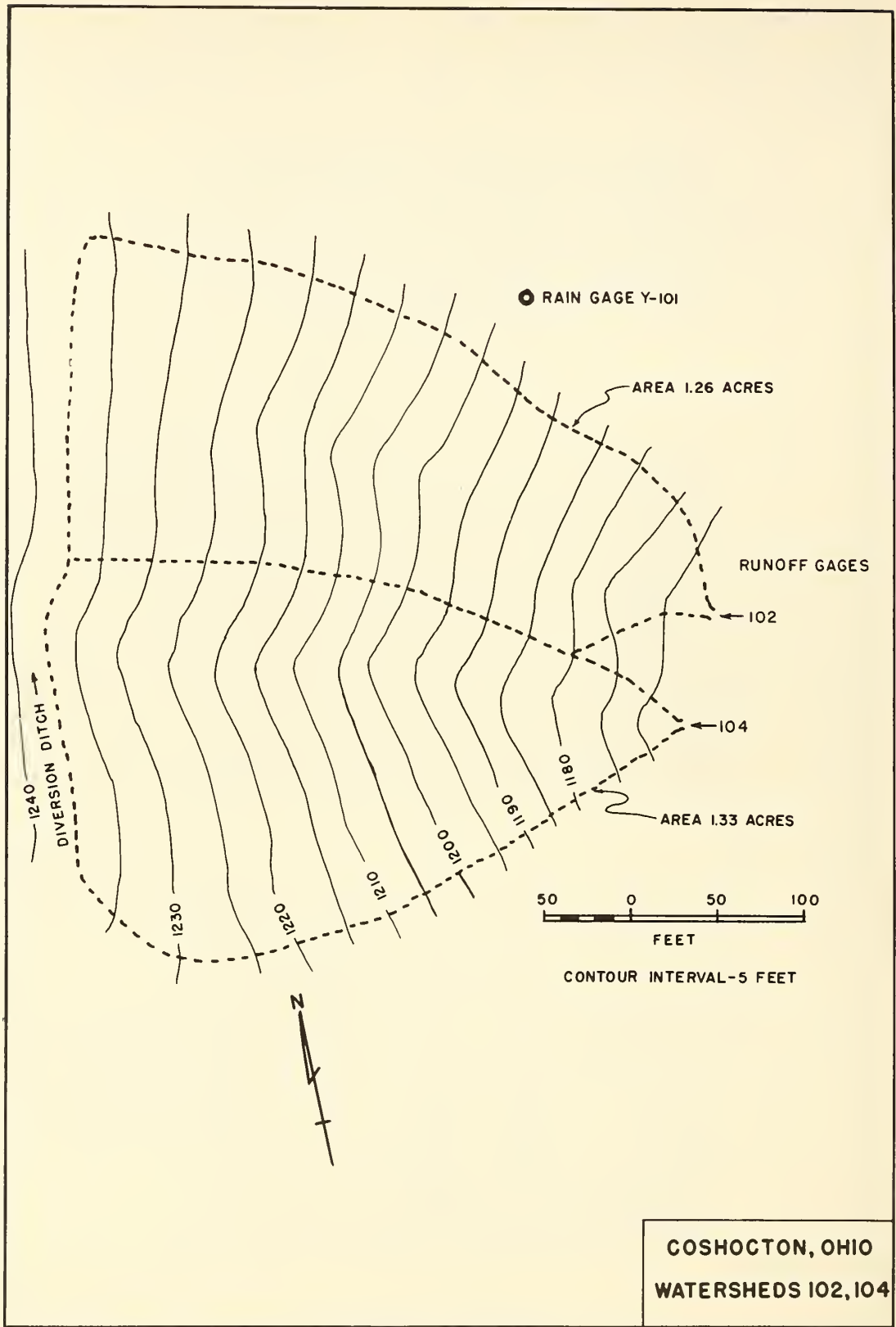
| Antecedent conditions | | | Rainfall | | | Runoff | | |
|--|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of September 23, 1945</u> | | | | | | | | |
| 8-23-45 | T | 0 | 9-23-45 | Rainage | Y-101 | 9-23-45 | | |
| 8-24 | .06 | 0 | 6:00p | 0 | 0 | 6:40p | 0 | 0 |
| 8-25-31 | 0 | 0 | :28 | .04 | .02 | 7:00 | .0433 | .01 |
| 9-1 | .15 | 0 | :32 | .60 | .06 | :06 | .272 | .02 |
| 9-2-7 | 0 | 0 | :36 | 2.25 | .21 | :10 | .583 | .05 |
| 9-8 | .50 | 0 | :40 | 1.50 | .31 | :24 | .0945 | .13 |
| 9-9 | .67 | 0 | :42 | 2.40 | .39 | :30 | .0433 | .13 |
| 9-10 | .73 | 0 | :50 | .68 | .48 | :10 | .0079 | .14 |
| 9-11 | .18 | 0 | :56 | .90 | .57 | :50 | 0 | .14 |
| 9-12 | 0 | 0 | 7:00 | 2.55 | .74 | 8:34 | 0 | .14 |
| 9-13 | .24 | 0 | :04 | 2.70 | .92 | :40 | .0150 | .14 |
| 9-14 | 1.21 | .02 | :14 | .36 | .98 | :48 | .339 | .16 |
| 9-15-16 | 0 | 0 | :24 | .24 | 1.02 | 9:00 | .109 | .20 |
| 9-17 | .50 | 0 | :30 | .70 | 1.09 | :06 | .0433 | .21 |
| 9-18 | .99 | 0 | 8:12 | .06 | 1.13 | :16 | .0079 | .21 |
| 9-19 | 0 | 0 | :16 | 0 | 1.13 | :30 | 0 | .21 |
| 9-20 | .54 | 0 | :20 | 1.80 | 1.25 | | | |
| 9-21-22 | 0 | 0 | :26 | .10 | 1.29 | | | |
| 9-23 | .53 1/2 | 0 | :33 | .34 | 1.33 | | | |
| | | | :42 | 1.80 | 1.60 | | | |
| Watershed conditions; Poverty grass cover pastured by cattle under prevailing practice. Grass 3" high, weeds 5"; density of cover 90%. | | | :56 | .17 | 1.64 | | | |
| | | | 9:32 | .07 | 1.68 | | | |
| | | | 10:00 | .04 | 1.70 | | | |
| | | | :20 | 0 | 1.70 | | | |
| | | | :36 | .08 | 1.72 | | | |
| | | | 11:10 | .02 | 1.73 | | | |
| | | | 12:00m | 0 | 1.73 | | | |

Notes: To convert runoff in in/hr to cfs, multiply by 1.2705;
1/ Most of rainfall occurred after 4:00p.

| SELECTED RUNOFF EVENTS | | | Coshooton, Ohio, Watershed 102 (Area - 1.26 acres) | | | | | |
|---|----------------------|--------------------|---|----------------------|------------------|------------------|-----------------|------------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of June 12, 1957 | | | | | | | | |
| | | | 6-12-57 | Raingage Y-101 | | 6-12-57 | | |
| 5-13-57 | 0 | 0 | 3:10p | 0 | 0 | 3:25 p | 0 | 0 |
| 5-14 | 1.27 | 0 | :13 | 2.00 | .10 | :47 | 2.07 | .16 |
| 5-15-21 | .66 | 0 | :20 | 1.46 | .27 | 4:01 | 3.64 | .87 |
| 5-22 | .52 | 0 | :30 | 2.52 | .69 | :11 | .504 | 1.27 |
| 5-23-25 | 0 | 0 | :34 | 4.80 | 1.01 | :23 | .0677 | 1.31 |
| 5-26 | .18 | 0 | :36 | 4.20 | 1.15 | 5:33 | 0 | 1.32 |
| 5-27-31 | 0 | 0 | :40 | 3.60 | 1.39 | | | |
| 6-1 | .16 | 0 | :42 | 6.90 | 1.62 | | | |
| 6-2-7 | 0 | 0 | :50 | 3.30 | 2.06 | | | |
| 6-8 | 1.01 | 0 | 4:00 | 4.86 | 2.87 | | | |
| 6-9-10 | 0 | 0 | :30 | .34 | 3.04 | | | |
| 6-11 | .31 | 0 | 5:00 | .18 | 3.13 | | | |
| 6-12 | 0 | 0 | 9:00 | .01 | 3.17 | | | |
| <p>Watershed conditions: Cover consists of legumes (mostly birdsfoot trefoil), grass and weeds. Legumes and grass 5" high, weeds 8" high; density of cover 90%. Pastured by cattle under improved practice. Birdsfoot trefoil planted April 1957. Poverty grass cover 1936 to April 1957.</p> | | | | | | | | |
| Event of June 28, 1957 | | | | | | | | |
| | | | 6-28-57 | Raingage Y-101 | | 6-28-57 | | |
| 5-28-31-57 | 0 | 0 | 1:07p | 0 | 0 | 5:10p | 0 | 0 |
| 6-1 | .16 | 0 | :09 | 7.50 | .25 | :24 | .0677 | .01 |
| 6-2-7 | 0 | 0 | :12 | .60 | .28 | :30 | .109 | .02 |
| 6-8 | 1.01 | 0 | :44 | .04 | .30 | :40 | .213 | .05 |
| 6-9-10 | 0 | 0 | :47 | 2.40 | .42 | :56 | .194 | .10 |
| 6-11 | .31 | 0 | :53 | .10 | .43 | 6:06 | .291 | .14 |
| 6-12 | 3.18 | 1.32 | 2:05 | 0 | .43 | :12 | .291 | .17 |
| 6-13 | .45 | .01 | :10 | .84 | .50 | :20 | .504 | .22 |
| 6-14 | .16 | 0 | :53 | .13 | .59 | :26 | .425 | .27 |
| 6-15 | 0 | 0 | :59 | 1.20 | .65 | :36 | .425 | .33 |
| 6-16 | .06 | 0 | 3:24 | .10 | .69 | :40 | .559 | .37 |
| 6-17-18 | 0 | 0 | :27 | .60 | .72 | :44 | .725 | .41 |
| 6-19 | .02 | 0 | 4:28 | .07 | .79 | :50 | 1.12 | .52 |
| 6-20-22 | 0 | 0 | :31 | .40 | .81 | :52 | 1.68 | .57 |
| 6-23 | .13 | 0 | :33 | 2.40 | .89 | :54 | 1.76 | .63 |
| 6-24 | 2.11 | .02 | :39 | .40 | .93 | :58 | 1.52 | .74 |
| 6-25-27 | 0 | 0 | 5:17 | .19 | 1.05 | 7:06 | .630 | .87 |
| 6-28 | .20 ^{1/} | 0 | :31 | .47 | 1.16 | :12 | .504 | .93 |
| | | | :38 | .77 | 1.25 | :16 | .362 | .96 |
| | | | :45 | .34 | 1.29 | :26 | .232 | 1.01 |
| | | | :57 | .50 | 1.39 | :30 | .158 | 1.02 |
| | | | 6:03 | .70 | 1.46 | :40 | .125 | 1.04 |
| | | | :12 | .47 | 1.53 | 8:00 | .0677 | 1.08 |
| | | | :18 | 1.10 | 1.64 | :20 | .0236 | 1.09 |
| | | | :37 | .66 | 1.85 | 9:50 | 0 | 1.10 |
| | | | :42 | .84 | 1.92 | | | |
| | | | :47 | 1.92 | 2.08 | | | |
| | | | :50 | 3.00 | 2.23 | | | |
| | | | :57 | 1.80 | 2.44 | | | |
| | | | 7:13 | .52 | 2.58 | | | |
| | | | :43 | .28 | 2.72 | | | |
| | | | :48 | .12 | 2.73 | | | |
| | | | 8:03 | .16 | 2.77 | | | |
| <p>Notes: ^{1/} Rain ended about 7:30a.</p> | | | | | | | | |



COSHOCTON, OHIO WATERSHED 102

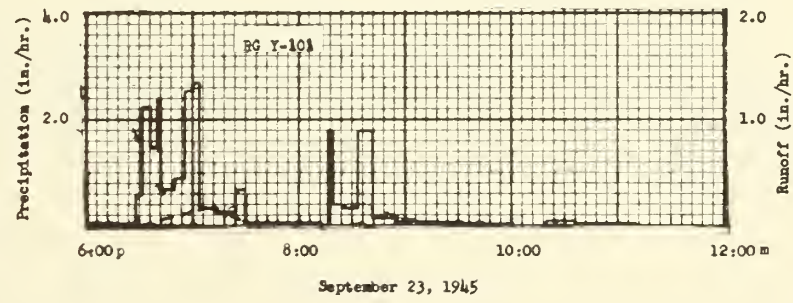


COSHOCTON, OHIO
WATERSHEDS 102, 104

| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 104 (Area - 1.33 acres) | | | | | |
|------------------------------------|-------------------|-----------------|--|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of September 23, 1945</u> | | | | | | | | |
| 8-23-45 | Y | 0 | 9-23-45 | Reingage | Y-101 | 9-23-45 | | |
| 8-24 | .06 | 0 | 6:00p | 0 | 0 | 6:30p | 0 | 0 |
| 8-25-31 | 0 | 0 | :28 | .04 | .02 | 7:08 | .183 | .01 |
| 9-1 | .15 | 0 | :32 | .50 | .06 | :14 | .118 | .03 |
| 9-2-7 | 0 | 0 | :36 | 2.25 | .21 | :20 | .118 | .04 |
| 9-8 | .50 | 0 | :40 | 1.50 | .31 | :28 | .0520 | .05 |
| 9-9 | .67 | 0 | :42 | 2.40 | .39 | :38 | .0141 | .06 |
| 9-10 | .73 | 0 | :50 | .68 | .48 | 8:00 | 0 | .06 |
| 9-11 | .18 | 0 | :56 | .90 | .57 | :30 | 0 | .06 |
| 9-12 | 0 | 0 | 7:00 | 2.55 | .74 | :50 | .118 | .06 |
| 9-13 | .24 | 0 | :04 | 2.70 | .92 | :56 | .0891 | .07 |
| 9-14 | 1.21 | 0 | :14 | .36 | .98 | 9:06 | .0520 | .08 |
| 9-15-16 | 0 | 0 | :24 | .24 | 1.02 | :14 | .0141 | .09 |
| 9-17 | .50 | 0 | :30 | .70 | 1.09 | 10:00 | 0 | .09 |
| 9-18 | .99 | 0 | 8:12 | .06 | 1.13 | | | |
| 9-19 | 0 | 0 | :16 | 0 | 1.13 | | | |
| 9-20 | .54 | 0 | :20 | 1.80 | 1.25 | | | |
| 9-21-22 | 0 | 0 | :26 | .40 | 1.29 | | | |
| 9-23 | .53 1/2 | 0 | :33 | .34 | 1.33 | | | |
| | | | :42 | 1.80 | 1.60 | | | |
| | | | :56 | .17 | 1.64 | | | |
| | | | 9:32 | .06 | 1.68 | | | |
| | | | 10:00 | .04 | 1.70 | | | |
| | | | :20 | 0 | 1.70 | | | |
| | | | :36 | .08 | 1.72 | | | |
| | | | 11:10 | .02 | 1.73 | | | |

Watershed conditions: Improved pasture consists mostly of Kentucky blue grass with a small amount of red clover and a few weeds. Grass 3" high, clovers 2" high, and weeds 5" high; density of cover 90%.

Notes: Watershed discontinued December 31, 1946.
 To convert runoff in in/hr to cfs, multiply by 1.3411.
 The map for this watershed is included with Watershed 102, page 26.1-4.
 1/ Most of rain occurred after 4:00p.



COSHOCTON, OHIO WATERSHED 104

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Coshooton, Ohio Watershed 129 (Area - 2.71 acres) | | | | | | |
|---|------|------|------|------|------|-------|--|------|-------|------|------|------|-------|
| Month Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 P | 1.68 | 5.52 | 4.14 | 4.00 | 6.79 | 5.09 | 6.30 | 3.94 | 1.40 | 1.17 | 1.46 | 3.34 | 44.83 |
| Q | 0 | .59 | .01 | 0 | 0 | .51 | .36 | .05 | 0 | 0 | 0 | 0 | 1.52 |
| 1957 P | 1.68 | 1.39 | 1.85 | 5.30 | 4.07 | 10.71 | 3.46 | 1.86 | 3.85 | 1.56 | 2.88 | 4.15 | 42.76 |
| Q | 0 | 0 | 0 | .05 | 0 | 1.75 | 0 | T | .03 | 0 | 0 | 0 | 1.83 |
| 1958 P | 1.51 | .77 | 1.05 | 3.66 | 3.02 | 4.11 | 9.22 | 2.70 | 3.12 | .34 | 2.07 | .80 | 32.37 |
| Q | 0 | 0 | 0 | 0 | .06 | 0 | .18 | 0 | 0 | 0 | 0 | 0 | .24 |
| 1959 P | 5.62 | 3.03 | 2.48 | 4.31 | 2.70 | 4.44 | 4.28 | 2.31 | 3.06 | 4.92 | 2.67 | 2.16 | 41.98 |
| Q | .35 | .09 | 0 | 0 | 0 | 0 | 0 | .05 | 0 | 0 | 0 | 0 | .49 |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | Coshooton, Ohio Watershed 129 | | | | | | | | | |
|---|-------------------|------|---|------|---------|------|-------------------------------|------|----------|------|-------|------|--------|------|--------|------|
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 6-12 | 2.36 | 6-12 | 0.98 | 6-12 | 0.99 | 6-12 | 0.99 | 6-12 | 0.99 | 6-12 | 0.99 | 6-12 | 0.99 | 6-12 | 0.99 |
| 1958 | 7-31 | .35 | 7-22 | .09 | 7-22 | .09 | 7-22 | .09 | 7-22 | .09 | 7-30 | .09 | 7-30 | .09 | 7-30 | .09 |
| 1959 | 1-21 | .25 | 1-21 | .14 | 1-21 | .17 | 1-21 | .19 | 1-21 | .32 | 1-21 | .35 | 1-21 | .35 | 1-21 | .35 |

Notes: Quality of records; monthly P, excellent; monthly Q, good; annual maximum discharges and volumes, good. Cover 1956-1959, 100% improved practice pasture.

| SELECTED RUNOFF EVENTS | | | | | | | Coshooton, Ohio Watershed 129 | | | |
|------------------------------------|-------------------|-----------------|---------------|-------------------|---------------|---------------|-------------------------------|---------------|--|--|
| Antecedent conditions | | | Rainfall | | | Runoff | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | |
| Event of September 23, 1945 | | | | | | | | | | |
| 8-23-45 | T | 0 | 9-23-45 | Rainage | 100 | 9-23-45 | | | | |
| 8-24 | .06 | 0 | 6:20p | 0 | 0 | 6:26p | 0 | 0 | | |
| 8-25-31 | 0 | 0 | :26 | .20 | .02 | :42 | .146 | .01 | | |
| 9-1 | .18 | 0 | :30 | .45 | .05 | :54 | .0736 | .03 | | |
| 9-2-7 | 0 | 0 | :40 | 1.92 | .37 | 7:00 | .234 | .04 | | |
| 9-8 | .51 | 0 | :46 | .80 | .45 | :04 | .527 | .07 | | |
| 9-9 | .70 | 0 | :54 | .75 | .55 | :12 | .234 | .12 | | |
| 9-10 | .76 | 0 | :56 | .60 | .57 | :16 | .126 | .13 | | |
| 9-11 | .17 | 0 | 7:03 | 2.91 | .91 | :20 | .0655 | .14 | | |
| 9-12 | 0 | 0 | :20 | .35 | 1.01 | :30 | .0315 | .15 | | |
| 9-13 | .29 | 0 | :30 | .48 | 1.09 | :50 | .0037 | .15 | | |
| 9-14 | 1.13 | .01 | :58 | .04 | 1.11 | 8:24 | .0256 | .16 | | |
| 9-15-16 | 0 | 0 | 8:08 | 0 | 1.11 | :30 | .0315 | .16 | | |
| 9-17 | .62 | 0 | :15 | .17 | 1.13 | :36 | .126 | .17 | | |
| 9-18 | 1.12 | T | :19 | 1.80 | 1.25 | :42 | .322 | .19 | | |
| 9-19 | 0 | 0 | :32 | .37 | 1.33 | :50 | .157 | .22 | | |
| 9-20 | .42 | .01 | :40 | 1.80 | 1.57 | 9:00 | .0439 | .24 | | |
| 9-21-22 | 0 | 0 | :52 | .20 | 1.61 | :10 | .0154 | .24 | | |
| 9-23 | .62 1/2 | 0 | 10:50 | .04 | 1.69 | 10:20 | 0 | .25 | | |

Watershed conditions:
Improved pasture consists mostly of alfalfa, timothy and bluegrass. Seeded to alfalfa May 12, 1945. Alfalfa 8" high, grass and weeds 8" high; density of cover 60%.

Notes: To convert runoff in in/hr to cfs, multiply by 2.7326.
1/ Most of rain occurred after 4:20p.

SELECTED RUNOFF EVENTS

Coshocton, Ohio Watershed 129

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|---|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of June 12, 1957 | | | | | | | | |
| | | | 6-12-57 | Raingage | 100 | 6-12-57 | | |
| 5-13-57 | 0 | 0 | 3:02p | 0 | 0 | 3:29p | 0 | 0 |
| 5-14 | 1.18 | 0 | :22 | .84 | .28 | :33 | .212 | .01 |
| 5-15 | .04 | 0 | :24 | 6.60 | .50 | :35 | .322 | .01 |
| 5-16-17 | 0 | 0 | :30 | 4.40 | .94 | :45 | 1.65 | .15 |
| 5-18 | .18 | 0 | :32 | 6.00 | 1.14 | :53 | 2.13 | .40 |
| 5-19 | .20 | 0 | :38 | 5.60 | 1.70 | :57 | 2.36 | .55 |
| 5-20 | .19 | 0 | :48 | 4.92 | 2.52 | 4:03 | 1.93 | .77 |
| 5-21 | 0 | 0 | 4:10 | 1.61 | 3.11 | :15 | .212 | .96 |
| 5-22 | .49 | 0 | :18 | .38 | 3.16 | :23 | .0736 | .98 |
| 5-23-25 | 0 | 0 | :58 | .21 | 3.30 | :55 | 0 | .99 |
| 5-26 | .14 | 0 | 8:58 | .01 | 3.32 | | | |
| 5-27-31 | 0 | 0 | | | | | | |
| 6-1 | .14 | 0 | | | | | | |
| 6-2-7 | 0 | 0 | | | | | | |
| 6-8 | 1.00 | 0 | | | | | | |
| 6-9-10 | 0 | 0 | | | | | | |
| 6-11 | .30 | 0 | | | | | | |
| 6-12 | 0 | 0 | | | | | | |
| Watershed conditions: Improved pasture consists of legumes, grass and weeds. Legumes and grasses 5" high, weeds 6" high; density of cover 100%. Grazed by cattle. | | | | | | | | |
| Event of June 28, 1957 | | | | | | | | |
| | | | 6-28-57 | Raingage | 100 | 6-28-57 | | |
| 5-28-31-57 | 0 | 0 | 1:00p | 0 | 0 | 4:30p | 0 | 0 |
| 6-1 | .14 | 0 | :06 | 2.30 | .23 | 5:21 | .0315 | .01 |
| 6-2-7 | 0 | 0 | :37 | .02 | .24 | :40 | .135 | .03 |
| 6-8 | 1.00 | 0 | :41 | 1.95 | .37 | :48 | .126 | .05 |
| 6-9-10 | 0 | 0 | | | | | | |
| 6-11 | .30 | 0 | :59 | .03 | .38 | 6:04 | .179 | .09 |
| 6-12 | 3.32 | .99 | 2:06 | .77 | .47 | :20 | .293 | .15 |
| 6-13 | .45 | 0 | :50 | .11 | .55 | :48 | .963 | .33 |
| 6-14 | .07 | 0 | :54 | 1.95 | .68 | :51 | 1.16 | .39 |
| 6-15 | 0 | 0 | 4:21 | .06 | .77 | 7:00 | .659 | .53 |
| 6-16 | .08 | 0 | :28 | 1.20 | .91 | :24 | .135 | .66 |
| 6-17-13 | 0 | 0 | :44 | .26 | .98 | :34 | .0816 | .68 |
| 6-19 | .02 | 0 | 5:00 | .11 | 1.01 | 8:04 | .0201 | .71 |
| 6-20-22 | 0 | 0 | :12 | .30 | 1.07 | :50 | 0 | .71 |
| 6-23 | .08 | 0 | 6:06 | .54 | 1.56 | | | |
| 6-24 | 2.14 | .05 | :12 | 1.20 | 1.68 | | | |
| 6-25-27 | 0 | 0 | :20 | .60 | 1.76 | | | |
| 6-28 | .21 1/2 | 0 | :38 | .97 | 2.02 | | | |
| | | | :48 | 2.22 | 2.39 | | | |
| | | | 7:02 | .94 | 2.61 | | | |
| | | | :32 | .42 | 2.80 | | | |
| | | | 8:10 | .09 | 2.86 | | | |
| Watershed conditions: Improved pasture consists of legumes, grass, and weeds. Legumes and grass 5" high, weeds 6" high; density of cover 100%. Grazed by cattle. | | | | | | | | |

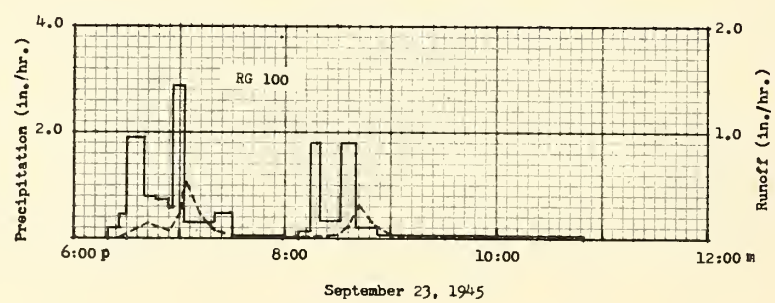
Notes: 1/ Rain ended about 7:30a.

| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 129 | | | | | |
|---------------------------|-------------------|-----------------|-------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of January 21, 1959 | | | | | | | | |
| 12-21-31-58 | 0 | 0 | 1-21-59 | Raingage | 100 | 1-21-59 | | |
| 1-1-59 | .66 | 0 | 12:20a | 0 | 0 | 1:46a | 0 | 0 |
| 1-2-59 | 0 | 0 | 1:12 | .09 | .08 | 2:30 | .0315 | .01 |
| 1-4 | .03 ^{1/} | 0 | 2:4 | 0 | .08 | 4:20 | .0037 | .03 |
| 1-5-8 | 0 | 0 | 4:8 | .18 | .15 | 4:0 | .0988 | .04 |
| 1-9-10 | ^{2/} | 0 | 2:04 | .38 | .25 | 5:0 | .249 | .07 |
| 1-11-13 | 0 | 0 | 2:9 | .22 | .34 | 5:10 | .168 | .14 |
| 1-14 | .25 | 0 | 3:00 | .08 | .38 | 5:30 | .0736 | .18 |
| 1-15 | .75 ^{2/} | 0 | 3:06 | 0 | .38 | 6:20 | .0110 | .21 |
| 1-16-19 | .30 ^{1/} | 0 | 3:09 | .40 | .40 | 7:00 | 0 | .21 |
| 1-20 | .41 | 0 | 3:58 | .07 | .46 | 8:30 | 0 | .21 |
| 1-21 | 0 | 0 | 4:04 | .40 | .50 | 9:40 | .0154 | .21 |
| | | | 4:30 | .16 | .57 | 10:10 | .0070 | .22 |
| | | | 4:41 | 1.42 | .83 | 11:08 | .117 | .26 |
| | | | 5:09 | .45 | 1.04 | 1:46 | .0315 | .31 |
| | | | 6:00 | .19 | 1.20 | 1:00p | 0 | .32 |
| | | | 7:16 | 0 | 1.20 | 4:10 | 0 | .32 |
| | | | 8:32 | .19 | 1.25 | 5:06 | .0256 | .32 |
| | | | 8:28 | .01 | 1.26 | 6:00 | .0201 | .34 |
| | | | 9:28 | .24 | 1.50 | 7:00 | 0 | .35 |
| | | | 10:27 | .14 | 1.64 | | | |
| | | | 11:44 | .56 | 1.80 | | | |
| | | | 11:04 | .39 | 1.93 | | | |
| | | | 1:48 | .18 | 2.06 | | | |
| | | | 1:32p | 0 | 2.06 | | | |
| | | | 4:40 | .30 | 2.10 | | | |
| | | | 4:02 | .02 | 2.14 | | | |
| | | | 5:06 | .45 | 2.17 | | | |
| | | | 5:04 | .14 | 2.31 | | | |
| | | | 5:12 | 1.05 | 2.45 | | | |
| | | | 6:00 | .14 | 2.56 | | | |
| | | | 7:20 | .06 | 2.64 | | | |

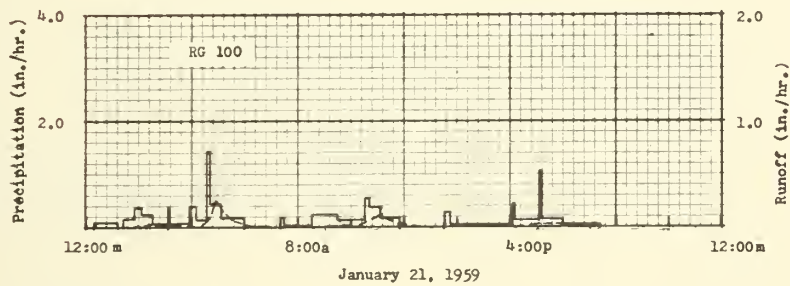
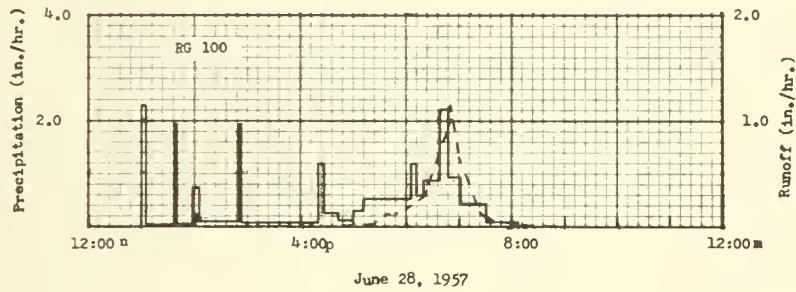
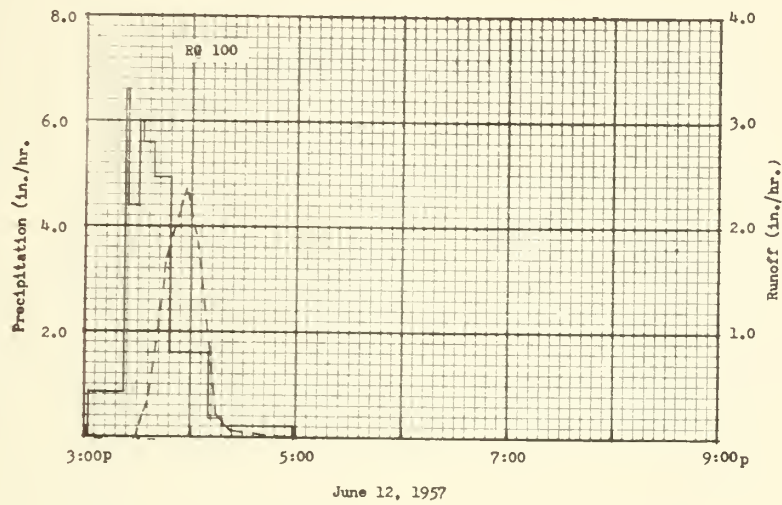
Watershed conditions: Improved pasture consists of legumes, grasses and weeds. Vegetation in dormant state. Depth of frost penetration 1". Snow cover 5" on Jan. 20. No winter grazing.

Notes: ^{1/} Snow

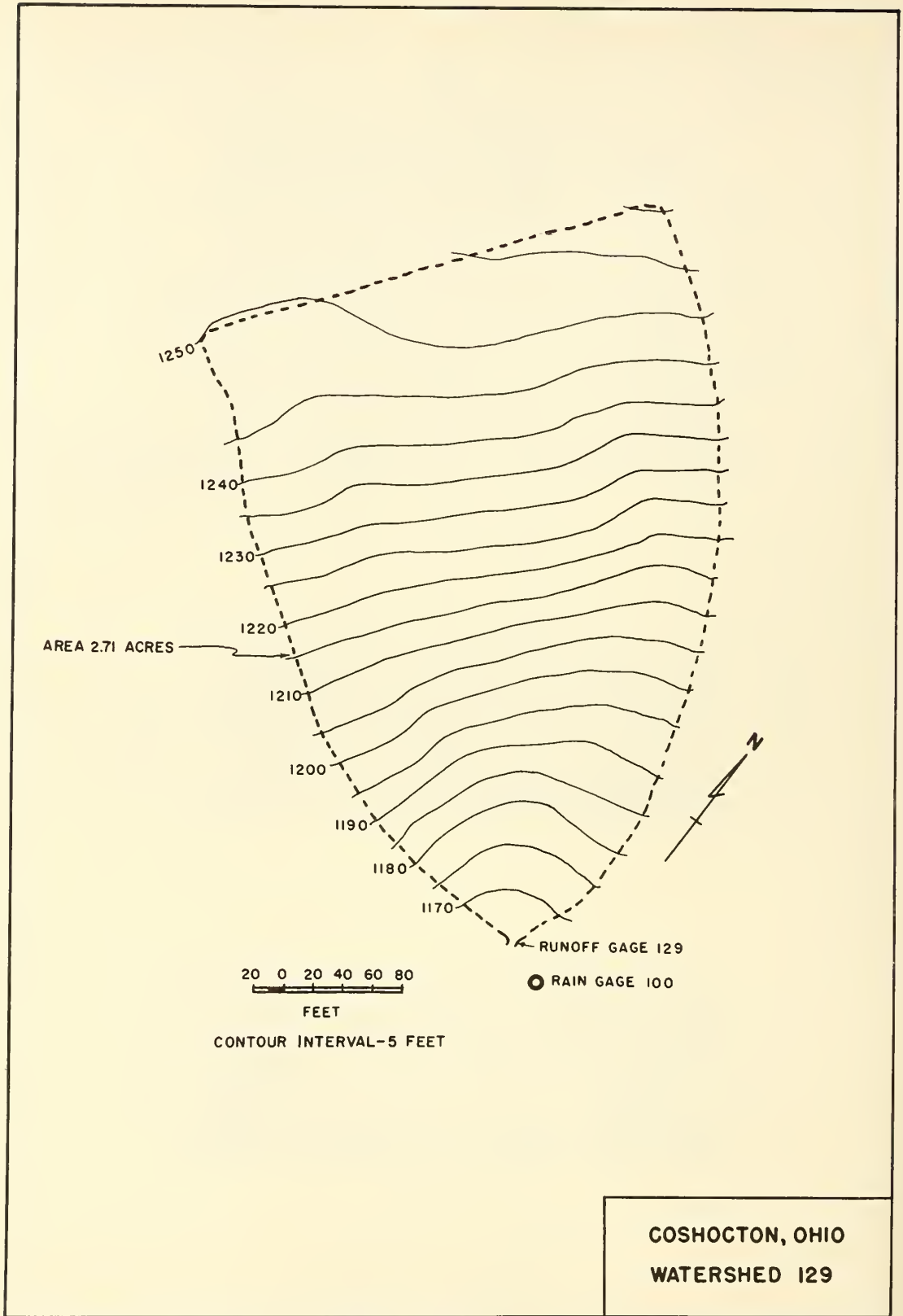
^{2/} Rain and Snow



COSHOCTON, OHIO WATERSHED 129



COSHOCTON, OHIO WATERSHED 129



COSHOCTON, OHIO
WATERSHED 129

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Coshocton, Ohio Watershed 135 (Area - 2.69 acres) | | | | | | |
|---|------------------|-------------|-----------|-------------|-----------|---------------|--|-------------|-------------|-----------|-----------|-------------|---------------|
| Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 | P 1.68 .19 | 5.52 .09 | 4.14 0 | 4.00 0 | 6.79 T | 5.09 .17 | 6.30 .17 | 3.94 .05 | 1.40 .01 | 1.17 0 | 1.46 0 | 3.34 0 | 44.83 .68 |
| 1957 | P 1.68 .04 | 1.39 T | 1.85 0 | 5.30 .01 | 4.07 0 | 10.71 1.59 | 3.46 0 | 1.86 0 | 3.85 .03 | 1.56 0 | 2.88 0 | 4.15 .01 | 42.76 1.68 |
| 1958 | P 1.51 .01 | .77 0 | 1.05 0 | 3.66 0 | 3.02 0 | 4.11 0 | 9.22 .15 | 2.70 0 | 3.12 0 | .34 0 | 2.07 0 | .80 0 | 32.37 .16 |
| 1959 | P 5.52 .28 | 3.03 .05 | 2.48 0 | 4.31 T | 2.70 0 | 4.44 .01 | 4.28 0 | 2.31 .02 | 3.06 0 | 4.92 0 | 2.67 0 | 2.16 0 | 41.98 .36 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS Coshocton, Ohio Watershed 135

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 6-12 | 2.38 | 6-12 | .92 | 6-12 | .93 | 6-12 | .93 | 6-12 | .93 | 6-12 | .93 | 6-12 | .93 | 6-12 | .93 |
| 1958 | 7-31 | .32 | 7-22 | .06 | 7-22 | .06 | 7-22 | .06 | 7-22 | .06 | 7-30 | .07 | 7-30 | .07 | 7-30 | .07 |
| 1959 | 1-21 | .20 | 1-21 | .11 | 1-21 | .13 | 1-21 | .15 | 1-21 | .24 | 1-20 | .27 | 1-20 | .28 | 1-20 | .28 |

Notes: Quality of Records: Monthly P, excellent; monthly Q, good; annual maximum discharges and volumes, good. Watershed conditions 1956-1959, 100% prevailing practice on unimproved pasture.

SELECTED RUNOFF EVENTS Coshocton, Ohio Watershed 135

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|-----------------------------|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of September 23, 1945 | | | | | | | | |
| 8-23-45 | T | 0 | 9-23-45 | Raingage | 100 | 9-23-45 | | |
| 8-24 | .06 | 0 | 6:20p | 0 | 0 | 6:30p | 0 | 0 |
| 8-25-31 | 0 | 0 | :26 | .20 | .02 | :52 | .136 | .01 |
| 9-1 | .18 | 0 | :30 | .45 | .05 | 7:00 | .108 | .02 |
| 9-2-7 | 0 | 0 | :40 | 1.92 | .37 | :08 | .678 | .07 |
| 9-8 | .51 | 0 | :46 | .80 | .45 | :18 | .236 | .14 |
| 9-9 | .70 | 0 | :54 | .75 | .55 | :24 | .108 | .16 |
| 9-10 | .76 | 0 | :56 | .60 | .57 | :30 | .0512 | .17 |
| 9-11 | .17 | 0 | 7:03 | 2.91 | .91 | 8:10 | .0070 | .18 |
| 9-12 | 0 | 0 | :20 | .35 | 1.01 | :42 | .0995 | .19 |
| 9-13 | .29 | 0 | :30 | .48 | 1.09 | :46 | .350 | .20 |
| 9-14 | 1.13 | T | :58 | .04 | 1.11 | 9:00 | .127 | .26 |
| 9-15-16 | 0 | 0 | 8:08 | 0 | 1.11 | :10 | .0376 | .28 |
| 9-17 | .62 | 0 | :15 | .17 | 1.13 | 10:20 | 0 | .28 |
| 9-18 | 1.12 | 0 | :19 | 1.80 | 1.25 | | | |
| 9-19 | 0 | 0 | :32 | .37 | 1.33 | | | |
| 9-20 | .42 | 0 | :40 | 1.80 | 1.57 | | | |
| 9-21 | 0 | 0 | :52 | .20 | 1.61 | | | |
| 9-22 | 0 | 0 | 10:50 | .04 | 1.69 | | | |
| 9-23 | .62 1/2 | 0 | | | | | | |

Watershed conditions: Pre-valuing practice pasture consists mostly of timothy, poverty grass and weeds. Height of grass 30", weeds 36"; density of cover 90%.

Notes: To convert runoff in in/hr to cfs, multiply by 2.7124.
1/ Most of rain occurred after 3:20p.

| SELECTED RUNOFF EVENTS | | | | | | Coshocton, Ohio Watershed 135 | | |
|---|-------------------|-----------------|---------------|-------------------|---------------|-------------------------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of June 12, 1957</u> | | | | | | | | |
| | | | 6-12-57 | Rainage | 100 | 6-12-57 | | |
| 5-13-57 | 0 | 0 | 3:02p | 0 | 0 | 3:32p | 0 | 0 |
| 5-14 | 1.18 | 0 | :22 | .84 | .28 | :37 | .310 | .01 |
| 5-15 | .04 | 0 | :24 | 6.60 | .50 | :43 | 1.47 | .11 |
| 5-16-17 | 0 | 0 | :30 | 4.40 | .94 | :57 | 2.38 | .57 |
| 5-18 | .18 | 0 | :32 | 6.00 | 1.14 | :59 | 2.20 | .64 |
| 5-19 | .20 | 0 | :38 | 5.60 | 1.70 | 4:02 | 1.43 | .74 |
| 5-20 | .19 | 0 | :48 | 4.92 | 2.52 | :19 | .447 | .90 |
| 5-21 | 0 | 0 | 4:10 | 1.60 | 3.11 | :29 | .0442 | .92 |
| 5-22 | .49 | 0 | :18 | .38 | 3.16 | 5:09 | 0 | .93 |
| 5-23-25 | 0 | 0 | :58 | .21 | 3.30 | | | |
| 5-26 | .14 | 0 | 8:58 | .01 | 3.32 | | | |
| 5-27-31 | 0 | 0 | | | | | | |
| 6-1 | .14 | 0 | | | | | | |
| 6-2-7 | 0 | 0 | | | | | | |
| 6-8 | 1.00 | 0 | | | | | | |
| 6-9-10 | 0 | 0 | | | | | | |
| 6-11 | .30 | 0 | | | | | | |
| 6-12 | 0 | 0 | | | | | | |
| Watershed conditions: Prevailing practice pasture consists of timothy, poverty grass and weeds. Height of grass 4", weeds 4"; density of cover 95%. Grazed by cattle. | | | | | | | | |
| <u>Event of June 28, 1957</u> | | | | | | | | |
| | | | 6-28-57 | Rainage | 100 | 6-28-57 | | |
| 5-28-31-57 | 0 | 0 | 1:00p | 0 | 0 | 4:27p | 0 | 0 |
| 6-1 | .14 | 0 | :06 | 2.30 | .23 | 5:20 | .0111 | .01 |
| 6-2-7 | 0 | 0 | :37 | .02 | .24 | :40 | .0822 | .02 |
| 6-8 | 1.00 | 0 | :41 | 1.95 | .37 | 6:00 | .136 | .06 |
| 6-9-10 | 0 | 0 | | | | | | |
| 6-11 | .30 | 0 | :59 | .03 | .38 | :26 | .284 | .14 |
| 6-12 | 3.32 | .93 | 2:06 | .77 | .47 | :32 | .262 | .16 |
| 6-13 | .45 | 0 | :50 | .11 | .55 | :40 | .295 | .20 |
| 6-14 | .07 | 0 | :54 | 1.95 | .68 | :52 | 1.01 | .31 |
| 6-15 | 0 | 0 | 4:21 | .06 | .77 | :58 | .859 | .41 |
| 6-16 | .08 | 0 | :28 | 1.20 | .91 | 7:00 | .730 | .43 |
| 6-17-18 | 0 | 0 | :44 | .26 | .98 | :18 | .236 | .56 |
| 6-19 | .02 | 0 | 5:00 | .11 | 1.01 | :28 | .127 | .59 |
| 6-20-22 | 0 | 0 | :12 | .30 | 1.07 | :40 | .0741 | .61 |
| 6-23 | .08 | 0 | 6:06 | .54 | 1.56 | 8:00 | .0258 | .63 |
| 6-24 | 2.14 | .03 | :12 | 1.20 | 1.68 | :48 | 0 | .63 |
| 6-25-27 | 0 | 0 | :20 | .60 | 1.76 | | | |
| 6-28 | .21 1/2 | 0 | :38 | .87 | 2.02 | | | |
| | | | :48 | 2.22 | 2.39 | | | |
| | | | 7:02 | .94 | 2.61 | | | |
| | | | :32 | .42 | 2.80 | | | |
| | | | 8:10 | .09 | 2.86 | | | |
| Watershed conditions: Prevailing practice pasture consists of timothy, poverty grass and weeds. Height of grass 4", weeds 4", density of cover 95%. Grazed by cattle. | | | | | | | | |

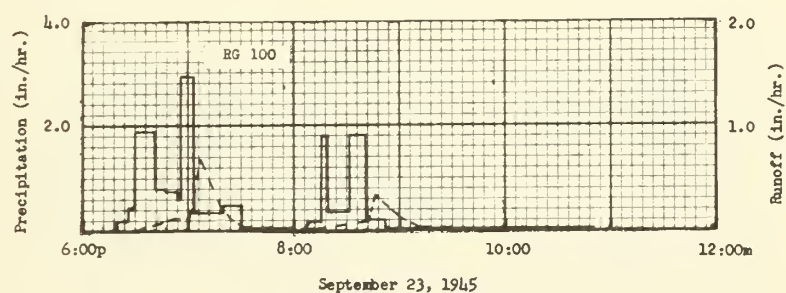
Notes: 1/ Rain ended about 7:30a.

SELECTED RUNOFF EVENTS Coshocton, Ohio Watershed 135

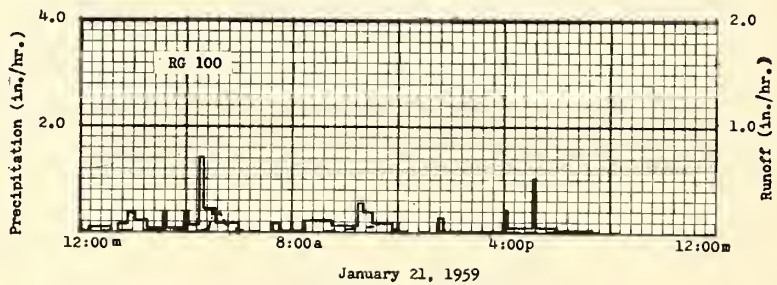
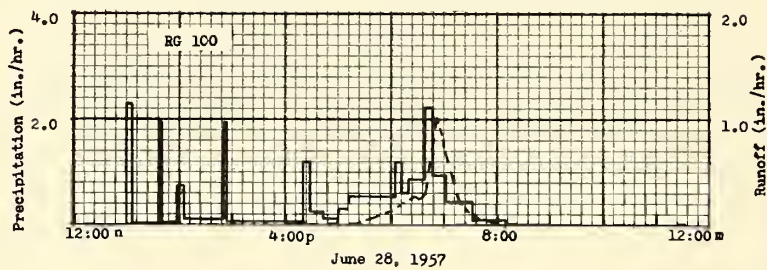
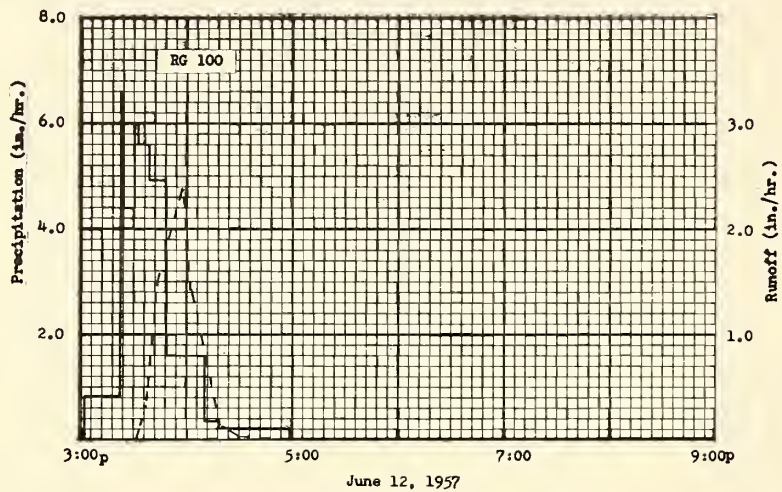
| Antecedent conditions | | | Rainfall | | | Runoff | | |
|----------------------------------|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of January 21, 1959 | | | | | | | | |
| 12-21-22-58 | 0 | 0 | 1-21-59 | Raingage | 1.00 | 1-21-59 | | |
| 12-23 | 1/2 | 0 | 12:20a | 0 | 0 | 12:01a | 0.0037 | 0 |
| 12-24 | 1/2 | 0 | 1:12 | .09 | .08 | 2:34 | .0111 | .01 |
| 12-25-31 | 0 | 0 | 1:24 | 0 | .08 | 4:34 | .0057 | .02 |
| 1-1-59 | .66 | 0 | 1:48 | .18 | .15 | 1:50 | .0317 | .03 |
| 1-2-3 | 0 | 0 | 2:04 | .38 | .25 | 1:58 | .199 | .04 |
| 1-4 | .03 1/2 | 0 | 1:29 | .22 | .34 | 5:06 | .136 | .06 |
| 1-5-8 | 0 | 0 | 3:00 | .08 | .38 | 1:14 | .181 | .08 |
| 1-9 | 1/2 | 0 | 1:06 | 0 | .38 | 1:34 | .0822 | .12 |
| 1-10 | 1/2 | 0 | 1:09 | .40 | .40 | 6:04 | .0203 | .15 |
| 1-11-13 | 0 | 0 | 1:58 | .07 | .46 | 8:24 | 0 | .16 |
| 1-14 | .25 | 0 | 4:04 | .40 | .50 | 1:34 | 0 | .16 |
| 1-15 | .75 3/4 | 0 | 1:30 | .16 | .57 | 11:04 | .0586 | .17 |
| 1-16-19 | .30 | 0 | 1:41 | 1.42 | .83 | 1:24 | .0995 | .20 |
| 1-20 | .41 | .02 | 5:09 | .45 | 1.04 | 12:00n | .0203 | .23 |
| | | | 6:00 | .19 | 1.20 | 1:14p | .0111 | .24 |
| | | | 7:16 | 0 | 1.20 | 2:14 | 0 | .25 |
| | | | 1:32 | .19 | 1.25 | 4:24 | 0 | .25 |
| | | | 8:28 | .01 | 1.26 | 5:48 | .0203 | .25 |
| | | | 9:28 | .24 | 1.50 | 8:24 | 0 | .26 |
| | | | 10:27 | .14 | 1.64 | | | |
| | | | 1:44 | .56 | 1.80 | | | |
| | | | 11:04 | .39 | 1.93 | | | |
| | | | 1:48 | .18 | 2.06 | | | |
| | | | 1:32p | 0 | 2.06 | | | |
| | | | 1:40 | .30 | 2.10 | | | |
| | | | 4:02 | .02 | 2.14 | | | |
| | | | 1:06 | .45 | 2.17 | | | |
| | | | 5:04 | .14 | 2.31 | | | |
| | | | 1:12 | 1.05 | 2.45 | | | |
| | | | 6:00 | .14 | 2.56 | | | |
| | | | 7:20 | .06 | 2.64 | | | |

Watershed conditions:
 Prevailing practice pasture consists of timothy, poverty grass and weeds. Vegetation in dormant state. Depth of frost penetration, 1". No winter grazing. Snow cover was 5" on Jan. 20.

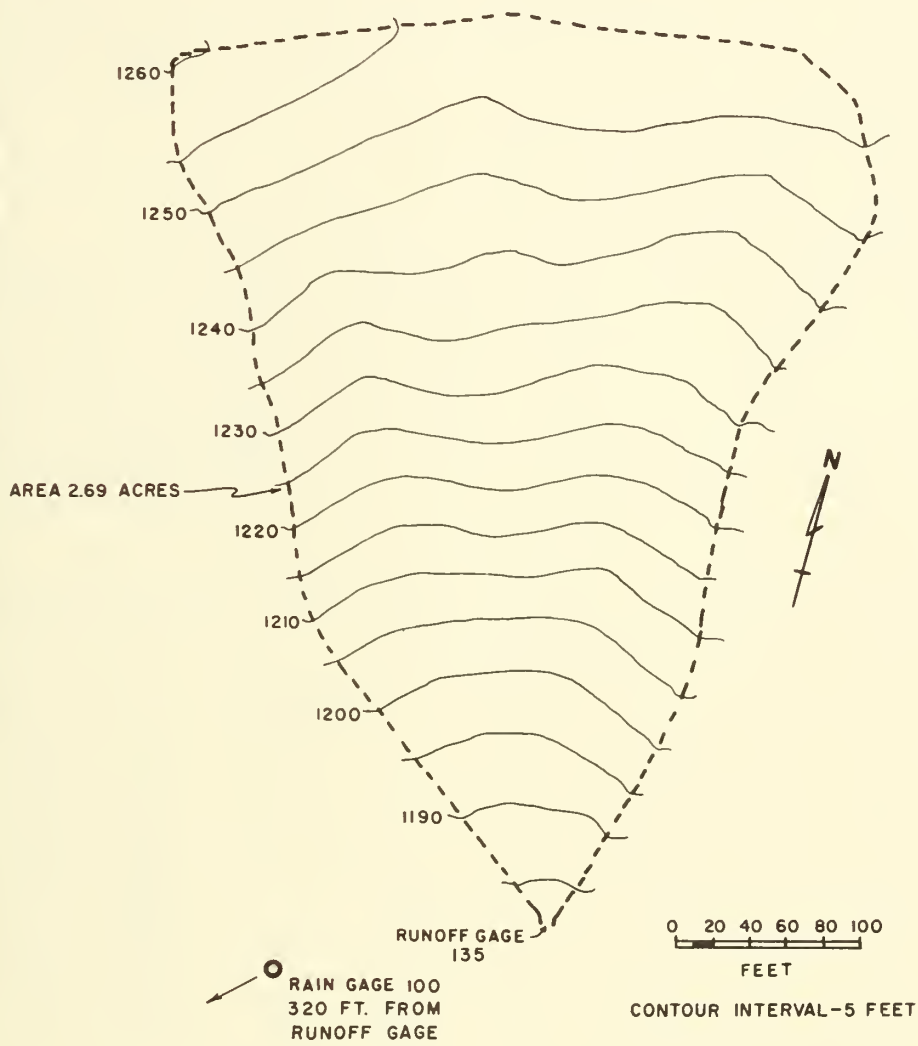
Notes: 1/ Snow
 2/ Rain and snow



COSHOCTON, OHIO WATERSHED 135



COSHOCOTON, OHIO WATERSHED 135



COSHOCTON, OHIO
WATERSHED 135

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | | Coshocton, Ohio Watershed 130 (Area - 1.63 acres) | | | | | | | | |
|--|-------------------|-----------------|---|-------------------|---------------|---------------|---------------|--|-------------|-------------|-----------|-----------|-------------|---------------|-----------|---------------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year | | |
| | | 1956 | P Q | 1.47 .23 | 5.22 1.10 | 3.80 .01 | 3.85 0 | 6.87 T | 4.61 .22 | 6.44 .25 | 3.86 0 | 1.34 0 | 1.09 0 | 1.45 0 | 3.36 0 | 43.36 1.81 |
| 1957 | P Q | 1.58 .02 | 1.31 0 | 1.79 0 | 4.91 .28 | 4.07 0 | 10.80 2.53 | 3.53 0 | 1.99 0 | 3.90 0 | 1.58 0 | 2.74 0 | 4.07 .07 | 42.27 2.90 | | |
| 1958 | P Q | 1.49 .07 | .74 .25 | .94 0 | 3.53 .04 | 3.01 .17 | 4.10 0 | 9.16 .53 | 2.86 0 | 3.18 0 | .29 0 | 2.09 0 | .80 0 | 32.19 1.06 | | |
| 1959 | P Q | 5.87 1.10 | 2.78 .29 | 2.44 T | 4.24 .12 | 2.72 T | 4.35 .01 | 4.45 0 | 2.28 .09 | 2.89 0 | 4.87 0 | 2.62 0 | 1.94 T | 41.45 1.61 | | |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | | Coshocton, Ohio Watershed 130 | | | | | | | | |
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 6-12 | 4.06 | 6-12 | 1.42 | 6-12 | 1.44 | 6-12 | 1.44 | 6-12 | 1.44 | 6-12 | 1.44 | 6-12 | 1.44 | 6-12 | 1.44 |
| 1958 | 7-22 | .85 | 7-22 | .24 | 7-22 | .24 | 7-22 | .24 | 7-22 | .24 | 7-22 | .24 | 7-22 | .24 | 2-21 | .25 |
| 1959 | 1-21 | .44 | 1-21 | .30 | 1-21 | .38 | 1-21 | .64 | 1-21 | .93 | 1-20 | 1.10 | 1-20 | 1.10 | 1-20 | 1.10 |
| Notes: Quality of Records: Monthly P, excellent; Monthly Q, good; annual maximum discharges and volumes, good. Cover 1957-1959, 100% improved practice meadow. | | | | | | | | | | | | | | | | |
| SELECTED RUNOFF EVENTS | | | | | | | | Coshocton, Ohio Watershed 130 | | | | | | | | |
| Antecedent conditions | | | | Rainfall | | | | Runoff | | | | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | | | | | | |
| <u>Event of September 23, 1945</u> | | | | | | | | | | | | | | | | |
| 8-23-45 | T | 0 | 9-23-45 | Raingage 103 | | 9-23-45 | | | | | | | | | | |
| 8-24 | .05 | 0 | 6:24p | 0 | 0 | 6:24p | 0 | 0 | | | | | | | | |
| 8-25-31 | 0 | 0 | :28 | .45 | .03 | :48 | .0852 | .01 | | | | | | | | |
| 9-1 | .16 | 0 | :32 | 1.05 | .10 | :56 | .116 | .03 | | | | | | | | |
| 9-2-7 | 0 | 0 | :34 | 4.20 | .24 | 7:00 | .341 | .04 | | | | | | | | |
| 9-8 | .55 | 0 | :41 | 1.80 | .45 | :06 | .852 | .11 | | | | | | | | |
| 9-9 | .73 | 0 | :55 | .64 | .50 | :12 | .572 | .13 | | | | | | | | |
| 9-10 | .68 | 0 | 7:02 | 3.17 | .97 | :24 | .213 | .25 | | | | | | | | |
| 9-11 | .21 | 0 | :14 | .70 | 1.11 | :30 | .158 | .27 | | | | | | | | |
| 9-12 | 0 | 0 | :24 | .30 | 1.16 | :38 | .0730 | .23 | | | | | | | | |
| 9-13 | .29 | 0 | :30 | .50 | 1.21 | :50 | .0249 | .30 | | | | | | | | |
| 9-14 | 1.09 | 0 | 8:14 | .04 | 1.24 | 8:12 | .0085 | .30 | | | | | | | | |
| 9-15-16 | 0 | 0 | :18 | 1.65 | 1.35 | :30 | .0608 | .31 | | | | | | | | |
| 9-17 | .56 | 0 | :32 | .47 | 1.46 | :36 | .237 | .33 | | | | | | | | |
| 9-18 | 1.04 | 0 | :36 | 1.80 | 1.58 | :40 | .493 | .35 | | | | | | | | |
| 9-19 | 0 | 0 | :40 | 2.10 | 1.72 | 9:00 | .116 | .45 | | | | | | | | |
| 9-20 | .38 | 0 | 9:30 | .12 | 1.82 | :08 | .0548 | .46 | | | | | | | | |
| 9-21-22 | 0 | 0 | 10:42 | .04 | 1.87 | :30 | .0146 | .48 | | | | | | | | |
| 9-23 | .70 1/2 | 0 | | | | 11:00 | 0 | .48 | | | | | | | | |
| Watershed conditions: Improved practice meadow. Cover consists of alfalfa (seeded in 1940 and re-seeded in 1942) and timothy. Alfalfa 6" high, grass 6", weeds 6"; density of cover 85%. | | | | | | | | | | | | | | | | |
| Notes: To convert runoff in in/hr to cfs, multiply by 1.6436. 1/ Most of rain occurred after 4:24p. | | | | | | | | | | | | | | | | |

SELECTED RUNOFF EVENTS

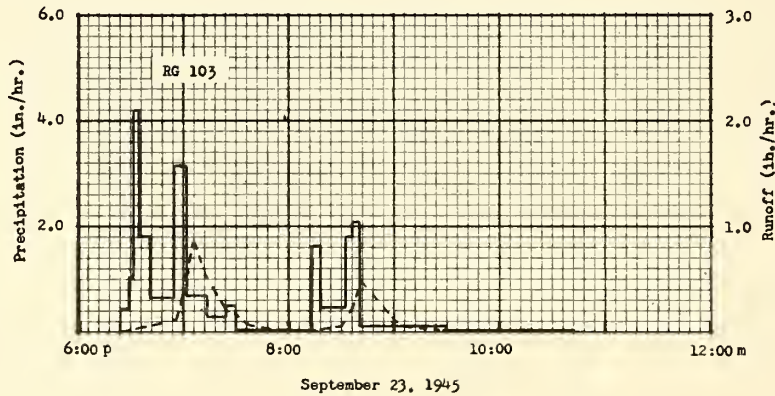
Coshocton, Ohio Watershed 130

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|---|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of June 12, 1957 | | | | | | | | |
| | | | 6-12-57 | Raingage 103 | | 6-12-57 | | |
| 5-13-57 | 0 | 0 | 3:07p | 0 | 0 | 3:25p | 0 | 0 |
| 5-14 | 1.12 | 0 | :12 | 1.20 | .10 | :29 | .237 | .01 |
| 5-15 | .04 | 0 | :19 | 1.11 | .23 | :37 | 1.33 | .09 |
| 5-16-17 | 0 | 0 | :22 | .20 | .24 | :42 | 2.34 | .23 |
| 5-18 | .18 | 0 | :24 | 2.10 | .31 | :47 | 2.10 | .42 |
| 5-19 | .20 | 0 | :30 | 4.90 | .80 | :55 | 4.06 | .83 |
| 5-20 | .19 | 0 | :40 | 5.58 | 1.73 | 4:01 | 2.47 | 1.18 |
| 5-21 | 0 | 0 | :48 | 3.15 | 2.15 | :13 | .298 | 1.38 |
| 5-22 | .51 | 0 | :51 | 7.80 | 2.54 | :19 | .158 | 1.41 |
| 5-23-25 | 0 | 0 | 4:12 | 1.77 | 3.16 | :23 | .0913 | 1.42 |
| 5-26 | .14 | 0 | :14 | 1.20 | 3.20 | :33 | .0389 | 1.43 |
| 5-27-31 | 0 | 0 | :19 | .24 | 3.22 | 5:37 | 0 | 1.44 |
| 6-1 | .18 | 0 | :22 | 0 | 3.22 | | | |
| 6-2-7 | 0 | 0 | :40 | .33 | 3.32 | | | |
| 6-8 | .98 | 0 | 5:28 | .05 | 3.36 | | | |
| 6-9-10 | 0 | 0 | | | | | | |
| 6-11 | .30 | 0 | | | | | | |
| 6-12 | 0 | 0 | | | | | | |
| Watershed conditions; Improved practice meadow. Cover consists of legumes and grasses. Cut for hay May 28, 1957. Legumes 4", grasses 4", weeds 5"; density of cover 100%. | | | | | | | | |
| Event of June 28, 1957 | | | | | | | | |
| | | | 6-28-57 | Raingage 103 | | 6-28-57 | | |
| 5-28-31-57 | 0 | 0 | 12:56p | 0 | 0 | 4:30p | 0 | 0 |
| 6-1 | .18 | 0 | 1:00 | 3.45 | .23 | 5:10 | .0389 | .02 |
| 6-2-7 | 0 | 0 | :32 | .08 | .27 | :20 | .0608 | .03 |
| 6-8 | .98 | 0 | :36 | 1.35 | .36 | :30 | .134 | .04 |
| 6-9-10 | 0 | 0 | :53 | .04 | .37 | :38 | .237 | .07 |
| 6-11 | .30 | 0 | 2:01 | .75 | .47 | :54 | .213 | .09 |
| 6-12 | 3.36 | 1.44 | :28 | .02 | .48 | 6:00 | .268 | .12 |
| 6-13 | .45 | 0 | :46 | .23 | .55 | :10 | .268 | .16 |
| 6-14 | .04 | 0 | :50 | 1.95 | .68 | :16 | .108 | .19 |
| 6-15 | 0 | 0 | 4:18 | .07 | .78 | :34 | .108 | .32 |
| 6-16 | .12 | 0 | :24 | 1.20 | .90 | :52 | 1.13 | .57 |
| 6-17-18 | 0 | 0 | 5:08 | .23 | 1.07 | 7:00 | .900 | .73 |
| 6-19 | .02 | 0 | :04 | .55 | 1.58 | :04 | .645 | .78 |
| 6-20-22 | 0 | 0 | :09 | 1.44 | 1.70 | :18 | .298 | .89 |
| 6-23 | .10 | 0 | :32 | .65 | 1.95 | :30 | .158 | .93 |
| 6-24 | 2.22 | .09 | :40 | 1.95 | 2.21 | :58 | .0548 | .98 |
| 6-25 | .03 | 0 | :45 | 1.56 | 2.34 | 8:30 | .0116 | 1.00 |
| 6-26-27 | 0 | 0 | :49 | 1.80 | 2.46 | 9:50 | 0 | 1.01 |
| 6-28 | .20 1/2 | 0 | 7:00 | .65 | 2.58 | | | |
| | | | :16 | .30 | 2.66 | | | |
| | | | :48 | .17 | 2.75 | | | |
| | | | 8:40 | .03 | 2.78 | | | |
| Watershed conditions; Improved practice meadow. Cover consists of legumes and grasses. Legumes 6" high, grasses 6", weeds 6". Density of cover 100%. | | | | | | | | |

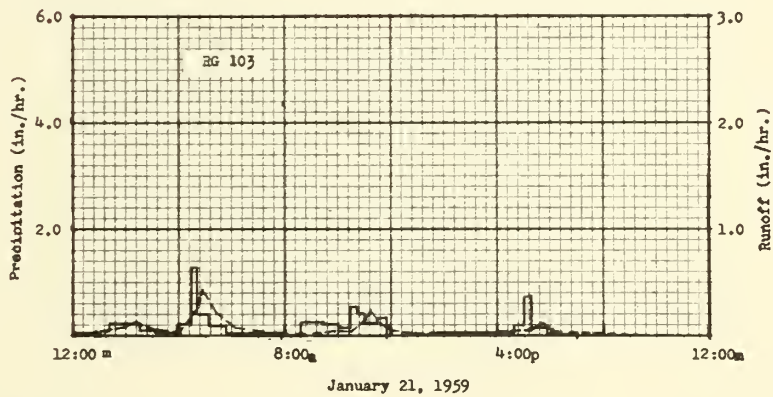
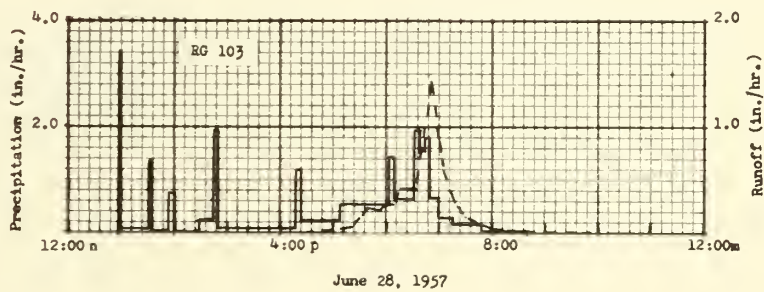
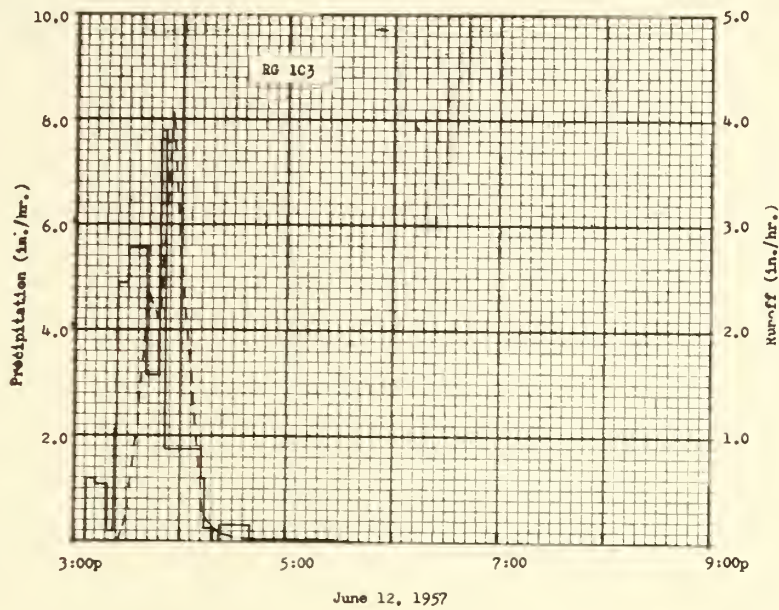
Notes: 1/ Rain ended about 7:30a.

| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 130 | | | | | |
|--|-------------------|-----------------|-------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of January 21, 1955</u> | | | | | | | | |
| 12-21-22-58 | 0 | 0 | 1-21-59 | Rain gauge 103 | | 1-21-59 | | |
| 12-23 | T | 0 | 12:01a | 0 | 0 | 12:01a | 0.0085 | 0 |
| 12-24 | T 1/ | 0 | 5:2 | .06 | .05 | 5:30 | .0146 | .01 |
| 12-25-31 | 0 | 0 | 1:04 | 0 | .05 | 2:00 | .0913 | .06 |
| 1-1-59 | .62 | 0 | 2:4 | .09 | .08 | 2:4 | .134 | .11 |
| 1-2-3 | 0 | 0 | 2:32 | .23 | .34 | 3:02 | .0730 | .18 |
| 1-4 | .02 1/ | 0 | 3:08 | .10 | .40 | 4:00 | .0389 | .24 |
| 1-5-8 | 0 | 0 | 5:8 | .07 | .46 | 5:6 | .268 | .29 |
| 1-9-10 | T 1/ | 0 | 4:28 | .22 | .57 | 5:5 | .144 | .34 |
| 1-11-13 | 0 | 0 | 4:4 | 1.28 | .91 | 5:30 | .213 | .53 |
| 1-14 | .25 | 0 | 5:08 | .40 | 1.07 | 6:08 | .0913 | .62 |
| 1-15 | .73 2/ | 0 | 4:8 | .20 | 1.20 | 8:30 | .0049 | .67 |
| 1-16-19 | .30 1/ | 0 | 7:52 | .05 | 1.30 | 9:24 | .0322 | .68 |
| 1-20 | .54 | .0410 | 8:30 | 0 | 1.30 | 5:2 | .0518 | .70 |
| | | | 9:28 | .26 | 1.55 | 10:28 | .0389 | .72 |
| | | | 10:00 | .21 | 1.66 | 11:0 | .0852 | .73 |
| | | | 1:26 | .16 | 1.73 | 11:04 | .158 | .78 |
| | | | 1:4 | .57 | 1.90 | 12 | .225 | .81 |
| | | | 11:00 | .41 | 2.01 | 1:30 | .116 | .87 |
| | | | 1:28 | .24 | 2.12 | 1:50 | .0852 | .91 |
| | | | 4:8 | .36 | 2.24 | 12:00a | .0548 | .92 |
| | | | 1:32p | 0 | 2.24 | 1:30p | 0 | .94 |
| | | | 4:40 | .06 | 2.43 | 5:11 | .0518 | .95 |
| | | | 5:01 | .20 | 2.50 | 4:0 | .116 | .99 |
| | | | 1:4 | .74 | 2.66 | 6:08 | .0548 | 1.03 |
| | | | 5:4 | .18 | 2.78 | | | |
| | | | 7:00 | .03 | 2.81 | 9:30 | 0 | 1.06 |
| <p><u>Watershed conditions:</u> Improved practice meadow. Cover consists of legumes and grasses. Vegetation dormant. Depth of frost penetration 1". Snow cover was 5" on January 20.</p> | | | | | | | | |

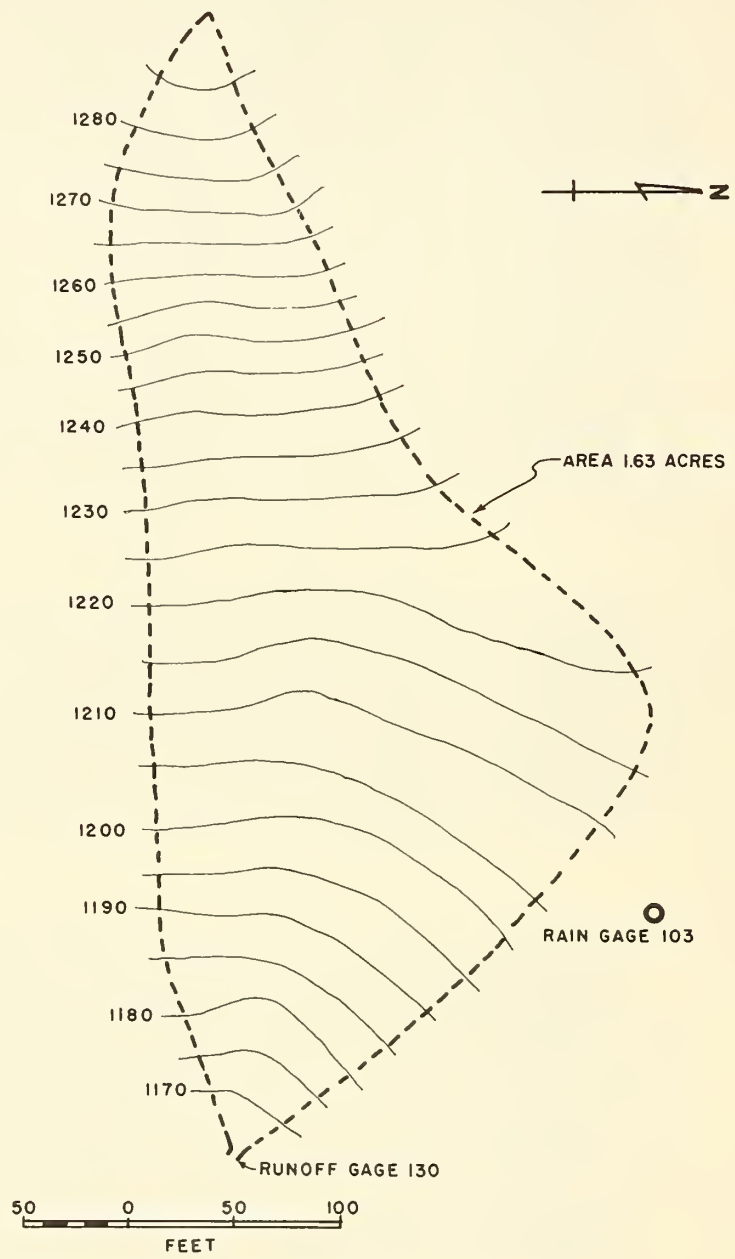
Notes:
 1/ Snow
 2/ Rain and Snow



COSHOCTON, OHIO WATERSHED 130



COHOCTON, OHIO WATERSHED 130

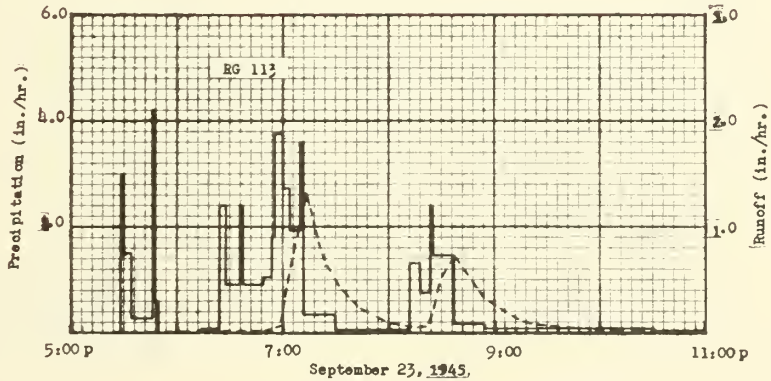


CONTOUR INTERVAL-5 FEET

GOSHOCTON, OHIO
WATERSHED 130

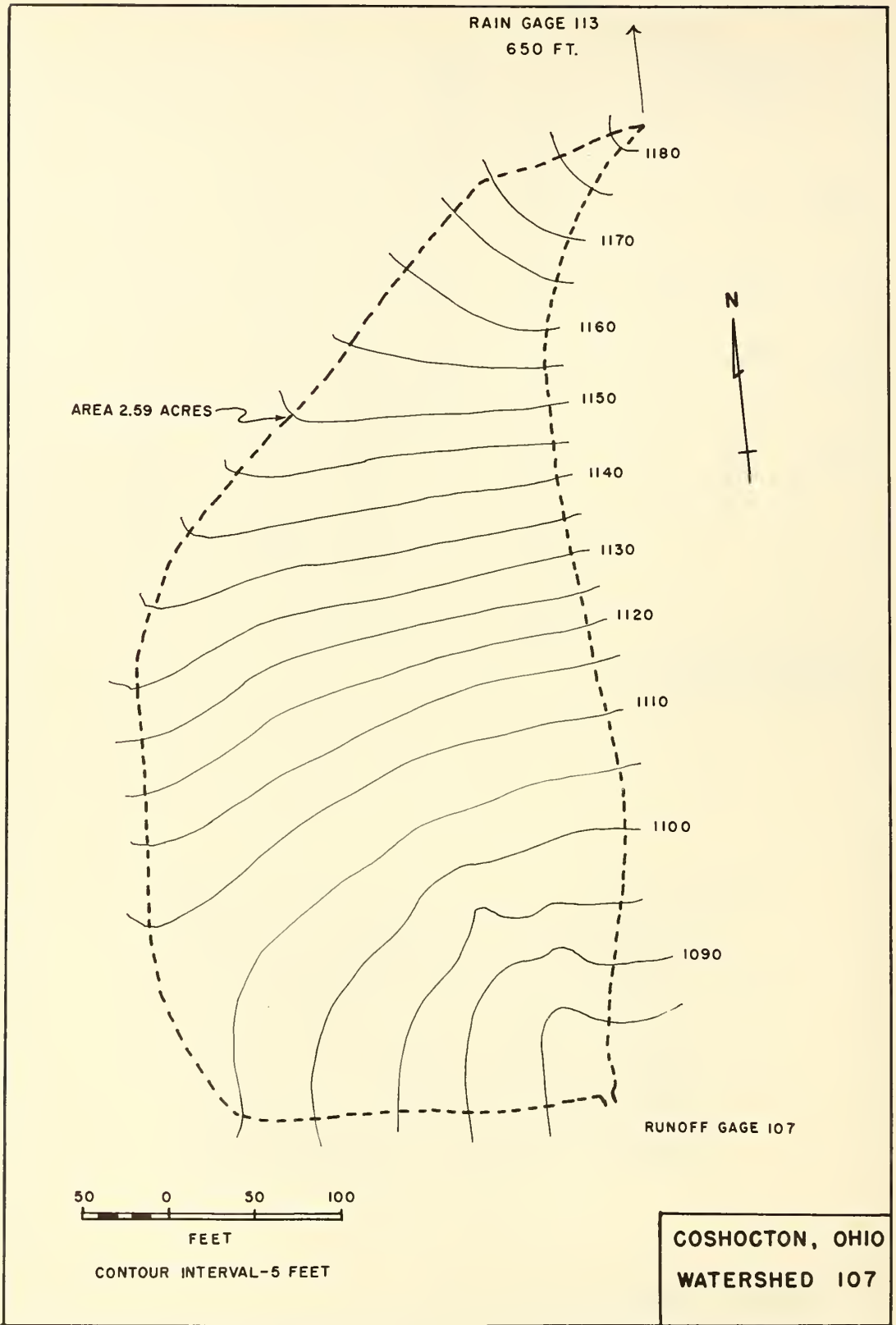
| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 107 (Area - 2.59 acres) | | | | | |
|------------------------------------|-------------------|-----------------|--|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (incheq) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of September 23, 1945</u> | | | | | | | | |
| 8-23-45 | T | 0 | 9-23-45 | Raingage | 113 | 9-23-45 | | |
| 8-24 | .06 | 0 | 5:28p | 0 | | 5:32p | 0 | 0 |
| 8-25-31 | 0 | 0 | :30 | 3.00 | .10 | 6:48 | .0095 | T |
| 9-1 | .17 | 0 | :34 | 1.50 | .20 | :54 | .0357 | T |
| 9-2-7 | 0 | 0 | :46 | .25 | .25 | :58 | .0574 | .01 |
| 9-8 | .76 | T | :48 | 1.20 | .39 | 7:04 | .620 | .03 |
| 9-9 | .96 | 0 | :50 | .60 | .41 | :14 | 1.31 | .20 |
| 9-10 | .72 | 0 | 6:14 | 0 | .41 | :18 | 1.01 | .28 |
| 9-11 | .04 | 0 | :24 | .06 | .42 | :24 | .685 | .37 |
| 9-12 | 0 | 0 | :28 | 2.40 | .58 | :32 | .437 | .44 |
| 9-13 | .29 | 0 | :36 | .90 | .70 | :42 | .247 | .50 |
| 9-14 | 1.20 | .01 | :38 | 2.40 | .78 | :58 | .100 | .54 |
| 9-15-16 | 0 | 0 | :50 | .90 | .96 | 8:16 | .0459 | .56 |
| 9-17 | .50 | 0 | :54 | 1.05 | 1.03 | :22 | .0613 | .56 |
| 9-18 | 1.01 | .04 | :56 | 1.80 | 1.09 | :26 | .212 | .57 |
| 9-19 | 0 | 0 | 7:00 | 3.75 | 1.34 | :30 | .528 | .60 |
| 9-20 | .49 | 0 | :04 | 2.70 | 1.52 | :38 | .720 | .68 |
| 9-21-22 | 0 | 0 | :10 | 1.90 | 1.71 | :54 | .328 | .82 |
| 9-23 | .28 1/2 | 0 | :12 | 3.60 | 1.83 | 9:14 | .118 | .88 |
| | | | :30 | .33 | 1.93 | :24 | .0796 | .90 |
| | | | 8:12 | .03 | 1.95 | :38 | .0532 | .92 |
| | | | :18 | 1.30 | 2.08 | 10:02 | .0326 | .93 |
| | | | :23 | .72 | 2.14 | :38 | .0171 | .95 |
| | | | :26 | 2.40 | 2.26 | 9-24-45 | | |
| | | | :38 | 1.45 | 2.55 | 12:18a | .0038 | .96 |
| | | | :56 | .17 | 2.60 | | | |
| | | | 10:32 | .06 | 2.69 | | | |
| | | | 12:00m | .01 | 2.70 | | | |

Watershed conditions: Pine stand due to reforestation in 1939. Pines 9 ft. high. Shrubs 1-8'. Weeds 15" high; grass 8", clover 3". No grazing.



COSHOCTON, OHIO WATERSHED 107

Notes: To convert runoff in in/hr to cfs, multiply by 2.6116.
 Watershed discontinued February 28, 1946.
 1/2 Most of rain occurred after 3:28p.



| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Coshocton, Ohio Watershed 131 (Area - 2.21 acres) | | | | | | | | | |
|--|-------------------|---|---------------|-------------------|---------------|---------------|--|---------------|-----------|-----------|-----------|-----------|-----------|--------------|------|------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year | | |
| 1956 | P Q | 1.47 0 | 5.22 .11 | 3.80 0 | 3.85 0 | 6.87 0 | 4.61 T | 6.44 0 | 3.86 0 | 1.34 0 | 1.09 0 | 1.45 0 | 3.36 0 | 43.36 .11 | | |
| 1957 | P Q | 1.58 0 | 1.31 0 | 1.79 0 | 4.91 0 | 4.07 0 | 10.80 .75 | 3.53 0 | 1.99 0 | 3.90 0 | 1.58 0 | 2.74 0 | 4.07 0 | 42.27 .75 | | |
| 1958 | P Q | 1.49 0 | .74 0 | .94 0 | 3.53 0 | 3.01 0 | 4.10 0 | 9.16 0 | 2.86 0 | 3.18 0 | .29 0 | 2.09 0 | .80 0 | 32.19 0 | | |
| 1959 | P Q | 5.87 .41 | 2.78 .06 | 2.44 0 | 4.24 .01 | 2.72 0 | 4.35 0 | 4.45 0 | 2.28 0 | 2.89 0 | 4.87 0 | 2.62 0 | 1.94 0 | 41.45 .48 | | |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | Coshocton, Ohio Watershed 131 | | | | | | | | | |
| YEAR | MAXIMUM DISCHARGE | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | | |
| | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | | |
| | | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | |
| 1957 | 6-12 | 1.18 | 6-12 | 0.41 | 6-12 | 0.45 | 6-12 | 0.45 | 6-12 | 0.45 | 6-12 | 0.45 | 6-12 | 0.45 | 6-12 | 0.45 |
| 1958 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 1959 | 1-21 | .07 | 1-21 | .07 | 1-21 | .11 | 1-21 | .20 | 1-21 | .35 | 1-21 | .41 | 1-21 | .41 | 1-21 | .41 |
| Notes: Quality of records: monthly P, excellent; monthly Q, good; annual maximum discharges and volumes, good. Cover 1956-1959, 100% uneven age hardwoods. | | | | | | | | | | | | | | | | |
| SELECTED RUNOFF EVENTS | | | | | | | Coshocton, Ohio Watershed 131 | | | | | | | | | |
| Antecedent conditions | | | Rainfall | | | | Runoff | | | | | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | | | | | | |
| <u>Event of September 23, 1945</u> | | | | | | | | | | | | | | | | |
| 8-23-45 | T | 0 | 9-23-45 | Rainage | 103 | 9-23-45 | | | | | | | | | | |
| 8-24 | .05 | 0 | 6:24p | 0 | | 7:00p | 0 | 0 | | | | | | | | |
| 8-25-31 | 0 | 0 | :28 | .45 | .03 | :14 | .0875 | .01 | | | | | | | | |
| 9-1 | .16 | 0 | :32 | 1.05 | .10 | :30 | .0538 | .03 | | | | | | | | |
| 9-2-7 | 0 | 0 | :34 | 4.20 | .24 | :50 | .0215 | .04 | | | | | | | | |
| 9-8 | .55 | 0 | :41 | 1.80 | .45 | 8:16 | .0050 | .05 | | | | | | | | |
| 9-9 | .73 | 0 | :55 | .64 | .60 | :38 | .0185 | .05 | | | | | | | | |
| 9-10 | .68 | 0 | 7:02 | 3.17 | .97 | :46 | .101 | .06 | | | | | | | | |
| 9-11 | .21 | 0 | :44 | .70 | 1.11 | :50 | .0812 | .07 | | | | | | | | |
| 9-12 | 0 | 0 | :24 | .30 | 1.16 | 9:00 | .0538 | .08 | | | | | | | | |
| 9-13 | .29 | 0 | :30 | .50 | 1.21 | :10 | .0346 | .09 | | | | | | | | |
| 9-14 | 1.09 | 0 | 8:14 | .04 | 1.24 | :30 | .0180 | .10 | | | | | | | | |
| 9-15-16 | 0 | 0 | :18 | 1.65 | 1.35 | 10:10 | .0050 | .10 | | | | | | | | |
| 9-17 | .56 | 0 | :32 | .47 | 1.46 | 12:00m | 0 | .11 | | | | | | | | |
| 9-18 | 1.04 | 0 | :36 | 1.80 | 1.58 | | | | | | | | | | | |
| 9-19 | 0 | 0 | :40 | 2.10 | 1.72 | | | | | | | | | | | |
| 9-20 | .38 | 0 | 9:30 | .12 | 1.82 | | | | | | | | | | | |
| 9-21-22 | 0 | 0 | 10:42 | .04 | 1.87 | | | | | | | | | | | |
| 9-23 | .70 1/2 | 0 | | | | | | | | | | | | | | |
| <u>Watershed conditions:</u> Uneven age stand of hardwoods; good woodland management; no grazing. Trees up to 80'. Shrubs 8'. Herbs 30". Litter 1/2". | | | | | | | | | | | | | | | | |
| Notes: To convert runoff in in/hr to cfs, multiply by 2.2284. 1/ Most of rain occurred after 4:24p. | | | | | | | | | | | | | | | | |

Cooperative Research Project of U. S. D. A. and Ohio Agricultural Experiment Station.

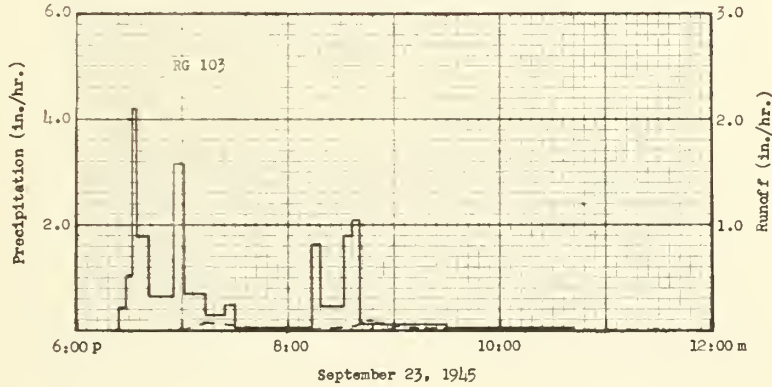
| SELECTED RUNOFF EVENTS | | | | | | Coshocton, Ohio Watershed 131 | | |
|---|-------------------|-----------------|---------------|-------------------|---------------|-------------------------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of June 12, 1957 | | | | | | | | |
| | | | 6-12-57 | Raingage | 103 | 6-12-57 | | |
| 5-13-57 | 0 | 0 | 3:07p | 0 | 0 | 3:43p | 0 | 0 |
| 5-14 | 1.12 | 0 | :12 | 1.20 | .10 | :47 | .390 | .01 |
| 5-15 | .04 | 0 | :19 | 1.11 | .23 | :49 | .610 | .03 |
| 5-16-17 | 0 | 0 | :22 | .20 | .24 | :51 | .924 | .06 |
| 5-18 | .18 | 0 | :24 | 2.10 | .31 | :56 | 1.18 | .15 |
| 5-19 | .20 | 0 | :30 | 4.90 | .80 | 1:00 | .951 | .22 |
| 5-20 | .19 | 0 | :40 | 5.58 | 1.73 | :09 | .390 | .32 |
| 5-21 | 0 | 0 | :48 | 3.15 | 2.15 | :31 | .107 | .39 |
| 5-22 | .51 | 0 | :51 | 7.80 | 2.54 | :51 | .059 | .42 |
| 5-23-25 | 0 | 0 | 4:12 | 1.77 | 3.16 | 7:00 | 0 | .45 |
| 5-26 | .14 | 0 | :14 | 1.20 | 3.20 | | | |
| 5-27-31 | 0 | 0 | :19 | .24 | 3.22 | | | |
| 6-1 | .18 | 0 | :22 | 0 | 3.22 | | | |
| 6-2-7 | 0 | 0 | :40 | .33 | 3.32 | | | |
| 6-8 | .98 | 0 | 5:28 | .05 | 3.36 | | | |
| 6-9-10 | 0 | 0 | | | | | | |
| 6-11 | .30 | 0 | | | | | | |
| 6-12 | 0 | 0 | | | | | | |
| Watershed conditions: Uneven age stand of hardwoods; good woodland management; no grazing. Trees up to 80'. Shrubs 36", herbs 18", Litter 1/2". | | | | | | | | |
| Event of June 28, 1957 | | | | | | | | |
| | | | 6-28-57 | Raingage | 103 | 6-28-57 | | |
| 5-28-31-57 | 0 | 0 | 12:56p | 0 | 0 | 5:46p | 0 | 0 |
| 6-1 | .18 | 0 | 1:00 | 3.45 | .23 | 6:12 | .0440 | .01 |
| 6-2-7 | 0 | 0 | :32 | .08 | .27 | :28 | .0749 | .03 |
| 6-8 | .98 | 0 | :36 | 1.35 | .36 | :48 | .251 | .07 |
| 6-9-10 | 0 | 0 | :53 | .04 | .37 | :52 | .328 | .09 |
| 6-11 | .30 | 0 | 2:01 | .75 | .47 | 7:12 | .193 | .17 |
| 6-12 | 3.36 | .45 | :28 | .02 | .48 | 8:12 | .0440 | .27 |
| 6-13 | .45 | 0 | :46 | .23 | .55 | 9:02 | .0113 | .30 |
| 6-14 | .04 | 0 | :50 | 1.95 | .68 | 10:52 | 0 | .30 |
| 6-15 | 0 | 0 | 4:18 | .07 | .78 | | | |
| 6-16 | .12 | 0 | :24 | 1.20 | .90 | | | |
| 6-17-18 | 0 | 0 | 5:08 | .23 | 1.07 | | | |
| 6-19 | .02 | 0 | 6:04 | .55 | 1.58 | | | |
| 6-20-22 | 0 | 0 | :09 | 1.44 | 1.70 | | | |
| 6-23 | .10 | 0 | :32 | .65 | 1.95 | | | |
| 6-24 | 2.22 | 0 | :40 | 1.95 | 2.21 | | | |
| 6-25 | .03 | 0 | :45 | 1.56 | 2.34 | | | |
| 6-26-27 | 0 | 0 | :49 | 1.80 | 2.46 | | | |
| 6-28 | .20 1/2 | 0 | 7:00 | .65 | 2.58 | | | |
| | | | :16 | .30 | 2.66 | | | |
| | | | :48 | .17 | 2.75 | | | |
| | | | 8:40 | .03 | 2.78 | | | |
| Watershed conditions: Uneven age stand of hardwoods; good woodland management; no grazing. Trees up to 80'. Shrubs 36", herbs 18", litter 1/2". | | | | | | | | |
| Notes: 1/ Rain ended about 7:30a. | | | | | | | | |

SELECTED RUNOFF EVENTS

Coshocton, Ohio Watershed 131

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|---------------------------|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of January 21, 1959 | | | | | | | | |
| 12-21-22-58 | 0 | 0 | 1-21-59 | Raingage | 103 | 1-21-59 | | |
| 12-23 | T 1/ | 0 | 12:01a | 0 | 0 | 12:30a | 0 | 0 |
| 12-24 | T 1/ | 0 | :52 | .06 | .05 | 3:30 | .0301 | .01 |
| 12-25-31 | 0 | 0 | 1:04 | 0 | .05 | 4:28 | .0256 | .04 |
| 1-1-59 | .62 | 0 | :24 | .09 | .08 | 5:00 | .0642 | .06 |
| 1-2-3 | 0 | 0 | 2:32 | .23 | .34 | :10 | .0749 | .07 |
| 1-4 | .02 2/ | 0 | 3:08 | .10 | .40 | :30 | .0642 | .10 |
| 1-5-8 | 0 | 0 | :58 | .07 | .46 | 7:10 | .0180 | .17 |
| 1-9-10 | T 3/ | 0 | 4:28 | .22 | .57 | 8:50 | .0180 | .19 |
| 1-11-13 | 0 | 0 | :44 | 1.28 | .91 | 10:00 | .0301 | .22 |
| 1-14 | .25 2/ | 0 | 5:08 | .40 | 1.07 | 11:00 | .0592 | .26 |
| 1-15 | .73 2/ | 0 | :48 | .20 | 1.20 | :18 | .0642 | .28 |
| 1-16-19 | .30 2/ | 0 | 7:52 | .05 | 1.30 | 1:30p | .0081 | .35 |
| 1-20 | .54 | 0 | 8:30 | 0 | 1.30 | 5:02 | .0050 | .36 |
| | | | 9:28 | .26 | 1.55 | :40 | .0215 | .37 |
| | | | 10:00 | .21 | 1.66 | 11:00 | 0 | .41 |
| | | | :26 | .16 | 1.73 | | | |
| | | | :44 | .57 | 1.90 | | | |
| | | | 11:00 | .41 | 2.01 | | | |
| | | | :28 | .24 | 2.12 | | | |
| | | | :48 | .36 | 2.24 | | | |
| | | | 1:32p | 0 | 2.24 | | | |
| | | | 4:40 | .06 | 2.43 | | | |
| | | | 5:01 | .20 | 2.50 | | | |
| | | | :14 | .74 | 2.66 | | | |
| | | | :54 | .18 | 2.78 | | | |
| | | | 7:00 | .03 | 2.81 | | | |

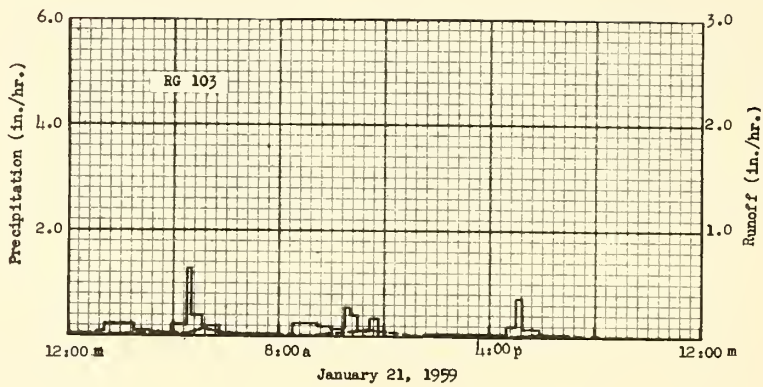
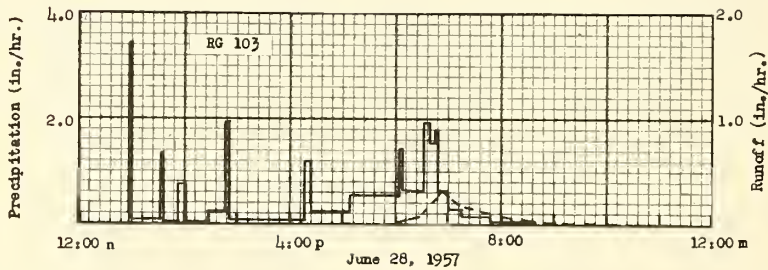
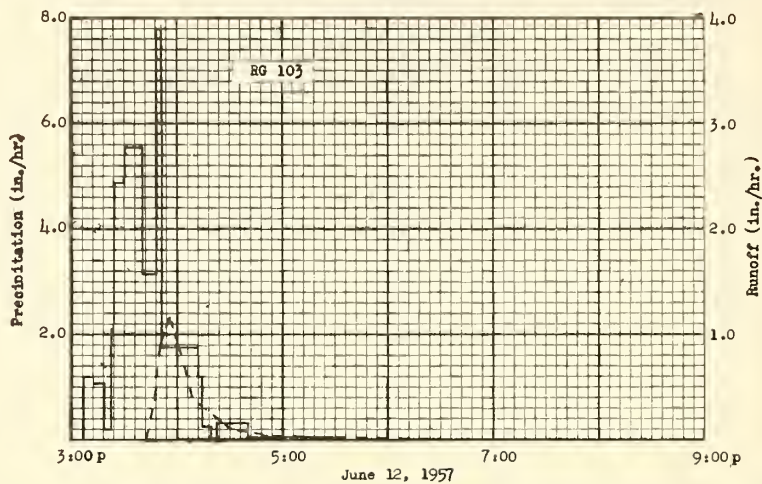
Watershed conditions: Uneven age stand of hardwoods; good woodland management; no grazing. Trees up to 80'. Shrubs 36". Herbs 18". Litter 1/2". No frost. Snow cover 5" on Jan. 20.



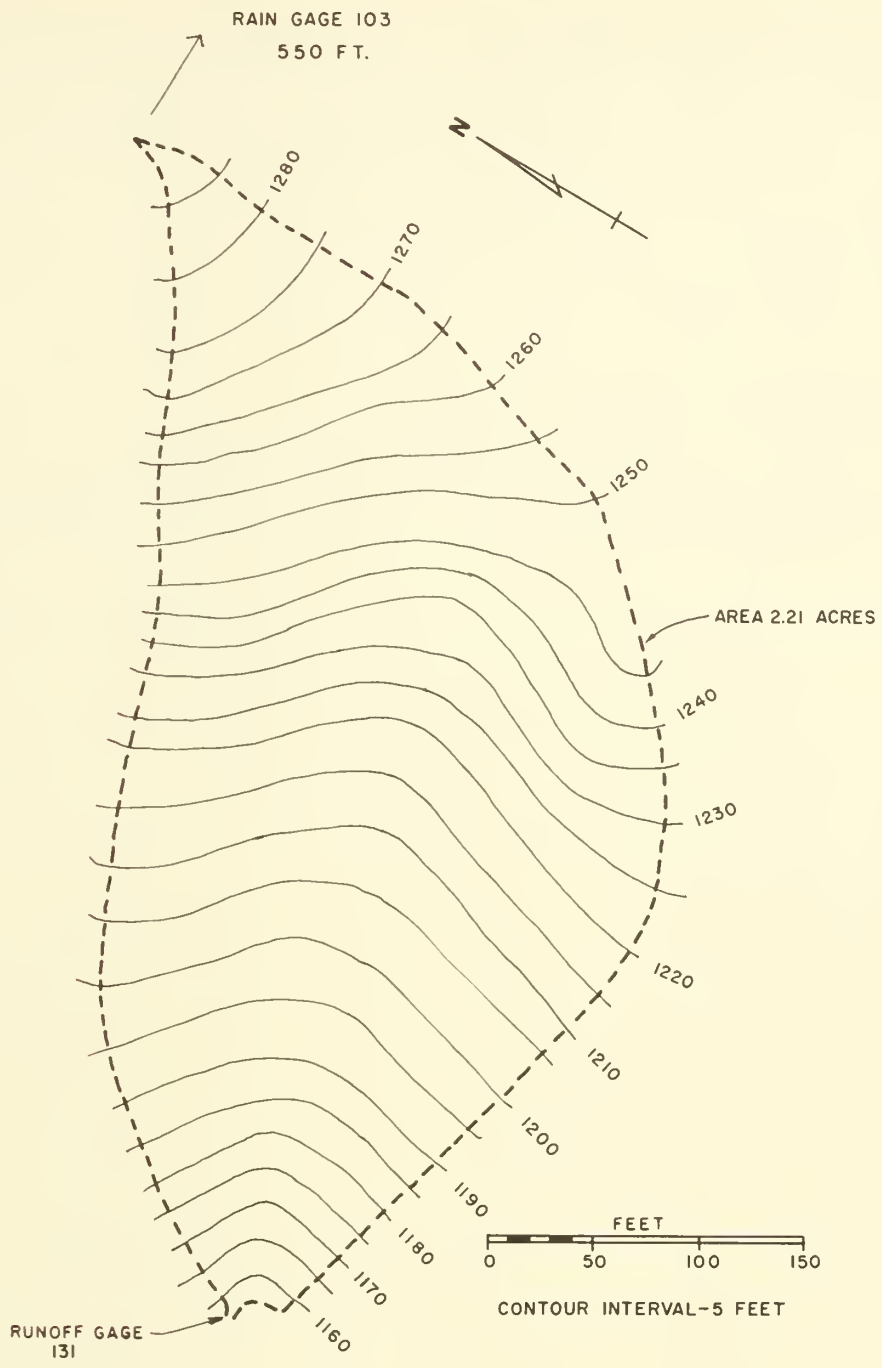
COSHOCTON, OHIO WATERSHED 131

Notes:

- 1/ Snow
- 2/ Rain and Snow

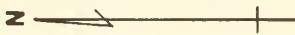


COSHOCOTON, OHIO WATERSHED 131

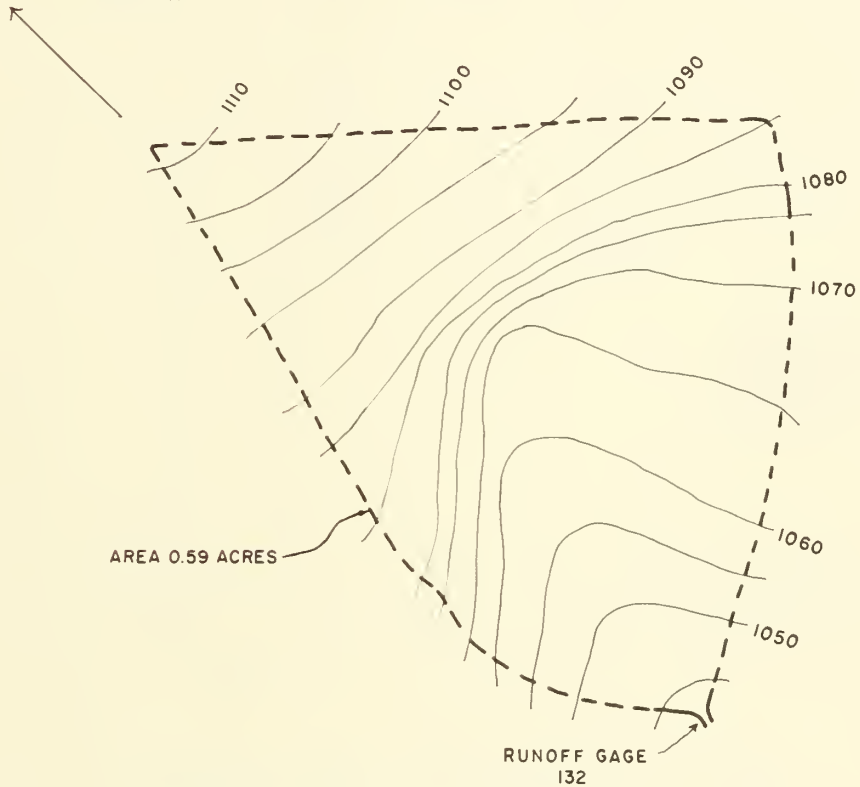


COSHOCTON, OHIO
WATERSHED 131

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Coshooton, Ohio Watershed 132 (Area - 0.59 acre) | | | | | | | | | |
|--|-------------------|-----------------|---|-------------------|---------------|---------------|---|---------------|-----------|-----------|-----------|-------------|---------------|--------|--------|--------|
| Month Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year | | | |
| 1956 P Q | 1.47 0 | 5.22 .49 | 3.80 0 | 3.85 0 | 6.87 0 | 4.61 0 | 6.44 T | 3.86 0 | 1.34 0 | 1.09 0 | 1.45 0 | 3.36 0 | 43.36 .49 | | | |
| 1957 P Q | 1.58 0 | 1.31 0 | 1.79 0 | 4.91 0 | 4.07 0 | 10.80 1.37 | 3.53 0 | 1.99 .02 | 3.90 0 | 1.58 0 | 2.74 0 | 4.07 .05 | 42.27 1.44 | | | |
| 1958 P Q | 1.49 0 | .74 0 | .94 0 | 3.53 .01 | 3.01 .10 | 4.10 0 | 9.16 .10 | 2.86 0 | 3.18 0 | .29 0 | 2.09 0 | .80 0 | 32.19 .21 | | | |
| 1959 P Q | 5.87 2.00 | 2.78 .85 | 2.44 .04 | 4.24 1.01 | 2.72 0 | 4.35 T | 4.45 0 | 2.28 .01 | 2.89 0 | 4.87 T | 2.62 0 | 1.94 .07 | 41.45 3.98 | | | |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | Coshooton, Ohio Watershed 132 | | | | | | | | | |
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 6-12 | e 2.00 | | nr | | nr | | nr | | nr | 6-12 | e .82 | 6-12 | e .82 | 6-12 | e .82 |
| 1958 | 5-4 | .03 | 5-4 | .02 | 5-4 | .04 | 5-4 | .10 | 5-4 | .10 | 5-4 | .10 | 5-4 | .10 | 5-4 | .10 |
| 1959 | 1-21 | e .30 | | nr | | nr | | nr | | nr | 1-21 | e 2.00 | 1-21 | e 2.00 | 1-21 | e 2.00 |
| Notes: Quality of records: monthly P and Q, good; annual maximum discharges and volumes, fair. Cover 1956-1959, 100% uneven age hardwoods. | | | | | | | | | | | | | | | | |
| SELECTED RUNOFF EVENTS | | | | | | | | | | | | | | | | |
| Antecedent conditions | | | Rainfall | | | Runoff | | | | | | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| Notes: No report on selected runoff events. Instrument failures during the higher peak runoff events make the detailed storm record of doubtful value. | | | | | | | | | | | | | | | | |



RAIN GAGE 103
1450 FT.



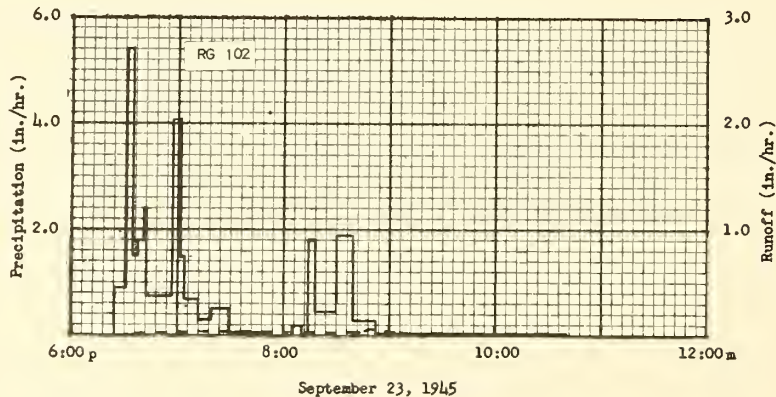
CONTOUR INTERVAL-5 FEET

COSHOCTON, OHIO
WATERSHED 132

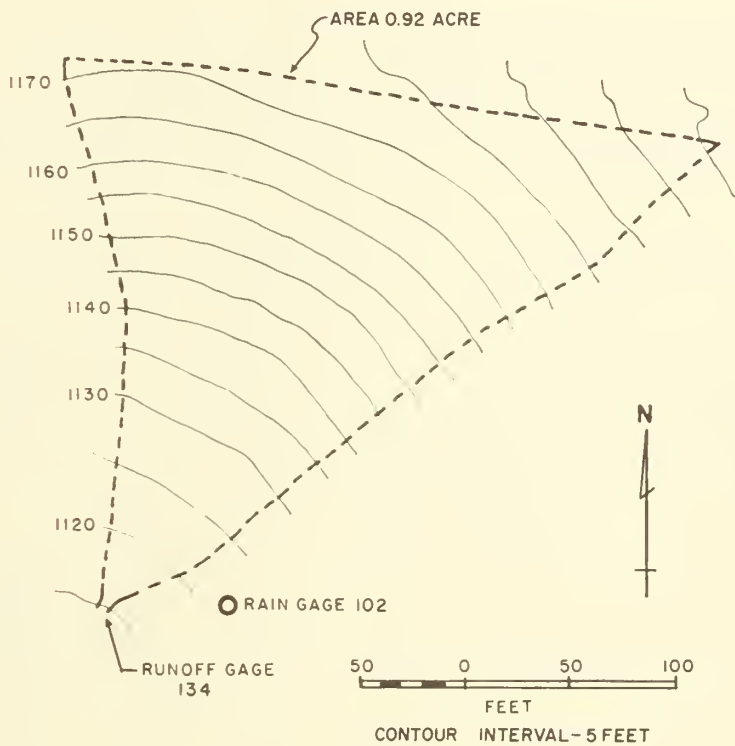
| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 134 (Area - 0.92 acre) | | | | | |
|------------------------------------|-------------------|-----------------|---|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of September 23, 1945 | | | | | | | | |
| 8-23-45 | ? | 0 | 9-23-45 | Rain gage | 102 | 9-23-45 | | |
| 8-24 | .08 | 0 | 6:24 p | 0 | 0 | 6:26 p | 0 | 0 |
| 8-25-31 | 0 | 0 | :32 | .90 | .12 | 7:06 | .0370 | T |
| 9-1 | .18 | 0 | :34 | 5.40 | .30 | 8:44 | .0370 | .01 |
| 9-2-7 | 0 | 0 | :38 | 1.50 | .40 | :50 | .0725 | .01 |
| | | | :40 | 1.80 | .46 | 9:00 | .0433 | .02 |
| 9-8 | .57 | 0 | :42 | 2.40 | .54 | :10 | .0195 | .03 |
| 9-9 | .76 | 0 | :57 | .76 | .73 | :20 | .0012 | .03 |
| 9-10 | .76 | 0 | 7:02 | 4.08 | 1.07 | | | |
| 9-11 | .24 | 0 | :04 | 1.50 | 1.12 | | | |
| 9-12 | 0 | 0 | :12 | .68 | 1.21 | | | |
| 9-13 | .34 | 0 | :20 | .30 | 1.25 | | | |
| 9-14 | 1.01 | 0 | :29 | .53 | 1.33 | | | |
| 9-15-16 | 0 | 0 | :54 | .05 | 1.35 | | | |
| 9-17 | .66 | 0 | 8:04 | 0 | 1.35 | | | |
| 9-18 | 1.09 | 0 | :10 | .20 | 1.37 | | | |
| 9-19 | 0 | 0 | :14 | 0 | 1.37 | | | |
| 9-20 | .36 | 0 | :18 | 1.80 | 1.49 | | | |
| 9-21-22 | 0 | 0 | :30 | .45 | 1.58 | | | |
| 9-23 | .62 1/2 | 0 | :39 | 1.87 | 1.86 | | | |
| | | | :52 | .28 | 1.92 | | | |
| | | | 10:40 | .04 | 2.01 | | | |

Watershed conditions:
Pines planted in 1938,
complete canopy. Pines 8'
high, grass 3", weeds 12",
briars 7". Litter of dead
grass and weeds also on
surface. No grazing.

Notes: WS 134 discontinued June 30, 1947.
To convert runoff in in/hr to cfs, multiply by 0.92766.
1/ Most of rain occurred after 4:24p.



COSHOCTON, OHIO WATERSHED 134



COSHOCTON, OHIO
WATERSHED 134

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Coshocton, Ohio Watershed 123 (Area - 1.37 acres) | | | | | | | |
|---|-------|------|------|------|------|------|--|------|------|-------|------|------|------|-------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 | P | 1.53 | 5.64 | 4.17 | 4.18 | 6.85 | 5.28 | 6.36 | 4.19 | 1.70 | 1.21 | 1.61 | 3.11 | 45.83 |
| | Q | 0 | 1.13 | .04 | 0 | .05 | .37 | .03 | T | 0 | 0 | 0 | 0 | 1.62 |
| 1957 | P | 1.80 | 1.49 | 1.80 | 5.11 | 4.33 | 10.54 | 3.41 | 1.83 | 3.91 | 1.75 | 2.98 | 4.57 | 43.52 |
| | Q | .32 | 0 | 0 | 1.12 | 0 | 3.07 | .01 | T | .04 | 0 | 0 | .67 | 5.23 |
| 1958 | P | 1.54 | .80 | 1.02 | 3.87 | 3.29 | 4.29 | 9.39 | 2.84 | 3.09 | .39 | 2.21 | .90 | 33.63 |
| | Q | .22 | .23 | 0 | 0 | .37 | 0 | .53 | .02 | .02 | 0 | 0 | 0 | 1.39 |
| 1959 | P | 5.96 | 3.33 | 2.59 | 4.59 | 3.00 | 4.47 | 4.13 | 2.26 | 2.97 | 5.64 | 3.06 | 2.37 | 44.37 |
| | Q | 2.33 | .91 | 0 | .42 | T | .01 | T | .02 | T | T | .01 | .40 | 4.10 |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | Coshocton, Ohio Watershed 123 | | | | | | |
|---|--|--|--|--|--|--|-------------------------------|--|--|--|--|--|--|
|---|--|--|--|--|--|--|-------------------------------|--|--|--|--|--|--|

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 6-12 | 5.97 | 6-12 | 1.37 | 6-12 | 1.18 | 6-28 | 1.51 | 6-28 | 1.51 | 6-12 | 1.56 | 6-12 | 1.56 | 6-12 | 1.56 |
| 1958 | 7-30 | .32 | 5-4 | .15 | 5-4 | .23 | 5-4 | .37 | 5-4 | .37 | 7-30 | .50 | 7-30 | .50 | 7-22 | .51 |
| 1959 | 1-21 | .55 | 1-21 | .45 | 1-21 | .67 | 1-21 | 1.12 | 1-21 | 1.84 | 1-21 | 2.33 | 1-21 | 2.33 | 1-21 | 2.33 |

Notes: Quality of records: monthly P and Q, excellent; annual maximum discharges and volumes, excellent. Cover 1956, 2nd year meadow; 1957, corn; 1958, wheat; 1959, 1st year meadow; conservation practice.

| SELECTED RUNOFF EVENTS | | | | | | | Coshocton, Ohio Watershed 123 | | | | | | |
|------------------------|--|--|--|--|--|--|-------------------------------|--|--|--|--|--|--|
|------------------------|--|--|--|--|--|--|-------------------------------|--|--|--|--|--|--|

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|------------------------------------|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of September 23, 1945</u> | | | | | | | | |
| 8-23-45 | T | 0 | 9-23-45 | Raingage | Y-103 | 9-23-45 | | |
| 8-24 | .07 | 0 | 5:28p | 0 | 0 | 6:52p | 0 | 0 |
| 8-25-31 | 0 | 0 | :30 | 3.00 | .10 | 7:16 | .332 | .02 |
| 9-1 | .15 | 0 | :40 | .78 | .23 | :33 | .133 | .08 |
| 9-2-7 | 0 | 0 | :50 | 0 | .23 | :40 | .0854 | .10 |
| 9-8 | .55 | 0 | :52 | 2.40 | .31 | :50 | .0483 | .11 |
| 9-9 | .66 | 0 | 6:24 | 0 | .31 | 8:02 | .0216 | .12 |
| 9-10 | .65 | 0 | :30 | .20 | .33 | :14 | .0145 | .12 |
| 9-11 | .14 | 0 | :34 | 1.20 | .41 | :29 | .0654 | .13 |
| 9-12 | 0 | 0 | :41 | 1.71 | .61 | :32 | .108 | .13 |
| 9-13 | .30 | 0 | :43 | 3.00 | .71 | :46 | .377 | .20 |
| 9-14 | 1.21 | 0 | :52 | .73 | .82 | 9:00 | .263 | .28 |
| 9-15-16 | 0 | 0 | :54 | 1.20 | .86 | :12 | .133 | .31 |
| 9-17 | .59 | 0 | :56 | .60 | .88 | :20 | .0854 | .33 |
| 9-18 | 1.08 | 0 | 7:00 | 2.55 | 1.05 | :35 | .0183 | .35 |
| 9-19 | 0 | 0 | :03 | 3.40 | 1.22 | 10:00 | .0216 | .36 |
| 9-20 | .43 | 0 | :08 | .48 | 1.26 | 11:45 | 0 | .37 |
| 9-21-22 | 0 | 0 | :16 | .52 | 1.33 | | | |
| 9-23 | .20 1/ | 0 | :22 | .20 | 1.35 | | | |
| | | | :30 | .45 | 1.41 | | | |
| | | | :58 | .06 | 1.44 | | | |
| | | | 8:08 | 0 | 1.44 | | | |
| | | | :10 | .30 | 1.45 | | | |
| | | | :14 | 0 | 1.45 | | | |
| | | | :20 | 1.20 | 1.57 | | | |
| | | | :26 | .60 | 1.63 | | | |
| | | | :32 | .40 | 1.67 | | | |
| | | | :34 | 2.40 | 1.75 | | | |
| | | | :40 | 1.90 | 1.94 | | | |
| | | | :50 | .24 | 1.98 | | | |

Notes: To convert runoff in in/hr to cfe, multiply by 1.3814.
1/ Most of rain occurred after 3:28p.

SELECTED RUNOFF EVENTS

Coshocton, Ohio Watershed 123

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|---|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of September 23, 1945 - continued | | | | | | | | |
| | | | 9:12p | .11 | 2.02 | | | |
| | | | 10:10 | .04 | 2.06 | | | |
| | | | :26 | 0 | 2.06 | | | |
| | | | :40 | .09 | 2.08 | | | |
| Event of June 12, 1957 | | | | | | | | |
| 5-13-57 | 0 | 0 | 6-12-57 | Raingage | Y-103 | 6-12-57 | | |
| 5-14 | 1.33 | 0 | 3:10p | 0 | 0 | 3:30p | 0 | 0 |
| 5-15 | .06 | 0 | :12 | 3.60 | .12 | :40 | e .06 | T |
| 5-16-17 | 0 | 0 | :18 | 1.40 | .26 | :45 | e .20 | .02 |
| | | | :30 | 2.25 | .71 | :50 | e .60 | .05 |
| 5-18 | .16 | 0 | :38 | 3.60 | 1.19 | :55 | e 3.20 | .21 |
| 5-19 | .24 | 0 | :42 | 4.05 | 1.46 | 4:00 | e 5.97 | .59 |
| 5-20 | .20 | 0 | :47 | 6.72 | 2.02 | :05 | e 3.20 | .97 |
| 5-21 | 0 | 0 | :50 | 2.00 | 2.12 | :10 | e 1.20 | 1.16 |
| 5-22 | .53 | 0 | :54 | 4.20 | 2.40 | :15 | e .50 | 1.23 |
| 5-23-25 | 0 | 0 | :57 | 6.60 | 2.73 | :30 | e .303 | 1.32 |
| 5-26 | .18 | 0 | 4:00 | 4.00 | 2.93 | :50 | e .192 | 1.40 |
| 5-27-31 | 0 | 0 | :10 | .12 | 2.95 | 5:10 | e .0999 | 1.45 |
| 6-1 | .11 | 0 | :26 | .34 | 3.04 | :30 | e .0537 | 1.47 |
| 6-2-7 | 0 | 0 | 5:00 | .16 | 3.13 | 6:10 | e .0216 | 1.50 |
| 6-8 | .99 | 0 | 9:10 | .01 | 3.18 | 8:00 | 0 | 1.51 |
| 6-9-10 | 0 | 0 | | | | | | |
| 6-11 | .30 | 0 | | | | | | |
| 6-12 | 0 | 0 | | | | | | |

Watershed conditions: In corn, wheat, meadow, meadow rotation (conservation practice) since 1941. Corn planted May 3, 1957. Corn plants 20" high, weeds 12" high.

Notes: To convert runoff in in/hr to cfs, multiply by 1.3814

| SELECTED RUNOFF EVENTS | | | | | | Coshooton, Ohio Watershed 123 | | |
|---|-------------------|-----------------|---------------|-------------------|---------------|-------------------------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of June 28, 1957 | | | | | | | | |
| 5-28-57 | 0 | 0 | 6-28-57 | Raingage | Y-103 | 6-28-57 | | |
| 5-29-31 | 0 | 0 | 1:07p | 0 | 0 | 4:55p | 0 | 0 |
| 6-1 | .11 | 0 | :11 | 3.30 | .22 | 5:12 | .0383 | .01 |
| 6-2-7 | 0 | 0 | :40 | .04 | .24 | :33 | .116 | .03 |
| 6-8 | .99 | 0 | :46 | 1.40 | .38 | :42 | .214 | .06 |
| 6-9-10 | 0 | 0 | 2:02 | 0 | .38 | :52 | .276 | .10 |
| 6-11 | .30 | 0 | :08 | .60 | .44 | :57 | .290 | .12 |
| 6-12 | 3.18 | 1.51 | :14 | 0 | .44 | 6:06 | .126 | .18 |
| 6-13 | .48 | .06 | :35 | .06 | .46 | :10 | .410 | .20 |
| 6-14 | .06 | 0 | :52 | .28 | .54 | :14 | .496 | .23 |
| 6-15 | 0 | 0 | :58 | .50 | .59 | :18 | .722 | .27 |
| 6-16 | .16 | 0 | 3:42 | .04 | .62 | :30 | .678 | .41 |
| 6-17-18 | 0 | 0 | 4:24 | .13 | .71 | :35 | .595 | .47 |
| 6-19 | .02 | 0 | :30 | 1.70 | .88 | :40 | .678 | .52 |
| 6-20-22 | 0 | 0 | 5:30 | .31 | 1.19 | :43 | .818 | .56 |
| 6-23 | .10 | 0 | 6:05 | .57 | 1.52 | :46 | 1.03 | .61 |
| 6-24 | 2.09 | 0 | :16 | .82 | 1.67 | :48 | 1.40 | .65 |
| 6-25-27 | 0 | 0 | :34 | .70 | 1.88 | :52 | 1.91 | .76 |
| 6-28 | .17 2/3 | 0 | :50 | 1.72 | 2.34 | :56 | 1.68 | .88 |
| | | | 7:00 | 1.08 | 2.52 | 7:03 | .919 | 1.02 |
| | | | :40 | .37 | 2.77 | :08 | .700 | 1.09 |
| | | | :44 | 0 | 2.77 | :22 | .377 | 1.21 |
| | | | 8:00 | .11 | 2.80 | :33 | .263 | 1.27 |
| | | | :10 | .06 | 2.81 | 8:02 | .161 | 1.38 |
| | | | | | | :07 | .124 | 1.39 |
| | | | | | | :37 | .0717 | 1.44 |
| | | | | | | 9:32 | .0294 | 1.48 |
| | | | | | | 10:47 | .0088 | 1.51 |
| | | | | | | 11:47 | 0 | 1.51 |
| Watershed conditions: In corn, wheat, meadow, meadow rotation (conservation practice) since 1941. Corn planted May 3, 1957. Corn plants 38" high, weeds and grass 24" high. | | | | | | | | |
| Event of January 21, 1959 | | | | | | | | |
| 12-21-22-58 | 0 | 0 | 1-21-59 | Raingage | Y-103 | 1-21-59 | | |
| 12-23 | T | 0 | 12:01a | 0 | 0 | 1:46a | 0 | 0 |
| 12-24 | .06 1/2 | 0 | 1:04 | .06 | .06 | 2:10 | .0383 | .01 |
| 12-25-31 | 0 | 0 | :53 | .16 | .19 | :40 | .0854 | .04 |
| 1-1-59 | .68 | 0 | :58 | 0 | .19 | 3:10 | .108 | .09 |
| 1-2-3 | 0 | 0 | 2:00 | .90 | .22 | :50 | .116 | .16 |
| 1-4 | .06 1/2 | 0 | :02 | 0 | .22 | 4:14 | .108 | .21 |
| 1-5-8 | 0 | 0 | :30 | .26 | .34 | :28 | .124 | .23 |
| 1-9-10 | T 1/2 | 0 | 3:00 | .06 | .37 | :36 | .214 | .26 |
| 1-11-13 | 0 | 0 | :30 | .1 | .44 | :44 | .317 | .29 |
| 1-14 | .29 | 0 | :50 | 0 | .44 | :54 | .534 | .37 |
| 1-15 | .85 2/3 | 0 | 4:17 | .13 | .50 | 5:06 | .553 | .47 |
| 1-16-19 | .36 1/2 | 0 | :30 | .23 | .56 | :30 | .377 | .66 |
| 1-20 | .47 | 0 | :39 | 1.47 | .78 | :46 | .317 | .75 |
| | | | :47 | .60 | .86 | 6:20 | .171 | .89 |
| | | | 5:05 | .23 | .93 | :50 | .0999 | .96 |
| | | | :14 | .53 | 1.01 | 8:00 | .0717 | 1.05 |
| | | | :58 | .22 | 1.17 | :30 | .0654 | 1.08 |
| | | | 7:20 | .01 | 1.19 | :50 | .0926 | 1.11 |
| | | | :30 | .24 | 1.23 | 9:04 | .116 | 1.13 |

Notes:

1/ Snow

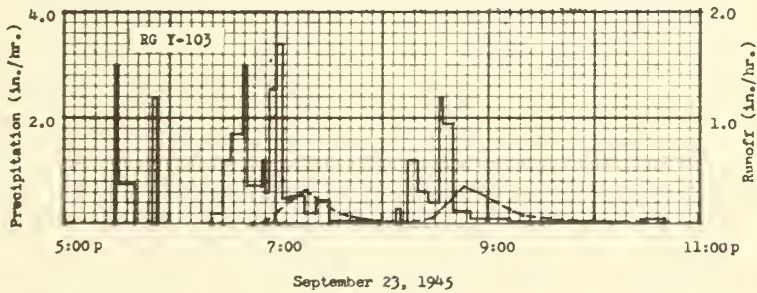
2/ Rain and Snow

To convert runoff in in/hr to cfs, multiply by 1.3614

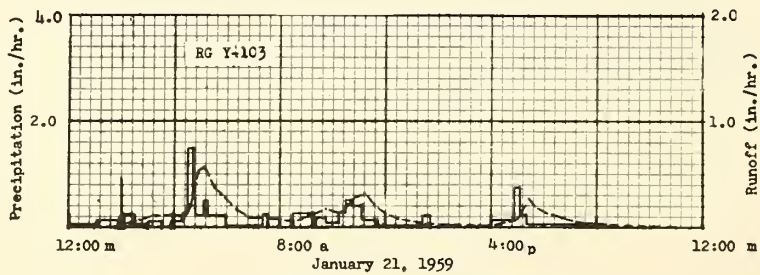
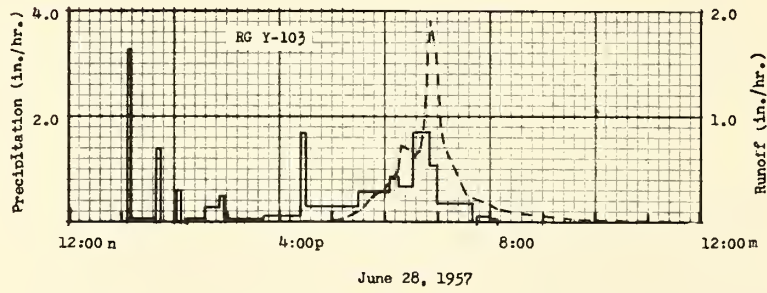
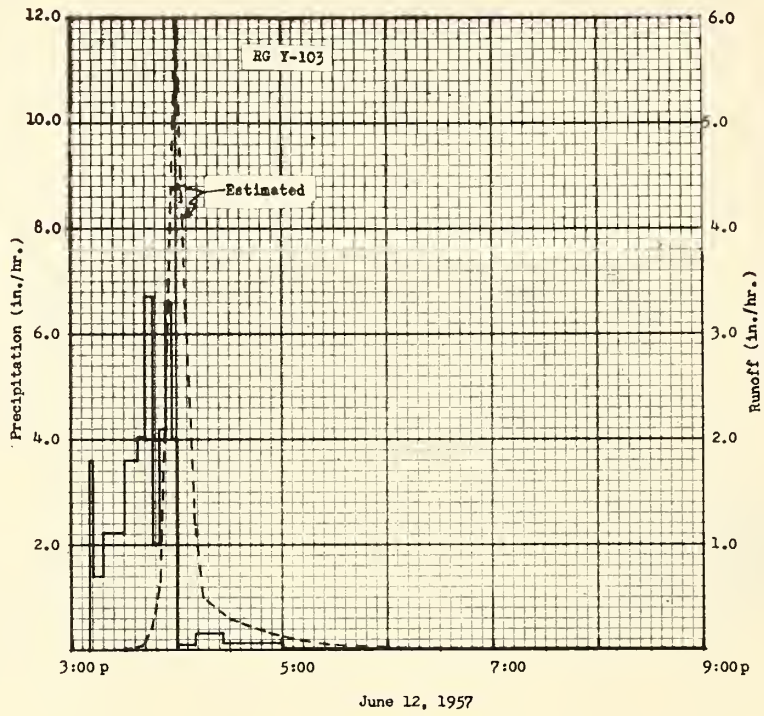
3/ Rain ended about 7:30a.

| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 123 | | | | | |
|--|-------------------|-----------------|-------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of January 21, 1959 - Continued</u> | | | | | | | | |
| | | | 8:28a | 0 | 1.23 | 9:46a | .171 | 1.24 |
| | | | 9:15 | .27 | 1.44 | 10:10 | .142 | 1.30 |
| | | | :20 | 0 | 1.44 | :22 | .151 | 1.33 |
| | | | :44 | .20 | 1.52 | :40 | .263 | 1.40 |
| | | | 10:14 | .10 | 1.57 | 11:12 | .317 | 1.55 |
| | | | :27 | .28 | 1.63 | :34 | .214 | 1.65 |
| | | | :44 | .56 | 1.79 | 12:00m | .133 | 1.73 |
| | | | 11:06 | .41 | 1.94 | :30p | .0717 | 1.78 |
| | | | :40 | .16 | 2.03 | 1:20 | .0337 | 1.82 |
| | | | 1:24p | .02 | 2.07 | 2:30 | .0294 | 1.86 |
| | | | :40 | .22 | 2.13 | 4:00 | .0179 | 1.89 |
| | | | 3:30 | 0 | 2.13 | :40 | .0483 | 1.91 |
| | | | 4:00 | .04 | 2.15 | 5:00 | .0854 | 1.93 |
| | | | :52 | .15 | 2.28 | :24 | .263 | 2.01 |
| | | | 5:03 | .76 | 2.42 | :40 | .203 | 2.08 |
| | | | :22 | .25 | 2.50 | 6:08 | .133 | 2.16 |
| | | | 7:40 | .07 | 2.66 | :40 | .0854 | 2.21 |
| | | | | | | 7:30 | .0483 | 2.27 |
| | | | | | | 8:30 | .0216 | 2.30 |
| | | | | | | 10:10 | .0044 | 2.32 |
| | | | | | | 11:00 | 0 | 2.33 |

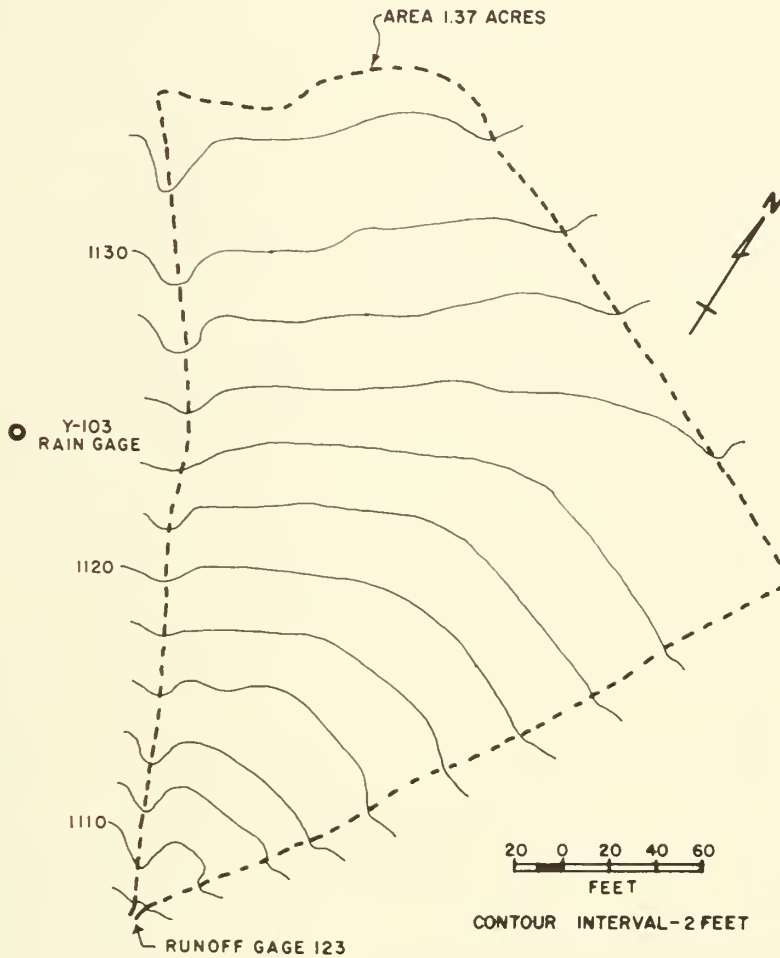
Watershed conditions: In corn, wheat, meadow, meadow rotation (conservation practice) since 1941. First year meadow in 1959. Vegetation in dormant state. Depth of frost penetration 1". Snow cover 5" on January 20.



COSHOCTON, OHIO WATERSHED 123



COSHOCTON, OHIO WATERSHED 123



COSHOCTON, OHIO
WATERSHED 123

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | | Coshocton, Ohio Watershed 115 (Area - 1.61 acres) | | | | | | |
|---|-------|------|------|------|------|------|-------|--|------|-------|------|------|------|-------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 | P | 1.53 | 5.64 | 4.17 | 4.18 | 6.85 | 5.28 | 6.36 | 4.19 | 1.70 | 1.21 | 1.61 | 3.11 | 45.83 |
| | Q | 0 | .41 | .32 | 0 | .01 | .08 | .03 | 0 | 0 | 0 | 0 | 0 | .85 |
| 1957 | P | 1.80 | 1.49 | 1.80 | 5.11 | 4.33 | 10.54 | 3.41 | 1.83 | 3.91 | 1.75 | 2.98 | 4.57 | 43.52 |
| | Q | .02 | 0 | 0 | .26 | .03 | 2.18 | .01 | 0 | .02 | 0 | 0 | .41 | 2.93 |
| 1958 | P | 1.54 | .80 | 1.02 | 3.87 | 3.29 | 4.29 | 9.39 | 2.84 | 3.09 | .39 | 2.21 | .90 | 33.63 |
| | Q | .48 | .10 | 0 | 0 | .12 | 0 | .35 | .01 | 0 | 0 | 0 | 0 | 1.06 |
| 1959 | P | 5.96 | 3.33 | 2.59 | 4.59 | 3.00 | 4.47 | 4.13 | 2.26 | 2.97 | 5.64 | 3.06 | 2.37 | 44.37 |
| | Q | 1.50 | .25 | T | .12 | T | 0 | T | .01 | 0 | T | 0 | .04 | 1.92 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS
Coshocton, Ohio Watershed 115

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 6-12 | 4.12 | 6-12 | 0.99 | 6-12 | 1.04 | 6-28 | 1.05 | 6-12 | 1.09 | 6-12 | 1.09 | 6-12 | 1.09 | 6-12 | 1.09 |
| 1958 | 7-30 | .39 | 7-30 | .11 | 7-31 | .11 | 1-24 | .22 | 1-24 | .28 | 7-30 | .33 | 7-30 | .33 | 1-21 | .48 |
| 1959 | 1-21 | .32 | 1-21 | .27 | 1-21 | .43 | 1-21 | .86 | 1-21 | 1.25 | 1-21 | 1.50 | 1-21 | 1.50 | 1-21 | 1.50 |

Notes: Quality of records: monthly P, good; Q, excellent; annual maximum discharges and volumes, excellent. Cover 1956, 2nd year meadow; 1957, corn; 1958, wheat; 1959, 1st year meadow, prevailing practice.

SELECTED RUNOFF EVENTS
Coshocton, Ohio Watershed 115

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|-----------------------------|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of September 23, 1945 | | | | | | | | |
| 8-23-45 | T | 0 | 9-23-45 | Rainage | Y-103 | 9-23-45 | | |
| 8-24 | .07 | 0 | 5:28p | 0 | 0 | 5:28p | 0 | 0 |
| 8-25-31 | 0 | 0 | :30 | 3.00 | .10 | :34 | .0003 | T |
| 9-1 | .15 | 0 | :40 | .78 | .23 | :39 | .0457 | T |
| 9-2-7 | 0 | 0 | :50 | 0 | .23 | :50 | .0152 | .01 |
| 9-8 | .55 | T | :52 | 2.40 | .31 | :56 | .0986 | .01 |
| 9-9 | .66 | .01 | 6:24 | 0 | .31 | 6:04 | .0250 | .02 |
| 9-10 | .65 | .02 | :30 | .20 | .33 | :35 | .0038 | .02 |
| 9-11 | .11 | T | :34 | 1.20 | .41 | :39 | .145 | .03 |
| 9-12 | 0 | 0 | :41 | 1.71 | .61 | :48 | .577 | .09 |
| 9-13 | .30 | 0 | :43 | 3.00 | .71 | :59 | .334 | .17 |
| 9-14 | 1.21 | .30 | :52 | .73 | .82 | 7:07 | 1.63 | .28 |
| 9-15-16 | 0 | 0 | :54 | 1.20 | .86 | :13 | .825 | .41 |
| 9-17 | .57 | T | :56 | .60 | .88 | :23 | .282 | .49 |
| 9-18 | 1.08 | .13 | 7:00 | 2.55 | 1.05 | :31 | .115 | .52 |
| 9-19 | 0 | 0 | :03 | 3.40 | 1.22 | :43 | .0788 | .54 |
| 9-20 | .43 | .07 | :08 | .48 | 1.26 | :53 | .0411 | .55 |
| 9-21-22 | 0 | 0 | :16 | .52 | 1.33 | 8:13 | .0184 | .56 |
| 9-23 | .20 1/2 | .85 | :22 | .20 | 1.35 | :24 | .0850 | .57 |
| | | | :30 | .45 | 1.41 | :32 | .224 | .60 |
| | | | :58 | .06 | 1.44 | :45 | .850 | .69 |
| | | | 8:08 | 0 | 1.44 | :54 | .295 | .78 |
| | | | :10 | .30 | 1.45 | 9:02 | .125 | .80 |
| | | | :14 | 0 | 1.45 | :13 | .0506 | .82 |
| | | | :20 | 1.20 | 1.57 | :23 | .0326 | .82 |
| | | | :26 | .60 | 1.63 | :53 | .0123 | .83 |
| | | | :32 | .40 | 1.67 | 12:00m | .0003 | .85 |
| | | | :34 | 2.40 | 1.75 | | | |
| | | | :40 | 1.90 | 1.94 | | | |
| | | | :50 | .24 | 1.98 | | | |

Notes: To convert runoff in in/hr to cfs, multiply by 1.6234.
1/ Most of rain occurred after 3:28p.

SELECTED RUNOFF EVENTS

Coshocton, Ohio Watershed 115

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|--|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of September 23, 1945 - Continued</u> | | | | | | | | |
| | | | 9:12p | 0.11 | 2.02 | | | |
| | | | 10:10 | .04 | 2.06 | | | |
| | | | :26 | 0 | 2.06 | | | |
| | | | :40 | .09 | 2.08 | | | |
| <p>Watershed conditions: In corn, wheat, meadow, meadow rotation (prevailing practice) since 1941. Corn in 1945. Corn plants 108" high, weeds 48", grass 36" high.</p> | | | | | | | | |
| <u>Event of June 12, 1957</u> | | | | | | | | |
| | | | 6-12-57 | Raingage | Y-103 | 6-12-57 | | |
| 5-13-57 | 0 | 0 | 3:10p | 0 | 0 | 3:34p | 0 | 0 |
| 5-14 | 1.33 | .03 | :12 | 3.60 | .12 | :44 | .270 | .01 |
| 5-15 | .06 | 0 | :18 | 1.40 | .26 | :48 | 1.19 | .05 |
| 5-16-17 | 0 | 0 | :30 | 2.25 | .71 | :59 | 4.12 | .50 |
| 5-18 | .16 | 0 | :38 | 3.60 | 1.19 | 4:01 | 3.67 | .63 |
| 5-19 | .24 | 0 | :42 | 4.05 | 1.46 | :13 | .392 | .91 |
| 5-20 | .20 | 0 | :47 | 6.72 | 2.02 | :30 | .129 | .97 |
| 5-21 | 0 | 0 | :50 | 2.00 | 2.12 | :48 | .0986 | 1.00 |
| 5-22 | .53 | 0 | :54 | 4.20 | 2.40 | 5:06 | .0411 | 1.02 |
| 5-23-25 | 0 | 0 | :57 | 6.60 | 2.73 | 6:00 | .0123 | 1.04 |
| 5-26 | .18 | 0 | 4:00 | 4.00 | 2.93 | 9:08 | 0 | 1.05 |
| 5-27-31 | 0 | 0 | :10 | .12 | 2.95 | | | |
| 6-1 | .14 | 0 | :26 | .34 | 3.04 | | | |
| 6-2-7 | 0 | 0 | 5:00 | .16 | 3.13 | | | |
| 6-8 | .99 | 0 | 9:00 | .01 | 3.18 | | | |
| 6-9-10 | 0 | 0 | | | | | | |
| 6-11 | .30 | 0 | | | | | | |
| 6-12 | 0 | 0 | | | | | | |
| <p>Watershed conditions: In corn, wheat, meadow, meadow rotation (prevailing practice) since 1941. Corn planted May 3, 1957. Corn plants 18" high, weeds 10" high.</p> | | | | | | | | |

Notes:

| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 115 | | | | | |
|---------------------------|-------------------|-----------------|-------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of June 28, 1957 | | | | | | | | |
| 5-28-31-57 | 0 | 0 | 6-28-57 | Raingage | Y-103 | 6-28-57 | | |
| 6-1 | .14 | 0 | 1:07p | 0 | 0 | 1:40p | 0 | 0 |
| 6-2-7 | 0 | 0 | :11 | 3.30 | .22 | 4:30 | .0610 | .01 |
| 6-8 | .99 | 0 | :40 | .04 | .24 | :36 | .121 | .02 |
| 6-9-10 | 0 | 0 | :46 | 1.40 | .38 | :46 | .0610 | .03 |
| 6-11 | .30 | 0 | 2:02 | 0 | .38 | 5:15 | .0250 | .05 |
| 6-12 | 3.18 | 1.05 | :08 | .60 | .44 | :25 | .0727 | .06 |
| 6-13 | .48 | .04 | :14 | 0 | .44 | :40 | .137 | .08 |
| 6-14 | .06 | 0 | :35 | .06 | .56 | :58 | .137 | .12 |
| 6-15 | 0 | 0 | :52 | .28 | .54 | 6:15 | .258 | .18 |
| 6-16 | .16 | 0 | :58 | .50 | .59 | :20 | .439 | .21 |
| 6-17-18 | 0 | 0 | 3:42 | .04 | .62 | :25 | .471 | .25 |
| 6-19 | .02 | 0 | 4:24 | .13 | .71 | :35 | .407 | .32 |
| 6-20-22 | 0 | 0 | :30 | 1.70 | .88 | :40 | .439 | .36 |
| 6-23 | .10 | 0 | 5:30 | .31 | 1.19 | :45 | .577 | .40 |
| 6-24 | 2.09 | .02 | 6:05 | .57 | 1.52 | :48 | .782 | .43 |
| 6-25-27 | 0 | 0 | :16 | .82 | 1.67 | :52 | 1.49 | .51 |
| 6-28 | .17 ^{2/} | 0 | :34 | .70 | 1.88 | :54 | 1.59 | .56 |
| | | | :50 | 1.72 | 2.34 | :58 | 1.36 | .66 |
| | | | 7:00 | 1.08 | 2.52 | 7:00 | 1.10 | .70 |
| | | | :40 | | | :04 | .696 | .76 |
| | | | :44 | 0 | 2.77 | :09 | .505 | .81 |
| | | | 8:00 | .11 | 2.80 | :15 | .377 | .85 |
| | | | :10 | .06 | 2.81 | :35 | .172 | .94 |
| | | | | | | 8:01 | .0986 | 1.00 |
| | | | | | | :15 | .0610 | 1.02 |
| | | | | | | :30 | .0411 | 1.03 |
| | | | | | | 9:00 | .0184 | 1.05 |
| | | | | | | 12:00m | .0003 | 1.06 |
| Event of January 21, 1959 | | | | | | | | |
| 12-21-22-58 | 0 | 0 | 1-21-59 | Raingage | Y-103 | 1-21-59 | | |
| 12-23 | T | 0 | 12:01a | 0 | 0 | 12:54a | 0 | 0 |
| 12-24 | .06 ^{1/} | 0 | 1:04 | .06 | .06 | 4:00 | .0326 | .05 |
| 12-25-31 | 0 | 0 | :53 | .16 | .19 | :38 | .0610 | .08 |
| 1-1-59 | .68 | 0 | :58 | 0 | .19 | :48 | .106 | .09 |
| 1-2-3 | 0 | 0 | 2:00 | .90 | .22 | 5:00 | .154 | .12 |
| 1-4 | .06 ^{1/} | 0 | :02 | 0 | .22 | :38 | .246 | .26 |
| 1-5-8 | 0 | 0 | :30 | .26 | .34 | 6:00 | .202 | .34 |
| 1-9-10 | T ^{1/} | 0 | 3:00 | .06 | .37 | :50 | .0850 | .45 |
| 1-11-13 | 0 | 0 | :30 | .14 | .44 | 8:00 | .0610 | .53 |
| 1-14 | .29 | 0 | :50 | 0 | .44 | :30 | .0506 | .56 |
| 1-15 | .85 ^{2/} | 0 | 4:17 | .13 | .50 | 9:00 | .0850 | .59 |
| 1-16-19 | .36 ^{1/} | 0 | :30 | .28 | .56 | :50 | .163 | .71 |
| 1-20 | .47 | 0 | :39 | 1.47 | .78 | 10:12 | .137 | .76 |
| | | | :47 | .60 | .86 | :28 | .202 | .80 |
| | | | 5:05 | .23 | .93 | 11:04 | .321 | .96 |
| | | | :14 | .53 | 1.01 | :30 | .202 | 1.08 |
| | | | :58 | .22 | 1.17 | 12:00n | .113 | 1.16 |
| | | | 7:20 | .01 | 1.19 | :14p | .0850 | 1.18 |
| | | | :30 | .24 | 1.23 | :30 | .0557 | 1.20 |
| | | | 8:28 | 0 | 1.23 | 4:00 | .0075 | 1.28 |
| | | | 9:15 | .27 | 1.44 | 5:06 | .0610 | 1.30 |
| | | | :20 | 0 | 1.44 | :28 | .163 | 1.35 |
| | | | :44 | .20 | 1.52 | 6:00 | .0986 | 1.42 |
| | | | 10:14 | .10 | 1.57 | :46 | .0411 | 1.47 |

Notes:

^{1/} Snow
^{2/} Rain and Snow

^{3/} Rain ended about 7:30a.

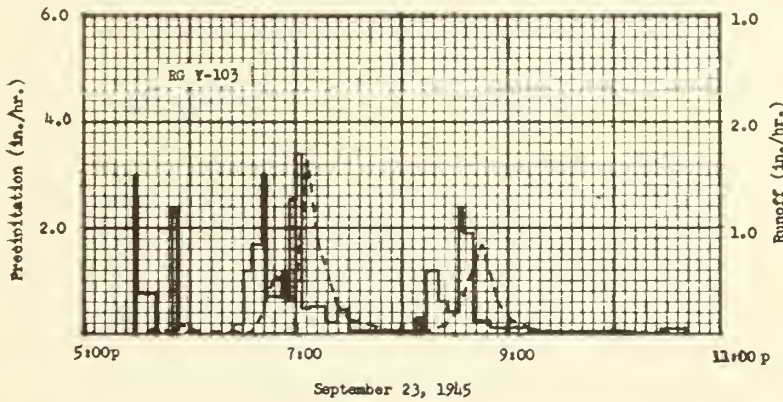
SELECTED RUNOFF EVENTS

Coshocton, Ohio Watershed 115

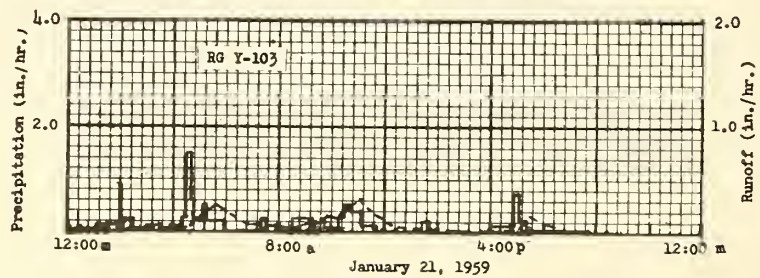
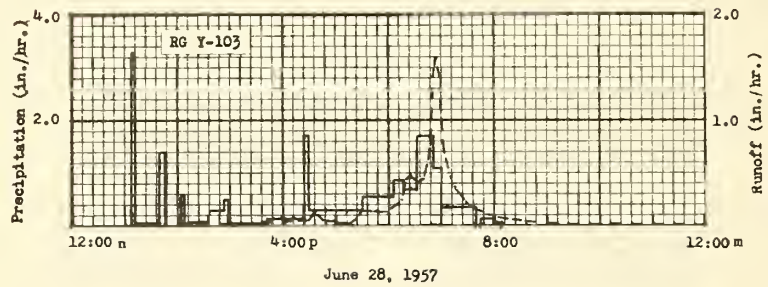
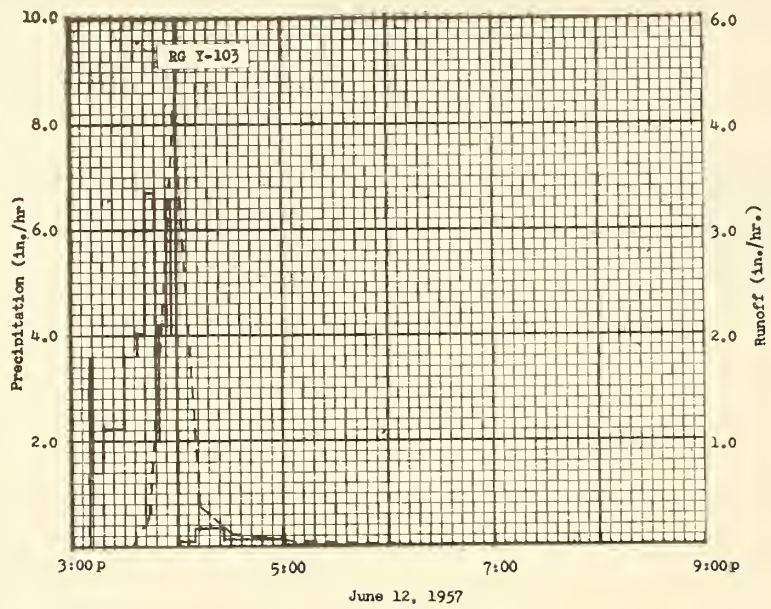
| Antecedent conditions | | | Rainfall | | | Runoff | | |
|--|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of January 21, 1959 - Continued</u> | | | | | | | | |
| | | | 10:27a | 0.28 | 1.63 | 7:18p | 0.0250 | 1.49 |
| | | | 11:06 | .41 | 1.94 | 8:50 | 0 | 1.50 |
| | | | 1:24p | .02 | 2.07 | | | |
| | | | 1:40 | .22 | 2.13 | | | |
| | | | 3:30 | 0 | 2.13 | | | |
| | | | 4:00 | .04 | 2.15 | | | |
| | | | 5:2 | .15 | 2.28 | | | |
| | | | 5:03 | .76 | 2.42 | | | |
| | | | 1:22 | .25 | 2.50 | | | |
| | | | 7:40 | .07 | 2.66 | | | |

Watershed conditions: In corn, wheat, meadow, meadow rotation (prevailing practice) since 1941. First year meadow in 1959. Vegetation dormant. Frost penetration 1". Snow cover 5" on January 20.

Notes:

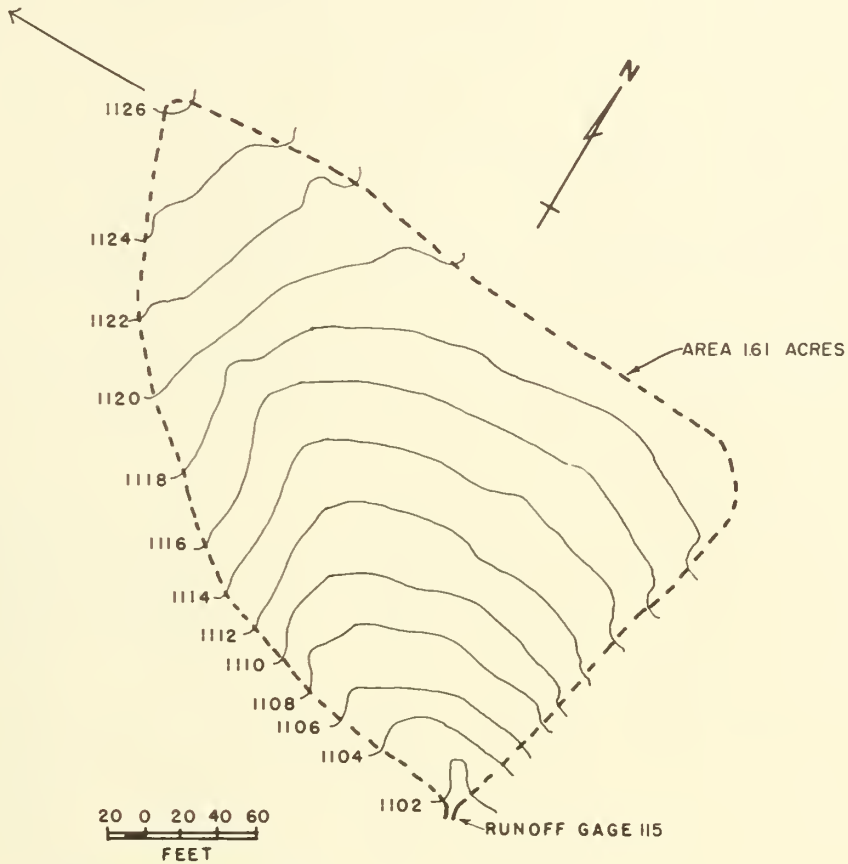


COSHOCTON, OHIO WATERSHED 115



COSHOCTON, OHIO WATERSHED 115

RAIN GAGE Y-103
500 FT.



CONTOUR INTERVAL-2 FEET

COSHOCTON, OHIO
WATERSHED II5

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | | Coshocton, Ohio Watershed 127 (Area - 1.65 acres) | | | | | | | | |
|---|-------------------|-----------------|---|-------------------|---------------|---------------|--------------|--|----------|-------|-------|------|--------|-------|--------|-------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year | | |
| | | 1956 | P | 1.53 | 5.64 | 4.17 | 4.18 | 6.85 | 5.28 | 6.36 | 4.19 | 1.70 | 1.21 | 1.61 | 3.11 | 45.83 |
| | Q | .36 | 1.03 | .38 | T | .13 | .71 | .24 | .01 | 0 | 0 | 0 | 0 | 2.86 | | |
| 1957 | P | 1.80 | 1.49 | 1.80 | 5.11 | 4.33 | 10.54 | 3.41 | 1.83 | 3.91 | 1.75 | 2.98 | 4.57 | 43.52 | | |
| | Q | .01 | 0 | 0 | 1.90 | 0 | 3.51 | T | 0 | T | 0 | 0 | 1.43 | 6.85 | | |
| 1958 | P | 1.54 | .80 | 1.02 | 3.87 | 3.29 | 4.29 | 9.39 | 2.84 | 3.09 | .39 | 2.21 | .90 | 33.63 | | |
| | Q | .18 | .12 | 0 | 0 | .41 | 0 | .61 | .07 | .01 | 0 | 0 | 0 | 1.40 | | |
| 1959 | P | 5.96 | 3.33 | 2.59 | 4.59 | 3.00 | 4.47 | 4.13 | 2.26 | 2.97 | 5.64 | 3.06 | 2.37 | 44.37 | | |
| | Q | 2.20 | 1.71 | .02 | .47 | .01 | .01 | .01 | .09 | 0 | 0 | .22 | .49 | 5.23 | | |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | | Coshocton, Ohio Watershed 127 | | | | | | | | |
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 6-12 | 3.12 | 6-12 | 0.86 | 6-12 | 1.11 | 6-12 | 1.49 | 6-12 | 1.66 | 6-12 | 1.75 | 6-12 | 1.84 | 6-12 | 1.85 |
| 1958 | 7-30 | .72 | 7-30 | .18 | 5-4 | .20 | 5-4 | .31 | 5-4 | .34 | 7-30 | .52 | 7-30 | .52 | 7-28 | .56 |
| 1959 | 1-21 | .47 | 1-21 | .38 | 1-21 | .56 | 1-21 | .96 | 1-21 | 1.64 | 1-21 | 1.97 | 1-21 | 2.03 | 1-21 | 2.20 |
| Notes: Quality of records: monthly P, excellent; Q, good; annual maximum discharges and volumes, good. Cover 1956, 2nd year meadow; 1957, corn; 1958, wheat; 1959, 1st year meadow; conservation practice plus mulch tillage. | | | | | | | | | | | | | | | | |
| SELECTED RUNOFF EVENTS | | | | | | | | Coshocton, Ohio Watershed 127 | | | | | | | | |
| Antecedent conditions | | | | Rainfall | | | | Runoff | | | | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | | | | | | |
| Event of June 12, 1957 | | | | | | | | | | | | | | | | |
| 5-13-57 | 0 | 0 | 6-12-57 | Raingage | Y-103 | 6-12-57 | | | | | | | | | | |
| 5-14 | 1.33 | 0 | 3:10p | 0 | 0 | 3:31p | 0 | 0 | | | | | | | | |
| 5-15 | .06 | 0 | :12 | 3.60 | .12 | :52 | .291 | .03 | | | | | | | | |
| 5-16-17 | 0 | 0 | :18 | 1.40 | .26 | :54 | .220 | .04 | | | | | | | | |
| | | | :30 | 2.25 | .71 | 4:00 | 1.98 | .11 | | | | | | | | |
| 5-18 | .16 | 0 | :38 | 3.60 | 1.19 | :03 | 3.12 | .24 | | | | | | | | |
| 5-19 | .24 | 0 | :42 | 4.05 | 1.46 | :12 | .873 | .50 | | | | | | | | |
| 5-20 | .20 | 0 | :47 | 6.72 | 2.02 | :26 | .614 | .66 | | | | | | | | |
| 5-21 | 0 | 0 | :50 | 2.00 | 2.12 | :35 | .502 | .75 | | | | | | | | |
| 5-22 | .53 | 0 | :54 | 4.20 | 2.40 | 5:06 | .304 | .96 | | | | | | | | |
| 5-23-25 | 0 | 0 | :57 | 6.60 | 2.73 | 6:01 | .159 | 1.16 | | | | | | | | |
| 5-26 | .18 | 0 | 4:00 | 4.00 | 2.93 | 7:01 | .109 | 1.29 | | | | | | | | |
| 5-27-31 | 0 | 0 | :10 | .12 | 2.95 | 9:06 | .0566 | 1.46 | | | | | | | | |
| 6-1 | .14 | 0 | :26 | .34 | 3.04 | | | | | | | | | | | |
| 6-2-7 | 0 | 0 | 5:00 | .16 | 3.13 | | | | | | | | | | | |
| 6-8 | .99 | 0 | 9:10 | .01 | 3.18 | | | | | | | | | | | |
| 6-9-10 | 0 | 0 | | | | | | | | | | | | | | |
| 6-11 | .30 | 0 | | | | | | | | | | | | | | |
| 6-12 | 0 | 0 | | | | | | | | | | | | | | |
| Watershed conditions: Corn planted May 2 using minimum tillage (plow-plant) practice. Corn plants 20", weeds 12" high. Land use is a 4-year rotation of corn, wheat, meadow, meadow since 1941, conservation practice with mulch tillage. | | | | | | | | | | | | | | | | |
| Notes: To convert runoff in in/hr to cfs, multiply by 1.6637. | | | | | | | | | | | | | | | | |
| Record began May 6, 1949. | | | | | | | | | | | | | | | | |

Cooperative Research Project of U. S. D. A. and Ohio Agricultural Experiment Station.

SELECTED RUNOFF EVENTS

Coshocton, Ohio Watershed 127

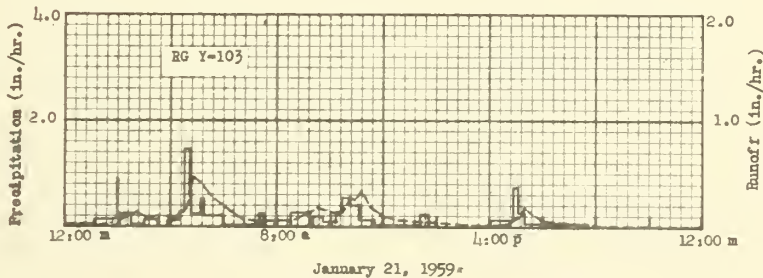
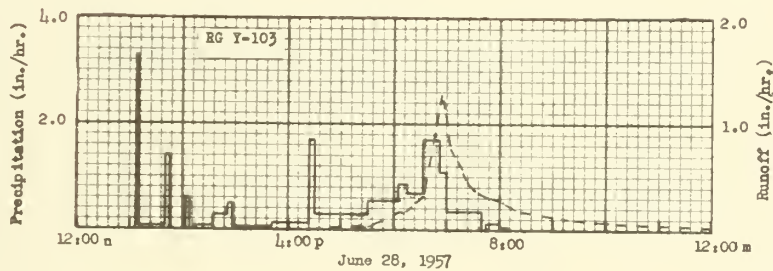
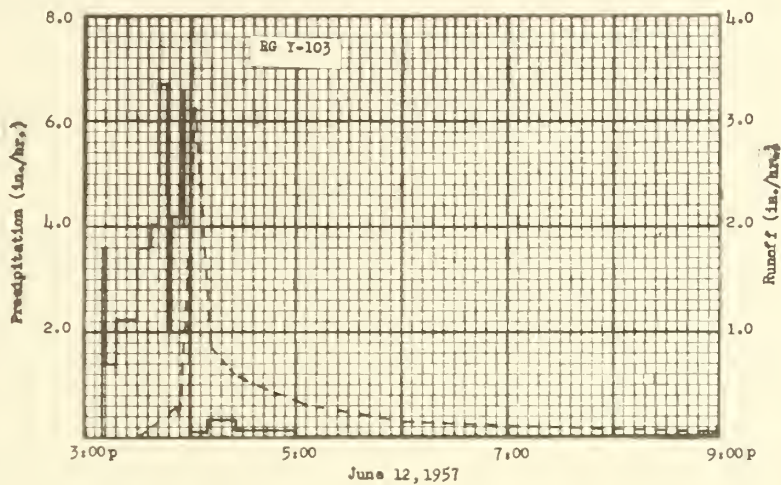
| Antecedent conditions | | | Rainfall | | | Runoff | | |
|------------------------|--------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of June 28, 1957 | | | | | | | | |
| 5-28-57 | 0 | 0 | 6-28-57 | Raingage | Y-103 | 6-28-57 | | |
| 5-29-31 | 0 | 0 | 1:07p | 0 | 0 | 4:22p | 0 | 0 |
| 6-1 | .14 | 0 | :11 | 3.30 | .22 | 5:36 | .0566 | .02 |
| 6-2-7 | 0 | 0 | :40 | .04 | .24 | 6:00 | .141 | .05 |
| 6-8 | .99 | 0 | :46 | 1.40 | .38 | :07 | .178 | .07 |
| 6-9-10 | 0 | 0 | 2:02 | 0 | .38 | :12 | .169 | .08 |
| 6-11 | .30 | 0 | :08 | .60 | .44 | :35 | .317 | .19 |
| 6-12 | 3.18 | 1.58 | :14 | 0 | .44 | :54 | 1.27 | .40 |
| 6-13 | .48 | .24 | :35 | .06 | .46 | 7:02 | .801 | .54 |
| 6-14 | .06 | .03 | :52 | .78 | .54 | :17 | .574 | .71 |
| 6-15 | 0 | 0 | :58 | .50 | .59 | :22 | .485 | .76 |
| 6-16 | .16 | 0 | 3:42 | .04 | .62 | :32 | .374 | .83 |
| 6-17-18 | 0 | 0 | 4:24 | .13 | .71 | :47 | .317 | .91 |
| 6-19 | .02 | 0 | :30 | 1.70 | .88 | 8:02 | .266 | .99 |
| 6-20-22 | 0 | 0 | 5:30 | .31 | 1.19 | :17 | .199 | 1.04 |
| 6-23 | .10 | 0 | 6:05 | .57 | 1.52 | 9:17 | .109 | 1.19 |
| 6-24 | 2.09 | .11 | :16 | .82 | 1.67 | 10:02 | .0807 | 1.26 |
| 6-25 | 0 | .01 | :34 | .70 | 1.88 | 12:00m | .0367 | 1.37 |
| 6-26 | 0 | T | :50 | 1.72 | 2.34 | | | |
| 6-27 | 0 | 0 | 7:00 | 1.08 | 2.52 | | | |
| 6-28 | .17 ^{1/2} | | :40 | .37 | 2.77 | | | |
| | | | :44 | 0 | 2.77 | | | |
| | | | 8:00 | .11 | 2.80 | | | |
| | | | :10 | .06 | 2.81 | | | |

Watershed conditions: Corn planted May 2 using minimum tillage. Corn plants 38" high, weeds 24" high. Land use is a 4-year rotation of corn, wheat meadow, meadow since 1949, conservation practice with mulch tillage.

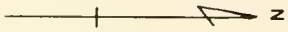
Notes: 1/ Rain ended about 7:30a.

| SELECTED RUNOFF EVENTS | | | | Coshocton, Ohio Watershed 127 | | | | |
|--|-------------------|-----------------|---------------|-------------------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of January 21, 1959 | | | | | | | | |
| 12-21-31-58 | 0 | 0 | 1-21-59 | Raingage | Y-103 | 1-21-59 | | |
| 1-1-59 | .68 | 0 | 12:01a | 0 | 0 | 12:01a | 0 | 0 |
| 1-2-3 | 0 | 0 | 1:04 | .06 | .06 | 1:05 | .0141 | .01 |
| 1-4 | .06 1/ | 0 | :53 | .16 | .19 | :35 | .0284 | .02 |
| 1-5-8 | 0 | 0 | :58 | 0 | .19 | :51 | .0462 | .03 |
| 1-9-10 | T 1/ | 0 | 2:00 | .90 | .22 | 2:15 | .0939 | .06 |
| 1-11-13 | 0 | 0 | :02 | 0 | .22 | :45 | .132 | .12 |
| 1-14 | .29 | 0 | :30 | .26 | .34 | 3:05 | .0939 | .15 |
| 1-15 | .85 2/ | 0 | 3:00 | .06 | .37 | :35 | .109 | .20 |
| 1-16-19 | .36 1/ | 0 | :30 | .14 | .44 | 4:05 | .0939 | .25 |
| 1-20 | .47 | T | :50 | 0 | .44 | :35 | .178 | .31 |
| Watershed conditions: Improved practice in 4-year rotation of corn, wheat, meadow, meadow. First year meadow in 1959. Vegetation in dormant state. Depth of frost penetration 1". Snow cover 5" on January 20. | | | 4:17 | .13 | .50 | :41 | .291 | .33 |
| | | | :30 | .28 | .56 | :51 | .468 | .39 |
| | | | :39 | 1.47 | .78 | 5:03 | .435 | .49 |
| | | | :47 | .60 | .86 | :31 | .251 | .67 |
| | | | 5:05 | .23 | .93 | :51 | .220 | .75 |
| | | | :14 | .53 | 1.01 | 6:15 | .141 | .83 |
| | | | :58 | .22 | 1.17 | :43 | .0807 | .88 |
| | | | 7:20 | .01 | 1.19 | 7:25 | .0572 | .92 |
| | | | :30 | .24 | 1.23 | :55 | .0680 | .95 |
| | | | 8:28 | 0 | 1.23 | 8:29 | .0566 | .98 |
| | | | 9:15 | .27 | 1.44 | 9:05 | .125 | 1.03 |
| | | | :20 | 0 | 1.44 | :31 | .178 | 1.11 |
| | | | :44 | .20 | 1.52 | :55 | .169 | 1.17 |
| | | | 10:14 | .10 | 1.57 | 10:15 | .116 | 1.22 |
| | | | :27 | .28 | 1.63 | :31 | .178 | 1.26 |
| | | | :44 | .56 | 1.79 | :45 | .279 | 1.31 |
| | | | 11:06 | .41 | 1.94 | :55 | .266 | 1.35 |
| | | | :40 | .16 | 2.03 | 11:11 | .345 | 1.44 |
| | | | 1:24P | .02 | 2.07 | :29 | .199 | 1.52 |
| | | | :40 | .22 | 2.13 | :57 | .109 | 1.59 |
| 3:30 | 0 | 2.13 | 12:13p | .0680 | 1.61 | | | |
| 4:00 | .04 | 2.15 | 3:35 | e .0210 | 1.70 | | | |
| :52 | .15 | 2.28 | 4:45 | e .0367 | 1.73 | | | |
| 5:03 | .76 | 2.42 | 5:07 | .0939 | 1.75 | | | |
| :22 | .25 | 2.50 | :21 | .188 | 1.79 | | | |
| 7:40 | .07 | 2.66 | :35 | .125 | 1.82 | | | |
| | | | :57 | .0680 | 1.66 | | | |
| | | | 7:55 | e .0210 | 1.93 | | | |
| | | | 12:00m | e .0027 | 1.97 | | | |

Notes: 1/ Snow
2/ Rain and Snow

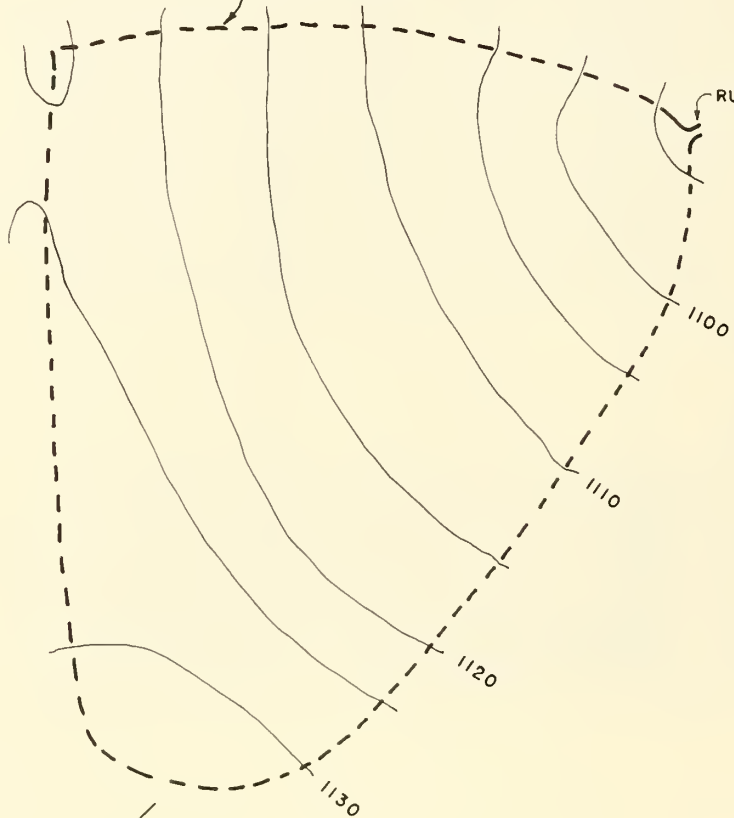


COSHOCTON, OHIO WATERSHED 127



AREA 1.65 ACRES

RUNOFF GAGE 127



RAIN GAGE Y103
175 FT.



CONTOUR INTERVAL - 5 FEET

COSHOCTON, OHIO
WATERSHED 127

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Coshocton, Ohio Watershed 109 (Area - 1.69 acres) | | | | | | |
|---|------|------|------|------|------|-------|--|------|-------|------|------|------|-------|
| Year \ Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 P | 1.52 | 5.48 | 3.65 | 4.05 | 7.08 | 5.07 | 6.60 | 4.02 | 1.55 | 1.17 | 1.59 | 2.97 | 44.75 |
| Q | 0 | .01 | 0 | 0 | 0 | .01 | T | T | 0 | 0 | 0 | 0 | .02 |
| 1957 P | 1.58 | 1.32 | 1.89 | 4.91 | 4.29 | 10.50 | 3.50 | 1.83 | 3.90 | 1.52 | 2.71 | 4.24 | 42.19 |
| Q | .01 | 0 | 0 | .01 | 0 | 1.51 | .09 | .03 | .08 | 0 | 0 | 0 | 1.73 |
| 1958 P | 1.40 | .75 | .96 | 3.72 | 3.13 | 4.25 | 9.35 | 2.77 | 3.23 | .35 | 2.15 | .90 | 32.96 |
| Q | .02 | .06 | 0 | 0 | 0 | T | .10 | 0 | 0 | 0 | 0 | 0 | .18 |
| 1959 P | 5.89 | 3.49 | 2.51 | 4.55 | 3.11 | 4.73 | 4.59 | 2.29 | 3.02 | 5.45 | 3.01 | 2.33 | 44.97 |
| Q | 1.00 | .30 | T | .01 | T | .01 | .01 | .02 | 0 | .01 | 0 | 0 | 1.36 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS Coshocton, Ohio Watershed 109

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 6-12 | 3.99 | 6-12 | 0.72 | 6-12 | 0.72 | 6-12 | 0.72 | 6-12 | 0.72 | 6-12 | 0.82 | 6-12 | 0.82 | 6-12 | 0.82 |
| 1958 | 7-31 | .25 | 7-30 | .04 | 7-30 | .04 | 7-30 | .04 | 7-30 | .05 | 7-30 | .09 | 7-30 | .09 | 7-30 | .10 |
| 1959 | 1-21 | e.40 | | nr | | nr | | nr | | nr | | nr | | nr | | nr |

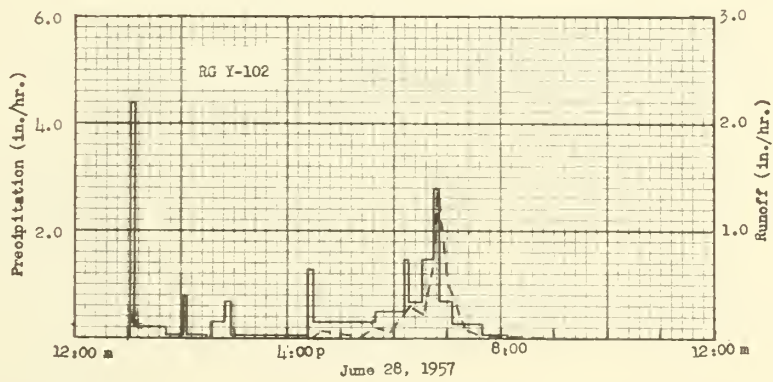
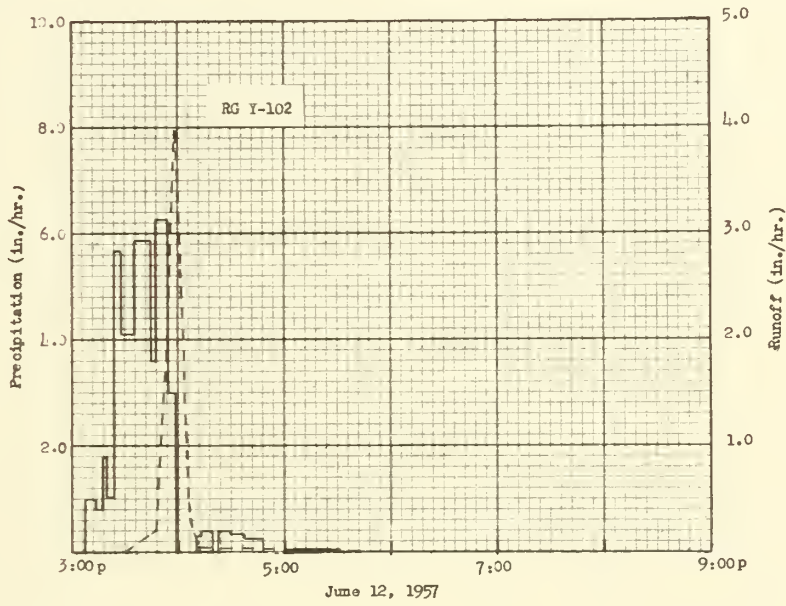
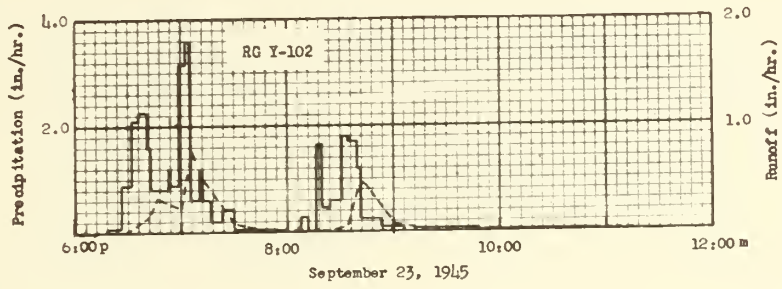
Notes: Quality of records: monthly P and Q, excellent; annual maximum discharges and volumes, excellent. Cover 1956, 2nd year meadow; 1957, corn; 1958, wheat; 1959, 1st year meadow; conservation practice.

SELECTED RUNOFF EVENTS Coshocton, Ohio Watershed 109

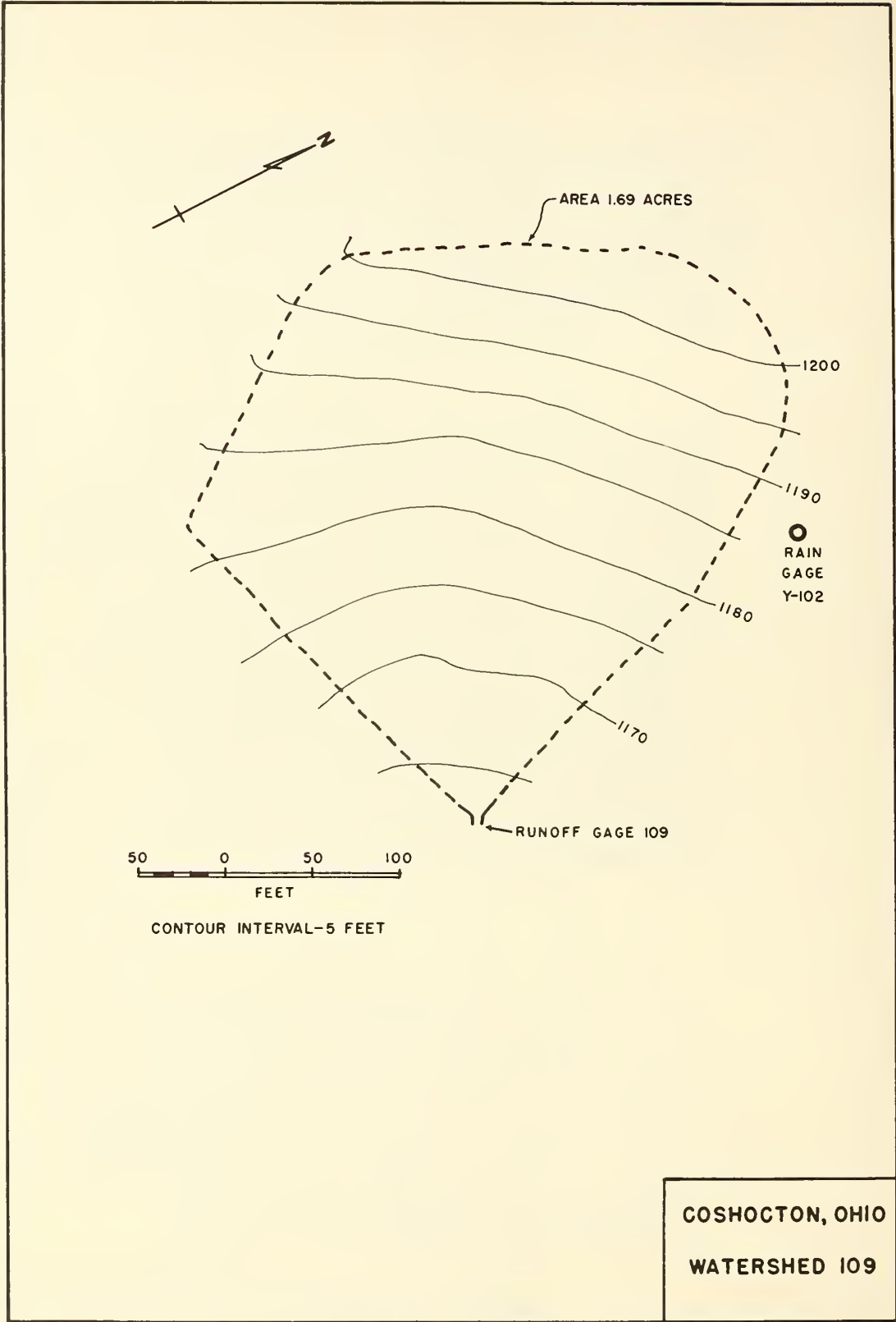
| Antecedent conditions | | | Rainfall | | | Runoff | | |
|-----------------------------|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of September 23, 1945 | | | | | | | | |
| 8-23-45 | T | 0 | 9-23-45 | Rainage | Y-102 | 9-23-45 | | |
| 8-24 | .06 | 0 | 6:18p | 0 | 0 | 6:28p | 0 | 0 |
| 8-25-31 | 0 | 0 | :26 | .08 | .01 | :42 | .164 | .01 |
| 9-1 | .22 | 0 | :32 | .90 | .10 | :46 | .336 | .02 |
| 9-2-7 | 0 | 0 | :36 | 2.10 | .24 | 7:00 | .237 | .08 |
| 9-8 | .54 | 0 | :40 | 2.25 | .39 | :06 | .780 | .14 |
| 9-9 | .74 | 0 | :43 | 1.60 | .47 | :12 | .524 | .20 |
| 9-10 | .67 | 0 | :52 | .80 | .59 | :30 | .0915 | .28 |
| 9-11 | .14 | 0 | :54 | 1.20 | .63 | :40 | .0316 | .29 |
| 9-12 | 0 | 0 | :58 | .90 | .69 | 8:25 | .0137 | .29 |
| 9-13 | .31 | 0 | 7:02 | 3.15 | .90 | :34 | .0663 | .30 |
| 9-14 | 1.20 | .04 | :04 | 3.60 | 1.02 | :41 | .424 | .33 |
| 9-15-16 | 0 | 0 | :10 | .60 | 1.08 | :43 | .456 | .34 |
| 9-17 | .55 | 0 | :12 | 1.20 | 1.12 | 9:00 | .0786 | .41 |
| 9-18 | .98 | 0 | :16 | .60 | 1.16 | :17 | .0204 | .42 |
| 9-19 | 0 | 0 | :22 | .20 | 1.18 | 11:15 | 0 | .42 |
| 9-20 | .43 | 0 | :30 | .45 | 1.24 | | | |
| 9-21-22 | 0 | 0 | :52 | .05 | 1.26 | | | |
| 9-23 | .69 1/2 | 0 | 8:08 | 0 | 1.26 | | | |
| | | | :12 | .30 | 1.28 | | | |
| | | | :16 | 0 | 1.28 | | | |
| | | | :20 | 1.65 | 1.39 | | | |
| | | | :24 | .45 | 1.42 | | | |
| | | | :32 | .60 | 1.50 | | | |
| | | | :34 | 1.80 | 1.56 | | | |
| | | | :40 | 1.70 | 1.73 | | | |
| | | | :42 | 1.20 | 1.77 | | | |
| | | | :52 | .24 | 1.81 | | | |
| | | | 9:06 | .09 | 1.83 | | | |
| | | | :12 | 0 | 1.83 | | | |
| | | | :46 | .07 | 1.87 | | | |
| | | | 10:52 | .03 | 1.90 | | | |

Notes: To convert runoff in in/hr to cfs, multiply by 1.7041.
1/ Most of rain occurred after 4:18p.

| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio | | | Watershed 109 | | |
|---|-------------------|-----|-----------------|---------|-------|---------------|-------|-----|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| <u>Event of June 12, 1957</u> | | | | | | | | |
| | | | 6-12-57 | Rainage | Y-102 | 6-12-57 | | |
| 5-13-57 | 0 | 0 | 3:08p | 0 | 0 | 3:30p | 0 | 0 |
| 5-14 | 1.28 | 0 | :14 | 1.00 | .10 | :48 | .214 | .01 |
| 5-15 | .04 | 0 | :17 | .80 | .14 | :54 | 2.24 | .15 |
| 5-16-17 | 0 | 0 | :20 | 1.80 | .23 | :58 | 3.99 | .37 |
| 5-18 | .16 | 0 | :24 | 1.05 | .30 | 4:02 | 2.67 | .60 |
| 5-19 | .20 | 0 | :28 | 5.70 | .68 | :04 | 1.21 | .66 |
| 5-20 | .21 | 0 | :36 | 4.12 | 1.23 | :06 | .524 | .69 |
| 5-21 | 0 | 0 | :45 | 5.87 | 2.11 | :08 | .259 | .70 |
| 5-22 | .51 | 0 | :48 | 3.60 | 2.29 | :11 | .066 | .71 |
| 5-23-25 | 0 | 0 | :55 | 6.26 | 3.02 | 6:00 | 0 | .72 |
| 5-26 | .17 | 0 | :59 | 3.00 | 3.22 | | | |
| 5-27-31 | 0 | 0 | 4:10 | 0 | 3.22 | | | |
| 6-1 | .12 | 0 | :14 | .30 | 3.24 | | | |
| 6-2-7 | 0 | 0 | :20 | .40 | 3.28 | | | |
| 6-8 | .95 | 0 | :22 | 0 | 3.28 | | | |
| 6-9-10 | 0 | 0 | :28 | .40 | 3.32 | | | |
| 6-11 | .29 | 0 | :38 | .36 | 3.38 | | | |
| 6-12 | 0 | 0 | :48 | .24 | 3.42 | | | |
| | | | 5:04 | 0 | 3.42 | | | |
| | | | :32 | .04 | 3.44 | | | |
| Watershed conditions: In corn, wheat, meadow, meadow rotation (conservation practice) since 1941. Corn planted May 3, 1957. Corn plants 20" high, weeds 12" high. | | | | | | | | |
| <u>Event of June 28, 1957</u> | | | | | | | | |
| | | | 6-28-57 | Rainage | Y-102 | 6-28-57 | | |
| 5-28-31-57 | 0 | 0 | 1:05p | 0 | 0 | 4:29p | 0 | 0 |
| 6-1 | .12 | 0 | :08 | 4.40 | .22 | :38 | .0786 | .01 |
| 6-2-7 | 0 | 0 | :14 | .20 | .34 | 5:23 | .0109 | .02 |
| 6-8 | .95 | 0 | 2:02 | .07 | .36 | :38 | .106 | .04 |
| 6-9-10 | 0 | 0 | :08 | .80 | .44 | :58 | .0851 | .07 |
| 6-11 | .29 | 0 | :30 | .05 | .46 | 6:20 | .309 | .13 |
| 6-12 | 3.44 | .72 | :36 | 0 | .54 | :35 | .225 | .20 |
| 6-13 | .42 | .11 | :51 | .32 | .54 | :46 | .675 | .26 |
| 6-14 | .08 | 0 | :58 | .69 | .62 | :48 | 1.10 | .29 |
| 6-15 | 0 | 0 | 4:24 | .06 | .70 | :51 | 1.36 | .35 |
| 6-16 | .04 | 0 | :30 | 1.30 | .83 | 7:00 | .599 | .51 |
| 6-17-18 | 0 | 0 | 5:40 | .33 | 1.22 | :23 | .0986 | .60 |
| 6-19 | .02 | 0 | 6:12 | .52 | 1.50 | :34 | .0403 | .61 |
| 6-20-22 | 0 | 0 | :16 | 1.50 | 1.60 | 9:28 | 0 | .63 |
| 6-23 | .08 | 0 | :34 | .67 | 1.80 | | | |
| 6-24 | 2.11 | .06 | :46 | 1.50 | 2.10 | | | |
| 6-25-27 | 0 | 0 | :52 | 2.80 | 2.38 | | | |
| 6-28 | .17 ^{1/} | 0 | 7:07 | .72 | 2.56 | | | |
| | | | :38 | .27 | 2.70 | | | |
| | | | 8:10 | .11 | 2.76 | | | |
| Watershed conditions: In corn, wheat, meadow, meadow rotation (conservation practice) since 1941. Corn planted May 3, 1957. Corn plants 36" high, weeds 24" high. | | | | | | | | |
| Notes: No tabulation for January 21, 1959 event due to faulty record. | | | | | | | | |
| 1/ Rain ended about 7:30a. | | | | | | | | |



COSHOCTON, OHIO WATERSHED 109



| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Coshocton, Ohio Watershed 103 (Area - 0.65 acre) | | | | | | |
|---|------|------|------|------|------|-------|---|------|-------|------|------|------|-------|
| Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 P | 1.60 | 5.34 | 3.49 | 3.77 | 6.94 | 4.39 | 6.18 | 3.92 | 1.33 | 1.15 | 1.35 | 3.61 | 43.07 |
| Q | 0 | .76 | T | 0 | .01 | .02 | .24 | 0 | 0 | 0 | 0 | 0 | 1.03 |
| 1957 P | 1.59 | 1.34 | 1.80 | 4.96 | 3.96 | 10.55 | 3.71 | 2.23 | 3.72 | 1.53 | 2.72 | 3.99 | 42.10 |
| Q | .11 | 0 | 0 | .92 | 0 | 2.66 | 0 | .01 | 0 | 0 | 0 | .38 | 4.08 |
| 1958 P | 1.48 | .58 | .98 | 3.37 | 2.88 | 4.24 | 8.43 | 2.79 | 3.16 | .30 | 1.81 | .51 | 30.53 |
| Q | .05 | 0 | 0 | 0 | .10 | 0 | .87 | T | 0 | 0 | 0 | 0 | 1.02 |
| 1959 P | 5.21 | 2.84 | 2.33 | 4.02 | 2.79 | 4.15 | 4.43 | 2.40 | 2.84 | 4.90 | 2.64 | 2.11 | 40.66 |
| Q | 2.17 | .78 | T | .31 | 0 | 0 | 0 | .07 | 0 | 0 | .05 | .23 | 3.71 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS Coshocton, Ohio Watershed 103

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 6-12 | 4.01 | 6-12 | 1.20 | 6-12 | 1.24 | 6-28 | 1.39 | 6-28 | 1.39 | 6-28 | 1.39 | 6-28 | 1.39 | 6-24 | 1.41 |
| 1958 | 7-31 | .75 | 7-22 | .19 | 7-22 | .23 | 7-22 | .27 | 7-31 | .31 | 7-30 | .34 | 7-30 | .35 | 7-28 | .35 |
| 1959 | 1-21 | .60 | 1-21 | .37 | 1-21 | .52 | 1-21 | .94 | 1-21 | 1.43 | 1-21 | 2.16 | 1-21 | 2.17 | 1-21 | 2.17 |

Notes: Quality of records: monthly P and Q, excellent; annual maximum discharges and volumes, excellent. Cover 1956, 1st year meadow; 1957, 2nd year meadow; 1958, corn; 1959, wheat; conservation practice.

SELECTED RUNOFF EVENTS

Coshocton, Ohio Watershed 103

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|------------------------------------|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of September 23, 1945</u> | | | | | | | | |
| 8-23-45 | T | 0 | 9-23-45 | Raingage | 107 | 9-23-45 | | |
| 8-24 | .06 | 0 | 6:00p | 0 | 0 | 6:00p | 0 | 0 |
| 8-25-31 | 0 | 0 | :15 | .04 | .01 | :36 | .142 | .01 |
| 9-1 | .20 | 0 | :23 | .08 | .02 | :44 | .317 | .04 |
| 9-2-7 | 0 | 0 | :30 | 1.20 | .16 | :50 | .279 | .07 |
| 9-8 | .64 | 0 | :34 | 2.70 | .34 | 7:00 | .778 | .13 |
| 9-9 | .82 | 0 | :41 | 1.54 | .52 | 10:04 | 1.54 | .21 |
| 9-10 | .69 | 0 | :50 | .67 | .62 | :24 | .400 | .54 |
| 9-11 | .12 | 0 | :55 | .96 | .70 | :36 | .183 | .59 |
| 9-12 | 0 | 0 | 7:00 | 3.48 | .99 | :46 | .0865 | .62 |
| 9-13 | .30 | 0 | :02 | 4.80 | 1.15 | 8:00 | .047 | .63 |
| 9-14 | 1.22 | 0 | :10 | 1.05 | 1.29 | :11 | .0198 | .64 |
| 9-15-16 | 0 | 0 | :12 | 3.00 | 1.39 | :20 | .0598 | .64 |
| 9-17 | .58 | 0 | :30 | .33 | 1.49 | :28 | .197 | .66 |
| 9-18 | 1.04 | 0 | 8:14 | .04 | 1.52 | :40 | .778 | .75 |
| 9-19 | 0 | 0 | :18 | 1.65 | 1.63 | 9:02 | .168 | .90 |
| 9-20 | .49 | 0 | :30 | .75 | 1.78 | :24 | .0865 | .95 |
| 9-21-22 | 0 | 0 | :38 | 1.95 | 2.04 | :30 | .0520 | .95 |
| 9-23 | .81 1/2 | 0 | :52 | .17 | 2.08 | 10:20 | .0153 | .98 |
| | | | 10:50 | .05 | 2.18 | | | |
| | | | 12:00m | .01 | 2.19 | | | |

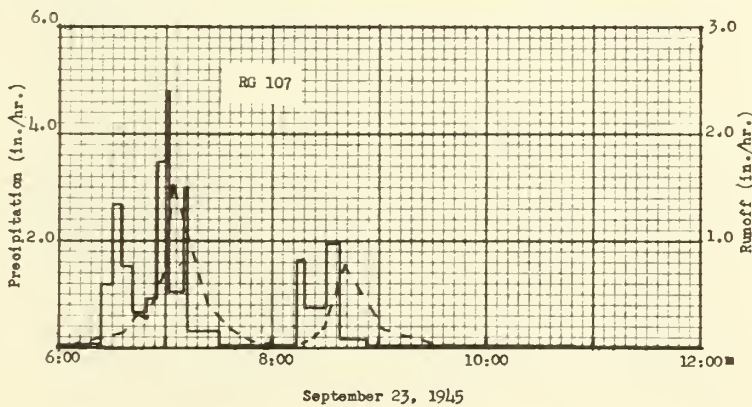
Watershed conditions: Cover in second year meadow of a corn, wheat, meadow, meadow rotation. Grass 5" high, alfalfa 6", clover 4", weeds 18" high. (In conservation practice).

Notes: To convert runoff in in/hr to cfs, multiply by 0.65542.
1/ Most of rain occurred after 4:00p.

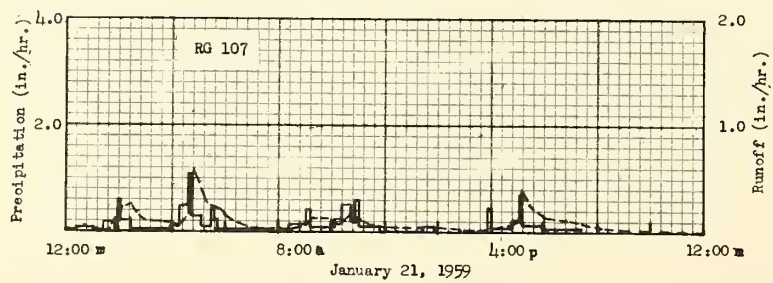
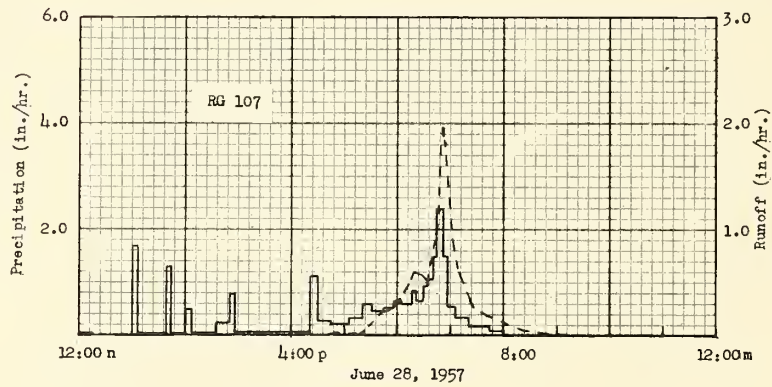
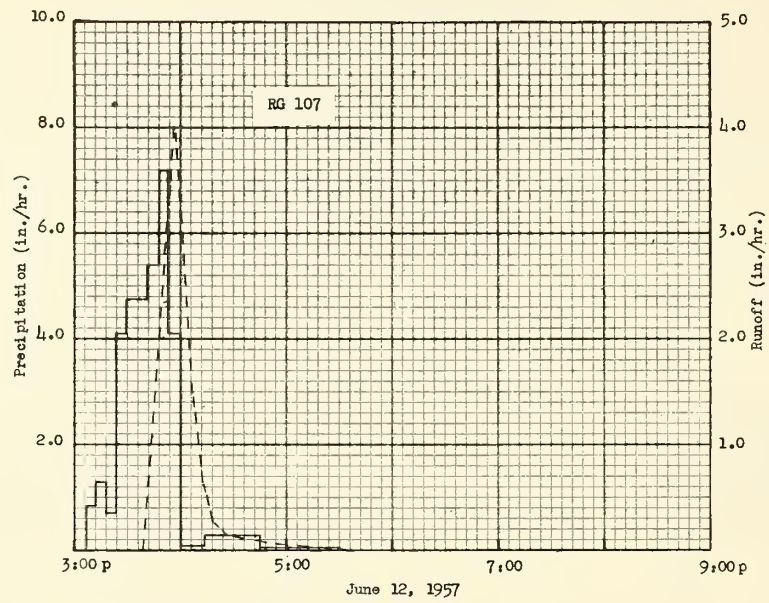
| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 103 | | | | | |
|--|-------------------|-----------------|-------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of June 12, 1957 | | | | | | | | |
| | | | 6-12-57 | Raingage | 107 | 6-12-57 | | |
| 5-13-57 | 0 | 0 | 3:07p | 0 | 0 | 3:39p | 0 | 0 |
| 5-14 | 1.31 | 0 | :12 | .84 | .07 | :55 | 3.45 | .41 |
| 5-15 | .03 | 0 | :18 | 1.30 | .20 | :57 | 4.01 | .54 |
| 5-16-17 | 0 | 0 | :23 | .72 | .26 | 4:07 | 1.49 | 1.00 |
| 5-18 | .18 | 0 | :29 | 4.10 | .67 | :13 | .656 | 1.10 |
| 5-19 | .23 | 0 | :41 | 4.75 | 1.62 | :19 | .279 | 1.15 |
| 5-20 | .20 | 0 | :48 | 5.40 | 2.25 | :27 | .155 | 1.18 |
| 5-21 | 0 | 0 | :53 | 7.20 | 2.85 | :49 | .0865 | 1.21 |
| 5-22 | .51 | 0 | 4:00 | 4.11 | 3.33 | 5:35 | 0 | 1.24 |
| 5-23-25 | 0 | 0 | :14 | .09 | 3.35 | | | |
| 5-26 | .16 | 0 | :23 | .27 | 3.39 | | | |
| 5-27-31 | 0 | 0 | :45 | .27 | 3.49 | | | |
| 6-1 | .12 | 0 | 5:30 | .05 | 3.53 | | | |
| 6-2-7 | 0 | 0 | | | | | | |
| 6-8 | 1.00 | 0 | | | | | | |
| 6-9-10 | 0 | 0 | | | | | | |
| 6-11 | .29 | 0 | | | | | | |
| 6-12 | 0 | 0 | | | | | | |
| Watershed conditions: Cover in second year meadow of a corn, wheat, meadow, meadow rotation. Hay cut June 3. Legumes and grass 3" high; weeds 4" high. (Conservation practice) | | | | | | | | |
| Event of June 28, 1957 | | | | | | | | |
| | | | 6-28-57 | Raingage | 107 | 6-28-57 | | |
| 5-28-31-57 | 0 | 0 | 12:00m | 0 | 0 | 4:39p | 0 | 0 |
| 6-1 | .12 | 0 | :15p | .04 | .01 | :50 | .0380 | .01 |
| 6-2-7 | 0 | 0 | 1:00 | 0 | .01 | 5:10 | .0313 | .02 |
| 6-8 | 1.00 | 0 | :06 | 1.70 | .18 | :20 | .0520 | .03 |
| 6-9-10 | 0 | 0 | | | | | | |
| 6-11 | .29 | 0 | :40 | .02 | .19 | :30 | .107 | .04 |
| 6-12 | 3.53 | 1.24 | :45 | 1.32 | .30 | :42 | .228 | .07 |
| 6-13 | .34 | .03 | 2:00 | .04 | .31 | :50 | .245 | .10 |
| 6-14 | .09 | 0 | :07 | .51 | .37 | :58 | .279 | .14 |
| 6-15 | 0 | 0 | :35 | .04 | .39 | 6:16 | .545 | .25 |
| 6-16 | .06 | 0 | :50 | .24 | .45 | :18 | .600 | .27 |
| 6-17-18 | .04 | 0 | :56 | .80 | .53 | :28 | .572 | .37 |
| 6-19 | 0 | 0 | 1:23 | .07 | .63 | :44 | .519 | .42 |
| 6-20-25 | 0 | 0 | :30 | 1.11 | .76 | :44 | .986 | .53 |
| 6-23 | .06 | 0 | :45 | .28 | .83 | :50 | 1.94 | .67 |
| 6-24 | 2.22 | 0.02 | 5:05 | .23 | .90 | :54 | 1.79 | .80 |
| 6-25-27 | 0 | 0 | :22 | .35 | 1.00 | 7:02 | .914 | .97 |
| 6-28 | .16 1/2 | 0 | :30 | .60 | 1.08 | :10 | .656 | 1.08 |
| | | | :45 | .48 | 1.20 | :28 | .279 | 1.21 |
| | | | :55 | .54 | 1.29 | :40 | .212 | 1.26 |
| | | | 6:05 | .66 | 1.40 | 8:20 | .0682 | 1.35 |
| | | | :15 | .60 | 1.50 | :50 | .0253 | 1.38 |
| | | | :20 | .84 | 1.57 | 9:40 | 0 | 1.39 |
| | | | :30 | .66 | 1.68 | | | |
| | | | :35 | .96 | 1.76 | | | |
| | | | :40 | 1.08 | 1.85 | | | |
| | | | :46 | 1.50 | 2.00 | | | |
| | | | :51 | 2.40 | 2.20 | | | |
| | | | :55 | 1.50 | 2.30 | | | |
| | | | 7:06 | .55 | 2.40 | | | |
| | | | :23 | .35 | 2.50 | | | |
| | | | :45 | .19 | 2.57 | | | |
| | | | 8:00 | .12 | 2.60 | | | |
| Notes: 1/ Rain ended about 7:30a. | | | | | | | | |

| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 103 | | | | | |
|----------------------------------|-------------------|-----------------|-------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of January 21, 1959 | | | | | | | | |
| 12-21-22-58 | 0 | 0 | 1-21-59 | Raingage | 1.07 | 1-21-59 | | |
| 12-23 | T | 0 | 12:01a | 0 | | 1:00a | 0 | 0 |
| 12-24 | T 1/2 | 0 | :23 | .03 | .01 | :40 | .0380 | .01 |
| 12-25-31 | 0 | 0 | 1:03 | .08 | .06 | :54 | .130 | .03 |
| 1-1-59 | .65 | 0 | :23 | .06 | .08 | 2:10 | .228 | .08 |
| 1-2-3 | 0 | 0 | :53 | .20 | .18 | :26 | .262 | .14 |
| 1-4 | .02 1/2 | 0 | :56 | 0 | .18 | :40 | .183 | .20 |
| 1-5-8 | 0 | 0 | 2:03 | .60 | .25 | 3:00 | .118 | .25 |
| 1-9-10 | T 1/2 | 0 | :28 | .22 | .34 | :36 | .0966 | .31 |
| 1-11-13 | 0 | 0 | 3:56 | .06 | .43 | 4:18 | .0682 | .36 |
| 1-14 | .26 | 0 | 4:15 | .13 | .47 | :36 | .183 | .39 |
| 1-15 | .60 2/2 | 0 | :34 | .51 | .63 | :48 | .600 | .48 |
| 1-16-19 | .30 1/2 | 0 | :42 | 1.12 | .78 | 5:10 | .400 | .64 |
| 1-20 | .43 | 0 | 5:08 | .32 | .92 | :20 | .279 | .70 |
| | | | :28 | .09 | .95 | :48 | .212 | .81 |
| | | | :36 | .45 | 1.01 | 6:00 | .155 | .84 |
| | | | :44 | .22 | 1.04 | :20 | .0966 | .89 |
| | | | 7:48 | .04 | 1.13 | :50 | .0520 | .92 |
| | | | 8:23 | 0 | 1.13 | 7:20 | .0380 | .94 |
| | | | 9:03 | .18 | 1.25 | 8:30 | .0380 | .99 |
| | | | :13 | .42 | 1.32 | :50 | .0598 | 1.01 |
| | | | 10:06 | .11 | 1.42 | 9:20 | .130 | 1.06 |
| | | | :23 | .24 | 1.48 | :50 | .130 | 1.12 |
| | | | :41 | .50 | 1.63 | 10:12 | .0865 | 1.16 |
| | | | :56 | .20 | 1.68 | :26 | .107 | 1.18 |
| | | | 11:03 | .60 | 1.75 | :40 | .183 | 1.22 |
| | | | :48 | .12 | 1.84 | 11:06 | .107 | 1.29 |
| | | | 1:28p | .01 | 1.85 | :30 | .0682 | 1.32 |
| | | | :53 | .12 | 1.90 | 1:00p | .0520 | 1.40 |
| | | | 3:53 | 0 | 1.90 | :50 | .0682 | 1.45 |
| | | | 4:01 | .45 | 1.96 | 3:26 | .0198 | 1.52 |
| | | | :48 | .08 | 2.02 | 4:00 | .0313 | 1.53 |
| | | | 5:01 | .23 | 2.07 | :50 | .0771 | 1.58 |
| | | | :11 | .72 | 2.19 | 5:04 | .130 | 1.61 |
| | | | :53 | .16 | 2.30 | :10 | .400 | 1.63 |
| | | | 7:23 | 0.07 | 2.40 | :26 | 0.279 | 1.72 |
| | | | | | | 6:00 | .155 | 1.83 |
| | | | | | | 7:00 | .107 | 1.95 |
| | | | | | | 8:10 | .0520 | 2.04 |
| | | | | | | 12:00m | .0153 | 2.15 |

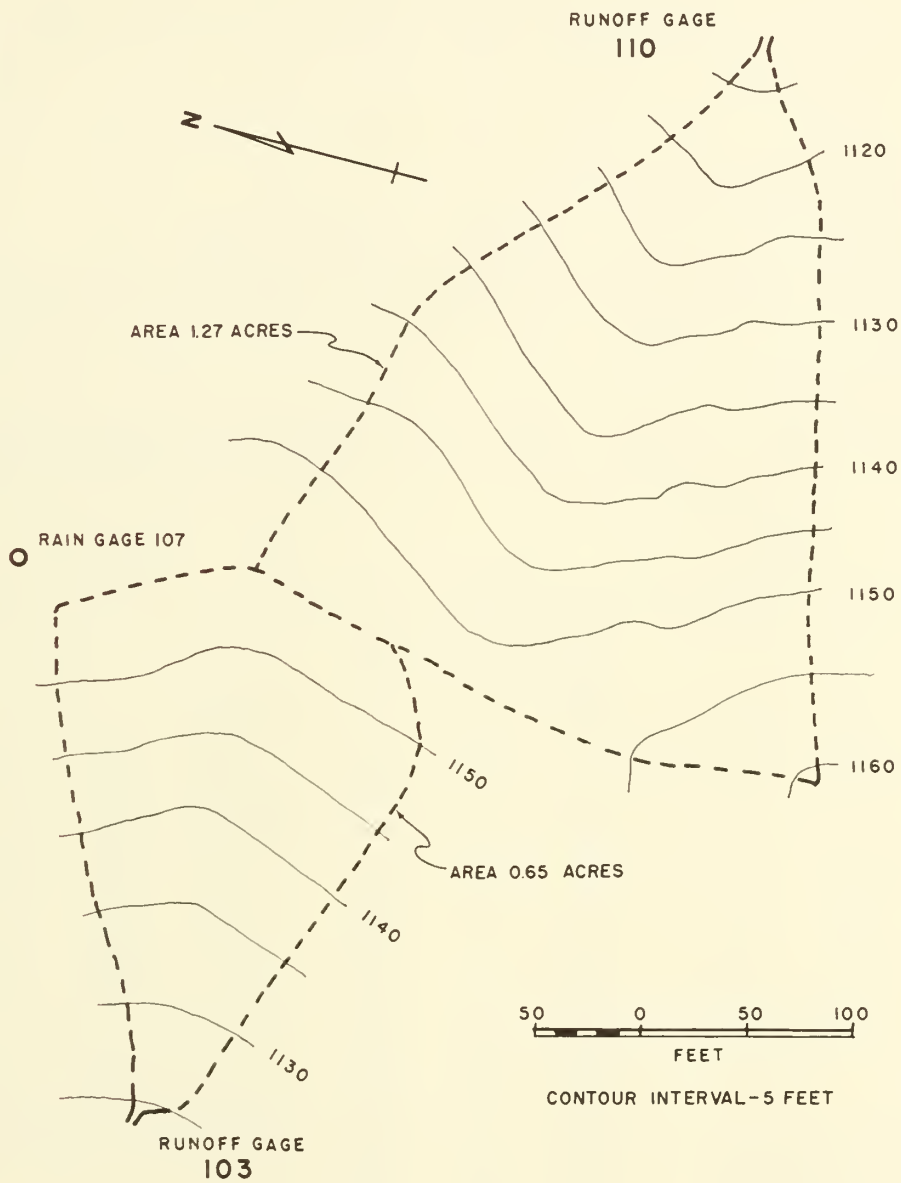
Notes:
 1/ Snow
 2/ Rain and Snow



COSHOCTON, OHIO WATERSHED 103



COSHOCOTON, OHIO WATERSHED 103



COSHOCTON, OHIO
WATERSHEDS 103,110

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | | Coshocton, Ohio Watershed 110 (Area - 1.27 acres) | | | | | | |
|---|-------|------|------|------|------|------|-------|--|------|-------|------|------|------|-------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| | | 1956 | P | 1.60 | 5.31 | 3.19 | 3.77 | 6.91 | 1.39 | 6.18 | 3.92 | 1.33 | 1.15 | 1.35 |
| | Q | .09 | 1.26 | .15 | .02 | .30 | .09 | .26 | 0 | 0 | 0 | 0 | 0 | 2.17 |
| 1957 | P | 1.59 | 1.31 | 1.80 | 1.96 | 3.96 | 10.55 | 3.71 | 2.23 | 3.72 | 1.53 | 2.72 | 3.99 | 12.10 |
| | Q | .08 | T | 0 | .16 | 0 | 2.11 | .05 | .01 | .01 | 0 | T | .38 | 3.10 |
| 1958 | P | 1.18 | .58 | .98 | 3.37 | 2.88 | 1.21 | 8.13 | 2.79 | 3.16 | .30 | 1.81 | .51 | 30.53 |
| | Q | .06 | .08 | 0 | .01 | .01 | .01 | .85 | .01 | 0 | 0 | 0 | 0 | 1.06 |
| 1959 | P | 5.21 | 2.81 | 2.33 | 1.02 | 2.79 | 1.15 | 1.13 | 2.10 | 2.81 | 1.90 | 2.61 | 2.11 | 10.66 |
| | Q | 2.13 | .60 | .01 | .03 | T | T | T | .11 | 0 | 0 | .03 | .06 | 3.00 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS Coshocton, Ohio Watershed 110

| YEAR | MAXIMUM DISCHARGE | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
| | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 6-12 | 1.21 | 1.20 | 6-12 | 1.22 | 6-12 | 1.22 | 6-12 | 1.22 | 6-12 | 1.22 | 6-12 | 1.22 | 6-12 | 1.22 |
| 1958 | 7-31 | 1.51 | .23 | 7-22 | .21 | 7-22 | .21 | 7-31 | .27 | 7-30 | .36 | 7-30 | .36 | 7-28 | .12 |
| 1959 | 1-21 | .18 | .36 | 1-21 | .53 | 1-21 | .91 | 1-21 | 1.61 | 1-20 | 2.10 | 1-20 | 2.10 | 1-20 | 2.10 |

Notes: Quality of records: monthly P and Q, excellent; annual maximum discharges and volumes, excellent. Cover 1956, 1st year meadow; 1957, 2nd year meadow; 1958, corn; 1959, wheat; prevailing practice.

SELECTED RUNOFF EVENTS Coshocton, Ohio watershed 110

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|--|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of September 23, 1915 | | | | | | | | |
| 8-23-15 | T | 0 | 9-23-15 | Raingage | 107 | 9-23-15 | | |
| 8-24 | .06 | 0 | 5:25p | 0 | 0 | 6:21p | 0 | 0 |
| 8-25-31 | 0 | 0 | :26 | 1.20 | .02 | :12 | .108 | .01 |
| 9-1 | .20 | 0 | :29 | 3.80 | .21 | :18 | .173 | .02 |
| 9-2-7 | 0 | 0 | :36 | 1.51 | .39 | :56 | .111 | .01 |
| 9-8 | .61 | 0 | :38 | .60 | .11 | 7:02 | .312 | .06 |
| 9-9 | .82 | 0 | :18 | .81 | .55 | :06 | .905 | .11 |
| 9-10 | .69 | 0 | :50 | .60 | .57 | :12 | .597 | .18 |
| 9-11 | .12 | 0 | 6:15 | .02 | .58 | :26 | .270 | .29 |
| 9-12 | 0 | 0 | :16 | .60 | .59 | :38 | .108 | .33 |
| 9-13 | .30 | 0 | :23 | 0 | .59 | :50 | .0521 | .31 |
| 9-14 | 1.22 | 0 | :30 | 1.20 | .73 | 8:02 | .0233 | .35 |
| 9-15-16 | 0 | 0 | :31 | 2.70 | .91 | :11 | .0123 | .35 |
| 9-17 | .58 | 0 | :11 | 1.51 | 1.09 | :21 | .0363 | .36 |
| 9-18 | 1.01 | 0 | :50 | .67 | 1.19 | :30 | .0997 | .36 |
| 9-19 | 0 | 0 | :55 | .96 | 1.27 | :36 | .270 | .38 |
| 9-20 | .19 | 0 | 7:00 | 3.18 | 1.56 | :12 | .516 | .12 |
| 9-21-22 | 0 | 0 | :02 | 1.80 | 1.72 | 9:01 | .125 | .53 |
| 9-23 | .21 1/2 | 0 | :10 | 1.05 | 1.86 | :12 | .0771 | .51 |
| | | | :12 | 3.00 | 1.96 | :10 | .0233 | .56 |
| | | | :30 | .33 | 2.06 | 11:00 | 0 | .57 |
| Watershed conditions: Cover in second year meadow of a 1-year rotation of corn, wheat, meadow, meadow. Grass 8" high; weeds 15" high. In prevailing practice since 1912. | | | 8:11 | .01 | 2.09 | | | |
| | | | :18 | 1.65 | 2.20 | | | |
| | | | :30 | .75 | 2.35 | | | |
| | | | :38 | 1.95 | 2.61 | | | |
| | | | :52 | .17 | 2.65 | | | |
| | | | 10:50 | .05 | 2.75 | | | |
| | | | 12:00m | .01 | 2.76 | | | |

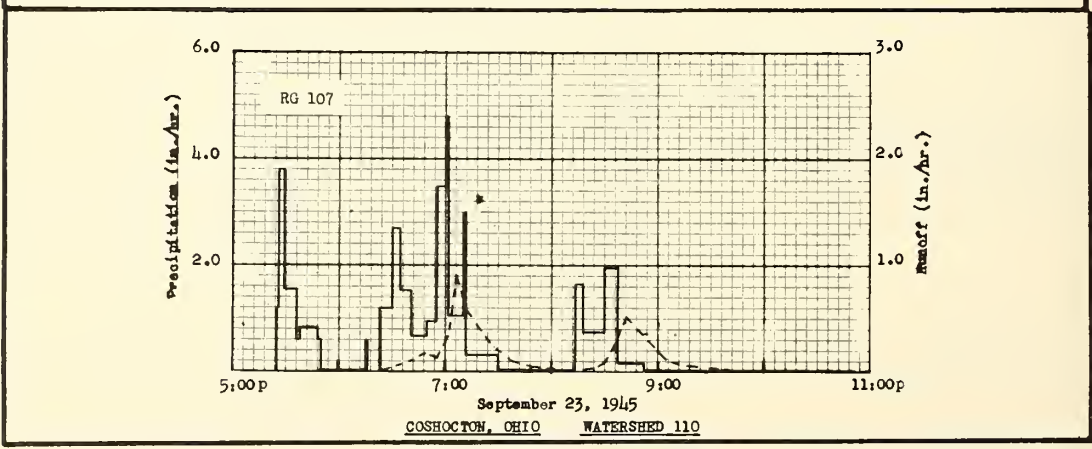
Notes: To convert runoff in in/hr to cfs, multiply by 1.2806.
1/ Most of rain occurred after 3:25p.

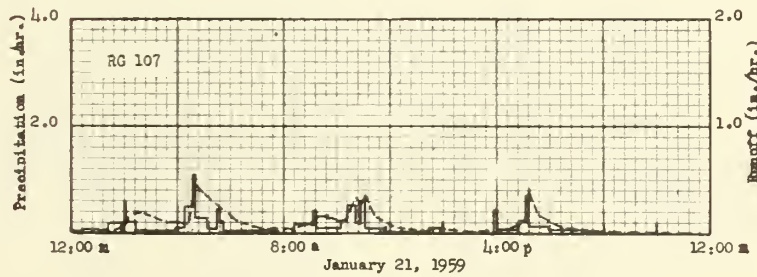
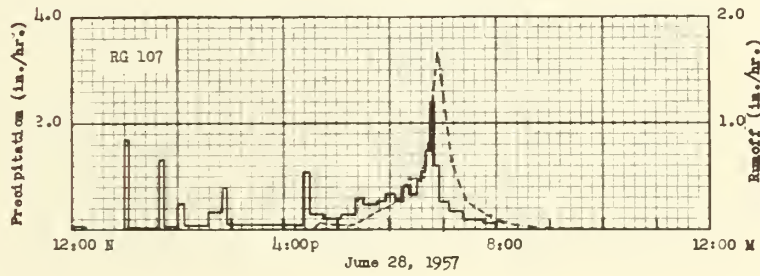
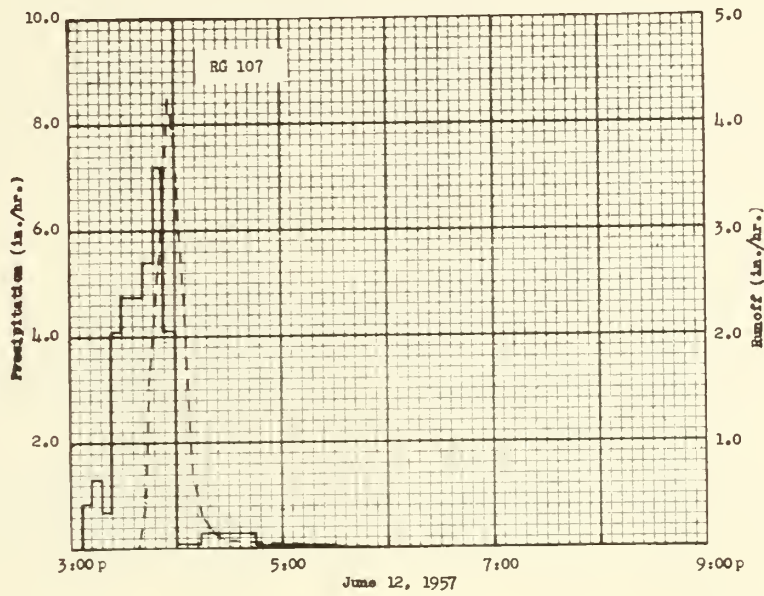
| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 110 | | | | | |
|---|-------------------|-----------------|-------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of June 12, 1957 | | | | | | | | |
| | | | 6-12-57 | Raingage | 107 | 6-12-57 | | |
| 5-13-57 | 0 | 0 | 3:07p | 0 | 0 | 3:39p | 0 | 0 |
| 5-14 | 1.31 | 0 | :12 | .84 | .07 | :43 | .112 | .01 |
| 5-15 | .03 | 0 | :18 | 1.30 | .20 | :45 | 1.51 | .01 |
| 5-16-17 | 0 | 0 | :23 | .72 | .26 | :51 | 2.62 | .21 |
| 5-18 | .18 | 0 | :29 | 1.10 | .67 | :57 | 1.21 | .60 |
| 5-19 | .23 | 0 | :41 | 1.75 | 1.62 | :59 | 3.98 | .71 |
| 5-20 | .20 | 0 | :48 | 5.40 | 2.25 | 1:01 | 3.48 | .86 |
| 5-21 | 0 | 0 | :53 | 7.20 | 2.85 | :10 | 4.0 | 1.11 |
| 5-22 | .51 | 0 | 1:00 | 1.11 | 3.33 | :15 | .312 | 1.15 |
| 5-23-25 | 0 | 0 | :11 | .09 | 3.35 | :21 | .173 | 1.17 |
| 5-26 | .16 | 0 | :23 | .27 | 3.39 | :27 | .0919 | 1.18 |
| 5-27-31 | 0 | 0 | :45 | .27 | 3.19 | 7:11 | 0 | 1.22 |
| 6-1 | .12 | 0 | 5:30 | .05 | 3.53 | | | |
| 6-2-7 | 0 | 0 | | | | | | |
| 6-8 | e 1.00 | 0 | | | | | | |
| 6-9-10 | 0 | 0 | | | | | | |
| 6-11 | .29 | 0 | | | | | | |
| 6-12 | 0 | 0 | | | | | | |
| Watershed conditions: Cover in second year meadow of a corn, wheat, meadow, meadow rotation. In prevailing practice since 1942. Grass and legumes 12" high; weeds 12" high. | | | | | | | | |
| Event of June 28, 1957 | | | | | | | | |
| | | | 6-28-57 | Raingage | 107 | 6-28-57 | | |
| 5-28-31-57 | 0 | 0 | 12:00n | 0 | 0 | 1:31p | 0 | 0 |
| 6-1 | .12 | 0 | :15p | .01 | .01 | :42 | .0706 | .01 |
| 6-2-7 | 0 | 0 | 1:00 | 0 | .01 | 5:00 | .0363 | .02 |
| 6-8 | e 1.00 | 0 | :06 | 1.70 | .18 | :20 | .0113 | .03 |
| 6-9-10 | 0 | 0 | :10 | .02 | .19 | :40 | .163 | .07 |
| 6-11 | .29 | 0 | :15 | 1.32 | .30 | 6:00 | .219 | .13 |
| 6-12 | 3.53 | 1.22 | 2:00 | .01 | .31 | :10 | .297 | .17 |
| 6-13 | .31 | 0 | :07 | .51 | .37 | :20 | 1.78 | .23 |
| 6-14 | .09 | 0 | :35 | .01 | .39 | :40 | 1.97 | .39 |
| 6-15 | 0 | 0 | :50 | .21 | .45 | :48 | 1.11 | .48 |
| 6-16 | .06 | 0 | :56 | .80 | .53 | :54 | 1.66 | .63 |
| 6-17-18 | 0 | 0 | 1:23 | .07 | .63 | :56 | 1.51 | .68 |
| 6-19 | .01 | 0 | :30 | 1.11 | .76 | 7:08 | .610 | .89 |
| 6-20-22 | 0 | 0 | :45 | .28 | .83 | :26 | .284 | 1.02 |
| 6-23 | .06 | 0 | 5:05 | .21 | .90 | :44 | .163 | 1.09 |
| 6-24 | 2.22 | .02 | :22 | .35 | 1.00 | :54 | .125 | 1.11 |
| 6-25-27 | 0 | 0 | :30 | .60 | 1.08 | 8:10 | .0641 | 1.14 |
| 6-28 | .151 | 0 | :45 | .48 | 1.20 | :30 | .0317 | 1.15 |
| | | | :55 | .54 | 1.29 | 10:00 | 0 | 1.16 |
| | | | 6:05 | .66 | 1.40 | | | |
| | | | :15 | .60 | 1.50 | | | |
| | | | :20 | .84 | 1.57 | | | |
| | | | :30 | .66 | 1.68 | | | |
| | | | :35 | .96 | 1.76 | | | |
| | | | :40 | 1.08 | 1.85 | | | |
| | | | :46 | 1.50 | 2.00 | | | |
| | | | :51 | 2.40 | 2.20 | | | |
| | | | :55 | 1.50 | 2.30 | | | |
| | | | 7:06 | .55 | 2.40 | | | |
| | | | :23 | .35 | 2.50 | | | |
| | | | :45 | .19 | 2.57 | | | |
| | | | 8:00 | .12 | 2.60 | | | |
| Notes: 1/ Rain ended about 7:30a. | | | | | | | | |

| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 110 | | | | | |
|---------------------------|-------------------|-----------------|-------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of January 21, 1959 | | | | | | | | |
| 12-21-22-58 | 0 | 0 | 1-21-59 | Raingage | 107 | 1-21-59 | | |
| 12-23 | T | 0 | 12:01a | 0 | 0 | 12:01a | 0 | 0 |
| 12-24 | T 1/ | 0 | :23 | .03 | .01 | 1:31 | .0094 | T |
| 12-25-31 | 0 | 0 | 1:03 | .08 | .06 | :55 | .0706 | .01 |
| 1-1-59 | .65 | .03 | :23 | .06 | .08 | 2:15 | .184 | .06 |
| 1-2-3 | 0 | 0 | :53 | .20 | .18 | :35 | .195 | .12 |
| 1-4 | .02 1/ | 0 | :56 | 0 | .18 | 3:35 | .108 | .26 |
| 1-5-8 | 0 | 0 | 2:03 | .60 | .25 | 4:03 | .108 | .31 |
| 1-9-10 | T 1/ | 0 | :28 | .22 | .34 | :15 | .0845 | .33 |
| 1-11-13 | 0 | 0 | 3:56 | .06 | .43 | :29 | .134 | .35 |
| 1-14 | .26 | 0 | 4:15 | .13 | .47 | :41 | .178 | .42 |
| 1-15 | .60 2/ | 0 | :34 | .51 | .63 | 5:03 | .374 | .56 |
| 1-16-19 | .30 1/ | 0 | :42 | 1.12 | .78 | :17 | .219 | .78 |
| 1-20 | .43 | T | 5:08 | .32 | .92 | 6:15 | .116 | .86 |
| | | | :28 | .09 | .95 | 7:15 | .0413 | .92 |
| | | | :36 | .45 | 1.01 | :55 | .0521 | .95 |
| | | | :44 | .22 | 1.04 | 8:25 | .0413 | .98 |
| | | | 7:48 | .04 | 1.13 | 9:05 | .108 | 1.02 |
| | | | 8:23 | 0 | 1.13 | :19 | .363 | 1.06 |
| | | | 9:03 | .18 | 1.25 | :41 | .163 | 1.12 |
| | | | :13 | .42 | 1.32 | 10:13 | .108 | 1.19 |
| | | | 10:08 | .11 | 1.42 | :25 | .163 | 1.22 |
| | | | :23 | .24 | 1.48 | :43 | .342 | 1.29 |
| | | | :41 | .50 | 1.63 | :55 | .281 | 1.36 |
| | | | :56 | .20 | 1.68 | 11:05 | .358 | 1.41 |
| | | | 11:03 | .60 | 1.75 | :25 | .181 | 1.50 |
| | | | :48 | .12 | 1.84 | :45 | .125 | 1.55 |
| | | | 1:28p | .01 | 1.85 | 12:15p | .0579 | 1.59 |
| | | | :53 | .12 | 1.90 | 1:15 | .0233 | 1.63 |
| | | | 3:53 | 0 | 1.90 | :49 | .0521 | 1.65 |
| | | | 4:01 | .45 | 1.96 | 2:45 | .0233 | 1.68 |
| | | | :48 | .08 | 2.02 | 4:05 | .0363 | 1.71 |
| | | | 5:01 | .23 | 2.07 | :33 | .0579 | 1.74 |
| | | | :11 | .72 | 2.19 | 5:03 | .108 | 1.77 |
| | | | :53 | .16 | 2.30 | :11 | .124 | 1.84 |
| | | | 7:23 | .07 | 2.40 | :21 | .297 | 1.87 |
| | | | | | | :35 | .163 | 1.93 |
| | | | | | | :55 | .116 | 1.97 |
| | | | | | | 6:25 | .0647 | 2.02 |
| | | | | | | 7:25 | .0363 | 2.07 |
| | | | | | | 8:15 | .0156 | 2.09 |
| | | | | | | 11:15 | 0 | 2.10 |

Watershed conditions: Wheat seeded October 25, 1958. In corn, wheat, meadow, meadow rotation (prevailing practice) since 1942. Wheat plants dormant. Frost penetration 1". Snow cover 5" on January 20.

Notes: 1/ Snow
2/ Rain and Snow See map of watershed on page 26.14-5.





COSHOCTON, OHIO WATERSHED 110

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | | Coshocton, Ohio Watershed 113 (Area - 1.45 acres) | | | | | | |
|---|-------|------|------|------|------|------|-------|--|------|-------|------|------|------|-------|
| Year. | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| | | 1956 | P | 1.62 | 5.51 | 3.87 | 4.07 | 7.24 | 4.57 | 6.31 | 4.34 | 1.62 | 1.27 | 1.50 |
| | Q | .36 | 1.95 | .06 | 0 | .05 | .01 | .06 | .01 | 0 | 0 | 0 | 0 | 2.50 |
| 1957 | P | 1.63 | 1.15 | 1.84 | 4.86 | 4.37 | 10.53 | 3.64 | 2.14 | 4.19 | 1.68 | 2.92 | 4.16 | 43.41 |
| | Q | .09 | 0 | 0 | .29 | T | 2.36 | T | .04 | .03 | 0 | 0 | .42 | 3.23 |
| 1958 | P | 1.55 | .70 | .98 | 3.66 | 3.20 | 4.36 | 8.10 | 2.65 | 3.01 | .37 | 2.10 | .75 | 31.73 |
| | Q | .27 | .11 | 0 | 0 | .19 | 0 | .14 | 0 | 0 | 0 | 0 | 0 | .71 |
| 1959 | P | 5.74 | 3.17 | 2.46 | 4.10 | 2.74 | 4.03 | 4.49 | 2.30 | 2.90 | 5.57 | 2.82 | 2.30 | 42.62 |
| | Q | 1.49 | .40 | 0 | .01 | 0 | 0 | .02 | .08 | 0 | .02 | 0 | T | 2.02 |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | | | | | | | | Coshocton, Ohio Watershed 113 | | |
|---|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|-------------------------------|--------|------|
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 6-12 | 3.77 | 6-12 | 0.89 | 6-28 | 1.17 | 6-28 | 3.35 | 6-28 | 1.35 | 6-28 | 1.35 | 6-28 | 1.35 | 6-24 | 1.14 |
| 1958 | 7-31 | .25 | 5-4 | .20 | 5-4 | .16 | 5-4 | .19 | 5-4 | .19 | 5-4 | .19 | 5-4 | .19 | 1-21 | .27 |
| 1959 | 1-21 | .50 | 1-21 | .34 | 1-21 | .48 | 1-21 | .63 | 1-21 | 1.21 | 1-20 | 1.49 | 1-20 | 1.49 | 1-20 | 1.49 |

Notes: Quality of records: monthly P and Q, excellent; annual maximum discharges and volumes, excellent. Cover 1956, wheat; 1957, 1st year meadow; 1958, 2nd year meadow; 1959, corn; conservation practice.

| SELECTED RUNOFF EVENTS | | | | | | Coshocton, Ohio Watershed 113 | | |
|------------------------------------|-------------------|-----------------|---------------|-------------------|---------------|-------------------------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of September 23, 1945</u> | | | | | | | | |
| 8-23-45 | T | 0 | 9-23-45 | Rainage | 108 1/ | 9-23-45 | | |
| 8-24 | .06 | 0 | 6:16 p | 0 | 0 | 6:38 p | 0 | 0 |
| 8-25-31 | 0 | 0 | :25 | .37 | .01 | :18 | .0408 | T |
| 9-1 | .18 | 0 | :34 | 1.13 | .18 | :54 | .0362 | .01 |
| 9-2-7 | 0 | 0 | :40 | 1.80 | .36 | 7:04 | .0944 | .02 |
| 9-8 | .84 | 0 | :42 | 1.50 | .41 | :07 | .248 | .03 |
| 9-9 | .92 | 0 | :52 | .66 | .52 | :12 | 1.08 | .08 |
| 9-10 | .79 | 0 | :56 | 1.35 | .61 | :20 | e .752 | .20 |
| 9-11 | .03 | 0 | 7:00 | 2.40 | .77 | :36 | .300 | .33 |
| 9-12 | 0 | 0 | :02 | 5.40 | .95 | :44 | .213 | .36 |
| 9-13 | .29 | 0 | :06 | 3.00 | 1.15 | :56 | .0944 | .39 |
| 9-14 | 1.29 | 0 | :10 | .75 | 1.20 | 8:06 | .0562 | .40 |
| 9-15-16 | 0 | 0 | :12 | 4.80 | 1.36 | :20 | .0239 | .41 |
| 9-17 | .53 | 0 | :32 | .42 | 1.50 | :38 | .237 | .44 |
| 9-18 | 1.04 | T | 8:10 | .06 | 1.54 | :44 | e .661 | .49 |
| 9-19 | 0 | 0 | :16 | 0 | 1.54 | :54 | .387 | .57 |
| 9-20 | .57 | 0 | :20 | 1.50 | 1.64 | 9:04 | .202 | .62 |
| 9-21-22 | 0 | 0 | :25 | .48 | 1.68 | :18 | .0944 | .65 |
| 9-23 | .90 2/ | 0 | :28 | 2.60 | 1.81 | :30 | .0507 | .67 |
| | | | :40 | 1.45 | 2.10 | :50 | .0204 | .68 |
| | | | 10:50 | .08 | 2.27 | 12:00m | .0003 | .69 |
| | | | | | | 9-24-45 | | |
| | | | | | | 1:30 a | 0 | .69 |

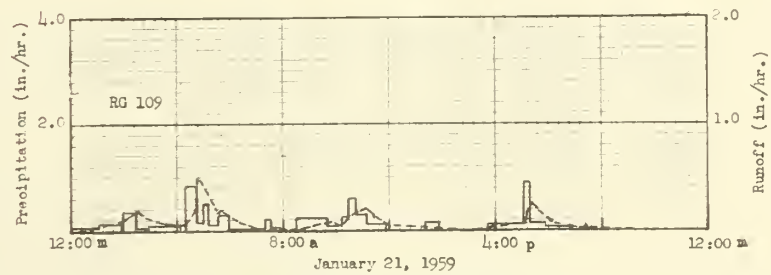
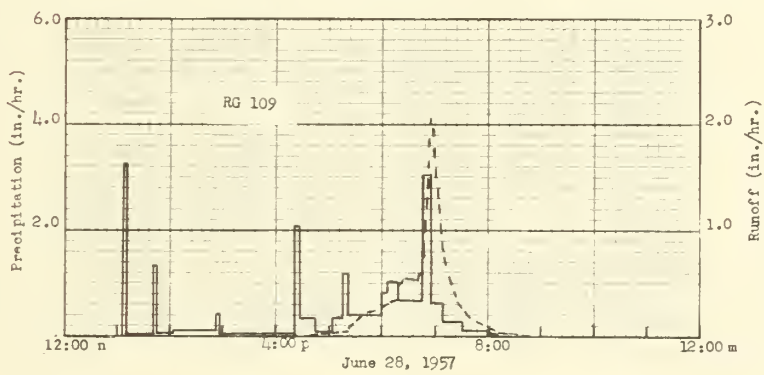
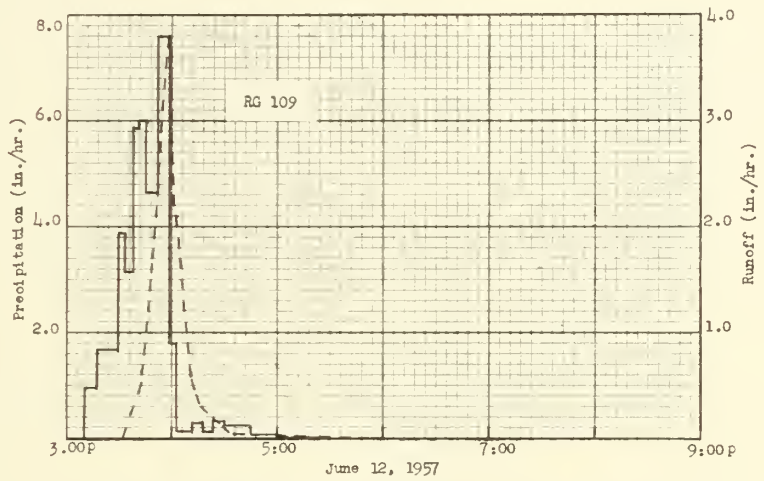
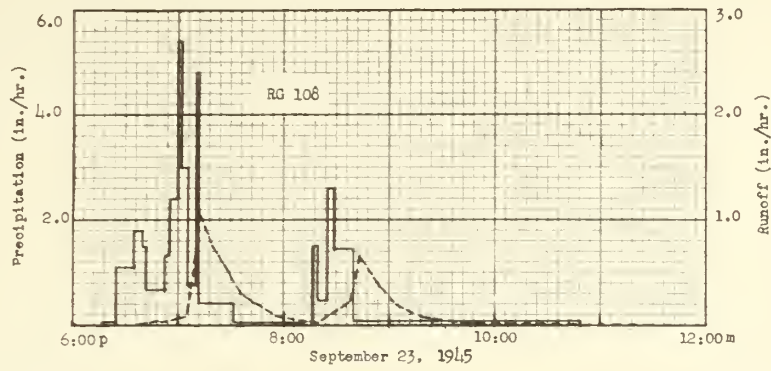
Notes: To convert runoff in in/hr to cfs, multiply by 1.4621.
 1/ Rainage 108 used for this storm. No record on rainage 109.
 2/ Most of rain occurred after 4:16p.

| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 113 | | | | | |
|---|-------------------|-----------------|-------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of June 12, 1957</u> | | | | | | | | |
| | | | 6-12-57 | Raingage | 109 | 6-12-57 | | |
| 5-13-57 | 0 | 0 | 3:10p | 0 | 0 | 3:33p | 0 | 0 |
| 5-14 | 1.79 | T | :17 | .94 | .11 | :43 | .523 | .02 |
| 5-15 | .06 | 0 | :29 | 1.65 | .44 | :49 | 1.66 | .12 |
| 5-16-17 | 0 | 0 | :33 | 3.90 | .70 | :57 | 3.77 | .41 |
| 5-18 | .16 | 0 | :37 | 3.15 | .91 | 4:01 | 2.20 | .59 |
| 5-19 | .26 | 0 | :41 | 5.85 | 1.30 | :11 | .561 | .80 |
| 5-20 | .19 | 0 | :45 | 6.00 | 1.70 | :15 | .356 | .83 |
| 5-21 | 0 | 0 | :52 | 4.63 | 2.24 | :33 | .0678 | .88 |
| 5-22 | .51 | 0 | :58 | 7.60 | 3.00 | 5:57 | 0 | .91 |
| 5-23-25 | 0 | 0 | 4:03 | 1.80 | 3.15 | | | |
| 5-26 | .17 | 0 | :12 | .13 | 3.17 | | | |
| 5-27-31 | 0 | 0 | :18 | .30 | 3.20 | | | |
| 6-1 | .10 | 0 | :23 | .12 | 3.21 | | | |
| 6-2-7 | 0 | 0 | :30 | .34 | 3.25 | | | |
| 6-8 | .86 | 0 | :45 | .24 | 3.31 | | | |
| 6-9-10 | 0 | 0 | 5:00 | .08 | 3.33 | | | |
| 6-11 | .35 | 0 | :30 | .02 | 3.34 | | | |
| 6-12 | 0 | 0 | | | | | | |
| <u>Watershed conditions:</u> In corn, wheat, meadow, meadow rotation (conservation practice) since 1943. First year meadow in 1957. Grass and legumes cut for hay on June 10. | | | | | | | | |
| <u>Event of June 28, 1957</u> | | | | | | | | |
| | | | 6-28-57 | Raingage | 109 | 6-28-57 | | |
| 5-28-31-57 | 0 | 0 | 1:05p | 0 | 0 | 4:22p | 0 | 0 |
| 6-1 | .10 | 0 | :09 | 3.30 | .22 | :46 | .0239 | .01 |
| 6-2-7 | 0 | 0 | :40 | .02 | .23 | :58 | .0408 | .01 |
| 6-8 | .86 | 0 | :44 | 1.35 | .32 | 5:22 | .0807 | .03 |
| 6-9-10 | 0 | 0 | | | | | | |
| 6-11 | .35 | 0 | 2:03 | .03 | .33 | :26 | .143 | .04 |
| 6-12 | 3.34 | .91 | :50 | .14 | .44 | :42 | .248 | .09 |
| 6-13 | .39 | T | :57 | .43 | .49 | 6:00 | .274 | .17 |
| 6-14 | .02 | 0 | 4:22 | .07 | .59 | :08 | .328 | .21 |
| 6-15 | 0 | 0 | :26 | 2.10 | .73 | :16 | .342 | .26 |
| 6-16 | .38 | 0 | :45 | .35 | .84 | :20 | .505 | .29 |
| 6-17-18 | 0 | 0 | 5:03 | .10 | .87 | :24 | .561 | .32 |
| 6-19 | .02 | 0 | :15 | .35 | .94 | :40 | .542 | .47 |
| 6-20-22 | 0 | 0 | :22 | 1.20 | 1.08 | :48 | .773 | .55 |
| 6-23 | .06 | 0 | 6:00 | .40 | 1.33 | :52 | 1.32 | .62 |
| 6-24 | 2.03 | .09 | :05 | .84 | 1.40 | :55 | 2.08 | .71 |
| 6-25-27 | 0 | 0 | :18 | 1.06 | 1.63 | 7:02 | 1.32 | .92 |
| 6-28 | .14 | 0 | :45 | .71 | 1.95 | :06 | .971 | .99 |
| | | | :55 | 3.06 | 2.46 | :10 | .773 | 1.05 |
| | | | 7:10 | .64 | 2.62 | :24 | .387 | 1.18 |
| | | | :30 | .30 | 2.72 | :30 | .287 | 1.22 |
| | | | 8:00 | .14 | 2.79 | :40 | .192 | 1.26 |
| | | | :10 | .06 | 2.80 | 8:00 | .109 | 1.31 |
| | | | | | | :12 | .0678 | 1.32 |
| | | | | | | :34 | .0278 | 1.34 |
| | | | | | | 9:00 | 0.0083 | 1.35 |
| | | | | | | 10:30 | 0 | 1.35 |
| <u>Watershed conditions:</u> In corn, wheat, meadow, meadow rotation (conservation practice) since 1943. First year meadow in 1957. Legumes and grass 6" high, weeds 6" high. | | | | | | | | |

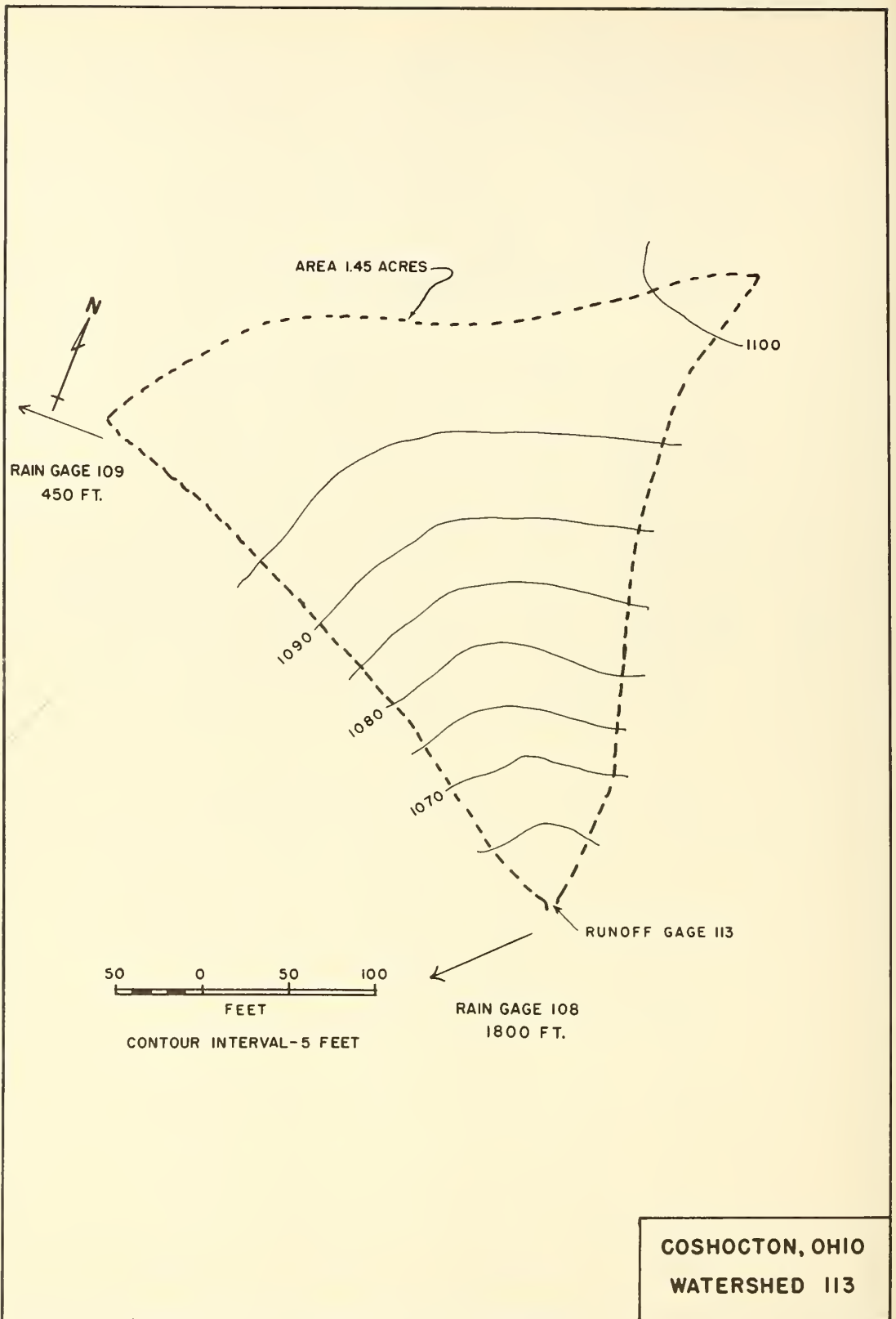
Notes:

| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 113 | | | | | |
|---|-------------------|-----------------|-------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of January 21, 1959</u> | | | | | | | | |
| 12-21-22-58 | 0 | 0 | 1-21-59 | Raingage | 109 | 1-21-59 | | |
| 12-23 | T | 0 | 12:01a | 0 | 0 | 12:19a | 0.0137 | 0 |
| 12-24 | T 1/ | 0 | 1:00 | .08 | .08 | 1:59 | .102 | .08 |
| 12-25-31 | 0 | 0 | +51 | .13 | .19 | 2:29 | .202 | .16 |
| 1-1-59 | .66 | 0 | +56 | 0 | .19 | 2:49 | .134 | .22 |
| 1-2-3 | 0 1/ | 0 | 2:26 | .34 | .36 | 3:29 | .0807 | .28 |
| 1-4 | .04 2/ | 0 | +56 | .04 | .38 | 4:19 | .0562 | .33 |
| 1-5-8 | 0 | 0 | 4:09 | .11 | .51 | +29 | .109 | .35 |
| 1-9-10 | T 1/ | 0 | +16 | 0 | .51 | +39 | .248 | .37 |
| 1-11-13 | 0 | 0 | 2:1 | .84 | .86 | 2:49 | .505 | .44 |
| 1-14 | .28 | 0 | +56 | .16 | .90 | 5:23 | .248 | .66 |
| 1-15 | .70 2/ | 0 | 5:11 | .52 | 1.03 | +33 | .171 | .69 |
| 1-16-19 | .30 1/ | 0 | +30 | .09 | 1.06 | 2:1 | .192 | .72 |
| 1-20 | .45 | T | +56 | .30 | 1.19 | 6:19 | .0873 | .81 |
| | | | 7:19 | .01 | 1.20 | +59 | .0204 | .84 |
| | | | +31 | .20 | 1.24 | 8:29 | .0042 | .86 |
| | | | +51 | .06 | 1.26 | 9:09 | .0562 | .87 |
| | | | 8:28 | 0 | 1.26 | 2:47 | .0873 | .93 |
| | | | 9:41 | .24 | 1.56 | 10:13 | .0507 | .95 |
| | | | 10:11 | .10 | 1.61 | +29 | .102 | .97 |
| | | | +26 | .24 | 1.67 | 11:05 | .213 | 1.08 |
| | | | 2:1 | .60 | 1.82 | +29 | .126 | 1.15 |
| | | | 11:05 | .32 | 1.95 | +59 | .0562 | 1.19 |
| | | | +51 | .12 | 2.04 | 3:09 P | 0 | 1.23 |
| | | | 1:21p | 0 | 2.04 | 5:05 | .0678 | 1.24 |
| | | | +51 | .16 | 2.12 | +13 | .202 | 1.26 |
| | | | 3:41 | 0 | 2.12 | +25 | .248 | 1.31 |
| | | | 5:02 | .15 | 2.32 | 6:09 | .0807 | 1.41 |
| | | | +20 | .90 | 2.59 | +59 | .0362 | 1.46 |
| | | | +50 | .14 | 2.66 | 9:39 | 0 | 1.49 |
| | | | 6:51 | .07 | 2.73 | | | |
| <p>Watershed conditions: In corn, wheat, meadow, meadow rotation (conservation practice) since 1943. Second year meadow cover in January 1959. Vegetation dormant. Frost penetration 1". Snow cover 5" on January 20.</p> | | | | | | | | |

Notes: 1/ Snow
2/ Rain and snow



GOSHOCTON, OHIO WATERSHED 113



| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | | Coshocton, Ohio Watershed 118 (Area - 1.96 acres) | | | | | |
|---|------|------|------|------|------|-------|------|--|-------|------|------|------|-------|
| Month Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 P | 1.71 | 5.69 | 3.89 | 4.03 | 7.42 | 4.45 | 6.45 | 4.40 | 1.60 | 1.18 | 1.53 | 3.42 | 45.77 |
| Q | .15 | 1.92 | .23 | .03 | .33 | .10 | .26 | .03 | 0 | 0 | 0 | .01 | 3.06 |
| 1957 P | 1.68 | 1.42 | 1.84 | 5.04 | 4.44 | 10.25 | 3.86 | 2.24 | 4.15 | 1.55 | 2.80 | 4.13 | 43.40 |
| Q | .01 | 0 | 0 | .14 | .01 | 2.16 | T | T | .01 | 0 | .01 | .29 | 2.63 |
| 1958 P | 1.47 | .64 | .99 | 3.38 | 3.15 | 4.23 | 8.02 | 2.72 | 2.99 | .32 | 2.18 | .71 | 30.80 |
| Q | 0 | 0 | 0 | 0 | .08 | 0 | .16 | T | 0 | 0 | 0 | 0 | .24 |
| 1959 P | 5.68 | 3.02 | 2.47 | 4.04 | 2.79 | 4.17 | 4.49 | 2.36 | 2.97 | 5.34 | 2.84 | 1.88 | 42.05 |
| Q | 1.00 | .31 | T | .08 | 0 | .10 | .39 | .57 | T | .02 | .05 | .10 | 2.62 |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | | | | | | | | Coshocton, Ohio Watershed 118 | | |
|---|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|-------------------------------|--------|------|
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 6-12 | 3.11 | 6-12 | 1.02 | 6-12 | 1.03 | 6-28 | 1.06 | 6-28 | 1.06 | 6-28 | 1.06 | 6-28 | 1.06 | 6-24 | 1.12 |
| 1958 | 7-31 | .18 | 7-22 | .08 | 7-22 | .08 | 5-4 | .08 | 5-4 | .08 | 5-4 | .08 | 5-4 | .08 | 5-4 | .08 |
| 1959 | 8-4 | 1.07 | 8-4 | .44 | 8-4 | .57 | 8-4 | .57 | 1-21 | .79 | 1-21 | 1.00 | 1-21 | 1.00 | 1-21 | 1.00 |

Notes: Quality of records: monthly P and Q, excellent; annual maximum discharges and volumes, excellent. Cover 1956, wheat; 1957, 1st year meadow; 1958, 2nd year meadow; 1959, corn; prevailing practice.

| SELECTED RUNOFF EVENTS | | | | | | | | | Coshocton, Ohio Watershed 118 | | |
|------------------------------------|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|-------------------------------|--|--|
| Antecedent conditions | | | Rainfall | | | Runoff | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | |
| <u>Event of September 23, 1945</u> | | | | | | | | | | | |
| 8-23-45 | T | 0 | 9-23-45 | Raingage | 108 | 9-23-45 | | | | | |
| 8-24 | .06 | 0 | 5:27p | 0 | 0 | 6:00p | 0 | 0 | | | |
| 8-25-31 | 0 | 0 | :31 | 3.30 | .22 | :40 | .0678 | .02 | | | |
| 9-1 | .18 | 0 | :36 | 2.16 | .40 | :44 | .167 | .02 | | | |
| 9-2-7 | 0 | 0 | :47 | .16 | .43 | :50 | .278 | .05 | | | |
| 9-8 | .84 | 0 | :49 | 3.90 | .56 | 7:06 | .815 | .14 | | | |
| 9-9 | .92 | 0 | :54 | .60 | .61 | :10 | 1.36 | .22 | | | |
| 9-10 | .79 | 0 | 6:16 | 0 | .61 | :24 | .901 | .50 | | | |
| 9-11 | .03 | 0 | :25 | .07 | .62 | :36 | .379 | .62 | | | |
| 9-12 | 0 | 0 | :30 | 1.32 | .73 | :44 | .204 | .66 | | | |
| 9-13 | .29 | 0 | :34 | .90 | .79 | :50 | .142 | .68 | | | |
| 9-14 | 1.29 | .01 | :40 | 1.80 | .97 | :56 | .0916 | .69 | | | |
| 9-15-16 | 0 | 0 | :52 | .80 | 1.13 | 8:18 | .0309 | .71 | | | |
| 9-17 | .53 | 0 | 7:00 | 1.88 | 1.38 | :30 | .150 | .72 | | | |
| 9-18 | 1.04 | .03 | :02 | 5.40 | 1.56 | :36 | .393 | .75 | | | |
| 9-19 | 0 | 0 | :06 | 3.00 | 1.76 | :44 | .815 | .83 | | | |
| 9-20 | .57 | .03 | :12 | 2.10 | 1.97 | :48 | .693 | .88 | | | |
| 9-21-22 | 0 | 0 | :32 | .42 | 2.11 | 9:02 | .278 | .99 | | | |
| 9-23 | .29 1/ | 0 | :40 | .15 | 2.13 | :10 | .177 | 1.02 | | | |
| | | | 8:10 | .04 | 2.15 | :16 | .119 | 1.04 | | | |
| | | | :20 | .60 | 2.25 | :24 | .0789 | 1.05 | | | |
| | | | :28 | 1.28 | 2.42 | :40 | .0476 | 1.07 | | | |
| | | | :40 | 1.45 | 2.71 | 10:30 | .0146 | 1.09 | | | |
| | | | 9:02 | .16 | 2.77 | 12:00 m | 0 | 1.10 | | | |
| | | | 10:50 | .06 | 2.88 | | | | | | |

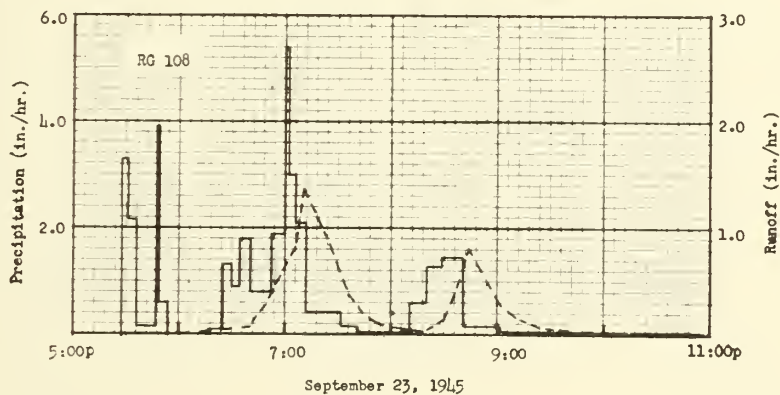
Notes: To convert runoff in in/hr to cfs, multiply by 1.9763.
1/ Most of rain occurred after 3:27p.

| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 118 | | | | | |
|--|-------------------|-----------------|-------------------------------|-------------------|-----------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of June 12, 1957</u> | | | | | | | | |
| 5-12-13-57 | 0 | 0 | 6-12-57 | Raingage | 10 ⁸ | 6-12-57 | | |
| 5-14 | 1.79 | .01 | 3:09p | 0 | 0 | 3:30p | 0 | 0 |
| 5-15 | .04 | 0 | :16 | .51 | .06 | :42 | .340 | .01 |
| 5-16-17 | 0 | 0 | :20 | 1.20 | .14 | :46 | 1.04 | .04 |
| 5-18 | .16 | 0 | :25 | .60 | .19 | :58 | 3.11 | .45 |
| 5-19 | .26 | 0 | :30 | 3.84 | .51 | 1:06 | 1.60 | .78 |
| 5-20 | .17 | 0 | :32 | 3.90 | .64 | :12 | .815 | .90 |
| 5-21 | 0 | 0 | :42 | 4.56 | 1.10 | :14 | .617 | .92 |
| 5-22 | .50 | 0 | :48 | 6.00 | 2.00 | :18 | .422 | .96 |
| 5-23-25 | 0 | 0 | :50 | 3.90 | 2.13 | :26 | .185 | 1.00 |
| 5-26 | .14 | 0 | :52 | 2.10 | 2.20 | :32 | .119 | 1.01 |
| 5-27-31 | 0 | 0 | :56 | 9.00 | 2.80 | 5:08 | 0 | 1.03 |
| 6-1 | .10 | 0 | :58 | 6.00 | 3.00 | | | |
| 6-2-7 | 0 | 0 | 4:00 | 1.50 | 3.05 | | | |
| 6-8 | .88 | 0 | :13 | .09 | 3.07 | | | |
| 6-9-10 | 0 | 0 | :16 | .60 | 3.10 | | | |
| 6-11 | .35 | 0 | :23 | .17 | 3.12 | | | |
| 6-12 | 0 | 0 | :36 | .23 | 3.17 | | | |
| | | | :43 | .34 | 3.21 | | | |
| | | | :52 | .13 | 3.23 | | | |
| | | | 5:23 | .04 | 3.25 | | | |
| <p>Watershed conditions: In corn, wheat, meadow, meadow rotation (Prevailing practice) since 1943. First year meadow in 1957. Grass, legumes and weeds 15" high.</p> | | | | | | | | |
| <u>Event of June 28, 1957</u> | | | | | | | | |
| 5-28-31-57 | 0 | 0 | 6-28-57 | Raingage | 10 ⁸ | 6-28-57 | | |
| 6-1 | .10 | 0 | 1:03p | 0 | 0 | 1:30p | 0 | 0 |
| 6-2-7 | 0 | 0 | :07 | 3.00 | .20 | :44 | .0476 | .01 |
| 6-8 | .88 | 0 | :38 | .04 | .22 | 5:08 | .0094 | .02 |
| 6-9-10 | 0 | 0 | :42 | 1.65 | .33 | :32 | .142 | .04 |
| 6-11 | .35 | 0 | 2:00 | .03 | .34 | :42 | .194 | .07 |
| 6-12 | 3.25 | 1.03 | :12 | .20 | .38 | :56 | .214 | .12 |
| 6-13 | .33 | 0 | :30 | .03 | .39 | 6:02 | .290 | .14 |
| 6-14 | .02 | 0 | :48 | .20 | .45 | :12 | .326 | .19 |
| 6-15 | 0 | 0 | 3:15 | .13 | .51 | :16 | .451 | .22 |
| 6-16 | .34 | 0 | :40 | .05 | .53 | :34 | .439 | .36 |
| 6-17-18 | 0 | 0 | 4:20 | .12 | .61 | :40 | .482 | .41 |
| 6-19 | .02 | 0 | :36 | .90 | .85 | :46 | .734 | .47 |
| 6-20-22 | 0 | 0 | 5:00 | .15 | .91 | :48 | 1.04 | .50 |
| 6-23 | .06 | 0 | :12 | .25 | .96 | :52 | 1.36 | .58 |
| 6-24 | 2.00 | .06 | :50 | .54 | 1.30 | 7:08 | .617 | .85 |
| 6-25-27 | 0 | 0 | 6:00 | .72 | 1.42 | :22 | .314 | .95 |
| 6-28 | .10 1/2 | 0 | :10 | .54 | 1.51 | :30 | .204 | .99 |
| | | | :17 | 1.20 | 1.65 | :42 | .134 | 1.02 |
| | | | :40 | .73 | 1.93 | 8:16 | .0176 | 1.06 |
| | | | :46 | 1.40 | 2.07 | :34 | 0 | 1.06 |
| | | | :54 | 2.78 | 2.44 | | | |
| | | | 7:00 | .80 | 2.52 | | | |
| | | | :07 | .69 | 2.60 | | | |
| | | | :20 | .37 | 2.68 | | | |
| | | | 8:00 | .17 | 2.79 | | | |
| | | | :10 | .06 | 2.80 | | | |
| <p>Watershed conditions: In corn, wheat, meadow, meadow rotation (prevailing practice) since 1943. First year meadow in 1957. Legumes, grass and weeds 4" high.</p> | | | | | | | | |
| Notes: 1/2 Rain ended about 7:30a. | | | | | | | | |

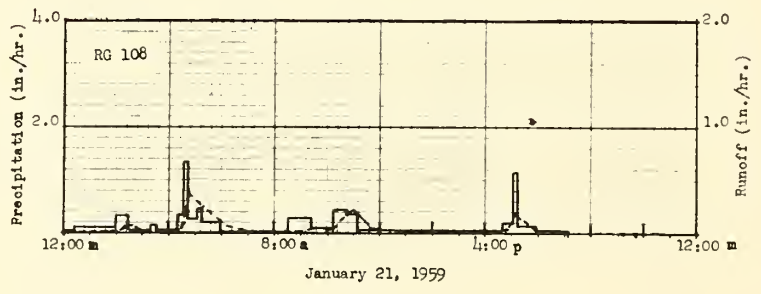
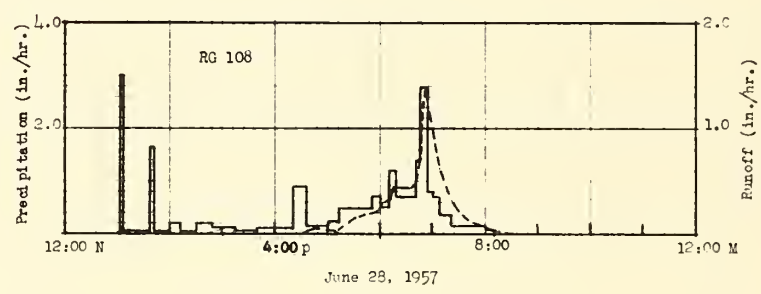
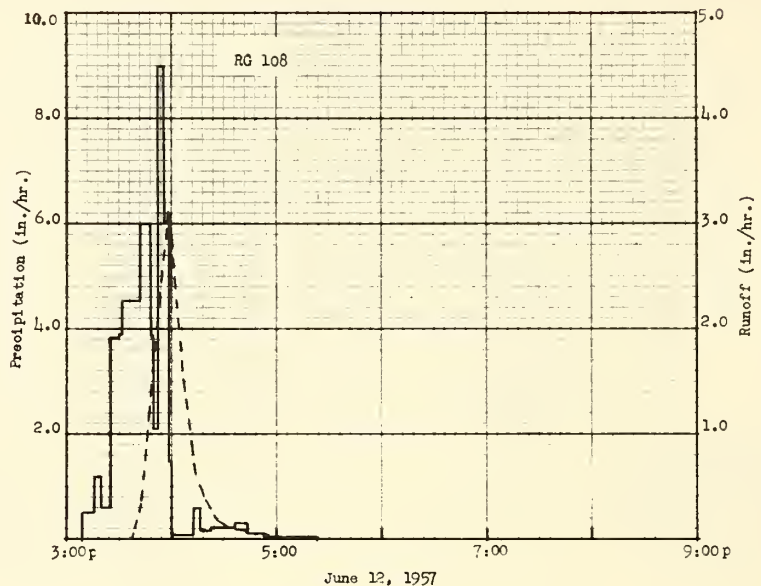
| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 118 | | | | | |
|----------------------------------|-------------------|-----------------|-------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of January 21, 1959</u> | | | | | | | | |
| 12-21-22-58 | 0 | 0 | 1-21-59 | Raingage | 108 | 1-21-59 | | |
| 12-23 | T 1/2 | 0 | 12:01a | 0 | 0 | 12:10a | 0 | 0 |
| 12-24 | T 1/2 | 0 | :26 | .05 | .02 | 2:00 | .0118 | .01 |
| 12-25-31 | 0 | 0 | 1:58 | .12 | .20 | :20 | .0572 | .02 |
| 1-1-59 | .60 | 0 | 2:26 | .36 | .37 | :36 | .0678 | .04 |
| 1-2-3 | 0 | 0 | 3:18 | .06 | .42 | 3:00 | .0176 | .05 |
| 1-4 | .04 1/2 | 0 | :31 | .18 | .46 | :50 | e .0094 | .06 |
| 1-5-8 | 0 1/2 | 0 | 4:16 | .07 | .51 | 4:30 | .0476 | .08 |
| 1-9-10 | T 1/2 | 0 | :32 | .38 | .61 | :37 | .204 | .09 |
| 1-11-13 | 0 | 0 | :43 | 1.36 | .86 | :46 | .393 | .14 |
| 1-14 | .27 2/2 | 0 | 5:03 | .27 | .95 | 5:20 | .256 | .34 |
| 1-15 | .72 2/2 | 0 | :16 | .46 | 1.05 | 6:12 | .0789 | .47 |
| 1-16-19 | .30 1/2 | 0 | :59 | .21 | 1.20 | 7:10 | .0176 | .51 |
| 1-20 | .48 | 0 | 8:28 | .03 | 1.27 | 8:10 | .0037 | .51 |
| | | | 9:23 | .29 | 1.54 | 9:14 | .0309 | .53 |
| | | | 10:13 | .10 | 1.62 | 146 | .0521 | .55 |
| | | | 143 | .44 | 1.84 | 10:12 | .0309 | .57 |
| | | | 11:08 | .36 | 1.99 | :32 | .119 | .59 |
| | | | 1:36p | .05 | 2.25 | 11:00 | .224 | .67 |
| | | | 5:02 | .20 | 2.33 | 144 | .167 | .72 |
| | | | :13 | 1.15 | 2.54 | 140 | .0572 | .77 |
| | | | :53 | .15 | 2.64 | 1:00p | e .0176 | .80 |
| | | | 7:08 | .06 | 2.71 | 4:10 | e .0053 | .84 |
| | | | | | | :50 | e .0431 | .85 |
| | | | | | | 5:10 | .194 | .89 |
| | | | | | | :50 | .0431 | .97 |
| | | | | | | 7:10 | e .0072 | .99 |
| | | | | | | 10:40 | 0 | 1.00 |

Watershed conditions: In corn, wheat, meadow, meadow rotation (prevailing practice) since 1943. Second year meadow cover in January 1959. Vegetation dormant. Frost penetration 1". Snow cover 5" on January 20.

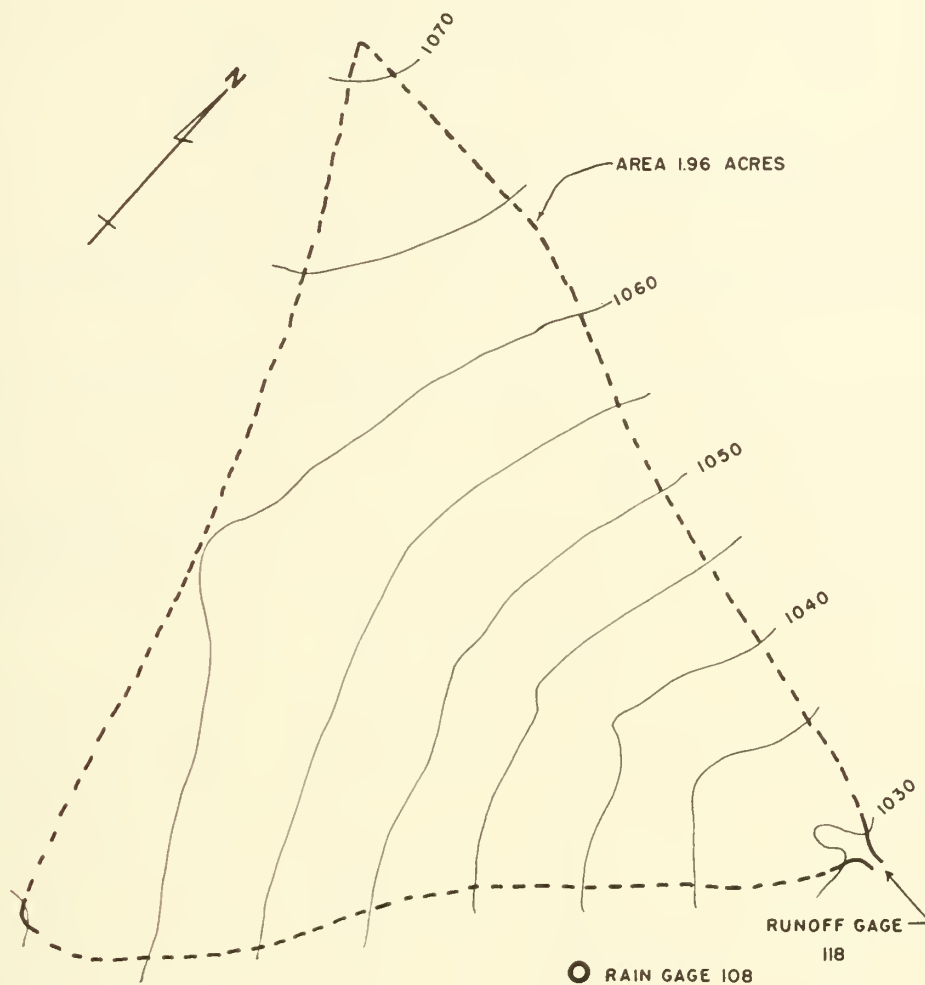
Notes: 1/ Snow
2/ Rain and Snow



COSHCOCTON, OHIO WATERSHED 118



GOSHOCTON, OHIO WATERSHED 118



CONTOUR INTERVAL-5 FEET

COSHOCTON, OHIO
WATERSHED 118

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Coshocton, Ohio Watershed 111 (Area - 1.18 acres) | | | | | | | |
|---|-------|------|------|------|------|------|--|------|------|-------|------|------|------|-------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| | | 1956 | P | 1.62 | 5.51 | 3.87 | 4.07 | 7.24 | 4.57 | 6.31 | 4.34 | 1.62 | 1.27 | 1.50 |
| | Q | .25 | 2.46 | .48 | .03 | .72 | .09 | .41 | .09 | T | 0 | 0 | 0 | 4.53 |
| 1957 | P | 1.63 | 1.45 | 1.84 | 4.86 | 4.37 | 10.53 | 3.64 | 2.14 | 4.19 | 1.68 | 2.92 | 4.16 | 43.41 |
| | Q | .36 | 0 | 0 | 1.26 | .01 | 3.62 | 0 | 0 | T | 0 | 0 | 1.07 | 6.32 |
| 1958 | P | 1.55 | .70 | .98 | 3.66 | 3.20 | 4.36 | 8.40 | 2.65 | 3.01 | .37 | 2.10 | .75 | 31.73 |
| | Q | .38 | .07 | T | .04 | .48 | 0 | .25 | 0 | 0 | 0 | 0 | 0 | 1.22 |
| 1959 | P | 5.74 | 3.17 | 2.46 | 4.10 | 2.74 | 4.03 | 4.49 | 2.30 | 2.90 | 5.57 | 2.82 | 2.30 | 42.62 |
| | Q | 2.57 | .91 | .02 | .15 | T | 0 | T | T | D | 0 | T | .26 | 3.91 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS Coshocton, Ohio Watershed 111

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 6-12 | 3.82 | 6-12 | 1.33 | 6-12 | 1.42 | 6-28 | 1.71 | 6-28 | 1.71 | 6-28 | 1.71 | 6-28 | 1.71 | 6-24 | 2.15 |
| 1958 | 7-31 | .24 | 5-4 | .19 | 5-4 | .32 | 5-4 | .44 | 5-4 | .48 | 5-4 | .48 | 5-4 | .48 | 4-29 | .51 |
| 1959 | 1-21 | .62 | 1-21 | .43 | 1-21 | .63 | 1-21 | 1.34 | 1-21 | 2.03 | 1-21 | 2.57 | 1-21 | 2.57 | 1-21 | 2.57 |

Notes: Quality of records: monthly P and Q, excellent; annual maximum discharges and volumes, excellent. Cover 1956, wheat; 1957, 1st year meadow; 1958, 2nd year meadow; 1959, corn; conservation practice plus mulch tillage.

SELECTED RUNOFF EVENTS Coshocton, Ohio Watershed 111

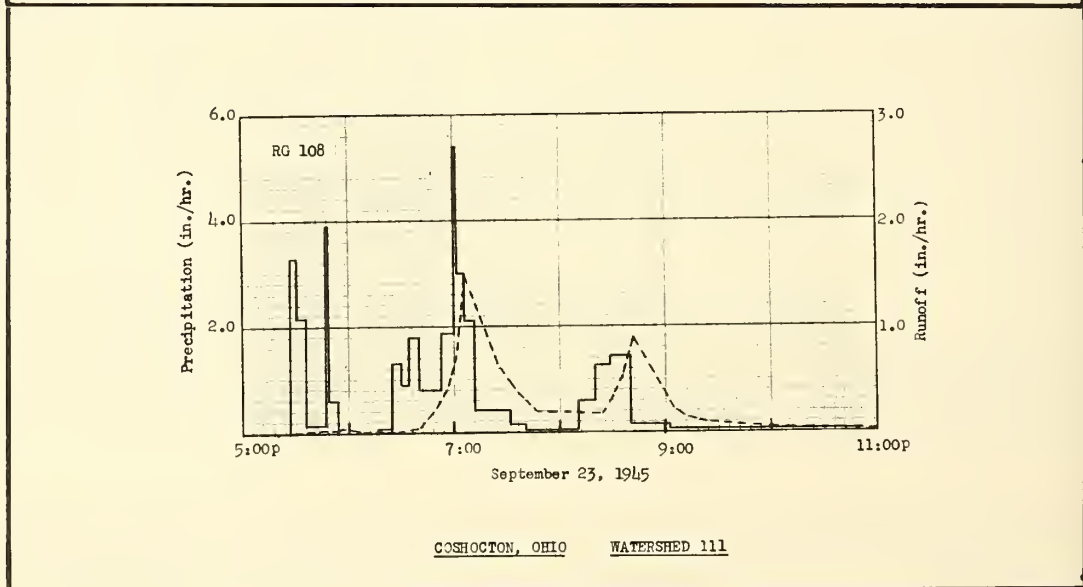
| Antecedent conditions | | | Rainfall | | | Runoff | | |
|--|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of September 23, 1945</u> | | | | | | | | |
| 8-23-45 | T | 0 | 9-23-45 | Raingage | 108 1/2 | 9-23-45 | | |
| 8-24 | .06 | 0 | 5:27p | 0 | 0 | 5:28p | 0 | 0 |
| 8-25-31 | 0 | 0 | :31 | 3.30 | .22 | :54 | .0102 | T |
| 9-1 | .18 | 0 | :36 | 2.16 | .40 | :56 | .0294 | T |
| 9-2-7 | 0 | 0 | :47 | .16 | .43 | 6:06 | .0102 | .01 |
| 9-8 | .84 | 0 | :49 | 3.90 | .56 | :26 | .0003 | .01 |
| 9-9 | .92 | 0 | :54 | .60 | .61 | :40 | .0561 | .01 |
| 9-10 | .79 | 0 | 6:16 | 0 | .61 | :50 | .235 | .04 |
| 9-11 | .03 | 0 | :25 | .07 | .62 | :56 | .403 | .07 |
| 9-12 | 0 | 0 | :30 | 1.32 | .73 | 7:02 | .787 | .12 |
| 9-13 | .29 | 0 | :34 | .90 | .79 | :06 | 1.47 | .20 |
| 9-14 | 1.29 | .02 | :40 | 1.80 | .97 | :24 | .656 | .55 |
| 9-15-16 | 0 | 0 | :52 | .80 | 1.13 | :36 | .368 | .65 |
| 9-17 | .53 | 0 | 7:00 | 1.88 | 1.38 | :46 | .198 | .70 |
| 9-18 | 1.04 | T | :02 | 5.40 | 1.56 | 8:24 | .176 | .77 |
| 9-19 | 0 | 0 | :06 | 3.00 | 1.76 | :30 | .336 | .79 |
| 9-20 | .57 | T | :12 | 2.10 | 1.97 | :36 | .556 | .83 |
| 9-21-22 | 0 | 0 | :32 | .42 | 2.11 | :42 | .893 | .91 |
| 9-23 | .292/ | 0 | :40 | .15 | 2.13 | 9:04 | .223 | 1.09 |
| | | | 8:10 | .04 | 2.15 | :10 | .165 | 1.11 |
| | | | :20 | .60 | 2.25 | :22 | .0989 | 1.13 |
| | | | :28 | 1.28 | 2.42 | :50 | .0624 | 1.17 |
| | | | :40 | 1.5 | 2.71 | 10:20 | .0341 | 1.20 |
| | | | 9:02 | .16 | 2.77 | 11:10 | .0168 | 1.22 |
| | | | 10:50 | .06 | 2.88 | 12:00m | .0051 | 1.23 |
| <p>Watershed conditions: In contour strips in 4-year rotation of corn, wheat, meadow, meadow (conservation practice) beginning in 1941. Corn and meadow strips in 1945. Corn strips; corn 108" high, weeds 20", grass 5" high. Meadow strips; grass and legumes 5" high, weeds 10" high.</p> | | | | | | | | |

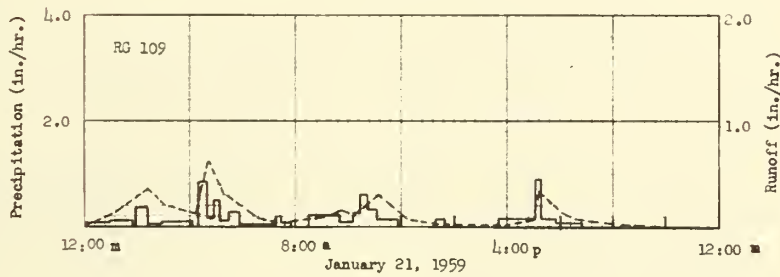
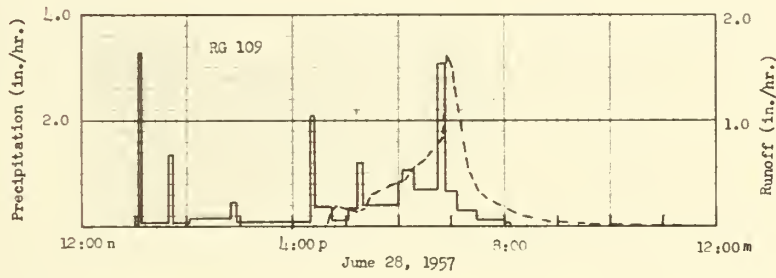
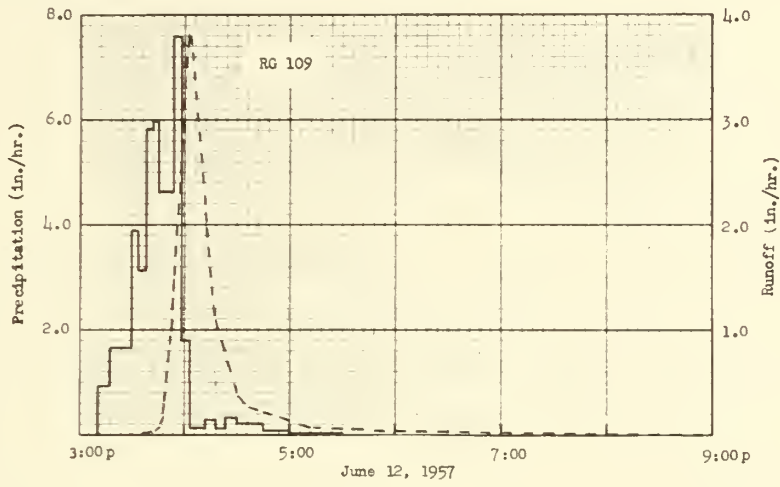
Notes: To convert runoff in in/hr to cfs, multiply by 1.1898. 1/ Raingage 108 used for this storm. No record on raingage 109. 2/ Most of rain occurred after 3:27p.

| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 111 | | | | | |
|---|-------------------|-----------------|-------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of June 12, 1957</u> | | | | | | | | |
| | | | 6-12-57 | Raingage | 109 | 6-12-57 | | |
| 5-13-57 | 0 | 0 | 3:10p | 0 | 0 | 3:26p | 0 | 0 |
| 5-14 | 1.79 | .01 | :17 | .94 | .11 | :14 | .0561 | .01 |
| 5-15 | .06 | 0 | :29 | 1.65 | .44 | :16 | .0989 | .01 |
| 5-16-17 | 0 | 0 | :33 | 3.90 | .70 | :48 | .176 | .01 |
| 5-18 | .16 | 0 | :37 | 3.15 | .91 | :50 | .476 | .03 |
| 5-19 | .26 | 0 | :41 | 5.85 | 1.30 | :52 | .950 | .05 |
| 5-20 | .19 | 0 | :45 | 6.00 | 1.70 | :54 | 1.62 | .09 |
| 5-21 | 0 | 0 | :52 | 4.63 | 2.24 | 4:02 | 3.82 | .45 |
| 5-22 | .51 | 0 | :58 | 7.60 | 3.00 | :06 | 3.38 | .70 |
| 5-23-25 | 0 | 0 | 4:03 | 1.80 | 3.15 | :12 | 2.03 | .97 |
| 5-26 | .17 | 0 | :12 | .13 | 3.17 | :18 | 1.13 | 1.12 |
| 5-27-31 | 0 | 0 | :18 | .30 | 3.20 | :30 | .403 | 1.26 |
| 6-1 | .10 | 0 | :23 | .12 | 3.21 | :36 | .276 | 1.29 |
| 6-2-7 | 0 | 0 | :30 | .34 | 3.25 | 5:10 | .0989 | 1.39 |
| 6-8 | .86 | 0 | :45 | .24 | 3.31 | :34 | .0561 | 1.42 |
| 6-9-10 | 0 | 0 | 5:00 | .08 | 3.33 | 9:00 | 0 | 1.46 |
| 6-11 | .35 | 0 | :30 | .02 | 3.34 | | | |
| 6-12 | 0 | 0 | | | | | | |
| <p>Watershed conditions: In 4-year rotation of corn, wheat, meadow, meadow (conservation practice with mulch tillage) since 1947. First year meadow in 1957. Legumes and grass and weeds 3" high.</p> | | | | | | | | |
| <u>Event of June 28, 1957</u> | | | | | | | | |
| 5-28-31-57 | 0 | 0 | 6-28-57 | Raingage | 109 | 6-28-57 | | |
| 6-1 | .10 | 0 | 1:05p | 0 | 0 | 4:38p | 0 | 0 |
| 6-2-7 | 0 | 0 | :09 | 3.30 | .22 | :46 | .155 | .01 |
| 6-8 | .86 | 0 | :40 | .02 | .23 | :50 | .198 | .02 |
| 6-9-10 | 0 | 0 | :44 | 1.35 | .32 | 5:02 | .176 | .06 |
| 6-11 | .35 | 0 | 2:03 | .03 | .33 | :14 | .135 | .09 |
| 6-12 | 3.34 | 1.46 | :50 | .14 | .44 | :22 | .165 | .11 |
| 6-13 | .39 | .01 | :57 | .43 | .49 | :30 | .305 | .14 |
| 6-14 | .02 | 0 | 4:22 | .07 | .59 | 6:10 | .438 | .38 |
| 6-15 | 0 | 0 | :26 | 2.10 | .73 | :20 | .577 | .46 |
| 6-16 | .38 | 0 | :45 | .35 | .84 | :32 | .642 | .59 |
| 6-17-18 | 0 | 0 | 5:03 | .10 | .87 | :50 | .839 | .80 |
| 6-19 | .02 | 0 | :15 | .35 | .94 | :56 | 1.62 | .92 |
| 6-20-22 | 0 | 0 | :22 | 1.20 | 1.08 | 7:02 | 1.47 | 1.07 |
| 6-23 | .06 | 0 | 6:00 | .40 | 1.33 | :04 | 1.33 | 1.12 |
| 6-24 | 2.03 | .44 | :05 | .84 | 1.40 | :08 | 1.07 | 1.20 |
| 6-25-27 | 0 | 0 | :18 | 1.06 | 1.63 | :22 | .556 | 1.38 |
| 6-28 | .44 1/2 | 0 | :45 | .71 | 1.95 | :32 | .368 | 1.46 |
| | | | :55 | 3.06 | 2.46 | :42 | .276 | 1.51 |
| | | | 7:10 | .64 | 2.62 | 8:22 | .107 | 1.64 |
| | | | :30 | .30 | 2.72 | :52 | .0501 | 1.68 |
| | | | 8:00 | .14 | 2.79 | 9:32 | .0168 | 1.70 |
| | | | :10 | .06 | 2.80 | 11:52 | 0 | 1.71 |
| <p>Watershed conditions: In 4-year rotation of corn, wheat, meadow, meadow (conservation practice with mulch tillage) since 1947. First year meadow in 1957. Legumes, grass and weeds 6" high.</p> | | | | | | | | |
| <p>Notes: 1/ Rain ended about 7:30a.</p> | | | | | | | | |

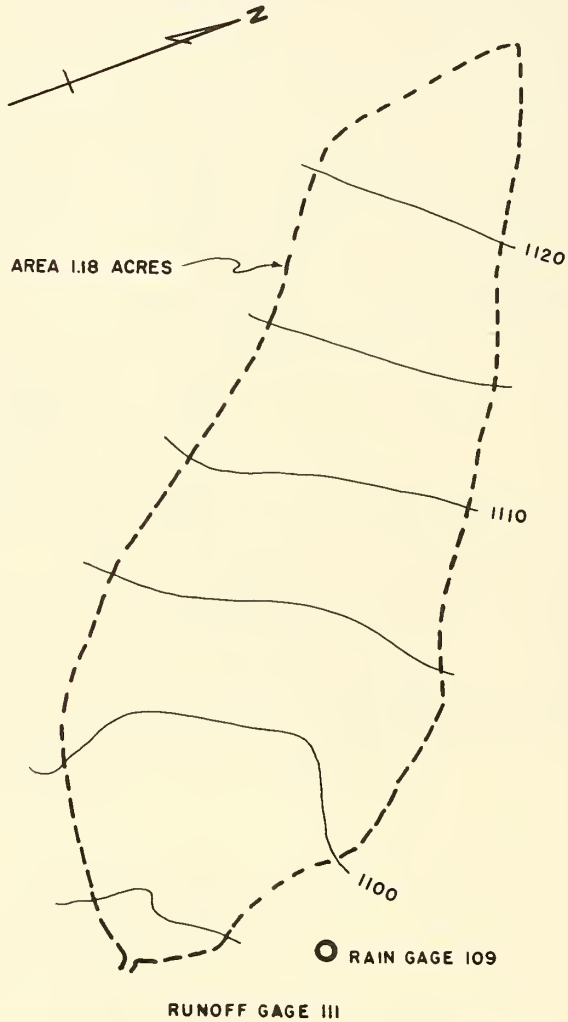
| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 111 | | | | | |
|----------------------------------|-------------------|-----------------|-------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of January 21, 1959</u> | | | | | | | | |
| 12-21-22-58 | 0 | 0 | 1-21-59 | Raingage | 109 | 1-21-59 | | |
| 12-23 | T | 0 | 12:01a | 0 | 0 | 12:05a | e 0.0051 | 0 |
| 12-24 | T 1/ | 0 | 1:00 | .08 | .08 | 1:05 | .107 | .05 |
| 12-25-31 | 0 | 0 | :51 | .13 | .19 | 2:27 | .352 | .36 |
| 1-1-59 | .66 | 0 | :56 | 0 | .19 | 3:03 | .198 | .50 |
| 1-2-3 | 0 | 0 | 2:26 | .34 | .36 | 4:15 | .116 | .68 |
| 1-4 | .04 1/ | 0 | :56 | .04 | .38 | 4:45 | .620 | .83 |
| 1-5-8 | 0 | 0 | 4:09 | .11 | .51 | 5:21 | .305 | 1.11 |
| 1-9-10 | T 1/ | 0 | :16 | 0 | .51 | 6:05 | .187 | 1.28 |
| 1-11-13 | 0 | 0 | :41 | .84 | .86 | :35 | .0833 | 1.35 |
| 1-14 | .28 | 0 | :56 | .16 | .90 | 7:17 | .0391 | 1.39 |
| 1-15 | .70 2/ | 0 | 5:11 | .52 | 1.03 | 9:05 | .0909 | 1.48 |
| 1-16-19 | .30 1/ | 0 | :30 | .09 | 1.06 | :45 | .155 | 1.57 |
| 1-20 | .45 | T | :56 | .30 | 1.19 | 10:11 | .107 | 1.62 |
| | | | 7:19 | .01 | 1.20 | 11:09 | .305 | 1.83 |
| | | | :31 | .20 | 1.24 | 12:00n | .116 | 2.00 |
| | | | :51 | .06 | 1.26 | :13p | .0833 | 2.02 |
| | | | 8:28 | 0 | 1.26 | 1:25 | .0250 | 2.08 |
| | | | 9:41 | .24 | 1.56 | 3:55 | .0133 | 2.14 |
| | | | 10:11 | .10 | 1.61 | 4:59 | .0690 | 2.18 |
| | | | :26 | .24 | 1.67 | 5:05 | .116 | 2.19 |
| | | | :41 | .60 | 1.82 | :15 | .336 | 2.23 |
| | | | 11:05 | .32 | 1.95 | 6:05 | .135 | 2.42 |
| | | | :51 | .12 | 2.04 | :35 | .0833 | 2.47 |
| | | | 1:21p | 0 | 2.04 | 8:15 | .0250 | 2.56 |
| | | | :51 | .16 | 2.12 | 9:47 | 0 | 2.57 |
| | | | 3:41 | 0 | 2.12 | | | |
| | | | 5:02 | .15 | 2.32 | | | |
| | | | :20 | .90 | 2.59 | | | |
| | | | :50 | .14 | 2.66 | | | |
| | | | 6:51 | .07 | 2.73 | | | |

Notes: 1/ Snow
2/ Rain and Snow





COSHOCTON, OHIO WATERSHED 111



CONTOUR INTERVAL- 5 FEET

COSHOCTON, OHIO
WATERSHED III

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Coshocton, Ohio Watershed 121 (Area - 1.42 acres) | | | | | | |
|---|-------------------|-------------|-------------|-------------|-------------|--------------|--|-------------|-------------|-------------|-----------|-------------|---------------|
| Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 | P 1.41 0 | 5.36 .27 | 3.05 .10 | 3.68 .03 | 6.87 .17 | 4.56 .44 | 7.06 1.02 | 4.08 .04 | 1.47 0 | 1.10 0 | 1.41 0 | 2.77 T | 42.82 2.07 |
| 1957 | P 1.44 .04 | 1.18 .01 | 1.48 0 | 4.36 .60 | 3.99 0 | 10.41 .88 | 3.85 .08 | 2.48 .03 | 4.29 .08 | 1.54 0 | 2.75 0 | 3.97 .05 | 41.74 1.77 |
| 1958 | P 1.27 .11 | .70 0 | .74 0 | 3.44 0 | 3.19 T | 4.65 0 | 7.92 .01 | 3.11 .01 | 3.02 0 | .36 0 | 1.79 0 | .44 0 | 30.63 .13 |
| 1959 | P 5.71 1.03 | 3.11 .09 | 2.26 0 | 3.87 .02 | 2.72 0 | 4.80 .06 | 4.80 T | 2.46 .07 | 2.73 .02 | 4.95 .01 | 2.73 0 | 2.07 0 | 42.21 1.30 |

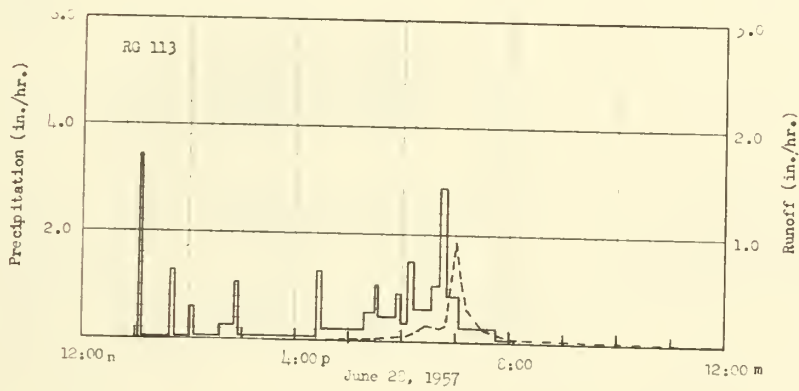
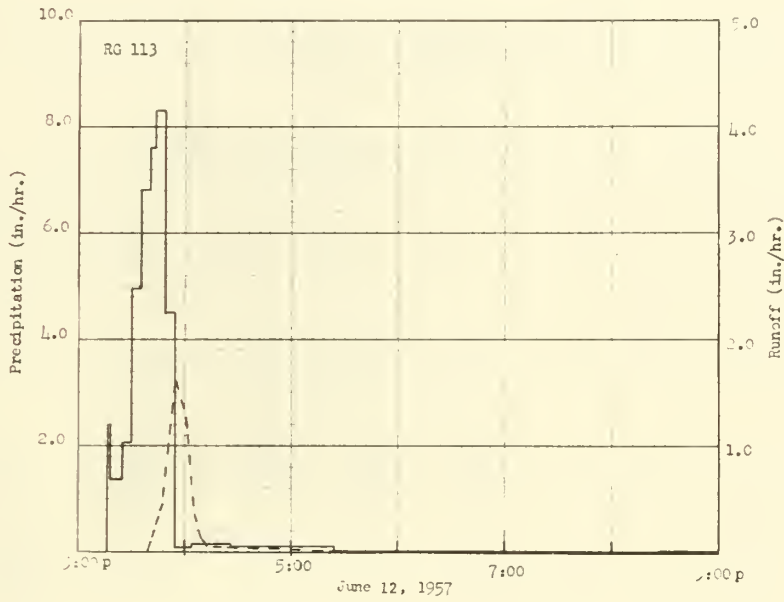
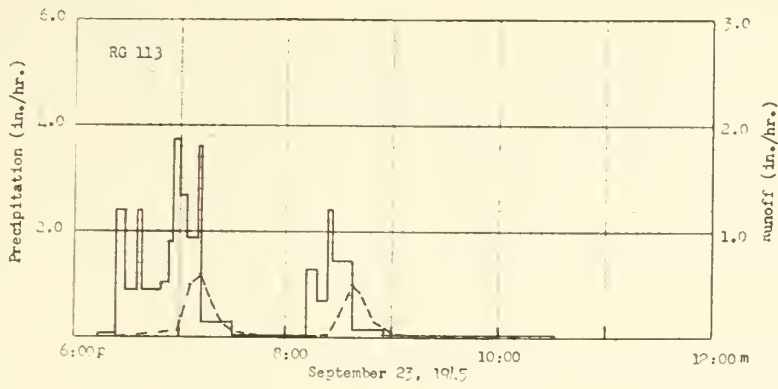
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | Coshocton, Ohio Watershed 121 | | | | | | | | | |
|---|-------------------|------|---|------|---------|------|-------------------------------|------|----------|------|-------|------|--------|------|--------|------|
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 6-12 | 1.62 | 6-12 | 0.37 | 6-28 | 0.38 | 6-28 | 0.44 | 6-28 | 0.44 | 6-28 | 0.46 | 6-28 | 0.48 | 4-3 | 0.57 |
| 1958 | 8-16 | .16 | 1-21 | .02 | 1-21 | .04 | 1-21 | .05 | 1-21 | .06 | 1-21 | .06 | 1-21 | .06 | 1-21 | .11 |
| 1959 | 1-21 | .40 | | nr | | nr | | nr | | nr | | nr | | nr | | nr |

Notes: Quality of records: monthly P and Q, excellent; annual maximum discharges and volumes, excellent. Cover 1956, corn; 1957, wheat; 1958, 1st year meadow; 1959, 2nd year meadow; conservation practice.

| SELECTED RUNOFF EVENTS | | | | | Coshocton, Ohio Watershed 121 | | | | |
|-----------------------------|-------------------|-----------------|---------------|-------------------|-------------------------------|---------------|--------------|---------------|--|
| Antecedent conditions | | | Rainfall | | | Runoff | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | |
| Event of September 23, 1945 | | | | | | | | | |
| 8-23-45 | T | 0 | 9-23-45 | Rainage | 113 | 9-23-45 | | | |
| 8-24 | .06 | 0 | 6:14p | 0 | 0 | 6:21p | 0 | 0 | |
| 8-25-31 | 0 | 0 | 24 | .06 | .01 | 58 | .0692 | .01 | |
| 9-1 | .17 | 0 | 28 | 2.40 | .17 | 7:00 | .146 | .02 | |
| 9-2-7 | 0 | 0 | 36 | .90 | .29 | 6:06 | .497 | .05 | |
| 9-8 | .76 | T | 38 | 2.40 | .37 | 12 | .592 | .10 | |
| 9-9 | .96 | T | 50 | .90 | .55 | 18 | .364 | .15 | |
| 9-10 | .72 | 0 | 51 | 1.05 | .62 | 24 | .146 | .18 | |
| 9-11 | .04 | 0 | 56 | 1.80 | .68 | 30 | .0824 | .19 | |
| 9-12 | 0 | 0 | 7:00 | 3.75 | .93 | 44 | .0208 | .20 | |
| 9-13 | .29 | 0 | 41 | 2.70 | 1.11 | 8:00 | .0062 | .20 | |
| 9-14 | 1.20 | 0 | 10 | 1.90 | 1.30 | 24 | .0325 | .21 | |
| 9-15-16 | 0 | 0 | 12 | 3.60 | 1.42 | 30 | .207 | .22 | |
| 9-17 | .50 | 0 | 30 | .33 | 1.52 | 38 | .497 | .27 | |
| 9-18 | 1.01 | T | 8:12 | .03 | 1.54 | 42 | .427 | .30 | |
| 9-19 | 0 | 0 | 13 | 1.30 | 1.67 | 50 | .165 | .33 | |
| 9-20 | .49 | 0 | 23 | .72 | 1.73 | 9:00 | .0631 | .35 | |
| 9-21-22 | 0 | 0 | 26 | 2.10 | 1.85 | 10 | .0244 | .36 | |
| 9-23 | .691/ | 0 | 38 | 1.45 | 2.14 | 20 | .0140 | .36 | |
| | | | 56 | .17 | 2.19 | 12:00m | .0013 | .38 | |
| | | | 10:32 | .06 | 2.28 | | | | |
| | | | 12:00m | .01 | 2.29 | | | | |

Notes: To convert runoff in in/hr to cfs, multiply by 1.4318.
1/ most of rain occurred after 4:14p.

| SELECTED RUNOFF EVENTS | | | | | | Coshocton, Ohio Watershed 121 | | |
|--|-------------------|-----------------|---------------|-------------------|---------------|-------------------------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of June 12, 1957</u> | | | | | | | | |
| | | | 6-12-57 | Raingage | 113 | 6-12-57 | | |
| 5-13-57 | 0 | 0 | 3:16p | 0 | 0 | 3:39p | 0 | 0 |
| 5-14 | 1.46 | 0 | :13 | 2.40 | .08 | :44 | .254 | .01 |
| 5-15 | .04 | 0 | :25 | 1.37 | .24 | :47 | .462 | .03 |
| 5-16-17 | 0 | 0 | :30 | 2.04 | .41 | :55 | 1.62 | .16 |
| 5-18 | .15 | 0 | :34 | 4.95 | .74 | :59 | 1.35 | .26 |
| 5-19 | .25 | 0 | :40 | 6.80 | 1.42 | 4:05 | .395 | .34 |
| 5-20 | .19 | 0 | :43 | 7.60 | 1.80 | :09 | .116 | .35 |
| 5-21 | 0 | 0 | :49 | 4.30 | 2.63 | :13 | .0573 | .36 |
| 5-22 | .50 | 0 | :55 | 4.50 | 3.08 | 5:27 | 0 | .37 |
| 5-23-25 | 0 | 0 | 4:04 | .07 | 3.09 | | | |
| 5-26 | .12 | 0 | :26 | .14 | 3.14 | | | |
| 5-27-31 | 0 | 0 | 5:24 | .10 | 3.24 | | | |
| 6-1 | .12 | 0 | 8:26 | .01 | 3.28 | | | |
| 6-2-7 | 0 | 0 | 9:24 | .02 | 3.30 | | | |
| 6-8 | .81 | 0 | | | | | | |
| 6-9-10 | 0 | 0 | | | | | | |
| 6-11 | .35 | 0 | | | | | | |
| 6-12 | 0 | 0 | | | | | | |
| Watershed conditions: In corn, wheat, meadow, meadow rotation (conservation practice) since 1942. Wheat in 1957. Wheat 30" high, weeds 14" high. | | | | | | | | |
| <u>Event of June 28, 1957</u> | | | | | | | | |
| 5-28-31-57 | 0 | 0 | 6-28-57 | Raingage | 113 | 6-28-57 | | |
| 6-1 | .12 | 0 | 1:03p | 0 | 0 | 4:34p | 0 | 0 |
| 6-2-7 | 0 | 0 | :07 | 3.45 | .23 | 5:30 | .0208 | .01 |
| 6-8 | .81 | 0 | :39 | .02 | .24 | 6:04 | .0518 | .04 |
| 6-9-10 | 0 | 0 | :44 | 1.32 | .35 | :12 | .0824 | .05 |
| 6-11 | .35 | 0 | 2:01 | .04 | .36 | :26 | .146 | .07 |
| 6-12 | 3.30 | .37 | :06 | .60 | .41 | :42 | .129 | .11 |
| 6-13 | .38 | 0 | :35 | .06 | .44 | :48 | .146 | .12 |
| 6-14 | .04 | 0 | :51 | .26 | .51 | 7:00 | .936 | .21 |
| 6-15-22 | 0 | 0 | :56 | 1.08 | .60 | :06 | .573 | .29 |
| 6-23 | .10 | 0 | 4:24 | .07 | .70 | :12 | .306 | .33 |
| 6-24 | 2.32 | .03 | :29 | 1.32 | .81 | :30 | .120 | .39 |
| 6-25-27 | 0 | 0 | 5:17 | .21 | .98 | 8:00 | .0416 | .42 |
| 6-28 | .12 1/2 | 0 | :29 | .55 | 1.09 | 12:00m | .3003 | .44 |
| | | | :33 | 1.05 | 1.16 | | | |
| | | | :53 | .45 | 1.31 | | | |
| | | | :59 | .90 | 1.40 | | | |
| | | | 6:07 | .38 | 1.45 | | | |
| | | | :13 | 1.50 | 1.60 | | | |
| | | | :33 | .60 | 1.80 | | | |
| | | | :41 | 1.05 | 1.94 | | | |
| | | | :50 | 2.87 | 2.37 | | | |
| | | | 7:04 | .86 | 2.57 | | | |
| | | | :45 | .26 | 2.75 | | | |
| | | | 8:05 | .06 | 2.77 | | | |
| Watershed conditions: In corn, wheat, meadow, meadow rotation (conservation practice) since 1942. Wheat in 1957. Wheat 36" high, weeds 4" high. | | | | | | | | |
| Notes: No tabulation for January 21, 1959 event due to faulty record. | | | | | | | | |
| See map of watershed on page 26.20-5. 1/ Rain ended about 7:30a. | | | | | | | | |



COSHOCKTON, OHIO WATERSHED 121

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Coshocton, Ohio Watershed 106 (Area - 1.56 acres) | | | | | | | |
|---|-------|------|------|------|------|------|--|------|------|-------|------|------|------|-------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 | P | 1.11 | 5.36 | 3.05 | 3.68 | 6.87 | 4.56 | 7.06 | 4.08 | 1.47 | 1.10 | 1.11 | 2.77 | 42.82 |
| | Q | .05 | .70 | .03 | T | .15 | .79 | 2.08 | .58 | .05 | 0 | 0 | .03 | 4.16 |
| 1957 | P | 1.14 | 1.18 | 1.48 | 4.36 | 3.99 | 10.41 | 3.85 | 2.48 | 4.29 | 1.54 | 2.75 | 3.97 | 41.74 |
| | Q | .11 | .02 | .03 | .52 | .01 | 1.77 | .10 | .25 | .18 | 0 | .01 | .75 | 3.75 |
| 1958 | P | 1.27 | .70 | .74 | 3.44 | 3.19 | 4.65 | 7.92 | 3.11 | 3.02 | .36 | 1.79 | .44 | 30.63 |
| | Q | .76 | .17 | 0 | .02 | .13 | 0 | .19 | .05 | T | 0 | 0 | 0 | 1.32 |
| 1959 | P | 5.71 | 3.11 | 2.26 | 3.87 | 2.72 | 4.80 | 4.80 | 2.46 | 2.73 | 4.95 | 2.73 | 2.07 | 42.21 |
| | Q | 1.05 | .12 | 0 | .02 | 0 | .10 | .01 | .12 | 0 | .04 | .18 | .24 | 1.88 |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | Coshocton, Ohio Watershed 106 | | | | | | | | | |
|---|-------------------|------|---|------|---------|------|-------------------------------|------|----------|------|-------|------|--------|------|--------|------|
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 6-12 | 3.03 | 6-12 | 0.93 | 6-12 | 0.94 | 6-12 | 0.94 | 6-12 | 0.94 | 6-12 | 0.95 | 6-12 | 0.95 | 6-8 | 0.96 |
| 1958 | 7-31 | .22 | 1-21 | .08 | 1-21 | .17 | 1-21 | .33 | 1-21 | .39 | 1-21 | .41 | 1-21 | .41 | 1-21 | .76 |
| 1959 | 1-21 | .45 | 1-21 | .28 | 1-21 | .38 | 1-21 | .71 | 1-20 | .91 | 1-20 | 1.03 | 1-20 | 1.03 | 1-20 | 1.03 |

Notes: Quality of records: monthly P and Q, excellent; annual maximum discharges and volumes, excellent. Cover 1956, corn; 1957, wheat; 1958, 1st year meadow; 1959, 2nd year meadow; prevailing practice.

| SELECTED RUNOFF EVENTS | | | | | | | Coshocton, Ohio Watershed 106 | | |
|------------------------------------|-------------------|-----------------|---------------|-------------------|---------------|---------------|-------------------------------|---------------|--|
| Antecedent conditions | | | Rainfall | | | Runoff | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | |
| <u>Event of September 23, 1945</u> | | | | | | | | | |
| 8-23-45 | T | 0 | 9-23-45 | Rainage | 113 | 9-23-45 | | | |
| 8-24 | .06 | 0 | 5:28p | 0 | 0 | 5:30p | 0 | 0 | |
| 8-25-31 | 0 | 0 | :30 | 3.00 | .10 | :34 | .0077 | T | |
| 9-1 | .17 | 0 | :34 | 1.50 | .20 | :44 | .0750 | .01 | |
| 9-2-7 | 0 | 0 | :46 | .25 | .25 | :50 | .0379 | .02 | |
| 9-8 | .76 | T | :48 | 4.20 | .39 | :52 | .0814 | .02 | |
| 9-9 | .96 | .07 | :50 | .60 | .41 | :57 | .0150 | .03 | |
| 9-10 | .72 | .01 | 6:14 | 0 | .41 | 6:00 | .117 | .03 | |
| 9-11 | .04 | 0 | :24 | .06 | .42 | :04 | .0522 | .04 | |
| 9-12 | 0 | 0 | :28 | 2.40 | .58 | :26 | .0057 | .05 | |
| 9-13 | .29 | 0 | :36 | .90 | .70 | :34 | .0947 | .05 | |
| 9-14 | 1.20 | .15 | :38 | 2.40 | .78 | :38 | .360 | .07 | |
| 9-15-16 | 0 | 0 | :50 | .90 | .96 | :44 | .615 | .12 | |
| 9-17 | .50 | 0 | :54 | 1.05 | 1.03 | 7:00 | .595 | .24 | |
| 9-18 | 1.01 | .07 | :56 | 1.80 | 1.09 | :06 | 2.21 | .39 | |
| 9-19 | 0 | 0 | 7:00 | 3.75 | 1.34 | :12 | 1.51 | .58 | |
| 9-20 | .49 | .06 | :04 | 2.70 | 1.52 | :24 | .557 | .80 | |
| 9-21-22 | 0 | 0 | :10 | 1.90 | 1.71 | :32 | .231 | .85 | |
| 9-23 | .28 1/2 | 0 | :12 | 3.60 | 1.83 | :40 | .0947 | .87 | |
| | | | :30 | .33 | 1.93 | :54 | .0336 | .88 | |
| | | | 8:12 | .03 | 1.95 | 8:10 | .0189 | .89 | |
| | | | 8:18 | 1.30 | 2.08 | :16 | .0157 | .89 | |
| | | | :23 | .72 | 2.14 | :22 | .0472 | .90 | |
| | | | :26 | 2.10 | 2.26 | :30 | .331 | .91 | |
| | | | :38 | 1.45 | 2.55 | :40 | 1.11 | 1.05 | |
| | | | :56 | .17 | 2.60 | :48 | .521 | 1.16 | |
| | | | 10:32 | .06 | 2.69 | 9:02 | .102 | 1.21 | |
| | | | 12:00 m | .01 | 2.70 | :18 | .0336 | 1.23 | |
| | | | | | | :30 | .0223 | 1.24 | |
| | | | | | | 10:10 | .0127 | 1.25 | |
| | | | | | | 12:00m | .0039 | 1.26 | |

Notes: To convert runoff in in/hr to cfs, multiply by 1.5730.
1/ Most of rainfall occurred after 3:28p.

SELECTED RUNOFF EVENTS

Coshocton, Ohio Watershed 106

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|------------------------|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of June 12, 1957 | | | | | | | | |
| 5-13-57 | 0 | 0 | 6-12-57 3:16p | Raingage 0 | 11.3 | 6-12-57 3:28p | 0 | 0 |
| 5-14 | 1.16 | .01 | :18 | 2.10 | .08 | :36 | .231 | .02 |
| 5-15 | .04 | 0 | :25 | 1.37 | .24 | :53 | 3.03 | .56 |
| 5-16-17 | 0 | 0 | :30 | 2.04 | .41 | :58 | 1.90 | .77 |
| 5-18 | .15 | 0 | :34 | 4.95 | .74 | 4:02 | .807 | .86 |
| 5-19 | .25 | 0 | :40 | 6.80 | 1.42 | :04 | .521 | .88 |
| 5-20 | .19 | 0 | :43 | 7.60 | 1.80 | :16 | .063 | .92 |
| 5-21 | 0 | 0 | :49 | 8.30 | 2.63 | 6:02 | 0 | .94 |
| 5-22 | .50 | 0 | :55 | 1.50 | 3.08 | | | |
| 5-23-25 | 0 | 0 | 4:04 | .07 | 3.09 | | | |
| 5-26 | .12 | 0 | :26 | .14 | 3.14 | | | |
| 5-27-31 | 0 | 0 | 5:24 | .10 | 3.24 | | | |
| 6-1 | .12 | 0 | 8:26 | .01 | 3.28 | | | |
| 6-2-7 | 0 | 0 | 9:24 | .04 | 3.30 | | | |
| 6-8 | .81 | .01 | | | | | | |
| 6-9-10 | 0 | 0 | | | | | | |
| 6-11 | .35 | 0 | | | | | | |
| 6-12 | 0 | 0 | | | | | | |
| Event of June 28, 1957 | | | | | | | | |
| 5-28-31-57 | 0 | 0 | 6-28-57 1:03p | Raingage 0 | 11.3 | 6-28-57 2:53p | 0 | 0 |
| 6-1 | .12 | 0 | :07 | 3.45 | .23 | 4:31 | .0575 | .01 |
| 6-2-7 | 0 | 0 | :39 | .02 | .24 | 5:03 | .0157 | .03 |
| 6-8 | .81 | .01 | :44 | 1.32 | .35 | 6:03 | .150 | .10 |
| 6-9-10 | 0 | 0 | 2:01 | .04 | .36 | :19 | .266 | .15 |
| 6-11 | .35 | 0 | :06 | .60 | .41 | :33 | .220 | .21 |
| 6-12 | 3.30 | .94 | :35 | .06 | .44 | :50 | 1.35 | .37 |
| 6-13 | .38 | .21 | :51 | .26 | .51 | 7:03 | .503 | .60 |
| 6-14 | .04 | 0 | :56 | 1.08 | .60 | :13 | .266 | .63 |
| 6-15-22 | 0 | 0 | 4:24 | .07 | .70 | 4:45 | .0630 | .70 |
| 6-23 | .10 | 0 | :29 | 1.32 | .81 | 8:03 | .0336 | .71 |
| 6-24 | 2.32 | .09 | 5:17 | .21 | .98 | 11:33 | 0 | .73 |
| 6-25-27 | 0 | 0 | :29 | .55 | 1.09 | | | |
| 6-28 | .12 1/2 | 0 | :33 | 1.05 | 1.16 | | | |
| | | | :53 | .45 | 1.31 | | | |
| | | | :59 | .90 | 1.40 | | | |
| | | | 6:07 | .38 | 1.45 | | | |
| | | | :13 | 1.50 | 1.60 | | | |
| | | | :33 | .60 | 1.80 | | | |
| | | | 4:1 | 1.05 | 1.94 | | | |
| | | | :50 | 2.87 | 2.37 | | | |
| | | | 7:04 | .86 | 2.57 | | | |
| | | | :45 | .26 | 2.75 | | | |
| | | | 8:05 | .06 | 2.77 | | | |

Watershed conditions: In corn, wheat, meadow, meadow rotation (prevailing practice) since 1942. Cover wheat in 1957. Wheat 30" high, weeds 4" high.

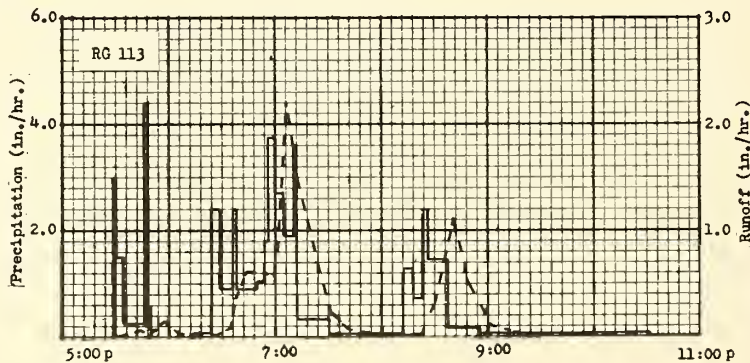
Watershed conditions: In corn, wheat, meadow, meadow rotation (prevailing practice) since 1942. Wheat in 1957. Wheat 36" high, weeds 4" high.

Notes: 1/2 Rain ended about 7:30a.

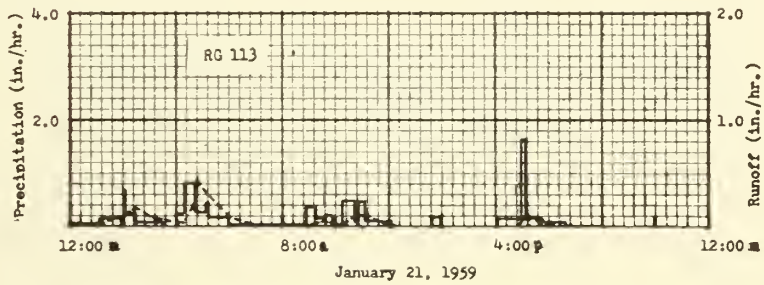
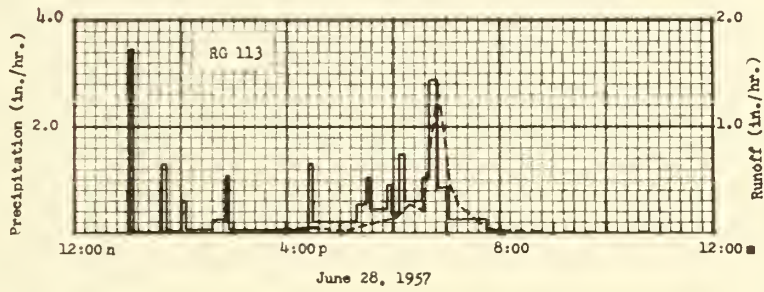
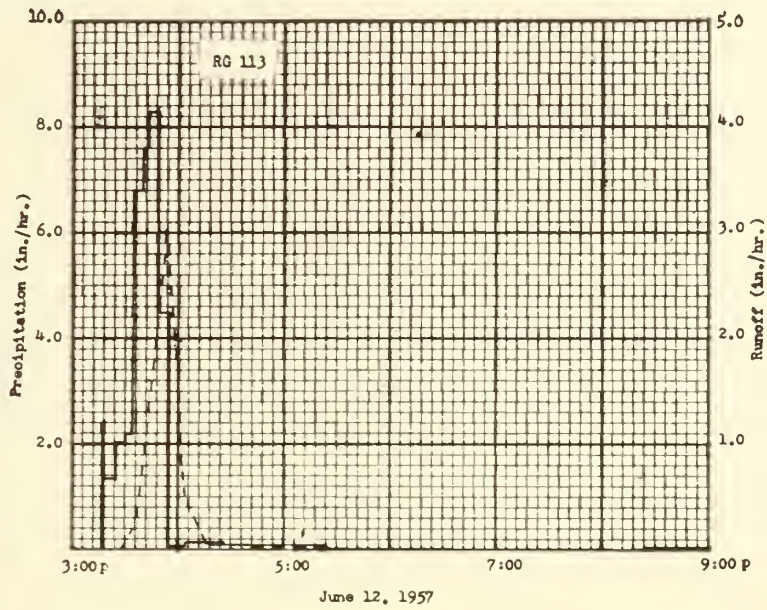
| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 106 | | | | | |
|---------------------------|-------------------|-----------------|-------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of January 21, 1959 | | | | | | | | |
| 12-21-22-58 | 0 | 0 | 1-21-59 | Raingage | 1.13 | 1-21-59 | | |
| 12-23 | T | 0 | 12:01a | 0 | 0 | 12:01a | 0.0223 | 0 |
| 12-24 | T 1/ | 0 | 1:06 | .06 | .07 | 1:05 | .0424 | .03 |
| 12-25-31 | 0 | 0 | 1:56 | .16 | .20 | 1:59 | .102 | .09 |
| 1-1-59 | .60 | .01 | 2:00 | 0 | .20 | 2:29 | .188 | .17 |
| 1-2-3 | 0 | 0 | 1:06 | .70 | .27 | 1:59 | .102 | .24 |
| 1-4 | .02 1/ | 0 | 1:30 | .25 | .37 | 3:47 | .0630 | .31 |
| 1-5-8 | 0 | 0 | 3:30 | .09 | .46 | 4:17 | .0472 | .33 |
| 1-9-10 | T 1/ | 0 | 1:58 | 0 | .46 | 1:39 | .231 | .37 |
| 1-11-13 | 0 | 0 | 4:19 | .26 | .55 | 4:47 | .452 | .42 |
| 1-14 | .29 | 0 | 1:42 | .83 | .87 | 5:11 | .306 | .56 |
| 1-15 | .71 2/ | 0 | 5:06 | .28 | .98 | 6:01 | .102 | .70 |
| 1-16-19 | .30 1/ | 0 | 1:14 | .45 | 1.04 | 7:11 | 0 | .73 |
| 1-20 | .43 | .05 | 1:58 | .19 | 1.18 | 8:45 | 0 | .73 |
| | | | 8:55 | .06 | 1.37 | 9:31 | .0472 | .76 |
| | | | 9:15 | .39 | 1.50 | 10:15 | .0189 | .78 |
| | | | 1:37 | .11 | 1.55 | 1:45 | .117 | .81 |
| | | | 1:54 | .21 | 1.61 | 11:01 | .102 | .84 |
| | | | 10:11 | .03 | 1.62 | 1:07 | .133 | .85 |
| | | | 1:43 | .50 | 1.86 | 1:51 | .0336 | .91 |
| | | | 1:50 | .09 | 1.87 | 12:21p | 0 | .91 |
| | | | 11:06 | .49 | 2.00 | 4:51 | 0 | .91 |
| | | | 12:06p | .10 | 2.10 | 5:11 | .117 | .92 |
| | | | 1:36 | 0 | 2.10 | 1:45 | .0336 | .96 |
| | | | 1:54 | .20 | 2.16 | 6:23 | .0077 | .98 |
| | | | 4:02 | 0 | 2.16 | 7:05 | 0 | .98 |
| | | | 1:59 | .16 | 2.31 | | | |
| | | | 5:10 | 1.64 | 2.61 | | | |
| | | | 1:46 | .17 | 2.71 | | | |
| | | | 6:38 | .10 | 2.80 | | | |
| | | | 8:06 | .01 | 2.82 | | | |

Watershed conditions: In corn, wheat, meadow, meadow rotation since 1942. In second year meadow in 1959. Vegetation dormant. Frost penetration 1". Snow cover 5" on January 20. (Prevailing practice)

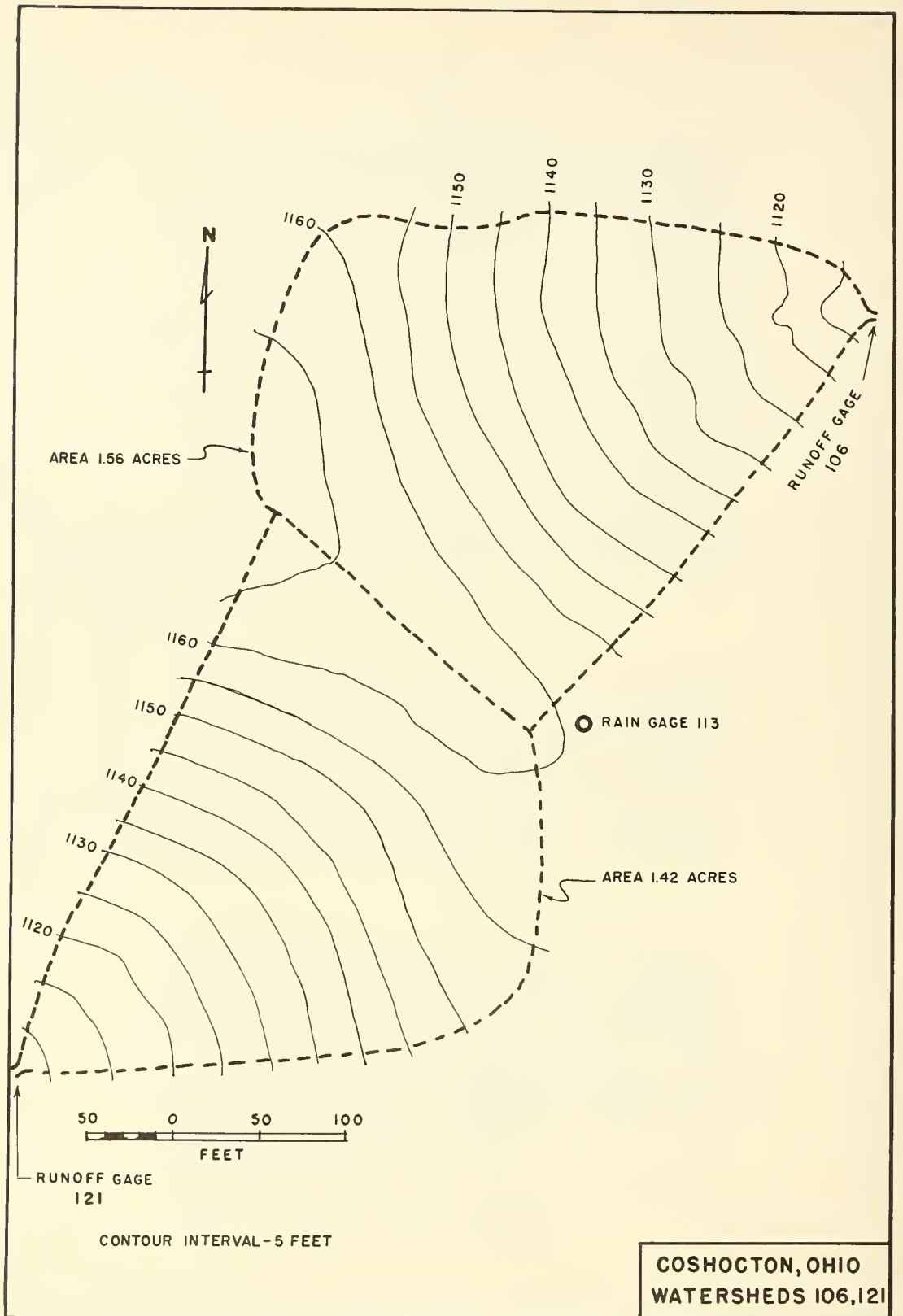
Notes: 1/ Snow
2/ Rain and Snow



COSHOCTON, OHIO WATERSHED 106



COSHOCTON, OHIO WATERSHED 106



| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | | Coshocton, Ohio Watershed 188 (Area - 2.05 acres) | | | | | | |
|---|-------|------|------|------|------|------|------|--|------|-------|------|------|------|-------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 | P | 1.51 | 5.51 | 3.20 | 3.80 | 7.03 | 4.13 | 6.99 | 4.63 | 1.46 | 1.12 | 1.35 | 3.02 | 43.85 |
| | Q | 0 | .81 | .05 | 0 | .06 | .04 | .35 | 0 | 0 | 0 | 0 | 0 | 1.31 |
| 1957 | P | 1.53 | 1.25 | 1.54 | 4.41 | 4.23 | 9.94 | 3.79 | 2.72 | 4.45 | 1.51 | 2.80 | 4.08 | 42.25 |
| | Q | T | 0 | 0 | .15 | 0 | 1.73 | 0 | .03 | .05 | 0 | 0 | .02 | 1.98 |
| 1958 | P | 1.39 | .75 | .81 | 3.51 | 3.24 | 4.46 | 7.46 | 3.02 | 3.16 | .30 | 1.92 | .49 | 30.51 |
| | Q | .15 | 0 | 0 | 0 | .05 | 0 | .01 | 0 | 0 | 0 | 0 | 0 | .21 |
| 1959 | P | 5.58 | 3.10 | 2.39 | 3.99 | 3.05 | 4.75 | 4.83 | 2.35 | 2.69 | 5.05 | 2.64 | 1.96 | 42.38 |
| | Q | .92 | .19 | 0 | 0 | T | .16 | 0 | .14 | 0 | 0 | 0 | 0 | 1.41 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS Coshocton, Ohio Watershed 188

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|-------|---|------|---------|------|---------|------|----------|------|-------|-------|--------|-------|--------|--------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 6-12 | e2.50 | | nr | | nr | | nr | | nr | 6-12 | e0.88 | 6-12 | e0.88 | 6-12 | e 0.88 |
| 1958 | 7-22 | .04 | 1-24 | .03 | 1-24 | .05 | 1-24 | .09 | 1-24 | .09 | 1-24 | .09 | 1-24 | .09 | 1-21 | .15 |
| 1959 | 6-12 | .46 | 1-21 | .28 | 1-21 | .38 | 1-21 | .45 | 1-21 | .81 | 1-21 | .92 | 1-21 | .92 | 1-21 | .92 |

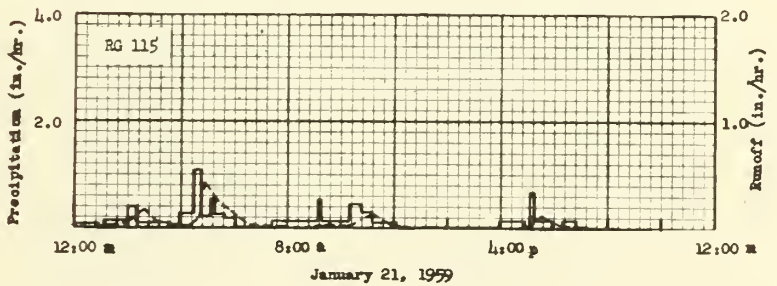
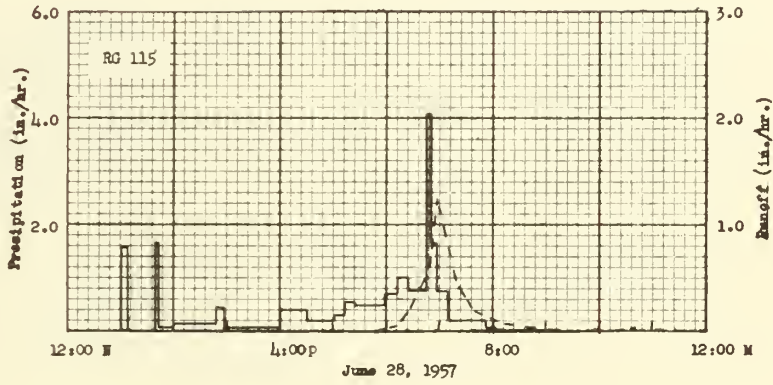
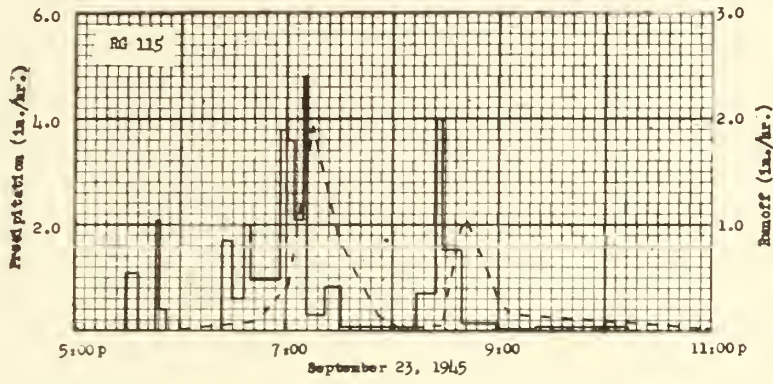
Notes: Quality of records: monthly P and Q, excellent; annual maximum discharges and volumes, excellent. Cover 1956, corn; 1957, wheat; 1958, 1st year meadow; 1959, 2nd year meadow; conservation practice plus mulch tillage.

SELECTED RUNOFF EVENTS Coshocton, Ohio Watershed 188

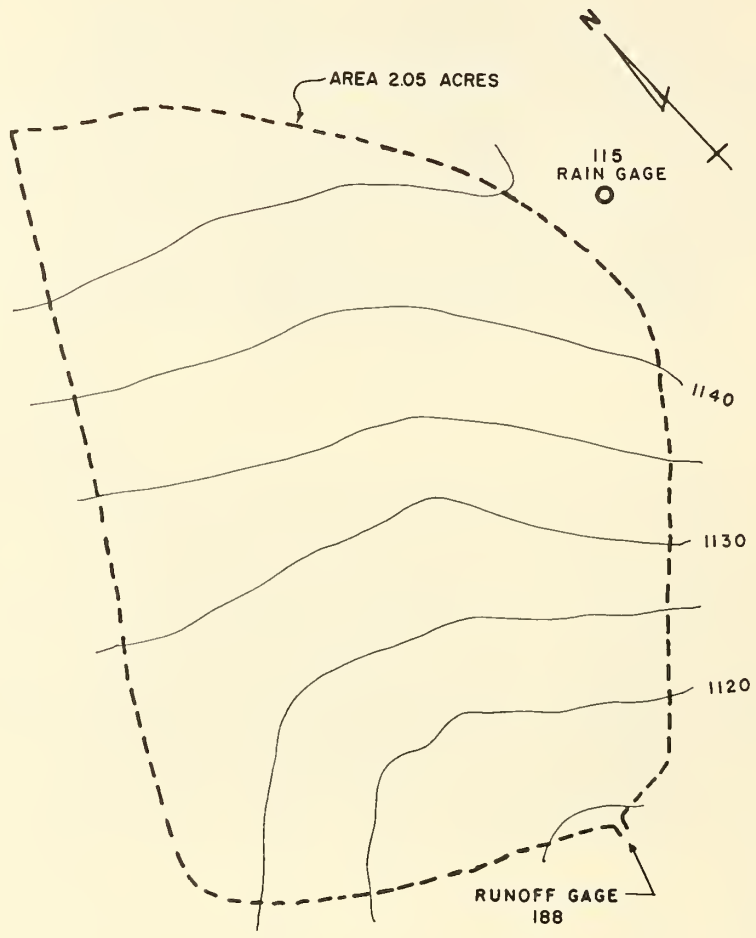
| Antecedent conditions | | | Rainfall | | | Runoff | | |
|--|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of September 23, 1945</u> | | | | | | | | |
| 8-23-45 | 0.01 | 0 | 9-23-45 | Raingage | 115 | 9-23-45 | | |
| 8-24 | .08 | 0 | 5:29 p | 0 | 0 | 5:59 p | 0 | 0 |
| 8-25-31 | 0 | 0 | :37 | 1.12 | .15 | 6:44 | .0934 | .01 |
| 9-1 | .15 | 0 | :45 | 0 | .15 | 7:01 | .432 | .10 |
| 9-2-7 | 0 | 0 | :49 | 2.10 | .29 | :15 | 1.95 | .37 |
| 9-8 | .82 | 0 | :52 | .40 | .31 | :30 | .885 | .74 |
| 9-9 | .88 | 0 | 6:24 | 0 | .31 | :53 | 1.35 | .89 |
| 9-10 | .70 | 0 | :30 | 1.70 | .48 | 8:03 | .0412 | .91 |
| 9-11 | .05 | 0 | :37 | .60 | .55 | :11 | .0168 | .91 |
| 9-12 | 0 | 0 | :40 | 2.00 | .65 | :29 | .0498 | .92 |
| 9-13 | .30 | 0 | :57 | .95 | .92 | :39 | .997 | 1.00 |
| 9-14 | 1.21 | .06 | 7:00 | 3.80 | 1.11 | :43 | 1.04 | 1.07 |
| 9-15-16 | 0 | 0 | :04 | 3.60 | 1.35 | 9:00 | .337 | 1.27 |
| 9-17 | .53 | 0 | :10 | 2.10 | 1.56 | :07 | .177 | 1.30 |
| 9-18 | 1.04 | .02 | :12 | 4.80 | 1.72 | 12:00m | .0003 | 1.33 |
| 9-19 | 0 | 0 | :22 | .30 | 1.77 | | | |
| 9-20 | .43 | T | :32 | .84 | 1.91 | | | |
| 9-21-22 | 0 | 0 | 8:14 | .07 | 1.96 | | | |
| 9-23 | .34 1/ | 0 | :25 | .71 | 2.09 | | | |
| | | | :28 | 4.00 | 2.29 | | | |
| | | | :40 | 1.55 | 2.60 | | | |
| | | | 9:00 | .18 | 2.66 | | | |
| | | | :22 | .05 | 2.68 | | | |
| | | | 10:14 | .09 | 2.76 | | | |
| Watershed conditions: In corn, wheat, meadow, meadow rotation (conservation practice with mulch tillage) since 1942. Cover wheat to meadow 1945. Legumes and grass 7" high; weeds 18-20" high. | | | | | | | | |

Notes: To convert runoff in in/hr to cfs, multiply by 2.0671.
1/ Most of rain occurred after 3:29p.

| SELECTED RUNOFF EVENTS | | | | | | Coshocton, Ohio Watershed 188 | | |
|---|-------------------|-----------------|---------------|-------------------|---------------|-------------------------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of June 28, 1957</u> | | | | | | | | |
| 5-28-31-57 | 0 | 0 | 6-28-57 | Raingage | 115 | 6-24-57 | | |
| 6-1 | .06 | 0 | 1:00p | 0 | 0 | 5:46p | 0 | 0 |
| 6-2-7 | 0 | 0 | :08 | 1.58 | .21 | 6:12 | .0648 | .01 |
| 6-8 | .88 | 0 | :38 | 0 | .21 | :24 | .195 | .04 |
| 6-9-10 | 0 | 0 | :43 | 1.68 | .35 | :48 | .590 | .16 |
| 6-11 | .35 | 0 | 2:00 | .04 | .36 | :56 | 1.25 | .29 |
| 6-12 | 2.87 | e .88 | :48 | .14 | .47 | 7:16 | .590 | .61 |
| 6-13 | .35 | 0 | :56 | .45 | .53 | :22 | .432 | .66 |
| 6-14 | .02 | 0 | 4:00 | .05 | .58 | :40 | .195 | .75 |
| 6-15 | 0 | 0 | :30 | .40 | .78 | 8:12 | .0701 | .82 |
| 6-16 | .02 | 0 | 5:00 | .20 | .88 | 9:02 | .0113 | .84 |
| 6-17-22 | 0 | 0 | :12 | .30 | .94 | 11:42 | 0 | .85 |
| 6-23 | .08 | 0 | :24 | .55 | 1.05 | | | |
| 6-24 | 2.28 | 0 | :58 | .51 | 1.34 | | | |
| 6-25-27 | 0 | 0 | 6:12 | .69 | 1.50 | | | |
| 6-28 | .18 $\frac{2}{1}$ | 0 | :24 | 1.00 | 1.70 | | | |
| | | | :44 | .78 | 1.96 | | | |
| | | | :49 | 4.08 | 2.30 | | | |
| | | | :56 | 1.63 | 2.49 | | | |
| | | | 7:08 | .75 | 2.64 | | | |
| | | | :52 | .20 | 2.79 | | | |
| | | | 8:04 | .05 | 2.80 | | | |
| Watershed conditions: In corn, wheat, meadow, meadow rotation (conservation practice with mulch tillage) since 1942. Wheat in 1957. Wheat 36" high, weeds 1" high. | | | | | | | | |
| <u>Event of January 21, 1959</u> | | | | | | | | |
| 12-21-22-58 | 0 | 0 | 1-21-59 | Raingage | 115 | 1-21-59 | | |
| 12-23 | T | 0 | 12:01a | 0 | 0 | 12:49a | 0 | 0 |
| 12-24 | T $\frac{1}{1}$ | 0 | :55 | .08 | .07 | 1:15 | .0139 | T |
| 12-25-31 | 0 | 0 | 1:03 | 0 | .07 | :35 | .0412 | .01 |
| 1-1-59 | .64 | 0 | :55 | .15 | .20 | 2:05 | .0755 | .04 |
| | | | :59 | 0 | .20 | :25 | .143 | .08 |
| 1-2-3 | 0 | 0 | 2:18 | .41 | .33 | :35 | .168 | .10 |
| 1-4 | .04 $\frac{1}{1}$ | 0 | 3:31 | .11 | .46 | 3:05 | .0648 | .16 |
| 1-5-8 | 0 | 0 | :55 | 0 | .46 | 4:19 | .0197 | .20 |
| 1-9-10 | T $\frac{1}{1}$ | 0 | 4:31 | .27 | .62 | :39 | .1001 | .22 |
| 1-11-13 | 0 | 0 | :44 | 1.11 | .86 | :47 | .300 | .24 |
| 1-14 | .31 | 0 | 5:04 | .21 | .93 | :53 | .432 | .28 |
| 1-15 | .59 $\frac{2}{1}$ | 0 | :15 | .55 | 1.03 | 5:25 | .255 | .46 |
| 1-16-19 | .30 $\frac{1}{1}$ | 0 | :38 | .26 | 1.13 | 6:05 | .120 | .56 |
| 1-20 | .44 | 0 | 6:03 | .19 | 1.21 | :35 | .0371 | .60 |
| | | | 7:23 | .01 | 1.22 | 8:35 | .0003 | .61 |
| | | | 9:07 | .13 | 1.44 | 9:31 | .0412 | .62 |
| | | | :15 | .52 | 1.51 | 10:15 | .0295 | .65 |
| | | | 10:15 | .13 | 1.64 | :45 | .0876 | .68 |
| | | | :45 | .46 | 1.87 | 11:15 | .143 | .73 |
| | | | 11:11 | .32 | 2.01 | :47 | .0547 | .79 |
| | | | 12:03p | .10 | 2.10 | 1:05p | 0 | .81 |
| | | | 3:59 | .02 | 2.19 | 4:52 | 0 | .81 |
| | | | 4:55 | .16 | 2.34 | 5:12 | .0498 | .81 |
| | | | 5:02 | 0 | 2.34 | :28 | .128 | .84 |
| | | | :15 | .69 | 2.49 | 6:12 | .0412 | .89 |
| | | | :55 | .15 | 2.59 | 8:02 | 0 | .92 |
| | | | 6:15 | 0 | 2.59 | | | |
| | | | :49 | .16 | 2.68 | | | |
| Watershed conditions: In corn, wheat, meadow meadow rotation (conservation practice with mulch tillage) since 1942. Second year meadow in 1959. Vegetation dormant. Frost penetration 1". Snow cover 5" on Jan. 20. | | | | | | | | |
| Notes: No record for June 12, 1957 storm on Watershed 188. | | | | | | | | |
| $\frac{1}{1}$ Snow $\frac{2}{1}$ Rain and Snow $\frac{2}{1}$ Rainfall ended about 7:30a. | | | | | | | | |



COSHOCTON, OHIO WATERSHED 188



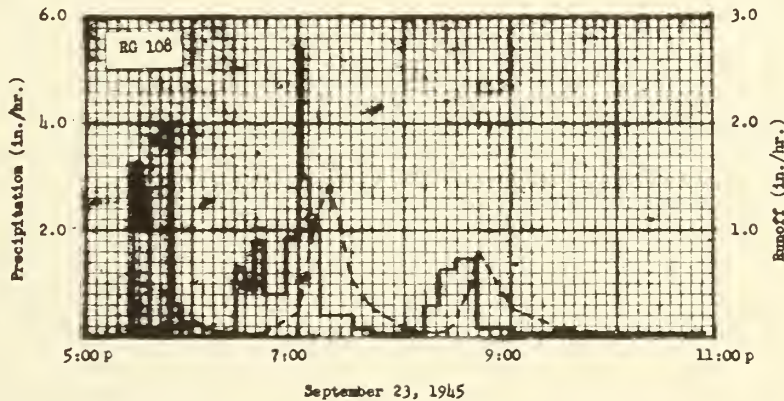
CONTOUR INTERVAL-5 FEET

COSHOCTON, OHIO
WATERSHED 188

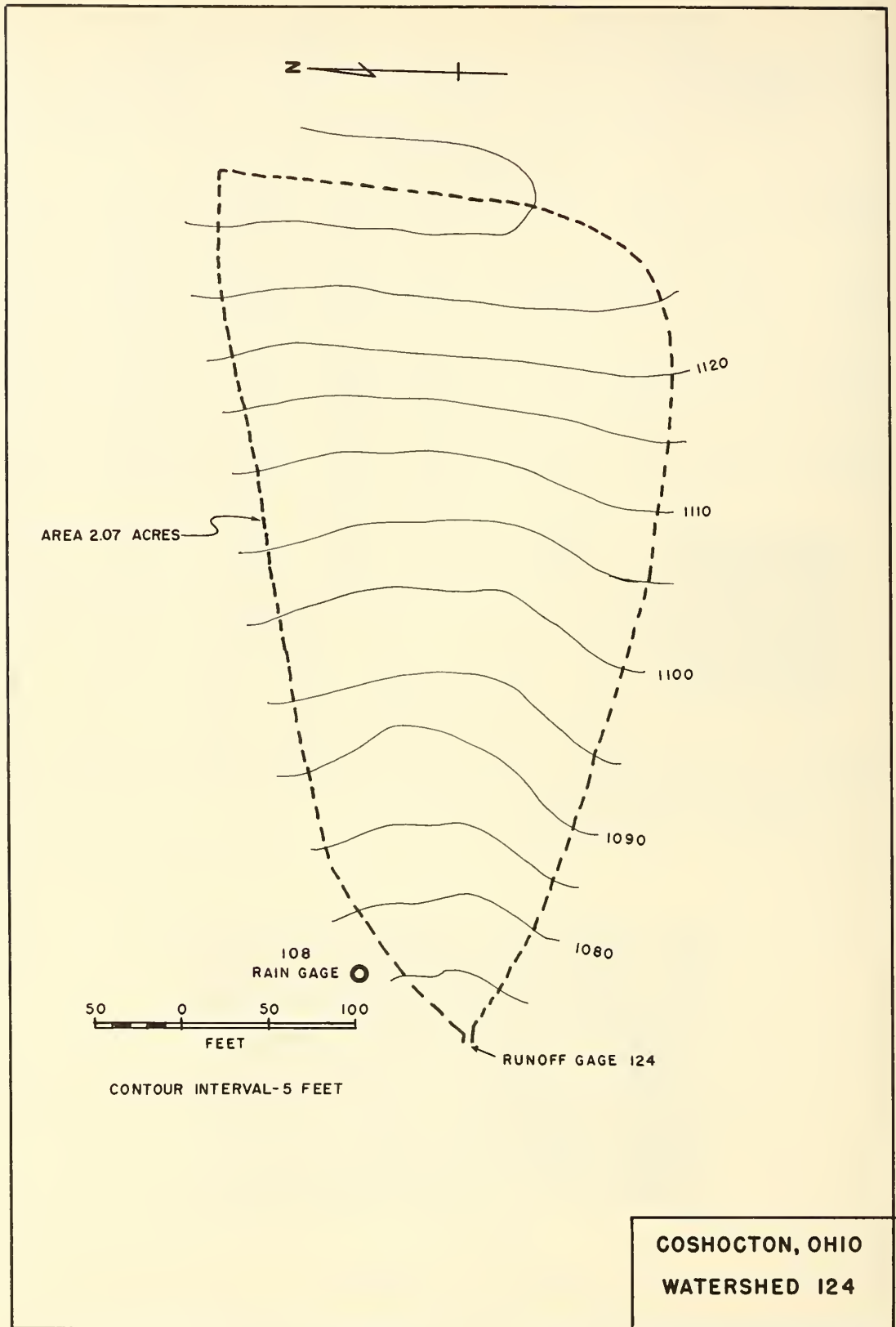
| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 124 (Area - 2.07 acres) | | | | | |
|------------------------------------|-------------------|-----------------|--|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of September 23, 1945</u> | | | | | | | | |
| 8-23-45 | T | 0 | 9-23-45 | Rainage | 1.08 | 9-23-45 | | |
| 8-24 | .06 | 0 | 5:27p | 0 | 0 | 5:30p | 0 | 0 |
| 8-25-31 | 0 | 0 | 1:31 | 3.30 | .22 | 5:50 | .0824 | .01 |
| 9-1 | .18 | 0 | 1:36 | 2.16 | .40 | 5:4 | .120 | .01 |
| 9-2-7 | 0 | 0 | 1:47 | .16 | .43 | 5:7 | .113 | .02 |
| 9-8 | .84 | 0 | 1:49 | 3.90 | .56 | 6:02 | .142 | .03 |
| 9-9 | .92 | 0 | 1:54 | .60 | .61 | 1:09 | .0824 | .04 |
| 9-10 | .79 | 0 | 6:36 | 0 | .61 | 1:30 | .0195 | .06 |
| 9-11 | .03 | 0 | 1:25 | .07 | .62 | 1:40 | .0433 | .06 |
| 9-12 | 0 | 0 | 1:30 | 1.32 | .73 | 7:00 | .229 | .31 |
| 9-13 | .29 | 0 | 1:34 | .90 | .79 | 1:11 | 1.16 | .22 |
| 9-14 | 1.29 | .06 | 1:40 | 1.80 | .97 | 1:18 | 1.43 | .36 |
| 9-15-16 | 0 | 0 | 1:52 | .80 | 1.13 | 1:24 | 1.02 | .49 |
| 9-17 | .53 | 0 | 7:00 | 1.88 | 1.36 | 1:30 | .541 | .57 |
| 9-18 | 1.04 | .04 | 1:02 | 5.40 | 1.56 | 1:40 | .293 | .63 |
| 9-19 | 0 | 0 | 1:06 | 3.00 | 1.76 | 8:00 | .0824 | .69 |
| 9-20 | .57 | .02 | 1:12 | 2.10 | 1.97 | 1:18 | .0393 | .71 |
| 9-21-22 | 0 | 0 | 1:32 | .42 | 2.11 | 1:22 | .0517 | .71 |
| 9-23 | .29 ✓ | 0 | 1:40 | .15 | 2.13 | 1:28 | .120 | .72 |
| | | | 8:10 | .04 | 2.15 | 1:32 | .260 | .73 |
| | | | 1:20 | .60 | 2.25 | 1:36 | .434 | .75 |
| | | | 1:28 | 1.28 | 2.42 | 1:42 | .795 | .81 |
| | | | 1:40 | 1.45 | 2.71 | 1:54 | 1.148 | .96 |
| | | | 9:02 | .16 | 2.77 | 9:00 | .260 | .99 |
| | | | 10:50 | .06 | 2.88 | 1:30 | .0517 | 1.05 |
| | | | | | | 10:00 | .0320 | 1.07 |
| | | | | | | 12:00m | .0029 | 1.09 |

Watershed conditions
 Contour strips of meadow and corn. Height of corn 108"; weeds 42", grass 12". In corn strips. Meadow strips, grass and legumes 6" high. In contour strips of corn and meadow (1941), wheat and meadow (1942) and continuing in strips of corn, wheat, meadow, meadow for period 1941-46.

Notes: Records discontinued June 30, 1947.
 To convert runoff in in/hr to cfs, multiply by 2.0872.
 ✓ Most of rainfall occurred after 3:27p.



COSHOCTON, OHIO WATERSHED 124



| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Coshocton, Ohio Watershed 185 (Area 7.40 acres) | | | | | | | |
|---|--------|-------------|-------------|-------------|-------------|-------------|--|--------------|-------------|-------------|-----------|-----------|-------------|---------------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 | P Q | 1.52 .14 | 5.48 .96 | 3.24 .07 | 3.85 T | 6.99 .15 | 4.22 .18 | 6.95 1.02 | 4.33 .09 | 1.49 T | 1.17 0 | 1.34 0 | 2.97 0 | 43.55 2.61 |
| 1957 | P Q | 1.54 T | 1.23 0 | 1.73 0 | 4.84 .86 | 4.19 T | 9.83 1.48 | 3.67 .02 | 2.65 .09 | 4.24 .15 | 1.45 0 | 2.83 0 | 4.01 .16 | 42.21 2.76 |
| 1958 | P Q | 1.51 .14 | .75 0 | .88 0 | 3.45 0 | 3.17 .05 | 4.65 0 | 7.45 .29 | 3.03 T | 3.23 0 | .34 0 | 1.88 0 | .66 0 | 31.00 .48 |
| 1959 | P Q | 5.38 .83 | 2.34 .16 | 2.26 T | 3.89 .02 | 2.68 0 | 4.40 .03 | 4.74 0 | 2.37 .05 | 2.66 0 | 4.95 0 | 2.46 T | 1.89 .03 | 40.02 1.12 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS

Coshocton, Ohio Watershed 185

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 6-12 | 2.65 | 6-12 | 0.69 | 6-12 | 0.70 | 6-28 | 0.74 | 6-28 | 0.74 | 6-28 | 0.74 | 6-28 | 0.74 | 4-3 | 0.85 |
| 1958 | 7-31 | .24 | 7-22 | .09 | 7-22 | .10 | 7-22 | .13 | 7-22 | .13 | 7-22 | .13 | 7-22 | .13 | 7-22 | .13 |
| 1959 | 1-21 | .23 | 1-21 | .19 | 1-21 | .27 | 1-21 | .36 | 1-21 | .65 | 1-21 | .83 | 1-21 | .83 | 1-21 | .83 |

Notes: Quality of records: monthly P, excellent; Q, good; annual maximum discharges and volumes, good. Cover 1956, meadow and corn; 1957, meadow and wheat; 1958, corn and meadow; 1959, wheat and meadow; conservation practice with strip cropping.

SELECTED RUNOFF EVENTS

Coshocton, Ohio Watershed 185

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|------------------------------------|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of September 23, 1945</u> | | | | | | | | |
| 8-23-45 | 0.01 | 0 | 9-23-45 | Raingage | 128 | 9-23-45 | | |
| 8-24 | .07 | 0 | 5:29p | 0 | 0 | 5:46p | 0 | 0 |
| 8-25-31 | 0 | 0 | :32 | 4.00 | .20 | 6:00 | .0468 | T |
| 9-1 | .16 | 0 | :40 | .60 | .28 | :06 | .0468 | .01 |
| 9-2-7 | 0 | 0 | :46 | 0 | .28 | :28 | .0089 | .02 |
| 9-8 | .85 | T | :48 | 4.20 | .42 | :42 | .158 | .03 |
| 9-9 | .94 | .03 | :52 | .60 | .46 | 7:00 | .554 | .13 |
| 9-10 | .74 | .01 | 6:14 | 0 | .46 | :08 | 1.90 | .30 |
| 9-11 | .04 | 0 | :16 | .30 | .47 | :24 | .524 | .67 |
| 9-12 | 0 | 0 | :24 | 0 | .47 | :30 | .300 | .71 |
| 9-13 | .32 | 0 | :30 | 1.70 | .64 | :54 | .0576 | .77 |
| 9-14 | 1.23 | .10 | :39 | 1.13 | .81 | 8:12 | .0174 | .78 |
| 9-15-16 | 0 | 0 | :54 | .88 | 1.03 | :24 | .0244 | .78 |
| 9-17 | .54 | 0 | :58 | 2.40 | 1.19 | :30 | .554 | .80 |
| 9-18 | 1.06 | .04 | 7:00 | 4.20 | 1.33 | :38 | 1.05 | .93 |
| 9-19 | 0 | 0 | :05 | 3.00 | 1.58 | :48 | .477 | 1.06 |
| 9-20 | .41 | .02 | :09 | 1.20 | 1.66 | 9:00 | .173 | 1.12 |
| 9-21-22 | 0 | 0 | :12 | 3.40 | 1.83 | :12 | .0730 | 1.14 |
| 9-23 | .33 1/ | 0 | :32 | .45 | 1.98 | :18 | .0493 | 1.15 |
| | | | :50 | .07 | 2.00 | 10:00 | .0143 | 1.17 |
| | | | 8:07 | 0 | 2.00 | 12:00m | .0014 | 1.18 |
| | | | :10 | .20 | 2.01 | | | |
| | | | :15 | 0 | 2.01 | | | |
| | | | :20 | 1.08 | 2.10 | | | |
| | | | :26 | .70 | 2.17 | | | |
| | | | :28 | 5.10 | 2.34 | | | |
| | | | :40 | 1.55 | 2.65 | | | |
| | | | :54 | .17 | 2.69 | | | |
| | | | 9:22 | .04 | 2.71 | | | |
| | | | 10:00 | .09 | 2.77 | | | |
| | | | 12:00m | .02 | 2.81 | | | |

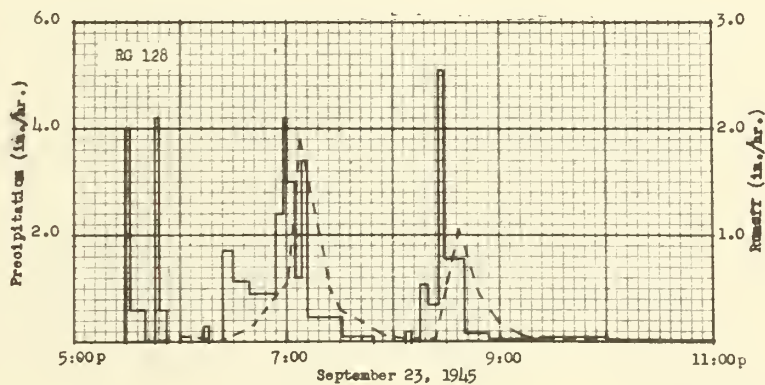
Notes: To convert runoff in in/hr to cfs, multiply by 7.4616.
1/ Most of rainfall occurred after 3:29p.

| SELECTED RUNOFF EVENTS | | | | | | Coshocton, Ohio Watershed 185 | | |
|--|-------------------|-----------------|---------------|-------------------|---------------|-------------------------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of June 12, 1957</u> | | | | | | | | |
| 5-13-57 | 0 | 0 | 6-12-57 | Raingage | 128 | 6-12-57 | | |
| 5-14 | 1.60 | T | 3:14p | 0 | 0 | 3:40p | 0 | 0 |
| 5-15 | .04 | 0 | :16 | 3.30 | .11 | :49 | .260 | .01 |
| 5-16-17 | 0 | 0 | :26 | .78 | .24 | :54 | 1.58 | .08 |
| | | | :43 | 3.21 | 1.15 | 4:00 | 2.65 | .30 |
| 5-18 | .18 | 0 | :48 | 6.36 | 1.68 | :04 | 2.20 | .47 |
| 5-19 | .26 | 0 | :53 | 6.24 | 2.20 | :12 | .477 | .64 |
| 5-20 | .14 | 0 | :59 | 5.00 | 2.70 | :14 | .328 | .65 |
| 5-21 | 0 | 0 | 4:16 | .11 | 2.73 | :16 | .260 | .66 |
| 5-22 | .52 | 0 | :28 | .15 | 2.76 | 5:38 | 0 | .70 |
| 5-23-25 | 0 | 0 | :52 | .22 | 2.85 | | | |
| 5-26 | .18 | 0 | | | | | | |
| 5-27-31 | 0 | 0 | | | | | | |
| 6-1 | .10 | 0 | | | | | | |
| 6-2-7 | 0 | 0 | | | | | | |
| 6-8 | .84 | 0 | | | | | | |
| 6-9-10 | 0 | 0 | | | | | | |
| 6-11 | .35 | 0 | | | | | | |
| 6-12 | 0 | 0 | | | | | | |
| <p><u>Watershed conditions:</u> In corn, wheat, meadow, meadow rotation (conservation practice with contour strips) since 1946. Wheat and meadow strips in 1957. Wheat 30" high, legumes and grass 4" high in wheat strips. Meadow strips, legumes, grasses and weeds 6" high.</p> | | | | | | | | |
| <u>Event of June 28, 1957</u> | | | | | | | | |
| 5-28-31-57 | 0 | 0 | 6-28-57 | Raingage | 128 | 6-28-57 | | |
| 6-1 | .10 | 0 | 1:03p | 0 | 0 | 3:00p | 0 | 0 |
| 6-2-7 | 0 | 0 | :06 | 4.40 | .22 | 5:44 | .0576 | .03 |
| 6-8 | .84 | 0 | :38 | .02 | .23 | 6:34 | .260 | .15 |
| 6-9-10 | 0 | 0 | :42 | 2.25 | .38 | :38 | .253 | .17 |
| 6-11 | .35 | 0 | 2:00 | .03 | .39 | :56 | 1.31 | .34 |
| 6-12 | 2.85 | .70 | :06 | .10 | .43 | 7:00 | 1.25 | .43 |
| 6-13 | .37 | T | :48 | .10 | .50 | :12 | .477 | .58 |
| 6-14 | .02 | 0 | :54 | .90 | .59 | :24 | .247 | .65 |
| 6-15 | 0 | 0 | 4:22 | .07 | .70 | 8:04 | .0468 | .72 |
| 6-16 | .02 | 0 | :28 | 1.10 | .81 | | | |
| 6-17-18 | 0 | 0 | :44 | .34 | .90 | 11:08 | 0 | .74 |
| 6-19 | .02 | 0 | 5:12 | .17 | .98 | | | |
| 6-20-22 | 0 | 0 | 6:12 | .53 | 1.51 | | | |
| 6-23 | .11 | 0 | :40 | .61 | 1.89 | | | |
| 6-24 | 2.26 | .04 | :54 | 2.10 | 2.38 | | | |
| 6-25-27 | 0 | 0 | 7:11 | .53 | 2.53 | | | |
| 6-28 | .18 1/2 | 0 | :44 | .20 | 2.64 | | | |
| | | 0 | 8:00 | .08 | 2.66 | | | |
| <p><u>Watershed conditions:</u> In corn, wheat, meadow, meadow rotation (conservation practice with contour strips) since 1946. Wheat and meadow strips in 1957. Wheat 36" high, grass 4" high in wheat strips. Meadow strips, legumes, grass and weeds 8" high.</p> | | | | | | | | |
| <p>Notes: 1/ Rain ended about 7:30a.</p> | | | | | | | | |

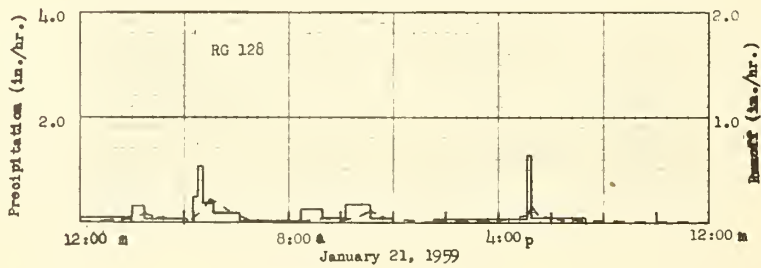
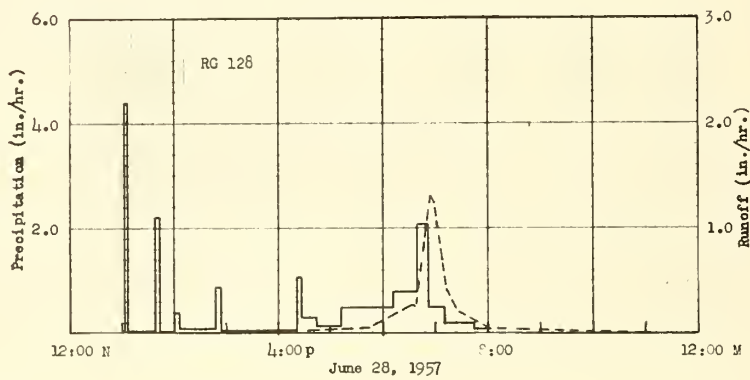
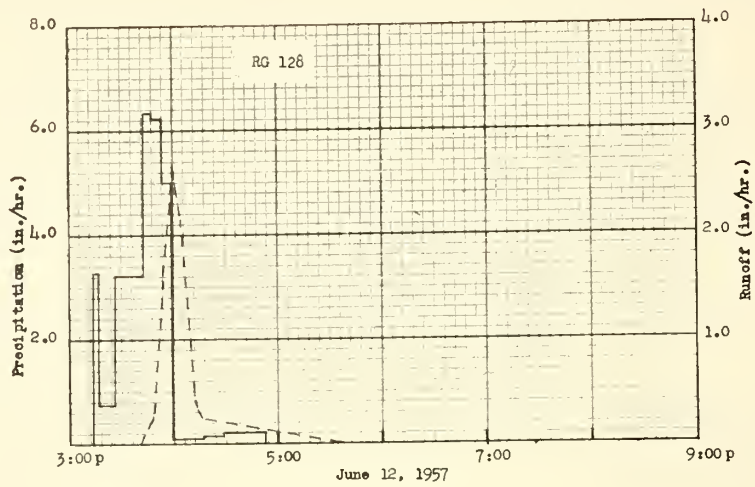
| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio | | | Watershed 185 | | |
|---------------------------|-------------------|-----------------|-----------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of January 21, 1959 | | | | | | | | |
| 12-21-22-58 | 0 | 0 | 1-21-59 | Raingage | 128 | 1-21-58 | | |
| 12-23 | T 1/ | 0 | 12:01a | 0 | 0 | 12:10a | 0 | 0 |
| 12-24 | T 1/ | 0 | 2:00 | .10 | .19 | 1:20 | .0158 | .01 |
| 12-25-31 | 0 | 0 | 2:28 | .34 | .35 | 2:00 | .0442 | .03 |
| 1-1-59 | .68 | 0 | 4:08 | .08 | .48 | 3:30 | .0903 | .06 |
| 1-2-3 | 0 | 0 | 4:18 | 0 | .48 | 3:00 | .0548 | .10 |
| 1-4 | .02 1/ | 0 | 4:30 | .50 | .58 | 4:16 | .0283 | .15 |
| 1-5-8 | 0 | 0 | 4:44 | 1.07 | .83 | 3:38 | .105 | .17 |
| 1-9-10 | T 1/ | 0 | 5:09 | .38 | .99 | 5:00 | .229 | .25 |
| 1-11-13 | 0 | 0 | 6:04 | .19 | 1.16 | 4:16 | .105 | .38 |
| 1-14 | .32 | 0 | 8:28 | .03 | 1.23 | 6:30 | .0324 | .43 |
| 1-15 | .50 2/ | 0 | 9:16 | .26 | 1.44 | 8:30 | .0102 | .46 |
| 1-16-19 | .30 1/ | 0 | 10:12 | .10 | 1.53 | 9:20 | .0468 | .48 |
| 1-20 | .45 | 0 | 11:08 | .36 | 1.87 | 10:10 | .0263 | .51 |
| | | | 12:00a | .08 | 1.94 | 4:10 | .0764 | .53 |
| | | | 1:32p | 0 | 1.94 | 11:10 | .113 | .58 |
| | | | 5:05 | .06 | 2.17 | 4:16 | .0520 | .62 |
| | | | 5:13 | 1.28 | 2.34 | 1:30p | .0077 | .66 |
| | | | 7:20 | .10 | 2.55 | 5:56 | .0158 | .66 |
| | | | | | | 3:40 | .0045 | .68 |
| | | | | | | 5:08 | .0698 | .70 |
| | | | | | | 4:14 | .158 | .71 |
| | | | | | | 4:30 | .0867 | .74 |
| | | | | | | 6:30 | .0303 | .79 |
| | | | | | | 12:00a | 0 | .83 |

Watershed conditions: In corn, wheat, meadow, meadow rotation (conservation practice with contour strips) since 1946. Wheat and meadow strips in 1959. Vegetation dormant. Frost penetration on both wheat and meadow strips 1". Snow cover 5" on January 20.

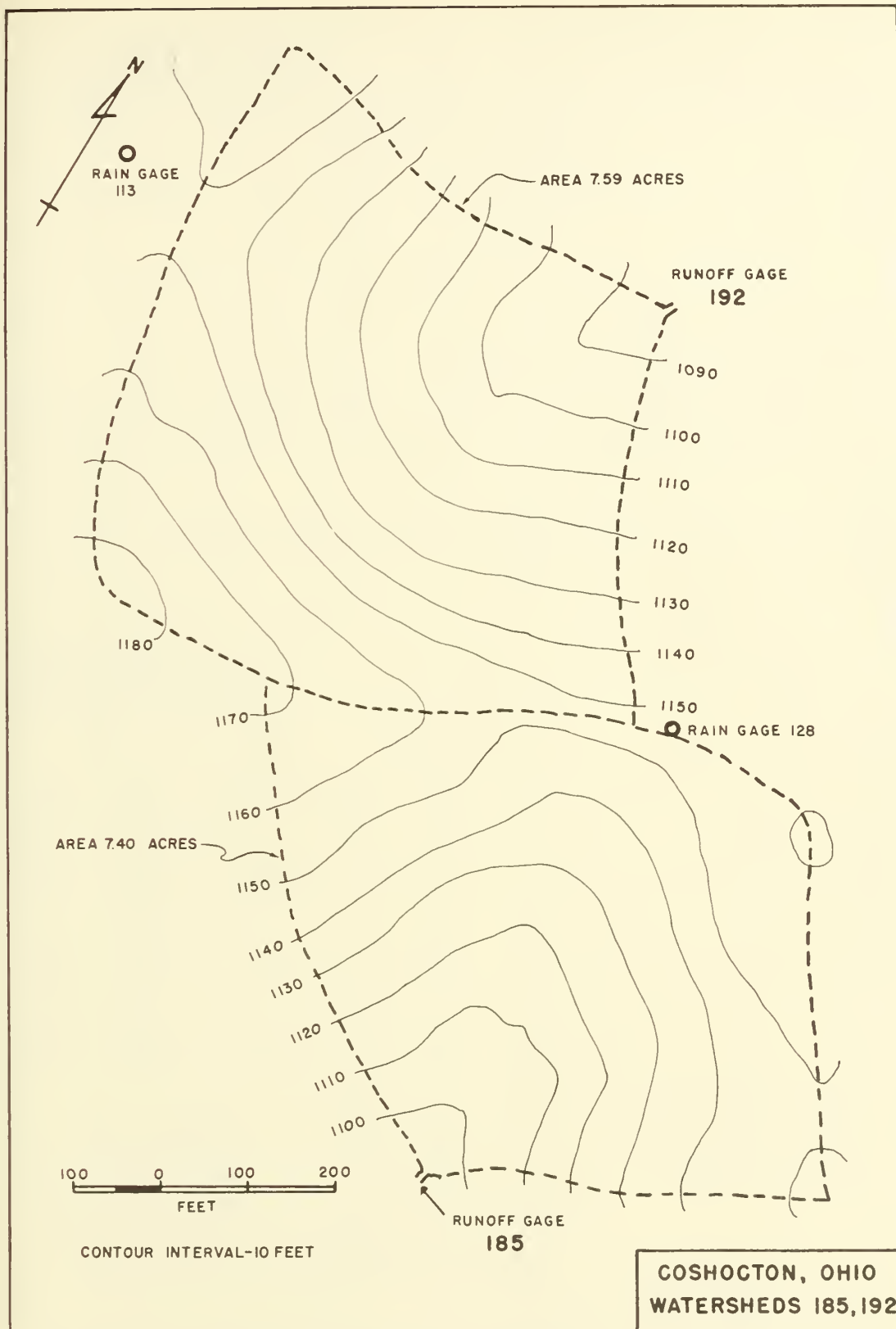
Notes: 1/ Snow
2/ Rain and Snow



COSHOCTON, OHIO WATERSHED 185



COSHOCTON, OHIO WATERSHED 185



| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | | Coshocton, Ohio Watershed 187 (Area - 7.20 acres) | | | | | | |
|---|--------|--------------|-------------|-------------|--------------|-------------|---------------|--|-------------|-------------|-------------|-------------|-------------|---------------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| | | 1956 | P Q | 1.59 .14 | 5.92 1.58 | 3.58 .26 | 4.05 .0 | 7.29 .26 | 4.23 .16 | 7.09 .42 | 4.64 .07 | 1.58 T | 1.20 0 | 1.39 0 |
| 1957 | P Q | 1.54 .46 | 1.33 0 | 1.79 0 | 4.81 1.65 | 4.27 .02 | 10.00 2.16 | 3.81 .29 | 2.84 .13 | 4.48 .09 | 1.47 0 | 2.57 .01 | 3.49 .98 | 42.40 5.79 |
| 1958 | P Q | 1.40 .25 | .66 .06 | .85 0 | 3.60 .01 | 3.22 .87 | 4.56 0 | 7.75 .08 | 2.94 .05 | 3.02 .01 | .30 0 | 2.09 0 | .79 0 | 31.18 1.33 |
| 1959 | P Q | 5.26 3.42 | 2.63 .98 | 2.52 .37 | 3.95 .07 | 2.94 T | 4.71 .07 | 4.85 .03 | 2.34 .09 | 2.74 0 | 5.17 .01 | 2.82 .03 | 2.09 .84 | 42.02 5.91 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS
Coshocton, Ohio Watershed 187

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | | | |
|------|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|--|--|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | | | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | | |
| 1957 | 6-12 | 2.75 | 6-12 | 0.71 | 6-28 | 0.80 | 6-28 | 0.92 | 6-28 | 0.96 | 6-28 | 1.08 | 6-28 | 1.28 | 4-4 | 1.48 | | |
| 1958 | 7-31 | .08 | 5-4 | .04 | 5-4 | .07 | 5-4 | .12 | 5-4 | .16 | 5-4 | .24 | 5-4 | .38 | 5-4 | .87 | | |
| 1959 | 1-21 | .35 | 1-21 | .29 | 1-21 | .45 | 1-21 | .70 | 1-21 | 1.26 | 1-21 | 1.90 | 1-21 | 2.39 | 1-20 | 3.36 | | |

Notes: Quality of records: monthly P and Q, excellent; annual maximum discharges and volumes, excellent. Cover 1956, meadow-wheat; 1957, corn-meadow; 1958, wheat-meadow; 1959, meadow-corn; conservation practice with strip cropping.

SELECTED RUNOFF EVENTS
Coshocton, Ohio Watershed 187

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|-----------------------------|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of September 23, 1945 | | | | | | | | |
| 8-23-45 | 0.01 | 0 | 9-23-45 | Raingage | 116 | 9-23-45 | | |
| 8-24 | .08 | 0 | 5:31p | 0 | 0 | 6:00 p | 0 | 0 |
| 8-25-31 | 0 | 0 | :38 | 1.46 | .17 | :50 | .0404 | .01 |
| 9-1 | .18 | 0 | :42 | .45 | .20 | 7:02 | .0785 | .02 |
| 9-2-7 | 0 | 0 | :47 | 0 | .20 | :12 | .102 | .05 |
| 9-8 | .92 | 0 | :50 | .80 | .24 | :20 | .806 | .14 |
| 9-9 | .92 | 0 | :52 | 3.90 | .37 | :30 | .455 | .25 |
| 9-10 | .80 | 0 | :56 | .30 | .39 | :48 | .157 | .33 |
| 9-11 | .02 | 0 | | | | 8:00 | .0685 | .35 |
| 9-12 | 0 | 0 | 6:16 | 0 | .39 | :18 | .0333 | .37 |
| 9-13 | .31 | 0 | :28 | .15 | .42 | :30 | .0751 | .37 |
| 9-14 | 1.34 | .01 | :34 | 1.20 | .54 | :36 | .229 | .39 |
| 9-15-16 | 0 | 0 | :40 | .60 | .60 | :46 | .675 | .48 |
| 9-17 | .60 | 0 | :42 | 3.60 | .72 | 9:00 | .309 | .60 |
| 9-18 | 1.07 | .02 | :50 | .60 | .80 | :12 | .125 | .63 |
| 9-19 | 0 | 0 | 7:00 | .96 | .96 | :20 | .0785 | .65 |
| 9-20 | .51 | T | :04 | 4.20 | 1.24 | 10:00 | .0333 | .68 |
| 9-21-22 | 0 | 0 | :08 | 3.00 | 1.44 | :30 | .0251 | .69 |
| 9-23 | .36 1/2 | 0 | :10 | 1.80 | 1.50 | 12:00m | .0132 | .72 |
| | | | :12 | 1.20 | 1.54 | | | |
| | | | :15 | 4.60 | 1.77 | | | |
| | | | :20 | .36 | 1.80 | | | |
| | | | :26 | .40 | 1.84 | | | |
| | | | :32 | .60 | 1.90 | | | |
| | | | :34 | 2.10 | 1.97 | | | |
| | | | :36 | .30 | 1.98 | | | |
| | | | 8:18 | .07 | 2.03 | | | |
| | | | :24 | 1.10 | 2.14 | | | |
| | | | :28 | .90 | 2.20 | | | |
| | | | :30 | 4.20 | 2.34 | | | |

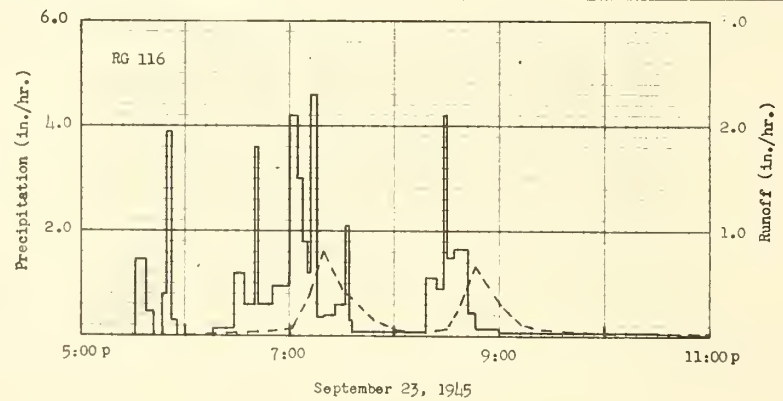
Notes: To convert runoff in in/hr to cfs, multiply by 7.2601.
1/ Most of rainfall occurred after 3:31p.

| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 187 (Area - 7.20 acres) | | | | | |
|---|-------------------|-----------------|--|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of September 23, 1945 - Continued</u> | | | | | | | | |
| | | | 8:34p | 1.50 | 2.14 | | | |
| | | | :42 | 1.65 | 2.66 | | | |
| | | | :46 | .45 | 2.69 | | | |
| | | | 9:00 | .13 | 2.72 | | | |
| | | | 10:30 | .08 | 2.84 | | | |
| | | | :43 | .05 | 2.85 | | | |
| | | | 12:00m | .01 | 2.86 | | | |
| <u>Event of June 12, 1957</u> | | | | | | | | |
| | | | 6-12-57 | Raingage | 116 | 6-12-57 | | |
| 5-13-57 | 0 | 0 | 3:05p | 0 | 0 | 3:13p | 0 | 0 |
| 5-14 | 1.75 | .02 | :07 | 2.10 | .07 | :50 | .153 | .01 |
| 5-15 | .08 | 0 | :11 | .94 | .18 | :54 | 1.12 | .05 |
| 5-16-17 | 0 | 0 | :16 | 2.70 | .27 | :57 | 2.75 | .15 |
| 5-18 | .14 | 0 | :20 | 1.65 | .38 | 4:00 | 2.63 | .28 |
| 5-19 | .26 | 0 | :23 | 2.60 | .51 | :12 | .722 | .62 |
| 5-20 | .18 | 0 | :30 | 3.31 | .90 | :18 | .267 | .66 |
| 5-21 | 0 | 0 | :35 | 3.12 | 1.16 | :32 | .0718 | .69 |
| 5-22 | .48 | 0 | :39 | 3.45 | 1.39 | 5:52 | .0147 | .74 |
| 5-23-25 | 0 | 0 | :42 | 2.20 | 1.50 | 9:00 | .0022 | .76 |
| 5-26 | .15 | 0 | :45 | 6.00 | 1.80 | | | |
| 5-27-31 | 0 | 0 | :48 | 4.00 | 2.00 | | | |
| 6-1 | .08 | 0 | :51 | 6.00 | 2.30 | | | |
| 6-2-7 | 0 | 0 | 4:00 | 2.93 | 2.74 | | | |
| 6-8 | .87 | 0 | :20 | .06 | 2.76 | | | |
| 6-9-10 | 0 | 0 | :35 | .16 | 2.80 | | | |
| 6-11 | .30 | 0 | :53 | .23 | 2.87 | | | |
| 6-12 | 0 | 0 | 5:35 | .04 | 2.90 | | | |
| <p><u>Watershed conditions:</u> In corn, wheat, meadow, meadow rotation (conservation practice with contour strips) since 1941. Corn and meadow strips in 1957. Corn 20" high, weeds 18" high. Meadow strips, legumes, grass and weeds 7" high.</p> | | | | | | | | |
| <u>Event of June 28, 1957</u> | | | | | | | | |
| | | | 6-28-57 | Raingage | 116 | 6-28-57 | | |
| 5-28-31-57 | 0 | 0 | 1:02p | 0 | 0 | 1:39p | 0 | 0 |
| 6-1 | .08 | 0 | :07 | 2.64 | .22 | :51 | .0104 | T |
| 6-2-7 | 0 | 0 | :37 | .04 | .24 | 2:35 | .0004 | T |
| 6-8 | .87 | 0 | :43 | 1.30 | .37 | 4:31 | .0118 | .01 |
| 6-9-10 | 0 | 0 | 2:00 | .04 | .38 | :35 | .0534 | .01 |
| 6-11 | .30 | 0 | :25 | .10 | .42 | 5:05 | .0132 | .02 |
| 6-12 | 2.90 | .76 | :53 | .21 | .52 | :47 | .0685 | .05 |
| 6-13 | .30 | .03 | 3:15 | .08 | .55 | 6:15 | .218 | .11 |
| 6-14 | .04 | T | :30 | 0 | .55 | :25 | .420 | .17 |
| 6-15 | 0 | 0 | :45 | .04 | .56 | :40 | .354 | .26 |
| 6-16 | .14 | 0 | 4:26 | .22 | .71 | :45 | .402 | .29 |
| 6-17-18 | 0 | 0 | :30 | 1.35 | .80 | :49 | .675 | .33 |
| 6-19 | .02 | 0 | :45 | .24 | .86 | :55 | 1.57 | .45 |
| 6-20-22 | 0 | 0 | 5:25 | .28 | 1.05 | :59 | 1.25 | .54 |
| 6-23 | .06 | 0 | :45 | .48 | 1.21 | 7:03 | .869 | .61 |
| 6-24 | 2.19 | .05 | 6:08 | .60 | 1.44 | :23 | .267 | .79 |
| 6-25 | 0 | T | :16 | .45 | 1.50 | :35 | .418 | .83 |
| 6-26-27 | 0 | 0 | :21 | 1.56 | 1.63 | :45 | .112 | .85 |
| 6-28 | .192 | 0 | :29 | .90 | 1.75 | 8:05 | .0592 | .88 |
| | | | :45 | .56 | 1.90 | :45 | .0213 | .90 |
| | | | :50 | 1.56 | 2.03 | 9:19 | .0147 | .91 |
| | | | :55 | 2.28 | 2.22 | 12:00m | .0068 | .94 |
| | | | 7:00 | 2.52 | 2.43 | | | |
| | | | :05 | 1.92 | 2.59 | | | |
| | | | :11 | .70 | 2.66 | | | |
| | | | :20 | .40 | 2.72 | | | |
| | | | 8:00 | .24 | 2.88 | | | |
| | | | :15 | .04 | 2.89 | | | |
| <p><u>Watershed conditions:</u> In corn, wheat, meadow, meadow rotation (conservation practice with contour strips) since 1941. Corn and meadow strips in 1957. Corn 32", weeds 24" high. Meadow strips, legumes, grass and weeds 10" high.</p> | | | | | | | | |
| <p>Notes: 1/ Rain ended about 7:30a.</p> | | | | | | | | |

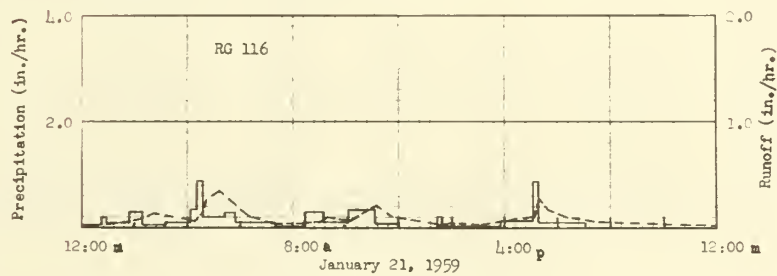
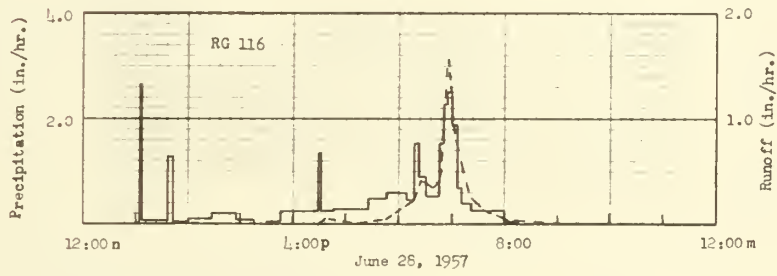
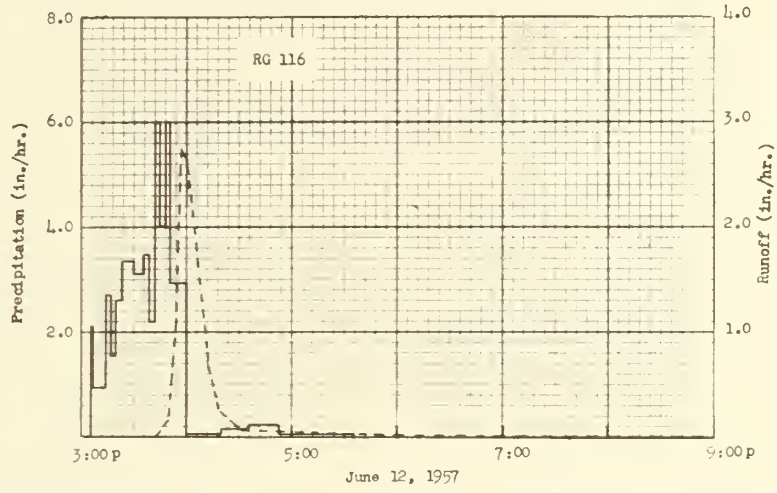
| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 187 | | | | | |
|----------------------------------|-------------------|-----------------|-------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of January 21, 1959</u> | | | | | | | | |
| 12-21-22-58 | 0 | 0 | 1-21-59 | Raingage | 116 | 1-21-59 | | |
| 12-23 | T 1/ | 0 | 12:01a | 0 | 0 | 12:01a | 0.0117 | 0 |
| 12-24 | T 1/ | 0 | 1:12 | .06 | .04 | 1:50 | .0563 | .05 |
| 12-25-31 | 0 | 0 | 1:57 | .20 | .09 | 2:20 | .0928 | .09 |
| 1-1-59 | .58 | 0 | 1:17 | .10 | .17 | 4:2 | .113 | .13 |
| 1-2-3 | 0 | 0 | 2:17 | .30 | .32 | 4:18 | .0718 | .28 |
| 1-4 | .01 1/ | 0 | 3:08 | .05 | .36 | 4:36 | .153 | .30 |
| 1-5-8 | 0 | 0 | 4:07 | .09 | .45 | 4:44 | .267 | .33 |
| 1-9-10 | T 1/ | 0 | 4:22 | .36 | .54 | 5:12 | .354 | .48 |
| 1-11-13 | 0 | 0 | 4:37 | .88 | .76 | 6:00 | .183 | .68 |
| 1-14 | .29 2/ | 0 | 5:26 | .21 | .93 | 6:20 | .112 | .73 |
| 1-15 | .61 2/ | 0 | 6:17 | .31 | 1.04 | 7:16 | .0380 | .79 |
| 1-16-19 | .30 1/ | 0 | 7:22 | .09 | 1.09 | 8:18 | .0428 | .83 |
| 1-20 | .44 | .10 | 8:27 | .03 | 1.12 | 9:32 | .0333 | .83 |
| | | | 9:09 | .29 | 1.32 | 9:00 | .0623 | .86 |
| | | | 10:05 | .09 | 1.40 | 9:20 | .104 | .88 |
| | | | 11:06 | .36 | 1.77 | 10:12 | .0785 | .97 |
| | | | 12:00m | .07 | 1.83 | 10:30 | .117 | 1.00 |
| | | | 1:27p | 0 | 1.83 | 11:10 | .205 | 1.11 |
| | | | 1:38 | .22 | 1.87 | 11:46 | .108 | 1.21 |
| | | | 3:52 | .02 | 1.90 | 1:30p | .0357 | 1.30 |
| | | | 5:02 | .14 | 2.06 | 1:50 | .0455 | 1.31 |
| | | | 5:17 | .88 | 2.28 | 3:10 | .0333 | 1.36 |
| | | | 7:02 | .09 | 2.44 | 5:06 | .108 | 1.44 |
| | | | | | | 5:20 | .281 | 1.49 |
| | | | | | | 6:38 | .183 | 1.56 |
| | | | | | | 6:20 | .0966 | 1.65 |
| | | | | | | 7:30 | .0592 | 1.74 |
| | | | | | | 12:00m | .0270 | 1.90 |

Watershed conditions: In corn, wheat, meadow, meadow rotation conservation practice with contour strips). All strips in meadow in January 1959. Vegetation dormant. Frost penetration 1". Snow cover 5" on January 20.

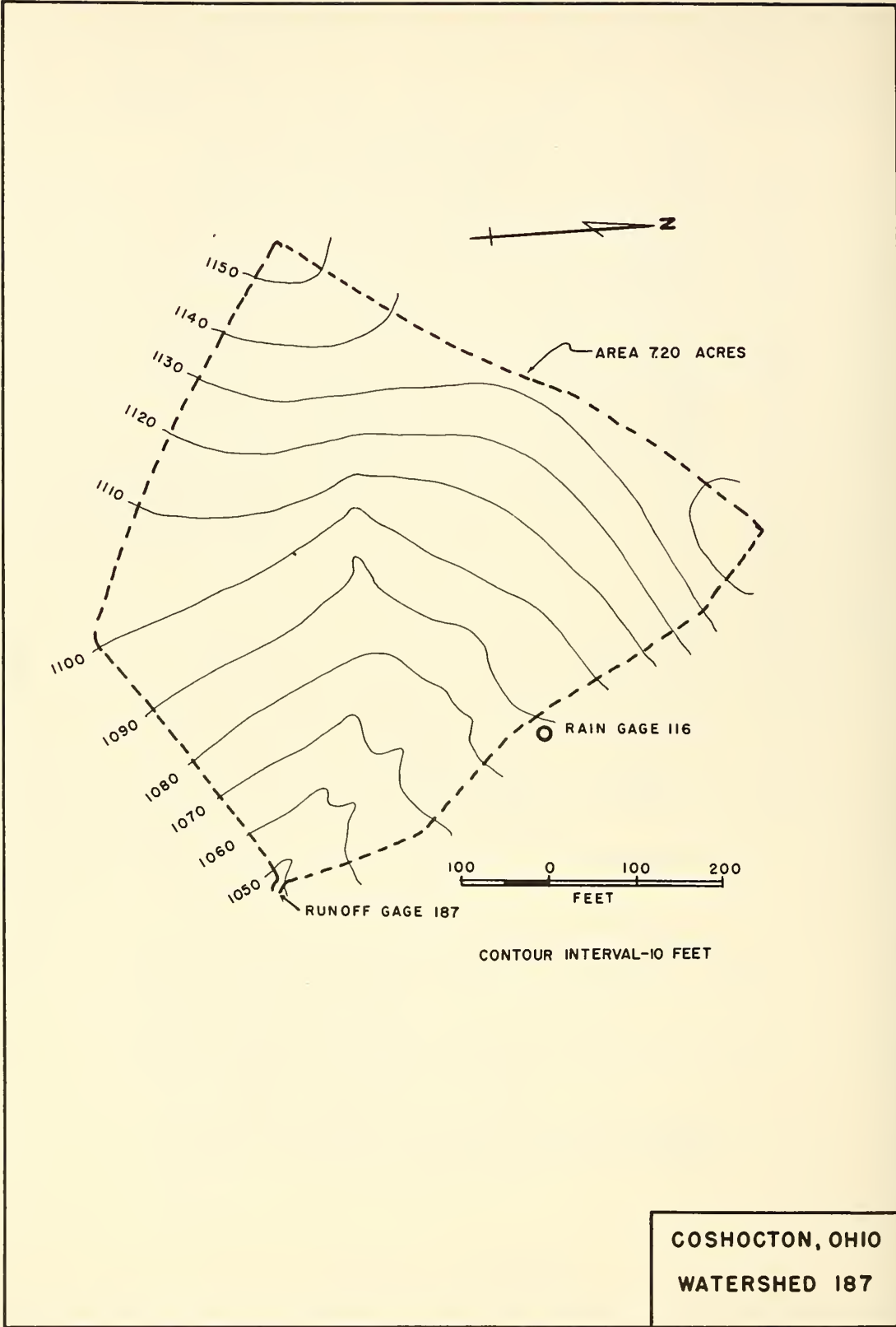
Notes: 1/ Snow
2/ Rain and snow



COSHOCTON, OHIO WATERSHED 187



COSHOCTON, OHIO WATERSHED 167



| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | | Coshocton, Ohio Watershed 192 (Area - 7.59 acres) | | | | | | |
|---|--------|--------------|--------------|-------------|-------------|-------------|--------------|--|-------------|-------------|-------------|-------------|-------------|---------------|
| Month Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year | |
| 1956 | P Q | 1.52 .14 | 5.48 1.74 | 3.24 .27 | 3.85 .06 | 6.99 .32 | 4.22 .17 | 6.95 .54 | 4.33 T | 1.49 0 | 1.17 0 | 1.34 0 | 2.97 .06 | 43.55 3.30 |
| 1957 | P Q | 1.54 .39 | 1.23 T | 1.73 T | 4.84 .89 | 4.19 T | 9.83 1.62 | 3.67 .14 | 2.65 .05 | 4.24 .07 | 1.45 .05 | 2.83 .48 | 4.01 .48 | 42.21 3.69 |
| 1958 | P Q | 1.51 .24 | .75 .10 | .88 0 | 3.45 .01 | 3.17 .16 | 4.65 .03 | 7.45 .61 | 3.03 .02 | 3.23 T | .34 0 | 1.88 0 | .66 0 | 31.00 1.17 |
| 1959 | P Q | 5.38 2.51 | 2.34 .59 | 2.26 .02 | 3.89 .08 | 2.68 0 | 4.40 .05 | 4.74 T | 2.37 .11 | 2.66 T | 4.95 T | 2.46 .05 | 1.89 .16 | 40.02 3.57 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS Coshocton, Ohio Watershed 192

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|------|---|------|---------|------|-------------------|------|----------|------|-------|------|--------|------|--------|------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 6-12 | 2.09 | 6-12 | 0.69 | 6-12 | 0.70 | 6-28 ^R | 0.76 | 6-28 | 0.78 | 6-28 | 0.80 | 6-28 | 0.81 | 6-24 | 0.90 |
| 1958 | 7-22 | .60 | 7-22 | .20 | 7-22 | .21 | 7-22 | .22 | 7-22 | .22 | 7-22 | .22 | 7-22 | .22 | 1-21 | .24 |
| 1959 | 1-21 | .60 | 1-21 | .42 | 1-21 | .53 | 1-21 | .85 | 1-21 | 1.51 | 1-20 | 2.17 | 1-20 | 2.30 | 1-20 | 2.36 |

Notes: Quality of records: monthly P, excellent, C, good; annual maximum discharges and volumes, excellent. Cover 1956, 1st year meadow; 1957, 2nd year meadow; 1958, corn; 1959, wheat; prevailing practice.

SELECTED RUNOFF EVENTS Coshocton, Ohio Watershed 192

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|------------------------------------|-------------------|-----------------|---------------|-------------------|-----------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of September 23, 1945</u> | | | | | | | | |
| 8-23-45 | .01 | 0 | 9-23-45 | Raingage | 12 ^R | 9-23-45 | | |
| 8-24 | .07 | 0 | 5:29p | 0 | 0 | 5:44p | 0 | 0 |
| 8-25-31 | 0 | 0 | :32 | 4.00 | .20 | :54 | .0256 | T |
| 9-1 | .16 | 0 | :40 | .60 | .28 | 6:02 | .0507 | .01 |
| 9-2-7 | 0 | 0 | :46 | 0 | .28 | :30 | .0154 | .02 |
| 9-8 | .85 | 0 | :48 | 4.20 | .42 | :36 | .0881 | .02 |
| 9-9 | .94 | 0 | :52 | .60 | .46 | :44 | .212 | .04 |
| 9-10 | .74 | 0 | 6:14 | 0 | .46 | 7:00 | .444 | .10 |
| 9-11 | .04 | 0 | :16 | .30 | .47 | :14 | .789 | .27 |
| 9-12 | 0 | 0 | :24 | 0 | .47 | :24 | .382 | .37 |
| 9-13 | .32 | 0 | :30 | 1.70 | .64 | :30 | .210 | .40 |
| 9-14 | 1.23 | T | :39 | 1.13 | .81 | :36 | .163 | .42 |
| 9-15-16 | 0 | 0 | :54 | .88 | 1.03 | :16 | .0781 | .44 |
| 9-17 | .54 | 0 | :58 | 2.10 | 1.19 | 8:06 | .0361 | .45 |
| 9-18 | 1.06 | .03 | 7:00 | 4.20 | 1.33 | :14 | .0295 | .16 |
| 9-19 | 0 | 0 | :05 | 3.00 | 1.58 | :24 | .0811 | .47 |
| 9-20 | .41 | .01 | :09 | 1.20 | 1.66 | :30 | .391 | .49 |
| 9-21-22 | 0 | 0 | :12 | 3.00 | 1.83 | :42 | .431 | .58 |
| 9-23 | .33 ^{1/} | 0 | :32 | .45 | 1.98 | :48 | .280 | .62 |
| | | | :50 | .07 | 2.00 | 9:00 | .136 | .66 |
| | | | 8:07 | 0 | 2.00 | :10 | .0845 | .67 |
| | | | :10 | .20 | 2.01 | :30 | .0156 | .69 |
| | | | :15 | 0 | 2.01 | 10:00 | .0316 | .71 |
| | | | :20 | 1.08 | 2.10 | :50 | .0220 | .74 |
| | | | :26 | .70 | 2.17 | 12:00 m | .0125 | .75 |
| | | | :28 | 5.10 | 2.34 | | | |
| | | | :40 | 1.55 | 2.65 | | | |
| | | | :54 | .17 | 2.69 | | | |
| | | | 9:22 | .04 | 2.71 | | | |
| | | | 10:00 | .09 | 2.77 | | | |
| | | | 12:00 m | .02 | 2.81 | | | |

Notes: To convert runoff in in/hr to cfs, multiply by 7.6535.
1/ Most of rainfall occurred after 3:29p.

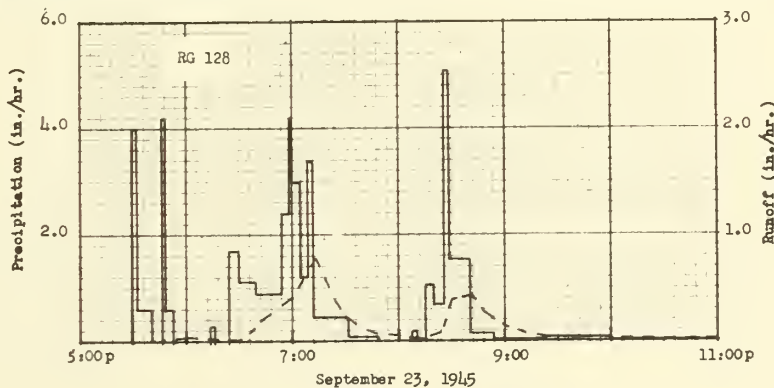
| SELECTED RUNOFF EVENTS | | | | Coshocton, Ohio Watershed 192 | | | | |
|---|-------------------|-----------------|------------------|-------------------------------|---------------|------------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of June 12, 1957</u> | | | | | | | | |
| 5-13-57 | 0 | 0 | 6-12-57 3:11p | Raingage 0 | 128 0 | 6-12-57 3:45p | 0 | 0 |
| 5-14 | 1.60 | T | :16 | 3.30 | .11 | :51 | .195 | .01 |
| 5-15 | .04 | 0 | :26 | .78 | .24 | :53 | 1.06 | .03 |
| 5-16-17 | 0 | 0 | :43 | 3.21 | 1.15 | :55 | 1.74 | .08 |
| 5-18 | .18 | 0 | :48 | 6.36 | 1.68 | :57 | 1.89 | .14 |
| 5-19 | .26 | 0 | :53 | 6.24 | 2.20 | :59 | 2.01 | .20 |
| 5-20 | .14 | 0 | :59 | 5.00 | 2.70 | 1:01 | 2.09 | .27 |
| 5-21 | 0 | 0 | 1:16 | .11 | 2.73 | :03 | 1.93 | .34 |
| 5-22 | .52 | 0 | :28 | .15 | 2.76 | :05 | 1.74 | .40 |
| 5-23-25 | 0 | 0 | :52 | .22 | 2.85 | :07 | 1.37 | .45 |
| 5-26 | .18 | 0 | | | | :15 | .685 | .58 |
| 5-27-31 | 0 | 0 | | | | :23 | .320 | .65 |
| 6-1 | .10 | 0 | | | | :29 | .127 | .67 |
| 6-2-7 | 0 | 0 | | | | :39 | .0456 | .68 |
| 6-8 | .84 | 0 | | | | 6:43 | 0 | .70 |
| 6-9-10 | 0 | 0 | | | | | | |
| 6-11 | .35 | 0 | | | | | | |
| 6-12 | 0 | 0 | | | | | | |
| Watershed conditions: In corn, wheat, meadow, meadow rotation (prevailing practice) since 1942. Second year meadow in 1957. Grass and legumes 12" high, weeds 12" high. | | | | | | | | |
| <u>Event of June 28, 1957</u> | | | | | | | | |
| 5-28-31-57 | 0 | 0 | 6-28-57 | Raingage | 128 | 6-28-57 | | |
| 6-1 | .10 | 0 | 1:03p | 0 | 0 | 3:10p | 0 | 0 |
| 6-2-7 | 0 | 0 | :06 | 4.40 | .22 | 4:36 | .0125 | .01 |
| 6-8 | .84 | 0 | :38 | .02 | .23 | :58 | .0507 | .02 |
| 6-9-10 | 0 | 0 | :42 | 2.25 | .38 | 5:12 | .0338 | .03 |
| 6-11 | .35 | 0 | 2:00 | .03 | .39 | :48 | .127 | .07 |
| 6-12 | 2.85 | .70 | :06 | .40 | .43 | 6:26 | .229 | .17 |
| 6-13 | .37 | .02 | :18 | .10 | .50 | :44 | .229 | .24 |
| 6-14 | .02 | 0 | :54 | .90 | .59 | :58 | .776 | .34 |
| 6-15 | 0 | 0 | 4:22 | .07 | .70 | 7:28 | .293 | .62 |
| 6-16 | .02 | 0 | :28 | 1.10 | .81 | :48 | .136 | .68 |
| 6-17-18 | 0 | 0 | :44 | .34 | .90 | 9:10 | .0170 | .75 |
| 6-19 | .02 | 0 | 5:12 | .17 | .98 | 12:00m | .0035 | .78 |
| 6-20-22 | 0 | 0 | 6:12 | .53 | 1.51 | | | |
| 6-23 | .11 | 0 | :40 | .81 | 1.89 | | | |
| 6-24 | 2.26 | .09 | :54 | 2.10 | 2.38 | | | |
| 6-25-27 | 0 | 0 | 7:11 | .53 | 2.53 | | | |
| 6-28 | .18 1/ | 0 | :44 | .20 | 2.64 | | | |
| | | | 8:00 | .08 | 2.66 | | | |
| Watershed conditions: In corn, wheat, meadow, meadow rotation (prevailing practice) since 1942. Second year meadow in 1957. Grass, legumes, and weeds 14" high. | | | | | | | | |
| Notes: 1/ Rain ended about 7:30a. | | | | | | | | |

| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 192 | | | | | |
|---------------------------|-------------------|-----------------|-------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of January 21, 1959 | | | | | | | | |
| 12-21-22-58 | 0 | 0 | 1-21-59 | Raingage | 128 | 1-21-59 | | |
| 12-23 | T | 0 | 12:01a | 0 | 0 | 12:01a | 0.0256 | 0 |
| 12-24 | T 1/ | 0 | 2:00 | .10 | .19 | 2:00 | .0745 | .07 |
| 12-25-31 | 0 | 0 | :26 | .34 | .35 | :26 | .110 | .12 |
| 1-1-59 | .68 | .07 | 4:08 | .08 | .48 | 3:24 | .119 | .25 |
| 1-2 | 0 | .01 | :18 | 0 | .48 | 4:16 | .0811 | .33 |
| 1-3 | 0 | 0 | :30 | .50 | .58 | :34 | .163 | .36 |
| 1-4 | .02 1/ | 0 | :44 | 1.07 | .83 | :42 | .465 | .40 |
| 1-5-8 | 0 | 0 | 5:05 | .38 | .99 | :50 | .600 | .47 |
| 1-9-10 | T 1/ | 0 | 6:04 | .19 | 1.16 | 5:04 | .465 | .60 |
| 1-11-13 | 0 | 0 | 8:28 | .33 | 1.23 | :10 | .502 | .64 |
| 1-14 | .32 | 0 | 9:16 | .26 | 1.44 | :18 | .399 | .70 |
| 1-15 | .50 2/ | .03 | 10:12 | .10 | 1.53 | :30 | .240 | .77 |
| 1-16-19 | .30 1/ | 0 | 11:08 | .36 | 1.87 | 6:00 | .0953 | .84 |
| 1-20 | .45 | .11 | 12:00m | .08 | 1.94 | :36 | .0534 | .88 |
| | | | 1:32p | 0 | 1.94 | 7:20 | .0406 | .92 |
| | | | 5:05 | .06 | 2.17 | :52 | .0507 | .95 |
| | | | :13 | 1.28 | 2.34 | 8:30 | .0361 | .97 |
| | | | 7:20 | .10 | 2.55 | 9:00 | .0881 | 1.00 |
| | | | | | | :18 | .154 | 1.04 |
| | | | | | | :34 | .149 | 1.08 |
| | | | | | | :42 | .154 | 1.10 |
| | | | | | | 10:12 | .0989 | 1.16 |
| | | | | | | :40 | .253 | 1.24 |
| | | | | | | 11:04 | .307 | 1.35 |
| | | | | | | :20 | .206 | 1.41 |
| | | | | | | :50 | .0916 | 1.49 |
| | | | | | | 1:30p | .0220 | 1.55 |
| | | | | | | :48 | .0507 | 1.56 |
| | | | | | | 3:30 | .0238 | 1.61 |
| | | | | | | 5:00 | .0811 | 1.68 |
| | | | | | | :06 | .145 | 1.69 |
| | | | | | | :16 | .344 | 1.74 |
| | | | | | | :47 | .235 | 1.88 |
| | | | | | | 6:30 | .0881 | 2.00 |
| | | | | | | :58 | .0507 | 2.03 |
| | | | | | | 8:00 | .0256 | 2.07 |
| | | | | | | 10:00 | .0140 | 2.11 |
| | | | | | | 12:00m | .0112 | 2.13 |

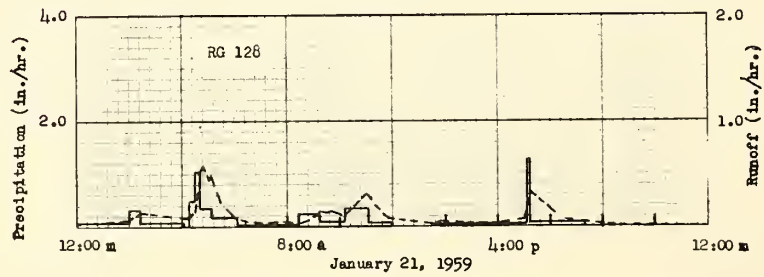
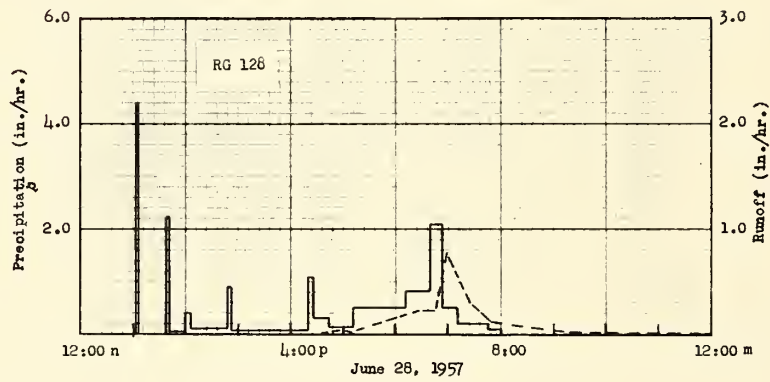
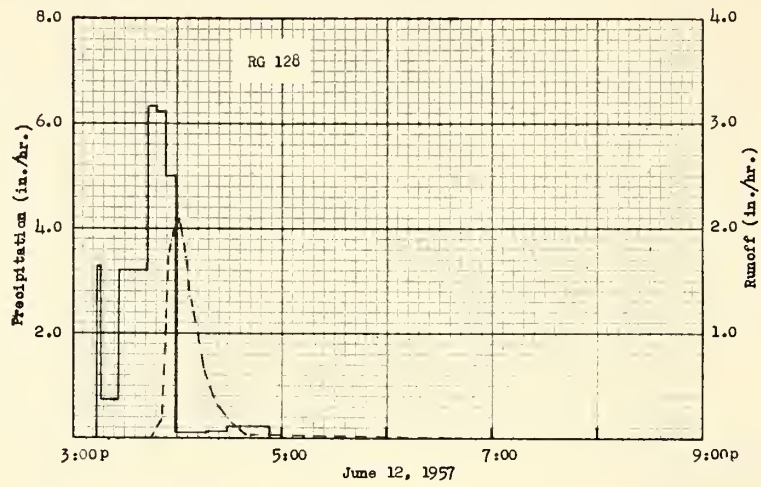
Watershed conditions: In corn, wheat, meadow, meadow rotation (prevailing practice) since 1942. Wheat in 1959. Vegetation dormant. Frost penetration 1". Snow cover 5" on January 20.

Notes: 1/ Snow
2/ Rain and Snow

See map of watershed on page 26.23-5.



COSHOCOTON, OHIO WATERSHED 192



COSHOCKTON, OHIO WATERSHED 192

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Coshocton, Ohio Watershed 172 (Area - 43.6 acres) | | | | | | |
|---|------|------|------|------|------|-------|--|------|-------|------|------|------|-------|
| Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 P | 1.17 | 5.22 | 3.80 | 3.85 | 6.87 | 1.61 | 6.11 | 3.86 | 1.31 | 1.09 | 1.15 | 3.36 | 13.36 |
| 1956 Q | .31 | 2.85 | 2.31 | 1.95 | 3.02 | 1.38 | .79 | .11 | .02 | .03 | .02 | .11 | 12.93 |
| 1957 P | 1.58 | 1.31 | 1.79 | 1.91 | 1.07 | 10.80 | 3.53 | 1.99 | 3.90 | 1.58 | 2.71 | 1.07 | 12.27 |
| 1957 Q | 1.16 | .31 | 1.02 | 1.29 | 1.16 | 1.12 | .16 | .02 | .03 | .03 | .10 | 1.13 | 11.86 |
| 1958 P | 1.19 | .71 | .91 | 3.53 | 3.01 | 1.10 | 9.16 | 2.86 | 3.18 | .29 | 2.09 | .80 | 32.19 |
| 1958 Q | .65 | .18 | .61 | 1.18 | 1.91 | .06 | 1.20 | .30 | .03 | .02 | .09 | .07 | 6.93 |
| 1959 P | 5.87 | 2.78 | 2.11 | 1.21 | 2.72 | 1.35 | 1.15 | 2.28 | 2.89 | 1.87 | 2.62 | 1.91 | 11.15 |
| 1959 Q | 2.11 | 2.22 | 1.61 | 2.01 | 1.01 | .38 | .08 | .19 | .01 | .05 | .22 | .72 | 10.97 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS Coshocton, Ohio Watershed 172

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 6-12 | 2.61 | 6-12 | 1.07 | 6-12 | 1.23 | 6-12 | 1.38 | 6-12 | 1.16 | 6-12 | 1.58 | 6-12 | 1.76 | 4-3 | 3.22 |
| 1958 | 7-22 | .15 | 5-11 | .10 | 5-11 | .16 | 5-11 | .32 | 5-11 | .17 | 5-11 | .61 | 5-11 | .83 | 11-28 | 1.67 |
| 1959 | 1-21 | .28 | 1-21 | .19 | 1-21 | .30 | 1-21 | .62 | 1-21 | 1.16 | 1-21 | 1.69 | 1-21 | 1.88 | 1-21 | 2.10 |

Notes: Quality of records: monthly P and Q, good; annual maximum discharges and volumes, good. Watershed conditions 1956-1959, 33% uneven age hardwoods, 67% pines planted in 1938.

SELECTED RUNOFF EVENTS Coshocton, Ohio Watershed 172

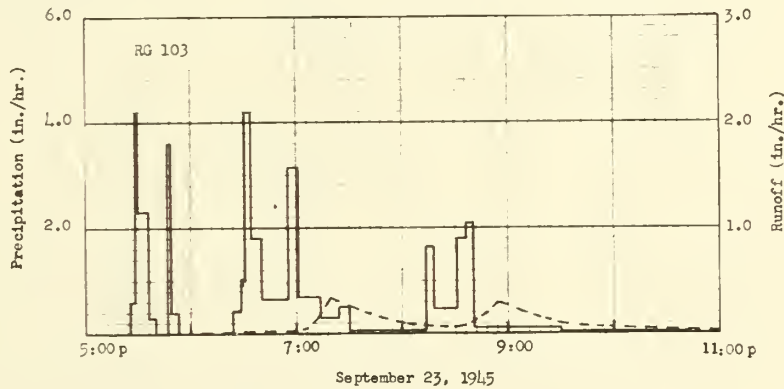
| Antecedent conditions | | | Rainfall | | | Runoff | | |
|---|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of September 23, 1915</u> | | | | | | | | |
| 8-23-15 | T | 0 | 9-23-15 | Raingage | 103 | 9-23-15 | | |
| 8-24 | .05 | 0 | 5:26p | 0 | 0 | 5:56p | 0.0027 | 0 |
| 8-25-31 | 0 | 0 | :28 | .60 | .02 | 7:00 | .0213 | .008 |
| 9-1 | .16 | 0 | :30 | 1.20 | .16 | :06 | .0573 | .012 |
| 9-2-7 | 0 | 0 | :36 | 2.30 | .39 | :12 | .150 | .022 |
| 9-8 | .55 | T | :40 | .30 | .11 | :20 | .353 | .058 |
| 9-9 | .73 | T | :17 | 0 | .11 | :12 | .189 | .160 |
| 9-10 | .68 | T | :19 | 3.60 | .53 | 8:01 | .0892 | .209 |
| 9-11 | .21 | T | :52 | .10 | .55 | :30 | .0632 | .230 |
| 9-12 | 0 | T | 6:21 | 0 | .55 | :36 | .0792 | .245 |
| 9-13 | .29 | T | :28 | .15 | .58 | :12 | .131 | .256 |
| 9-14 | 1.09 | .01 | :32 | 1.05 | .65 | :18 | .207 | .273 |
| 9-15 | 0 | T | :31 | 1.20 | .79 | :51 | .298 | .259 |
| 9-16 | 0 | T | :11 | 1.80 | 1.00 | 9:00 | .271 | .327 |
| 9-17 | .56 | T | :55 | .61 | 1.15 | :18 | .150 | .390 |
| 9-18 | 1.01 | .02 | 7:02 | 3.17 | 1.52 | :21 | .126 | .404 |
| 9-19 | 0 | .01 | :11 | .70 | 1.66 | :30 | .103 | .415 |
| 9-20 | .38 | T | :21 | .30 | 1.71 | :10 | .0823 | .431 |
| 9-21-22 | 0 | T | :30 | .50 | 1.76 | 10:00 | .0573 | .451 |
| 9-23 | .15 | T | 8:11 | .01 | 1.79 | 11:00 | .0291 | .493 |
| Watershed conditions: One-third of area in hardwoods, 2/3 area reforested to pines. Hardwoods were up to 60 feet high, shrubs 2 to 10 feet high. Leaf litter over all of hardwoods area 1/2" to 1" deep. Pines were 10 feet high, weeds 2 1/2 feet, and grass 5" high on reforested area. | | | :18 | 1.65 | 1.90 | 12:00m | .0166 | .516 |
| | | | :32 | .17 | 2.01 | | | |
| | | | :36 | 1.80 | 2.13 | | | |
| | | | :10 | 2.10 | 2.27 | | | |
| | | | 9:30 | .12 | 2.37 | | | |
| | | | 10:12 | .01 | 2.12 | | | |

Notes: To convert runoff in in/hr to cfs, multiply by 43.963.
1/ Most of rain occurred after 3:26p.

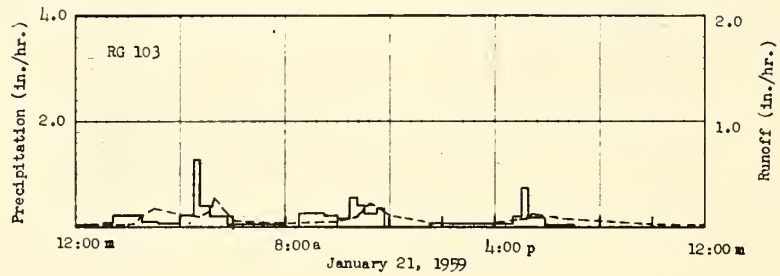
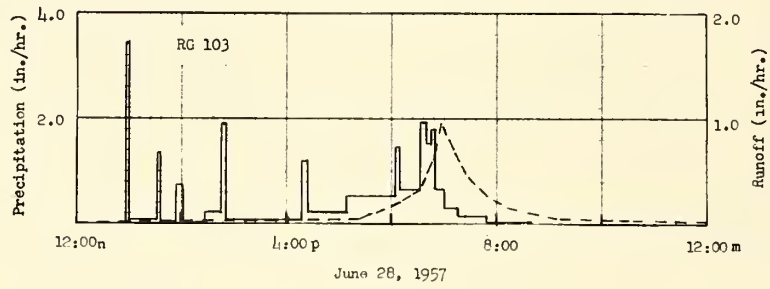
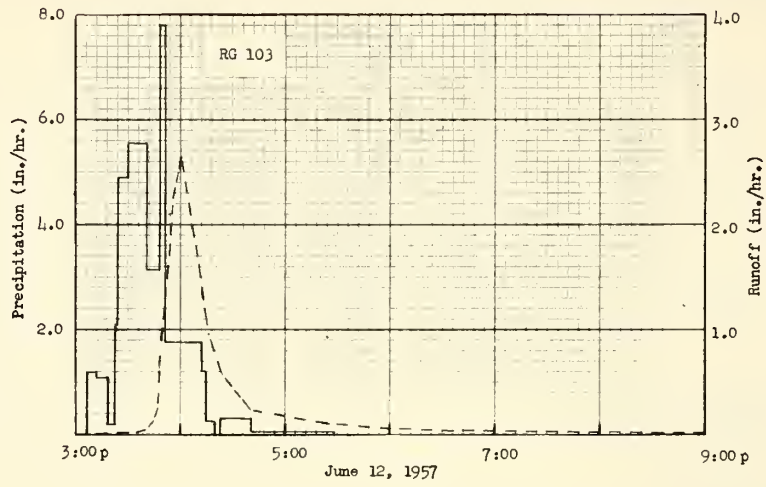
| SELECTED RUNOFF EVENTS | | | | | | Coshocton, Ohio Watershed 172 | | |
|--|-------------------|-----------------|---------------|-------------------|---------------|-------------------------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of June 12, 1957</u> | | | | | | | | |
| 5-13-57 | 0 | .03 | 6-12-57 | Raingage | 103 | 6-12-57 | | |
| 5-14 | 1.12 | .22 | 3:07p | 0 | 0 | 3:00p | 0.00011 | 0 |
| 5-15 | .04 | .10 | :12 | 1.20 | .10 | :30 | .00861 | T |
| 5-16 | 0 | .05 | :19 | 1.11 | .23 | :31 | .0209 | .001 |
| | | | :22 | .20 | .24 | :40 | .0514 | .005 |
| 5-17 | 0 | .04 | :24 | 2.10 | .31 | :44 | .122 | .011 |
| 5-18 | e .18 | .03 | :30 | 4.90 | .80 | :46 | .255 | .017 |
| 5-19 | e .20 | .05 | :40 | 5.58 | 1.73 | :48 | .60 | .030 |
| 5-20 | e .19 | .06 | :48 | 3.15 | 2.15 | :52 | e 1.19 | .100 |
| 5-21 | 0 | .04 | :51 | 7.80 | 2.54 | :56 | e 2.26 | .225 |
| 5-22 | .51 | .11 | 4:12 | 1.77 | 3.16 | 4:00 | e 2.64 | .398 |
| 5-23 | 0 | .06 | :14 | 1.20 | 3.20 | :08 | e 1.89 | .690 |
| 5-24 | 0 | .04 | :19 | .24 | 3.22 | :16 | e .960 | .885 |
| 5-25 | 0 | .03 | :22 | 0 | 3.22 | :20 | e .764 | .943 |
| 5-26 | .14 | .02 | :40 | .33 | 3.32 | :24 | e .578 | .987 |
| 5-27 | 0 | .02 | 5:28 | .05 | 3.36 | :40 | e .250 | 1.091 |
| 5-28-31 | 0 | .04 | | | | :50 | e .200 | 1.139 |
| 6-1 | .18 | T | | | | 5:30 | e .100 | 1.227 |
| 6-2-7 | 0 | T | | | | 6:00 | e .060 | 1.267 |
| 6-8 | .98 | T | | | | :40 | .0368 | 1.299 |
| 6-9-10 | 0 | T | | | | 8:00 | .0298 | 1.344 |
| 6-11 | .30 | T | | | | 9:00 | .0210 | 1.372 |
| 6-12 | 0 | T | | | | | | |
| <p>Watershed conditions: One-third of area in hardwoods, 2/3 area reforested to pines. Hardwoods up to 70 ft. high, shrubs 18", herbs 1", litter 1" deep. Pines on reforested area were 20 ft. high, weeds 6" high. Litter 1/2" deep.</p> | | | | | | | | |
| <u>Event of June 28, 1957</u> | | | | | | | | |
| 5-28-31-57 | 0 | 0.03 | 6-28-57 | Raingage | 103 | 6-28-57 | | |
| 6-1 | .18 | T | 12:56p | 0 | 0 | 12:00n | 0.0009 | 0 |
| 6-2-7 | 0 | T | 1:00 | 3.45 | .23 | 3:12p | .0250 | .0189 |
| 6-8 | .98 | T | :32 | .08 | .27 | 5:20 | .0514 | .0766 |
| 6-9-10 | 0 | T | :36 | 1.35 | .36 | 6:10 | .207 | .1827 |
| | | | :53 | .04 | .37 | :30 | .337 | .2728 |
| 6-11 | .30 | T | 2:01 | .75 | .47 | :48 | .619 | .3985 |
| 6-12 | 3.36 | 1.43 | :28 | .02 | .48 | :56 | .969 | .5113 |
| 6-13 | .45 | .24 | :46 | .23 | .55 | 7:02 | .864 | .6039 |
| 6-14 | .04 | .12 | :50 | 1.95 | .68 | :12 | .689 | .7334 |
| 6-15 | 0 | .06 | 4:18 | .07 | .78 | :24 | .484 | .8486 |
| 6-16 | .12 | .03 | :24 | 1.20 | .90 | :50 | .255 | 1.0006 |
| 6-17-18 | 0 | .03 | 5:08 | .23 | 1.07 | 8:12 | .163 | 1.0770 |
| 6-19 | .02 | .01 | 6:04 | .55 | 1.58 | 9:08 | .0664 | 1.1728 |
| 6-20 | 0 | .01 | :09 | 1.44 | 1.70 | 10:30 | .0384 | 1.2100 |
| 6-21-22 | 0 | T | :32 | .65 | 1.95 | 12:00 m | .0291 | 1.2919 |
| 6-23 | .10 | T | :40 | 1.95 | 2.21 | | | |
| 6-24 | 2.22 | .32 | :45 | 1.56 | 2.34 | | | |
| 6-25 | .03 | .08 | :49 | 1.80 | 2.46 | | | |
| 6-26-27 | 0 | .05 | 7:00 | .65 | 2.58 | | | |
| 6-28 | .20 1/ | T | :16 | .30 | 2.66 | | | |
| | | | :48 | .17 | 2.75 | | | |
| | | | 8:40 | .03 | 2.78 | | | |
| <p>Watershed conditions: One-third of area in hardwoods, 2/3 of area reforested to pines. Hardwoods up to 70 ft. high, shrubs 18", herbs 6", litter 1" deep. Pines on reforested area were 20 ft. high, weeds 7" high. Litter 1/2" deep.</p> | | | | | | | | |
| <p>Notes: 1/ Rain ended about 7:30a.</p> | | | | | | | | |

| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 172 | | | | | |
|---------------------------|-------------------|-----------------|-------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of January 21, 1959 | | | | | | | | |
| 12-21-22-58 | 0 | T | 1-21-59 | Raingage | 103 | 1-21-59 | | |
| 12-23 | T 1/ | T | 12:01a | 0 | 0 | 12:01a | 0 | 0 |
| 12-24 | T 1/ | T | :52 | .06 | .05 | 2:11 | .01 3/4 | .065 |
| 12-25-31 | 0 | T | 1:04 | 0 | .05 | :36 | .107 | .092 |
| 1-1-59 | .62 | .03 | :24 | .09 | .08 | 3:00 | .180 | .150 |
| 1-2-3 | 0 | e .06 | 2:32 | .23 | .31 | 4:00 | .122 | .304 |
| 1-4 | .02 1/ | e .01 | 3:08 | .10 | .40 | :40 | .0996 | .377 |
| 1-5-8 | 0 | e .04 | :58 | .07 | .46 | 5:04 | .154 | .424 |
| 1-9-10 | T 1/ | e .01 | 4:28 | .22 | .57 | :18 | .278 | .475 |
| 1-11-13 | 0 | e .02 | 4:44 | 1.28 | .91 | :42 | .154 | .566 |
| 1-14 | .25 | e .01 | 5:08 | .40 | 1.07 | 6:02 | .0728 | .605 |
| 1-15 | .73 2/ | e T | :48 | .20 | 1.20 | 7:50 | .0287 | .676 |
| 1-16-19 | .30 1/ | e .01 | 7:52 | .05 | 1.30 | 10:00 | .0544 | .755 |
| 1-20 | .54 | e .02 | 8:30 | 0 | 1.30 | :42 | .0996 | .799 |
| | | | 9:28 | .26 | 1.55 | 11:00 | .167 | .844 |
| | | | 10:00 | .21 | 1.66 | :16 | .222 | .895 |
| | | | :26 | .16 | 1.73 | 12:00n | .114 | 1.016 |
| | | | :44 | .57 | 1.90 | 1:30p | .0544 | 1.132 |
| | | | 11:00 | .41 | 2.01 | 3:50 | .0359 | 1.240 |
| | | | :28 | .24 | 2.12 | 5:12 | .0858 | 1.302 |
| | | | 1:18 | .36 | 2.24 | :24 | .134 | 1.325 |
| | | | 1:32p | 0 | 2.24 | 6:24 | .0858 | 1.414 |
| | | | 4:40 | .06 | 2.43 | e 12:00m | .0300 | 1.6716 |
| | | | 5:01 | .20 | 2.50 | | | |
| | | | :44 | .74 | 2.66 | | | |
| | | | :54 | .18 | 2.78 | | | |
| | | | 7:00 | .03 | 2.81 | | | |

Notes: 1/ Snow
2/ Rain and snow



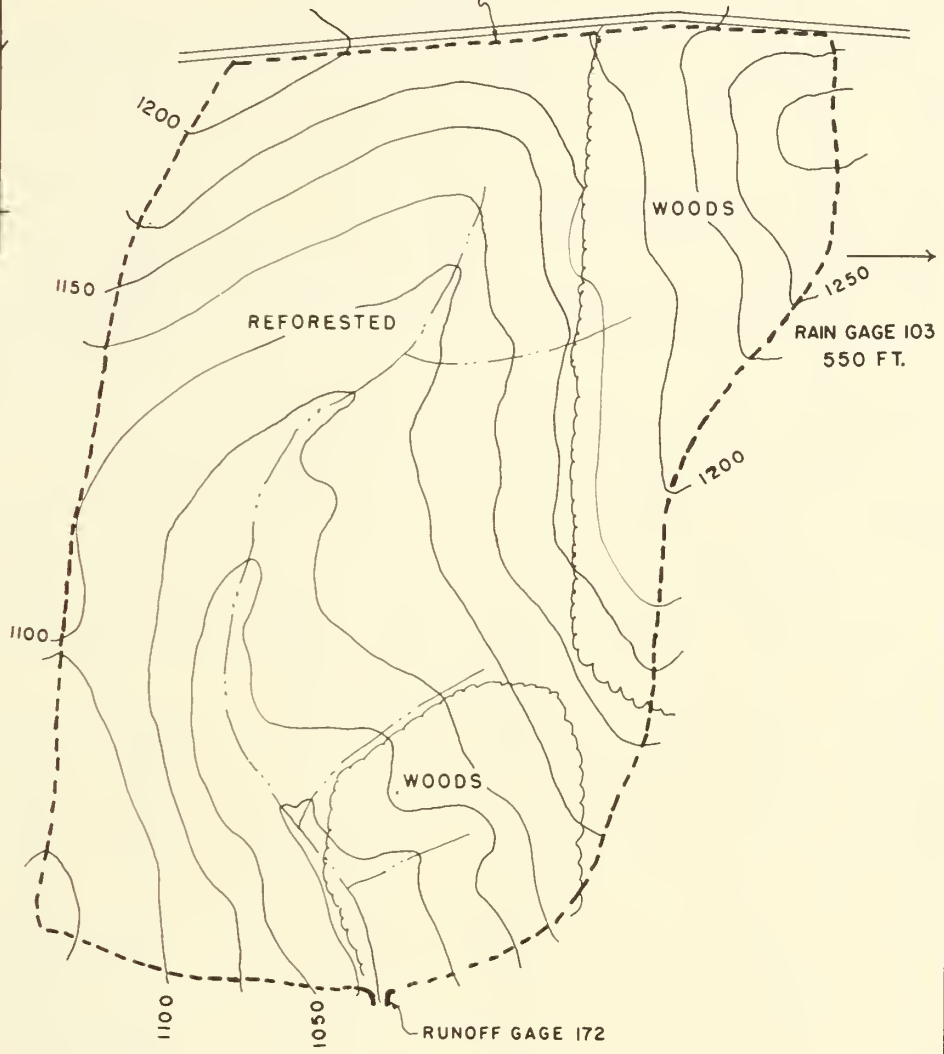
COSHOCOTON, OHIO WATERSHED 172



COSHOCTON, OHIO WATERSHED 172



AREA 436 ACRES



FEET

CONTOUR INTERVAL-25 FEET

**COSHOCTON, OHIO
WATERSHED 172**

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Coshocton, Ohio Watershed 169 (Area - 29.0 acres) | | | | | | |
|---|------------------|--------------|--------------|--------------|--------------|---------------|--|-------------|-------------|-------------|-------------|--------------|---------------|
| Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 | P 1.11 Q .11 | 5.36 2.00 | 3.05 1.11 | 3.68 .79 | 6.87 1.26 | 1.56 .80 | 7.06 1.55 | 1.08 .24 | 1.17 .03 | 1.10 0 | 1.11 T | 2.77 .13 | 12.82 8.32 |
| 1957 | P 1.11 Q .63 | 1.18 .12 | 1.18 .50 | 1.36 2.57 | 3.99 .21 | 10.11 2.78 | 3.85 .39 | 2.18 .09 | 1.29 .16 | 1.51 0 | 2.75 .07 | 3.97 1.32 | 11.71 9.11 |
| 1958 | P 1.27 Q .12 | .70 .22 | .71 .15 | 3.11 .35 | 3.19 .81 | 1.65 .08 | 7.92 .64 | 3.11 .16 | 3.02 .05 | .36 0 | 1.79 T | .11 0 | 30.63 2.91 |
| 1959 | P 5.71 Q 2.81 | 3.11 1.26 | 2.26 .52 | 3.87 .37 | 2.72 .08 | 1.80 .36 | 1.80 .09 | 2.16 .17 | 2.73 T | 1.95 .11 | 2.73 .15 | 2.07 .70 | 12.21 6.62 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS Coshocton, Ohio Watershed 169

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 6-12 | 2.59 | 6-12 | 0.85 | 6-28 | 1.02 | 6-28 | 1.23 | 6-28 | 1.29 | 6-28 | 1.33 | 6-28 | 1.38 | 1-3 | 1.88 |
| 1958 | 7-31 | .21 | 7-22 | .13 | 5-1 | .11 | 5-1 | .23 | 5-1 | .30 | 5-1 | .35 | 5-1 | .10 | 5-3 | .69 |
| 1959 | 6-12 | .53 | 1-21 | .36 | 1-21 | .52 | 1-21 | .86 | 1-21 | 1.39 | 1-21 | 2.12 | 1-21 | 2.37 | 1-20 | 2.68 |

Notes: Quality of records: P and Q, good; annual maximum discharges and volumes, good. Mixed cover 1956 to 1959; 6% hardwoods, 6% reforested, 18% grassland, 31% cultivated, 6% miscellaneous; contour strip cropped.

SELECTED RUNOFF EVENTS Coshocton, Ohio Watershed 169

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|-----------------------------|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of September 23, 1945 | | | | | | | | |
| 8-23-45 | T | 0 | 9-23-45 | Raingage | 113 | 9-23-45 | | |
| 8-24 | .06 | 0 | 5:28p | 0 | 0 | 6:00p | 0.00667 | 0 |
| 8-25-31 | 0 | 0 | :30 | 3.00 | .10 | :16 | .0138 | .001 |
| 9-1 | .17 | 0 | :31 | 1.50 | .20 | :30 | .0238 | .012 |
| 9-2-7 | 0 | 0 | :16 | .25 | .25 | :19 | .129 | .025 |
| 9-8 | .76 | T | :18 | 1.20 | .39 | 7:12 | .971 | .169 |
| 9-9 | .96 | .01 | :50 | .60 | .11 | :18 | 1.37 | .291 |
| 9-10 | .72 | .01 | 6:11 | 0 | .11 | :30 | .910 | .529 |
| 9-11 | .01 | T | :21 | .06 | .12 | :36 | .619 | .605 |
| 9-12 | 0 | 0 | :28 | 2.10 | .58 | :51 | .139 | .703 |
| 9-13 | .29 | 0 | :36 | .90 | .70 | 8:00 | .0999 | .715 |
| 9-14 | 1.20 | .06 | :38 | 2.10 | .78 | :06 | .0691 | .721 |
| 9-15-16 | 0 | 0 | :50 | .90 | .96 | :18 | .0107 | .735 |
| 9-17 | .50 | .01 | :51 | 1.05 | 1.03 | :30 | .0817 | .711 |
| 9-18 | 1.01 | .07 | :56 | 1.80 | 1.09 | :36 | .369 | .761 |
| 9-19 | 0 | 0 | 7:00 | 3.75 | 1.31 | :17 | .828 | .887 |
| 9-20 | .19 | .03 | :01 | 2.70 | 1.52 | 9:00 | .196 | 1.036 |
| 9-21-22 | 0 | 0 | :10 | 1.90 | 1.71 | :06 | .312 | 1.076 |
| 9-23 | .28 1/2 | T | :12 | 3.60 | 1.83 | :18 | .129 | 1.116 |
| | | | :30 | .33 | 1.93 | :31 | .0653 | 1.112 |

Continued on next page

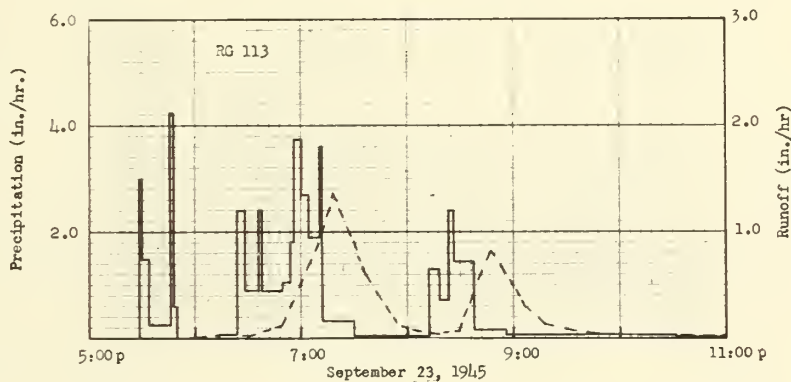
Notes: To convert runoff in in/hr to cfs, multiply by 29.241.
1/ Most of rainfall occurred after 3:28p.

| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 169 | | | | | |
|--|-------------------|-----------------|-------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of September 23, 1945 - Continued | | | | | | | | |
| <p>Watershed conditions: Mixed cover under conservation practice. 3.0% of the area was in corn-meadow strips; corn was 120" high, weeds 48" high. In meadow strips, legumes were 12" high, grass 5" high, weeds 12" high. 28.6% of the area was in wheat-meadow strips and 6.8% in wheat going to meadow after cutting in July. Legumes and weeds were 12" high, grass 5" high. 8.3% of the area was in pasture. Legumes and grasses 8" high. 3.0% of the area was in hardwood forest and 10.0% was reforested to pines. Pines were 9 feet high and shrubs 1-8", weeds 15" high. 3.4% of the area was in orchard and 5.9% in miscellaneous cover (farmsteads, roads, etc.)</p> | | | 8:12 p | 0.03 | 1.95 | 9:18 p | 0.0189 | 1.155 |
| | | | :18 | 1.30 | 2.08 | 10:08 | .0331 | 1.168 |
| | | | :23 | .72 | 2.11 | :36 | .0222 | 1.181 |
| | | | :26 | 2.10 | 2.26 | 11:21 | .0119 | 1.191 |
| | | | :38 | 1.15 | 2.55 | 12:00m | .00719 | 1.200 |
| | | | :56 | .17 | 2.60 | | | |
| | | | 10:32 | .06 | 2.69 | | | |
| | | | 12:00m | .01 | 2.70 | | | |
| | | | | | | | | |
| | | | | | | | | |
| Event of June 12, 1957 | | | | | | | | |
| | | | 6-12-57 | Raingage | 113 | 6-12-57 | | |
| 5-13-57 | 0 | T | 3:16p | 0 | 0 | 3:12 p | 0 | 0 |
| 5-14 | 1.16 | .09 | :18 | 2.10 | .08 | :10 | .011 | .001 |
| 5-15 | .04 | .01 | :25 | 1.37 | .21 | :12 | .109 | .003 |
| 5-16 | 0 | T | :30 | 2.04 | .11 | :14 | .312 | .010 |
| 5-17 | 0 | 0 | :31 | 1.95 | .71 | :18 | .828 | .017 |
| 5-18 | .15 | T | :10 | 6.80 | 1.12 | :56 | 2.59 | .291 |
| 5-19 | .25 | .01 | :13 | 7.60 | 1.80 | 4:00 | 2.35 | .457 |
| 5-20 | .19 | .01 | :19 | 8.30 | 2.63 | :06 | 1.38 | .612 |
| 5-21 | 0 | T | :55 | 1.50 | 3.08 | :12 | .691 | .711 |
| 5-22 | .50 | .01 | 1:01 | .07 | 3.09 | :18 | .356 | .792 |
| 5-23 | 0 | T | :26 | .1 | 3.11 | :30 | .129 | .836 |
| 5-24-25 | 0 | 0 | 5:21 | .10 | 3.21 | :18 | .058 | .861 |
| 5-26 | .12 | T | 8:26 | .01 | 3.28 | 5:00 | .050 | .872 |
| 5-27-31 | 0 | 0 | 9:21 | .02 | 3.30 | :32 | .022 | .891 |
| 6-1 | .12 | 0 | | | | 9:00 | .702 | .914 |
| 6-2-7 | 0 | 0 | | | | | | |
| 6-8 | .81 | T | | | | | | |
| 6-9-10 | 0 | T | | | | | | |
| 6-11 | .35 | T | | | | | | |
| 6-12 | 0 | 0 | | | | | | |
| <p>Watershed conditions: Mixed cover under conservation practice. 3.0% of the area was in corn-meadow strips. Corn was 20" high, weeds 12" high. In meadow strips, legumes, grass and weeds were 5" high. 28.6% of the area was in wheat-meadow strips and 6.8% in wheat (without strips). Wheat was 30" high, legumes and grass 5" in wheat strips. In meadow strips legumes, grass and weeds were 6" high. 8.3% of the area was in pasture. Legumes and grasses 5" high, weeds 6" high. 3% of the area was in hardwood forest and 10.0% was reforested to pines in 1939. 3.4% of the area was in orchard and 5.9% in miscellaneous cover (farmsteads, roads, etc.).</p> | | | | | | | | |
| Notes: | | | | | | | | |

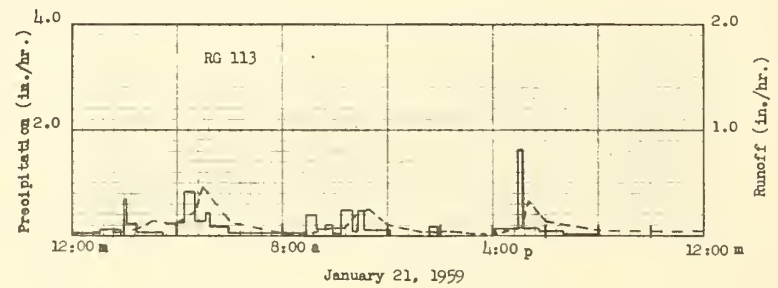
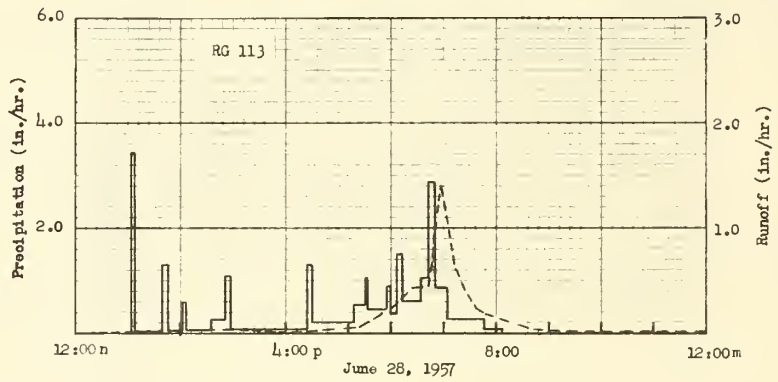
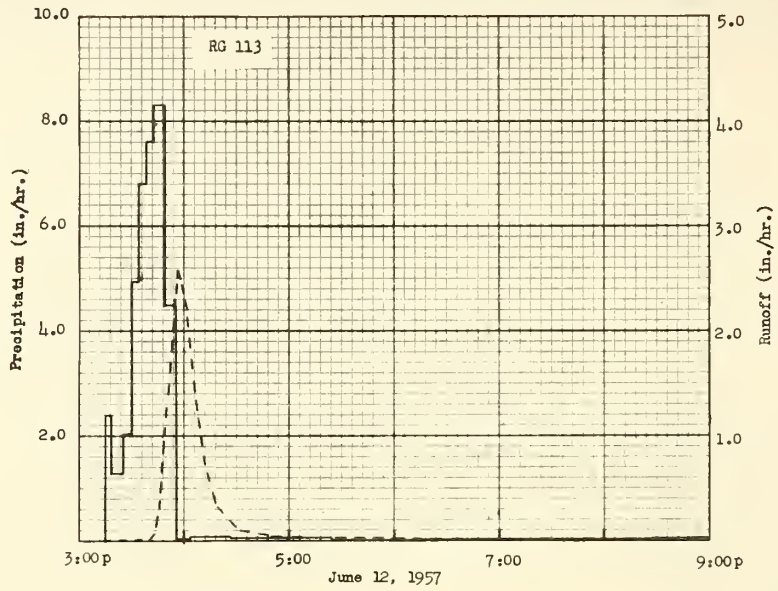
| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 169 | | | | | |
|--|--------------------|--------------------|-------------------------------|-------------------|---------------|---------------|--------------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of June 28, 1957 | | | | | | | | |
| 5-28-31-57 | 0 | 0 | 6-28-57 | Raingage | 113 | 6-28-57 | | |
| 6-1 | .12 | 0 | 1:03p | 0 | 0 | 12:00n | 0.000 ₁ | 0 |
| 6-2-7 | 0 | 0 | :07 | 3.45 | .23 | 2:00p | .0176 | .0097 |
| 6-8 | .81 | .01 | :39 | .02 | .21 | 3:08 | .0321 | .0211 |
| 6-9-10 | 0 | T | 4:44 | 1.32 | .35 | 4:00 | .00667 | .0381 |
| 6-11 | .35 | T | 2:01 | .04 | .36 | 4:11 | .0418 | .0466 |
| 6-12 | 3.30 | .92 | :06 | .60 | .41 | 5:24 | .0653 | .0891 |
| 6-13 | .38 | .07 | :35 | .06 | .44 | 6:00 | .238 | .1885 |
| 6-14 | .04 | .01 | :51 | .26 | .51 | 7:21 | .438 | .3217 |
| 6-15-22 | 0 | .04 | :56 | 1.08 | .60 | 8:0 | .455 | .4379 |
| 6-23 | .10 | T | 4:24 | .07 | .70 | 4:7 | .728 | .5019 |
| 6-24 | 2.32 | .28 | :29 | 1.32 | .81 | 4:9 | .930 | .5294 |
| 6-25-27 | 0 | .03 | 5:17 | .21 | .98 | :56 | 1.40 | .6734 |
| 6-28 | .12 _{1/2} | .01 _{2/2} | :29 | .55 | 1.09 | 7:00 | 1.25 | .7644 |
| | | | :33 | 1.05 | 1.16 | :12 | .674 | .9493 |
| | | | :53 | .45 | 1.31 | 8:24 | .407 | 1.0510 |
| | | | :59 | .90 | 1.40 | :36 | .245 | 1.1179 |
| | | | 6:07 | .38 | 1.45 | 4:8 | .183 | 1.1607 |
| | | | :13 | 1.50 | 1.60 | 8:24 | e .0653 | 1.2269 |
| | | | :33 | .60 | 1.80 | :36 | e .0107 | 1.2375 |
| | | | 4:11 | 1.05 | 1.94 | 9:20 | .0191 | 1.2582 |
| | | | :50 | 2.87 | 2.37 | 10:00 | .0125 | 1.2688 |
| | | | 7:04 | .86 | 2.57 | 12:00m | .00588 | 1.2863 |
| | | | 4:45 | .27 | 2.75 | | | |
| | | | 8:05 | .06 | 2.77 | | | |
| <p>Watershed conditions: Mixed cover under conservation practice. 34.0% of the area was in corn-meadow strips. Corn was 32" high, weeds 10" high. In meadow strips, legumes, grass, and weeds were 8" high. 28.6% of the area was in wheat-meadow strips and 6.8% in wheat (without strips). Wheat was 36" high and legumes and grass were 4" high in wheat areas. In meadow strips, legumes, grass, and weeds were 8" high. 8.3% of the area was in pasture. Legumes and grass were 5" high, weeds 6" high. 3% of the area was in hardwoods forest and 10.0% was reforested to pines in 1939. 3.4% of the area was in orchard and 5.9% in miscellaneous cover (farmsteads, roads, etc.)</p> | | | | | | | | |
| <p>Notes: _{1/} Rain ended about 7:30a. _{2/} Runoff prior to 12:00n.</p> | | | | | | | | |

| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 169 | | | | | |
|---|-------------------|-----------------|-------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of January 21, 1959 | | | | | | | | |
| 12-21-22-58 | 0 | 0 | 1-21-59 | Raingage | 113 | 1-21-59 | | |
| 12-23 | T | 0 | 12:01a | 0 | 0 | 12:01a | e 0.0107 | 0 |
| 12-24 | T 1/2 | 0 | 1:06 | .06 | .07 | 2:00 | .0107 | e .080 |
| 12-25-31 | 0 | 0 | :56 | .16 | .20 | :10 | .0906 | .113 |
| 1-1-59 | .60 | T | 2:00 | 0 | .20 | 3:01 | .155 | .162 |
| 1-2-3 | 0 | 0 | :06 | .70 | .27 | :10 | .121 | .211 |
| 1-4 | .02 1/2 | 0 | :30 | .25 | .37 | 1:00 | .121 | .286 |
| 1-5-8 | 0 | 0 | 3:30 | .09 | .46 | :16 | .215 | .406 |
| 1-9-10 | T 1/2 | 0 | :58 | 0 | .46 | 5:00 | .465 | .496 |
| 1-11-13 | 0 | 0 | 1:19 | .26 | .55 | :31 | .298 | .711 |
| 1-14 | .29 | 0 | :12 | .83 | .87 | 6:00 | .150 | .801 |
| 1-15 | .71 2/3 | 0 | 5:06 | .28 | .98 | 8:20 | .0213 | .951 |
| 1-16-19 | .30 1/2 | 0 | :11 | .45 | 1.01 | :56 | .0213 | .969 |
| 1-20 | .13 | 0 | :58 | .19 | 1.18 | 9:20 | .0571 | .985 |
| | | | 8:55 | .06 | 1.37 | :56 | .0906 | 1.030 |
| Watershed conditions: Mixed cover under conservation practice. 21.0% of the area had been in wheat-meadow strips in 1958. 28.6% of the area was in wheat-meadow strips in 1959. 6.8% of the area was in 2nd year meadow of a corn-wheat-meadow-rotation. 8.3% of the area was in pasture. All vegetation was in dormant state, frost penetration 1". 3% of the area was in hardwood forest and 10.0% was reforested to pines in 1939. 3.1% was in orchard and 5.9% in miscellaneous cover (farmsteads, roads, etc.). Snow cover 5" on January 20. | | | 9:15 | .39 | 1.50 | 10:21 | .0817 | 1.070 |
| | | | 12:37 | .11 | 1.55 | :51 | .219 | 1.110 |
| | | | :51 | .21 | 1.61 | 11:15 | .258 | 1.220 |
| | | | 10:11 | .03 | 1.62 | 12:00m | .109 | 1.317 |
| | | | :13 | .50 | 1.86 | 1:20p | .0107 | 1.436 |
| | | | :50 | .09 | 1.87 | :50 | .0107 | 1.457 |
| | | | 11:06 | .19 | 2.00 | 2:16 | .0189 | 1.477 |
| | | | 12:06p | .10 | 2.10 | 3:10 | .0213 | 1.510 |
| | | | 1:36 | 0 | 2.10 | 1:10 | .0213 | 1.531 |
| | | | :51 | .20 | 2.16 | 5:10 | .0999 | 1.583 |
| | | | 1:02 | 0 | 2.16 | :22 | .110 | 1.625 |
| | | | :59 | .16 | 2.31 | 6:00 | .150 | 1.771 |
| | | | 5:10 | 1.61 | 2.61 | 8:10 | .0107 | 1.916 |
| :16 | .17 | 2.71 | 12:00m | e .0107 | 2.116 | | | |
| 6:38 | .10 | 2.80 | | | | | | |
| 8:06 | .01 | 2.82 | | | | | | |

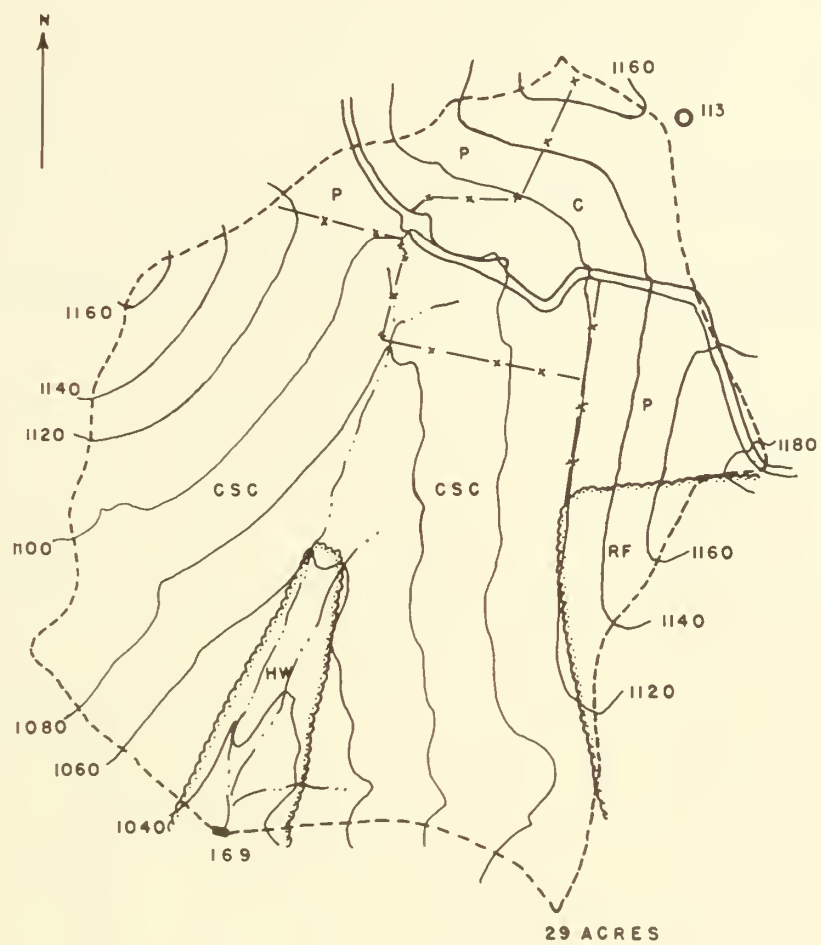
Notes: 1/ Snow
2/ Rain and snow



COSHOCTON, OHIO WATERSHED 169



COSHOCTON, OHIO WATERSHED 169



LEGEND

- P PASTURE
- C CROPPED
- CSC CONTOUR STRIP CROPPED
- RF REFORESTED (PINE)
- HW HARDWOODS
- RAINGAGE
- RUNOFF GAGE



CONTOUR INTERVAL - 20 FEET

**COSHOCTON, OHIO
WATERSHED 169**

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | | Coshocton, Ohio Watershed 177 (Area - 75.6 acres) | | | | | |
|---|------|------|------|------|------|-------|------|--|-------|------|------|------|-------|
| Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 P | 1.47 | 5.22 | 3.80 | 3.85 | 6.87 | 4.61 | 6.44 | 3.86 | 1.34 | 1.09 | 1.45 | 3.36 | 43.36 |
| Q | .23 | 2.74 | 1.85 | .98 | 1.51 | 1.13 | 1.16 | .22 | .02 | T | T | .21 | 10.05 |
| 1957 P | 1.58 | 1.31 | 1.79 | 4.91 | 4.07 | 10.80 | 3.53 | 1.99 | 3.90 | 1.58 | 2.74 | 4.07 | 42.27 |
| Q | .90 | .37 | .42 | 2.62 | .23 | 3.67 | .28 | .04 | .06 | 0 | .12 | 1.76 | 10.47 |
| 1958 P | 1.49 | .74 | .94 | 3.53 | 3.01 | 4.10 | 9.16 | 2.86 | 3.18 | .29 | 2.09 | .80 | 32.19 |
| Q | .37 | .21 | .35 | .48 | 1.18 | .06 | 1.45 | .53 | .06 | T | 0 | 0 | 4.69 |
| 1959 P | 5.87 | 2.78 | 2.44 | 4.24 | 2.72 | 4.35 | 4.45 | 2.28 | 2.89 | 4.87 | 2.62 | 1.94 | 41.45 |
| Q | 2.54 | 1.77 | .97 | .66 | .23 | .19 | .08 | .23 | T | .21 | .57 | 1.41 | 8.86 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 6-12 | 3.14 | 6-12 | 1.33 | 6-12 | 1.45 | 6-12 | 1.50 | 6-12 | 1.52 | 6-12 | 1.60 | 6-12 | 1.67 | 4-3 | 2.03 |
| 1958 | 7-22 | .42 | 7-22 | .23 | 7-22 | .27 | 7-22 | .32 | 7-22 | .33 | 5-4 | .38 | 5-4 | .51 | 5-4 | .93 |
| 1959 | 1-21 | .44 | 1-21 | .34 | 1-21 | .51 | 1-21 | .86 | 1-21 | 1.35 | 1-21 | 1.94 | 1-20 | 1.98 | 1-20 | 2.19 |

Notes: Quality of records: monthly P, good; Q, excellent; annual maximum discharges and volumes, excellent. Mixed cover 1956 to 1959; 4% hardwoods, 6% reforested, 67% grassland, 17% cultivated, 6% miscellaneous; contour strip cropped.

SELECTED RUNOFF EVENTS

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|-----------------------------|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of September 23, 1945 | | | | | | | | |
| 8-23-45 | T | 0 | 9-23-45 | raingage | 1.3 | 9-23-45 | | |
| 8-24 | .05 | 0 | 5:26p | 0 | 0 | 5:28p | 0.0030 | 0 |
| 8-25-31 | 0 | 0 | :28 | .60 | .02 | 6:26 | 0.0523 | .003 |
| 9-1 | .16 | 0 | :30 | 4.20 | .16 | :43 | 0.512 | .010 |
| 9-2-7 | 0 | 0 | :36 | 2.30 | .39 | 7:01 | .226 | .035 |
| 9-8 | .55 | 0 | :40 | .30 | .41 | :13 | .609 | .117 |
| 9-9 | .73 | T | :47 | 0 | .41 | :21 | .721 | .206 |
| 9-10 | .69 | 0 | :49 | 3.60 | .53 | 8:03 | .147 | .438 |
| 9-11 | .21 | 0 | :52 | .40 | .55 | :17 | .5963 | .516 |
| 9-12 | 0 | 0 | 6:24 | 0 | .55 | :29 | .0778 | .533 |
| 9-13 | .29 | 0 | :23 | .45 | .58 | :37 | .0963 | .545 |
| 9-14 | 1.09 | T | :32 | 1.05 | .65 | :47 | .226 | .569 |
| 9-15-16 | 0 | 0 | :34 | 4.20 | .79 | :59 | .343 | .629 |
| 9-17 | .56 | 0 | :41 | 1.80 | 1.00 | 9:13 | .270 | .703 |
| 9-18 | 1.04 | .74 | :55 | .64 | 1.15 | :37 | .129 | .778 |
| 9-19 | 0 | T | 7:02 | 3.17 | 1.52 | :47 | .5963 | .797 |
| 9-20 | .38 | .01 | :14 | .70 | 1.66 | 10:05 | .7606 | .920 |
| 9-21-22 | 0 | T | :24 | .30 | 1.71 | :24 | .0391 | .836 |
| 9-23 | .15 1/2 | T | :30 | .50 | 1.76 | 12:00m | .120 | .071 |
| | | | 8:14 | .04 | 1.79 | | | |
| | | | :18 | 1.65 | 1.90 | | | |
| | | | :32 | .47 | 2.01 | | | |
| | | | :36 | 1.80 | 2.13 | | | |
| | | | :40 | 2.10 | 2.27 | | | |
| | | | 9:30 | .12 | 2.37 | | | |
| | | | 10:42 | .04 | 2.42 | | | |

(See next page for other raingage totals and watershed conditions.)

Notes: To convert runoff in in/hr to cfs, multiply by 76.231.
1/ Most of rainfall occurred after 3:26p.

| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 177 | | | | | |
|---|-------------------|-----------------|-------------------------------|-------------------|-------------------|-------------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of September 23, 1945 - Continued | | | | | | | | |
| | | | 9-23-45 5:26p 10:50 | Raingage 0 | 100 0 2.12 | | | |
| | | | 9-23-45 5:27 p 10:52 | Raingage " | Y162 0 2.41 | | | |
| | | | 9-23-45 5:25 p 10:50 | Raingage " | 107 0 2.75 | | | |
| <p>Watershed conditions: Mixed cover under conservation practice. 16.0% of the area was in corn. Corn plants were 120" high, weeds 52" high. 3.5% of the area was in meadow. Grass and legumes 7' high, weeds 15 high. 31.1% of the area was in pasture. Alfalfa, grass and weeds were 8' high. 16.4% of the area was in woods and 6.0% in miscellaneous cover (farmsteads, roads, etc.).</p> | | | | | | | | |
| Event of June 12, 1957 | | | | | | | | |
| 4-11-57 | 0.25 | 0.1 | 6-12-57 3:12 p | Raingage 0 | 100 | 6-12-57 3:12 p | 0 | 0 |
| 4-12 | 1.10 | 0.1 | 4:12 | 1.10 | 1.10 | 4:46 | 0.963 | 1.03 |
| 4-13 | 0.1 | 0.1 | 4:19 | 1.11 | 2.23 | 4:43 | 0.42 | 1.45 |
| 4-14-57 | 0.1 | 0.1 | 4:22 | 0.2 | 2.43 | 4:54 | 2.45 | 1.71 |
| 4-15 | 0.1 | 0.1 | 4:24 | 2.10 | 4.53 | 4:00 | 3.14 | 4.89 |
| 4-16 | 0.2 | 0.1 | 4:27 | 4.0 | 8.53 | 4:08 | 2.72 | 7.61 |
| 4-17 | 0.1 | 0.1 | 4:30 | 3.5 | 12.03 | 4:12 | 1.76 | 9.37 |
| 4-18 | 0.1 | 0.1 | 4:33 | 3.15 | 15.18 | 4:17 | 1.74 | 11.11 |
| 5-22 | 0.1 | 0.4 | 4:31 | 0.1 | 15.28 | 4:24 | 0.6 | 11.92 |
| 4-19 | 0.1 | 0.1 | 4:31 | 0.1 | 15.38 | 4:30 | 0.44 | 12.36 |
| 4-20 | 0.1 | 0.1 | 4:33 | 0.2 | 15.58 | 4:34 | 0.147 | 12.51 |
| 4-21 | 0.1 | 0.1 | 4:31 | 0.2 | 15.78 | 4:32 | 0.86 | 13.37 |
| 4-22 | 0.1 | 0.1 | 4:30 | 0.22 | 16.00 | 4:30 | 0.06 | 13.43 |
| 4-23 | 0.1 | 0.1 | 4:30 | 0.2 | 16.20 | 4:32 | 0.1 | 13.53 |
| 4-24 | 0.1 | 0.1 | 4:30 | 0.3 | 16.50 | 4:32 | 0.37 | 13.90 |
| 4-25 | 0.1 | 0.1 | 4:30 | 0.3 | 16.80 | 4:32 | 0.37 | 14.27 |
| 4-26 | 0.1 | 0.1 | 4:30 | 0.3 | 17.10 | 4:32 | 0.37 | 14.64 |
| 4-27 | 0.1 | 0.1 | 4:30 | 0.3 | 17.40 | 4:32 | 0.37 | 15.01 |
| 4-28 | 0.1 | 0.1 | 4:30 | 0.3 | 17.70 | 4:32 | 0.37 | 15.38 |
| 4-29 | 0.1 | 0.1 | 4:30 | 0.3 | 18.00 | 4:32 | 0.37 | 15.75 |
| 4-30 | 0.1 | 0.1 | 4:30 | 0.3 | 18.30 | 4:32 | 0.37 | 16.12 |
| 4-31 | 0.1 | 0.1 | 4:30 | 0.3 | 18.60 | 4:32 | 0.37 | 16.49 |
| 5-1 | 0.1 | 0.1 | 4:30 | 0.3 | 18.90 | 4:32 | 0.37 | 16.86 |
| 5-2 | 0.1 | 0.1 | 4:30 | 0.3 | 19.20 | 4:32 | 0.37 | 17.23 |
| 5-3 | 0.1 | 0.1 | 4:30 | 0.3 | 19.50 | 4:32 | 0.37 | 17.60 |
| 5-4 | 0.1 | 0.1 | 4:30 | 0.3 | 19.80 | 4:32 | 0.37 | 17.97 |
| 5-5 | 0.1 | 0.1 | 4:30 | 0.3 | 20.10 | 4:32 | 0.37 | 18.34 |
| 5-6 | 0.1 | 0.1 | 4:30 | 0.3 | 20.40 | 4:32 | 0.37 | 18.71 |
| 5-7 | 0.1 | 0.1 | 4:30 | 0.3 | 20.70 | 4:32 | 0.37 | 19.08 |
| 5-8 | 0.1 | 0.1 | 4:30 | 0.3 | 21.00 | 4:32 | 0.37 | 19.45 |
| 5-9 | 0.1 | 0.1 | 4:30 | 0.3 | 21.30 | 4:32 | 0.37 | 19.82 |
| 5-10 | 0.1 | 0.1 | 4:30 | 0.3 | 21.60 | 4:32 | 0.37 | 20.19 |
| 5-11 | 0.1 | 0.1 | 4:30 | 0.3 | 21.90 | 4:32 | 0.37 | 20.56 |
| 5-12 | 0.1 | 0.1 | 4:30 | 0.3 | 22.20 | 4:32 | 0.37 | 20.93 |
| 5-13 | 0.1 | 0.1 | 4:30 | 0.3 | 22.50 | 4:32 | 0.37 | 21.30 |
| 5-14 | 0.1 | 0.1 | 4:30 | 0.3 | 22.80 | 4:32 | 0.37 | 21.67 |
| 5-15 | 0.1 | 0.1 | 4:30 | 0.3 | 23.10 | 4:32 | 0.37 | 22.04 |
| 5-16 | 0.1 | 0.1 | 4:30 | 0.3 | 23.40 | 4:32 | 0.37 | 22.41 |
| 5-17 | 0.1 | 0.1 | 4:30 | 0.3 | 23.70 | 4:32 | 0.37 | 22.78 |
| 5-18 | 0.1 | 0.1 | 4:30 | 0.3 | 24.00 | 4:32 | 0.37 | 23.15 |
| 5-19 | 0.1 | 0.1 | 4:30 | 0.3 | 24.30 | 4:32 | 0.37 | 23.52 |
| 5-20 | 0.1 | 0.1 | 4:30 | 0.3 | 24.60 | 4:32 | 0.37 | 23.89 |
| 5-21 | 0.1 | 0.1 | 4:30 | 0.3 | 24.90 | 4:32 | 0.37 | 24.26 |
| 5-22 | 0.1 | 0.1 | 4:30 | 0.3 | 25.20 | 4:32 | 0.37 | 24.63 |
| 5-23 | 0.1 | 0.1 | 4:30 | 0.3 | 25.50 | 4:32 | 0.37 | 25.00 |
| 5-24 | 0.1 | 0.1 | 4:30 | 0.3 | 25.80 | 4:32 | 0.37 | 25.37 |
| 5-25 | 0.1 | 0.1 | 4:30 | 0.3 | 26.10 | 4:32 | 0.37 | 25.74 |
| 5-26 | 0.1 | 0.1 | 4:30 | 0.3 | 26.40 | 4:32 | 0.37 | 26.11 |
| 5-27 | 0.1 | 0.1 | 4:30 | 0.3 | 26.70 | 4:32 | 0.37 | 26.48 |
| 5-28 | 0.1 | 0.1 | 4:30 | 0.3 | 27.00 | 4:32 | 0.37 | 26.85 |
| 5-29 | 0.1 | 0.1 | 4:30 | 0.3 | 27.30 | 4:32 | 0.37 | 27.22 |
| 5-30 | 0.1 | 0.1 | 4:30 | 0.3 | 27.60 | 4:32 | 0.37 | 27.59 |
| 5-31 | 0.1 | 0.1 | 4:30 | 0.3 | 27.90 | 4:32 | 0.37 | 27.96 |
| 6-1 | 0.1 | 0.1 | 4:30 | 0.3 | 28.20 | 4:32 | 0.37 | 28.33 |
| 6-2 | 0.1 | 0.1 | 4:30 | 0.3 | 28.50 | 4:32 | 0.37 | 28.70 |
| 6-3 | 0.1 | 0.1 | 4:30 | 0.3 | 28.80 | 4:32 | 0.37 | 29.07 |
| 6-4 | 0.1 | 0.1 | 4:30 | 0.3 | 29.10 | 4:32 | 0.37 | 29.44 |
| 6-5 | 0.1 | 0.1 | 4:30 | 0.3 | 29.40 | 4:32 | 0.37 | 29.81 |
| 6-6 | 0.1 | 0.1 | 4:30 | 0.3 | 29.70 | 4:32 | 0.37 | 30.18 |
| 6-7 | 0.1 | 0.1 | 4:30 | 0.3 | 30.00 | 4:32 | 0.37 | 30.55 |
| 6-8 | 0.1 | 0.1 | 4:30 | 0.3 | 30.30 | 4:32 | 0.37 | 30.92 |
| 6-9 | 0.1 | 0.1 | 4:30 | 0.3 | 30.60 | 4:32 | 0.37 | 31.29 |
| 6-10 | 0.1 | 0.1 | 4:30 | 0.3 | 30.90 | 4:32 | 0.37 | 31.66 |
| 6-11 | 0.1 | 0.1 | 4:30 | 0.3 | 31.20 | 4:32 | 0.37 | 32.03 |
| 6-12 | 0.1 | 0.1 | 4:30 | 0.3 | 31.50 | 4:32 | 0.37 | 32.40 |
| 6-13 | 0.1 | 0.1 | 4:30 | 0.3 | 31.80 | 4:32 | 0.37 | 32.77 |
| 6-14 | 0.1 | 0.1 | 4:30 | 0.3 | 32.10 | 4:32 | 0.37 | 33.14 |
| 6-15 | 0.1 | 0.1 | 4:30 | 0.3 | 32.40 | 4:32 | 0.37 | 33.51 |
| 6-16 | 0.1 | 0.1 | 4:30 | 0.3 | 32.70 | 4:32 | 0.37 | 33.88 |
| 6-17 | 0.1 | 0.1 | 4:30 | 0.3 | 33.00 | 4:32 | 0.37 | 34.25 |
| 6-18 | 0.1 | 0.1 | 4:30 | 0.3 | 33.30 | 4:32 | 0.37 | 34.62 |
| 6-19 | 0.1 | 0.1 | 4:30 | 0.3 | 33.60 | 4:32 | 0.37 | 34.99 |
| 6-20 | 0.1 | 0.1 | 4:30 | 0.3 | 33.90 | 4:32 | 0.37 | 35.36 |
| 6-21 | 0.1 | 0.1 | 4:30 | 0.3 | 34.20 | 4:32 | 0.37 | 35.73 |
| 6-22 | 0.1 | 0.1 | 4:30 | 0.3 | 34.50 | 4:32 | 0.37 | 36.10 |
| 6-23 | 0.1 | 0.1 | 4:30 | 0.3 | 34.80 | 4:32 | 0.37 | 36.47 |
| 6-24 | 0.1 | 0.1 | 4:30 | 0.3 | 35.10 | 4:32 | 0.37 | 36.84 |
| 6-25 | 0.1 | 0.1 | 4:30 | 0.3 | 35.40 | 4:32 | 0.37 | 37.21 |
| 6-26 | 0.1 | 0.1 | 4:30 | 0.3 | 35.70 | 4:32 | 0.37 | 37.58 |
| 6-27 | 0.1 | 0.1 | 4:30 | 0.3 | 36.00 | 4:32 | 0.37 | 37.95 |
| 6-28 | 0.1 | 0.1 | 4:30 | 0.3 | 36.30 | 4:32 | 0.37 | 38.32 |
| 6-29 | 0.1 | 0.1 | 4:30 | 0.3 | 36.60 | 4:32 | 0.37 | 38.69 |
| 6-30 | 0.1 | 0.1 | 4:30 | 0.3 | 36.90 | 4:32 | 0.37 | 39.06 |
| 7-1 | 0.1 | 0.1 | 4:30 | 0.3 | 37.20 | 4:32 | 0.37 | 39.43 |
| 7-2 | 0.1 | 0.1 | 4:30 | 0.3 | 37.50 | 4:32 | 0.37 | 39.80 |
| 7-3 | 0.1 | 0.1 | 4:30 | 0.3 | 37.80 | 4:32 | 0.37 | 40.17 |
| 7-4 | 0.1 | 0.1 | 4:30 | 0.3 | 38.10 | 4:32 | 0.37 | 40.54 |
| 7-5 | 0.1 | 0.1 | 4:30 | 0.3 | 38.40 | 4:32 | 0.37 | 40.91 |
| 7-6 | 0.1 | 0.1 | 4:30 | 0.3 | 38.70 | 4:32 | 0.37 | 41.28 |
| 7-7 | 0.1 | 0.1 | 4:30 | 0.3 | 39.00 | 4:32 | 0.37 | 41.65 |
| 7-8 | 0.1 | 0.1 | 4:30 | 0.3 | 39.30 | 4:32 | 0.37 | 42.02 |
| 7-9 | 0.1 | 0.1 | 4:30 | 0.3 | 39.60 | 4:32 | 0.37 | 42.39 |
| 7-10 | 0.1 | 0.1 | 4:30 | 0.3 | 39.90 | 4:32 | 0.37 | 42.76 |
| 7-11 | 0.1 | 0.1 | 4:30 | 0.3 | 40.20 | 4:32 | 0.37 | 43.13 |
| 7-12 | 0.1 | 0.1 | 4:30 | 0.3 | 40.50 | 4:32 | 0.37 | 43.50 |
| 7-13 | 0.1 | 0.1 | 4:30 | 0.3 | 40.80 | 4:32 | 0.37 | 43.87 |
| 7-14 | 0.1 | 0.1 | 4:30 | 0.3 | 41.10 | 4:32 | 0.37 | 44.24 |
| 7-15 | 0.1 | 0.1 | 4:30 | 0.3 | 41.40 | 4:32 | 0.37 | 44.61 |
| 7-16 | 0.1 | 0.1 | 4:30 | 0.3 | 41.70 | 4:32 | 0.37 | 44.98 |
| 7-17 | 0.1 | 0.1 | 4:30 | 0.3 | 42.00 | 4:32 | 0.37 | 45.35 |
| 7-18 | 0.1 | 0.1 | 4:30 | 0.3 | 42.30 | 4:32 | 0.37 | 45.72 |
| 7-19 | 0.1 | 0.1 | 4:30 | 0.3 | 42.60 | 4:32 | 0.37 | 46.09 |
| 7-20 | 0.1 | 0.1 | 4:30 | 0.3 | 42.90 | 4:32 | 0.37 | 46.46 |
| 7-21 | 0.1 | 0.1 | 4:30 | 0.3 | 43.20 | 4:32 | 0.37 | 46.83 |
| 7-22 | 0.1 | 0.1 | 4:30 | 0.3 | 43.50 | 4:32 | 0.37 | 47.20 |
| 7-23 | 0.1 | 0.1 | 4:30 | 0.3 | 43.80 | 4:32 | 0.37 | 47.57 |
| 7-24 | 0.1 | 0.1 | 4:30 | 0.3 | 44.10 | 4:32 | 0.37 | 47.94 |
| 7-25 | 0.1 | 0.1 | 4:30 | 0.3 | 44.40 | 4:32 | 0.37 | 48.31 |
| 7-26 | 0.1 | 0.1 | 4:30 | 0.3 | 44.70 | 4:32 | 0.37 | 48.68 |
| 7-27 | 0.1 | 0.1 | 4:30 | 0.3 | 45.00 | 4:32 | 0.37 | 49.05 |
| 7-28 | 0.1 | 0.1 | 4:30 | 0.3 | 45.30 | 4:32 | 0.37 | 49.42 |
| 7-29 | 0.1 | 0.1 | 4:30 | 0.3 | 45.60 | 4:32 | 0.37 | 49.79 |
| 7-30 | 0.1 | 0.1 | 4:30 | 0.3 | 45.90 | 4:32 | 0.37 | 50.16 |
| 7-31 | 0.1 | 0.1 | 4:30 | 0.3 | 46.20 | 4:32 | 0.37 | 50.53 |
| 8-1 | 0.1 | 0.1 | 4:30 | 0.3 | 46.50 | 4:32 | 0.37 | 50.90 |
| 8-2 | 0.1 | 0.1 | 4:30 | 0.3 | 46.80 | 4:32 | 0.37 | 51.27 |
| 8-3 | 0.1 | 0.1 | 4:30 | 0.3 | 47.10 | 4:32 | 0.37 | 51.64 |
| 8-4 | 0.1 | 0.1 | 4:30 | 0.3 | 47.40 | 4:32 | 0.37 | 52.01 |
| 8-5 | 0.1 | 0.1 | 4:30 | 0.3 | 47.70 | 4:32 | 0.37 | 52.38 |
| 8-6 | 0.1 | 0.1 | 4:30 | 0.3 | 48.00 | 4:32 | 0.37 | 52.75 |
| 8-7 | 0.1 | 0.1 | 4:30 | 0.3 | 48.30 | 4:32 | 0.37 | 53.12 |
| 8-8 | 0.1 | 0.1 | 4:30 | 0.3 | 48.60 | 4:32 | | |

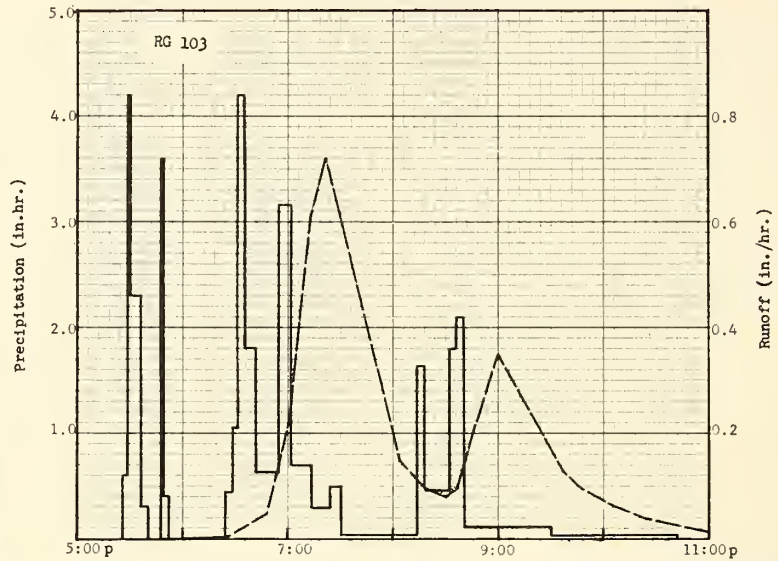
| SELECTED RUNOFF EVENTS | | | | | | Coshocton, Ohio Watershed 177 | | |
|---|-------------------|-------------------|---------------|-------------------|---------------|-------------------------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of June 28, 1957 | | | | | | | | |
| 5-28-57 | 0 | T | 6-28-57 | Raingage | 103 | 6-28-57 | | |
| 5-29-31 | 0 | 0 | 12:56p | 0 | 0 | 1:00p | .000765 | 0 |
| 6-1 | .18 | 0 | 1:00 | 3.45 | .23 | 3:00 | .0177 | .018 |
| 6-2-7 | 0 | 0 | :32 | .08 | .27 | :40 | .0345 | .033 |
| 6-8 | .98 | T | :36 | 1.35 | .36 | 4:00 | .0277 | .044 |
| 6-9 | 0 | T | :53 | .04 | .37 | 5:12 | .0707 | .072 |
| 6-10 | 0 | 0 | 2:01 | .75 | .47 | 6:00 | .185 | .146 |
| 6-11 | .30 | 0 | :28 | .02 | .48 | :48 | .460 | .395 |
| 6-12 | 3.36 | 1.51 | :46 | .23 | .55 | 7:00 | 1.18 | .558 |
| 6-13 | .45 | .12 | :50 | 1.95 | .68 | :24 | .533 | .907 |
| 6-14 | .04 | .05 | 4:18 | .07 | .78 | :36 | .354 | .994 |
| 6-15 | 0 | .03 | :24 | 1.20 | .90 | 8:00 | .190 | 1.097 |
| 6-16 | .12 | .02 | 5:08 | .23 | 1.07 | :30 | .0925 | 1.166 |
| 6-17 | 0 | .01 | 6:04 | .55 | 1.58 | 9:00 | .0453 | 1.199 |
| 6-18 | 0 | .01 | :09 | 1.44 | 1.70 | 12:00m | .0105 | 1.255 |
| 6-19 | .02 | T | :32 | .65 | 1.95 | | | |
| 6-20-22 | 0 | T | :40 | 1.95 | 2.21 | | | |
| 6-23 | .10 | T | :45 | 1.56 | 2.34 | | | |
| 6-24 | 2.22 | .25 | :49 | 1.80 | 2.46 | | | |
| 6-25 | .03 | .03 | 7:00 | .65 | 2.58 | | | |
| 6-26-27 | 0 | .04 | :16 | .30 | 2.66 | | | |
| 6-28 | .20 ^{1/} | .01 ^{2/} | :48 | .17 | 2.75 | | | |
| | | | 8:40 | .03 | 2.78 | | | |
| | | | 6-28-57 | Raingage | 100 | | | |
| | | | 1:02p | 0 | 0 | | | |
| | | | 8:10 | | 2.86 | | | |
| | | | 6-28-577 | Raingage | 102 | | | |
| | | | 1:05p | 0 | 0 | | | |
| | | | 8:10 | | 2.76 | | | |
| | | | 6-28-57 | Raingage | 107 | | | |
| | | | 1:00p | 0 | 0 | | | |
| | | | 8:00 | | 2.60 | | | |
| <p>Watershed conditions: Mixed cover under conservation practice. 7.9% of the area was in corn. 20.0% of the area was in corn-meadow strips. Corn was 38" high, weeds 24" high. 15.9% of the area was in wheat-meadow strips. Wheat was 36" high and legumes and grass in wheat strips 4" high. In meadow strips, legumes, grasses and weeds were 8" high. 7.9% of the area was in permanent meadow. Legumes, grasses, and weeds were 6" high. 25.9% of the area was in pasture. Legumes and grasses were 5" high, weeds 6" high. 16.4% of the area was in woods and 6.0% in miscellaneous cover (farmsteads, roads, etc.).</p> | | | | | | | | |
| <p>Notes: ^{1/} Rain ended about 7:30a. ^{2/} Runoff prior to 1:00p.</p> | | | | | | | | |

SELECTED RUNOFF EVENTS

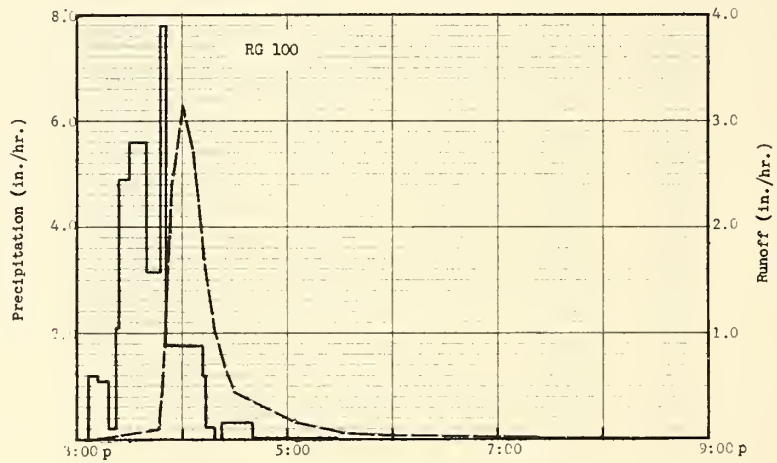
Coshocton, Ohio Watershed 177

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|--|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of January 21, 1959 | | | | | | | | |
| 12-11-58 | 0 | 0 | 1-21-59 | Rain gage | 103 | 1-21-59 | | |
| 12-22 | 0 | 0 | 12:01a | 0 | 0 | 12:01a | 0 | 0 |
| 12-23 | T | C | :52 | .06 | .05 | 2:20 | .0424 | .082 |
| 12-24 | T 1/2 | 0 | 1:04 | 0 | .05 | :38 | .0963 | .102 |
| 12-25-31 | 0 | 0 | :24 | .09 | .08 | 3:08 | .151 | .168 |
| 1-1-59 | .62 | .04 | 2:32 | .23 | .34 | :54 | .121 | .273 |
| 1-2 | 0 | .2 | 3:08 | .10 | .40 | 4:46 | .236 | .402 |
| 1-3 | 0 | .01 | :58 | .07 | .46 | :58 | .441 | .474 |
| 1-4 | .62 1/2 | .1 | 4:29 | .22 | .57 | 5:40 | .241 | .724 |
| 1-5 | 0 | T | :44 | 1.28 | .91 | 6:40 | .0850 | .874 |
| 1-6-59 | 0 | 0 | 5:08 | .40 | 1.07 | 7:40 | .0316 | .923 |
| 1-7-10 | T 1/2 | 0 | :48 | 1.20 | 1.20 | 10:40 | .0963 | 1.056 |
| 1-1-13 | 0 | 0 | 1:52 | .05 | 1.30 | 11:00 | .174 | 1.105 |
| 1-14 | .25 2/3 | 0 | :31 | 0 | 1.30 | :16 | .236 | 1.164 |
| 1-15 | .73 2/3 | e .44 | :28 | .26 | 1.55 | :54 | .138 | 1.280 |
| 1-16-19 | .30 1/2 | e .5 | 10:00 | .21 | 1.66 | 12:30p | .0813 | 1.346 |
| 1-2 | .54 | e .44 | :26 | .16 | 1.73 | 1:40 | .0316 | 1.408 |
| | | | :44 | .57 | 1.90 | 5:15 | .0887 | 1.53 |
| | | | 11:00 | .41 | 2.11 | :26 | .199 | 1.570 |
| | | | :28 | .24 | 2.11 | 6:10 | .112 | 1.684 |
| | | | :40 | .36 | 2.24 | 7:20 | .0606 | 1.780 |
| | | | 1:32p | | 2.24 | e 12:00m | .0316 | 1.943 |
| | | | 4:4 | .3 | 2.43 | | | |
| | | | 5:1 | .2 | 2.57 | | | |
| | | | :14 | .77 | 2.66 | | | |
| | | | :54 | .15 | 2.78 | | | |
| | | | 1:0 | .33 | 2.81 | | | |
| <p>Watershed conditions: Misc. cover under conservation practice. 12.3% of the area was in corn-meadow strips. 23.6% in wheat-meadow strips, 7.9% in meadow following wheat and 7.9% in permanent meadow. 25.9% was in pasture, 16.4% in woods and 5. % in miscellaneous cover (farmsteads, roads, etc.). All vegetation dormant. Frost penetration 1' on wheat and meadow areas. Snow cover 5' on January 2 .</p> | | | | | | | | |
| | | | 1-21-59 | ga. gage | 100 | | | |
| | | | 12:20a | | | | | |
| | | | :27 | | 2.64 | | | |
| | | | 1-21-59 | ga. gage | 112 | | | |
| | | | 12:01a | | | | | |
| | | | :31 | | 2.6 | | | |
| | | | 1-21-59 | ga. gage | 107 | | | |
| | | | 12:01a | | | | | |
| | | | 7:23p | | 2.4 | | | |

Notes:
 1/2 Snow
 2/3 Rain and snow

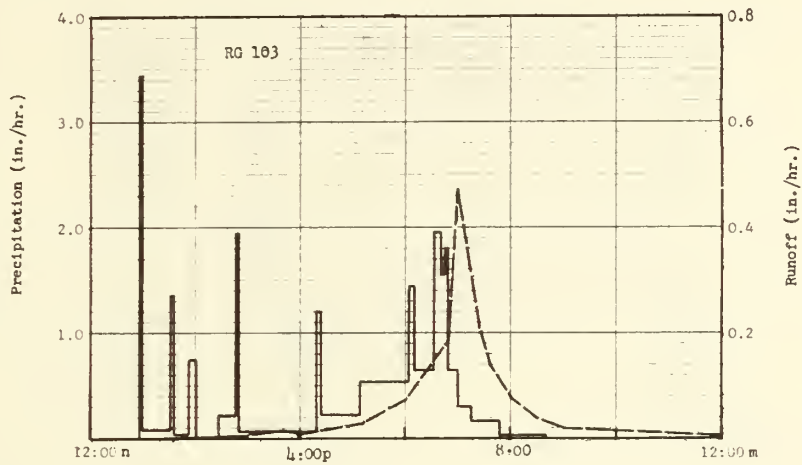


September 23, 1945

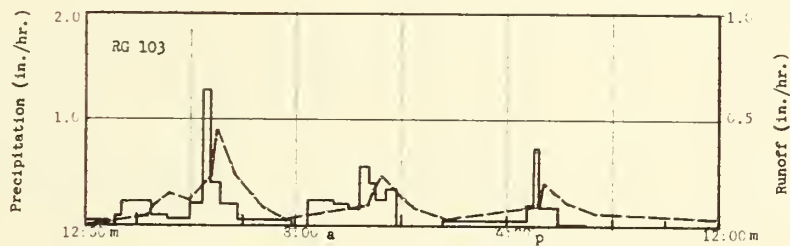


June 12, 1957

COSHOCTON, OHIO WATERSHED 177

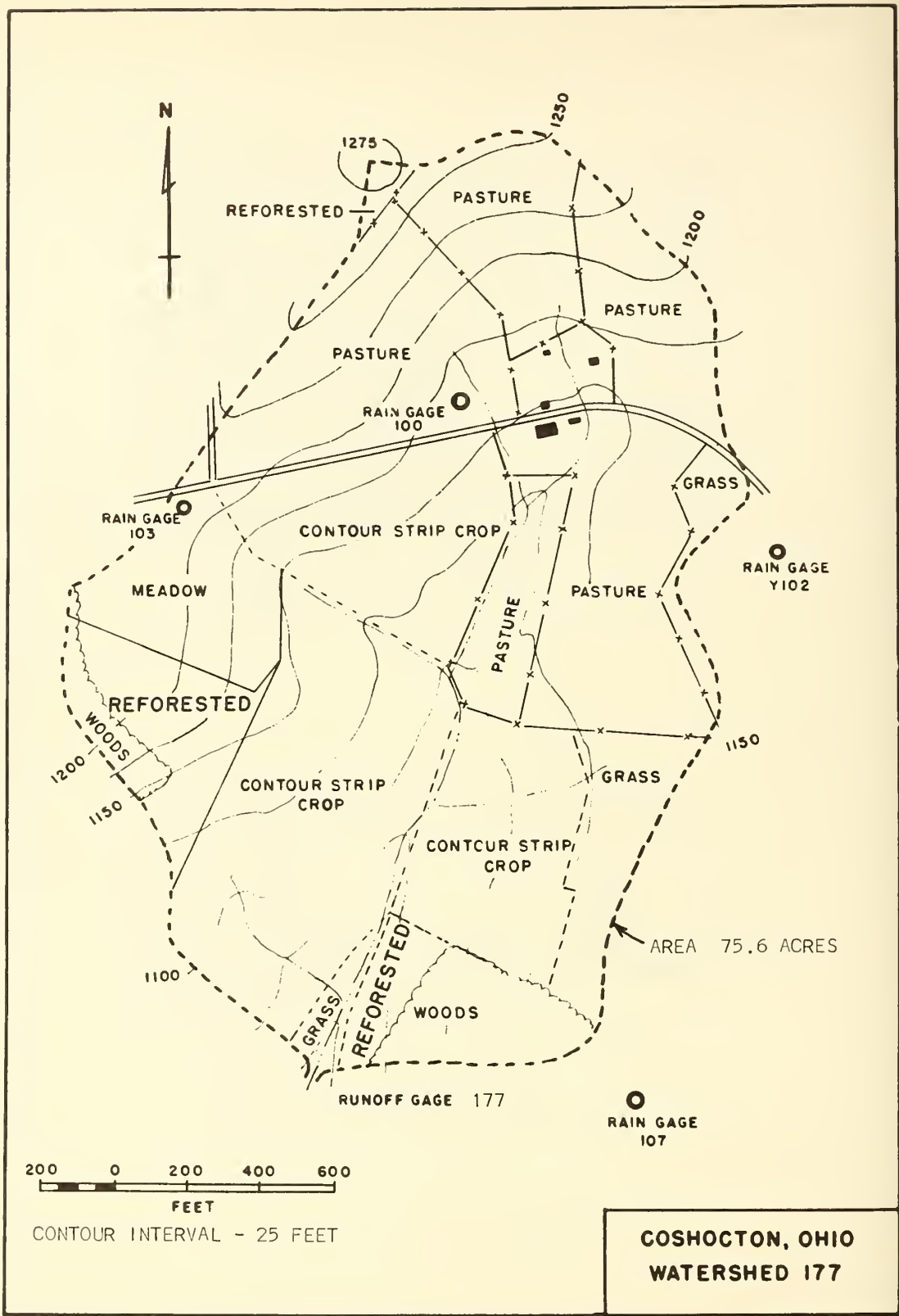


June 28, 1957



January 21, 1959

COSHOCTON, OHIO WATERSHED 177



| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Coshocton, Ohio Watershed 183 (Area = 74.2 acres) | | | | | | | |
|---|-------|------|------|------|------|------|--|------|------|-------|------|------|------|-------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 | P | 1.88 | 6.31 | 1.04 | 1.34 | 7.69 | 3.91 | 6.27 | 4.72 | 1.68 | 1.31 | 1.33 | 3.19 | 16.67 |
| | C | .32 | 3.44 | 1.93 | 1.34 | 2.35 | 1.12 | 1.23 | .38 | .11 | .01 | .01 | .57 | 12.81 |
| 1957 | P | 1.68 | 1.45 | 1.87 | 5.25 | 4.21 | 9.89 | 4.06 | 2.63 | 4.33 | 1.70 | 2.91 | 4.29 | 44.27 |
| | C | 1.37 | .66 | .85 | 3.50 | .57 | 3.33 | .60 | .09 | .12 | T | .26 | 2.36 | 13.71 |
| 1958 | P | 1.59 | .76 | 1.08 | 3.86 | 3.50 | 4.59 | 7.42 | 2.85 | 3.19 | .31 | 2.12 | .72 | 31.99 |
| | C | .70 | .35 | .60 | 1.05 | 1.69 | .13 | 1.06 | .61 | .16 | T | .01 | .01 | 6.36 |
| 1959 | P | 5.75 | 3.10 | 2.53 | 4.10 | 2.93 | 3.94 | 4.86 | 2.42 | 3.00 | 5.25 | 2.87 | 2.27 | 43.02 |
| | C | 3.15 | 2.29 | 1.29 | 1.17 | .73 | .38 | .27 | .38 | .01 | .27 | .75 | 1.60 | 12.29 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS Coshocton, Ohio Watershed 183

| YEAR | MAXIMUM DISCHARGE | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | | |
|------|-------------------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|-------|
| | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | | |
| | | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | |
| 1957 | 6-12 | 2.50 | 6-12 | 1.04 | 6-12 | 1.11 | 6-12 | 1.18 | 6-28 | 1.28 | 6-28 | 1.39 | 6-28 | 1.50 | 4-3 | 2.54 |
| 1958 | 7-22 | .15 | 7-22 | .08 | 5-4 | .44 | 5-4 | .29 | 5-4 | .44 | 5-4 | .54 | 5-4 | .69 | 5-3 | 1.33 |
| 1959 | 1-21 | e.45 | | nr | | nr | | nr | | nr | | nr | 1-21 | e2.19 | 1-21 | e2.68 |

Notes: Quality of records: monthly P, good; C, excellent; annual maximum discharges and volumes, excellent. Mixed cover 1956 to 1959; 14% woodlot, 57% grassland, 29% cultivated; prevailing practice except for 9% area strip cropped.

SELECTED RUNOFF EVENTS Coshocton, Ohio Watershed 183

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|-----------------------------|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of September 23, 1945 | | | | | | | | |
| 8-23-45 | 0.01 | 0 | 9-23-45 | Raingage | 119 | 9-23-45 | | |
| 8-24 | .06 | 0 | 5:28p | 0 | 0 | 5:33p | 0.000855 | 0 |
| 8-25-31 | 0 | 0 | :31 | .20 | .01 | :53 | .00521 | T |
| 9-1 | .11 | 0 | :34 | 4.60 | .24 | :57 | .0461 | .002 |
| 9-2-6 | 0 | 0 | :47 | .23 | .29 | 6:12 | .119 | .027 |
| 9-7 | 0 | T | :50 | 3.00 | .44 | :30 | .0552 | .050 |
| 9-8 | .92 | 0 | :52 | .60 | .46 | :38 | .0488 | .057 |
| 9-9 | .80 | .01 | 6:14 | 0 | .46 | :48 | .0793 | .068 |
| 9-10 | .77 | .01 | :18 | .30 | .48 | :56 | .136 | .082 |
| 9-11 | .01 | T | :26 | .08 | .49 | 7:06 | .401 | .121 |
| 9-12 | 0 | 0 | :32 | .90 | .58 | :12 | .929 | .185 |
| 9-13 | .32 | 0 | :36 | .30 | .60 | :20 | 1.41 | .352 |
| 9-14 | 1.31 | .08 | :40 | 1.35 | .69 | :30 | .892 | .546 |
| 9-15-16 | 0 | .01 | :42 | .60 | .71 | :36 | .652 | .621 |
| 9-17 | .61 | .01 | :56 | .77 | .89 | :48 | .381 | .726 |
| 9-18 | 1.12 | .11 | 7:00 | 1.80 | 1.01 | 8:00 | .219 | .744 |
| 9-19 | 0 | .01 | :04 | 3.75 | 1.26 | :24 | .102 | .844 |
| 9-20 | .39 | .06 | :08 | 2.85 | 1.45 | :30 | .132 | .853 |
| 9-21-22 | 0 | .02 | :10 | 1.20 | 1.49 | :36 | .275 | .873 |
| 9-23 | .351/ | .012/ | :12 | 5.40 | 1.67 | :48 | .710 | .976 |
| | | | :16 | 2.10 | 1.81 | 9:00 | .441 | 1.093 |
| | | | :30 | .56 | 1.94 | :12 | .251 | 1.162 |
| | | | :32 | 3.30 | 2.05 | :48 | .0904 | 1.248 |
| | | | :36 | .45 | 2.08 | 10:12 | .0618 | 1.279 |
| | | | 8:14 | .03 | 2.10 | 11:07 | .0349 | 1.322 |
| | | | :24 | .60 | 2.20 | 12:00m | .0227 | 1.346 |
| | | | :28 | 2.55 | 2.37 | | | |
| | | | :41 | 1.62 | 2.72 | | | |
| | | | 10:00 | .12 | 2.87 | | | |
| | | | :30 | .06 | 2.90 | | | |
| | | | 12:00m | .01 | 2.91 | | | |

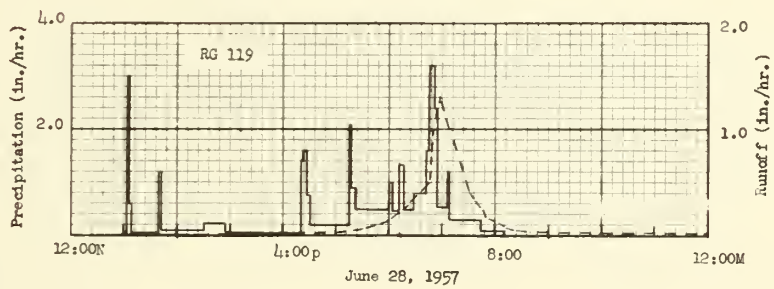
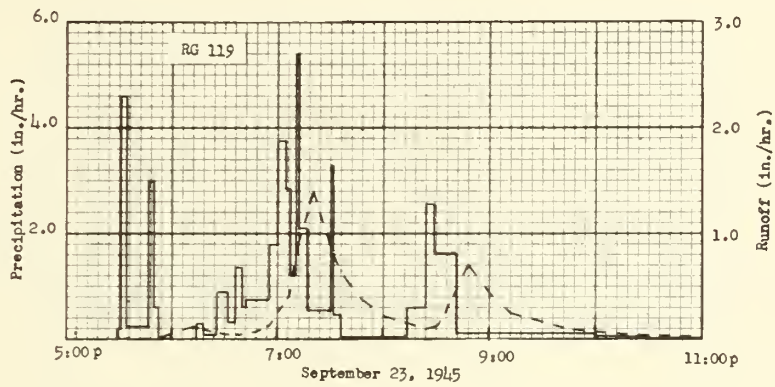
Notes: To convert runoff in in/hr to cfs, multiply by 74.817.
 1/ Most of rainfall occurred after 5:28p.
 2/ Runoff prior to 5:33p.

| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 183 | | | | | |
|--|--------------------|--------------------|-------------------------------|-------------------|---------------|-----------------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of September 23, 1915 - Continued</u> | | | | | | | | |
| <p>Watershed conditions: Mixed cover under prevailing practice. 12.5% of the area was in corn with straight row cultivation and 8.6% in corn-meadow strips. Corn was 108" high, weeds 18" and grass 36" high. In meadow strips, legumes and grass were 6" high and weeds 12" high. 6.5% of the area was in oats going to wheat and 6.9% in oats going to meadow. 29.1% was in meadow. Grass and weeds 4" high. 22.7% of the area was in pasture. Grass 3" high, weeds 5" high. 9.2% was in pasture woodland and 3.2% in protected woodland. 1% of the area was in miscellaneous cover (farmsteads, roads, etc.).</p> | | | 9-23-15 | Raingage | 108 | | | |
| | | | 5:27p 10:50 | 0 | 0 | 2.88 | | |
| | | | 9-23-15 | Raingage nr | 109 | | | |
| <u>Event of June 28, 1957</u> | | | | | | | | |
| 5-28-31-57 | 0 | 0.02 | 6-2 nd -57 | Raingage | 119 | 6-2 nd -57 | | |
| 6-1 | .06 | T | 1:03p | 0 | 0 | 12:00n | 0.00103 | 0 |
| 6-2-6 | 0 | .01 | :05 | 3.00 | .10 | 3:00p | .00521 | .010 |
| 6-7 | 0 | 0 | :08 | .60 | .13 | 4:32 | .0168 | .024 |
| 6-8 | .96 | T | :39 | .04 | .15 | 5:00 | .0300 | .038 |
| 6-9-10 | 0 | T | :43 | 1.20 | .23 | :30 | .0720 | .061 |
| 6-11 | .40 | .01 | 2:29 | .07 | .28 | 6:00 | .110 | .112 |
| 6-12 | 2.86 | 1.20 | :54 | .22 | .37 | :20 | .287 | .179 |
| 6-13 | .26 | .08 | 4:20 | .06 | .46 | :46 | .499 | .343 |
| 6-14 | .02 | .03 | :23 | 1.40 | .53 | :18 | .735 | .362 |
| 6-15 | 0 | .04 | :26 | 1.60 | .62 | :50 | 1.00 | .392 |
| 6-16 | .46 | .02 | :30 | .75 | .67 | :58 | 1.30 | .519 |
| 6-17-18 | 0 | .02 | 5:14 | .20 | .82 | 7:08 | 1.00 | .728 |
| 6-19 | .02 | T | :16 | 2.10 | .89 | :30 | .428 | .988 |
| 6-20-22 | 0 | .01 | :22 | .90 | .98 | :36 | .361 | 1.028 |
| 6-23 | .07 | T | 6:00 | .49 | 1.29 | :46 | .241 | 1.077 |
| 6-24 | 1.87 | .29 | :03 | 1.00 | 1.34 | :50 | .188 | 1.091 |
| 6-25-27 | 0 | .06 | :11 | .45 | 1.40 | 8:00 | .440 | 1.118 |
| 6-28 | .18 ^{1/2} | .01 ^{2/3} | :16 | 1.32 | 1.51 | :10 | .0981 | 1.138 |
| | | | :27 | .49 | 1.60 | :20 | .0686 | 1.152 |
| <p>Watershed conditions: Mixed cover under prevailing practice. 4% of the area was in corn with straight row cultivation. Corn plants were 26" high, weeds 20" high. 7% of the area was in wheat. Wheat plants were 36" high, grass and weeds 4" high. 51% of the area was in meadow. Grasses, legumes and weeds were 6" high. 23% of the area was in pasture, 14% of the area was in woods and 1% in miscellaneous cover (farmsteads, roads, etc.).</p> | | | :42 | .80 | 1.80 | :40 | .0434 | 1.171 |
| | | | :45 | 1.60 | 1.88 | 10:40 | .0202 | 1.225 |
| | | | :51 | 3.20 | 2.20 | 12:00m | .0168 | 1.249 |
| | | | :55 | 2.40 | 2.36 | | | |
| | | | 7:05 | .54 | 2.15 | | | |
| | | | :08 | 1.20 | 2.51 | | | |
| | | | :45 | .28 | 2.68 | | | |
| | | | 8:10 | .07 | 2.71 | | | |
| | | | 6-28-57 | Raingage | 108 | | | |
| | | | 1:03p | 0 | 0 | | | |
| 8:10p | | 2.90 | | | | | | |
| 6-28-57 | Raingage | 109 | | | | | | |
| 1:05p | 0 | 0 | | | | | | |
| 8:10p | | 2.80 | | | | | | |

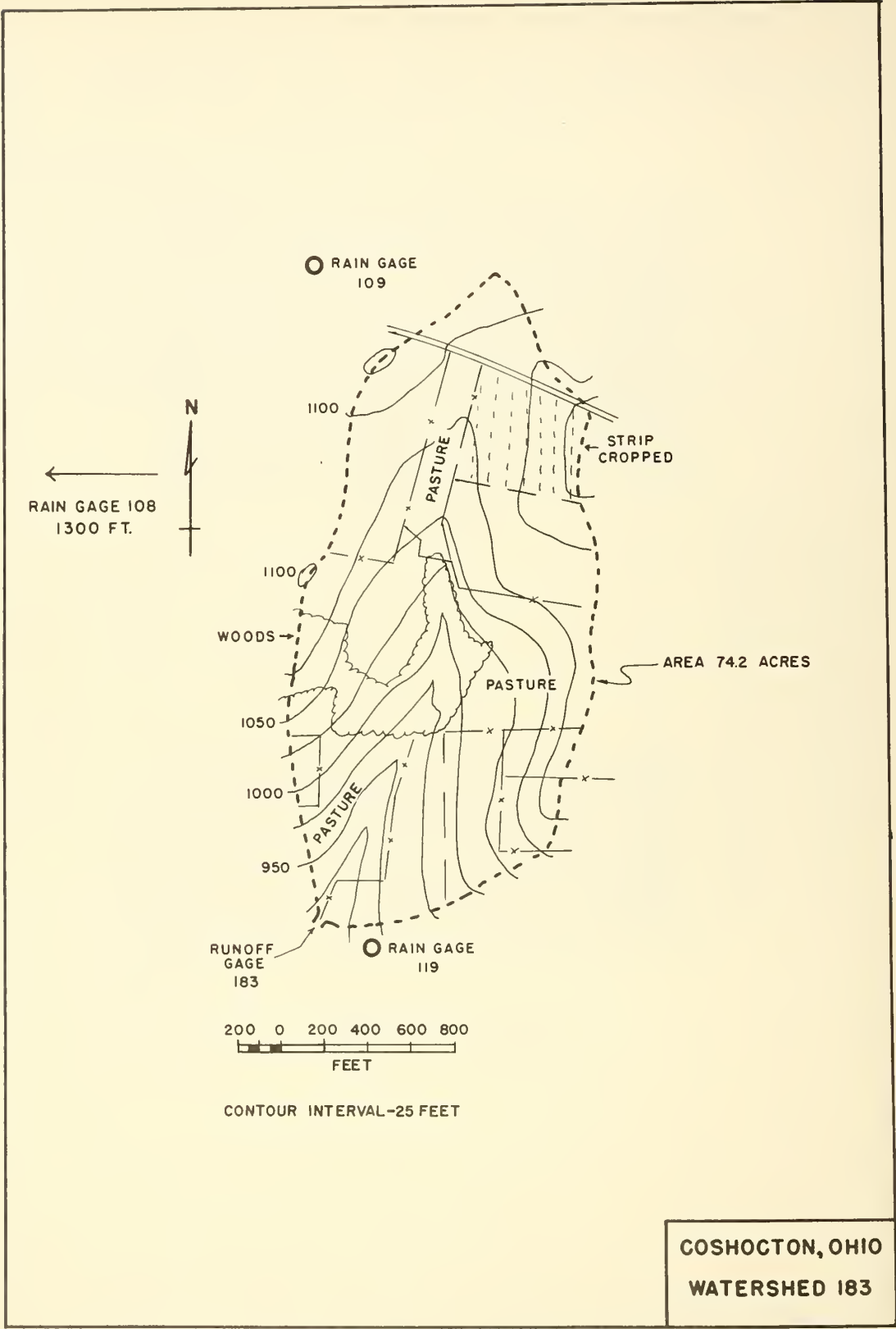
Notes:

- 1/ Rain ended about 7:30a.
- 2/ Runoff prior to 12:00n.

Events of June 12, 1957 and Jan. 21, 1959 could not be presented because of faulty records.



GOSHOCKTON, OHIO WATERSHED 183



| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Coshocton, Ohio Watershed 196 (Area - 303 acres) | | | | | | | |
|---|-------|------|------|------|------|------|---|------|------|-------|------|------|------|-------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 | P | 1.71 | 5.69 | 3.89 | 4.03 | 7.42 | 4.45 | 6.15 | 4.40 | 1.60 | 1.18 | 1.53 | 3.42 | 45.77 |
| | Q | .37 | 4.16 | 3.67 | 2.75 | 3.78 | 1.73 | 1.90 | .63 | .22 | .12 | .13 | .97 | 20.43 |
| 1957 | P | 1.68 | 1.42 | 1.84 | 5.04 | 4.44 | 10.25 | 3.86 | 2.24 | 4.15 | 1.55 | 2.80 | 4.13 | 43.40 |
| | Q | 1.90 | 1.12 | 1.49 | 4.49 | 1.19 | 4.50 | .86 | .26 | .31 | .14 | .51 | 3.20 | 19.97 |
| 1958 | P | 1.47 | .64 | .99 | 3.38 | 3.15 | 4.23 | 8.02 | 2.72 | 2.99 | .32 | 2.18 | .71 | 30.80 |
| | Q | 1.07 | .61 | 1.09 | 1.68 | 2.26 | .32 | 1.72 | .78 | .25 | .12 | .19 | .17 | 10.21 |
| 1959 | P | 5.68 | 3.02 | 2.47 | 4.04 | 2.79 | 4.17 | 1.49 | 2.36 | 2.97 | 5.34 | 2.84 | 1.88 | 42.05 |
| | Q | 4.16 | 2.89 | 1.91 | 1.61 | .99 | .40 | .26 | .41 | .09 | .42 | .98 | 2.05 | 16.37 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS Coshocton, Ohio Watershed 196

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 6-12 | 3.72 | 6-12 | 1.31 | 6-12 | 1.44 | 6-28 | 1.55 | 6-28 | 1.67 | 6-28 | 1.80 | 6-28 | 1.94 | 6-28 | 2.22 |
| 1958 | 7-22 | .32 | 7-22 | .19 | 7-22 | .23 | 7-22 | .30 | 7-22 | .34 | 7-31 | .40 | 7-31 | .48 | 7-30 | .87 |
| 1959 | 1-21 | .50 | 1-21 | .43 | 1-21 | .67 | 1-21 | 1.22 | 1-21 | 2.06 | 1-21 | 2.92 | 1-20 | 3.21 | 1-20 | 3.55 |

Notes: Quality of records: monthly P and Q, good; annual maximum discharges and volumes, good. Mixed cover 1956 to 1959; 27% woodlot, 50% grassland, 19% cultivated, 4% miscellaneous; prevailing practice.

SELECTED RUNOFF EVENTS Coshocton, Ohio Watershed 196

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|------------------------------------|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of September 23, 1945</u> | | | | | | | | |
| 9-23-45 | T | T | 9-23-45 | Raingage | 108 | 9-23-45 | | |
| 9-24 | .06 | T | 5:27 p | 0 | 0 | 5:30p | 0.0007 | 0 |
| 9-25-31 | 0 | .01 | :31 | 3.30 | .22 | 6:00 | .0279 | .002 |
| 9-1 | .18 | T | :36 | 2.16 | .40 | :10 | .0822 | .013 |
| 9-2-7 | 0 | .01 | :47 | .16 | .43 | :30 | .0583 | .037 |
| 9-8 | .84 | T | :49 | 3.90 | .56 | :48 | .0700 | .054 |
| 9-9 | .92 | .02 | :54 | .60 | .61 | :54 | .127 | .063 |
| 9-10 | .79 | .01 | 6:16 | 0 | .61 | 7:00 | .250 | .081 |
| 9-11 | .03 | .01 | :25 | .07 | .62 | :12 | .664 | .168 |
| 9-12 | 0 | T | :30 | 1.32 | .73 | :19 | 1.06 | .267 |
| 9-13 | .29 | T | :34 | .90 | .79 | :30 | .704 | .426 |
| 9-14 | 1.29 | .08 | :40 | 1.80 | .97 | :36 | .553 | .489 |
| 9-15-16 | 0 | T | :52 | .80 | 1.13 | :48 | .340 | .580 |
| 9-17 | .53 | .01 | 7:00 | 1.88 | 1.38 | 8:00 | .183 | .633 |
| 9-18 | 1.04 | .13 | :02 | 5.40 | 1.56 | :10 | .133 | .659 |
| 9-19 | 0 | .01 | :06 | 3.00 | 1.76 | :24 | .0959 | .685 |
| 9-20 | .57 | .05 | :12 | 2.10 | 1.97 | :36 | .139 | .708 |
| 9-21-22 | 0 | .02 | :30 | .42 | 2.11 | :48 | .432 | .761 |
| 9-23 | .29 1/2 | .01 2/3 | :40 | .15 | 2.13 | :56 | .513 | .829 |
| | | | 8:10 | .04 | 2.15 | 9:12 | .285 | .944 |
| | | | :20 | .60 | 2.25 | :24 | .183 | .991 |
| | | | :28 | 1.28 | 2.42 | :30 | .151 | 1.008 |
| | | | :40 | 1.45 | 2.71 | :40 | .113 | 1.029 |
| | | | 9:02 | .16 | 2.77 | 10:00 | .0802 | 1.060 |
| | | | 10:50 | .06 | 2.88 | :20 | .0642 | 1.084 |
| | | | | | | 11:00 | .0542 | 1.132 |

(See next page for other raingage totals and watershed conditions.)

Notes: To convert runoff in in/hr to cfs, multiply by 305.52.
 1/ Most of rainfall occurred after 3:27p.
 2/ Runoff prior to 5:30p.

| SELECTED RUNOFF EVENTS | | | | | | Coshocton, Ohio Watershed 196 | | | |
|---|-------------------|-----------------|---------------|-------------------|---------------|-------------------------------|--------------|---------------|--|
| Antecedent conditions | | | Rainfall | | | Runoff | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | |
| <u>Event of September 23, 1945 - Continued</u> | | | | | | | | | |
| <p>Watershed conditions: Mixed cover under prevailing practice. 7.2% of the area was in corn with straight row cultivation. Corn plants were 108" and weeds 48" high. 0.7% of the area was in oats which was seeded to wheat in October. Oats stubble and weeds were 3 to 4" high. 35.3% of the area was in meadow which included areas in wheat that was followed by meadow. Grass, legumes and weeds were 4" high. 24.2% of the area was in pasture. Pasture consisted mostly of timothy, poverty grass and weeds. Grass was 3" high and weeds 5" high. 26.1% of the area was in hardwood forest and 0.8% was reforested to pines. 0.7% of the area was in orchard and 1.7% in miscellaneous cover (farmsteads, roads, etc.).</p> | | | 9-23-45 | Raingage | 107 | | | | |
| | | | 5:25p | 0 | 0 | | | | |
| | | | 10:50p | 2.75 | | | | | |
| | | | 9-23-45 | Raingage | 109 | | | | |
| | | | | nr | | | | | |
| | | | 9-23-45 | Raingage | 113 | | | | |
| | | | 5:28p | 0 | 0 | | | | |
| | | | 10:32p | 2.69 | | | | | |
| | | | 9-23-45 | Raingage | 116 | | | | |
| | | | 5:31p | 0 | 0 | | | | |
| 10:41p | 2.85 | | | | | | | | |
| <u>Event of June 28, 1957</u> | | | | | | | | | |
| 5-28-31-57 | 0 | 0 | 6-28-57 | Raingage | 108 | 6-26-57 | | | |
| 6-1 | .10 | 0 | 1:03p | 0 | 0 | 12:00n | 0.0014 | 0 | |
| 6-2-7 | 0 | 0 | :07 | 3.00 | .20 | 3:00p | .0118 | .0115 | |
| 6-8 | .88 | 0 | :38 | .04 | .22 | :30 | .0152 | .0212 | |
| 6-9-10 | 0 | 0 | :42 | 1.65 | .33 | 4:15 | .0118 | .0324 | |
| 6-11 | .35 | 0 | 2:00 | .03 | .34 | :34 | .0189 | .0369 | |
| 6-12 | 3.25 | 1.03 | :12 | .20 | .38 | :46 | .0445 | .0425 | |
| 6-13 | .33 | 0 | :30 | .03 | .39 | 5:16 | .0733 | .0791 | |
| 6-14 | .02 | 0 | :48 | .20 | .45 | :30 | .0988 | .0983 | |
| 6-15 | 0 | 0 | 3:15 | .13 | .51 | 6:16 | .393 | .2660 | |
| 6-16 | .34 | 0 | :40 | .05 | .53 | :26 | .524 | .3434 | |
| 6-17-18 | 0 | 0 | 4:20 | .12 | .61 | :40 | .573 | .4715 | |
| 6-19 | .02 | 0 | :36 | .90 | .85 | :52 | 1.06 | .6191 | |
| 6-20-22 | 0 | 0 | 5:00 | .15 | .91 | :56 | 1.24 | .6962 | |
| 6-23 | .06 | 0 | :12 | .25 | .96 | 7:00 | 1.39 | .7852 | |
| 6-24 | 2.00 | .06 | :50 | .54 | 1.30 | :08 | 1.15 | .9520 | |
| 6-25-27 | 0 | 0 | 6:00 | .72 | 1.42 | :10 | .982 | .9829 | |
| 6-28 | .10 ^{1/} | 0 | :10 | .54 | 1.51 | :25 | .573 | 1.1793 | |
| | | | :17 | 1.20 | 1.65 | :42 | .327 | 1.3058 | |
| | | | :40 | .73 | 1.93 | :58 | .226 | 1.3776 | |
| <p>Watershed conditions: Mixed cover under prevailing practice. 4% of the area was in corn with straight row cultivation. Corn plants were 32" high and weeds 24" high. 12% of the area was in wheat. Wheat plants were 36" high and weeds 4" high. 23% of the area was in meadow. Grass, legumes and weeds were 4" high. 28.0% of the area was in pasture. Grass and weeds were 4" high. 1.7% of the area was reforested to pines and 26.3% of the area was in hardwood forest. 5.0% of the area was in miscellaneous cover (farmsteads, roads, etc.).</p> | | | :46 | 1.40 | 2.07 | 8:16 | .151 | 1.4327 | |
| | | | :54 | 2.78 | 2.44 | :28 | .121 | 1.4599 | |
| | | | 7:00 | .80 | 2.52 | 10:00 | .0432 | 1.5660 | |
| | | | :07 | .69 | 2.60 | :30 | .0353 | 1.5056 | |
| | | | :20 | .37 | 2.68 | 12:00m | .0237 | 1.6293 | |
| | | | 8:00 | .17 | 2.79 | | | | |
| | | | :10 | .06 | 2.80 | | | | |
| | | | 6-28-57 | Raingage | 107 | | | | |
| | | | 1:00p | 0 | 0 | | | | |
| | | | 8:00p | 2.60 | | | | | |
| 6-28-57 | Raingage | 109 | | | | | | | |
| 1:05p | 0 | 0 | | | | | | | |
| 8:10p | 2.80 | | | | | | | | |
| 6-28-57 | Raingage | 113 | | | | | | | |
| 1:18p | 0 | 0 | | | | | | | |
| 8:20p | 2.77 | | | | | | | | |
| 6-28-57 | Raingage | 116 | | | | | | | |
| 1:02p | 0 | 0 | | | | | | | |
| 8:15p | 2.89 | | | | | | | | |
| <p>Notes: 1/ Rainfall ended about 7:30a.</p> <p>Event of June 12, 1957 could not be presented because of faulty record.</p> | | | | | | | | | |

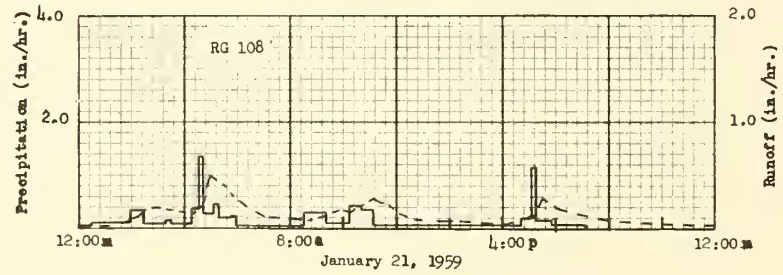
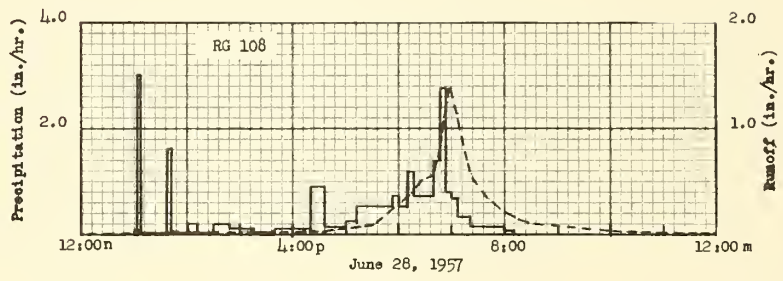
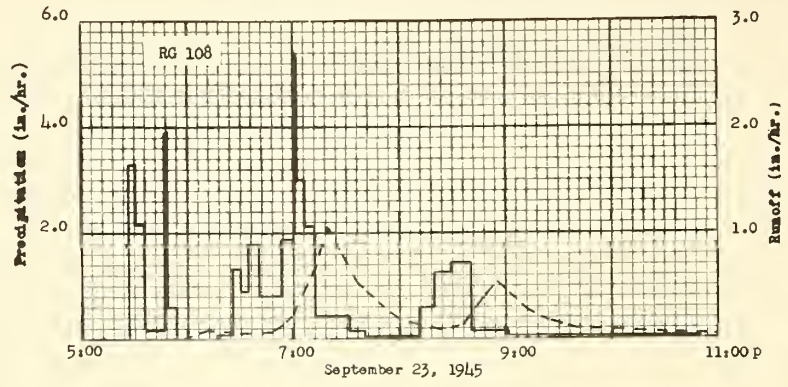
SELECTED RUNOFF EVENTS

Coshocton, Ohio Watershed 196

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|---------------------------|-------------------|-----------------|-------------------|-------------------|---------------|-------------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of January 21, 1959 | | | | | | | | |
| 12-21-58 | 0 | T | 1-21-59 | Raingage | 108 | 1-21-59 | | |
| 12-22 | 0 | T | 12:01a | 0 | 0 | 12:01a | 0.0152 | 0 |
| 12-23 | T 1/ | T | :25 | .05 | .02 | 1:10 | .0315 | .0256 |
| 12-24 | T 1/ | T | 1:58 ^R | .12 | .20 | :50 | .0700 | .0569 |
| 12-25-31 | 0 | .04 | 2:26 | .36 | .37 | 2:16 | .121 | .0957 |
| 1-1-59 | .60 | .09 | 3:18 | .06 | .42 | :30 | .164 | .1288 |
| 1-2 | 0 | .05 | :31 | .18 | .16 | :50 | .209 | .1919 |
| 1-3 | 0 | .03 | 4:16 | .07 | .51 | 3:30 | .164 | .3151 |
| 1-4 | 0 1/ | .02 | :32 | .38 | .61 | 4:00 | .151 | .3943 |
| 1-5-8 | 0 | .04 | :43 | 1.36 | .86 | :16 | .139 | .4331 |
| 1-9-10 | T 1/ | .01 | 5:03 | .27 | .95 | :42 | .217 | .5020 |
| 1-11-13 | 0 | .02 | :16 | .46 | 1.05 | :52 | .445 | .5561 |
| 1-14 | .27 2/ | .01 | :46 | .20 | 1.15 | :58 | .504 | .6036 |
| 1-15 | .72 2/ | .07 | :59 | .23 | 1.20 | 5:28 ^R | .419 | .8466 |
| 1-16-19 | .30 1/ | .07 | 8:28 | .03 | 1.27 | :50 | .301 | .9729 |
| 1-20 | .48 | .05 | 9:23 | .29 | 1.54 | 6:20 | .209 | 1.1031 |
| | | | 10:13 | .10 | 1.62 | 7:00 | .110 | 1.2066 |
| | | | :43 | .44 | 1.84 | 8:44 | .0733 | 1.3483 |
| | | | 11:38 | .36 | 1.99 | 9:16 | .121 | 1.3972 |
| | | | 7:38 ^p | .05 | 2.25 | :50 | .167 | 1.4831 |
| | | | 5:02 | .20 | 2.33 | 10:44 | .151 | 1.5478 |
| | | | :13 | 1.15 | 2.54 | :44 | .226 | 1.6333 |
| | | | :53 | .15 | 2.64 | 11:10 | .270 | 1.7426 |
| | | | 7:08 | .06 | 2.71 | :24 | .245 | 1.8447 |
| | | | | | | :40 | .226 | 1.8733 |
| | | | 1-21-59 | Raingage | 107 | | | |
| | | | 12:01a | 0 | 0 | 12:06p | .157 | 1.9569 |
| | | | 7:23p | | 2.40 | :44 | .0933 | 2.0347 |
| | | | | | | 1:50 | .0612 | 2.1155 |
| | | | 1-21-59 | Raingage | 109 | 2:10 | .0717 | 2.1386 |
| | | | 12:01a | 0 | 0 | 4:10 | .0484 | 2.2520 |
| | | | 6:51p | | 2.73 | | | |
| | | | 1-21-59 | Raingage | 113 | 5:12 | .121 | 2.3197 |
| | | | 12:01a | 0 | 0 | :30 | .280 | 2.3851 |
| | | | 8:06p | | 2.82 | 6:06 | .183 | 2.5242 |
| | | | | | | 8:00 | .0700 | 2.7372 |
| | | | | | | 10:00 | .0396 | 2.8437 |
| | | | 1-21-59 | Raingage | 116 | 12:00m | .0296 | 2.9118 |
| | | | 12:01a | 0 | 0 | | | |
| | | | 7:02p | | 2.44 | | | |

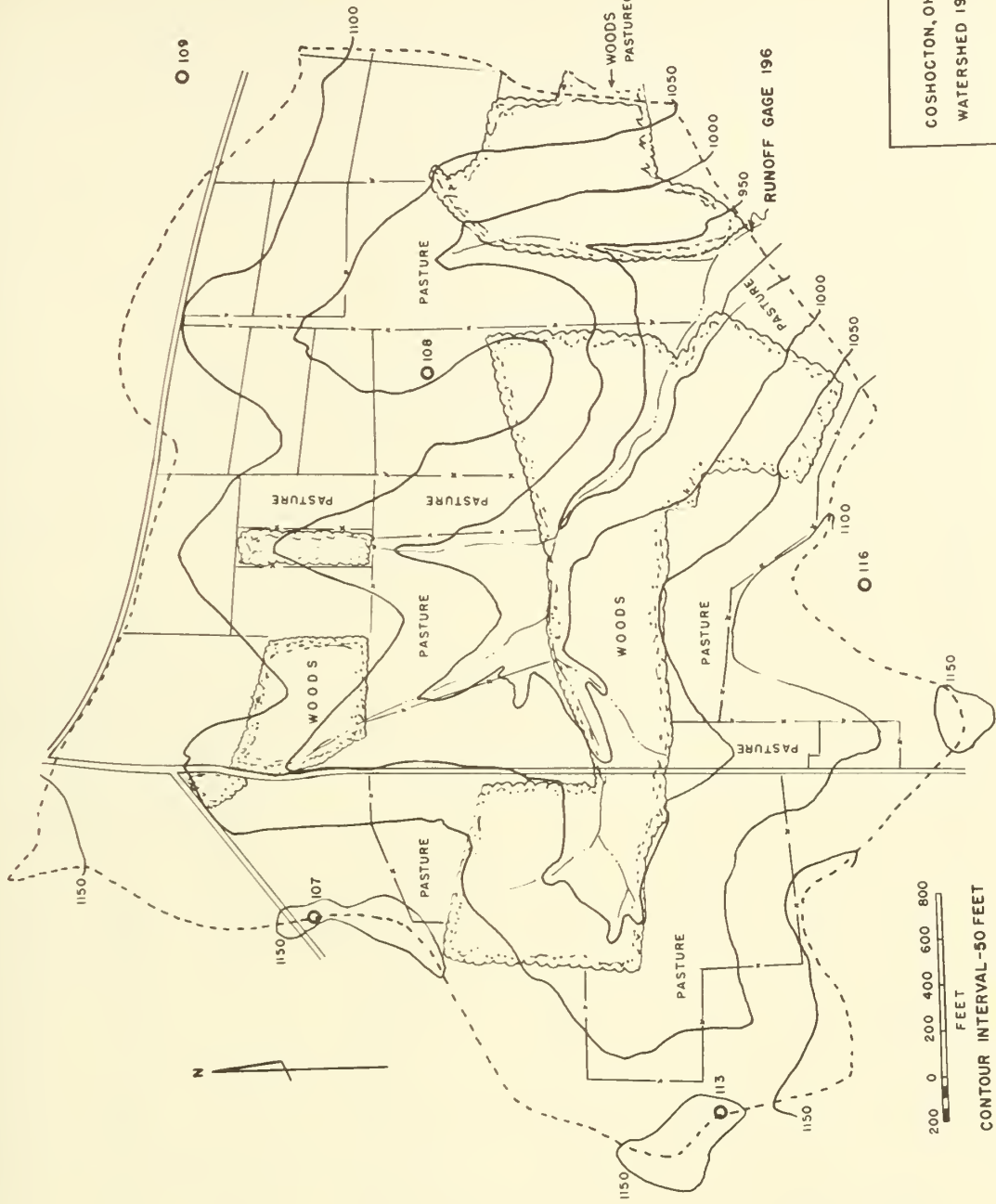
watershed conditions: Mixed cover under prevailing practice. 9.5% of the area was in wheat, 27.4% in meadow, and 30.1% in pasture. 14.2% was in pastured woodland, 12.1% in protected woodland and 1.7% was reforested to pines. 5.4% of the area was in miscellaneous cover. All vegetation was in dormant state. Depth of frost penetration on all areas except woodland, 1". No frost in woodland. Snow cover 5" on January 20.

Notes: 1/ Snow
2/ Rain and Snow



COSHOCOTON, OHIO WATERSHED 196

COSHOCTON, OHIO
WATERSHED 196



| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Coshocton, Ohio Watershed 10 (Area - 122 acres) | | | | | | | |
|---|-------|------|------|------|------|------|--|-------|------|-------|------|------|------|-------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 | P | 1.60 | 5.58 | 1.55 | 3.96 | 6.15 | 5.87 | 6.11 | 1.09 | 1.11 | 1.07 | 1.53 | 3.30 | 15.55 |
| | Q | .32 | 3.01 | 2.17 | 1.51 | 2.19 | 1.78 | 1.05 | .17 | .13 | .11 | .13 | .31 | 13.57 |
| 1957 | P | 1.80 | 1.31 | 1.95 | 5.30 | 3.89 | 10.08 | 2.96 | 2.13 | 3.69 | 1.52 | 2.70 | 1.61 | 11.97 |
| | Q | 1.19 | .55 | .81 | 3.16 | .67 | 3.60 | .72 | .12 | .08 | .09 | .16 | 1.79 | 13.57 |
| 1958 | P | 1.62 | .71 | 1.00 | 3.80 | 3.06 | 1.19 | 10.08 | 2.68 | 2.79 | .38 | 2.15 | .76 | 33.22 |
| | Q | .88 | .11 | .18 | 1.12 | 1.55 | .18 | 1.77 | .56 | .15 | .13 | .16 | .12 | 7.51 |
| 1959 | P | 5.91 | 3.55 | 2.56 | 1.17 | 2.88 | 1.61 | 2.97 | 2.10 | 3.17 | 5.15 | 2.76 | 2.22 | 13.15 |
| | Q | 2.16 | 2.63 | 1.07 | 1.71 | .72 | .10 | .12 | .11 | .07 | .38 | .76 | 1.33 | 11.79 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS Coshocton, Ohio Watershed 10

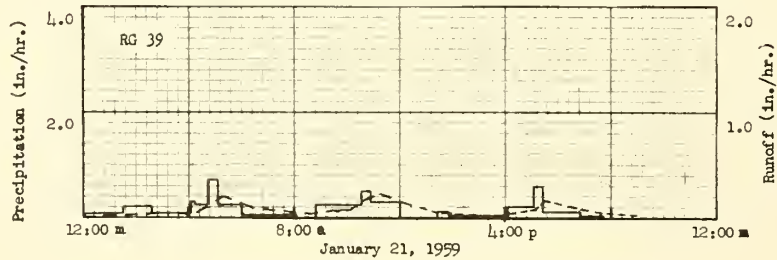
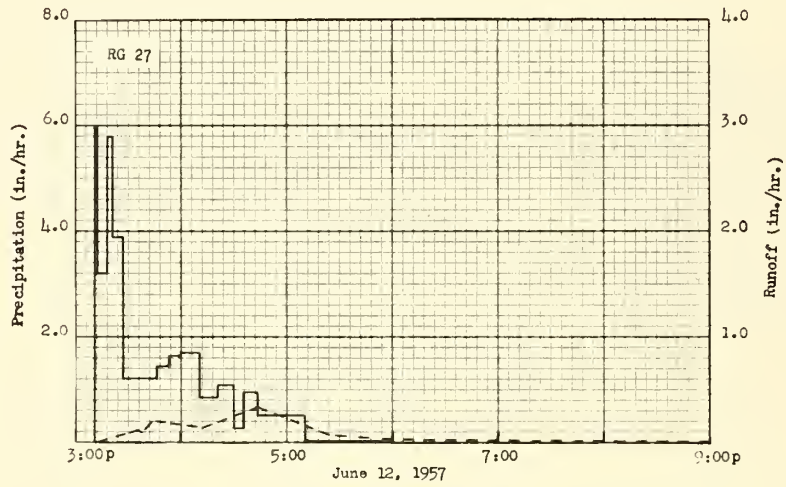
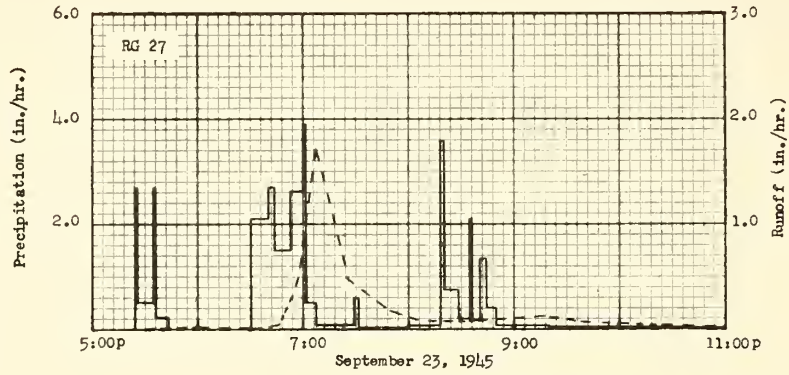
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 6-28 | 1.76 | 6-28 | 0.98 | 6-28 | 1.39 | 6-28 | 1.80 | 6-28 | 1.99 | 6-28 | 2.11 | 6-28 | 2.25 | 6-21 | 2.79 |
| 1958 | 7-11 | .21 | 7-11 | .12 | 7-11 | .17 | 5-1 | .25 | 5-1 | .38 | 5-1 | .52 | 5-1 | .66 | 5-3 | 1.16 |
| 1959 | 2-10 | .35 | 2-10 | .25 | 2-10 | .35 | 1-21 | .60 | 1-21 | 1.09 | 1-21 | 1.68 | 1-21 | 1.86 | 1-21 | 2.05 |

Notes: Quality of records: monthly P and Q, good; annual maximum discharges and volumes, good. Mixed cover 1956 to 1959; 21% cropland, 18% grassland, 25% woodland, 6% miscellaneous; conservation practice.

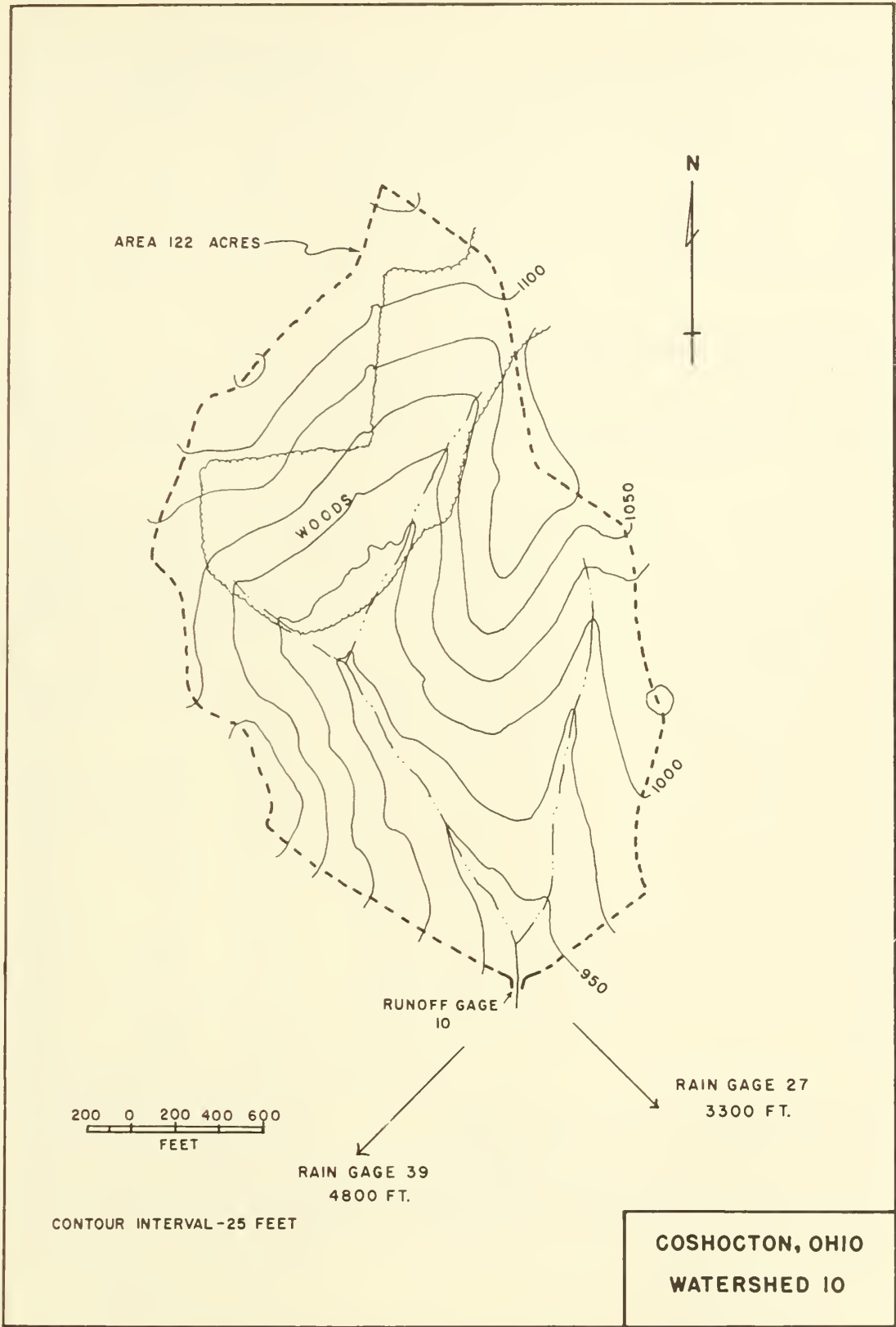
SELECTED RUNOFF EVENTS Coshocton, Ohio Watershed 10

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|-----------------------------|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of September 23, 1915 | | | | | | | | |
| 9-23-15 | T | T | 9-23-15 | Raingage | 27 | 9-23-15 | | |
| 9-21 | .05 | T | 5:21p | 0 | 0 | 5:20p | T | 0 |
| 8-25-28 | 0 | T | :26 | 2.70 | .09 | :31 | .00280 | .0002 |
| 8-29-31 | 0 | 0 | :31 | .52 | .16 | :11 | .0169 | .0021 |
| 9-1 | .07 | 0 | :36 | 2.70 | .25 | :52 | .0286 | .0019 |
| 9-2-7 | 0 | 0 | :11 | .22 | .28 | 6:00 | .0189 | .0082 |
| 9-8 | .52 | T | 6:30 | 0 | .28 | :28 | .00371 | .0123 |
| 9-9 | .58 | T | :10 | 2.10 | .63 | :36 | .00520 | .0129 |
| 9-10 | 1.26 | .01 | :11 | 2.70 | .81 | :16 | .0513 | .0165 |
| 9-11 | .20 | T | :52 | 1.50 | 1.01 | :19 | .116 | .0215 |
| 9-12 | 0 | T | 7:00 | 2.62 | 1.36 | :53 | .329 | .0371 |
| 9-13 | .38 | T | :02 | 3.90 | 1.19 | :57 | .501 | .0612 |
| 9-14 | .95 | .02 | :08 | .50 | 1.51 | 7:01 | 1.10 | .1169 |
| 9-15-16 | 0 | T | :28 | .09 | 1.57 | :07 | 1.72 | .2593 |
| 9-17 | .60 | .01 | :32 | .60 | 1.61 | :25 | .185 | .5677 |
| 9-18 | 1.07 | .01 | 8:00 | .02 | 1.62 | :19 | .165 | .6819 |
| 9-19 | 0 | .01 | :18 | .07 | 1.61 | 8:05 | .0959 | .7162 |
| 9-20 | .65 | .02 | :20 | 3.60 | 1.76 | :25 | .0689 | .7121 |
| 9-21 | 0 | .01 | :28 | .75 | 1.86 | :37 | .0837 | .7571 |
| 9-22 | 0 | T | :31 | .20 | 1.88 | 9:17 | .127 | .8153 |
| 9-23 | .201/ | .012/ | :36 | 2.10 | 1.95 | :25 | .109 | .8611 |
| | | | :10 | .15 | 1.96 | :31 | .0837 | .8755 |
| | | | :11 | 1.35 | 2.05 | 10:01 | .0196 | .9071 |
| | | | :50 | .10 | 2.09 | :21 | .0386 | .9219 |
| | | | 9:20 | .08 | 2.13 | 11:12 | .0211 | .9161 |
| | | | 10:10 | .01 | 2.18 | :36 | .0206 | .9550 |
| | | | 12:00m | .01 | 2.19 | 12:00m | .0169 | .9626 |

Notes: To convert runoff in in/hr to cfs, multiply by 123.02.
 1/ Most of rainfall occurred after 3:24p.
 2/ Runoff prior to 5:20p.



COSHOCTON, OHIO WATERSHED 10



| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Coshocton, Ohio Watershed 5 (Area - 349 acres) | | | | | | | |
|---|-------|------|------|------|------|------|---|-------|------|-------|------|------|------|-------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 | P | 1.60 | 5.58 | 1.55 | 3.96 | 6.45 | 5.87 | 6.14 | 1.09 | 1.11 | 1.07 | 1.53 | 3.30 | 15.55 |
| | Q | .18 | 2.72 | 2.45 | 1.53 | 2.94 | 1.60 | .57 | .29 | .13 | .04 | .07 | .46 | 12.98 |
| 1957 | P | 1.80 | 1.34 | 1.95 | 5.30 | 3.89 | 10.08 | 2.96 | 2.13 | 3.69 | 1.52 | 2.70 | 1.61 | 11.97 |
| | Q | .92 | .73 | .95 | 1.65 | 1.36 | 3.29 | 1.28 | .06 | .12 | .06 | .34 | 2.13 | 15.89 |
| 1958 | P | 1.62 | .71 | 1.00 | 3.80 | 3.06 | 1.19 | 10.08 | 2.68 | 2.79 | .38 | 2.15 | .76 | 33.22 |
| | Q | .97 | .48 | .78 | 1.36 | 1.85 | .24 | 2.12 | .69 | .20 | .06 | .08 | .15 | 8.98 |
| 1959 | P | 5.91 | 3.55 | 2.56 | 1.47 | 2.88 | 1.81 | 2.97 | 2.10 | 3.17 | 5.45 | 2.76 | 2.22 | 13.15 |
| | Q | 3.71 | 2.70 | 1.54 | 1.77 | .99 | .91 | .25 | .08 | .06 | .59 | .92 | 1.67 | 15.19 |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | Coshocton, Ohio Watershed 5 | | | | | | | | | |
|---|-------------------|------|---|------|---------|------|-----------------------------|------|----------|------|-------|------|--------|------|--------|------|
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 6-28 | 1.09 | 6-28 | 0.77 | 6-28 | 1.04 | 6-28 | 1.38 | 6-28 | 1.58 | 6-28 | 1.74 | 6-28 | 1.91 | 1-3 | 2.68 |
| 1958 | 7-14 | .33 | 7-14 | .20 | 7-14 | .29 | 7-14 | .36 | 7-14 | .40 | 5-4 | .52 | 5-4 | .69 | 5-3 | 1.31 |
| 1959 | 1-21 | .29 | 1-21 | .27 | 1-21 | .45 | 1-21 | .84 | 1-21 | 1.51 | 1-21 | 2.31 | 1-20 | 2.64 | 1-20 | 3.04 |

Notes: Quality of records: monthly P and C, fair; annual maximum discharges and volumes, fair. Mixed cover 1956 to 1959; 20% cropland, 5% grassland, 23% woodland, 3% miscellaneous; conservation practice.

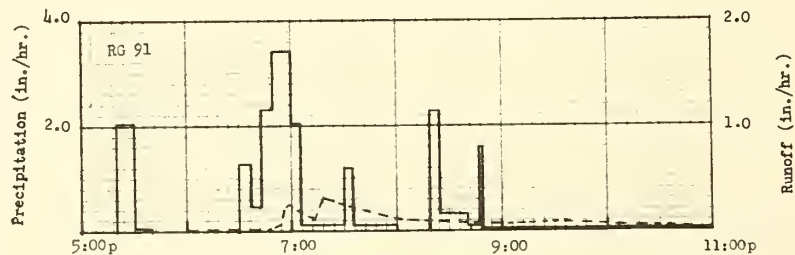
| SELECTED RUNOFF EVENTS | | | | | | | Coshocton, Ohio Watershed 5 | | | | | | |
|------------------------------------|--------------------|-----------------|---------------|-------------------|---------------|---------------|-----------------------------|---------------|--|--|--|--|--|
| Antecedent conditions | | | Rainfall | | | Runoff | | | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | | | |
| <u>Event of September 23, 1945</u> | | | | | | | | | | | | | |
| 8-23-45 | T | T | 9-23-45 | Rainage | 91 | 9-23-45 | | | | | | | |
| 8-24 | .06 | T | 5:20p | 0 | 0 | 6:00p | 0 | 0 | | | | | |
| 8-25-30 | 0 | T | :30 | 2.04 | .34 | :18 | .0103 | .0042 | | | | | |
| 8-31 | 0 | T | :10 | .06 | .35 | :54 | .0639 | .0069 | | | | | |
| 9-1 | .06 | T | 6:30 | 0 | .35 | :56 | .201 | .0113 | | | | | |
| 9-2-7 | 0 | .01 | :38 | 1.28 | .52 | :58 | .251 | .0189 | | | | | |
| 9-8 | .48 | T | :43 | .48 | .56 | 7:00 | .238 | .0270 | | | | | |
| 9-9 | .47 | T | :50 | 2.32 | .83 | :06 | .166 | .0470 | | | | | |
| 9-10 | 1.47 | .05 | 7:00 | 3.42 | 1.40 | :13 | .114 | .0633 | | | | | |
| 9-11 | .07 | T | :05 | 2.04 | 1.57 | :18 | .321 | .0813 | | | | | |
| 9-12 | 0 | T | :30 | .12 | 1.62 | :36 | .217 | .1594 | | | | | |
| 9-13 | .33 | T | :35 | 1.20 | 1.72 | 8:00 | .124 | .2241 | | | | | |
| 9-14 | .99 | .04 | 8:00 | .10 | 1.76 | :26 | .0929 | .2704 | | | | | |
| 9-15-16 | 0 | .01 | :20 | 0 | 1.76 | :40 | .0864 | .2913 | | | | | |
| 9-17 | .60 | .01 | :25 | 2.28 | 1.95 | 9:06 | .0747 | .3279 | | | | | |
| 9-18 | 1.02 | .12 | :40 | .36 | 2.04 | :12 | .0730 | .3353 | | | | | |
| 9-19 | 0 | .01 | :47 | .09 | 2.05 | :26 | .0864 | .3535 | | | | | |
| 9-20 | .25 | .01 | :50 | 1.60 | 2.13 | :32 | .0906 | .3623 | | | | | |
| 9-21-22 | 0 | .01 | 12:00m | .03 | 2.21 | 10:00 | .0639 | .3986 | | | | | |
| 9-23 | .19 ^{1/2} | T | | | | :30 | .0392 | .4244 | | | | | |
| | | | | | | 11:00 | .0257 | .4405 | | | | | |
| | | | | | | 12:00m | .0133 | .4589 | | | | | |

Watershed conditions: Mixed cover, mostly conservation practice. 8.0% of the area was in corn. Corn was cut prior to storm leaving the area in stubble. 14.5% of the area was in small grain crops mostly wheat which was cut in July and was followed by meadow. 20.0% additional of the area was in rotation meadow. Legumes and grasses were 7" high and weeds 11" high. 24.5% of the area was in pasture. Legumes, grass and weeds were 8" high. 5% of the area was in idle land which consisted mostly of grass and weeds. 14.5% of the area was in protected woodland, 9% in pastured woodland and 4.5% in miscellaneous cover (farmsteads, roads, etc.).

Notes: To convert runoff in in/hr to cfs, multiply by 351.91.
^{1/2} Most of rainfall occurred after 3:20p.

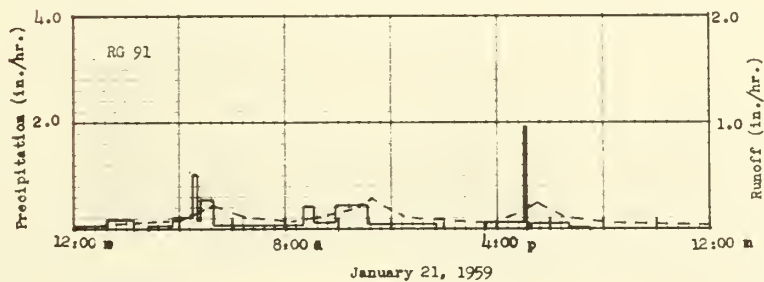
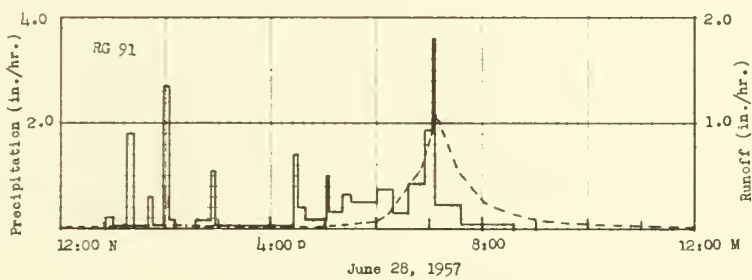
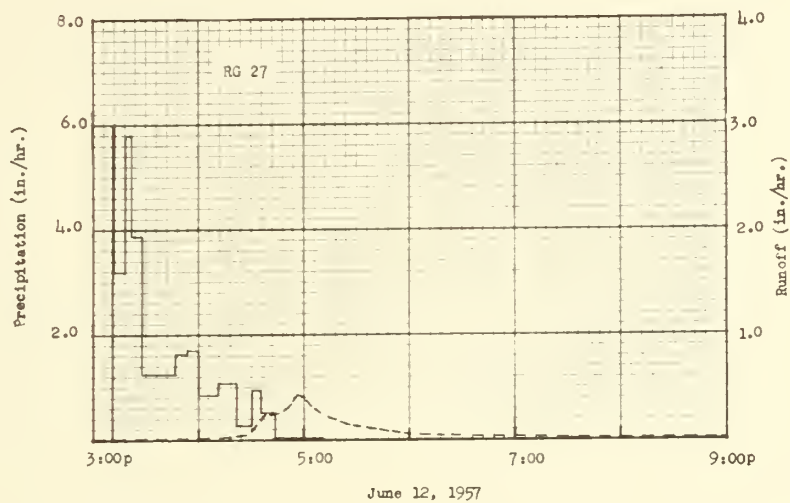
| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 5 | | | | | |
|--|-------------------|-----------------|-----------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of June 12, 1957 | | | | | | | | |
| | | | 6-12-57 | Raingage | 27 1/2 | 6-12-57 | | |
| 5-13-57 | .01 | .02 | 3:10p | 0 | 0 | 3:00p | 0.0002 | 0 |
| 5-14 | .90 | .13 | :12 | 6.00 | .20 | 1:00 | .0078 | .0012 |
| 5-15 | .03 | .10 | :18 | 3.20 | .52 | :18 | .0211 | .0053 |
| 5-16-17 | 0 | .11 | :21 | 5.80 | .81 | :28 | .0673 | .0113 |
| 5-18 | .11 | .07 | :27 | 3.90 | 1.20 | :31 | .166 | .0233 |
| 5-19 | .18 | .07 | :46 | 1.23 | 1.59 | :38 | .217 | .0375 |
| 5-20 | .18 | .08 | :53 | 1.63 | 1.78 | :48 | .280 | .0790 |
| 5-21 | 0 | .07 | 1:00 | 1.71 | 1.98 | :52 | .355 | .1001 |
| 5-22 | e .52 | .13 | :10 | .81 | 2.12 | :56 | .132 | .1268 |
| 5-23-25 | 0 | .15 | :21 | 1.09 | 2.32 | 5:00 | .106 | .1517 |
| 5-26 | e .18 | .01 | :30 | .27 | 2.36 | 5:01 | .321 | .1791 |
| 5-27-31 | 0 | .11 | :35 | .96 | 2.41 | :12 | .212 | .2165 |
| 6-1 | .18 | .02 | 1:11 | .53 | 2.52 | :26 | .166 | .2613 |
| 6-2-5 | 0 | .01 | 5:10 | .02 | 2.53 | :31 | .135 | .2811 |
| 6-6 | .01 | .01 | 6:00 | .01 | 2.51 | :46 | .0995 | .3080 |
| 6-7 | .02 | .01 | | | | 6:00 | .0656 | .3271 |
| 6-8 | .96 | .03 | | | | :20 | .0138 | .3153 |
| 6-9-10 | 0 | .02 | | | | :18 | .0273 | .3616 |
| 6-11 | .20 | .01 | | | | 7:11 | .0188 | .3716 |
| 6-12 | 0 | T | | | | :32 | .0113 | .3766 |
| | | | | | | 9:00 | .0103 | .3980 |
| Watershed conditions: Mixed cover mostly under conservation practice. 8.5% of the area was in corn. Corn plants were 20" high and weeds 18" high. 12.0% of the area was in small grain crops, mostly wheat. Wheat plants were 30" high and legumes and grass 4" high. 19% of the area was in meadow. Legumes, grass and weeds were 7" high. 29.6% of the area was in pasture. Legumes and grass were 5" high and weeds 6" high. 5.8% was in idle land, mostly in grass and weeds. 3% of the area was in protected woodland and 19.6% in pastured woodland. 2.5% of the area was in miscellaneous cover (farmsteads and roads). | | | | | | | | |
| Event of June 28, 1957 | | | | | | | | |
| | | | 6-28-57 | Raingage | 91 | 6-28-57 | | |
| 5-28-31-57 | 0 | 0.09 | 12:50p | 0 | 0 | 12:00n | 0.00305 | 0 |
| 6-1 | .12 | .02 | 1:00 | .21 | .01 | 2:21 p | .0537 | .0179 |
| 6-2-5 | 0 | .01 | :15 | .01 | .05 | :16 | .0172 | .0308 |
| 6-6 | .10 | .01 | :23 | 1.80 | .29 | :56 | .0639 | .0168 |
| 6-7 | 0 | .01 | :40 | .01 | .30 | 1:02 | .0361 | .1015 |
| 6-8 | .90 | .03 | :41 | .60 | .31 | :31 | .0282 | .1180 |
| 6-9-10 | 0 | .02 | :57 | .05 | .35 | 5:00 | .0523 | .1361 |
| 6-11 | .16 | .01 | 2:03 | 2.70 | .62 | :30 | .0929 | .1711 |
| 6-12 | e 2.16 | .12 | :10 | .17 | .61 | 6:12 | .166 | .2596 |
| 6-13 | .31 | .13 | | | | | | |
| 6-14 | .06 | .07 | :33 | 0 | .61 | :18 | .510 | .1230 |
| 6-15 | 0 | .05 | :50 | .18 | .69 | 7:08 | 1.09 | .7290 |
| 6-16 | .05 | .01 | :56 | 1.10 | .80 | :21 | .711 | .9861 |
| 6-17-18 | 0 | .05 | :25 | .05 | .88 | :30 | .591 | 1.0533 |
| 6-19 | .02 | .02 | :31 | 1.10 | 1.02 | 8:01 | .212 | 1.2657 |
| 6-20-21 | 0 | .02 | :40 | .10 | 1.08 | :28 | .166 | 1.3118 |
| 6-22 | 0 | .01 | 5:02 | .19 | 1.15 | 9:00 | .0929 | 1.1132 |
| 6-23 | .12 | .01 | :05 | 1.00 | 1.20 | :20 | .0656 | 1.1399 |
| 6-24 | 2.22 | .19 | :20 | .32 | 1.28 | 10:00 | .0160 | 1.1769 |
| 6-25-27 | 0 | .11 | :31 | .65 | 1.10 | 11:00 | .0315 | 1.5118 |
| 6-28 | .38 2/3 | .01 2/3 | 6:00 | .50 | 1.61 | 12:00m | .0250 | 1.5126 |
| | | | :18 | .77 | e 1.87 | | | |
| | | | :36 | .30 | e 1.96 | | | |
| | | | :55 | .85 | e 2.23 | | | |
| | | | 7:01 | 1.87 | e 2.51 | | | |
| | | | :06 | 3.60 | e 2.63 | | | |
| | | | :35 | .16 | e 2.85 | | | |
| | | | 8:31 | .11 | 2.96 | | | |
| Watershed conditions: Mixed cover mostly under conservation practice. 8.5% of the area was in corn. Corn plants were 32" high and weeds 24" high. 12.0% of the area was in small grain crops, mostly wheat. Wheat plants were 36" high, grass and weeds 4" high. 19% of the area was in meadow. Legumes, grass and weeds were 10" high. 29.6% of the area was in pasture. Legumes and grass were 8" high. 5.8% was in idle land, mostly grass and weeds. 3% of the area was in protected woodland and 19.6% in pastured woodland. 2.5% of the area was in miscellaneous cover (farmsteads and roads). | | | | | | | | |
| Notes: 1/ No intensity record on Raingage 91. Raingage 27 used. | | | | | | | | |
| 2/ Rain ended about 7:30a. | | | | | | | | |
| 3/ Runoff prior to 12:00n. | | | | | | | | |

| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 5 | | | | | |
|--|-------------------|-----------------|-----------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of January 21, 1959</u> | | | | | | | | |
| 12-21-22-58 | 0 | 0.01 | 1-21-59 | Raingage | 91 | 1-21-59 | | |
| 12-23 | T | T | 12:01a | 0 | 0 | 12:01a | 0.0115 | 0 |
| 12-24 | .04 1/ | T | 1:15 | .05 | .06 | 2:00 | .0577 | .0517 |
| 12-25-31 | 0 | .04 | 2:20 | .19 | .26 | 4:00 | .0747 | .2103 |
| 1-1-59 | .71 | .08 | 5:00 | 0 | .26 | 5:15 | .234 | .3801 |
| 1-2-3 | 0 | .09 | 3:43 | .06 | .31 | 6:30 | .109 | .6108 |
| 1-4 | .04 1/ | .03 | 4:30 | .22 | .48 | 8:15 | .0608 | .7412 |
| 1-5-8 | 0 | .05 | 4:00 | 1.02 | .65 | 9:15 | .109 | .8188 |
| 1-9-10 | T 1/ | .02 | 4:8 | .15 | .67 | 10:30 | .180 | .9928 |
| 1-11-13 | 0 | .02 | 5:21 | .56 | .98 | 11:15 | .290 | 1.1801 |
| 1-14 | .23 | .01 | 8:45 | .06 | 1.18 | 12:00m | .180 | 1.3603 |
| 1-15 | .69 2/ | .06 | 9:04 | .41 | 1.31 | 1:30p | .124 | 1.4336 |
| 1-16-19 | .30 1/ | .09 | 5:55 | .13 | 1.42 | 1:00 | .0995 | 1.4895 |
| 1-20 | .49 | .04 | 11:06 | .45 | 1.95 | 3:45 | .0486 | 1.6573 |
| | | | 1:40p | .07 | 2.13 | 4:15 | .135 | 1.7198 |
| | | | 3:30 | 0 | 2.13 | 5:30 | .247 | 1.8648 |
| | | | 5:00 | .13 | 2.33 | 6:30 | .109 | 2.0258 |
| | | | 5:05 | 1.92 | 2.49 | 8:00 | .0591 | 2.1443 |
| | | | 4:4 | 0 | 2.49 | 12:00m | .0290 | 2.3030 |
| | | | 6:46 | .10 | 2.64 | | | |
| | | | 7:30 | .01 | 2.65 | | | |
| <p><u>Watershed conditions:</u> Mixed cover mostly under conservation practice. 8.5% of the area had been in row crops. 12.0% in small grain crops. 20.0% in meadow and 29.0% in pasture. 5.4% was in idle land, 3.0% in protected woodland, 19.6% in pastured woodland and 2.5% in miscellaneous cover (farmsteads and roads). All vegetation in dormant state. Frost penetration on all areas except woodland, 1" deep. No frost in woodland. Snow cover 5" on January 20.</p> | | | | | | | | |
| <p>Notes: 1/ Snow 2/ Rain and Snow</p> | | | | | | | | |



September 23, 1945

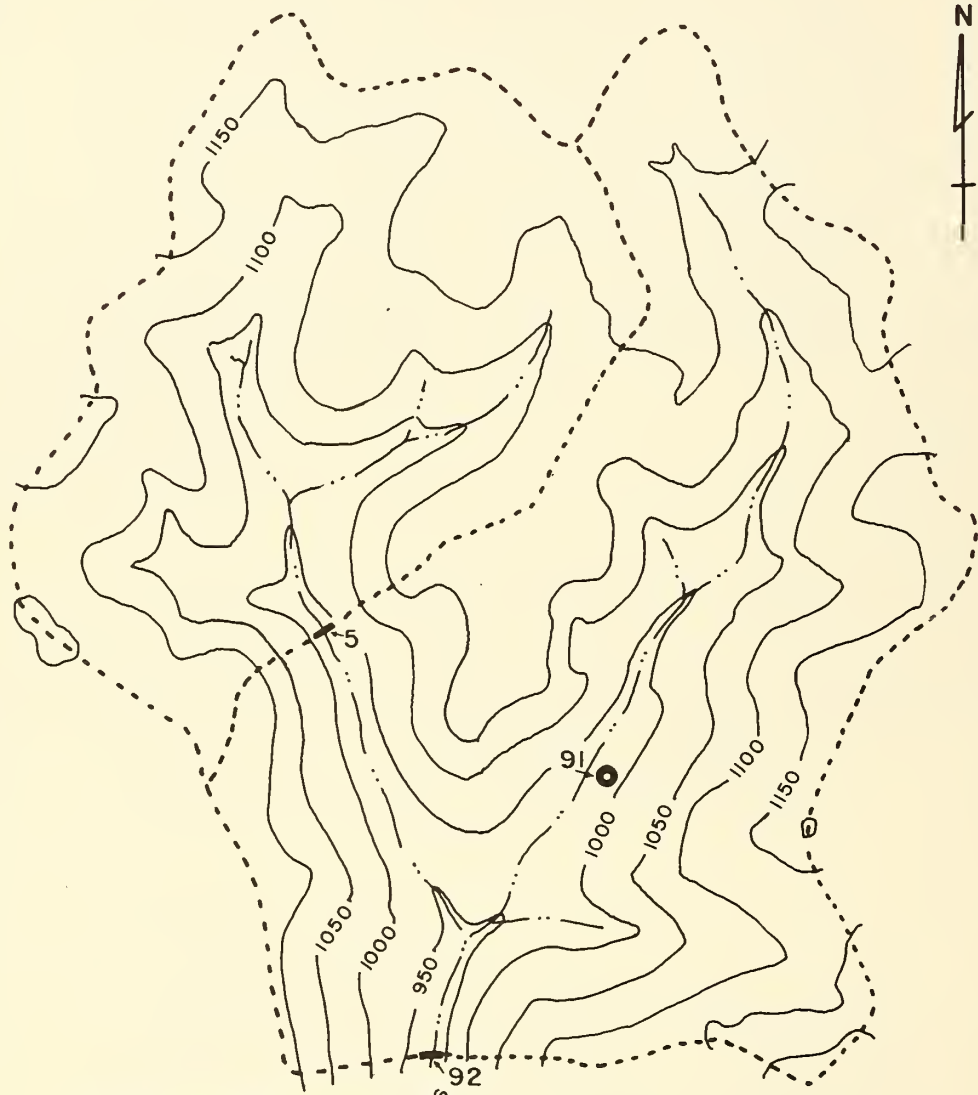
COSHOCTON, OHIO WATERSHED 5



COSHOCTON, OHIO WATERSHED 5

● MC 4
3 MILES

| DRAINAGE AREAS: | |
|-----------------|---------|
| 5 | 349 AC. |
| 92 | 920 AC. |



0 500 1000
FEET

CONTOUR INTERVAL-50 FEET

● RAINGAGE 27
1.4 MILES

○ RAIN GAGE & NUMBER
- RUNOFF GAGE & NUMBER

COSHOCTON, OHIO
WATERSHEDS 5,92

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Coshocton, Ohio Watershed 92 (Area - 920 acres) | | | | | | | |
|---|-------|------|------|------|------|------|--|-------|------|-------|------|------|------|-------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 | P | 1.60 | 5.58 | 1.55 | 3.96 | 6.15 | 5.87 | 6.11 | 4.09 | 1.41 | 1.07 | 1.53 | 3.30 | 15.55 |
| | Q | .20 | 2.97 | 2.62 | 1.58 | 2.53 | 1.45 | .60 | .34 | .14 | .06 | .08 | .51 | 13.08 |
| 1957 | P | 1.80 | 1.34 | 1.95 | 5.30 | 3.89 | 10.08 | 2.96 | 2.13 | 3.69 | 1.52 | 2.70 | 1.61 | 11.97 |
| | Q | .99 | .73 | 1.04 | 1.10 | 1.03 | 3.27 | 1.07 | .07 | .11 | .05 | .31 | 2.38 | 15.15 |
| 1958 | P | 1.62 | .71 | 1.00 | 3.80 | 3.06 | 4.19 | 10.08 | 2.68 | 2.79 | .38 | 2.15 | .76 | 33.22 |
| | Q | 1.00 | .53 | .82 | 1.53 | 2.08 | .27 | 2.10 | .74 | .19 | .06 | .09 | .18 | 9.59 |
| 1959 | P | 5.91 | 3.55 | 2.56 | 4.47 | 2.88 | 4.81 | 2.97 | 2.10 | 3.47 | 5.45 | 2.76 | 2.22 | 13.15 |
| | Q | 3.83 | 3.17 | 1.63 | 1.93 | 1.08 | .87 | .23 | .09 | .07 | .57 | .91 | 1.71 | 16.09 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS Coshocton, Ohio Watershed 92

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|------|---|------|---------|------|---------|------|----------|-------|-------|-------|--------|-------|--------|------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 6-28 | 0.62 | 6-28 | 0.52 | 6-28 | 0.82 | 6-28 | 1.24 | 6-28 | 1.44 | 6-28 | 1.61 | 6-28 | 1.79 | 4-3 | 2.64 |
| 1958 | 7-14 | .18 | 7-14 | .16 | 7-14 | .23 | 7-14 | .31 | 5-4 | e .41 | 5-4 | e .57 | 5-4 | e .75 | 5-3 | 1.15 |
| 1959 | 2-10 | .34 | 2-10 | .27 | 1-21 | .46 | 1-21 | .88 | 1-21 | 1.60 | 1-21 | 2.41 | 1-20 | 2.71 | 1-20 | 3.12 |

Notes: Quality of records: P and Q, fair; annual maximum discharges and volumes, fair. Mixed cover 1956 to 1959; 16% cropland, 59% grassland, 21% woodland, 4% miscellaneous; conservation practice.

SELECTED RUNOFF EVENTS Coshocton, Ohio Watershed 92

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|------------------------------------|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>event of September 23, 1945</u> | | | | | | | | |
| 9-23-45 | T | 0 | 9-23-45 | Rainage | 91 | 9-23-45 | | |
| 9-24 | .06 | T | 5:20p | 0 | 0 | 6:00p | 0 | 0 |
| 9-25-31 | 0 | T | :30 | 2.04 | .34 | :50 | .0104 | .0030 |
| 9-1 | .06 | 0 | :40 | .06 | .35 | :57 | .0316 | .0054 |
| 9-2-7 | 0 | 0 | 6:30 | 0 | .35 | 7:00 | .0567 | .0076 |
| 9-8 | .18 | T | :38 | 1.28 | .52 | :13 | .179 | .0364 |
| 9-9 | .17 | T | :43 | .18 | .56 | :25 | .229 | .0786 |
| 9-10 | 1.47 | .03 | :50 | 2.32 | .83 | 8:05 | .153 | .2062 |
| 9-11 | .07 | .01 | 7:00 | 3.42 | 1.10 | 9:25 | .108 | .3658 |
| 9-12 | 0 | T | :05 | 2.04 | 1.57 | :55 | .0829 | .1132 |
| 9-13 | .33 | T | :30 | .12 | 1.62 | 10:19 | .0611 | .1428 |
| 9-14 | .99 | .03 | :35 | 1.20 | 1.72 | :55 | .0.14 | .739 |
| 9-15-16 | 0 | .01 | 8:00 | .10 | 1.76 | 12:00m | .0235 | .5077 |
| 9-17 | .60 | T | :20 | 0 | 1.76 | | | |
| 9-18 | 1.02 | .10 | :25 | 2.28 | 1.95 | | | |
| 9-19 | 0 | .02 | :10 | .36 | 2.01 | | | |
| 9-20 | .25 | .02 | :17 | .09 | 2.05 | | | |
| 9-21-22 | 0 | .02 | :50 | 1.60 | 2.13 | | | |
| 9-23 | .19 1/2 | .01 2/3 | 12:00m | .03 | 2.21 | | | |

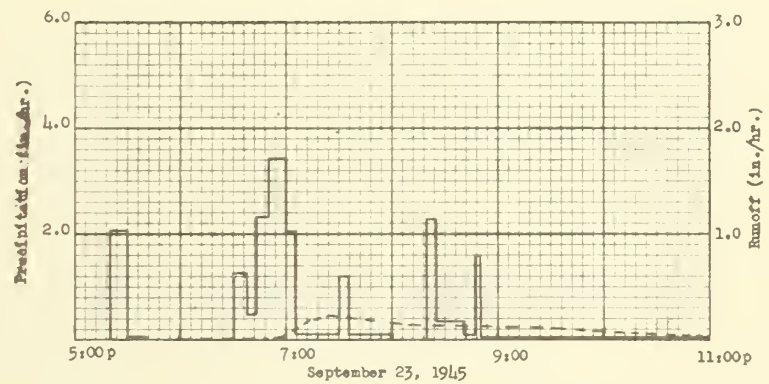
Notes: To convert runoff in in/hr to cfs, multiply by 927.64.
 1/2 most of rainfall occurred before 3:20p.
 2/3 Runoff prior to 6:00p.

| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 92 | | | | | |
|--|-------------------|-------------------|------------------------------|-------------------|------------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of June 12, 1957</u> | | | | | | | | |
| | | | 6-12-57 | Raingage | 27 ^{1/} | 6-12-57 | | |
| 5-13-57 | .04 | .02 | 3:10p | 0 | 0 | 3:00p | 0.0003 | 0 |
| 5-14 | .90 | .09 | :12 | 6.00 | .20 | 4:30 | .0054 | .0015 |
| 5-15 | .03 | .06 | :18 | 3.20 | .52 | :38 | .0309 | .0035 |
| 5-16-17 | 0 | .06 | :21 | 5.80 | .81 | :40 | .114 | .0055 |
| 5-18 | .14 | .03 | :27 | 3.90 | 1.20 | :42 | .203 | .0112 |
| 5-19 | .18 | .04 | :46 | 1.23 | 1.59 | :46 | .233 | .0257 |
| 5-20 | .18 | .04 | :53 | 1.63 | 1.78 | :54 | .259 | .0584 |
| 5-21 | 0 | .05 | 4:00 | 1.71 | 1.98 | 5:00 | .282 | .0855 |
| 5-22 | e .52 | .04 | :10 | .84 | 2.12 | :14 | .268 | .1497 |
| 5-23-25 | 0 | .14 | :21 | 1.09 | 2.32 | :30 | .220 | .2156 |
| 5-26 | e .18 | .03 | :30 | .27 | 2.36 | :40 | .178 | .2480 |
| 5-27-31 | 0 | .09 | :35 | .96 | 2.44 | :50 | .143 | .2748 |
| 6-1 | .18 | .01 | :44 | .53 | 2.52 | 6:00 | .114 | .2960 |
| 6-2-5 | 0 | .04 | 5:10 | .02 | 2.53 | :12 | .0855 | .3159 |
| 6-6 | .04 | .01 | 6:00 | .01 | 2.54 | :36 | .0505 | .3420 |
| 6-7 | .02 | .01 | | | | 7:04 | .0336 | .3611 |
| 6-8 | .96 | .03 | | | | :40 | .0235 | .3771 |
| 6-9-10 | 0 | .02 | | | | 8:00 | .0193 | .3842 |
| 6-11 | .20 | .01 | | | | 9:10 | .0134 | .4075 |
| 6-12 | 0 | T | | | | | | |
| <u>Watershed conditions:</u> Mixed cover under conservation practice. 10.0% of the area was in corn. Corn plants were 20" high and weeds 18" high. 13.5% was in small grain crops, mostly wheat. Wheat plants were 30" high and legumes and grass in wheat 4" high. 19.2% in meadow. Legumes, grass and weeds were 7" high. 20.0% was in pasture. Legumes and grasses were 5" high and weeds 6" high. 5.0% was in idle land, mostly grass and weeds. 12.1% was in protected woodland, 16.8% in pastured woodland. 3.4% was in miscellaneous cover (farmsteads and roads). | | | | | | | | |
| <u>Event of June 28, 1957</u> | | | | | | | | |
| 5-28-31-57 | 0 | 0.07 | 6-28-57 | Raingage | 91 | 6-28-57 | | |
| 6-1 | .12 | .01 | 12:50p | 0 | 0 | 12:00n | 0.00254 | 0 |
| 6-2-5 | 0 | .04 | 1:00 | .24 | .04 | 2:48p | .0336 | .0199 |
| 6-6 | .10 | .01 | :15 | .04 | .05 | 3:00 | .0468 | .0281 |
| 6-7 | 0 | .01 | :23 | 1.80 | .29 | :36 | .0505 | .0589 |
| 6-8 | .90 | .03 | :40 | .04 | .30 | 5:00 | .0383 | .1143 |
| 6-9-10 | 0 | .02 | :44 | .60 | .34 | :30 | .0882 | .1150 |
| 6-11 | .15 | .01 | :57 | .05 | .35 | 6:00 | .164 | .2083 |
| 6-12 | e 2.16 | .44 | 2:03 | 2.70 | .62 | :30 | .239 | .3061 |
| 6-13 | .34 | .15 | :10 | .17 | .64 | :48 | .350 | .3924 |
| 6-14 | .06 | .08 | :33 | 0 | .64 | 7:00 | .453 | .4724 |
| 6-15 | 0 | .05 | :50 | .13 | .69 | :14 | .623 | .6043 |
| 6-16 | .05 | .04 | :56 | 1.10 | .80 | :48 | .424 | .9108 |
| 6-17-18 | 0 | .05 | 4:25 | .05 | .88 | 8:00 | .356 | .9888 |
| 6-19 | .02 | .02 | :31 | 1.40 | 1.02 | :24 | .224 | 1.1029 |
| 6-20-22 | 0 | .04 | :10 | .40 | 1.08 | 9:00 | .130 | 1.2078 |
| 6-23 | .12 | .01 | 5:02 | .19 | 1.15 | :48 | .0727 | 1.2859 |
| 6-24 | 2.22 | .23 | :05 | 1.00 | 1.20 | 11:00 | .0432 | 1.3519 |
| 6-25-27 | 0 | .18 | :20 | .32 | 1.28 | 12:00m | .0336 | 1.3899 |
| 6-28 | .38 ^{2/} | .03 ^{3/} | :31 | .65 | 1.40 | | | |
| | | | :18 | e .77 | 1.87 | | | |
| | | | :36 | e .30 | 1.96 | | | |
| | | | :55 | e .85 | 2.23 | | | |
| | | | 7:04 | e 1.87 | 2.51 | | | |
| | | | :06 | e 3.60 | 2.63 | | | |
| | | | :35 | e .46 | 2.85 | | | |
| | | | 8:34 | .11 | 2.96 | | | |
| <u>Watershed conditions:</u> Mixed cover under conservation practice. 10.0% of the area was in corn. Corn plants were 20" high and weeds 18" high. 13.5% was in small grain crops, mostly wheat. Wheat plants were 30" high & legumes and grass in wheat, 4" high. 19.2% was in meadow. Legumes, grass and weeds were 7" high. 20.0% was in pasture. Legumes and grasses were 5" high and weeds 6" high. 5.0% was in idle land, mostly grass and weeds. 12.1% was in protected woodland, 16.8% in pastured woodland. 3.4% was in miscellaneous cover (farmsteads and roads). | | | | | | | | |
| <u>Notes:</u> | | | | | | | | |
| 1/ No intensity record on Raingage 91. Raingage 27 used. | | | | | | | | |
| 2/ Rainfall ended about 7:30a. 3/ Runoff prior to 12:00n. | | | | | | | | |

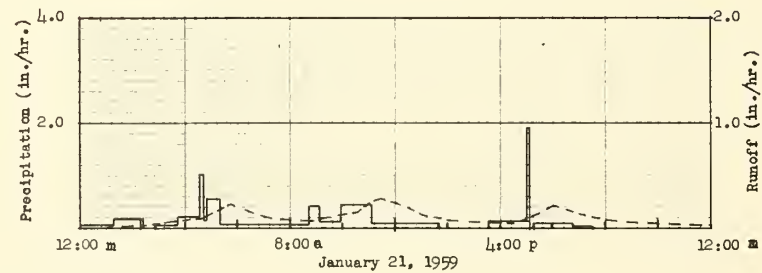
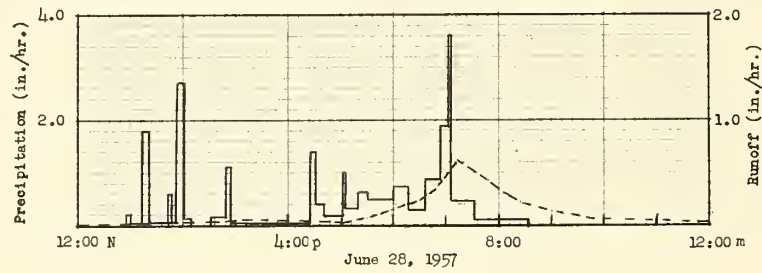
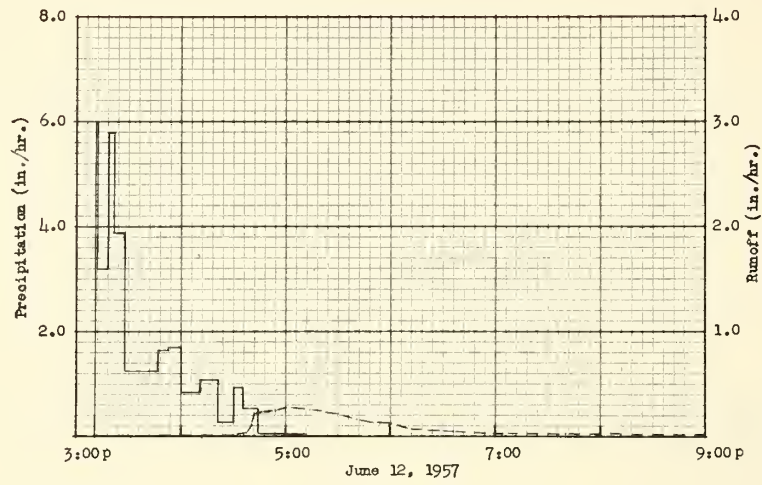
| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 92 | | | | | |
|----------------------------------|-------------------|-----------------|------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of January 21, 1959</u> | | | | | | | | |
| 12-21-22-58 | 0 | 0.01 | 1-21-59 | Raingage | .91 | 1-21-59 | | |
| 12-23 | T | .01 | 12:01a | 0 | 0 | 1:00a | 0.0113 | 0 |
| 12-24 | .04 1/ | .01 | 1:15 | .05 | .06 | 2:30 | .0270 | .0276 |
| 12-25-31 | 0 | .04 | 2:20 | .19 | .26 | 3:0 | .0505 | .0465 |
| 1-1-59 | .71 | .07 | :50 | 0 | .26 | 4:42 | .0993 | .1978 |
| 1-2-3 | 0 | .10 | 3:43 | .06 | .31 | 5:00 | .117 | .2340 |
| 1-4 | .04 1/ | .03 | 4:30 | .22 | .48 | :46 | .233 | .3881 |
| 1-5-8 | 0 | .07 | :40 | 1.02 | .65 | 6:36 | .153 | .5439 |
| 1-9-10 | T 1/ | .02 | :48 | .15 | .67 | 7:18 | .0993 | .6336 |
| 1-11-13 | 0 | .02 | 5:21 | .56 | .98 | 8:40 | .0703 | .7441 |
| 1-14 | .23 2/ | .01 | 8:45 | .06 | 1.18 | :54 | .0703 | .7605 |
| 1-15 | .69 2/ | .06 | 9:04 | .41 | 1.31 | 9:30 | .108 | .8117 |
| 1-16-19 | .30 1/ | .09 | :55 | .13 | 1.42 | 10:30 | .152 | .9429 |
| 1-20 | .49 | .04 | 11:06 | .45 | 1.95 | 11:00 | .242 | 1.0384 |
| | | | 1:40p | .07 | 2.13 | :28 | .282 | 1.1613 |
| | | | 3:30 | 0 | 2.13 | 12:00n | .242 | 1.3039 |
| | | | 5:00 | .13 | 2.33 | 1:00p | .130 | 1.4779 |
| | | | :05 | 1.92 | 2.49 | 2:00 | .0751 | 1.5740 |
| | | | :14 | 0 | 2.49 | 4:16 | .0536 | 1.7134 |
| | | | 6:46 | .10 | 2.64 | :26 | .0536 | 1.7224 |
| | | | 7:30 | .01 | 2.65 | 5:04 | .0727 | 1.7610 |
| | | | | | | :30 | .139 | 1.8034 |
| | | | | | | 6:00 | .220 | 1.9027 |
| | | | | | | 7:00 | .129 | 2.0751 |
| | | | | | | 8:00 | .0802 | 2.1754 |
| | | | | | | 10:00 | .0468 | 2.2552 |
| | | | | | | 12:00m | .0330 | 2.3731 |

Watershed conditions: Mixed cover under conservation practice. 10.0% of the area had been in corn. 14.0% in small grain crops, mostly wheat, 18.7% in meadow, 20.0% in pasture, 5.0% in idle land, 12.1% in protected woodland, 16.8% in pastured woodland and 3.4% in miscellaneous cover. All vegetation in dormant state. Frost penetration in all areas except woodland, 1". No frost in woodland. Snow cover 5" on January 20.

Notes: 1/ Snow 2/ Rain and snow
See map of watershed on page 26.32-5.



COSHOCTON, OHIO WATERSHED 92



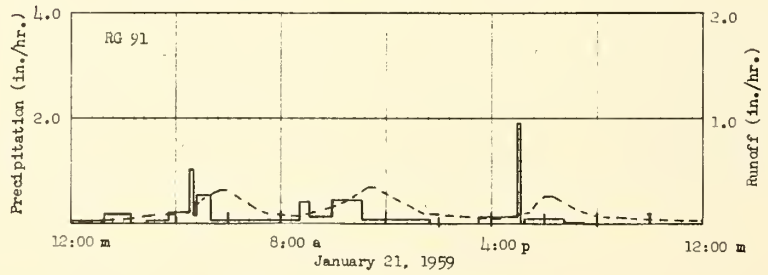
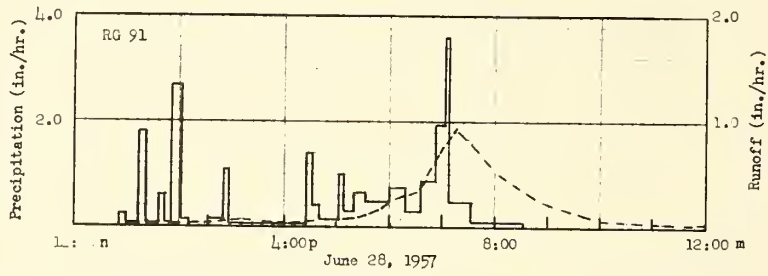
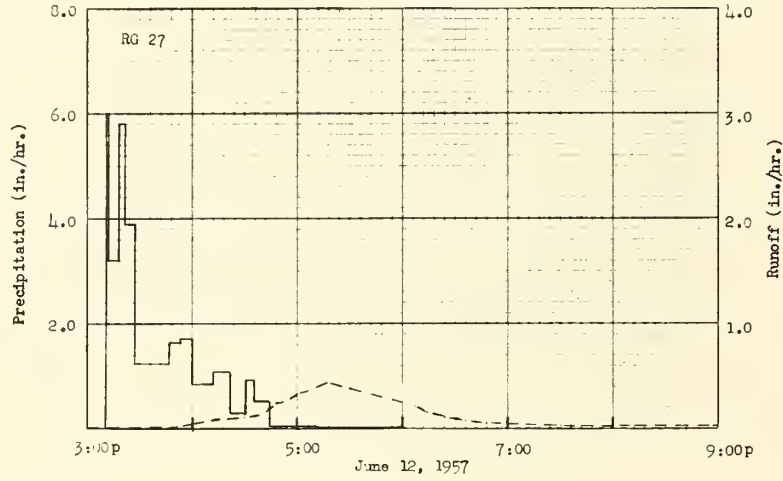
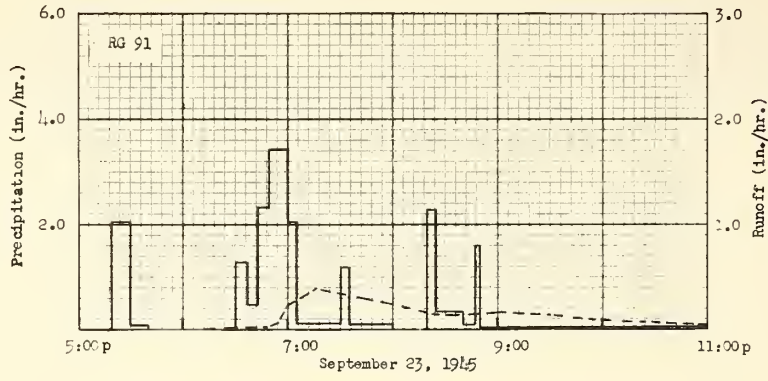
COSHOCTON, OHIO WATERSHED 92

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | | Coshocton, Ohio Watershed 9 ₁ (Area - 1520 acres) | | | | | | | | | |
|---|-------------------|---|---------------|-------------------|---------------|---------------|--------------|---|------|-------|------|--------|------|--------|-------|------|------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year | | | |
| | 1956 | P | 1.60 | 5.58 | 1.55 | 3.96 | 6.15 | 5.87 | 6.11 | 1.09 | 1.11 | 1.07 | 1.53 | 3.30 | 15.55 | | |
| Q | | .17 | 3.27 | 2.80 | 1.61 | 2.56 | 1.65 | .75 | .11 | .15 | .05 | .08 | .19 | 11.02 | | | |
| 1957 | P | 1.80 | 1.31 | 1.95 | 5.30 | 3.89 | 10.08 | 2.96 | 2.13 | 3.69 | 1.52 | 2.70 | 1.61 | 11.97 | | | |
| | Q | 1.01 | .77 | 1.02 | 1.10 | 1.06 | 1.13 | 1.05 | .11 | .13 | .07 | .30 | 2.36 | 16.11 | | | |
| 1958 | P | 1.62 | .71 | 1.00 | 3.80 | 3.06 | 1.19 | 10.08 | 2.68 | 2.79 | .38 | 2.15 | .76 | 33.22 | | | |
| | Q | 1.01 | .52 | .86 | 1.17 | 2.16 | .30 | 7.13 | .80 | .23 | .09 | .12 | .19 | 10.18 | | | |
| 1959 | P | 5.91 | 3.55 | 2.56 | 1.47 | 2.88 | 1.81 | 2.97 | 2.10 | 3.17 | 5.15 | 2.76 | 2.22 | 13.15 | | | |
| | Q | 1.33 | 3.16 | 1.53 | 1.90 | 1.11 | .87 | .26 | .13 | .09 | .58 | .95 | 1.79 | 16.70 | | | |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | | Coshocton, Ohio Watershed 9 ₁ | | | | | | | | | |
| YEAR | MAXIMUM DISCHARGE | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | | | |
| | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | | | |
| | | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | | |
| 1957 | | 6-28 | 0.92 | 6-28 | 0.77 | 6-28 | 1.22 | 6-28 | 1.79 | 6-28 | 1.99 | 6-28 | 2.16 | 6-28 | 2.32 | 6-21 | 2.91 |
| 1958 | | 7-11 | .21 | 7-11 | .21 | 7-11 | .30 | 7-11 | .39 | 7-11 | .15 | 5-1 | .58 | 5-1 | .76 | 5-3 | 1.53 |
| 1959 | | 2-10 | .38 | 1-21 | .33 | 1-21 | .60 | 1-21 | 1.13 | 1-21 | 2.01 | 1-21 | 2.95 | 1-20 | 3.27 | 1-20 | 3.67 |
| Notes: quality of records: monthly P and Q, fair; annual maximum discharges and volumes, fair. Mixed cover 1956 to 1959; 15% cropland, 57% grassland, 21% woodland. 1/2 miscellaneous; conservation practice. | | | | | | | | | | | | | | | | | |
| SELECTED RUNOFF EVENTS | | | | | | | | Coshocton, Ohio Watershed 9 ₁ | | | | | | | | | |
| Antecedent conditions | | | | Rainfall | | | | Runoff | | | | | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | | | | | | | |
| Event of September 23, 1915 | | | | | | | | | | | | | | | | | |
| 8-23-15 | T | 0 | 9-23-15 | Raingage | 91 | 9-23-15 | | | | | | | | | | | |
| 8-21 | .06 | 0 | 5:20p | 0 | 0 | 6:00p | 0.00178 | 0 | | | | | | | | | |
| 8-25-27 | 0 | T | :30 | 2.01 | .31 | :18 | .0201 | .0010 | | | | | | | | | |
| 8-28-31 | 0 | 0 | :10 | .06 | .35 | :51 | .0652 | .0080 | | | | | | | | | |
| 9-1 | .06 | 0 | 6:30 | 0 | .35 | 7:00 | .217 | .0216 | | | | | | | | | |
| 9-2-7 | 0 | 0 | :38 | 1.28 | .52 | :16 | .397 | .1125 | | | | | | | | | |
| 9-8 | .18 | 0 | :13 | .18 | .56 | :21 | .366 | .1635 | | | | | | | | | |
| 9-9 | .47 | T | :50 | 2.32 | .83 | 8:00 | .217 | .3181 | | | | | | | | | |
| 9-10 | 1.17 | .03 | 7:00 | 3.12 | 1.10 | :21 | .152 | .1268 | | | | | | | | | |
| 9-11 | .07 | .01 | :05 | 2.01 | 1.57 | :31 | .138 | .1507 | | | | | | | | | |
| 9-12 | 0 | T | :30 | .12 | 1.62 | 9:00 | .165 | .5162 | | | | | | | | | |
| 9-13 | .33 | T | :35 | 1.20 | 1.72 | :30 | .138 | .5931 | | | | | | | | | |
| 9-11 | .99 | .03 | 8:00 | .10 | 1.76 | 10:00 | .0909 | .6501 | | | | | | | | | |
| 9-15-16 | 0 | .01 | :20 | 0 | 1.76 | :21 | .0686 | .6811 | | | | | | | | | |
| 9-17 | .60 | T | :25 | 2.28 | 1.95 | 11:00 | .0396 | .7117 | | | | | | | | | |
| 9-18 | 1.02 | .08 | :10 | .36 | 2.01 | 12:00 | .0228 | .7113 | | | | | | | | | |
| 9-19 | 0 | .01 | :17 | .09 | 2.05 | | | | | | | | | | | | |
| 9-20 | .25 | .02 | :50 | 1.60 | 2.13 | | | | | | | | | | | | |
| 9-21-22 | 0 | .02 | 12:00m | .03 | 2.21 | | | | | | | | | | | | |
| 9-23 | .19 1/2 | .012/ | 9-23-15 | Raingage | 27 | | | | | | | | | | | | |
| | | | 6:30p | 0 | 0 | | | | | | | | | | | | |
| | | | 12:00m | | 1.91 | | | | | | | | | | | | |
| Watershed conditions: Mixed cover mostly under conservation practice. 7% of the area was in corn. Corn was cut September 17, leaving area in stubble. 10% of the area was in small grain crops, mostly wheat which was followed by meadow in July. 20% additional area was in rotation meadow. Legumes and grasses were 7" high and weeds 11" high. 23.5% was in pasture. Legumes, grasses and weeds were 8" high. 5% of the area was in idle land which was mostly in grass and weeds. 19% was in protected woodland and 12% in pastured woodland. 3.5% was in miscellaneous cover (farmsteads and roads). | | | | | | | | | | | | | | | | | |
| Notes: To convert runoff in in/hr. to cfs, multiply by 1532.7. | | | | | | | | | | | | | | | | | |
| 1/ Most of rainfall occurred after 3:20p. 2/ Runoff prior to 6:00p. | | | | | | | | | | | | | | | | | |

Cooperative Research Project of U. S. D. A. and Ohio Agricultural Experiment Station.

| SELECTED RUNOFF EVENTS | | | | | | Coshocton, Ohio Watershed 94 | | |
|--|-------------------|-----------------|---------------|-------------------|---------------|------------------------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of June 12, 1957</u> | | | | | | | | |
| | | | 6-12-57 | Raingage | 27 1/ | 6-12-57 | | |
| 5-13-57 | .01 | .02 | 3:10p | 0 | 0 | 3:00p | 0.0001 | 0 |
| 5-14 | .90 | .10 | :12 | 6.00 | .20 | :16 | .0102 | .0027 |
| 5-15 | .03 | .07 | :18 | 3.20 | .52 | 4:00 | .0186 | .0073 |
| 5-16-17 | 0 | .06 | :21 | 5.80 | .81 | :08 | .0771 | .0159 |
| 5-18 | .11 | .01 | :27 | 3.90 | 1.20 | :30 | .109 | .0511 |
| 5-19 | .18 | .01 | :46 | 1.23 | 1.59 | :10 | .155 | .0726 |
| 5-20 | .18 | .05 | :53 | 1.63 | 1.78 | :18 | .239 | .0986 |
| 5-21 | 0 | .01 | 1:00 | 1.71 | 1.98 | :52 | .267 | .1156 |
| 5-22 | e .52 | .11 | :10 | .81 | 2.12 | 5:00 | .321 | .1517 |
| 5-23-25 | 0 | .11 | :21 | 1.09 | 2.32 | :06 | .366 | .1891 |
| 5-26 | e .18 | .03 | :30 | .27 | 2.36 | :17 | .137 | .2630 |
| 5-27-31 | 0 | .09 | :35 | .96 | 2.11 | 6:08 | .207 | .5522 |
| 6-1 | .18 | .01 | :44 | .53 | 2.52 | :11 | .167 | .5708 |
| 6-2-5 | 0 | .01 | 5:10 | .02 | 2.53 | :21 | .118 | .5916 |
| 6-6 | .01 | .01 | 6:00 | .01 | 2.51 | :36 | .0850 | .6118 |
| 6-7 | .02 | .01 | | | | :18 | .0637 | .6296 |
| 6-8 | .96 | .03 | | | | 7:08 | .0126 | .6170 |
| 6-9-10 | 0 | .02 | | | | :30 | .0293 | .6597 |
| 6-11 | .20 | .01 | | | | 8:00 | .0231 | .6727 |
| 6-12 | 0 | .01 2/ | | | | 9:00 | .0158 | .6916 |
| <p><u>Watershed conditions:</u> Mixed cover mostly under conservation practice. 8% of the area was in corn. Corn plants were 20" high and weeds 18" high. 12.5% was in small grain crops, mostly wheat. Wheat plants were 30" high and legumes and grass in wheat, 14" high. 16.9% was in meadow. Legumes, grass and weeds were 7" high. 20% was in pasture. Legumes and grasses were 5" high and weeds 6" high. 6.5% was in idle land, mostly grass and weeds. 19.2% was in protected woodland and 13.4% in pastured woodland. 3.5% was in miscellaneous cover (farmsteads, roads, etc.).</p> | | | | | | | | |
| <u>Event of June 28, 1957</u> | | | | | | | | |
| 5-28-31-57 | 0 | 0.07 | 6-28-57 | Raingage | 91 | 6-28-57 | | |
| 6-1 | .12 | .01 | 12:50p | 0 | 0 | 12:00n | 0.0026 | 0 |
| 6-2-5 | 0 | .01 | 1:00 | .21 | .01 | 1:00p | .00225 | .0026 |
| 6-6 | .10 | .01 | :15 | .01 | .05 | 2:30 | .0216 | .0112 |
| 6-7 | 0 | .01 | :23 | 1.80 | .29 | 3:00 | .0186 | .0281 |
| 6-8 | .90 | .03 | :10 | .01 | .30 | :10 | .0620 | .0371 |
| 6-9-10 | 0 | .02 | :11 | .60 | .31 | 1:00 | .0171 | .0815 |
| 6-11 | .16 | .01 | :57 | .05 | .35 | 5:21 | .0928 | .1158 |
| 6-12 | e 2.16 | .73 | 2:03 | 2.70 | .62 | :18 | .170 | .1981 |
| 6-13 | .31 | .11 | :10 | .17 | .61 | 6:00 | .229 | .2390 |
| 6-14 | .06 | .09 | :33 | 0 | .61 | :30 | .315 | .3771 |
| 6-15 | 0 | .05 | :50 | .18 | .69 | :18 | .190 | .5001 |
| 6-16 | .05 | .01 | :56 | 1.10 | .80 | 7:02 | .778 | .6153 |
| 6-17-18 | 0 | .05 | 1:25 | .05 | .88 | :16 | .918 | .8109 |
| 6-19 | .02 | .02 | :31 | 1.10 | 1.02 | :30 | .821 | 1.0156 |
| 6-20-22 | 0 | .01 | :10 | .10 | 1.08 | 8:00 | .531 | 1.3751 |
| 6-23 | .12 | .01 | 5:02 | .19 | 1.15 | :18 | .267 | 1.6872 |
| 6-24 | 2.22 | .25 | :05 | 1.00 | 1.20 | 10:00 | .0719 | 1.8561 |
| 6-25-27 | 0 | .18 | :20 | .32 | 1.28 | :30 | .0521 | 1.8670 |
| 6-28 | .38 2/ | .02 4/ | :31 | .65 | 1.10 | 11:10 | .0390 | 1.9168 |
| | | | 6:00 | .50 | 1.61 | 12:00n | .0313 | 1.9411 |
| | | | :18 | e .77 | 1.87 | | | |
| | | | :36 | e .30 | 1.96 | | | |
| | | | :55 | e .85 | 2.23 | | | |
| | | | 7:04 | e 1.87 | 2.51 | | | |
| | | | :06 | e 3.60 | 2.63 | | | |
| | | | :35 | e .46 | 2.85 | | | |
| | | | 8:34 | .11 | 2.96 | | | |
| | | | 6-28-57 | Raingage | 27 | | | |
| | | | 1:03p | 0 | 0 | | | |
| | | | 8:50p | | 3.11 | | | |
| <p>See next page for Watershed conditions.</p> | | | | | | | | |
| <p>Notes: 1/ No intensity record on Raingage 91. Raingage 27 used. 2/ Runoff prior to 3:00p. 3/ Rainfall ended 7:30a. 4/ Runoff prior to 12:00n.</p> | | | | | | | | |

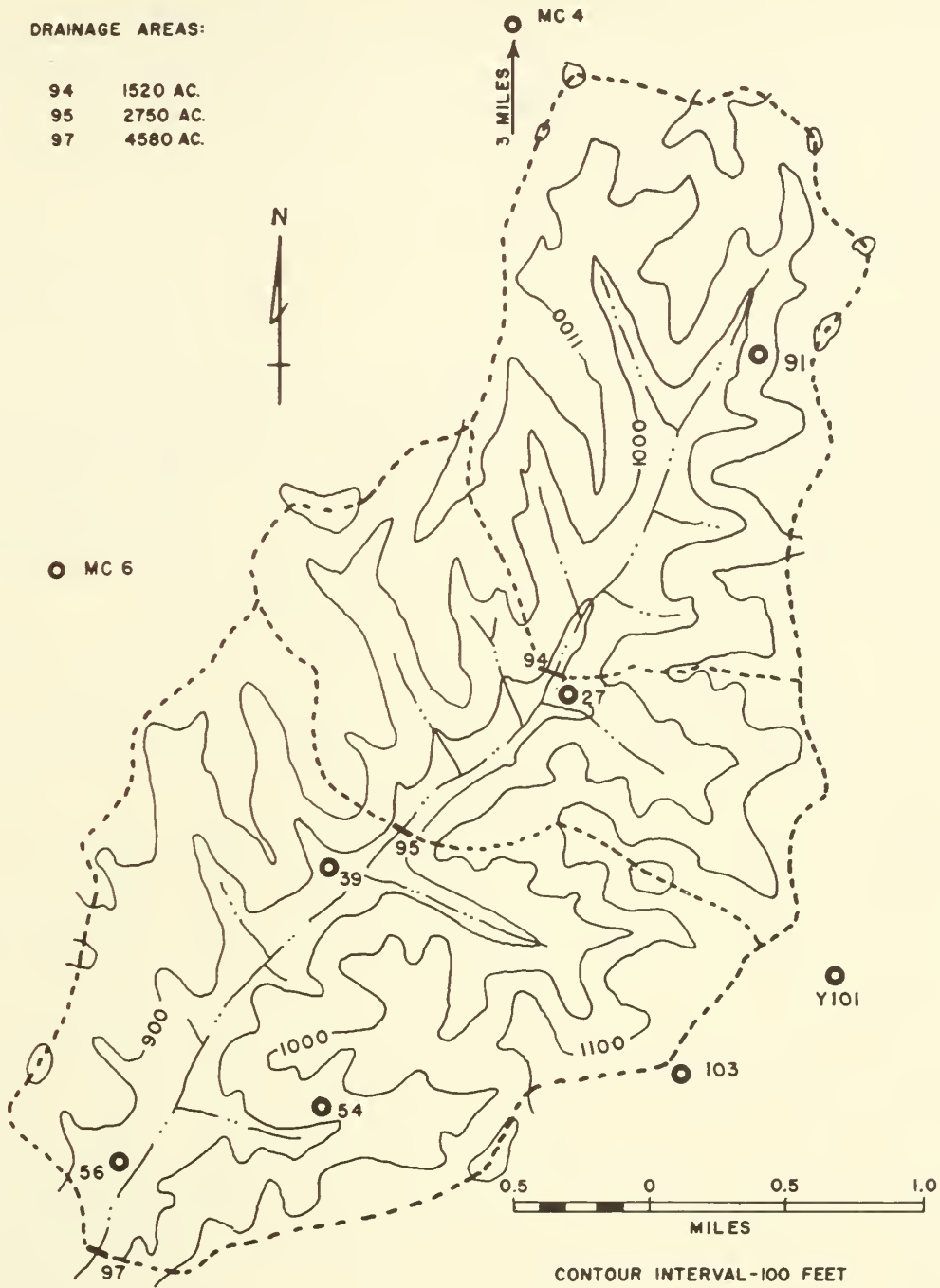
| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 94 | | | | | |
|---|-------------------|-----------------|------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of June 28, 1957 - Continued</u> | | | | | | | | |
| <p>Watershed conditions: Mixed cover mostly under conservation practice. 8% of the area was in corn. Corn plants were 32" high and weeds 24" high. 12.5% of the area was in small grain crops, mostly wheat. Wheat plants were 36" high, grass and weeds 4" high. 16.9% was in meadow. Legumes, grass and weeds were 10" high. 20% was in pasture. Legumes and grass were 8" high. 6.5% was in idle land, mostly grass and weeds. 19.2% was in protected woodland and 13.4% in pastured woodland. 3.5% was in miscellaneous cover (farmsteads, roads, etc.).</p> | | | | | | | | |
| <u>Event of January 21, 1959</u> | | | | | | | | |
| 12-21-22-58 | O | e 0.01 | 1-21-59 | Raingage | 91 | 1-21-59 | | |
| 12-23 | T | e .01 | 12:01a | 0 | 0 | 12:20a | 0.0135 | 0 |
| 12-24 | .01 1/ | e .01 | 1:15 | .05 | .06 | 2:20 | .0514 | .0503 |
| 12-25-31 | O | e .05 | 2:20 | .19 | .26 | 3:00 | .0817 | .0918 |
| 1-1-59 | .71 | e .07 | :50 | 0 | .26 | 4:30 | .101 | .2311 |
| 1-2-3 | O | e .09 | 3:4.3 | .06 | .31 | :54 | .207 | .2899 |
| 1-4 | .01 1/ | .03 | 4:30 | .22 | .18 | 5:06 | .255 | .3363 |
| 1-5-8 | O | .06 | :40 | 1.02 | .65 | :40 | .330 | .5089 |
| 1-9-10 | T 1/ | .02 | :4.8 | .15 | .67 | :54 | .330 | .5859 |
| 1-11-13 | O | .02 | 5:21 | .56 | .98 | 6:30 | .247 | .7630 |
| 1-14 | .23 2/ | .01 | 8:45 | .06 | 1.18 | 7:00 | .155 | .8660 |
| 1-15 | .69 2/ | .06 | 9:04 | .41 | 1.31 | :30 | .107 | .9293 |
| 1-16-19 | .30 1/ | .08 | :55 | .13 | 1.42 | 8:40 | .0758 | 1.0332 |
| 1-20 | .49 | .04 | 11:06 | .45 | 1.95 | :46 | .0758 | 1.0407 |
| | | | 1:40p | .07 | 2.13 | 10:00 | .164 | 1.1887 |
| | | | 3:30 | 0 | 2.13 | :30 | .219 | 1.2798 |
| | | | 5:00 | .13 | 2.33 | :52 | .281 | 1.3723 |
| | | | :05 | 1.92 | 2.49 | 11:18 | .348 | 1.5089 |
| | | | :14 | 0 | 2.49 | :36 | .348 | 1.6133 |
| | | | 6:46 | .10 | 2.64 | 12:30p | .223 | 1.8752 |
| | | | 7:30 | .01 | 2.65 | 1:24 | .101 | 2.0083 |
| | | | | | | 2:30 | .0680 | 2.1016 |
| | | | | | | 4:00 | .0507 | 2.1829 |
| | | | | | | :20 | .0507 | 2.1998 |
| | | | | | | 5:24 | .113 | 2.2699 |
| | | | | | | :42 | .207 | 2.3168 |
| | | | | | | 6:00 | .264 | 2.3892 |
| | | | | | | :20 | .264 | 2.4772 |
| | | | | | | 7:06 | .155 | 2.6399 |
| | | | | | | 8:00 | .0850 | 2.7414 |
| | | | | | | 9:30 | .0486 | 2.8377 |
| | | | | | | 12:00m | .0303 | 2.9326 |
| <p>Watershed conditions: Mixed cover mostly under conservation practice. 7.5% of the area had been in corn, 13% in small grain crops, mostly wheat, 17.4% in meadow, 20% in pasture, 6% idle land, 19.2% protected woodland, 13.4% pastured woodland and 3.5% in miscellaneous cover (farmsteads and roads). All vegetation in dormant state. Frost penetration on all areas except woodland, 1" deep. No frost in woodland areas. Snow cover 5" on January 20.</p> | | | | | | | | |
| <p>Notes: 1/ Snow 2/ Rain and snow</p> | | | | | | | | |



COSHOCTON, OHIO WATERSHED 94

DRAINAGE AREAS:

| | |
|----|----------|
| 94 | 1520 AC. |
| 95 | 2750 AC. |
| 97 | 4580 AC. |



- RAIN GAGE & NUMBER
- RUNOFF GAGE & NUMBER

COSHOCTON, OHIO
WATERSHEDS 94,95,97

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Coshocton, Ohio Watershed 95 (Area - 2570 acres) | | | | | | |
|---|------------------|--------------|--------------|--------------|--------------|---------------|---|-------------|-------------|-------------|-------------|--------------|----------------|
| Month Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 | P 1.60 Q .18 | 5.58 3.17 | 4.55 2.85 | 3.96 1.82 | 6.45 2.50 | 5.87 1.84 | 6.14 .88 | 4.09 .41 | 1.41 .14 | 1.07 .07 | 1.53 .09 | 3.30 .53 | 45.55 14.48 |
| 1957 | P 1.80 Q 1.02 | 1.34 .83 | 1.95 1.07 | 5.30 3.85 | 3.89 1.00 | 10.08 3.84 | 2.96 .86 | 2.13 .09 | 3.69 .13 | 1.52 .07 | 2.70 .36 | 4.61 2.34 | 41.97 15.46 |
| 1958 | P 1.62 Q .94 | .71 .51 | 1.00 .80 | 3.80 1.45 | 3.06 1.96 | 4.19 .28 | 10.08 2.41 | 2.68 .70 | 2.79 .21 | .38 .09 | 2.15 .11 | .76 .19 | 33.22 9.65 |
| 1959 | P 5.91 Q 4.17 | 3.55 3.07 | 2.56 1.49 | 4.47 1.73 | 2.88 .96 | 4.81 .59 | 2.97 .20 | 2.10 .13 | 3.47 .07 | 5.45 .51 | 2.76 .86 | 2.22 1.76 | 43.15 15.54 |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | Coshocton, Ohio Watershed 95 | | | | | | | | | |
|---|-------------------|-------|---|-------|---------|-------|------------------------------|-------|----------|-------|-------|-------|--------|-------|--------|-------|
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 6-28 | 0.61 | 6-28 | 0.56 | 6-28 | 0.95 | 6-28 | 1.43 | 6-28 | 1.62 | 6-28 | 1.78 | 6-28 | 1.94 | 6-24 | 2.52 |
| 1958 | 7-14 | .18 | 7-14 | .16 | 7-14 | .25 | 7-14 | .33 | 5-4 | .38 | 5-4 | .55 | 5-4 | .74 | 5-3 | 1.41 |
| 1959 | 2-10 | e .43 | 2-10 | e .36 | 1-21 | e .60 | 1-21 | e1.09 | 1-21 | e1.92 | 1-21 | e2.78 | 1-21 | e3.07 | 1-20 | e3.46 |

Notes: Quality of records: monthly P, fair; Q, good; annual maximum discharges and volumes, good. Mixed cover 1956 to 1959; 15% cropland, 55% grassland, 26% woodland, 4% miscellaneous; conservation practice.

| SELECTED RUNOFF EVENTS | | | | | | | Coshocton, Ohio Watershed 95 | | | | | | |
|-----------------------------|-------------------|-----------------|---------------|-------------------|---------------|---------------|------------------------------|---------------|--|--|--|--|--|
| Antecedent conditions | | | Rainfall | | | Runoff | | | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | | | |
| Event of September 23, 1945 | | | | | | | | | | | | | |
| 8-23-45 | T | T | 9-23-45 | Raingage | 27 | 9-23-45 | | | | | | | |
| 8-24 | .05 | T | 5:24p | 0 | 0 | 6:00p | 0.0005 | 0 | | | | | |
| 8-25-28 | 0 | T | :26 | 2.70 | .09 | 7:06 | .0136 | .0030 | | | | | |
| 8-29-31 | 0 | 0 | :34 | .52 | .16 | :12 | .0502 | .0060 | | | | | |
| 9-1 | .07 | 0 | :36 | 2.70 | .25 | :18 | .0876 | .0132 | | | | | |
| 9-2-7 | 0 | 0 | :44 | .22 | .28 | :24 | .161 | .0246 | | | | | |
| 9-8 | .52 | 0 | 6:30 | 0 | .28 | :30 | .338 | .0473 | | | | | |
| 9-9 | .58 | 0 | :10 | 2.10 | .63 | :34 | .362 | .0708 | | | | | |
| 9-10 | 1.26 | .02 | :44 | 2.70 | .81 | :48 | .331 | .1520 | | | | | |
| 9-11 | .20 | .01 | :52 | 1.50 | 1.01 | 8:00 | .288 | .2139 | | | | | |
| 9-12 | 0 | T | 7:00 | 2.62 | 1.36 | :24 | .228 | .3168 | | | | | |
| 9-13 | .38 | T | :02 | 3.90 | 1.19 | :48 | .175 | .3965 | | | | | |
| 9-14 | .95 | .03 | :08 | .50 | 1.54 | 9:00 | .161 | .1301 | | | | | |
| 9-15 | 0 | .01 | :28 | .09 | 1.57 | :32 | .168 | .5166 | | | | | |
| 9-16 | 0 | T | :32 | .60 | 1.61 | 10:00 | .140 | .5907 | | | | | |
| 9-17 | .60 | 0 | 8:00 | .02 | 1.62 | :20 | .102 | .6314 | | | | | |
| 9-18 | 1.07 | .08 | :18 | .07 | 1.64 | :32 | .0822 | .6499 | | | | | |
| 9-19 | 0 | .01 | :20 | 3.60 | 1.76 | :48 | .0629 | .6692 | | | | | |
| 9-20 | .65 | .03 | :28 | .75 | 1.86 | 11:00 | .0533 | .6808 | | | | | |
| 9-21 | 0 | .02 | :34 | .20 | 1.88 | 12:00m | .0283 | .7188 | | | | | |
| 9-22 | 0 | .01 | :36 | 2.10 | 1.95 | | | | | | | | |
| 9-23 | .20 1/ | .01 2/ | :40 | .15 | 1.96 | | | | | | | | |
| | | | :44 | 1.35 | 2.05 | | | | | | | | |
| | | | :50 | .40 | 2.09 | | | | | | | | |
| | | | 9:20 | .08 | 2.13 | | | | | | | | |
| | | | 10:10 | .04 | 2.18 | | | | | | | | |
| | | | 12:00 m | .01 | 2.19 | | | | | | | | |

Notes: To convert runoff in in/hr. to cfs, multiply by 2591.4.
 1/ Most of rainfall occurred after 3:24p. 2/ Runoff prior to 6:00p.

Cooperative Research Project of U. S. D. A. and Ohio Agricultural Experiment Station.

| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 95 | | | | | |
|---|-------------------|-------------------|------------------------------|-------------------|-----------------|------------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of September 23, 1945 - Continued</u> | | | | | | | | |
| | | | 9-23-45 | Raingage nr | 39 | | | |
| | | | 9-23-45 6:30p 12:00m | Raingage 0 | 91 0 1.86 | | | |
| <p>Watershed conditions: Mixed cover mostly in conservation practice. 7% of the area was in corn. Corn cutting was completed before Sept. 23, leaving area in stubble. 9% of the area had been in small grain crops, mostly wheat which was cut in July and followed by meadow. 20.2% additional area was in rotation meadow. Legumes, grass and weeds were 7" high and weeds 11" high. 22% was in pasture. Legumes and grass and weeds were 8" high. 6% was in idle land, mostly grass and weeds. 23.1% was in protected woodland and 8.7% in pastured woodland. 1% was in miscellaneous cover (farmsteads and roads).</p> | | | | | | | | |
| <u>Event of June 12, 1957</u> | | | | | | | | |
| | | | 6-12-57 3:10p | Raingage 0 | 27 0 | 6-12-57 3:00p | T | 0 |
| 5-13-57 | .04 | .02 | :12 | 6.00 | .20 | :52 | .0132 | .0023 |
| 5-14 | .90 | .11 | :16 | 3.20 | .52 | 4:00 | .0301 | .0019 |
| 5-15 | .03 | .07 | :21 | 5.80 | .81 | :12 | .0919 | .0166 |
| 5-16 | 0 | .03 | :27 | 3.90 | 1.20 | :30 | .203 | .0611 |
| 5-17 | 0 | .03 | :16 | 1.23 | 1.59 | :34 | .235 | .0760 |
| 5-18 | .14 | .03 | :53 | 1.63 | 1.78 | :18 | .292 | .1382 |
| 5-19 | .18 | .03 | 4:00 | 1.71 | 1.98 | 5:14 | .346 | .2797 |
| 5-20 | .18 | .04 | :10 | .84 | 2.12 | 6:02 | .281 | .5354 |
| 5-21 | 0 | .03 | :21 | 1.09 | 2.32 | 7:00 | .0807 | .7226 |
| 5-22 | e .52 | .10 | :30 | .27 | 2.36 | 8:10 | .0272 | .7724 |
| 5-23-25 | 0 | .13 | :35 | .96 | 2.44 | 9:00 | .0197 | .7917 |
| 5-26 | e .18 | .03 | :44 | .53 | 2.52 | | | |
| 5-27-31 | 0 | .08 | 5:10 | .02 | 2.53 | | | |
| 6-1 | .18 | .01 | 6:00 | .01 | 2.54 | | | |
| 6-2-5 | 0 | .03 | | | | | | |
| 6-6 | .04 | .01 | | | | | | |
| 6-7 | .02 | .01 | | | | | | |
| 6-8 | .96 | .03 | | | | | | |
| 6-9-10 | 0 | .02 | | | | | | |
| 6-11 | .20 | .01 | | | | | | |
| 6-12 | 0 | .01 ^{1/} | | | | | | |
| <p>Watershed conditions: Mixed cover mostly in conservation practice. 9% in corn, plants 20" high and weeds 18" high. 11.0% in small grain crops, mostly wheat, wheat 30" high and legumes and grass 4" high. 19.0% meadow, 7" high. 19.8% in pasture, 6" high. 5.0% in idle land, 23.1% in protected woodland, 8.7% in pastured woodland and 4.4% in miscellaneous cover (farmsteads and roads).</p> | | | | | | | | |
| Notes: ^{1/} Runoff prior to 3:00p. | | | | | | | | |

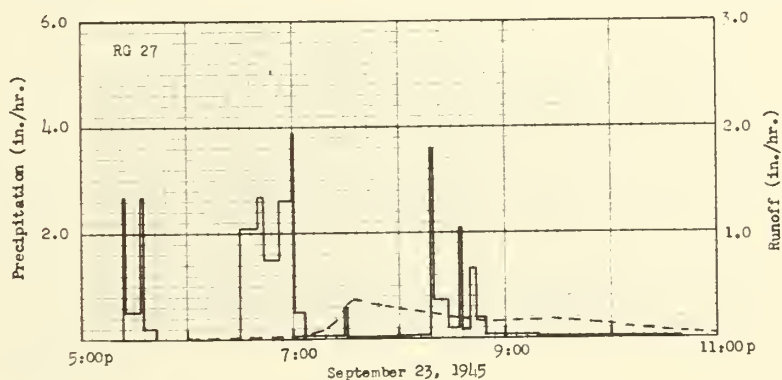
| SELECTED RUNOFF EVENTS | | | | | | Coshocton, Ohio Watershed 95 | | |
|---|-------------------|-------------------|---------------|-------------------|---------------|------------------------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of June 28, 1957</u> | | | | | | | | |
| 5-28-31-57 | 0 | 0.06 | 6-28-57 | Raingage | 27 | 6-28-57 | | |
| 6-1 | .18 | .01 | 1:03p | 0 | 0 | 12:00n | 0.00238 | 0 |
| 6-2-5 | 0 | .03 | :05 | 3.90 | .13 | 3:00p | .0279 | .0176 |
| 6-6 | .04 | .01 | :10 | 3.00 | .38 | 4:00 | .0421 | .0558 |
| 6-7 | .02 | .01 | 2:00 | .01 | .39 | 6:00 | .0942 | .1131 |
| 6-8 | .96 | .03 | :08 | .98 | .52 | :30 | .203 | .2135 |
| 6-9-10 | 0 | .02 | :10 | 6.00 | .72 | 7:11 | .432 | .4215 |
| 6-11 | .20 | .01 | :15 | .48 | .76 | :30 | .598 | .5942 |
| 6-12 | 2.54 | .84 | :40 | .02 | .77 | :36 | .614 | .6548 |
| 6-13 | .32 | .16 | :58 | .10 | .80 | 9:04 | .256 | 1.3075 |
| 6-14 | .04 | .08 | 3:00 | 3.30 | .91 | :58 | .0899 | 1.4634 |
| 6-15 | 0 | .05 | :40 | .02 | .92 | 10:30 | .0533 | 1.4994 |
| 6-16 | .02 | .04 | 4:10 | .08 | .96 | 11:00 | .0421 | 1.5229 |
| 6-17-18 | 0 | .05 | :30 | .12 | 1.00 | 12:00m | .0320 | 1.5595 |
| 6-19 | .02 | .02 | :33 | 2.00 | 1.10 | | | |
| 6-20-21 | 0 | .03 | :50 | .25 | 1.17 | | | |
| 6-22 | 0 | .01 | 5:00 | .18 | 1.20 | | | |
| 6-23 | .10 | .01 | :20 | .36 | 1.32 | | | |
| 6-24 | 2.24 | .25 | :30 | .72 | 1.44 | | | |
| 6-25 | 0 | .10 | :50 | .51 | 1.61 | | | |
| 6-26-27 | 0 | .08 ^{1/} | 6:02 | .55 | 1.72 | | | |
| 6-28 | .26 ^{1/} | .02 ^{2/} | :10 | .82 | 1.83 | | | |
| | | | :17 | 1.11 | 1.96 | | | |
| | | | :25 | .45 | 2.02 | | | |
| | | | :40 | 1.20 | 2.32 | | | |
| | | | :45 | 2.16 | 2.50 | | | |
| | | | :57 | e .35 | e 2.57 | | | |
| | | | 7:01 | e 3.15 | e 2.78 | | | |
| | | | :05 | e .60 | e 2.82 | | | |
| | | | :10 | e .24 | e 2.84 | | | |
| | | | :18 | e .90 | e 2.96 | | | |
| | | | :50 | e .24 | e 3.09 | | | |
| | | | 8:05 | e .12 | e 3.12 | | | |
| | | | :20 | e .04 | e 3.13 | | | |
| | | | :50 | e .02 | 3.14 | | | |
| | | | 6-28-57 | Raingage | 39 | | | |
| | | | 12:50p | 0 | 0 | | | |
| | | | 8:50 | | 2.85 | | | |
| | | | 6-28-57 | Raingage | 56 | | | |
| | | | 1:19p | 0 | 0 | | | |
| | | | 8:35 | | 2.69 | | | |
| | | | 6-28-57 | Raingage | 91 | | | |
| | | | 12:50p | 0 | 0 | | | |
| | | | 8:34 | | 2.96 | | | |
| <p>Watershed conditions: Mixed cover mostly in conservation practice. 9.0% of the area was in corn. Corn plants were 32" high and weeds 24" high. 11.0% of the area was in small grain crops, mostly wheat. Wheat plants were 36" high, grass and weeds 4" high. 19.0% of the area was in meadow. Legumes, grass, and weeds were 10" high. 19.8% was in pasture. Legumes, grass and weeds were 8" high. 5.0% was in idle land, 23.1% in protected woodland, 8.7% in pastured woodland and 4.4% in miscellaneous cover (farmsteads and roads).</p> | | | | | | | | |

Notes: ^{1/} Rainfall ended about 7:30a. ^{2/} Runoff prior to 12:00n.

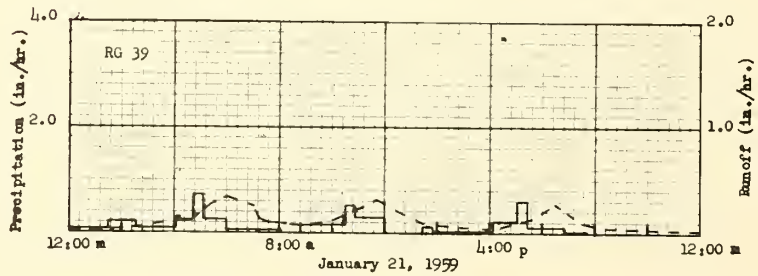
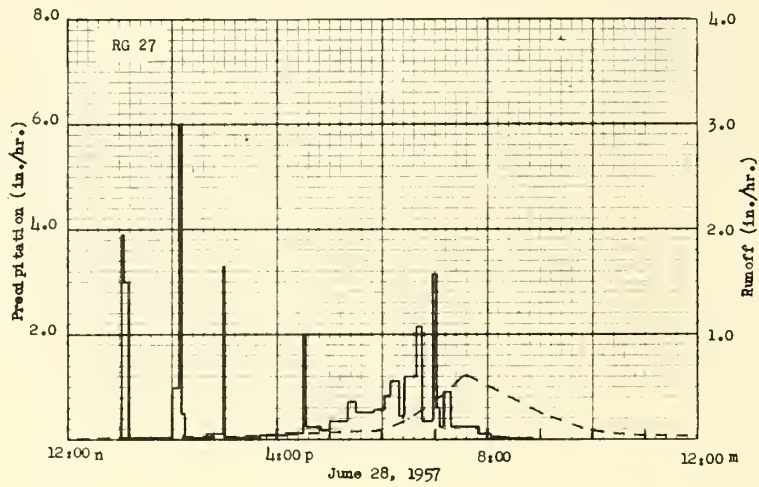
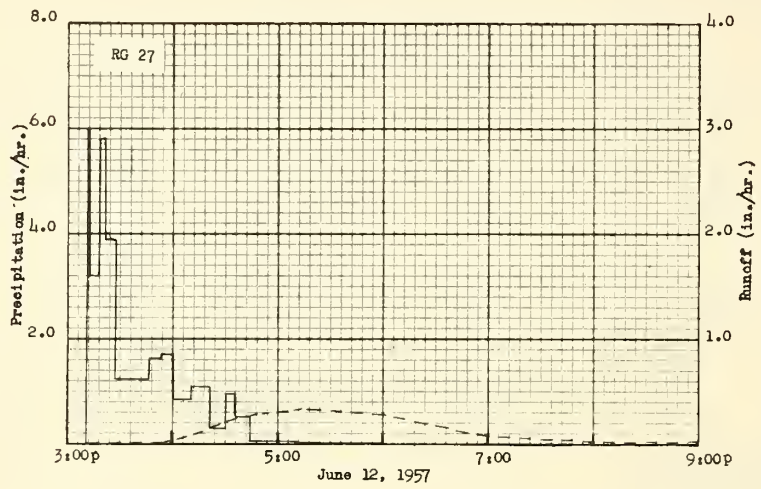
| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 95 | | | | | |
|----------------------------------|-------------------|-----------------|------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of January 21, 1959</u> | | | | | | | | |
| 12-21-22-58 | 0 | 0.01 | 1-21-59 | Raingage | .39 | 1-21-59 | | |
| 12-23 | T | .01 | 12:01a | 0 | 0 | 12:01a | T | 0 |
| 12-24 | T 1/ | .01 | 1:30 | .06 | .09 | 2:36 | .0448 | .0486 |
| 12-25-31 | 0 | .05 | 2:35 | .21 | .31 | 4:48 | .143 | .2139 |
| 1-1-59 | .70 | .07 | 4:02 | .07 | .41 | 5:24 | .271 | .3358 |
| 1-2-3 | 0 | .12 | :15 | .32 | .48 | 6:00 | .350 | .5312 |
| 1-4 | .02 1/ | .03 | :45 | .24 | .60 | 7:00 | .253 | .8476 |
| 1-5-8 | 0 | .06 | 5:08 | .73 | .88 | :12 | .143 | .8895 |
| 1-9 | T 1/ | .01 | 6:00 | .24 | 1.09 | :36 | .101 | .9372 |
| 1-10 | T 1/ | .01 | 8:05 | .05 | 1.19 | 8:54 | .0687 | 1.0445 |
| 1-11-13 | 0 | .02 | :48 | 0 | 1.19 | 10:00 | .122 | 1.1384 |
| 1-14 | .22 2/ | .01 | 10:33 | .17 | 1.62 | 11:00 | .235 | 1.3138 |
| 1-15 | .72 2/ | .05 | :51 | .53 | 1.78 | :40 | .320 | 1.5051 |
| 1-16-19 | .30 1/ | .11 | 12:00n | .29 | 2.11 | 12:36p | .196 | 1.7723 |
| 1-20 | e .40 | .05 | 1:25p | 0 | 2.11 | 1:30 | .0919 | 1.8841 |
| | | | 1:50 | .14 | 2.17 | 3:10 | .0567 | 2.0023 |
| | | | 4:05 | .02 | 2.22 | 4:10 | .0467 | 2.0535 |
| | | | 5:03 | .21 | 2.42 | 5:36 | .133 | 2.1421 |
| | | | :25 | .60 | 2.64 | 6:04 | .214 | 2.2262 |
| | | | 6:49 | .10 | 2.78 | :28 | .267 | 2.3233 |
| | | | 7:45 | .01 | 2.79 | 7:10 | .189 | 2.4933 |
| | | | | | | :32 | .101 | 2.5396 |
| | | | | | | 8:24 | .0567 | 2.6048 |
| | | | | | | 12:00m | .0305 | 2.7514 |

Watershed conditions: Mixed cover mostly in conservation practice. 9.5% of the area had been in corn, 10.5% in wheat, 19.6% in meadow, 19.2% in pasture, 5% in idle land, 23.1% in protected woodland, 8.7% in pastured woodland and 4.4% in miscellaneous cover (farmsteads and roads). All vegetation in dormant state. Depth of frost penetration on all areas except woodland, 1" deep. No frost in woodland. Snow cover 5" on January 20.

Notes: 1/ Snow
2/ Rain and Snow
See map of watershed on page 26.34-5.



COSHOCOTON, OHIO WATERSHED 95



COSHOCTON, OHIO WATERSHED 95

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | | Coshocton, Ohio Watershed 97 (Area - 4580 acres) | | | | | | |
|---|-------|------|------|------|------|------|-------|---|------|-------|------|------|------|-------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 | P | 1.60 | 5.58 | 4.55 | 3.96 | 6.15 | 5.87 | 6.14 | 4.09 | 1.41 | 1.07 | 1.53 | 3.30 | 45.55 |
| | C | .20 | 3.23 | 2.81 | 1.80 | 2.50 | 1.94 | 1.34 | .44 | .16 | .06 | .08 | .61 | 15.17 |
| 1957 | P | 1.80 | 1.34 | 1.95 | 5.30 | 3.89 | 10.08 | 2.96 | 2.13 | 3.69 | 1.52 | 2.70 | 4.61 | 41.97 |
| | C | 1.12 | .84 | 1.02 | 4.16 | .94 | 4.03 | .73 | .08 | .12 | .07 | .35 | 2.51 | 15.97 |
| 1958 | P | 1.62 | .71 | 1.00 | 3.80 | 3.06 | 4.19 | 10.08 | 2.68 | 2.79 | .38 | 2.15 | .76 | 33.22 |
| | C | .92 | .52 | .79 | 1.47 | 2.07 | .27 | 2.57 | .75 | .24 | .09 | .11 | .19 | 9.99 |
| 1959 | P | 5.91 | 3.55 | 2.56 | 4.47 | 2.88 | 4.81 | 2.97 | 2.10 | 3.47 | 5.45 | 2.76 | 2.22 | 43.15 |
| | C | 4.52 | 2.65 | 1.33 | 1.81 | .85 | .68 | .20 | .21 | .05 | .50 | .90 | 1.71 | 15.41 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS Coshocton, Ohio Watershed 97

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 6-28 | 0.72 | 6-28 | 0.66 | 6-28 | 1.15 | 6-28 | 1.73 | 6-28 | 1.92 | 6-28 | 2.09 | 6-28 | 2.24 | 4-3 | 2.84 |
| 1958 | 7-22 | .11 | 7-22 | .11 | 7-22 | .20 | 7-22 | .35 | 5-4 | .48 | 5-4 | .67 | 5-4 | .86 | 5-3 | 1.54 |
| 1959 | 1-21 | .37 | 1-21 | .35 | 1-21 | .64 | 1-21 | 1.20 | 1-21 | 2.32 | 1-21 | 3.24 | 1-20 | 3.54 | 1-20 | 3.85 |

Notes: Quality of records: monthly P, fair; C, good; annual maximum discharges and volumes, good. Mixed cover 1956 to 1959; 18% cropland, 50% grassland, 24% woodland, 4% miscellaneous; conservation practice.

SELECTED RUNOFF EVENTS Coshocton, Ohio Watershed 97

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|-------------------------------|-------------------|-----------------|------------------|-------------------|---------------|------------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of June 12, 1957</u> | | | | | | | | |
| 5-13-57 | .04 | .02 | 6-12-57 3:10p | Raingage 0 | 27 0 | 6-12-57 3:00p | T | 0 |
| 5-14 | .90 | .10 | :12 | 6.00 | .20 | 4:10 | .0124 | .0015 |
| 5-15 | .03 | .07 | :18 | 3.20 | .52 | :24 | .0784 | .0123 |
| 5-16 | 0 | .03 | :21 | 5.80 | .81 | :30 | .0992 | .0208 |
| 5-17 | 0 | .03 | :27 | 3.90 | 1.20 | :36 | .122 | .0319 |
| 5-18 | .14 | .03 | :46 | 1.23 | 1.59 | :48 | .188 | .0634 |
| 5-19 | .18 | .03 | :53 | 1.63 | 1.78 | 5:00 | .245 | .1071 |
| 5-20 | .18 | .04 | 4:00 | 1.71 | 1.98 | :30 | .260 | .2404 |
| 5-21 | 0 | .03 | :10 | .84 | 2.12 | 7:24 | .111 | .5821 |
| 5-22 | e .52 | .10 | :21 | 1.09 | 2.32 | 8:00 | .0812 | .6395 |
| 5-23 | 0 | .05 | :30 | .27 | 2.36 | :36 | .0437 | .6786 |
| 5-24-25 | 0 | .06 | :35 | .96 | 2.44 | 9:00 | .0323 | .6934 |
| 5-26 | e .18 | .03 | :44 | .53 | 2.52 | | | |
| 5-27-28 | 0 | .04 | 5:10 | .02 | 2.53 | | | |
| 5-29-31 | 0 | .04 | 6:00 | .01 | 2.54 | | | |
| 6-1 | .18 | .01 | | | | | | |
| 6-2-5 | 0 | .03 | 6-12-57 | Raingage | 39 | | | |
| 6-6 | .04 | .01 | 3:07p | | 0 | | | |
| 6-7 | .02 | .01 | 6:00p | | 2.64 | | | |
| 6-8 | .96 | .02 | | | | | | |
| 6-9-10 | 0 | .02 | 6-12-57 | Raingage | 56 | | | |
| 6-11 | .20 | .01 | 3:08p | | 0 | | | |
| 6-12 | 0 | .01 1/2 | 5:30p | | 1.34 | | | |

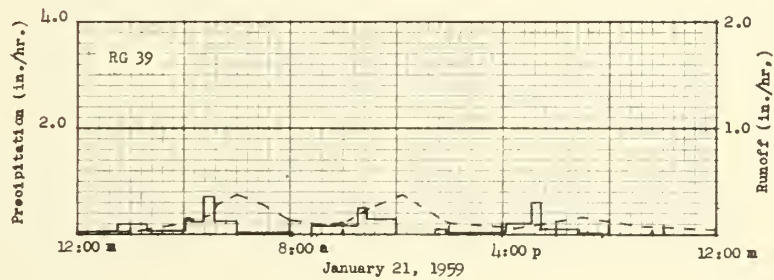
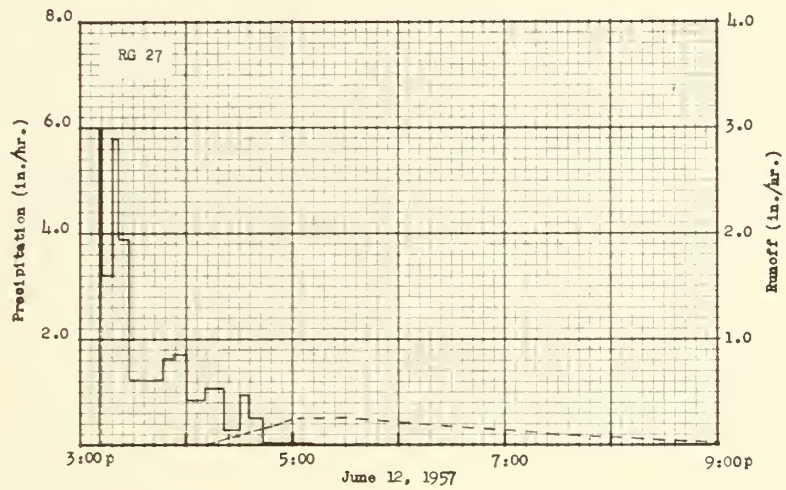
See next page for Watershed conditions.

Notes: To convert runoff in in/hr to cfs, multiply by 4618.1.
1/2 Runoff prior to 3:00p.

| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 97 | | | | | |
|---|-------------------|-----------------|------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of June 12, 1957 - Continued | | | | | | | | |
| <p>Watershed conditions: Mixed cover under conservation practice. 8.0% of the area was in corn and 1.0% in potatoes and soybeans. Corn plants were 20" high and weeds 18" high. 8.0% of the area was in wheat and 1.0% in other small grain crops. Wheat plants were 30" high, legumes and grass in wheat were 4" high. 21.0% of the area was in meadow. Legumes and grass were 7" high. 22.0% of the area was in pasture. Legumes, grass and weeds were 5" high. 5.0% of the area was idle land, mostly in grass and weeds. 30.0% of the area was in woodland and 1.0% in miscellaneous cover (farmsteads, roads, etc.).</p> | | | | | | | | |
| Event of January 21, 1959 | | | | | | | | |
| 12-21-58 | 0 | 0.01 | 1-21-59 | Raingage | 39 | 1-21-59 | | |
| 12-22 | 0 | T | 12:01a | 0 | 0 | 12:01a | 0.0095 | 0 |
| 12-23 | T | .01 | 1:30 | .06 | .09 | 2:15 | .0470 | .0159 |
| 12-24 | T 1/ | .01 | 2:35 | .21 | .31 | 3:45 | .103 | .1630 |
| 12-25-26 | 0 | .02 | 4:02 | .07 | .41 | 5:00 | .182 | .3167 |
| 12-29-31 | 0 | e .02 | :15 | .32 | .68 | :15 | .284 | .3761 |
| 1-1-59 | .70 | .08 | :15 | .24 | .60 | 6:00 | .369 | .6285 |
| 1-2-3 | 0 | .13 | 5:08 | .73 | .88 | 7:00 | .275 | .9607 |
| 1-4 | .02 1/ | .03 | 6:00 | .21 | 1.09 | 8:00 | .132 | 1.1564 |
| 1-5-8 | 0 | .06 | 8:05 | .05 | 1.19 | 9:05 | .0942 | 1.2740 |
| 1-9-10 | T 1/ | .02 | :48 | 0 | 1.19 | 10:00 | .112 | 1.3688 |
| 1-11-13 | 0 | .02 | 10:33 | .17 | 1.62 | 11:00 | .245 | 1.5156 |
| 1-14 | .22 2/ | .01 | :41 | .53 | 1.78 | 12:15p | .373 | 1.9178 |
| 1-15 | .72 2/ | .06 | 12:00n | .29 | 2.11 | 1:30 | .171 | 2.2593 |
| 1-16-19 | .30 1/ | .09 | 1:25p | 0 | 2.11 | 2:00 | .109 | 2.3279 |
| 1-20 | e .40 | .04 | :50 | .14 | 2.17 | 4:30 | .0585 | 2.5131 |
| | | | 4:05 | .02 | 2.22 | 5:30 | .0992 | 2.5913 |
| | | | 5:03 | .21 | 2.42 | 7:00 | .166 | 2.7868 |
| | | | :25 | .60 | 2.64 | 8:00 | .118 | 2.9371 |
| | | | 6:49 | .10 | 2.78 | 9:00 | .0844 | 3.0356 |
| | | | 7:15 | .01 | 2.79 | 12:00m | .0390 | 3.2098 |
| <p>Watershed conditions: Mixed cover under conservation practice. 2% of the area had been in row crops, 9% in small grain crops, 21% in meadow, 22% in pasture, 5% in idle land, 30% in woodland and 4% in miscellaneous cover. All vegetation in a dormant state. Frost on 1-21-59. No frost in woodland. Snow water 3" on January 22.</p> | | | | | | | | |
| | | | 1-21-59 | Raingage | 54 | | | |
| | | | 12:01a | 0 | 0 | | | |
| | | | 7:30p | | 2.88 | | | |
| | | | 1-21-59 | Raingage | 56 | | | |
| | | | 12:01a | 0 | 0 | | | |
| | | | 7:36p | | 2.63 | | | |
| | | | 1-21-59 | Raingage | 91 | | | |
| | | | 12:01a | 0 | 0 | | | |
| | | | 7:30p | | 2.65 | | | |

Notes: 1/ Snow
2/ Rain and snow
see map of watershed on page 26.34-5.

Events of Sept. 23, 1945 and June 28, 1957 could not be presented because of faulty records.



COSHOCTON, OHIO WATERSHED 97

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | | | | | | | Coshocton, Ohio Watershed 994 (Area - 17,500 acres) | |
|---|-------|------|------|------|------|------|-------|-------|------|-------|------|------|--|-------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 | P | 1.60 | 5.58 | 4.55 | 3.96 | 6.45 | 5.87 | 6.14 | 4.09 | 1.41 | 1.07 | 1.53 | 3.30 | 45.55 |
| | Q | .27 | 3.64 | 3.31 | 1.98 | 3.17 | 2.74 | 1.45 | .46 | .25 | .09 | .10 | .63 | 18.09 |
| 1957 | P | 1.80 | 1.34 | 1.95 | 5.30 | 3.89 | 10.08 | 2.96 | 2.13 | 3.69 | 1.52 | 2.70 | 4.61 | 41.97 |
| | Q | 1.21 | 1.00 | 1.24 | 4.26 | 1.38 | 4.14 | .99 | .10 | .12 | .07 | .35 | 2.68 | 17.54 |
| 1958 | P | 1.62 | .71 | 1.00 | 3.80 | 3.06 | 4.19 | 10.08 | 2.68 | 2.79 | .38 | 2.15 | .76 | 33.22 |
| | Q | 1.11 | .55 | .89 | 1.74 | 2.21 | .29 | 2.17 | .74 | .27 | .11 | .12 | .22 | 10.42 |
| 1959 | P | 5.91 | 3.55 | 2.56 | 4.47 | 2.88 | 4.81 | 2.97 | 2.10 | 3.47 | 5.45 | 2.76 | 2.22 | 43.15 |
| | Q | 4.77 | 3.04 | 1.53 | 1.66 | .92 | 1.43 | .47 | .22 | .08 | .62 | 1.10 | 2.01 | 17.85 |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | | | | | | | Coshocton, Ohio Watershed 994 | | | |
|---|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|-------------------------------|------|--------|------|
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 6-28 | 0.44 | 6-28 | 0.43 | 6-28 | 0.81 | 6-28 | 1.71 | 6-28 | 2.16 | 6-28 | 2.39 | 6-28 | 2.64 | | n r |
| 1958 | 7-14 | .05 | 5-4 | .05 | 5-4 | .09 | 5-4 | .25 | 5-4 | .41 | 5-4 | .59 | 5-4 | .80 | | n r |
| 1959 | 1-21 | .25 | 1-21 | .25 | 1-21 | .48 | 1-21 | 1.36 | 1-21 | 2.04 | 1-21 | 3.06 | 1-21 | 3.45 | | n r |

Notes: Quality of records: monthly P, fair; Q, good; annual maximum discharges and volumes, good. **Mixed cover 1956-59;** 15% cropland, 55% grassland, 26% woodland, 4% miscellaneous; generally under conservation practice. Runoff data furnished by the U. S. Geological Service, Columbus, Ohio.

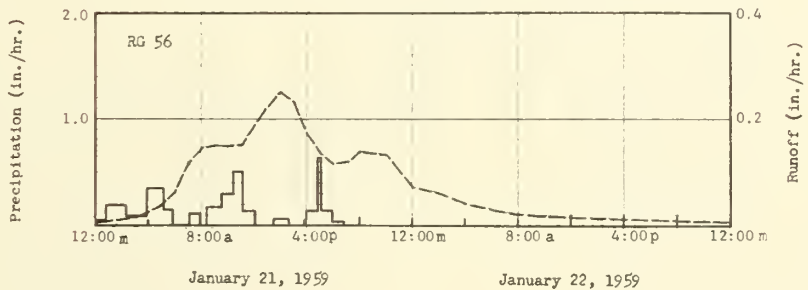
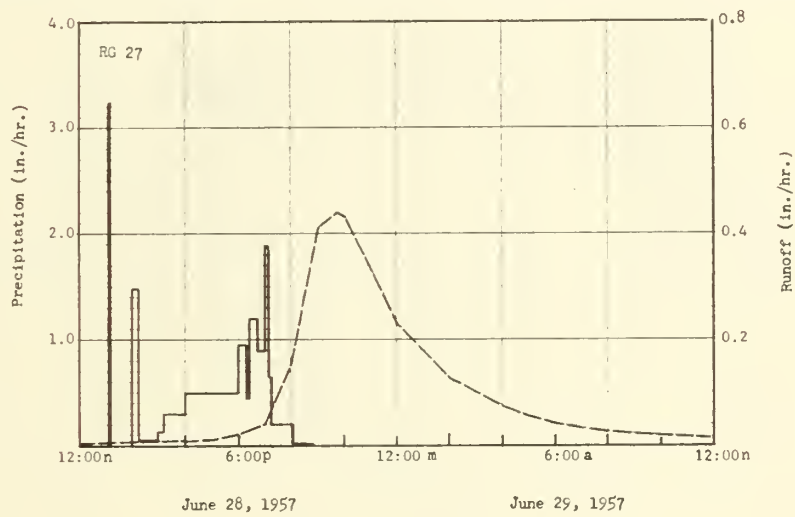
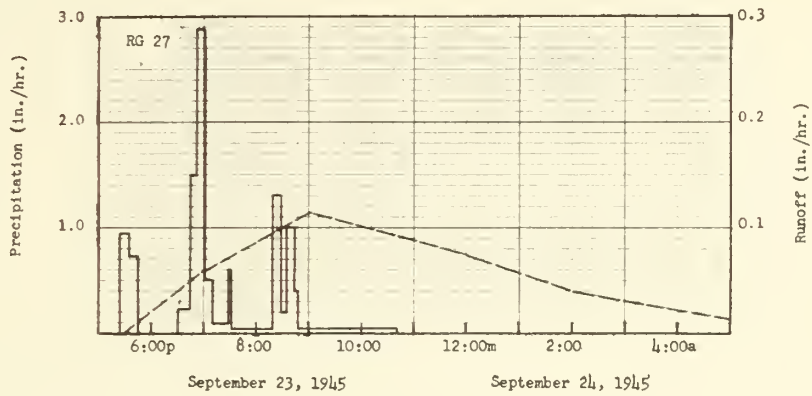
| SELECTED RUNOFF EVENTS | | | | | | | | | | | | | Coshocton, Ohio Watershed 994 | |
|---------------------------------------|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|--|--|--|--|-------------------------------|--|
| Antecedent conditions | | | | Rainfall | | | | Runoff | | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | | | | |
| <u>Event of September 23-24, 1945</u> | | | | | | | | | | | | | | |
| 8-23-45 | T | | 9-23-45 | Raingage 27 | | 9-23-45 | | | | | | | | |
| 8-24 | .05 | T | 5:24p | 0 | 0 | 5:30p | 0.0017 | 0 | | | | | | |
| 8-25-31 | 0 | T | :34 | .96 | .16 | 7:00 | .0586 | .0452 | | | | | | |
| 9-1 | .07 | T | :44 | .72 | .28 | 9:00 | .114 | .2174 | | | | | | |
| 9-2-7 | 0 | T | 6:30 | 0 | .28 | 12:00m | .0735 | .4982 | | | | | | |
| 9-8 | .52 | T | :44 | .23 | .31 | 9-24-45 | | | | | | | | |
| 9-9 | .58 | T | :52 | 1.50 | 1.01 | 2:00a | .0395 | .6112 | | | | | | |
| 9-10 | 1.26 | .04 | 7:02 | 2.88 | 1.49 | 5:00 | .0129 | .6898 | | | | | | |
| 9-11 | .20 | .02 | :08 | .50 | 1.54 | | | | | | | | | |
| 9-12 | 0 | T | :28 | .09 | 1.57 | | | | | | | | | |
| 9-13 | .38 | T | :32 | .60 | 1.61 | | | | | | | | | |
| 9-14 | .95 | .02 | 8:18 | .04 | 1.64 | | | | | | | | | |
| 9-15-16 | 0 | .01 | :28 | 1.32 | 1.86 | | | | | | | | | |
| 9-17 | .60 | T | :34 | .20 | 1.88 | | | | | | | | | |
| 9-18 | 1.07 | .10 | :44 | 1.02 | 2.05 | | | | | | | | | |
| 9-19 | 0 | .02 | :50 | .40 | 2.09 | | | | | | | | | |
| 9-20 | .65 | .03 | 10:40 | .05 | 2.18 | | | | | | | | | |
| 9-21 | 0 | .02 | 9-24-45 | | | | | | | | | | | |
| 9-22 | 0 | .01 | 1:20a | .01 | 2.20 | | | | | | | | | |
| 9-23 | .20 ^{1/} | nr | | | | | | | | | | | | |

See next page for Watershed Conditions and other raingage totals.

Notes: To convert runoff in in/hr to cfs, multiply by 17646.
^{1/} Most of rainfall occurred after 3:24p.

| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 99L | | | | | | |
|---|----------------------------------|-----------------|-------------------------------|-------------------|---------------|---------------|--------------|---------------|-------|
| Antecedent conditions | | | Rainfall | | | Runoff | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | |
| <u>Event of September 23-24, 1945 - Continued</u> | | | | | | | | | |
| <p>Watershed conditions: Mixed cover mostly in conservation practice. 8% of the area was in row crops, mostly corn. Corn cutting was completed before September 23, leaving area in stubble. 14% of the area was in small grain crops, mostly wheat, which was cut in July and followed by meadow. 20.9% additional area was in rotation meadow. Legumes and grasses were 7" high and weeds 11". 27% of the area was in pasture. Legumes, grass and weeds were 3" high. 5% was in idle land, mostly grass and weeds. 21.5% was in protected woodland and 1% in pastured woodland. 2.6% was in miscellaneous cover (farmsteads and roads).</p> | | | 9-23-45 5:25p | Raingage 54 0 | 0 | | | | |
| | | | 9-24-45 8:00a | | 2.47 | | | | |
| | | | 9-23-45 5:12p | Raingage 56 0 | 0 | | | | |
| | | | 9-24-45 3:00a | | 2.61 | | | | |
| | | | 9-23-45 5:20p | Raingage 91 0 | 0 | | | | |
| | | | 9-24-45 5:00a | | 2.25 | | | | |
| | <u>Event of June 28-29, 1957</u> | | | | | | | | |
| | 6-28-57 | | .02 | 6-28-57 | Raingage 27 | | 6-28-57 | | |
| | 6-29-31 | | .06 | 1:13p | 0 | 0 | 12:00n | .0039 | 0 |
| | 6-1 | .18 | .02 | :10 | 3.26 | .38 | 4:00p | .0062 | .0189 |
| 6-2-5 | | .05 | 2:00 | .01 | .39 | 5:00 | .0103 | .0272 | |
| 6-6 | .04 | .01 | :15 | 1.48 | .76 | 6:00 | .0209 | .0428 | |
| 6-7 | .02 | .01 | :58 | .06 | .80 | 7:00 | .0424 | | |
| 6-8 | .06 | .03 | 4:10 | .13 | .96 | 8:00 | .1503 | .1708 | |
| 6-9-10 | | .03 | 5:00 | .29 | 1.20 | 9:00 | .4128 | .4523 | |
| 6-11 | .20 | .01 | 6:02 | .50 | 1.72 | 9:45 | .4385 | .7715 | |
| 6-12 | 2.54 | .32 | :17 | .96 | 1.96 | 10:00 | .4325 | .8804 | |
| 6-13 | .32 | .17 | :25 | .45 | 2.02 | 12:00m | .2279 | 1.5419 | |
| 6-14 | .04 | .08 | :40 | 1.20 | 2.32 | 6-29-57 | | | |
| 6-15 | | .05 | :57 | .88 | 2.57 | 2:00a | .1272 | 1.8857 | |
| 6-16 | .002 | .04 | 7:05 | 1.38 | 2.82 | 4:00 | .0763 | 2.0892 | |
| 6-17-1b | | .05 | :18 | .65 | 2.96 | 5:00 | .0543 | 2.1545 | |
| 6-19 | .02 | .02 | 8:05 | .20 | 3.12 | 6:00 | .0426 | 2.2030 | |
| 6-2-22 | | .04 | :50 | .03 | 3.14 | 8:00 | .0270 | 2.2726 | |
| 6-23 | .10 | .01 | | | | 10:00 | .0193 | 2.3189 | |
| 6-24 | 2.24 | .27 | | | | 12:00n | .0155 | 2.3537 | |
| 6-25 | | .17 | | | | | | | |
| 6-26 | | .06 | 6-28-57 | Raingage 39 | | | | | |
| 6-27 | | .04 | 12:50p | 0 | | | | | |
| 6-28 | .26 ^{1/} | n r | 8:50p | | 2.85 | | | | |
| | | | 6-28-57 | Raingage 56 | | | | | |
| | | | 1:13p | 0 | 0 | | | | |
| | | | 8:35p | | 2.60 | | | | |
| | | | 6-28-57 | Raingage 91 | | | | | |
| | | | 12:50p | 0 | 0 | | | | |
| | | | 8:34p | | 2.96 | | | | |
| | | | 6-28-57 | Raingage MC-6 | | | | | |
| | | | 12:04p | 0 | 2.57 | | | | |
| | | | 3:3p | | | | | | |
| <p>Notes: ^{1/} Rain ended about 7:30a. Event of June 12, 1957 could not be presented because of faulty record.</p> | | | | | | | | | |

| SELECTED RUNOFF EVENTS | | | Coshocton, Ohio Watershed 994 | | | | | |
|---|-------------------|-----------------|-------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of January 21-22, 1959</u> | | | | | | | | |
| 12-22-58 | 0 | .01 | 1-21-59 | Raingage 56 | | 1-21-59 | | |
| 12-23-31 | T | .07 | 12:01a | 0 | 0 | 12:01a | 0.0051 | 0 |
| 1-1-59 | .70 | .09 | :50 | .05 | .04 | 1:00 | .0070 | .0060 |
| 1-2-3 | 0 | .27 | 2:14 | .19 | .30 | 2:00 | .0103 | .0147 |
| 1-4 | .02 <u>1/</u> | .04 | 3:40 | .08 | .42 | 3:00 | .0153 | .0275 |
| 1-5-13 | T | .13 | 5:05 | .36 | .93 | 4:00 | .0248 | .0475 |
| 1-14 | .22 | .01 | :50 | .15 | 1.04 | 5:00 | .0380 | .0789 |
| 1-15 | .72 <u>2/</u> | .10 | 7:08 | .02 | 1.07 | 6:00 | .0622 | .1290 |
| 1-16-19 | .30 <u>1/</u> | .13 | :40 | .11 | 1.13 | 7:00 | .1159 | .2181 |
| 1-20 | .40 | .03 | 8:26 | 0 | 1.13 | 8:00 | .1436 | .3478 |
| | | | 9:38 | .18 | 1.35 | 9:00 | .1532 | .4962 |
| | | | 10:28 | .29 | 1.59 | 10:00 | .1481 | .6469 |
| | | | 11:06 | .52 | 1.92 | 11:00 | .1532 | .7976 |
| | | | 12:06p | .14 | 2.06 | 1:00p | .2216 | 1.1725 |
| | | | 1:28 | 0 | 2.06 | 2:00 | .2510 | 1.4088 |
| | | | 2:36 | .06 | 2.13 | 3:00 | .2334 | 1.6510 |
| | | | 3:49 | 0 | 2.13 | 4:00 | .1758 | 1.8557 |
| | | | 4:00 | .05 | 2.14 | 5:00 | .1351 | 2.0111 |
| | | | :46 | .14 | 2.25 | 6:00 | .1159 | 2.1367 |
| | | | 5:03 | .64 | 2.43 | 7:00 | .1196 | 2.2544 |
| | | | :56 | .15 | 2.56 | 8:00 | .1391 | 2.3838 |
| | | | 7:36 | .04 | 2.63 | 10:00 | .1351 | 2.6580 |
| | | | | | | 12:00m | .0724 | 2.8655 |
| | | | | | | 1-22-59 | | |
| | | | | | | 2:00a | .0622 | 3.0001 |
| | | | 1-21-59 | Raingage 27 | | 4:00 | .0415 | 3.1035 |
| | | | 12:01a | 0 | 0 | 6:00 | .0303 | 3.1753 |
| | | | 7:40p | e 2.98 | | 8:00 | .0226 | 3.2282 |
| | | | | | | 10:00 | .0187 | 3.2695 |
| | | | 1-21-59 | Raingage 39 | | 12:00n | .0158 | 3.3040 |
| | | | 12:01a | 0 | 0 | 2:00p | .0141 | 3.3339 |
| | | | 7:45p | e 2.79 | | 4:00 | .0127 | 3.3607 |
| | | | 1-21-59 | Raingage 54 | | 6:00 | .0116 | 3.3850 |
| | | | 12:01a | 0 | 0 | 8:00 | .0103 | 3.4069 |
| | | | 7:30p | e 2.88 | | 10:00 | .0096 | 3.4268 |
| | | | | | | 12:00m | .0088 | 3.4452 |
| | | | 1-21-59 | Raingage 91 | | | | |
| | | | 12:01a | 0 | 0 | | | |
| | | | 7:30p | e 2.65 | | | | |
| | | | 1-21-59 | Raingage NC-4 | | | | |
| | | | 12:01a | 0 | 0 | | | |
| | | | 7:26p | e 3.20 | | | | |
| | | | 1-21-59 | Raingage MC-6 | | | | |
| | | | 12:01a | 0 | 0 | | | |
| | | | 7:22p | e 2.89 | | | | |
| <p><u>Watershed conditions:</u> Mixed cover mostly in conservation practice. 8% of the area had been in corn, 14% in small grain crops, mostly wheat, 21% in meadow, 26.9% in pasture, 5% in idle land, 21.5% in protected woodland, 1% in pastured woodland and 2.6% in miscellaneous cover (farmsteads and roads). All vegetation in dormant state. Depth of frost penetration on all areas except woodland, 1". No frost in woodland. Snow cover 5" on January 20.</p> | | | | | | | | |
| <p>Notes: <u>1/</u> Snow <u>2/</u> Rain and snow</p> | | | | | | | | |



COSHOCTON, OHIO WATERSHED 994

DRAINAGE AREAS:

| | |
|-----|------------|
| 94 | 1,520 AC. |
| 95 | 2,750 AC. |
| 97 | 4,580 AC. |
| 994 | 17,500 AC. |



- RAIN GAGE & NUMBER
- RUNOFF GAGE & NUMBER

COSHOCTON, OHIO
WATERSHED 994

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | | Fennimore, Wisconsin Watershed W-1 Area - 330 acres | | | | | | |
|---|-------|------|------|------|------|------|------|--|------|-------|------|------|------|-------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 | P | 0.58 | 0.74 | 1.86 | 4.15 | 4.76 | 3.74 | 3.62 | 5.69 | 1.58 | 1.28 | 3.45 | 0.75 | 32.20 |
| | Q | .13 | .12 | 1.20 | .16 | .16 | .26 | .17 | .24 | .07 | .04 | .08 | .03 | 2.66 |
| 1957 | P | .21 | .31 | .67 | 1.95 | 4.45 | 4.62 | 6.71 | 3.00 | 1.35 | 1.60 | 2.41 | 1.18 | 28.46 |
| | Q | .24 | .34 | .11 | .05 | .04 | .08 | .12 | .04 | .03 | .03 | .02 | .04 | 1.14 |
| 1958 | P | .28 | .02 | .48 | 2.76 | 1.65 | 2.62 | 8.48 | 3.60 | 1.96 | 1.92 | 1.27 | 1.35 | 20.39 |
| | Q | 0 | .26 | .03 | .02 | 0 | T | .01 | .01 | T | 0 | 0 | 0 | .33 |
| 1959 | P | .69 | 1.54 | 2.89 | 2.05 | 6.26 | 5.80 | 2.24 | 7.51 | 3.07 | 5.35 | 2.63 | 2.00 | 42.03 |
| | Q | 0 | 0 | 2.88 | .40 | .24 | .15 | .09 | .21 | .08 | .13 | .20 | .21 | 4.59 |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | | | | Fennimore, Wisconsin Watershed W-1 | | | | | | |
|---|-------------------|------|---|------|---------|------|---------|------|----------|------------------------------------|-------|------|--------|------|--------|------|
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 1-24 | 0.07 | 1-24 | 0.06 | 1-24 | 0.10 | 1-24 | 0.18 | 1-24 | 0.20 | 1-24 | 0.20 | 1-24 | 0.20 | 2-9 | 0.29 |
| 1958 | 2-23 | .06 | 2-23 | .05 | 2-23 | .09 | 2-23 | .16 | 2-23 | .17 | 2-23 | .20 | 2-23 | .24 | 2-23 | .26 |
| 1959 | 5-10 | .11 | 5-10 | .06 | 3-31 | .10 | 3-31 | .24 | 3-24 | .32 | 3-30 | .48 | 3-24 | .79 | 3-24 | 2.29 |

Notes: Quality of records: P - excellent; Q - excellent, except for periods of melting snow. Watershed conditions: 16% permanent pasture; 5% roads and farmsteads; balance in corn, oats and hay.

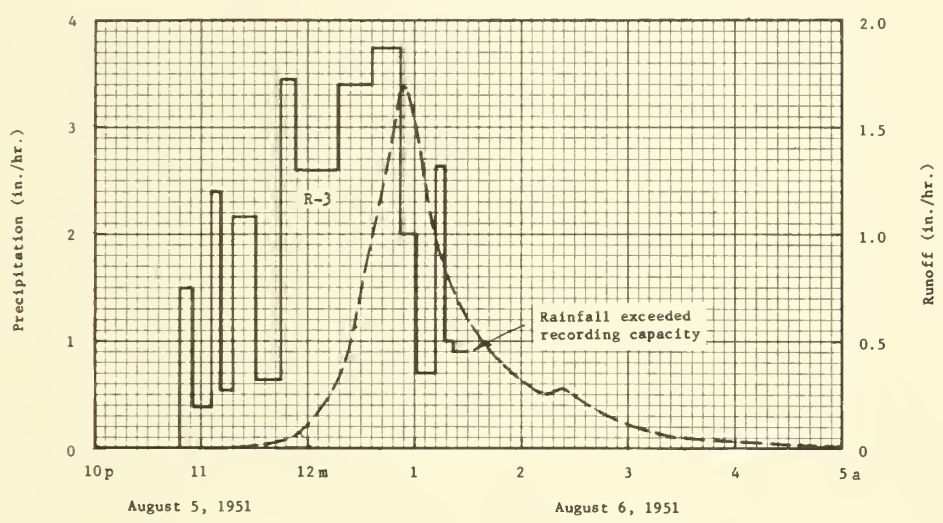
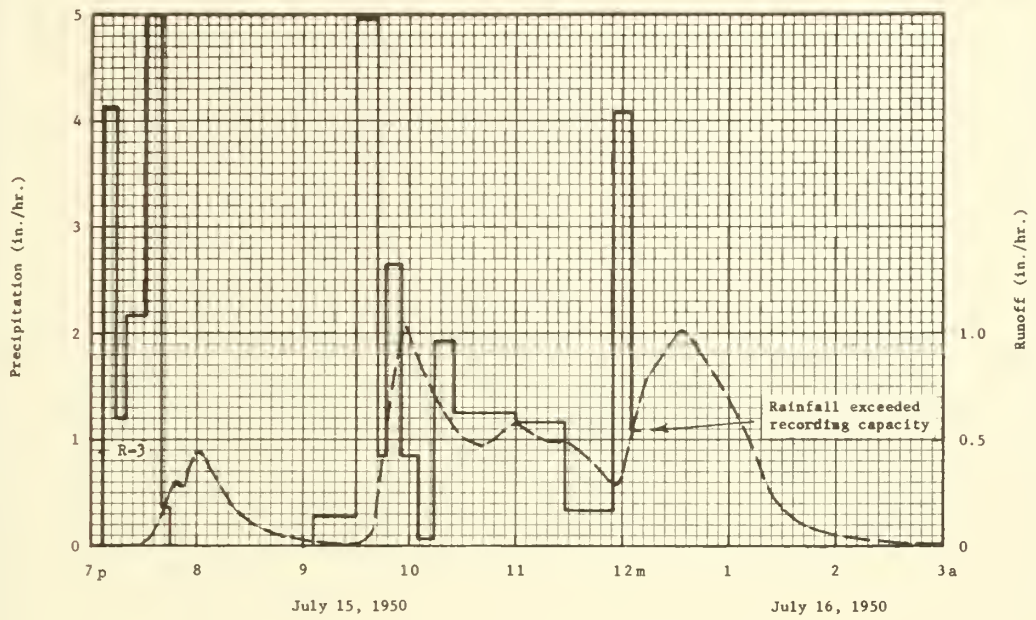
| SELECTED RUNOFF EVENTS | | | | | | Fennimore, Wisconsin Watershed W-1 | | | | | |
|--|-------------------|-----------------|---------------|-------------------|---------------|------------------------------------|--------------|---------------|--|--|--|
| Antecedent conditions | | | Rainfall | | | Runoff | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | |
| Event of July 15-16, 1950 | | | | | | | | | | | |
| 6-15-50 | 0.28 | 0.003 | 7-15-50 | Raingage | R-3 | 7-15-50 | | | | | |
| 6-17 | .07 | 0 | 7:07p | 0 | 0 | 7:05p | 0 | 0 | | | |
| 6-18 | .34 | 0 | :15 | 4.13 | .55 | :30 | .0109 | .0006 | | | |
| 6-20 | .34 | .001 | :20 | 1.20 | .65 | :34 | .0339 | .0020 | | | |
| 6-23 | .47 | .004 | :31 | 2.18 | 1.05 | :38 | .0996 | .0063 | | | |
| 6-24 | 0 | .001 | :40 | 5.00 | 1.80 | :40 | .140 | .0103 | | | |
| 7-1 | .58 | 0 | :45 | .36 | 1.83 | :44 | .245 | .0231 | | | |
| 7-3 | .11 | 0 | 9:06 | 0 | 1.83 | :50 | .299 | .0514 | | | |
| 7-4 to 7 | 0 | .001 | :30 | .28 | 1.94 | :52 | .279 | .0610 | | | |
| 7-8 to 11 | 0 | .001 | :42 | 4.95 | 2.93 | 8:00 | .438 | .1097 | | | |
| 7-12 | .59 | T | :47 | .84 | 3.00 | :14 | .278 | .1949 | | | |
| 7-13 to 14 | 0 | T | :55 | 2.63 | 3.35 | :26 | .136 | .2347 | | | |
| | | | 10:05 | .84 | 3.49 | :50 | .0486 | .2687 | | | |
| | | | :14 | .07 | 3.50 | 9:30 | .0127 | .2859 | | | |
| | | | :25 | 1.91 | 3.84 | :38 | .0534 | .2890 | | | |
| Watershed Conditions | | | 11:00 | 1.25 | 4.58 | :47 | .534 | .3269 | | | |
| 14.6% corn; 19.8% grain; 31.2% hay; 28.9% pasture; 5.5% roads and buildings. | | | :28 | 1.16 | 5.12 | :52 | .840 | .3869 | | | |
| | | | :55 | .33 | 5.27 | :58 | 1.04 | .4810 | | | |
| | | | 7-16-50 | | | 10:06 | .866 | .6070 | | | |
| | | | 12:05a | 4.08 | 5.95 | :24 | .570 | .8199 | | | |
| | | | :10 | 1.08 | 6.04 | :40 | .474 | .9567 | | | |
| | | | Total 1/ | | 7.24 | 11:00 | .570 | 1.1297 | | | |
| | | | | | | :20 | .495 | 1.3058 | | | |
| | | | | | | :30 | .486 | 1.3875 | | | |
| | | | 7-15-50 | Raingage | R-8 | :56 | .292 | 1.5569 | | | |
| | | | 7:07p | 0 | 0 | 7-16-50 | | | | | |
| | | | :11 | 4.50 | .30 | 12:02a | .426 | 1.5899 | | | |
| | | | :16 | 2.76 | .53 | | .12 | 1.6867 | | | |
| | | | :29 | 1.94 | .95 | | .789 | 1.7121 | | | |
| | | | :40 | 4.36 | 1.75 | :26 | .935 | 1.8848 | | | |

Notes: To convert runoff in in/hr to cfs, multiply by 332.75. 1/ Rain exceeded capacity of gage.

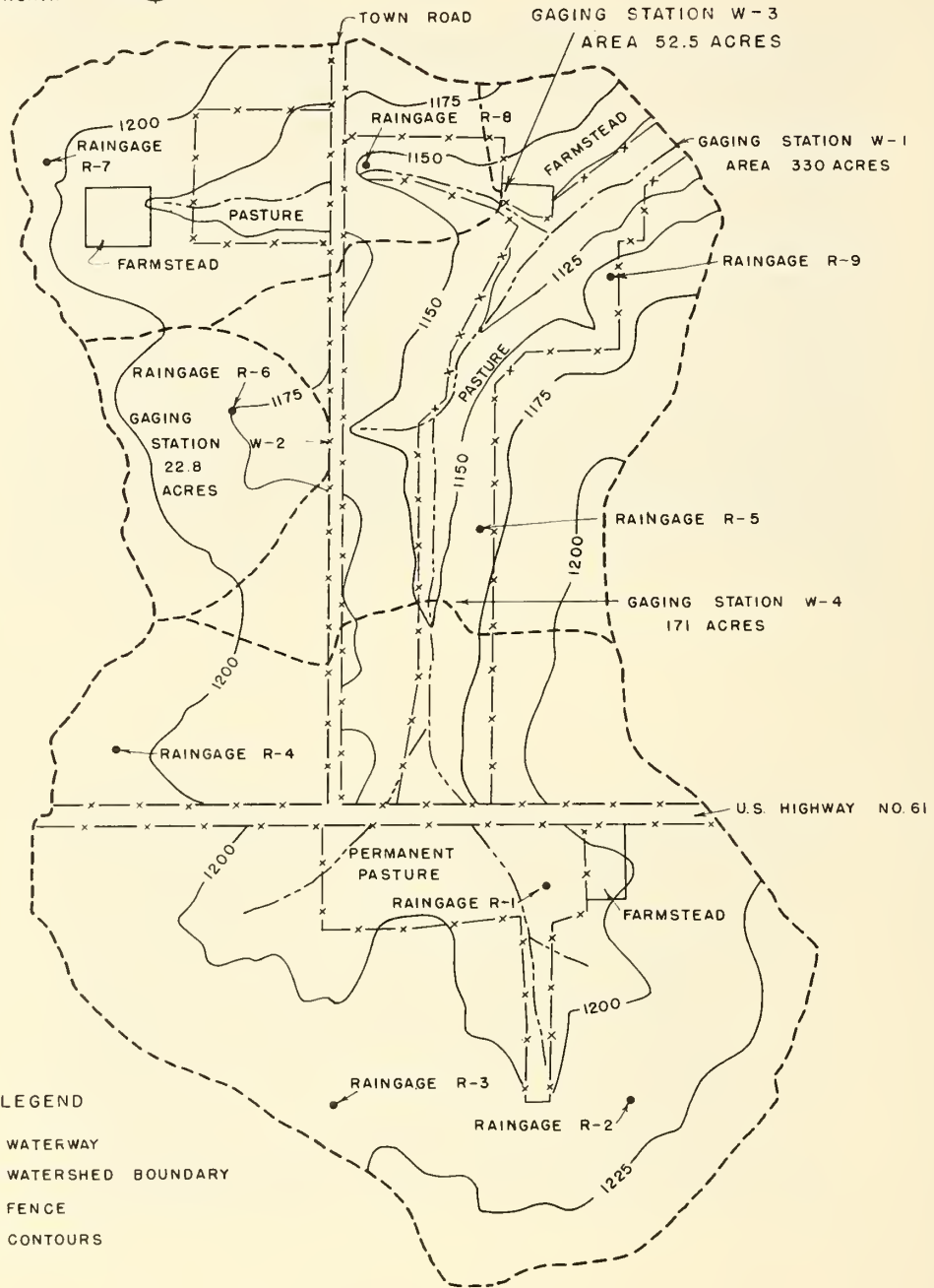
| SELECTED RUNOFF EVENTS | | | Fennimore, Wisconsin Watershed W-1 | | | | | |
|---|-------------------|-----------------|------------------------------------|-------------------|---------------|----------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of July 15-16, 1950 - Continued | | | | | | | | |
| | | | 7:45p | 1.20 | 1.85 | 7-16-50 | | |
| | | | 9:10 | 0 | 1.85 | 12:34a | 1.02 | 2.0158 |
| | | | :19 | .33 | 1.90 | :40 | .962 | 2.1146 |
| | | | :27 | .08 | 1.91 | :56 | .750 | 2.3423 |
| | | | :31 | 1.35 | 2.00 | 1:12 | .476 | 2.5068 |
| | | | :38 | 6.86 | 2.80 | :20 | .324 | 2.5609 |
| | | | :42 | 4.35 | 3.09 | :30 | .170 | 2.6001 |
| | | | :47 | .48 | 3.13 | :46 | .0888 | 2.6332 |
| | | | :54 | 2.48 | 3.42 | 2:10 | .0411 | 2.6574 |
| | | | :59 | .36 | 3.45 | 3:00 | .0100 | 2.6758 |
| | | | 10:03 | .75 | 3.50 | 6:00 <u>1/</u> | .0009 | 2.6847 |
| | | | :14 | .05 | 3.51 | | | |
| | | | 11:00 | 1.31 | 4.52 | | | |
| | | | :30 | 1.10 | 5.07 | | | |
| | | | :53 | .39 | 5.22 | | | |
| | | | 7-16-50 | | | | | |
| | | | 12:05a | 3.65 | 5.95 | | | |
| | | | | Total <u>2/</u> | 7.46 | | | |
| | | | | Total | Rainfall | | | |
| | | | | R-1 | 7.25 | | | |
| | | | | R-2 | 7.20 | | | |
| | | | | R-4 | 7.54 | | | |
| | | | | R-5 | 6.97 | | | |
| | | | | R-6 | 7.41 | | | |
| | | | | R-7 | 7.46 | | | |
| | | | | R-9 | 7.06 | | | |
| | | | | Watershed Average | 7.29 | | | |
| Event of August 5-6, 1951 | | | | | | | | |
| 7-8-51 | 2.89 | .212 | 8-5-51 | Raingage | R-3 | 8-5-51 | | |
| 7-9 | 0 | .014 | 10:48p | 0 | 0 | 10:40p | .0007 | 0 |
| 7-10 | .04 | .014 | :52 | 1.50 | .10 | 11:30 | .0123 | .0020 |
| 7-11 to 12 | 0 | .027 | 11:06 | .39 | .19 | :50 | .0498 | .0103 |
| 7-13 | .18 | .013 | :10 | 2.40 | .35 | 8-6-51 | | |
| 7-14 to 15 | 0 | .025 | :18 | .53 | .42 | 12:10a | .215 | .0510 |
| 7-16 | .36 | .014 | :32 | 2.18 | .93 | :20 | .375 | .0982 |
| 7-17 to 20 | 0 | .049 | :45 | .64 | 1.07 | :30 | .751 | .1879 |
| 7-21 | .73 | .017 | :53 | 3.45 | 1.53 | :40 | 1.15 | .3459 |
| 7-22 to 26 | 0 | .060 | 8-6-51 | | | :50 | 1.54 | .5685 |
| 7-27 | .03 | .012 | 12:17a | 2.60 | 2.57 | :54 | 1.69 | .6786 |
| 7-28 to 8-4 | 0 | .096 | :36 | 3.41 | 3.65 | 1:00 | 1.54 | .8417 |
| 8-5 <u>3/</u> | .55 | .012 | :52 | 3.75 | 4.65 | :06 | 1.23 | .9795 |
| | | | 1:01 | 2.00 | 4.95 | :14 | .922 | 1.1199 |
| | | | :12 | .71 | 5.08 | :24 | .691 | 1.2547 |
| | | | :17 | 2.64 | 5.30 | :32 | .580 | 1.3393 |
| | | | :20 | 1.00 | 5.35 | :40 | .483 | 1.4101 |
| | | | :30 | .90 | 5.50 | :52 | .366 | 1.4944 |
| | | | 2:45 <u>4/</u> | Total <u>2/</u> | 6.73 | 2:14 | .262 | 1.6044 |
| | | | | | | :26 | .269 | 1.6585 |
| | | | 8-5-51 | Raingage | R-8 | :42 | .183 | 1.7182 |
| | | | 10:44p | 0 | 0 | 3:00 | .109 | 1.7615 |
| | | | :49 | 1.44 | .12 | :20 | .0606 | 1.7890 |
| | | | 11:01 | 3.00 | .22 | :40 | .0411 | 1.8060 |
| | | | :07 | 1.70 | .39 | 4:00 | .0281 | 1.8175 |
| | | | :15 | .68 | .48 | :30 | .0164 | 1.8284 |
| | | | :28 | 2.63 | 1.05 | 5:00 <u>5/</u> | .0100 | 1.8349 |
| | | | :40 | .75 | 1.20 | | | |
| | | | :49 | 3.66 | 1.75 | | | |
| | | | 8-6-51 | | | | | |
| | | | 12:02a | 3.23 | 2.45 | | | |
| | | | :23 | 3.15 | 3.55 | | | |
| | | | :40 | 3.53 | 4.55 | | | |
| | | | :53 | 3.23 | 5.25 | | | |
| <p>Notes: To convert runoff in in/hr to cfs, multiply by 332.75. <u>1/</u> Base flow continued at less than 0.001 in/hr. <u>2/</u> Rain exceeded gage capacity. <u>3/</u> Prior to event beginning 10:48p. <u>4/</u> Estimated from weekly gage. <u>5/</u> Base flow continued at less than 0.01 in/hr.</p> | | | | | | | | |

| SELECTED RUNOFF EVENTS | | | Fennimore, Wisconsin Watershed W-1 | | | | | |
|------------------------|-------------------|-----------------|---------------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| | | | Event of August 5-6, 1951 - Continued | | | | | |
| | | | 8-6-51 | | | | | |
| | | | 1:01a | 1.50 | 5.45 | | | |
| | | | 2:45 <u>1/</u> | Total <u>2/</u> | 6.75 | | | |
| | | | | Total | | Rainfall | | |
| | | | | R-1 | 6.90 | | | |
| | | | | R-2 | nr | | | |
| | | | | R-4 | 6.56 | | | |
| | | | | R-5 | 7.40 | | | |
| | | | | R-6 | 7.11 | | | |
| | | | | R-7 | 7.10 | | | |
| | | | | R-9 | 7.33 | | | |
| | | | | Watershed Average | 6.98 | | | |

Notes: To convert runoff in in/hr to cfs, multiply by 332.75. 1/ Estimated from weekly gage. 2/ Rain exceeded gage capacity.

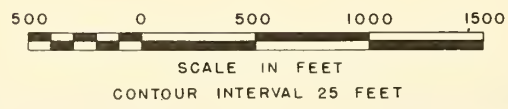


FENNIMORE, WISCONSIN WATERSHED W-1



LEGEND

- WATERWAY
- - - WATERSHED BOUNDARY
- x- FENCE
- 1200- CONTOURS



FENNIMORE, WISCONSIN
Watersheds
W-1, W-2, W-3, W-4

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | | Fennimore, Wisconsin Watershed W-2 Area - 22.8 acres | | | | | | |
|---|-------------|------------|--------------|---------------|----------------|----------------|-------------|---|-------------|-----------|-------------|-------------|--------------|---------------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| | | 1956 | P Q D | 0.54 e .05 | D.75 e 1.02 | 1.85 e 1.02 | 4.21 0 | 4.48 0 | 4.08 .04 | 3.62 0 | 5.78 T | 1.60 0 | 1.25 0 | 3.56 0 |
| 1957 | P Q | .22 .19 | .36 e .22 | .61 e .02 | 1.97 0 | 4.60 0 | 5.00 .01 | 7.02 .03 | 2.98 0 | 1.28 0 | 1.58 0 | 2.53 0 | 1.25 .01 | 29.40 .48 |
| 1958 | P Q D | .30 D | .D2 .27 | .48 .04 | 2.82 0 | 1.68 D | 2.76 0 | 3.56 0 | 3.51 D | 1.64 0 | 1.96 0 | 1.18 0 | .31 e .D1 | 20.22 .32 |
| 1959 | P Q 0 | .66 0 | 1.49 0 | 2.85 4.84 | 2.11 .79 | 6.24 .06 | 5.66 .01 | 2.21 0 | 6.82 .03 | 2.89 0 | 5.45 .01 | 2.75 .01 | 1.83 T | 40.96 5.75 |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | | Fennimore, Wisconsin Watershed W-2 | | | | | | | | |
|---|-------------------|------|---|------|---------|------|---------|------------------------------------|----------|------|-------|------|--------|------|--------|--------|
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 1-24 | 0.05 | 1-24 | 0.05 | 1-24 | 0.09 | 1-24 | 0.18 | 1-24 | 0.19 | 1-24 | 0.19 | 1-24 | 0.19 | 2-9 | e 0.22 |
| 1958 | 2-23 | .05 | 2-23 | .05 | 2-23 | .09 | 2-23 | .18 | 2-23 | .19 | 2-23 | .2D | 2-23 | .27 | 2-23 | .27 |
| 1959 | 5-10 | .24 | 3-19 | .08 | 3-19 | .14 | 3-19 | .36 | 3-19 | .71 | 3-19 | 1.09 | 3-24 | 1.20 | 3-24 | 3.77 |

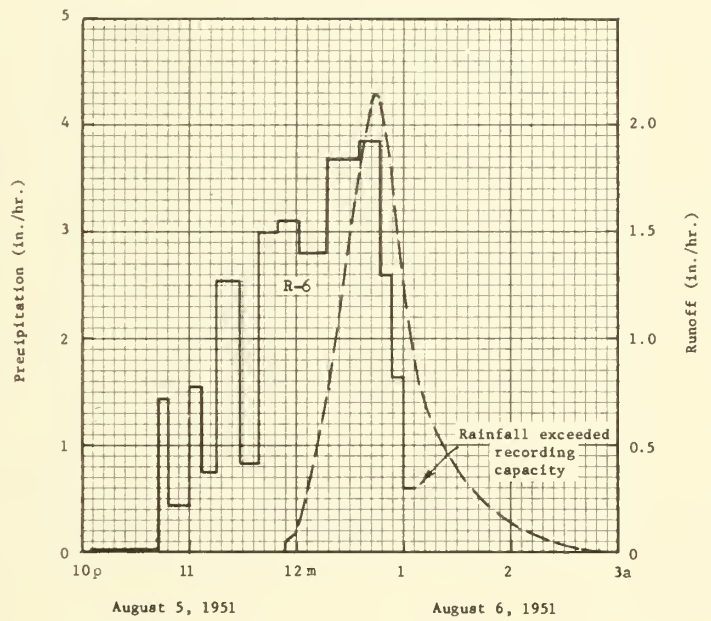
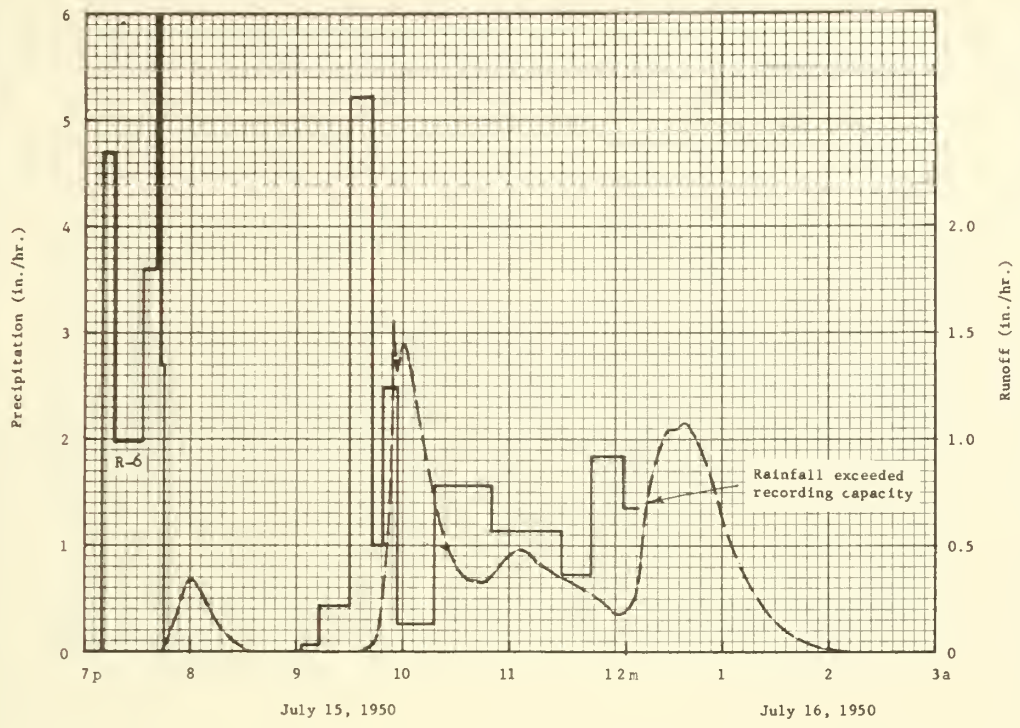
Notes: Quality of records: P - excellent; Q - excellent, except for periods of melting snow. Watershed conditions: 18% small grain or corn, 82% idle hay and pasture lands.

| SELECTED RUNOFF EVENTS | | | | | | Fennimore, Wisconsin Watershed W-2 | | | |
|-----------------------------|-------------------|-----------------|---------------|-------------------|---------------|------------------------------------|--------------|---------------|--|
| Antecedent conditions | | | Rainfall | | | Runoff | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | |
| Event of July 15-16, 1950 | | | | | | | | | |
| 6-15-50 | 0.29 | 0 | 7-15-50 | Raingage | R-6 | 7-15-50 | | | |
| 6-17 | .D9 | 0 | 7:10p | D | 0 | 7:44p | 0 | 0 | |
| 6-18 | .36 | 0 | :16 | 4.70 | .47 | :54 | .223 | .D18 | |
| 6-2D | .42 | 0 | :33 | 1.97 | 1.03 | :59 | .334 | .042 | |
| 6-23 | .48 | 0 | :40 | 3.60 | 1.45 | 8:D1 | .334 | .053 | |
| 7-1 | .66 | D | :43 | 6.00 | 1.75 | :10 | .214 | .095 | |
| 7-3 | .11 | 0 | :45 | 2.70 | 1.84 | :2D | .D819 | .119 | |
| 7-12 | .60 | 0 | 9:03 | 0 | 1.84 | :30 | .0213 | .127 | |
| | | | :13 | .06 | 1.85 | :5D | .0001 | .129 | |
| | | | :30 | .42 | 1.97 | 9:35 | 0 | .129 | |
| <u>Watershed Conditions</u> | | | :43 | 5.22 | 3.10 | :45 | .0548 | .132 | |
| 18.4% hay; 81.6% pasture | | | :49 | 1.0D | 3.20 | :47 | .163 | .136 | |
| | | | :57 | 2.48 | 3.53 | :50 | .373 | .148 | |
| | | | 10:18 | .26 | 3.62 | :52 | .556 | .164 | |
| | | | :5D | 1.56 | 4.45 | :55 | 1.56 | .217 | |
| | | | 11:30 | 1.13 | 5.20 | :57 | 1.33 | .264 | |
| | | | :46 | .72 | 5.39 | 10:01 | 1.44 | .358 | |
| | | | 7-16-50 | | | :10 | 1.05 | .546 | |
| | | | 12:05a | 1.83 | 5.97 | :20 | .609 | .683 | |
| | | | :13 | 1.35 | 6.15 | :3D | .401 | .766 | |
| | | | | Total 1/ | 7.41 | :35 | .346 | .797 | |
| | | | | | | :45 | .332 | .854 | |
| | | | | | | 11:00 | .452 | .950 | |
| | | | | | | :05 | .475 | .989 | |
| | | | | | | :30 | .349 | 1.160 | |
| | | | | | | :45 | .283 | 1.239 | |
| | | | | | | 7-16-50 | | | |
| | | | | | | 12:00a | .184 | 1.298 | |
| | | | | | | :05 | .180 | 1.313 | |
| | | | | | | :10 | .243 | 1.330 | |

Notes: To convert runoff in in/hr to cfs, multiply by 22.988. 1/ Rain exceeded gage capacity. For map of watershed, see page 31.1-5.

| SELECTED RUNOFF EVENTS | | | Fennimore, Wisconsin Watershed W-2 | | | | | |
|--|-------------------|-----------------|------------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of July 15-16, 1950 - Continued</u> | | | | | | | | |
| | | | | | | 7-16-50 | | |
| | | | | | | 12:15a | .461 | 1.360 |
| | | | | | | :19 | .805 | 1.403 |
| | | | | | | :26 | .986 | 1.507 |
| | | | | | | :40 | 1.07 | 1.750 |
| | | | | | | :45 | 1.01 | 1.837 |
| | | | | | | 1:00 | .639 | 2.047 |
| | | | | | | :20 | .259 | 2.190 |
| | | | | | | :40 | .0774 | 2.241 |
| | | | | | | 2:10 | .0070 | 2.256 |
| | | | | | | 3:00 | 0 | 2.258 |
| <u>Event of August 5-6, 1951</u> | | | | | | | | |
| 7-8-51 | 2.80 | .024 | 8-5-51 | Raingage | R-6 | 8-5-51 | | |
| 7-10 | .04 | 0 | 10:05p | 0 | 0 | 11:53p | 0 | 0 |
| 7-13 | .19 | 0 | :44 | .03 | .02 | :54 | .0470 | 0 |
| 7-16 | .39 | 0 | :49 | 1.44 | .14 | 12:00m | .0901 | .007 |
| 7-21 | .70 | 0 | 11:00 | .44 | .22 | 8-6-51 | | |
| 7-27 | .04 | 0 | :07 | 1.55 | .40 | 12:08a | .347 | .030 |
| 8-5 <u>1/</u> | .55 | 0 | :15 | .75 | .50 | :10 | .452 | .043 |
| | | | :28 | 2.54 | 1.05 | :19 | .761 | .133 |
| | | | :39 | .82 | 1.20 | :27 | 1.33 | .273 |
| | | | :50 | 3.00 | 1.75 | :39 | 1.95 | .606 |
| <u>Watershed Conditions</u> | | | 8-6-51 | | | :43 | 2.14 | .742 |
| 100% pasture | | | 12:02a | 3.10 | 2.37 | :46 | 2.13 | .848 |
| | | | :17 | 2.80 | 3.07 | :53 | 1.82 | 1.083 |
| | | | :35 | 3.69 | 4.18 | 1:00 | 1.25 | 1.261 |
| | | | :47 | 3.85 | 4.95 | :10 | .736 | 1.419 |
| | | | :53 | 2.60 | 5.21 | :30 | .396 | 1.601 |
| | | | 1:00 | 1.63 | 5.40 | 2:05 | .105 | 1.732 |
| | | | :07 | .60 | 5.47 | :50 | .0172 | 1.781 |
| | | | 2:45 <u>2/</u> | Total <u>3/</u> | 7.11 | 3:35 | .0005 | 1.783 |
| | | | | | | :45 | 0 | 1.783 |

Notes: To convert runoff in in/hr to cfs, multiply by 22.988. 1/ Prior to event beginning 10:05p. 2/ Estimated from weekly gage. 3/ Rain exceeded capacity of gage.



FENNIMORE, WISCONSIN WATERSHED W-2

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Fennimore, Wisconsin Watershed W-3 Area - 52.5 acres | | | | | | | |
|---|-------|------|-------|-------|------|------|---|------|------|-------|------|------|------|-------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 | P | 0.49 | 0.73 | 1.79 | 4.21 | 4.25 | 3.63 | 3.60 | 5.67 | 1.55 | 1.24 | 3.41 | 0.73 | 31.30 |
| | Q | 0 | e .05 | e .90 | 0 | 0 | 0 | 0 | T | 0 | 0 | 0 | 0 | .95 |
| 1957 | P | .16 | .28 | .70 | 1.93 | 4.28 | 4.67 | 6.72 | 3.02 | 1.31 | 1.67 | 2.35 | 1.13 | 28.22 |
| | Q | .18 | e .22 | .02 | 0 | 0 | .02 | T | 0 | 0 | 0 | 0 | T | .44 |
| 1958 | P | .23 | .02 | .43 | 2.72 | 1.71 | 2.56 | 3.50 | 3.31 | 1.79 | 1.94 | 1.23 | .35 | 19.79 |
| | Q | 0 | .21 | e .02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .23 |
| 1959 | P | .68 | 1.50 | 2.96 | 2.01 | 6.21 | 5.77 | 2.28 | 7.36 | 3.15 | 5.49 | 2.81 | 1.96 | 42.18 |
| | Q | 0 | 0 | 2.46 | .04 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2.50 |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | Fennimore, Wisconsin Watershed W-3 | | | | | | | | | |
|---|-------------------|------|---|------|---------|------|------------------------------------|------|----------|------|-------|------|--------|------|--------|--------|
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 1-24 | 0.06 | 1-24 | 0.05 | 1-24 | 0.09 | 1-24 | 0.17 | 1-24 | 0.18 | 1-24 | 0.18 | 1-24 | 0.18 | 2-9 | e 0.22 |
| 1958 | 2-23 | .06 | 2-23 | .06 | 2-23 | .12 | 2-23 | .19 | 2-23 | .19 | 2-23 | .20 | 2-23 | .21 | 2-23 | .21 |
| 1959 | 3-24 | .05 | 3-24 | .05 | 3-24 | .10 | 3-24 | .26 | 3-24 | .40 | 3-24 | .51 | 3-24 | .51 | 3-24 | 1.89 |

Notes: Quality of records: P - excellent; Q - excellent, except for periods of melting snow. Watershed conditions: 23% permanent pasture; 7% roads and farmsteads; remainder farmed as 3 or 4-yr. rotation of corn, oats and meadow.

| SELECTED RUNOFF EVENTS | | | | | | | Fennimore, Wisconsin Watershed W-3 | | | | |
|---|-------------------|-----------------|---------------|-------------------|---------------|---------------|------------------------------------|---------------|--|--|--|
| Antecedent conditions | | | Rainfall | | | Runoff | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | |
| <u>Event of August 12, 1943</u> | | | | | | | | | | | |
| 7-14-43 | 0.22 | 0 | 8-12-43 | Raingage | R-7 | 8-12-43 | | | | | |
| 7-16 | 1.50 | T | 4:48a | 0 | 0 | 5:01a | 0 | 0 | | | |
| 7-24 | .18 | 0 | :50 | 3.00 | .10 | :06 | .1764 | .006 | | | |
| 7-28 | .13 | 0 | :55 | 10.20 | .95 | :08 | .9700 | .023 | | | |
| 7-29 | .06 | 0 | 5:00 | 5.16 | 1.38 | :10 | 1.1200 | .058 | | | |
| 8-2 | .17 | 0 | :05 | 5.40 | 1.83 | :12 | 1.1250 | .096 | | | |
| 8-9 | .20 | 0 | :13 | 2.40 | 2.15 | :14 | 1.0620 | .132 | | | |
| 8-12 1/ | 1.05 | T | | | | :16 | .9650 | .166 | | | |
| <u>Watershed Conditions</u> | | | | | | | | | | | |
| 19.3% corn; 7.8% small grain; 29.2% hay; 36.4% pasture; 7.3% roads and buildings. | | | 8-12-43 | Raingage | R-8 | :20 | .7300 | .222 | | | |
| | | | 4:49a | 0 | 0 | :24 | .5210 | .263 | | | |
| | | | :55 | 9.30 | .93 | :28 | .3670 | .293 | | | |
| | | | 5:00 | 6.36 | 1.46 | :32 | .2680 | .314 | | | |
| | | | :07 | 4.62 | 2.00 | :37 | .1890 | .333 | | | |
| | | | :13 | 3.20 | 2.32 | :45 | .1098 | .353 | | | |
| | | | | | | :50 | .0810 | .360 | | | |
| | | | | | | 6:00 | .0427 | .370 | | | |
| | | | | | | :20 | .0129 | .379 | | | |
| | | | | | | :40 | .0048 | .382 | | | |
| | | | | | | 7:00 | .0018 | .383 | | | |
| | | | | | | :20 | .0004 | .383 | | | |
| | | | | | | :32 | 0 | .383 | | | |
| <u>Event of July 11, 1944</u> | | | | | | | | | | | |
| 6-11-44 | 0.14 | 0 | 7-11-44 | Raingage | R-7 | 7-11-44 | | | | | |
| 6-12 | 1.83 | .02 | 6:30p | 0 | 0 | 6:45p | 0 | 0 | | | |
| 6-13 | .37 | T | :40 | 3.60 | .60 | 7:00 | .0072 | .001 | | | |
| 6-15 | .76 | .01 | :45 | 6.24 | 1.12 | :01 | .0208 | .001 | | | |
| 6-17 | 1.51 | .35 | :50 | 6.12 | 1.63 | :04 | .6640 | .015 | | | |
| 6-22 | 1.58 | .29 | :58 | 1.73 | 1.86 | :07 | .4750 | .043 | | | |
| 6-26 | .27 | 0 | 7:05 | .51 | 1.92 | :10 | .3500 | .064 | | | |
| 7-10 | .02 | 0 | :15 | .24 | 1.96 | :14 | .2460 | .083 | | | |
| | | | | | | :18 | .1890 | .098 | | | |

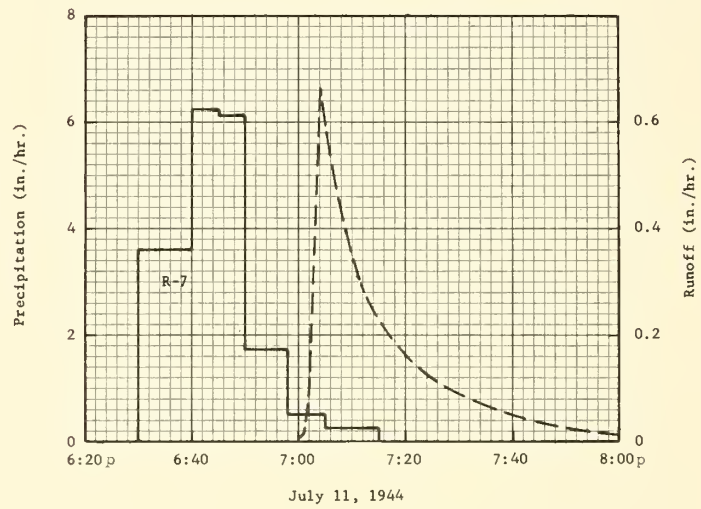
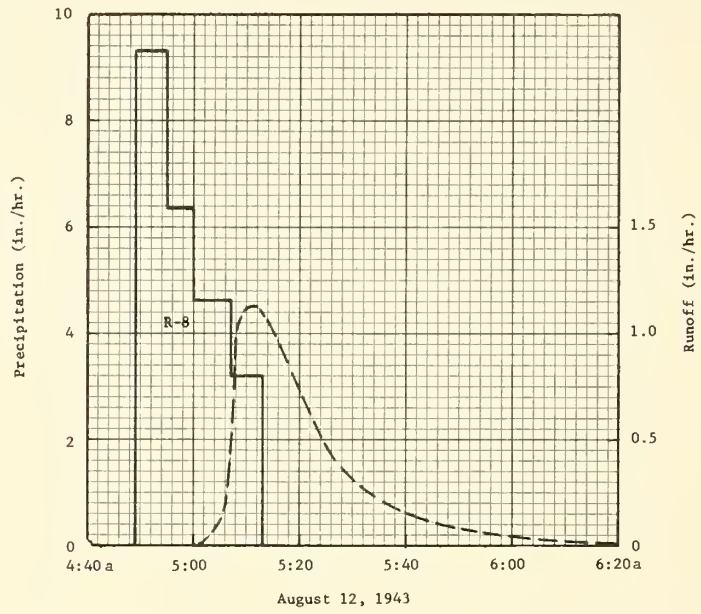
Notes: To convert runoff in in/hr to cfs, multiply by 52.94. 1/ Prior to event beginning 4:48a. For map of watershed, see page 31.1-5.

| SELECTED RUNOFF EVENTS | | | Fennimore, Wisconsin Watershed W-3 | | | | | | | | |
|--|-------------------|-----------------|---|-------------------|---------------|----------------------------------|--------------|---------------|-------------------------------|-------|------|
| Antecedent conditions | | | Rainfall | | | Runoff | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | |
| | | | <u>Event of July 11, 1944 - Continued</u> | | | | | | | | |
| <u>Watershed Conditions</u> | | | 6:33p | Raingage | R-8 | 7:24p | 0.1272 | 0.113 | | | |
| 37% corn; 3.4% small grain; 23.8% hay; 28.6% pasture; 7.3% roads and buildings. | | | :30 | 0 | | :30 | .0905 | .124 | | | |
| | | | :40 | 3.69 | .43 | :36 | .0640 | .132 | | | |
| | | | :45 | 5.40 | .88 | :48 | .0314 | .141 | | | |
| | | | :50 | 7.68 | 1.52 | 8:00 | .0140 | .145 | | | |
| | | | :53 | 3.60 | 1.70 | :20 | .0034 | .148 | | | |
| | | | 7:01 | 1.35 | 1.88 | :40 | .0010 | .148 | | | |
| | | | :17 | .23 | 1.94 | 9:00 | 0 | .148 | | | |
| | | | | | | | | | <u>Event of June 28, 1945</u> | | |
| | | | 5-31-45 | 0.50 | 0 | 6-28-45 | Raingage | R-7 | 6-28-45 | | |
| | | | 6-1 | 1.82 | .19 | 5:43a | 0 | 0 | 5:50a | 0 | 0 |
| 6-2 | .02 | 0 | :48 | 8.40 | .70 | :52 | .0454 | .001 | | | |
| 6-9 | .19 | 0 | :52 | 3.75 | .95 | :54 | .0349 | .002 | | | |
| 6-10 | .49 | 0 | 6:00 | .75 | 1.05 | :56 | .1348 | .004 | | | |
| 6-14 | .56 | 0 | <u>Raingage</u> | | | :58 | .2530 | .012 | | | |
| 6-15 | .56 | 0 | 5:44a | 0 | 0 | :59 | .2174 | .015 | | | |
| 6-17 | .06 | 0 | :47 | 10.00 | .50 | 6:00 | .5350 | .022 | | | |
| 6-24 | .91 | 0 | :51 | 4.95 | .83 | :01 | 1.6200 | .040 | | | |
| 6-26 | .05 | 0 | :56 | 1.44 | .95 | :02 | 1.6300 | .067 | | | |
| 6-27 | .21 | 0 | 6:02 | .50 | 1.00 | :04 | 1.3700 | .117 | | | |
| 6-28 <u>1/</u> | 1.01 | 0 | | | | :08 | .9700 | .195 | | | |
| | | | | | | :12 | .6250 | .248 | | | |
| <u>Watershed Conditions</u> | | | | | | :16 | .4390 | .283 | | | |
| 25.7% corn; 23.7% small grain; 15.5% hay; 27.8% pasture; 7.3% roads and buildings. | | | | | | :18 | .3590 | .296 | | | |
| | | | | | | | | | :24 | .2246 | .325 |
| | | | | | | | | | :30 | .1570 | .344 |
| | | | | | | | | | :36 | .1080 | .357 |
| | | | | | | | | | :48 | .0550 | .373 |
| | | | | | | | | | 7:00 | .0291 | .382 |
| | | | | | | | | | :12 | .0135 | .386 |
| | | | | | | | | | :24 | .0062 | .388 |
| | | | | | | | | | :36 | .0026 | .389 |
| | | | | | | | | | :48 | .0008 | .389 |
| | | | | | | :54 | .0003 | .389 | | | |
| | | | | | | 8:00 | .0002 | .389 | | | |
| | | | | | | :12 | 0 | .389 | | | |
| | | | | | | <u>Event of June 24-25, 1949</u> | | | | | |
| 5-25-49 | 0.03 | 0 | 6-24-49 | Raingage | R-7 | 6-24-49 | | | | | |
| 5-27 | .06 | 0 | 7:45p | 0 | 0 | 8:25p | 0 | 0 | | | |
| 6-1 | .27 | 0 | :55 | 2.40 | .40 | :26 | .0026 | 0 | | | |
| 6-2 | .55 | 0 | 8:02 | 4.28 | .90 | :27 | .3875 | .003 | | | |
| 6-12 | .23 | 0 | :10 | 3.23 | 1.33 | :28 | .4710 | .010 | | | |
| 6-13 | .01 | 0 | :26 | 1.20 | 1.65 | :29 | .4785 | .018 | | | |
| 6-14 | 1.82 | 0 | 9:00 | .18 | 1.75 | :30 | .4710 | .026 | | | |
| 6-20 | .61 | 0 | 10:50 | .08 | 1.90 | :36 | .3554 | .068 | | | |
| 6-21 | .28 | 0 | 6-25-49 | | | :42 | .2872 | .100 | | | |
| 6-22 | .05 | 0 | 12:30a | .04 | 1.97 | :48 | .2324 | .126 | | | |
| 6-23 | 1.89 | 0 | 6-24-49 | Raingage | R-8 | :54 | .1844 | .146 | | | |
| 6-24 <u>2/</u> | .20 | 0 | 7:43p | 0 | 0 | 9:00 | .1434 | .163 | | | |
| | | | :46 | 1.60 | .08 | :20 | .0616 | .196 | | | |
| <u>Watershed Conditions</u> | | | :50 | 3.30 | .30 | :40 | .0196 | .209 | | | |
| 13.6% corn; 20.2% small grain; 16.4% hay; 42.5% pasture; 7.3% roads and buildings. | | | :57 | 4.55 | .83 | 10:00 | .0051 | .213 | | | |
| | | | | | | 8:07 | 3.72 | 1.45 | :30 | .0004 | .214 |
| | | | | | | :15 | .98 | 1.58 | :50 | 0 | .214 |
| | | | | | | :23 | 1.50 | 1.78 | | | |
| | | | | | | 9:15 | .19 | 1.94 | | | |
| | | | | | | 10:50 | .05 | 2.02 | | | |
| | | | | | | 6-25-49 | | | | | |
| | | | | | | 1:00a | .03 | 2.09 | | | |

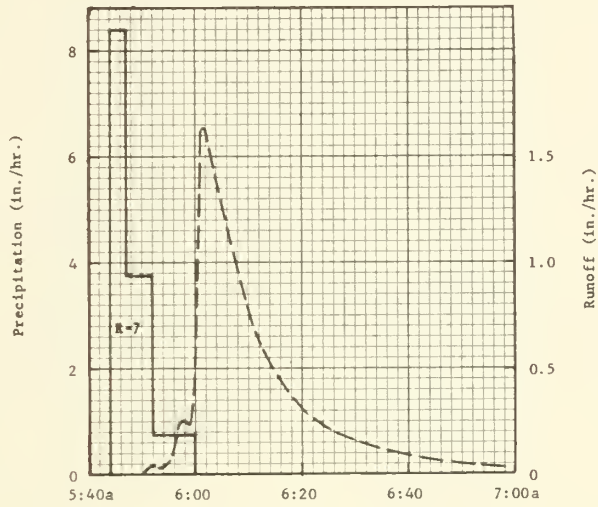
Notes: To convert runoff in in/hr to cfs, multiply by 52.94. 1/ Prior to event beginning 5:43a. 2/ Prior to event beginning 7:45p, 6-24.

| SELECTED RUNOFF EVENTS | | | Fennimore, Wisconsin Watershed W-3 | | | | | |
|---------------------------------------|-------------------|-----------------|------------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of August 5-6, 1951 - Continued | | | | | | | | |
| | | | 8-6-51 | | | 8-6-51 | | |
| | | | 12:25a | 2.71 | 3.30 | 1:06a | 1.04 | 0.902 |
| | | | :44 | 3.64 | 4.45 | :15 | .747 | 1.037 |
| | | | :55 | 2.73 | 4.95 | :31 | .387 | 1.179 |
| | | | 1:02 | 1.71 | 5.15 | :55 | .204 | 1.291 |
| | | | :09 | .86 | 5.25 | 2:12 | .140 | 1.337 |
| | | | :15 | 2.00 | 5.45 | :30 | .125 | 1.380 |
| | | | 2:45 <u>1/</u> | Total <u>2/</u> | 7.10 | 3:00 | .0452 | 1.422 |
| | | | | | | :30 | .0121 | 1.435 |
| | | | | | | 5:00 | .0001 | 1.439 |
| | | | 8-5-51 | Raingage | R-8 | 6:00 | 0 | 1.439 |
| | | | 10:44p | 0 | 0 | | | |
| | | | :49 | 1.44 | .12 | | | |
| | | | 11:01 | 3.00 | .22 | | | |
| | | | :07 | 1.70 | .39 | | | |
| | | | :15 | .68 | .48 | | | |
| | | | :28 | 2.63 | 1.05 | | | |
| | | | :40 | .75 | 1.20 | | | |
| | | | :49 | 3.66 | 1.75 | | | |
| | | | 8-6-51 | | | | | |
| | | | 12:02a | 3.23 | 2.45 | | | |
| | | | :23 | 3.15 | 3.55 | | | |
| | | | :40 | 3.53 | 4.55 | | | |
| | | | :53 | 3.23 | 5.25 | | | |
| | | | 1:01 | 1.50 | 5.45 | | | |
| | | | 2:45 <u>1/</u> | Total <u>2/</u> | 6.75 | | | |

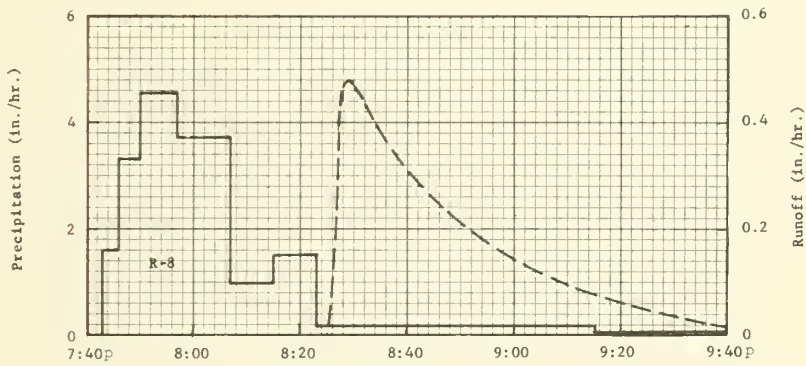
Notes: To convert runoff in in/hr to cfs, multiply by 52.94. 1/ Estimated from weekly gage. 2/ Rain exceeded recording capacity of gage.



FENNIMORE, WISCONSIN WATERSHED W-3

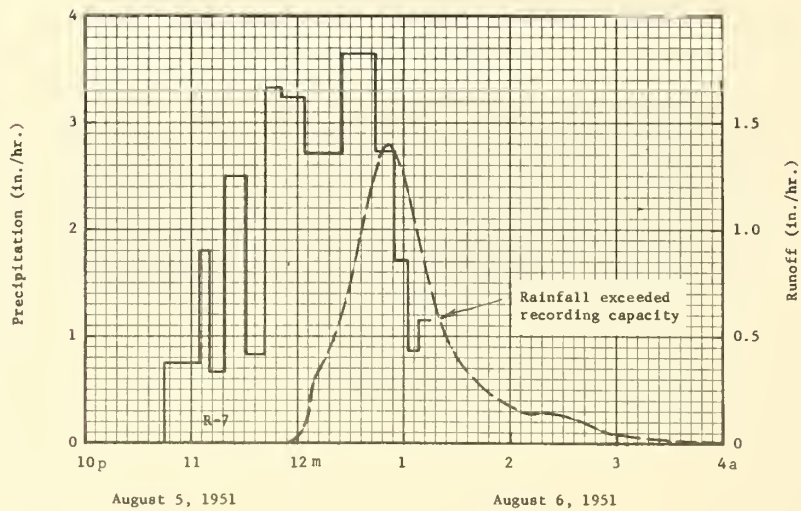


June 28, 1945



June 24, 1949

FENNIMORE, WISCONSIN WATERSHED W-3



FENNIMORE, WISCONSIN WATERSHED W-3

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Fennimore, Wisconsin Watershed W-4 Area - 171 acres | | | | | | |
|---|------|-------|------|------|------|------|--|------|-------|------|------|------|-------|
| Month Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 P | 0.69 | 0.76 | 1.95 | 4.06 | 4.56 | 3.76 | 3.65 | 5.71 | 1.58 | 1.27 | 3.38 | 0.74 | 32.11 |
| 1956 Q | 0 | .07 | 1.17 | 0 | 0 | .14 | 0 | .01 | 0 | 0 | T | 0 | 1.39 |
| 1957 P | .23 | .35 | .71 | 1.96 | 4.56 | 4.54 | 6.76 | 2.98 | 1.35 | 1.58 | 2.37 | 1.17 | 28.56 |
| 1957 Q | .26 | e .32 | .03 | 0 | 0 | .03 | .02 | 0 | 0 | 0 | 0 | .04 | .70 |
| 1958 P | .33 | .02 | .53 | 2.73 | 1.56 | 2.63 | 3.47 | 3.64 | 1.98 | 1.92 | 1.39 | .40 | 20.60 |
| 1958 Q | 0 | .37 | .02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .39 |
| 1959 P | .75 | 1.62 | 2.87 | 2.01 | 6.27 | 5.95 | 2.25 | 7.66 | 3.13 | 5.31 | 2.55 | 2.19 | 42.56 |
| 1959 Q | 0 | 0 | 3.36 | .26 | .10 | .03 | 0 | .06 | 0 | 0 | .01 | .01 | 3.83 |

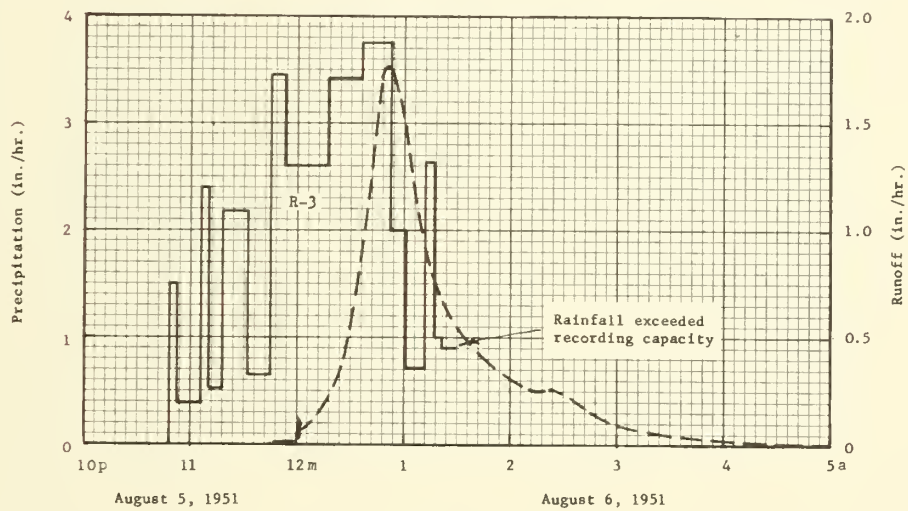
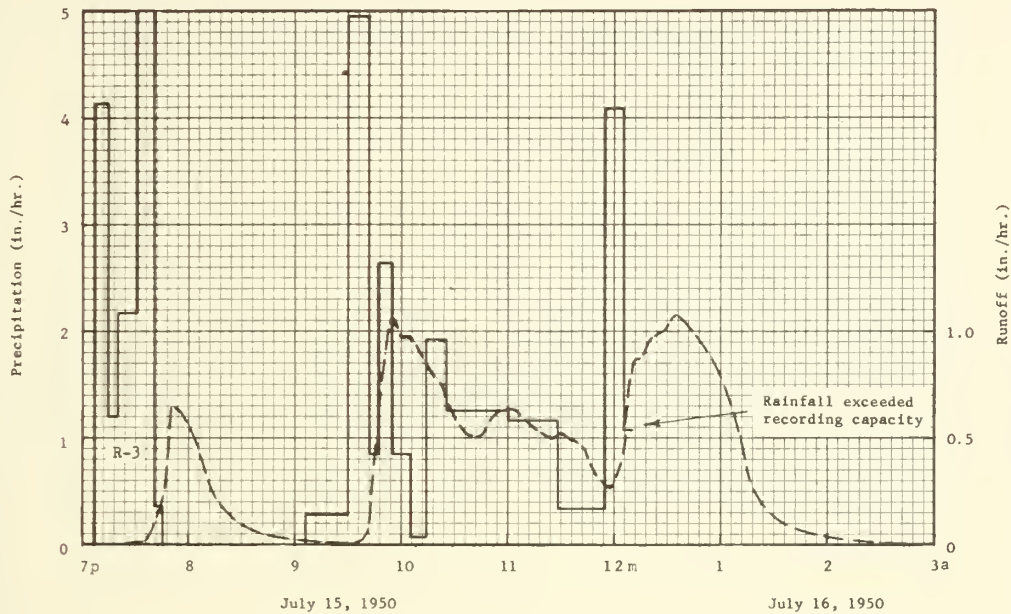
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | Fennimore, Wisconsin Watershed W-4 | | | | | | | | | |
|---|-------------------|------|---|-------|---------|-------|------------------------------------|-------|----------|-------|-------|-------|--------|-------|--------|--------|
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 1-24 | 0.09 | 1-24 | 0.08 | 1-24 | 0.14 | 1-24 | 0.23 | 1-24 | 0.26 | 1-24 | 0.26 | 1-24 | 0.26 | 2-9 | e 0.27 |
| 1958 | 2-23 | .10 | 2-23 | e .09 | 2-23 | e .13 | 2-23 | e .24 | 2-23 | e .25 | 2-23 | e .29 | 2-23 | e .37 | 2-23 | e .37 |
| 1959 | 5-10 | .16 | 3-31 | .07 | 3-31 | .13 | 3-31 | .28 | 3-24 | .33 | 3-30 | .59 | 3-24 | 1.01 | 3-24 | 2.81 |

Notes: Quality of records: P - excellent; Q - excellent, except for periods of melting snow. Watershed conditions: 13% permanent pasture; 6% roads and farmsteads; remainder 3-yr. rotation of corn, oats and hay.

| SELECTED RUNOFF EVENTS | | | | Fennimore, Wisconsin Watershed W-4 | | | | |
|---|-------------------|-----------------|---------------------|------------------------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of July 15-16, 1950 | | | | | | | | |
| 6-15-50 | 0.28 | 0 | 7-15-50 | Raingage | R-3 | 7-15-50 | | |
| 6-17 | .07 | 0 | 7:07p | 0 | 0 | 7:15p | 0 | 0 |
| 6-18 | .33 | 0 | :15 | 4.13 | .55 | :38 | .0486 | .0027 |
| 6-20 | .30 | 0 | :20 | 1.20 | .65 | :42 | .129 | .0093 |
| 6-23 | .48 | 0 | :31 | 2.18 | 1.05 | :45 | .144 | .0161 |
| 7-1 | .52 | 0 | :40 | 5.00 | 1.80 | :48 | .414 | .0287 |
| 7-3 | .12 | 0 | :45 | .36 | 1.83 | :51 | .652 | .0570 |
| 7-12 | .60 | 0 | 9:06 | 0 | 1.83 | 8:00 | .567 | .1494 |
| | | | :30 | .28 | 1.94 | :11 | .305 | .2310 |
| | | | :42 | 4.95 | 2.93 | :20 | .161 | .2640 |
| Watershed Conditions | | | :47 | .84 | 3.00 | :55 | .0274 | .3064 |
| 20% corn; 25.4% grain; 36.6% hay; 12.3% pasture; 5.7% roads and buildings. | | | :55 | 2.63 | 3.35 | 9:30 | .0070 | .3148 |
| | | | 10:05 | .84 | 3.49 | :39 | .0432 | .3171 |
| | | | :14 | .07 | 3.50 | :45 | .380 | .3330 |
| | | | :25 | 1.91 | 3.84 | :50 | .840 | .3831 |
| | | | 11:00 | 1.25 | 4.58 | :54 | 1.06 | .4465 |
| | | | :28 | 1.16 | 5.12 | 10:00 | .975 | .5482 |
| | | | :55 | .33 | 5.27 | :05 | .980 | .6301 |
| | | | 7-16-50 | | | :15 | .828 | .7812 |
| | | | 12:05a | | | :25 | .700 | .9097 |
| | | | | | | :10 | 1.08 | 6.04 |
| | | | Total $\frac{1}{2}$ | 7.24 | | :45 | .506 | 1.0968 |
| | | | | | | :55 | .627 | 1.1927 |
| | | | 7-15-50 | Raingage | R-4 | 11:00 | .638 | 1.2454 |
| | | | 7:05p | 0 | 0 | :15 | .547 | 1.3950 |
| | | | :11 | 3.50 | .35 | :26 | .500 | 1.4901 |
| | | | :27 | 2.06 | .90 | :30 | .525 | 1.5243 |
| | | | :39 | 3.80 | 1.66 | :45 | .417 | 1.6443 |
| | | | :43 | .60 | 1.70 | :59 | .283 | 1.7192 |
| | | | | | | 7-16-50 | | |

Notes: To convert runoff in in/hr to cfs, multiply by 172.425. $\frac{1}{2}$ Rain exceeded capacity of gage. For map of watershed, see page 31.1-5.

| SELECTED RUNOFF EVENTS | | | Fennimore, Wisconsin Watershed W-4 | | | | | |
|--|-------------------|-----------------|------------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of July 15-16, 1950 - Continued</u> | | | | | | | | |
| | | | 9:10p | 0.01 | 1.72 | 7-16-50 | | |
| | | | :28 | .36 | 1.83 | 12:05a | 0.434 | 1.7534 |
| | | | :42 | 4.58 | 2.90 | :10 | .829 | 1.8052 |
| | | | :46 | 1.20 | 2.98 | :20 | .955 | 1.9529 |
| | | | :56 | 2.16 | 3.34 | :35 | 1.07 | 2.2048 |
| | | | 10:13 | .35 | 3.44 | :55 | .876 | 2.5340 |
| | | | :24 | 2.23 | 3.85 | 1:11 | .505 | 2.7250 |
| | | | :55 | 1.37 | 4.56 | :25 | .179 | 2.7939 |
| | | | 11:04 | .40 | 4.62 | 2:00 | .0350 | 2.8438 |
| | | | :36 | .92 | 5.11 | 3:00 | .0038 | 2.8587 |
| | | | :54 | .63 | 5.30 | 5:00 | 0 | 2.8618 |
| | | | 7-16-50 | | | | | |
| | | | 12:07a | 3.46 | 6.05 | | | |
| | | | | Total <u>1/</u> | 7.54 | | | |
| | | | | Total | Rainfall | | | |
| | | | | | R-1 | | | |
| | | | | | R-2 | | | |
| | | | | Watershed Average | 7.31 | | | |
| | | | <u>Event of August 5-6, 1951</u> | | | | | |
| 7-8-51 | 2.89 | .192 | 8-5-51 | Raingage | R-3 | 8-5-51 | | |
| 7-10 | .04 | 0 | 10:48p | 0 | 0 | 11:15p | 0 | 0 |
| 7-13 | .16 | 0 | :52 | 1.50 | .10 | :48 | .010 | .0023 |
| 7-16 | .36 | 0 | 11:06 | .39 | .19 | 12:00m | .021 | .0047 |
| 7-21 | .72 | 0 | :10 | 2.40 | .35 | 8-6-51 | | |
| 7-27 | .04 | 0 | :18 | .53 | .42 | 12:01a | .115 | .0058 |
| 8-5 <u>2/</u> | .55 | 0 | :32 | 2.18 | .93 | :03 | .0733 | .0088 |
| | | | :45 | .64 | 1.07 | :15 | .192 | .0332 |
| | | | :53 | 3.45 | 1.53 | :23 | .316 | .0666 |
| | | | 8-6-51 | | | :30 | .565 | .1171 |
| | | | 12:17a | 2.60 | 2.57 | :37 | .909 | .2018 |
| | | | :36 | 3.41 | 3.65 | :42 | 1.29 | .2946 |
| | | | :52 | 3.75 | 4.65 | :45 | 1.52 | .3644 |
| | | | 1:01 | 2.00 | 4.95 | :51 | 1.76 | .5341 |
| | | | :12 | .71 | 5.08 | :54 | 1.74 | .6217 |
| | | | :17 | 2.64 | 5.30 | 1:00 | 1.53 | .7860 |
| | | | :20 | 1.00 | 5.35 | :05 | 1.22 | .9003 |
| | | | :30 | .90 | 5.50 | :10 | 1.01 | .9923 |
| | | | 2:45 <u>3/</u> | Total <u>1/</u> | 6.73 | :20 | .685 | 1.1312 |
| | | | | | | :35 | .491 | 1.2765 |
| | | | 8-5-51 | Raingage | R-4 | :55 | .349 | 1.4146 |
| | | | 10:42p | 0 | 0 | 2:12 | .260 | 1.4986 |
| | | | 11:00 | .84 | .25 | :34 | .220 | 1.5892 |
| | | | :05 | 1.92 | .41 | :52 | .123 | 1.6400 |
| | | | :14 | .60 | .50 | 3:10 | .0777 | 1.6699 |
| | | | :27 | 2.31 | 1.00 | :30 | .0469 | 1.6906 |
| | | | :38 | .77 | 1.14 | 4:00 | .0205 | 1.7071 |
| | | | :58 | 2.88 | 2.10 | :30 | .0114 | 1.7147 |
| | | | 8-6-51 | | | 8:00 | .0004 | 1.7246 |
| | | | 12:23a | 3.24 | 3.45 | 12:00n | 0 | 1.7257 |
| | | | :41 | 3.83 | 4.60 | | | |
| | | | :53 | 3.00 | 5.20 | | | |
| | | | 1:06 | .92 | 5.40 | | | |
| | | | :10 | 1.95 | 5.53 | | | |
| | | | 2:45 <u>3/</u> | Total <u>1/</u> | 6.56 | | | |
| | | | | Total | Rainfall | | | |
| | | | | | R-1 | | | |
| | | | | | R-2 | | | |
| | | | | Watershed Average | 6.73 | | | |
| <p>Watershed Conditions</p> <p>29% corn; 12.7% grain; 21.8% hay; 30.8% pasture; 5.7% roads and buildings.</p> | | | | | | | | |
| <p>Notes: To convert runoff in in/hr to cfs, multiply by 172.425. <u>1/</u> Rain exceeded recording capacity of gage. <u>2/</u> Prior to event beginning 10:48p. <u>3/</u> Estimated from weekly gage.</p> | | | | | | | | |



FENNIMORE, WISCONSIN WATERSHED W-4

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | | | | La Crosse, Wisconsin Watershed CW (Area - 2.71 acres) | | | | |
|---|-------|------|------|-------|-------|------|------|------|-------|--|------|------|------|-------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| | | 1956 | P | 0.44 | 0.36 | 3.06 | 2.09 | 3.42 | 2.52 | 3.19 | 3.36 | 1.78 | 1.68 | 2.08 |
| | Q | 0 | 0 | e .88 | e .75 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.63 |
| 1957 | P | .35 | .27 | .95 | 2.41 | 4.29 | 5.02 | 6.97 | 4.46 | 2.29 | 1.02 | 2.98 | .68 | 31.69 |
| | Q | 0 | 0 | 0 | 0 | 0 | .06 | .40 | .01 | 0 | 0 | 0 | 0 | .47 |
| 1958 | P | .36 | .05 | .32 | 2.11 | 1.11 | 2.02 | 3.13 | 1.49 | 3.70 | 1.07 | 2.38 | .30 | 18.04 |
| | Q | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1959 | P | .82 | 2.30 | 2.66 | .72 | 6.96 | 3.63 | 2.53 | 11.56 | 6.81 | 2.76 | 2.68 | 1.33 | 44.76 |
| | Q | 0 | 0 | 2.26 | .96 | .02 | 0 | 0 | .96 | .23 | 0 | T | 0 | 4.43 |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | | | | La Crosse, Wisconsin Watershed CW | | | | | | |
|---|-------------------|------|---|------|---------|------|---------|------|----------|-----------------------------------|-------|------|--------|------|--------|------|
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1959 | 8-26 | 2.78 | 8-26 | 0.77 | 8-26 | 0.83 | 8-26 | 0.83 | 8-26 | 0.83 | 8-26 | 0.83 | 3-31 | 0.96 | 3-28 | 2.24 |

Notes: Quality of records: P - good; Q - Jan., Feb., Mar., poor - Apr. to Dec., good. Watershed conditions: 1956 - hay; 1957 and 1958 - hay and corn; 1959 - hay.

| SELECTED RUNOFF EVENTS | | | | | | | | | | La Crosse, Wisconsin Watershed CW | | | | |
|---------------------------------|-------------------|-----------------|---------------|-----------------------|---------------|---------------|--------------|---------------|--|-----------------------------------|--|--|--|--|
| Antecedent conditions | | | Rainfall | | | Runoff | | | | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | | | | |
| <u>Event of August 16, 1940</u> | | | | | | | | | | | | | | |
| 7-26-40 | 0.12 | 0 | 8-16-40 | Control Plot Raingage | 0 | 8-16-40 | | | | | | | | |
| 7-28 | .10 | 0 | 2:52p | 0 | 0 | 2:58p | 0 | 0 | | | | | | |
| 7-29 | .26 | 0 | :55 | 1.20 | .06 | 3:02 | .0004 | T | | | | | | |
| 7-31 | .02 | 0 | :58 | 6.20 | .37 | :04 | .693 | .010 | | | | | | |
| 8-1 | 1.30 | .01 | 3:03 | 5.40 | .82 | :06 | 1.71 | .055 | | | | | | |
| 8-3 | .17 | 0 | :08 | 4.44 | 1.19 | :08 | 1.92 | .117 | | | | | | |
| 8-5 | .06 | 0 | :18 | 1.98 | 1.52 | :11 | 1.65 | .208 | | | | | | |
| 8-10 | .33 | 0 | :22 | .30 | 1.54 | :14 | 1.06 | .275 | | | | | | |
| 8-11 | .30 | 0 | :36 | .09 | 1.56 | :19 | .600 | .342 | | | | | | |
| 8-12 | .52 | 0 | | | | :23 | .341 | .374 | | | | | | |
| 8-14 | .55 | 0 | | | | :27 | .108 | .387 | | | | | | |
| 8-15 | .19 | 0 | | | | :32 | .0180 | .391 | | | | | | |
| | | | | | | 4:15 | 0 | .393 | | | | | | |
| <u>Watershed Conditions</u> | | | | | | | | | | | | | | |
| 100% hay | | | | | | | | | | | | | | |
| <u>Event of June 29, 1941</u> | | | | | | | | | | | | | | |
| 5-30-41 | .29 | T | 6-29-41 | Control Plot Raingage | 0 | 6-29-41 | | | | | | | | |
| 6-6 | .03 | 0 | 10:14p | 0 | 0 | 10:20p | 0 | 0 | | | | | | |
| 6-7 | .34 | 0 | :18 | 3.75 | .25 | :22 | .583 | .007 | | | | | | |
| 6-9 | .60 | 0 | :23 | 4.56 | .63 | :23 | 1.01 | .020 | | | | | | |
| 6-11 | .97 | 0 | :26 | 2.60 | .76 | :25 | 1.25 | .057 | | | | | | |
| 6-12 | .87 | .02 | :30 | 1.35 | .85 | :27 | 1.22 | .099 | | | | | | |
| 6-13 | .47 | 0 | :34 | .45 | .88 | :29 | .984 | .137 | | | | | | |
| 6-14 | .22 | 0 | :50 | .08 | .90 | :33 | .423 | .182 | | | | | | |
| 6-26 | .70 | 0 | | | | :37 | .136 | .200 | | | | | | |
| 6-27 | .06 | 0 | | | | :43 | .0240 | .207 | | | | | | |
| <u>Watershed Conditions</u> | | | | | | | | | | | | | | |
| 100% hay | | | | | | | | | | | | | | |
| | | | | | | 11:20 | .0004 | .210 | | | | | | |

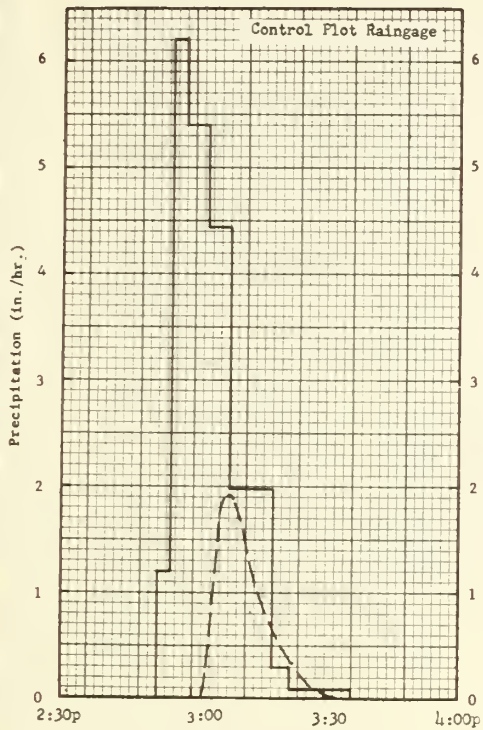
Notes: To convert runoff in in/hr to cfs, multiply by 2.732.

| SELECTED RUNOFF EVENTS | | | La Crosse, Wisconsin Watershed CW | | | | | |
|------------------------------------|-------------------|-----------------|-----------------------------------|-----------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of September 15, 1941</u> | | | | | | | | |
| 8-20-41 | .04 | 0 | 9-15-41 | Control Plot Raingage | | 9-15-41 | | |
| 8-21 | .03 | 0 | 7:46p | 0 | 0 | 8:00p | 0 | 0 |
| 8-25 | .10 | 0 | :54 | .75 | .10 | :02 | .269 | .005 |
| 8-31 | .08 | 0 | 8:09 | 3.80 | 1.05 | :05 | .732 | .028 |
| 9-3 | .70 | .01 | :36 | .16 | 1.12 | :08 | 1.46 | .082 |
| 9-4 | .17 | 0 | | | | :10 | 2.14 | .140 |
| 9-7 | 1.80 | .14 | | | | :11 | 2.58 | .179 |
| 9-8 | 1.40 | .04 | | | | :13 | 2.14 | .260 |
| 9-9 | .26 | 0 | | | | :15 | 1.39 | .320 |
| 9-11 | .02 | 0 | | | | :17 | .772 | .354 |
| 9-13 | .15 | 0 | | | | :21 | .247 | .386 |
| 9-14 | .40 | 0 | | | | :28 | .0422 | .400 |
| 9-15 <u>1/</u> | .36 | 0 | | | | :35 | .0106 | .402 |
| | | | | | | :55 <u>2/</u> | .0004 | .403 |
| <u>Watershed Conditions</u> | | | | | | | | |
| 100% hay | | | | | | | | |
| <u>Event of June 23, 1952</u> | | | | | | | | |
| 5-24-52 | 0.15 | 0 | 6-23-52 | Control Plot Raingage | | 6-23-52 | | |
| 5-27 | .49 | 0 | 10:47a | 0 | 0 | 10:50a | .0040 | 0 |
| 5-30 | .60 | 0 | :50 | 4.40 | .22 | :52 | .0610 | T |
| 5-31 | .23 | 0 | :54 | 6.00 | .62 | :53 | .582 | .01 |
| 6-1 | .14 | 0 | :57 | 2.60 | .75 | :54 | 3.08 | .04 |
| 6-4 | .09 | 0 | 11:02 | 1.56 | .87 | :55 | 4.25 | .10 |
| 6-11 | .30 | 0 | :10 | .67 | .96 | :56 | 4.50 | .17 |
| 6-13 | .29 | 0 | :19 | 2.60 | 1.35 | :58 | 3.57 | .31 |
| 6-14 | .04 | 0 | :21 | 1.20 | 1.39 | 11:00 | 2.96 | .42 |
| 6-16 | .03 | 0 | :25 | 2.85 | 1.58 | :02 | 2.35 | .50 |
| 6-20 <u>3/</u> | .44 | 0 | :32 | .34 | 1.62 | :06 | 1.64 | .64 |
| 6-23 | 2.34 | 0.19 | | | | :10 | .905 | .72 |
| | | | | | | :14 | .618 | .77 |
| | | | | | | :16 | .732 | .79 |
| | | | | | | :18 | 1.11 | .82 |
| | | | | | | :20 | 1.84 | .87 |
| | | | | | | :22 | 2.35 | .94 |
| | | | | | | :24 | 2.20 | 1.02 |
| | | | | | | :26 | 1.99 | 1.08 |
| | | | | | | :28 | 2.24 | 1.16 |
| | | | | | | :30 | 2.02 | 1.25 |
| | | | | | | :33 | .952 | 1.30 |
| | | | | | | :36 | .580 | 1.33 |
| | | | | | | :39 | .268 | 1.36 |
| | | | | | | :45 | .0940 | 1.37 |
| | | | | | | :51 | .0380 | 1.38 |
| | | | | | | 12:00n | .0130 | 1.38 |
| | | | | | | :30p | 0 | 1.38 |
| <u>Event of July 19, 1952</u> | | | | | | | | |
| 6-20-52 | 0.44 | 0 | 7-19-52 | Control Plot Raingage | | 7-19-52 | | |
| 6-23 | 4.10 | 1.57 | 7:35p | 0 | 0 | 7:48p | 0 | 0 |
| 6-24 | .53 | .06 | :37 | 5.40 | .18 | :52 | .0240 | T |
| 6-25 | .18 | 0 | :43 | 1.80 | .36 | :54 | .169 | T |
| 6-27 | .48 | 0 | :53 | 3.96 | 1.02 | :57 | .500 | .02 |

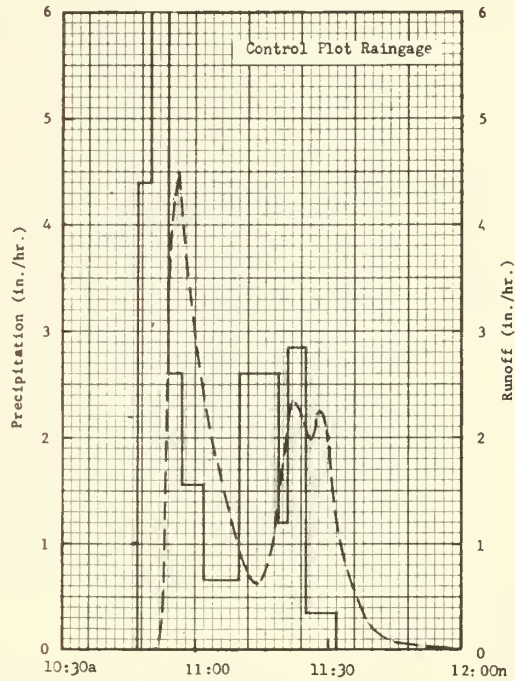
Notes: To convert runoff in in/hr to cfs, multiply by 2.732. 1/ Prior to event beginning 7:46p. 2/ Runoff continued at rate less than 0.01 in/hr until next event 9:27p, 9-15. 3/ Prior to event beginning 10:47a.

| SELECTED RUNOFF EVENTS | | | | | | La Crosse, Wisconsin Watershed CW | | |
|--|-------------------|-----------------|---------------|-----------------------|---------------|-----------------------------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of July 19, 1952 - Continued</u> | | | | | | | | |
| 7-2-52 | .08 | 0 | 8:00p | 3.17 | 1.39 | 8:00p | 1.25 | .06 |
| 7-3 | .55 | 0 | :05 | 3.24 | 1.66 | :02 | 1.78 | .11 |
| 7-7 | .96 | .01 | :11 | 3.10 | 1.97 | :04 | 2.26 | .18 |
| 7-13 | .40 | 0 | :17 | 3.50 | 2.32 | :06 | 2.34 | .26 |
| 7-14 | .65 | 0 | :20 | 3.80 | 2.51 | :08 | 2.38 | .34 |
| 7-18 | .08 | 0 | :26 | 1.40 | 2.65 | :11 | 2.34 | .45 |
| 7-19 1/ | .67 | .01 | :37 | .71 | 2.78 | :14 | 2.26 | .57 |
| | | | :42 | 1.92 | 2.94 | :16 | 2.46 | .65 |
| | | | :48 | .80 | 3.02 | :18 | 2.46 | .73 |
| | | | :56 | 1.58 | 3.23 | :21 | 2.58 | .85 |
| <u>Watershed Conditions</u> | | | | | | | | |
| Six contour strips each 45 feet wide. Alternate strips in hay and corn. Lowest strip in hay. | | | 9:06 | .54 | 3.32 | :22 | 2.54 | .90 |
| | | | :33 | .04 | 3.34 | :24 | 2.70 | .99 |
| | | | | | | :26 | 3.33 | 1.09 |
| | | | | | | :28 | 3.55 | 1.20 |
| | | | | | | :30 | 3.42 | 1.32 |
| | | | | | | :33 | 2.38 | 1.46 |
| | | | | | | :36 | 1.46 | 1.56 |
| | | | | | | :39 | .907 | 1.62 |
| | | | | | | :43 | .532 | 1.66 |
| | | | | | | :48 | .304 | 1.70 |
| | | | | | | :51 | .516 | 1.72 |
| | | | | | | :54 | .794 | 1.75 |
| | | | | | | :56 | .732 | 1.78 |
| | | | | | | :58 | .600 | 1.80 |
| | | | | | | 9:00 | .516 | 1.82 |
| | | | | | | :03 | .655 | 1.85 |
| | | | | | | :06 | .907 | 1.89 |
| | | | | | | :09 | .732 | 1.93 |
| | | | | | | :13 | .394 | 1.96 |
| | | | | | | :18 | .187 | 1.99 |
| | | | | | | :24 | .0605 | 2.00 |
| | | | | | | :34 | .0106 | 2.00 |
| | | | | | | 11:15 | 0 | 2.01 |
| <u>Event of August 26, 1959</u> | | | | | | | | |
| 7-28-59 | .06 | 0 | 8-26-59 | Control Plot Raingage | | 8-26-59 | | |
| 7-30 | .35 | 0 | 9:35p | 0 | 0 | 10:10p | 0 | 0 |
| 8-2 | .19 | 0 | :44 | .60 | .09 | :21 | .0240 | .001 |
| 8-3 | 2.52 | .12 | :48 | 1.20 | .17 | :28 | .0944 | .007 |
| 8-6 | 1.10 | T | :55 | .09 | .18 | :32 | .280 | .019 |
| 8-10 | .08 | 0 | :59 | .60 | .22 | :35 | .247 | .033 |
| 8-11 | .12 | 0 | 10:02 | .60 | .25 | :41 | .0709 | .047 |
| 8-14 | .13 | 0 | :07 | 4.08 | .59 | :49 | .0153 | .052 |
| 8-15 | .45 | 0 | :14 | 1.29 | .74 | :55 | .0884 | .056 |
| 8-16 | .89 | T | :21 | 3.94 | 1.20 | 11:01 | .316 | .074 |
| 8-21 | .54 | 0 | :24 | 1.80 | 1.29 | :06 | .483 | .109 |
| 8-22 | .20 | 0 | :28 | 6.15 | 1.70 | :11 | .468 | .149 |
| 8-26 2/ | .03 | 0 | :32 | 1.80 | 1.82 | :16 | .367 | .184 |
| | | | :36 | .90 | 1.88 | :19 | .532 | .206 |
| | | | :41 | .36 | 1.91 | :22 | 1.49 | .250 |
| <u>Watershed Conditions</u> | | | | | | | | |
| 100% hay | | | :46 | 1.56 | 2.04 | :24 | 2.30 | .309 |
| | | | :56 | 2.82 | 2.51 | :26 | 2.78 | .393 |
| | | | 11:04 | 2.70 | 2.87 | :27 | 2.54 | .436 |
| | | | :11 | 1.63 | 3.06 | :29 | 2.70 | .525 |
| | | | :15 | 1.95 | 3.19 | :33 | 1.85 | .678 |
| | | | :23 | 5.48 | 3.92 | :36 | 1.11 | .750 |
| | | | :30 | 4.03 | 4.39 | :40 | .438 | .796 |
| | | | :34 | 1.35 | 4.48 | :46 | .101 | .820 |
| | | | 12:00m | .25 | 4.59 | :52 | .0240 | .826 |
| | | | 8-27-59 | | | 8-27-59 | | |
| | | | 12:10a | .36 | 4.65 | 12:25a | 0 | .828 |
| | | | :16 | .50 | 4.70 | | | |

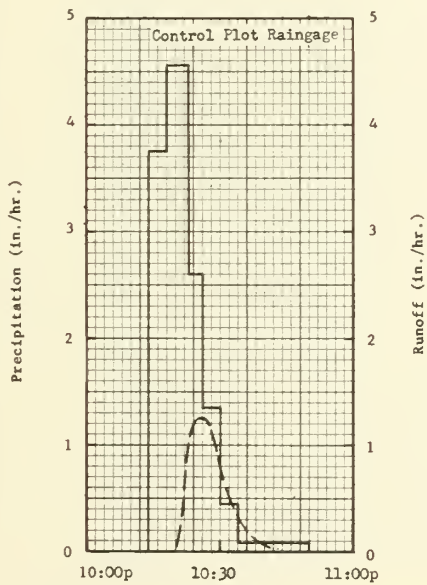
Notes: To convert runoff in in/hr to cfs, multiply by 2.732. 1/ Prior to event beginning 7:35p. 2/ Prior to event beginning 9:35p, 8-26.



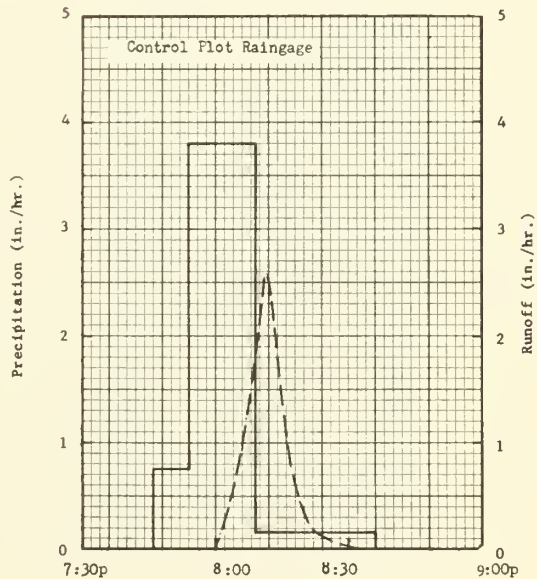
August 16, 1940



June 23, 1952

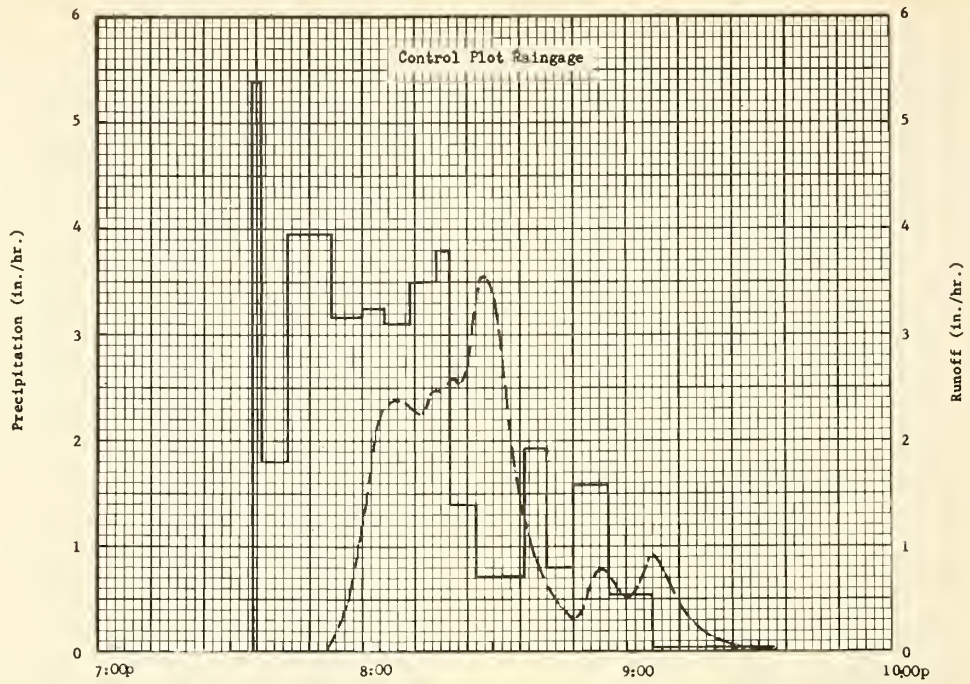


June 29, 1941

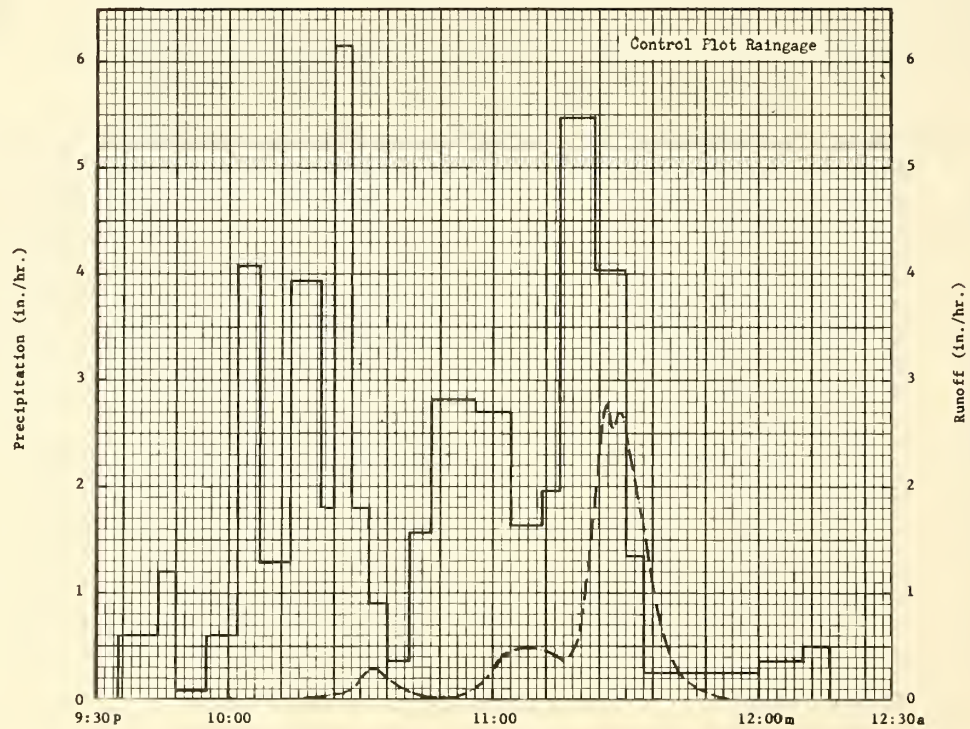


September 15, 1941

LA CROSSE, WISCONSIN WATERSHED CW

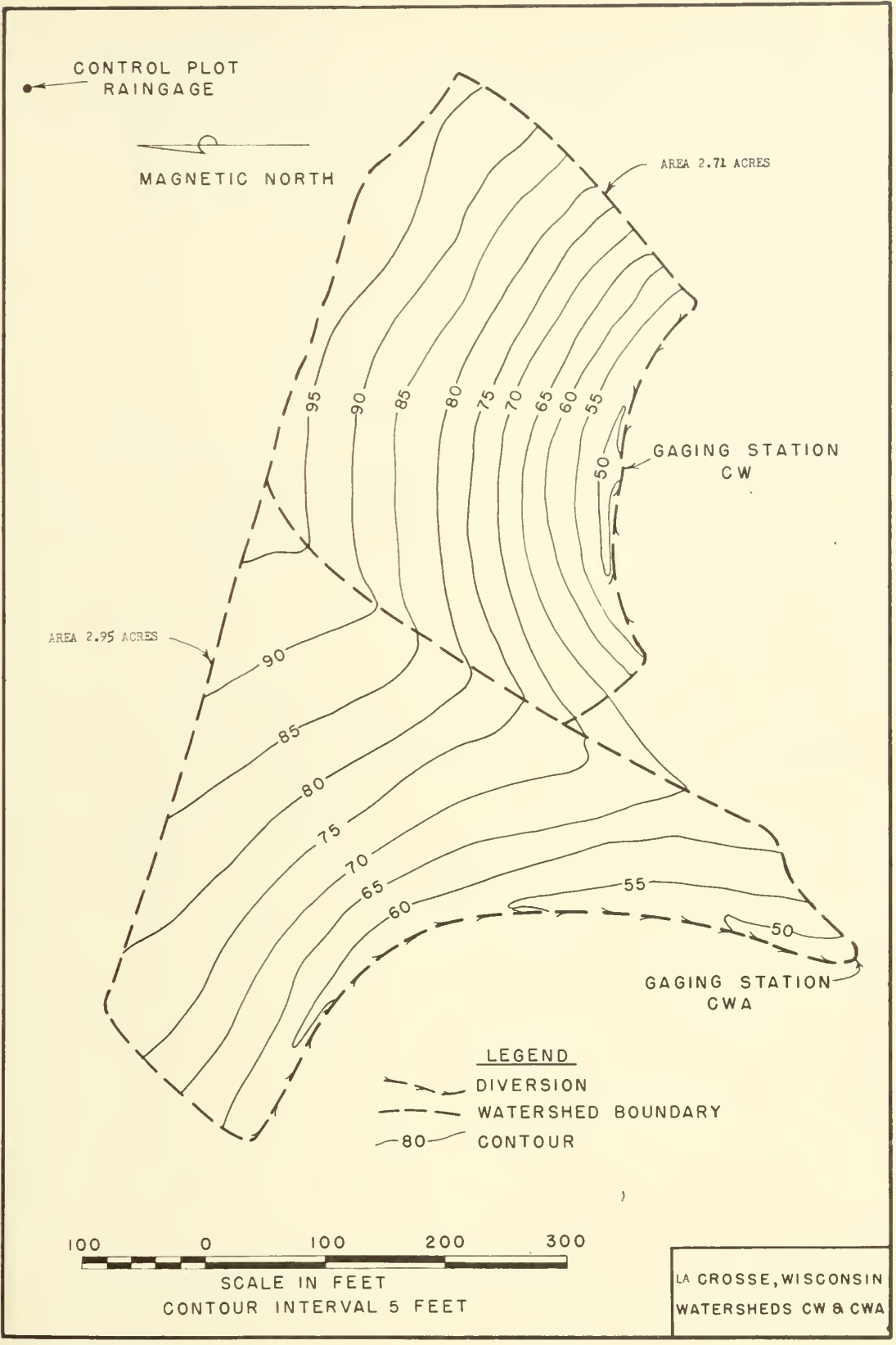


July 19, 1952



August 26-27, 1959

LA CROSSE, WISCONSIN WATERSHED CW



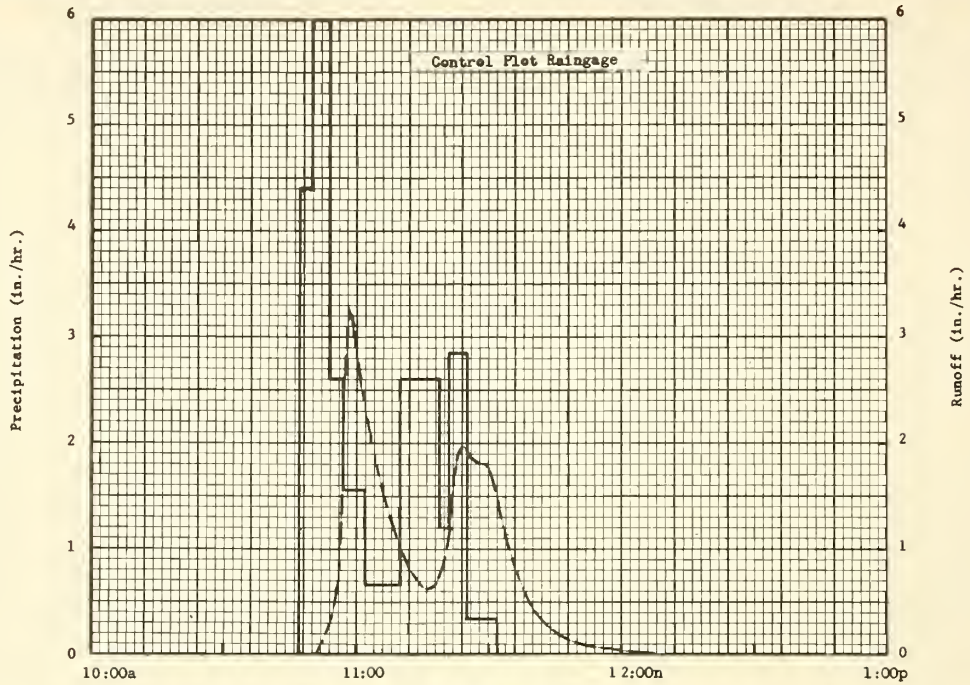
| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | La Crosse, Wisconsin Watershed CWA (Area - 2.95 acres) 1/ | | | | | | | |
|---|-------|---------|------|------|------|------|--|-------|-------|-------|------|------|------|-------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| | | 1952 1/ | P | 1.68 | 0.61 | 2.24 | 1.03 | 3.33 | 6.62 | 9.23 | 5.06 | 0.93 | T | 2.33 |
| | Q | .10 | 0 | .67 | 0 | 0 | 1.44 | 2.38 | .44 | 0 | 0 | .01 | 0 | 5.04 |
| 1953 | P | .96 | 2.06 | 1.56 | 4.91 | 2.15 | 4.39 | 11.15 | 2.07 | .48 | .44 | 1.53 | 1.24 | 32.94 |
| | Q | 0 | 0 | .16 | 0 | .03 | .01 | 1.27 | .18 | 0 | 0 | 0 | 0 | 1.65 |
| 1954 | P | .58 | .42 | 1.17 | 8.06 | 1.80 | 7.24 | 3.55 | 2.60 | 4.59 | 4.77 | 1.09 | .49 | 36.36 |
| | Q | 0 | 0 | .16 | 1.00 | 0 | .69 | .44 | .03 | .01 | .16 | 0 | 0 | 2.49 |
| 1955 | P | .38 | .52 | 1.14 | 2.90 | 4.19 | 2.99 | 4.14 | .71 | 1.67 | 1.91 | .88 | .67 | 22.10 |
| | Q | 0 | 0 | .24 | 0 | 0 | .04 | .42 | 0 | 0 | 0 | 0 | 0 | .70 |
| 1956 | P | 0.44 | 0.36 | 3.06 | 2.09 | 3.42 | 2.52 | 3.19 | 3.36 | 1.78 | 1.68 | 2.08 | 0.59 | 24.57 |
| | Q | 0 | 0 | .70 | 1.52 | 0 | 0 | 0 | .01 | 0 | 0 | 0 | 0 | 2.23 |
| 1957 | P | .35 | .27 | .95 | 2.41 | 4.29 | 5.02 | 6.97 | 4.46 | 2.29 | 1.02 | 2.98 | .68 | 31.69 |
| | Q | 0 | 0 | 0 | 0 | 0 | .05 | .51 | .02 | 0 | 0 | 0 | 0 | .58 |
| 1958 | P | .36 | .05 | .32 | 2.11 | 1.11 | 2.02 | 3.13 | 1.49 | 3.70 | 1.07 | 2.38 | .30 | 18.04 |
| | Q | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1959 | P | .82 | 2.30 | 2.66 | .72 | 6.96 | 3.63 | 2.53 | 11.56 | 6.81 | 2.76 | 2.68 | 1.33 | 44.76 |
| | Q | 0 | 0 | .97 | 1.08 | .01 | 0 | 0 | .95 | .26 | 0 | .01 | 0 | 3.28 |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | | | | | | | | | | La Crosse, Wisconsin Watershed CWA | | | | | | | |
|---|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------------------------------------|--|--|--|--|--|--|--|
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | | | | | | | | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | | | | | | | |
| 1952 1/ | 7-19 | 3.53 | 7-19 | 1.78 | 7-19 | 2.06 | 7-19 | 2.14 | 7-19 | 2.22 | 7-19 | 2.24 | 7-19 | 2.24 | 7-19 | 2.24 | | | | | | | |
| 1953 | 7-4 | 1.70 | 7-4 | .69 | 7-4 | .74 | 7-4 | .74 | 7-4 | .74 | 7-4 | .74 | 7-4 | .74 | 7-4 | .84 | | | | | | | |
| 1954 | 4-30 | 1.70 | 4-30 | .76 | 4-30 | .93 | 4-30 | .97 | 4-30 | 1.04 | 4-30 | 1.04 | 4-30 | 1.04 | 4-30 | 1.04 | | | | | | | |
| 1955 | 7-8 | .78 | 7-8 | .32 | 7-8 | .38 | 7-8 | .42 | 7-8 | .42 | 7-8 | .42 | 7-8 | .42 | 7-8 | .42 | | | | | | | |
| 1956 | 4-2 | .08 | 4-2 | .08 | 4-2 | .16 | 4-2 | .39 | 4-2 | .64 | 4-1 | 1.17 | 4-1 | 1.52 | 3-26 | e1.95 | | | | | | | |
| 1957 | 7-21 | .73 | 7-21 | .29 | 7-21 | .29 | 7-21 | .29 | 7-21 | .29 | 7-21 | .29 | 7-21 | .29 | 7-16 | .37 | | | | | | | |
| 1958 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | |
| 1959 | 8-26 | 2.30 | 8-26 | 0.72 | 8-26 | .80 | 8-26 | .80 | 8-26 | .80 | 3-31 | .97 | 3-31 | 1.56 | 3-31 | 2.04 | | | | | | | |

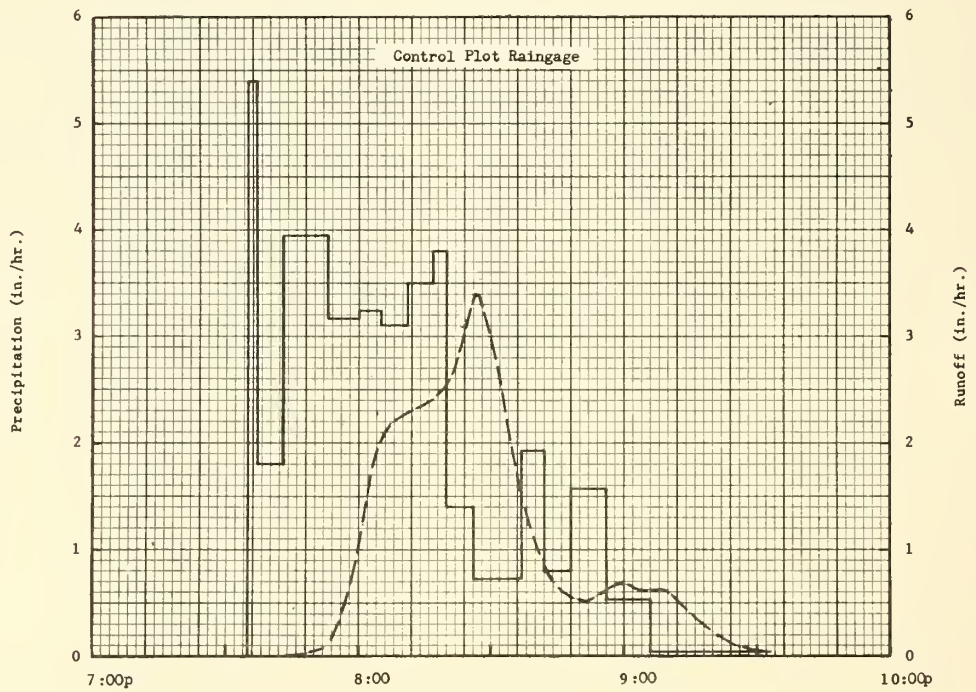
Notes: Quality of records: P=good; Q=good. Months of Jan., Feb., Mar. and Dec. include snow and snow melt. Watershed conditions: 1956-hay; 1957 and 1958-hay and corn; 1959-hay. 1/ The drainage area has been reduced from 3.06 acres to 2.95 acres, and the monthly runoff and annual maximum values have been revised for the period 1952 through 1958 and supersede those previously reported.

| SELECTED RUNOFF EVENTS | | | | | | | | | | La Crosse, Wisconsin Watershed CWA | | | | | | | |
|---|-------------------|-----------------|---------------|-----------------------|---------------|---------------|--------------|---------------|--|------------------------------------|------|------|--|--|--|--|--|
| Antecedent conditions | | | | Rainfall | | | | Runoff | | | | | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | | | | | | | |
| Event of June 23, 1952 | | | | | | | | | | | | | | | | | |
| 5-24-52 | 0.15 | 0 | 6-23-52 | Control Plot Raingage | | 6-23-52 | | | | | | | | | | | |
| 5-27 | .49 | 0 | 10:47a | 0 | 0 | 10:48a | .0008 | 0 | | | | | | | | | |
| 5-30 | .60 | 0 | :50 | 4.40 | .22 | :50 | .003 | T | | | | | | | | | |
| 5-31 | .23 | 0 | :54 | 6.30 | .64 | :53 | .164 | T | | | | | | | | | |
| 6-2 | .14 | 0 | :57 | 2.60 | .77 | :56 | .770 | .02 | | | | | | | | | |
| 6-4 | .09 | 0 | 11:02 | 1.44 | .89 | :57 | 2.12 | .04 | | | | | | | | | |
| 6-11 | .30 | 0 | :10 | .68 | .98 | :58 | 3.39 | .09 | | | | | | | | | |
| 6-13 | .29 | 0 | :19 | 2.67 | 1.38 | 11:00 | 2.94 | .20 | | | | | | | | | |
| 6-14 | .04 | 0 | :21 | 1.20 | 1.42 | :02 | 2.38 | .28 | | | | | | | | | |
| 6-16 | .03 | 0 | :25 | 3.00 | 1.62 | :06 | 1.64 | .42 | | | | | | | | | |
| 6-20 | .44 | 0 | :32 | .34 | 1.66 | :12 | .857 | .54 | | | | | | | | | |
| 6-23 1/ | 2.34 | .2192 | | | | :16 | .654 | .59 | | | | | | | | | |
| Watershed Conditions | | | | | | | | | | :18 | .691 | .61 | | | | | |
| Six strips on 2% grade. Lowest strip in hay, then alternate strips in corn and hay. | | | | | | | | | | :20 | .928 | .64 | | | | | |
| | | | | | | | | | | :22 | 1.61 | .67 | | | | | |
| | | | | | | | | | | :24 | 2.04 | .74 | | | | | |
| | | | | | | | | | | :27 | 1.90 | .84 | | | | | |
| | | | | | | | | | | :30 | 1.84 | .93 | | | | | |
| | | | | | | | | | | :32 | 1.55 | .97 | | | | | |
| | | | | | | | | | | :36 | .857 | 1.07 | | | | | |
| | | | | | | | | | | :42 | .362 | 1.12 | | | | | |
| :51 | .106 | 1.16 | | | | | | | | | | | | | | | |
| 12:07p | .014 | 1.17 | | | | | | | | | | | | | | | |
| 1:17 | 0 | 1.17 | | | | | | | | | | | | | | | |

Notes: To convert runoff in in/hr to cfs, multiply by 2.975. 1/ Prior to event beginning 10:47a.

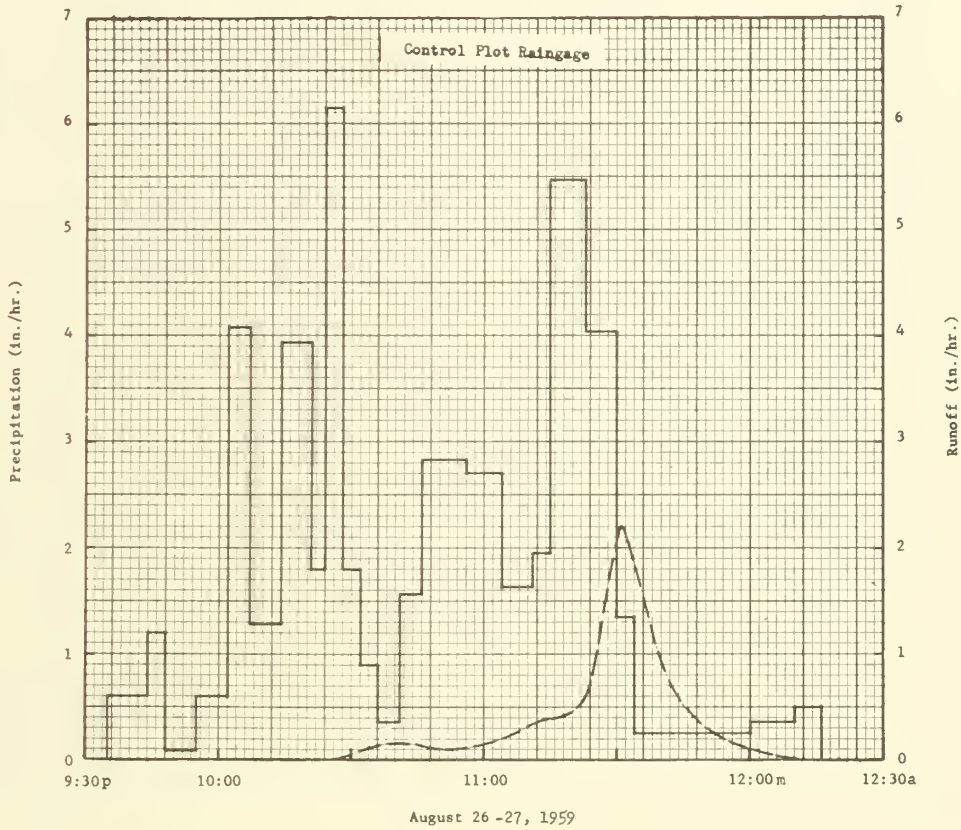


June 23, 1952



July 19, 1952

LA CROSSE, WISCONSIN WATERSHED CWA

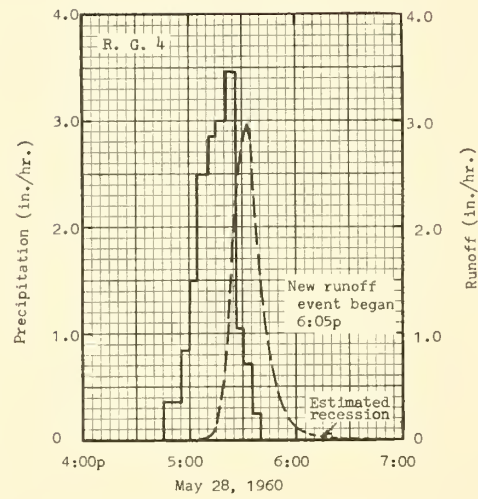
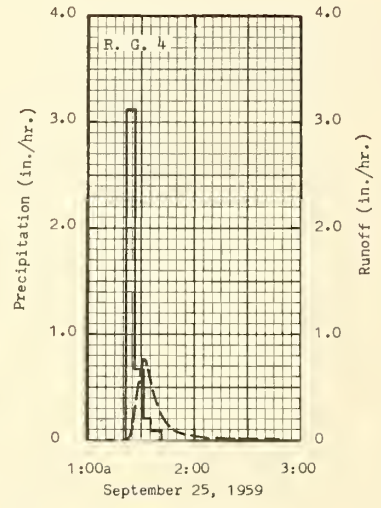
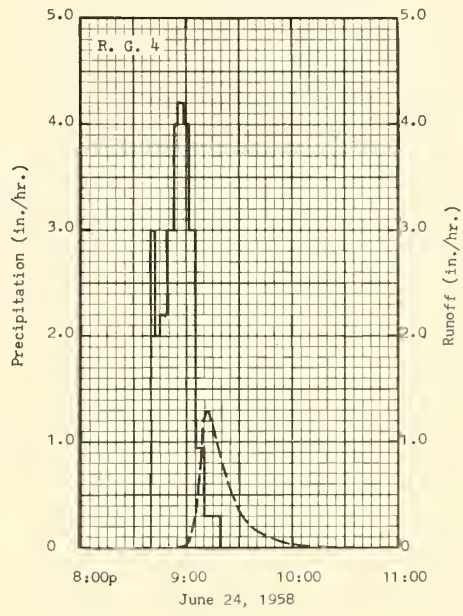


LA CROSSE, WISCONSIN WATERSHED CWA

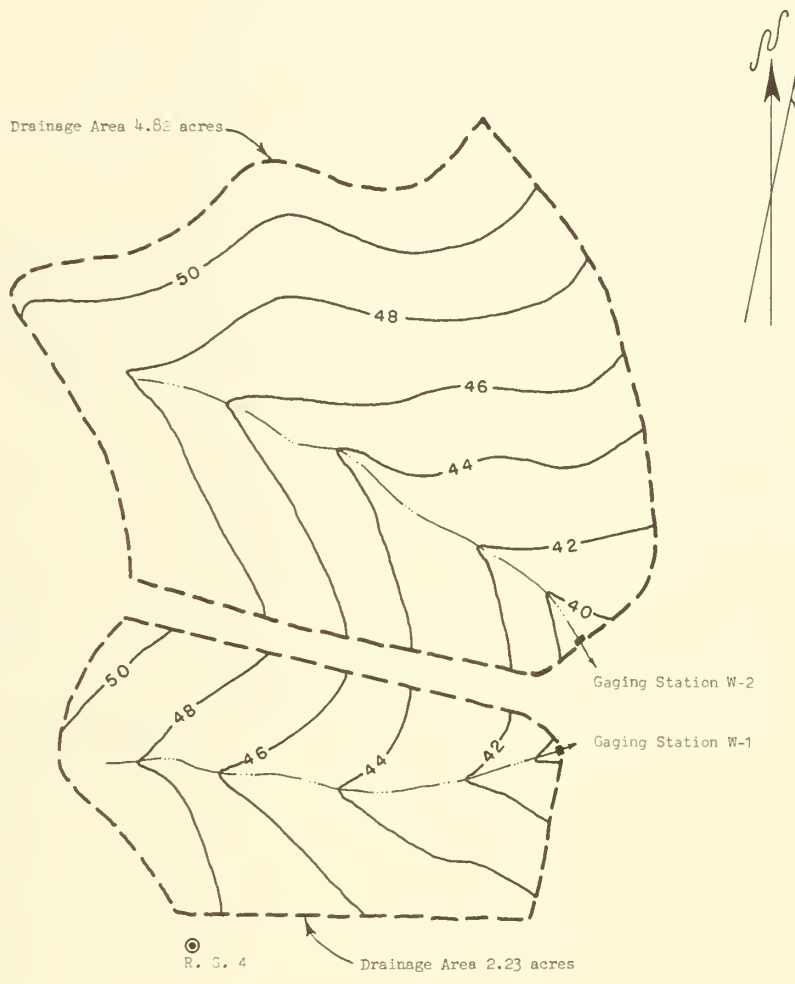
| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Cherokee, Oklahoma Watershed W-1 (Area - 2.23 acres) | | | | | | | | | |
|--|-------------------|-----------------|---|-------------------|---------------|---------------|---|---------------|-----------|-------------|--------------|-----------|-----------|---------------|-----------|------------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year | | |
| | | 1956 | P Q | 0.11 0 | 0.10 0 | 0.51 0 | 0.34 0 | 1.12 0 | 2.42 T | 2.17 0 | 1.88 T | 0.25 0 | 0.89 0 | 0.44 0 | 1.04 0 | 11.27 T |
| 1957 | P Q | .75 0 | 1.01 0 | 3.73 0 | 7.16 2.63 | 10.74 3.81 | 7.60 2.19 | 2.17 nr | .54 0 | 6.26 .03 | 2.48 0 | 1.37 0 | .16 0 | 43.97 8.66 | | |
| 1958 | P Q | .73 T | .09 0 | 2.20 .03 | 1.76 .05 | 1.80 0 | 5.88 1.71 | 4.41 .67 | 2.58 0 | 3.45 .49 | .41 0 | .92 0 | .26 0 | 24.49 2.95 | | |
| 1959 | P Q | .18 0 | .11 0 | 1.91 .02 | 2.92 .36 | 6.41 1.74 | 1.86 .01 | .63 0 | 1.74 0 | 5.72 .62 | 4.95 1.38 | .12 0 | 1.09 0 | 27.64 4.13 | | |
| 1960 | P Q | 1.11 .06 | 1.56 .24 | .78 0 | .85 0 | 4.72 1.34 | 3.50 .76 | 1/ 1/ | | | | | | 12.52 2.40 | | |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | Cherokee, Oklahoma Watershed W-1 | | | | | | | | | |
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1958 | 6-25 | 1.51 | 6-25 | 1.08 | 6-25 | 1.26 | 6-25 | 1.29 | 6-24 | 1.71 | 6-24 | 1.71 | 6-24 | 1.71 | 6-21 | 1.71 |
| 1959 | 10-2 | 2.52 | 5-26 | 1.46 | 5-25 | 1.57 | 5-25 | 1.64 | 5-25 | 1.64 | 5-25 | 1.64 | 5-25 | 1.64 | 9-24 | 1.83 |
| 1960 | 5-28 | 2.97 | 5-28 | .99 | 5-28 | 1.32 | 5-28 | 1.33 | 5-28 | 1.34 | 5-28 | 1.34 | 5-28 | 1.34 | 5-28 | 1.34 |
| Notes: Quality of records: P-good, Q good. 1/ Watershed discontinued June 30, 1960. Watershed Conditions: Continuous wheat 1956-60. Tillage: 1956,57- chiseling 6 inches deep; 1958-8 foot sweep 4 inches deep; 1959-8 foot sweep 3 inches deep. All years disc and spring tooth harrows used as necessary for weed control. | | | | | | | | | | | | | | | | |
| SELECTED RUNOFF EVENTS | | | | | | | Cherokee, Oklahoma Watershed W-1 | | | | | | | | | |
| Antecedent conditions | | | | Rainfall | | | | Runoff | | | | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | | | | | | |
| Event of June 24, 1958 | | | | | | | | | | | | | | | | |
| 5-29-58 | 0.73 | 0 | 6-24-58 | Raingage | 4 | 6-24-58 | | | | | | | | | | |
| 6-16 | 1.30 | 0 | 8:40p | 0 | 0 | 8:56p | 0 | 0 | | | | | | | | |
| 6-18 | .08 | 0 | :42 | 3.00 | .10 | :57 | .006 | 0 | | | | | | | | |
| 6-20 | .29 | 0 | :45 | 2.00 | .20 | :58 | .010 | 0 | | | | | | | | |
| 6-21 | .63 | T | :48 | 2.20 | .31 | :59 | .010 | 0 | | | | | | | | |
| 6-22 | .08 | 0 | :52 | 3.00 | .51 | 9:01 | .042 | T | | | | | | | | |
| | | | :55 | 4.00 | .71 | :02 | .086 | T | | | | | | | | |
| | | | :58 | 4.20 | .92 | :04 | .234 | .01 | | | | | | | | |
| | | | 9:01 | 4.00 | 1.12 | :06 | .451 | .02 | | | | | | | | |
| Watershed Conditions: 100% of area in wheat stubble. Wheat harvested 6-14. | | | | | | | | | | | | | | | | |
| | | | :05 | 3.00 | 1.32 | :08 | .872 | .04 | | | | | | | | |
| | | | :10 | .96 | 1.40 | :09 | 1.14 | .06 | | | | | | | | |
| | | | :18 | .30 | 1.44 | :11 | 1.29 | .10 | | | | | | | | |
| | | | | | | :12 | 1.29 | .12 | | | | | | | | |
| | | | | | | :13 | 1.27 | .14 | | | | | | | | |
| | | | | | | :15 | 1.14 | .18 | | | | | | | | |
| | | | | | | :17 | 1.02 | .22 | | | | | | | | |
| | | | | | | :19 | .849 | .25 | | | | | | | | |
| | | | | | | :23 | .623 | .30 | | | | | | | | |
| | | | | | | :27 | .466 | .33 | | | | | | | | |
| | | | | | | :31 | .333 | .36 | | | | | | | | |
| | | | | | | :39 | .179 | .39 | | | | | | | | |
| | | | | | | :44 | .104 | .40 | | | | | | | | |
| | | | | | | :52 | .050 | .42 | | | | | | | | |
| | | | | | | 10:00 | .027 | .42 | | | | | | | | |
| | | | | | | :08 | .015 | .42 | | | | | | | | |
| | | | | | | :18 | .006 | .42 | | | | | | | | |
| | | | | | | :26 | .003 | .42 | | | | | | | | |
| | | | | | | :36 | .001 | .42 | | | | | | | | |
| | | | | | | :54 | 0 | .43 | | | | | | | | |
| Notes: To convert runoff in in/hr to cfs multiply by 2.2488. | | | | | | | | | | | | | | | | |

| SELECTED RUNOFF EVENTS | | | Cherokee, Oklahoma Watershed W-1 | | | | | |
|--|-------------------|-----------------|----------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of September 25, 1959 | | | | | | | | |
| 8-28-59 | T | 0 | 9-25-59 | Raingage | 4 | 9-25-59 | | |
| 8-30 | .37 | 0 | 1:22a | 0 | 0 | 1:22a | 0 | 0 |
| 9-3 | .76 | 0 | :27 | 3.12 | .26 | :23 | .005 | T |
| 9-17 | .12 | 0 | :32 | .72 | .32 | :24 | .034 | T |
| 9-22 | .70 | 0 | :35 | .20 | .33 | :25 | .104 | T |
| 9-23 | .26 | 0 | :42 | .09 | .34 | :26 | .215 | T |
| 9-24 | 3.24 | .441 | | | | :27 | .321 | .01 |
| Watershed Conditions: 100% of area fallow. Offset disk plowed 8-13. Spring tooth harrowed 9-9. | | | | | | :28 | .423 | .01 |
| | | | | | | :29 | .543 | .02 |
| | | | | | | :30 | .605 | .03 |
| | | | | | | :31 | .694 | .04 |
| | | | | | | :32 | .769 | .06 |
| | | | | | | :34 | .676 | .08 |
| | | | | | | :36 | .510 | .10 |
| | | | | | | :38 | .396 | .11 |
| | | | | | | :42 | .192 | .13 |
| | | | | | | :46 | .132 | .14 |
| | | | | | | :48 | .080 | .15 |
| | | | | | | :50 | .080 | .15 |
| | | | | | | :54 | .046 | .15 |
| | | | | | | :58 | .034 | .16 |
| | | | | | | 2:02 | .021 | .16 |
| | | | :07 | .013 | .16 | | | |
| | | | :14 | .006 | .16 | | | |
| | | | :21 | .003 | .16 | | | |
| Event of May 28, 1960 | | | | | | | | |
| 4-28-60 | 0.01 | 0 | 5-28-60 | Raingage | 4 | 5-28-60 | | |
| 5-3 | .20 | 0 | 4:45p | 0 | 0 | 5:04p | 0 | 0 |
| 5-4 | .35 | 0 | :55 | .36 | .03 | :05 | .001 | T |
| 5-5 | .12 | 0 | 5:00 | .84 | .10 | :06 | .003 | T |
| 5-6 | .10 | 0 | :04 | 1.50 | .20 | :07 | .006 | T |
| 5-17 | .73 | 0 | :11 | 2.49 | .49 | :09 | .013 | T |
| 5-20 | .24 | 0 | :15 | 2.85 | .68 | :10 | .021 | T |
| 5-24 | .57 | 0 | :21 | 3.00 | .98 | :11 | .034 | T |
| 5-28 | .32 | 0 | :26 | 3.48 | 1.27 | :13 | .086 | T |
| Watershed Conditions: 100% of area in wheat in dough stage. Good stand. | | | :30 | 1.05 | 1.34 | :14 | .124 | T |
| | | | :35 | .72 | 1.40 | :15 | .179 | .01 |
| | | | :40 | .24 | 1.42 | :17 | .333 | .02 |
| | | | | | | :19 | .556 | .03 |
| | | | | | | :21 | .934 | .05 |
| | | | | | | :23 | 1.51 | .10 |
| | | | | | | :27 | 2.48 | .23 |
| | | | | | | :31 | 2.88 | .41 |
| | | | | | | :33 | 2.97 | .51 |
| | | | | | | :34 | 2.84 | .56 |
| | | | | | | :36 | 2.40 | .64 |
| | | | | | | :40 | 1.60 | .78 |
| | | | | | | :44 | .934 | .86 |
| | | | | | | :48 | .605 | .92 |
| | | | | | | :52 | .357 | .95 |
| | | | :57 | .179 | .97 | | | |
| | | | 1/6:05 | .064 | .98 | | | |
| | | | :11 | e .032 | e .99 | | | |
| | | | :16 | e .016 | e .99 | | | |
| | | | :22 | e .008 | e .99 | | | |
| | | | :28 | e .004 | e .99 | | | |
| | | | :32 | e .002 | e .99 | | | |
| | | | :38 | e .001 | e .99 | | | |
| | | | 7:00 | e 0 | e .99 | | | |

Notes: To convert runoff in in/hr to cfs multiply by 2.2488. 1/ New runoff event began 6:05p. Recession estimated.



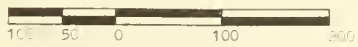
CHEROKEE, OKLAHOMA Watershed W-1



LEGEND

- Watershed Boundary
- Natural Waterway
- 44 — Contours
- ⊥ Gaging Station
- ⊙ Recording Raingage

Scale in Feet



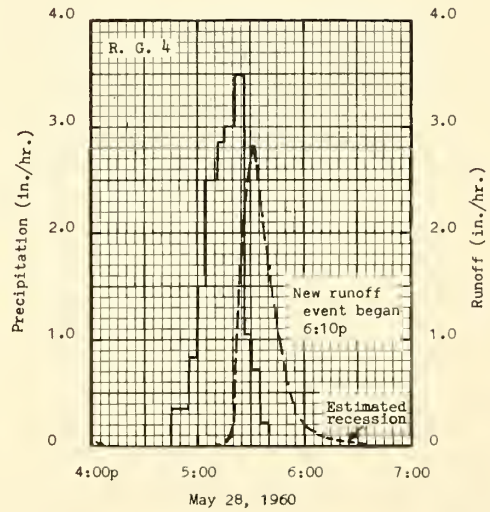
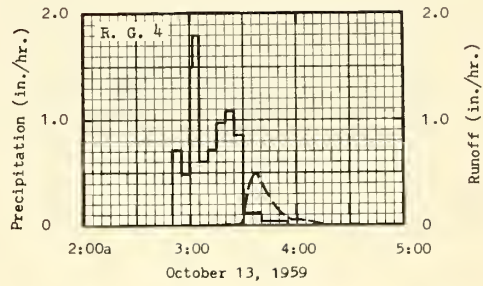
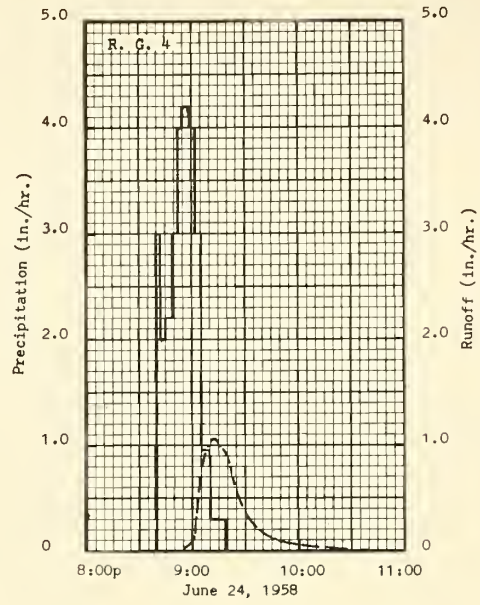
Contour Interval 2 Feet

CHEROKEE, OKLAHOMA
Watersheds W-1, W-2

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | | Cherokee, Oklahoma Watershed W-2 (Area - 4.82 acres) | | | | | | | | |
|--|-------------------|-----------------|---|-------------------|---------------|---------------|--------------|---|-------------|--------------|-----------|-----------|----------------|------|--------|------|
| Month Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year | | | |
| 1956 P Q | 0.11 0 | 0.10 0 | 0.51 0 | 0.34 0 | 1.12 0 | 2.42 T | 2.17 0 | 1.88 C | 0.25 0 | 0.89 0 | 0.44 0 | 1.04 0 | 11.27 T | | | |
| 1957 P Q | .75 0 | 1.01 0 | 3.73 T | 7.16 2.63 | 10.74 4.29 | 7.60 2.49 | 2.17 .87 | .54 0 | 6.26 .01 | 2.48 0 | 1.37 0 | .16 0 | 43.97 10.29 | | | |
| 1958 P Q | .73 T | .09 0 | 2.20 T | 1.76 .03 | 1.80 T | 5.88 1.66 | 4.41 .45 | 2.58 T | 3.45 .36 | .41 0 | .92 0 | .26 0 | 24.49 2.50 | | | |
| 1959 P Q | .18 0 | .11 0 | 1.91 .02 | 2.92 .43 | 6.41 1.91 | 1.86 T | .63 0 | 1.74 0 | 5.72 .67 | 4.95 1.40 | .12 0 | 1.09 0 | 27.64 4.44 | | | |
| 1960 P Q | 1.11 .03 | 1.56 .16 | .78 0 | .85 0 | 4.72 1.35 | 3.50 .73 | 1/ T | | | | | | 12.52 2.27 | | | |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | | Cherokee, Oklahoma Watershed W-2 | | | | | | | | |
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1958 | *6-25 | 1.32 | 6-25 | 1.00 | 6-25 | 1.17 | 6-25 | 1.20 | 6-24 | 1.66 | 6-24 | 1.66 | 6-24 | 1.66 | 6-21 | 1.66 |
| 1959 | 5-26 | 2.45 | 5-26 | 1.44 | 5-25 | 1.62 | 5-25 | 1.77 | 5-25 | 1.78 | 5-25 | 1.78 | 5-25 | 1.78 | 9-24 | 1.92 |
| 1960 | 5-28 | 2.82 | 5-28 | .97 | 5-28 | 1.35 | 5-28 | 1.35 | 5-28 | 1.35 | 5-28 | 1.35 | 5-28 | 1.35 | 5-28 | 1.35 |
| Notes: Quality of records: P-good, Q-good. 1/ Watershed discontinued June 30, 1960. Watershed Conditions: Continuous wheat 1956-60. Tillage: 1956,57- chiseling 6 inches deep; 1958- 8 foot sweep 4 inches deep; 1959- 8 foot sweep 3 inches deep. All years disc and spring tooth harrows used as necessary for weed control. | | | | | | | | | | | | | | | | |
| SELECTED RUNOFF EVENTS | | | | | | | | Cherokee, Oklahoma Watershed W-2 | | | | | | | | |
| Antecedent conditions | | | | Rainfall | | | | Runoff | | | | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | | | | | | |
| Event of June 24, 1958 | | | | | | | | | | | | | | | | |
| 5-29-58 | 0.73 | T | 6-24-58 | Raingage | 4 | 6-24-58 | | | | | | | | | | |
| 6-16 | 1.30 | T | 8:40p | 0 | 0 | 8:41p | 0 | 0 | | | | | | | | |
| 6-18 | .08 | 0 | :42 | 3.00 | .10 | :42 | .003 | T | | | | | | | | |
| 6-20 | .29 | 0 | :45 | 2.00 | .20 | :44 | .003 | T | | | | | | | | |
| 6-21 | .63 | .020 | :48 | 2.20 | .31 | :45 | .004 | T | | | | | | | | |
| 6-22 | .08 | 0 | :52 | 3.00 | .51 | :46 | .003 | T | | | | | | | | |
| | | | :55 | 4.00 | .71 | :47 | .004 | T | | | | | | | | |
| | | | :58 | 4.20 | .92 | :49 | .007 | T | | | | | | | | |
| | | | 9:01 | 4.00 | 1.12 | :50 | .011 | T | | | | | | | | |
| | | | :05 | 3.00 | 1.32 | :54 | .025 | T | | | | | | | | |
| Watershed Conditions: 100% of area in wheat stubble. Wheat harvested 6-14. | | | | | | | | | | | | | | | | |
| | | | :10 | .96 | 1.40 | :56 | .035 | T | | | | | | | | |
| | | | :18 | .30 | 1.44 | :58 | .043 | T | | | | | | | | |
| | | | | | | 9:00 | .068 | .01 | | | | | | | | |
| | | | | | | :02 | .165 | .01 | | | | | | | | |
| | | | | | | :03 | .251 | .01 | | | | | | | | |
| | | | | | | :05 | .648 | .03 | | | | | | | | |
| | | | | | | :07 | .840 | .05 | | | | | | | | |
| | | | | | | :11 | 1.04 | .12 | | | | | | | | |
| | | | | | | :13 | 1.06 | .15 | | | | | | | | |
| | | | | | | :14 | 1.04 | .17 | | | | | | | | |
| | | | | | | :17 | .963 | .22 | | | | | | | | |
| | | | | | | :20 | .885 | .27 | | | | | | | | |
| | | | | | | :25 | .586 | .33 | | | | | | | | |
| | | | | | | :30 | .393 | .37 | | | | | | | | |
| | | | | | | :40 | .183 | .41 | | | | | | | | |
| | | | | | | :50 | .091 | .44 | | | | | | | | |
| | | | | | | 10:00 | .048 | .45 | | | | | | | | |
| | | | | | | :20 | .013 | .46 | | | | | | | | |
| | | | | | | :45 | .002 | .46 | | | | | | | | |
| | | | | | | 11:16 | T | .46 | | | | | | | | |
| | | | | | | :46 | 0 | .46 | | | | | | | | |
| Notes: To convert runoff in in/hr to cfs multiply by 4.8602. For map of watershed see page 34.1-4. | | | | | | | | | | | | | | | | |

| SELECTED RUNOFF EVENTS | | | Cherokee, Oklahoma Watershed W-2 | | | | | |
|---|-------------------|-----------------|----------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of October 13, 1959 | | | | | | | | |
| 9-17-59 | 0.12 | 0 | 10-13-59 | Raingage | 4 | 10-13-59 | | |
| 9-22 | .70 | 0 | 2:50a | 0 | 0 | 3:19a | 0 | 0 |
| 9-23 | .26 | 0 | :55 | .72 | .06 | :25 | .001 | T |
| 9-24 | 3.24 | .514 | 3:00 | .48 | .10 | :26 | .002 | T |
| 9-25 | .34 | .158 | :02 | 1.50 | .15 | :28 | .006 | T |
| 9-29 | .04 | 0 | :05 | 1.80 | .24 | :29 | .032 | T |
| 9-30 | .41 | 0 | :10 | .60 | .29 | :30 | .083 | T |
| 10-1 | 1.12 | .226 | :15 | .72 | .35 | :31 | .138 | T |
| 10-2 | 1.66 | 1.065 | :20 | .96 | .43 | :33 | .313 | .01 |
| 10-3 | .12 | 0 | :25 | 1.08 | .52 | :35 | .442 | .02 |
| 10-4 | .30 | 0 | :30 | .84 | .59 | :37 | .506 | .04 |
| 10-13 | 1/ .22 | 0 | :40 | .12 | .60 | :39 | .453 | .06 |
| | | | :55 | .04 | .61 | :41 | .383 | .07 |
| Watershed Conditions: 100% of area fallow. Spring tooth harrowed 10-10. | | | | | | :45 | .251 | .09 |
| | | | | | | :49 | .143 | .10 |
| | | | | | | :53 | .087 | .11 |
| | | | | | | :57 | .054 | .12 |
| | | | | | | 4:01 | .045 | .12 |
| | | | | | | :05 | .025 | .12 |
| | | | | | | :09 | .014 | .12 |
| | | | | | | :13 | .008 | .12 |
| | | | | | | :23 | .003 | .12 |
| | | | | | | :32 | .001 | .12 |
| | | | | | | 5:03 | 0 | .12 |
| Event of May 28, 1960 | | | | | | | | |
| 4-28-60 | 0.01 | 0 | 5 28-60 | Raingage | 4 | 5-28-60 | | |
| 5-3 | .20 | 0 | 4:45p | 0 | 0 | 5:04p | 0 | 0 |
| 5-4 | .35 | 0 | :55 | .36 | .03 | :05 | T | T |
| 5-5 | .12 | 0 | 5:00 | .84 | .10 | :06 | .001 | T |
| 5-6 | .10 | 0 | :04 | 1.50 | .20 | :08 | .002 | T |
| 5-17 | .73 | 0 | :11 | 2.49 | .49 | :10 | .005 | T |
| 5-20 | .24 | 0 | :15 | 2.85 | .68 | :14 | .018 | T |
| 5-24 | .57 | 0 | :21 | 3.00 | .98 | :16 | .037 | T |
| 5-28 | .32 | 0 | :26 | 3.48 | 1.27 | :18 | .083 | T |
| | | | :30 | 1.05 | 1.34 | :19 | .138 | .01 |
| Watershed Conditions: 100% of area in wheat in dough stage. Good stand. | | | :35 | .72 | 1.40 | :20 | .209 | .01 |
| | | | :40 | .24 | 1.42 | :22 | .529 | .02 |
| | | | | | | :23 | .854 | .03 |
| | | | | | | :24 | 1.37 | .05 |
| | | | | | | :25 | 1.78 | .08 |
| | | | | | | :28 | 2.55 | .19 |
| | | | | | | :32 | 2.82 | .37 |
| | | | | | | :36 | 2.32 | .54 |
| | | | | | | :38 | 2.04 | .62 |
| | | | | | | :40 | 1.73 | .68 |
| | | | | | | :44 | 1.20 | .78 |
| | | | | | | :48 | .782 | .84 |
| | | | | | | :52 | .484 | .88 |
| | | | | | | :56 | .296 | .91 |
| | | | | | | 6:00 | .183 | .93 |
| | | | | | | 2/ :10 | .108 | .95 |
| | | | | | | :18 | e .050 | e .96 |
| | | | | | | :26 | e .024 | e .96 |
| | | | | | | :34 | e .012 | e .97 |
| | | | | | | :41 | e .006 | e .97 |
| | | | | | | :49 | e .003 | e .97 |
| | | | | | | 7:01 | e .001 | e .97 |
| | | | | | | :40 | e 0 | e .97 |

Notes: To convert runoff in in/hr to cfs multiply by 4.8602. 1/ Prior to event beginning 2:50a. Antecedent rainfall ended 2:40a. 2/ New runoff event began 6:10p. Recession estimated.

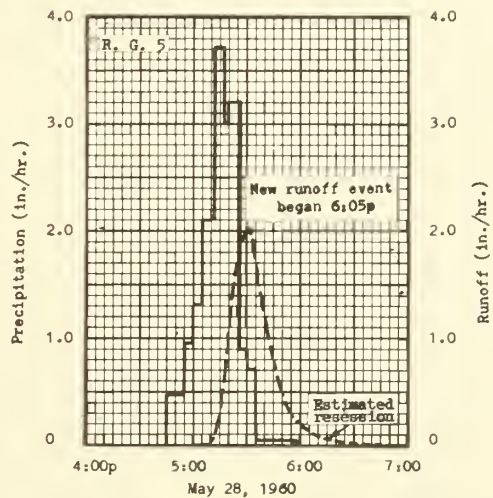
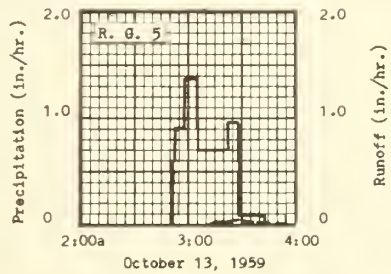
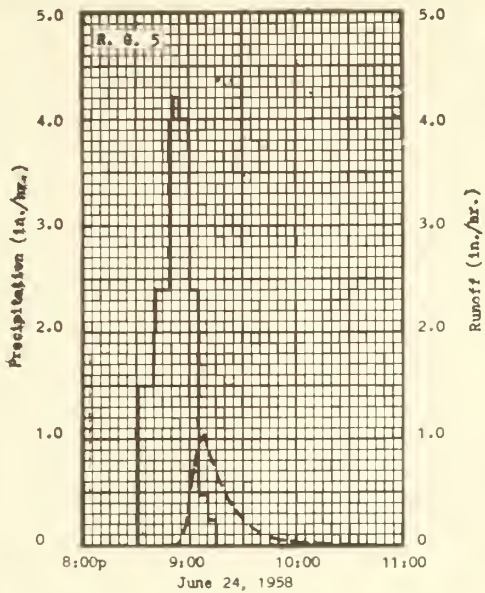


CHEROKEE, OKLAHOMA Watershed W-2

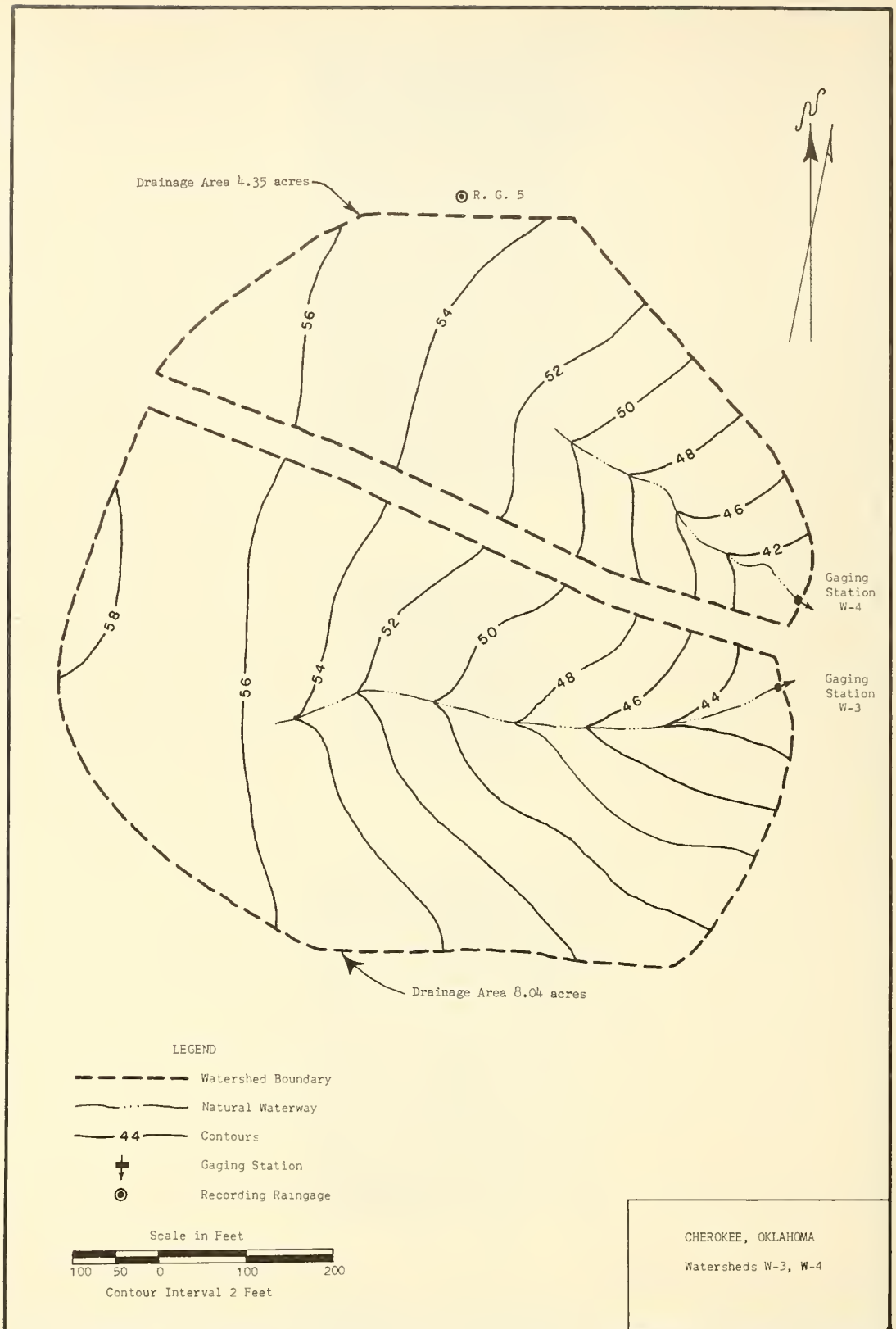
| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | | | | | | | Cherokee, Oklahoma Watershed W 3 (Area - 8.04 acres) | | | |
|--|-------------------|-----------------|---|-------------------|----------------|---------------|--------------|---------------|-----------|-------------|--------------|-----------|---|----------------|-----------|------------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year | | |
| | | 1956 | P Q | 0.11 0 | 0.11 0 | 0.52 0 | 0.35 0 | 1.09 0 | 2.18 1 | 2.26 0 | 1.98 0 | 0.19 0 | 0.82 0 | 0.43 0 | 1.02 0 | 11.06 T |
| 1957 | P Q | .73 0 | 1.00 0 | 3.86 T | 7.09 e 2.84 | 10.78 4.61 | 7.54 2.43 | 2.17 .94 | .56 0 | 6.23 .02 | 2.53 0 | 1.45 0 | .18 0 | 44.12 10.84 | | |
| 1958 | P Q | .68 0 | .09 0 | 2.16 T | 1.79 .03 | 1.76 T | 5.90 1.43 | 4.13 .32 | 3.03 T | 3.33 .18 | .37 0 | .90 0 | .29 0 | 24.43 1.96 | | |
| 1959 | P Q | .19 0 | .12 0 | 2.00 .01 | 3.03 .26 | 6.41 1.34 | 1.81 .01 | .61 0 | 1.62 0 | 6.34 .68 | 5.13 1.14 | .12 0 | 1.12 0 | 28.50 3.43 | | |
| 1960 | P Q | 1.18 .01 | 1.62 .13 | .75 0 | .90 0 | 4.73 1.25 | 3.40 .66 | 1/ T | | | | | | 12.61 2.05 | | |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | | | | | | | Cherokee, Oklahoma Watershed W-3 | | | |
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1958 | 6-25 | 1.23 | 6-25 | 0.83 | 6-25 | 0.98 | 6-25 | 1.02 | 6-24 | 1.42 | 6-24 | 1.42 | 6-24 | 1.42 | 6-16 | 1.43 |
| 1959 | 5-26 | 1.99 | 5-26 | 1.07 | 5-25 | 1.17 | 5-25 | 1.25 | 5-25 | 1.25 | 5-25 | 1.25 | 5-25 | 1.25 | 9-24 | 1.63 |
| 1960 | 5-28 | 2.02 | 5-28 | .82 | 5-28 | 1.24 | 5-28 | 1.25 | 5-28 | 1.25 | 5-28 | 1.25 | 5-28 | 1.25 | 5-28 | 1.25 |
| Notes: Quality of records: P-good, Q-good. 1/ Watershed discontinued June 30, 1960. Watershed Conditions: Continuous wheat 1956-60. Tillage: 1956,57- chiseling 6 inches deep; 1958- 8 foot sweep 4 inches deep; 1959- 8 foot sweep 3 inches deep. All years disc and spring tooth harrows used as necessary for weed control. | | | | | | | | | | | | | | | | |
| SELECTED RUNOFF EVENTS | | | | | | | | | | | | | Cherokee, Oklahoma Watershed W-3 | | | |
| Antecedent conditions | | | Rainfall | | | | | Runoff | | | | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | | | | | | |
| Event of June 24, 1958 | | | | | | | | | | | | | | | | |
| 5-29-58 | 0.76 | 0.002 | 6-24-58 | Raingage | 5 | 6-24-58 | | | | | | | | | | |
| 6-16 | 1.23 | .002 | 8:36p | 0 | 0 | 8:45p | 0 | 0 | | | | | | | | |
| 6-18 | .08 | 0 | :40 | 1.50 | .10 | :46 | .001 | T | | | | | | | | |
| 6-20 | .39 | 0 | :43 | 2.00 | .20 | :47 | .002 | T | | | | | | | | |
| 6-21 | .64 | .005 | :48 | 2.40 | .40 | :49 | .004 | T | | | | | | | | |
| 6-22 | .05 | 0 | :51 | 4.00 | .60 | :51 | .008 | T | | | | | | | | |
| | | | :54 | 4.20 | .81 | :53 | .016 | T | | | | | | | | |
| | | | 9:00 | 4.00 | 1.21 | :55 | .053 | T | | | | | | | | |
| | | | :05 | 2.40 | 1.41 | :56 | .097 | T | | | | | | | | |
| | | | :10 | .48 | 1.45 | :57 | .154 | .01 | | | | | | | | |
| | | | :15 | .24 | 1.47 | :59 | .330 | .01 | | | | | | | | |
| | | | | | | 9:01 | .498 | .02 | | | | | | | | |
| | | | | | | :03 | .709 | .04 | | | | | | | | |
| | | | | | | :05 | .936 | .07 | | | | | | | | |
| | | | | | | :08 | 1.02 | .12 | | | | | | | | |
| | | | | | | :11 | .909 | .17 | | | | | | | | |
| | | | | | | :14 | .765 | .21 | | | | | | | | |
| | | | | | | :17 | .624 | .25 | | | | | | | | |
| | | | | | | :20 | .508 | .28 | | | | | | | | |
| | | | | | | :25 | .352 | .31 | | | | | | | | |
| | | | | | | :31 | .239 | .34 | | | | | | | | |
| | | | | | | :41 | .116 | .37 | | | | | | | | |
| | | | | | | :47 | .064 | .38 | | | | | | | | |
| | | | | | | :59 | .030 | .39 | | | | | | | | |
| | | | | | | 10:15 | .010 | .39 | | | | | | | | |
| | | | | | | :31 | .004 | .39 | | | | | | | | |
| | | | | | | :53 | .002 | .40 | | | | | | | | |
| | | | | | | 11:07 | .001 | .40 | | | | | | | | |
| | | | | | | :41 | 0 | .40 | | | | | | | | |
| Notes: To convert runoff in in/hr to cfs multiply by 8.1070. | | | | | | | | | | | | | | | | |

| SELECTED RUNOFF EVENTS | | | | | | Cherokee, Oklahoma Watershed W-3 | | |
|---|-------------------|-----------------|---------------|-------------------|---------------|----------------------------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of October 13, 1959 | | | | | | | | |
| 9-17-59 | 0.13 | 0 | 10-13-59 | Raingage | 5 | 10-13-59 | | |
| 9-22 | .91 | .005 | 2:51a | 0 | 0 | 3:12a | 0 | 0 |
| 9-23 | .24 | 0 | :52 | .60 | .01 | :13 | .002 | T |
| 9-24 | 3.43 | .508 | :58 | .90 | .10 | :14 | .014 | T |
| 9-25 | .43 | .166 | 3:05 | 1.38 | .26 | :15 | .017 | T |
| 9-29 | .02 | 0 | :22 | .70 | .46 | :18 | .012 | T |
| 9-30 | .43 | 0 | :27 | .96 | .54 | :20 | .016 | .02 |
| 10-1 | 1.08 | .210 | :42 | .08 | .56 | :22 | .024 | .02 |
| 10-2 | 1.80 | .801 | | | | :26 | .037 | .04 |
| 10-3 | .08 | 0 | | | | :28 | .050 | .06 |
| 10-4 | .36 | 0 | | | | :31 | .037 | .08 |
| 10-13 | <u>1/</u> .26 | 0 | | | | :33 | .026 | .09 |
| | | | | | | :36 | .014 | .10 |
| | | | | | | :43 | .006 | .11 |
| | | | | | | :54 | .003 | .12 |
| Watershed Conditions: 100% of area fallow. Spring tooth harrowed 10-10. | | | | | | 4:00 | .001 | .12 |
| | | | | | | :04 | .001 | .12 |
| | | | | | | :14 | T | .12 |
| | | | | | | :26 | T | .12 |
| | | | | | | :56 | T | .12 |
| | | | | | | 5:20 | 0 | .12 |
| Event of May 28, 1960 | | | | | | | | |
| 4-28-60 | 0.02 | 0 | 5-28-60 | Raingage | 5 | 5-28-60 | | |
| 5-3 | .23 | 0 | 4:45p | 0 | 0 | 5:02p | 0 | 0 |
| 5-4 | .33 | 0 | :55 | .48 | .04 | :04 | T | T |
| 5-5 | .12 | 0 | 5:00 | .96 | .12 | :05 | .001 | T |
| 5-6 | .09 | 0 | :05 | 1.32 | .23 | :08 | .006 | T |
| 5-17 | .70 | 0 | :11 | 2.10 | .44 | :09 | .012 | T |
| 5-20 | .24 | 0 | :16 | 3.72 | .75 | :11 | .064 | T |
| 5-24 | .56 | 0 | :20 | 3.00 | .95 | :13 | .146 | T |
| 5-28 | .34 | 0 | :26 | 3.20 | 1.27 | :15 | .302 | .05 |
| | | | :30 | .90 | 1.33 | :16 | .438 | .06 |
| Watershed Conditions: 100% of area in wheat in dough stage. Good stand. | | | | | | :18 | .687 | .07 |
| | | | :35 | .72 | 1.39 | :20 | .948 | .10 |
| | | | :58 | .05 | 1.41 | :22 | 1.23 | .14 |
| | | | | | | :24 | 1.52 | .18 |
| | | | | | | :29 | 1.96 | .33 |
| | | | | | | :31 | 2.02 | .40 |
| | | | | | | :33 | 1.91 | .46 |
| | | | | | | :35 | 1.71 | .52 |
| | | | | | | :38 | 1.38 | .60 |
| | | | | | | :46 | .730 | .74 |
| | | | | | | :50 | .438 | .76 |
| | | | | | | <u>2/</u> 6:05 | .137 | .81 |
| | | | | | | :15 | e .060 | e .83 |
| | | | | | | :24 | e .028 | e .84 |
| | | | | | | :35 | e .014 | e .84 |
| | | | | | | :41 | e .007 | e .84 |
| | | | | | | :48 | e .004 | e .84 |
| | | | | | | :56 | e .002 | e .84 |
| | | | | | | 7:04 | e .001 | e .84 |
| | | | | | | :50 | e 0 | e .84 |

Notes: To convert runoff in in/hr to cfs multiply by 8.1070. 1/ Prior to event beginning 2:51a. Antecedent rainfall ended 2:50a. 2/ New runoff event began 6:05p. Recession estimated.



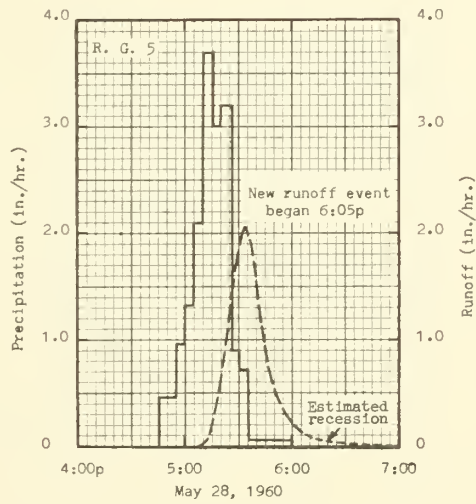
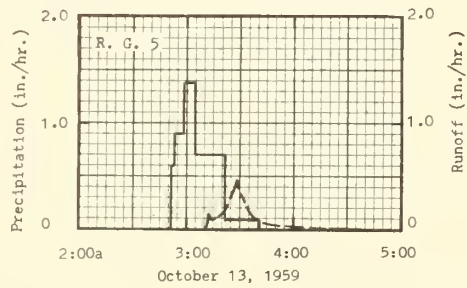
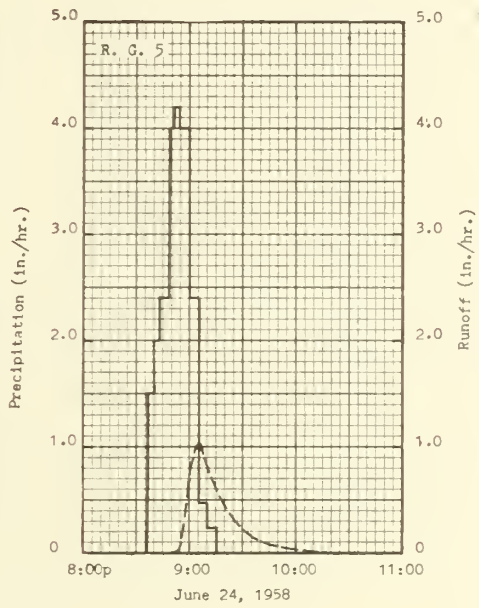
CHEROKEE, OKLAHOMA Watershed W-3



| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | | Cherokee, Oklahoma Watershed W-4 (Area - 4.35 acres) | | | | | | | | |
|--|-------------------|-----------------|---|-------------------|---------------|---------------|--------------|---|-------------|--------------|-----------|-----------|----------------|------|--------|------|
| Month Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year | | | |
| 1956 P Q | 0.11 0 | 0.11 0 | 0.52 0 | 0.35 0 | 1.09 0 | 2.18 T | 2.26 0 | 1.98 .01 | 0.19 0 | 0.82 0 | 0.43 0 | 1.02 0 | 11.06 .01 | | | |
| 1957 P Q | .73 0 | 1.00 0 | 3.86 .02 | 7.09 3.03 | 10.78 4.85 | 7.54 2.58 | 2.17 .93 | .56 0 | 6.23 T | 2.53 0 | 1.45 0 | .18 0 | 44.12 11.41 | | | |
| 1958 P Q | .68 T | .09 0 | 2.16 T | 1.79 .02 | 1.76 .01 | 5.90 1.47 | 4.13 .26 | 3.03 T | 3.33 .32 | .37 0 | .90 T | .29 0 | 24.43 2.08 | | | |
| 1959 P Q | .19 0 | .12 0 | 2.00 .01 | 3.03 .33 | 6.41 1.55 | 1.81 .02 | .61 0 | 1.62 0 | 6.34 .77 | 5.13 1.25 | .12 0 | 1.12 0 | 28.50 3.93 | | | |
| 1960 P Q | 1.18 .01 | 1.62 .18 | .78 0 | .90 0 | 4.73 1.26 | 3.40 .64 | 5.66 .24 | 0 0 | 1/ T | | | | 18.27 2.33 | | | |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | | Cherokee, Oklahoma Watershed W-4 | | | | | | | | |
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1958 | 6-25 | 1.33 | 6-25 | 0.77 | 6-25 | 0.92 | 6-25 | 1.07 | 6-24 | 1.45 | 6-24 | 1.45 | 6-24 | 1.45 | 6-16 | 1.47 |
| 1959 | 5-26 | 2.29 | 5-26 | 1.24 | 5-25 | 1.37 | 5-25 | 1.45 | 5-25 | 1.45 | 5-25 | 1.45 | 5-25 | 1.45 | 9-24 | 1.85 |
| 1960 | 5-28 | 2.05 | 5-28 | .81 | 5-28 | 1.26 | 5-28 | 1.26 | 5-28 | 1.27 | 5-28 | 1.27 | 5-28 | 1.27 | 5-28 | 1.27 |
| Notes: Quality of records P-good, Q-good. 1/ Watershed discontinued August 3, 1960. Watershed Conditions: Continuous wheat 1956-60. Tillage: 1956,57- chisel 6 inches deep, 8 foot sweep 6 inches deep; 1958- 8 foot sweep 4 inches deep; 1959- 8 foot sweep 3 inches deep. All years disc and spring tooth harrows as necessary for weed control. | | | | | | | | | | | | | | | | |
| SELECTED RUNOFF EVENTS | | | | | | | | Cherokee, Oklahoma Watershed W-4 | | | | | | | | |
| Antecedent conditions | | | Rainfall | | | Runoff | | | | | | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | | | | | | |
| Event of June 24, 1958 | | | | | | | | | | | | | | | | |
| 5-29-58 | 0.76 | 0.007 | 6-24-58 | Raingage | 5 | 6-24-58 | | | | | | | | | | |
| 6-16 | 1.23 | .011 | 8:36p | 0 | 0 | 8:50p | 0 | 0 | | | | | | | | |
| 6-18 | .08 | 0 | :40 | 1.50 | .10 | :51 | .002 | T | | | | | | | | |
| 6-20 | .39 | 0 | :43 | 2.00 | .20 | :52 | .005 | T | | | | | | | | |
| 6-21 | .64 | .009 | :48 | 2.40 | .40 | :53 | .026 | T | | | | | | | | |
| 6-22 | .05 | 0 | :51 | 4.00 | .60 | :55 | .110 | T | | | | | | | | |
| | | | :54 | 4.20 | .81 | :56 | .141 | T | | | | | | | | |
| Watershed Conditions: 100% of area in wheat stubble. Wheat harvested 6-14. | | | | | | | | | | | | | | | | |
| | | | 9:00 | 4.00 | 1.21 | :57 | .217 | .01 | | | | | | | | |
| | | | :05 | 2.40 | 1.41 | :59 | .513 | .02 | | | | | | | | |
| | | | :10 | .48 | 1.45 | 9:01 | .746 | .04 | | | | | | | | |
| | | | :15 | .24 | 1.47 | :03 | .914 | .07 | | | | | | | | |
| | | | | | | :05 | 1.03 | .10 | | | | | | | | |
| | | | | | | :06 | 1.03 | .12 | | | | | | | | |
| | | | | | | :09 | .898 | .17 | | | | | | | | |
| | | | | | | :13 | .663 | .22 | | | | | | | | |
| | | | | | | :19 | .456 | .27 | | | | | | | | |
| | | | | | | :25 | .310 | .31 | | | | | | | | |
| | | | | | | :35 | .147 | .35 | | | | | | | | |
| | | | | | | :39 | .120 | .36 | | | | | | | | |
| | | | | | | :45 | .071 | .37 | | | | | | | | |
| | | | | | | :55 | .033 | .37 | | | | | | | | |
| | | | | | | 10:05 | .014 | .38 | | | | | | | | |
| | | | | | | :16 | .003 | .38 | | | | | | | | |
| | | | | | | :23 | T | .38 | | | | | | | | |
| | | | | | | :29 | 0 | .38 | | | | | | | | |
| Event of October 13, 1959 | | | | | | | | | | | | | | | | |
| 9-17-59 | 0.13 | 0 | 10-13-59 | Raingage | 5 | 10-13-59 | | | | | | | | | | |
| 9-22 | .91 | .013 | 2:51a | 0 | 0 | 3:10a | 0 | 0 | | | | | | | | |
| 9-23 | .24 | 0 | :52 | .60 | .01 | :11 | T | T | | | | | | | | |
| 9-24 | 3.43 | e .753 | :58 | .90 | .10 | :12 | .002 | T | | | | | | | | |
| 9-25 | .43 | 1/ | 3:05 | 1.38 | .26 | :13 | .152 | T | | | | | | | | |
| 9-29 | .02 | 0 | :22 | .70 | .46 | :15 | .083 | .01 | | | | | | | | |
| 9-30 | .43 | 0 | :27 | .96 | .54 | :17 | .083 | .01 | | | | | | | | |
| Notes: To convert runoff in in/hr to cfs multiply by 4.3862. For map of watershed see page 34.3-4. 1/ Runoff for 9-25 included in the estimate for 9-24. | | | | | | | | | | | | | | | | |

| SELECTED RUNOFF EVENTS | | | | | | Cherokee, Oklahoma Watershed W-4 | | |
|---|-------------------|-----------------|-------------------|-------------------|---------------|----------------------------------|----------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of October 13, 1959 - Continued | | | | | | | | |
| 10-1-59 | 1.08 | 0.311 | 10-13-59 3:42a | 0.08 | 0.56 | 10-13-59 3:19a | 0.100 | 0.01 |
| 10-2 | 1.80 | .821 | | | | :23 | .203 | .02 |
| 10-3 | .08 | 0 | | | | :27 | .346 | .04 |
| 10-4 | .36 | 0 | | | | :29 | .467 | .05 |
| 10-13 | <u>1/</u> .26 | 0 | | | | :33 | .278 | .08 |
| | | | | | | :37 | .130 | .09 |
| | | | | | | :41 | .053 | .10 |
| | | | | | | :47 | .036 | .10 |
| | | | | | | :55 | .017 | .11 |
| | | | | | | 4:03 | .011 | .11 |
| | | | | | | :13 | .005 | .11 |
| | | | | | | :39 | <u>2/</u> .003 | .11 |
| Event of May 28, 1960 | | | | | | | | |
| 4-28-60 | 0.02 | 0 | 5-28-60 | Raingage | 5 | 5-28-60 | | |
| 5-3 | .23 | 0 | 4:45p | 0 | 0 | 5:07p | 0 | 0 |
| 5-4 | .33 | 0 | :55 | .48 | .04 | :08 | .001 | T |
| 5-5 | .12 | 0 | 5:00 | .96 | .12 | :10 | .012 | T |
| 5-6 | .09 | 0 | :05 | 1.32 | .23 | :12 | .060 | T |
| 5-17 | .70 | 0 | :11 | 2.10 | .44 | :15 | .177 | .01 |
| 5-20 | .24 | 0 | :16 | 3.72 | .75 | :18 | .406 | .02 |
| 5-24 | .56 | 0 | :20 | 3.00 | .95 | :21 | .775 | .05 |
| 5-28 | .34 | 0 | :26 | 3.20 | 1.27 | :23 | 1.03 | .08 |
| | | | :30 | .90 | 1.33 | :26 | 1.31 | .14 |
| | | | :35 | .72 | 1.39 | :28 | 1.52 | .18 |
| | | | :58 | .05 | 1.41 | :32 | 1.89 | .30 |
| | | | | | | :34 | 2.05 | .37 |
| | | | | | | :36 | 1.94 | .43 |
| | | | | | | :39 | 1.61 | .52 |
| | | | | | | :41 | 1.39 | .57 |
| | | | | | | :43 | 1.12 | .61 |
| | | | | | | :47 | .650 | .67 |
| | | | | | | :51 | .415 | .71 |
| | | | | | | :57 | .254 | .74 |
| | | | | | | 6:03 | .147 | .76 |
| | | | | | | <u>3/</u> :05 | .130 | .76 |
| | | | | | | :12 | e .067 | e .78 |
| | | | | | | :20 | e .032 | e .78 |
| | | | | | | :27 | e .017 | e .79 |
| | | | | | | :34 | e .009 | e .79 |
| | | | | | | :43 | e .004 | e .79 |
| | | | | | | :51 | e .002 | e .79 |
| | | | | | | :58 | e .001 | e .79 |
| | | | | | | 7:40 | e 0 | e .79 |
| <p>Watershed Conditions: 100% of area fallow. Spring tooth harrowed 10-10.</p> <p>Watershed Conditions: 100% of area in wheat in dough stage. Good stand.</p> | | | | | | | | |

Notes: To convert runoff in in/hr to cfs multiply by 4.3862.1/ Prior to event beginning 2:51a. Antecedent rainfall ended 2:50a. 2/ Beginning of a new event. 3/ New runoff event began 6:05p. Recession estimated.

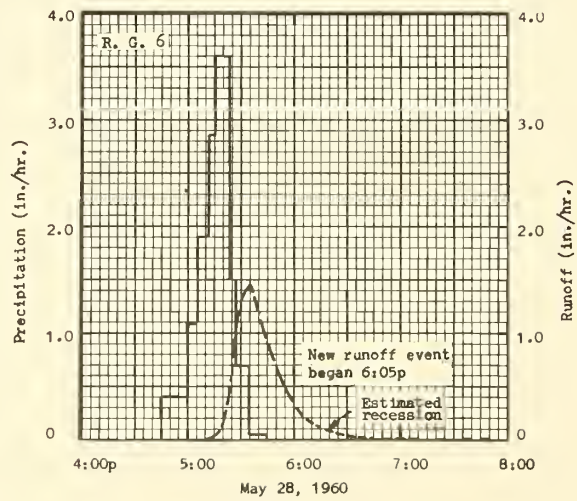
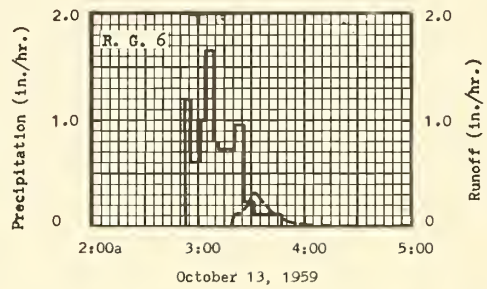
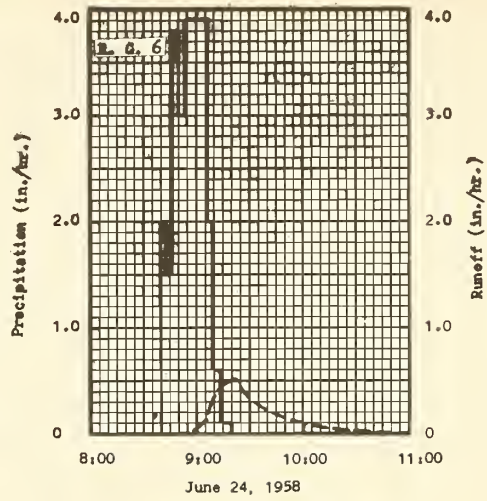


CHEROKEE, OKLAHOMA Watershed W-4

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Cherokee, Oklahoma Watershed W-5 (Area - 7.85 acres) | | | | | | | | | | |
|--|-------------------|---|---------------|-------------------|---------------|---------------|---|---------------|------|-------|------|--------|------|--------|------|------|------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year | | | |
| 1956 | P | 0.11 | 0.11 | 0.52 | 0.33 | 1.10 | 2.16 | 2.33 | 1.97 | 0.17 | 0.83 | 0.44 | 1.06 | 11.13 | | | |
| | Q | 0 | 0 | 0 | 0 | 0 | 0 | 0 | T | 0 | 0 | 0 | 0 | T | | | |
| 1957 | P | .74 | 1.00 | 3.88 | 7.02 | 10.79 | 7.64 | 2.18 | .54 | 6.14 | 2.45 | 1.39 | .16 | 43.93 | | | |
| | Q | 0 | 0 | T | 1.91 | 3.41 | 2.07 | .78 | 0 | .04 | 0 | 0 | 0 | 8.21 | | | |
| 1958 | P | .78 | .07 | 2.31 | 1.79 | 1.69 | 5.93 | 4.22 | 3.20 | 3.27 | .37 | .97 | .33 | 24.93 | | | |
| | Q | T | 0 | .01 | .02 | 0 | 1.23 | .19 | T | .07 | 0 | T | 0 | 1.52 | | | |
| 1959 | P | .28 | .12 | 1.96 | 3.09 | 6.07 | 1.74 | .64 | 1.58 | 6.23 | 5.16 | .12 | 1.18 | 28.17 | | | |
| | Q | 0 | 0 | 0 | .40 | 1.61 | T | 0 | 0 | .62 | 1.40 | 0 | 0 | 4.03 | | | |
| 1960 | P | 1.17 | 1.74 | .77 | .91 | 4.45 | 3.19 | 5.60 | 2.62 | 1/1 | | | | 20.45 | | | |
| | Q | .04 | .20 | 0 | 0 | 1.10 | .62 | .17 | .02 | 1/1 | | | | 2.15 | | | |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | Cherokee, Oklahoma Watershed W-5 | | | | | | | | | | |
| YEAR | MAXIMUM DISCHARGE | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | | | |
| | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | | | |
| | | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | | |
| 1958 | | 6-25 | 0.86 | 6-25 | 0.65 | 6-25 | 0.86 | 6-25 | 0.93 | 6-24 | 1.23 | 6-24 | 1.23 | 6-24 | 1.23 | 6-24 | 1.23 |
| 1959 | | 5-26 | 2.06 | 5-26 | 1.23 | 5-25 | 1.38 | 5-25 | 1.50 | 5-25 | 1.51 | 5-25 | 1.51 | 5-25 | 1.51 | 9-24 | 1.89 |
| 1960 | | 5-28 | 1.44 | 5-28 | .68 | 5-28 | 1.07 | 5-28 | 1.09 | 5-28 | 1.09 | 5-28 | 1.09 | 5-28 | 1.09 | 5-28 | 1.10 |
| Notes: Quality of records P-good, Q-good. 1/ Watershed discontinued August 3, 1960. Watershed Conditions: Continuous wheat 1956-60. Tillage: 1956,57- chisel 6 inches deep; 1958- 8 foot sweep 4 inches deep; 1959- 8 foot sweep 3 inches deep. All years disc and spring tooth harrows as necessary for weed control. | | | | | | | | | | | | | | | | | |
| SELECTED RUNOFF EVENTS | | | | | | | Cherokee, Oklahoma Watershed W-5 | | | | | | | | | | |
| Antecedent conditions | | | | Rainfall | | | | Runoff | | | | | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | | | | | | | |
| Event of June 24, 1958 | | | | | | | | | | | | | | | | | |
| 5-29-58 | 0.73 | 0 | 6-24-58 | Raingage | 6 | 6-24-58 | | | | | | | | | | | |
| 6-16 | 1.23 | 0 | 8:40p | 0 | 0 | 8:47p | 0 | 0 | | | | | | | | | |
| 6-18 | .08 | 0 | :43 | 2.00 | .10 | :48 | T | T | | | | | | | | | |
| 6-20 | .41 | 0 | :47 | 1.50 | .20 | :50 | .003 | T | | | | | | | | | |
| 6-21 | .51 | 0 | :50 | 3.80 | .39 | :52 | .006 | T | | | | | | | | | |
| 6-22 | .05 | 0 | :54 | 3.00 | .59 | :54 | .010 | T | | | | | | | | | |
| | | | 9:06 | 3.90 | 1.37 | :57 | .021 | T | | | | | | | | | |
| | | | :09 | 2.00 | 1.47 | 9:01 | .060 | T | | | | | | | | | |
| | | | :13 | .60 | 1.51 | :04 | .119 | .01 | | | | | | | | | |
| | | | :20 | .09 | 1.52 | :07 | .193 | .02 | | | | | | | | | |
| | | | | | | :11 | .384 | .03 | | | | | | | | | |
| | | | | | | :17 | .475 | .08 | | | | | | | | | |
| | | | | | | :22 | .457 | .12 | | | | | | | | | |
| | | | | | | :27 | .376 | .15 | | | | | | | | | |
| | | | | | | :31 | .317 | .18 | | | | | | | | | |
| | | | | | | :43 | .210 | .23 | | | | | | | | | |
| | | | | | | 10:04 | .082 | .27 | | | | | | | | | |
| | | | | | | :19 | .039 | .29 | | | | | | | | | |
| | | | | | | :49 | .012 | .30 | | | | | | | | | |
| | | | | | | 11:03 | .006 | .30 | | | | | | | | | |
| | | | | | | :31 | .003 | .30 | | | | | | | | | |
| | | | | | | :51 | .001 | .30 | | | | | | | | | |
| | | | | | | 12:00 | T | .30 | | | | | | | | | |
| | | | | | | 6-25-58 | | | | | | | | | | | |
| | | | | | | :03a | T | .30 | | | | | | | | | |
| | | | | | | :31 | 0 | .30 | | | | | | | | | |
| Event of October 13, 1959 | | | | | | | | | | | | | | | | | |
| 9-17-59 | 0.13 | 0 | 10-13-59 | Raingage | 6 | 10-13-59 | | | | | | | | | | | |
| 9-22 | .81 | 0 | 2:52a | 0 | 0 | 3:18a | 0 | 0 | | | | | | | | | |
| 9-23 | .28 | 0 | :55 | 1.20 | .08 | :19 | .066 | T | | | | | | | | | |
| 9-24 | 3.51 | .466 | 3:01 | .60 | .13 | :20 | .108 | T | | | | | | | | | |
| Notes: To convert runoff in in/hr to cfs multiply by 7.9154 | | | | | | | | | | | | | | | | | |

| SELECTED RUNOFF EVENTS | | | Cherokee, Oklahoma Watershed W-5 | | | | | |
|---|-------------------|-----------------|----------------------------------|-------------------|---------------|-------------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of October 13, 1959 - Continued | | | | | | | | |
| 9-25-59 | 0.25 | 0.154 | 10-13-59 3:04a | 1.00 | 0.18 | 10-13-59 3:24a | 0.131 | 0.01 |
| 9-29 | .02 | 0 | :08 | 1.65 | .29 | :30 | .283 | .03 |
| 9-30 | .44 | 0 | :11 | .80 | .33 | :32 | .322 | .04 |
| 10-1 | .62 | .197 | :21 | .72 | .45 | :36 | .245 | .06 |
| 10-2 | 2.32 | 1.18 | :26 | .96 | .53 | :44 | .107 | .08 |
| 10-3 | .09 | 0 | :31 | .24 | .55 | :48 | .066 | .09 |
| 10-4 | .36 | 0 | :46 | .12 | .58 | :54 | .037 | .09 |
| 10-13 | 1/ .32 | 0 | | | | 4:00 | .023 | .10 |
| Watershed Conditions: 100% of area fallow. Spring tooth harrowed 10-10. | | | | | | :08 | .011 | .10 |
| | | | | | | :17 | .006 | .10 |
| | | | | | | :30 | .003 | .10 |
| | | | | | | :58 | .001 | .10 |
| | | | | | | 5:06 | T | .10 |
| | | | | | | :32 | 0 | .10 |
| Event of May 28, 1960 | | | | | | | | |
| 5-28-60 | 3.01 | 0 | 5-28-60 4:45p | Rain gage 0 | 6 | 5-28-60 4:55p | 0 | 0 |
| 5-3 | .22 | 0 | :05 | .40 | .10 | 5:00 | T | T |
| 5-5 | .41 | 0 | :05 | 1.18 | .19 | :01 | .001 | T |
| 5-6 | .0 | 0 | :11 | 1.2 | .38 | :05 | .001 | T |
| 5-17 | .65 | 0 | :15 | 2.85 | .57 | :08 | .001 | T |
| 5-20 | .23 | 0 | :23 | 3.60 | 1.05 | :10 | .005 | T |
| 5-24 | .55 | 0 | :27 | 1.50 | 1.15 | :16 | .033 | T |
| 5-28 | .32 | 0 | :34 | .69 | 1.23 | :18 | .066 | T |
| Watershed Conditions: 100% of area in wheat in dough stage. Good stand. | | | | | | :45 | .140 | .01 |
| | | | | | | :24 | .502 | .03 |
| | | | | | | :27 | .844 | .06 |
| | | | | | | :30 | 1.24 | .11 |
| | | | | | | :33 | 1.40 | .18 |
| | | | | | | :35 | 1.44 | .23 |
| | | | | | | :37 | 1.36 | .27 |
| | | | | | | :41 | 1.20 | .36 |
| | | | | | | :45 | .959 | .43 |
| | | | | | | :51 | .639 | .51 |
| | | | | | | :59 | .352 | .57 |
| | | | | | | 2/6:05 | .232 | .60 |
| | | | | | | :10 | e .158 | e .61 |
| | | | | | | :20 | e .076 | e .63 |
| :30 | e .037 | e .64 | | | | | | |
| :40 | e .018 | e .65 | | | | | | |
| :48 | e .010 | e .65 | | | | | | |
| :50 | e .005 | e .65 | | | | | | |
| 7:05 | e .003 | e .65 | | | | | | |
| :20 | e .001 | e .65 | | | | | | |
| :50 | e 0 | e .65 | | | | | | |

Notes: To convert runoff in in/hr to cfs multiply by 7.154. 1/ Prior to event beginning 2:52a. Antecedent rainfall ended 2:51a. 2/ Beginning of new runoff event. Reception estimated.

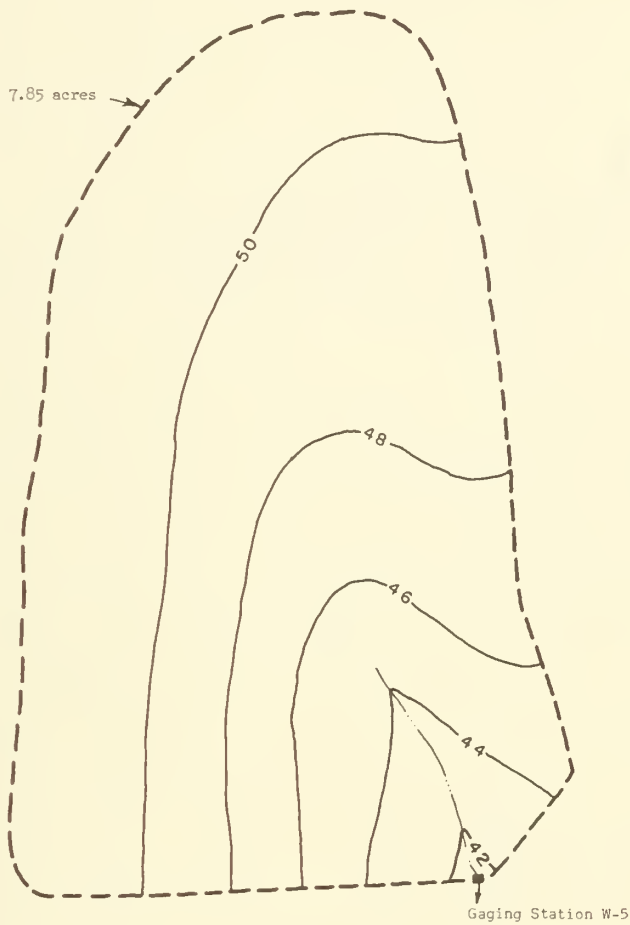


CHEROKEE, OKLAHOMA Watershed W-5

Drainage Area 7.85 acres



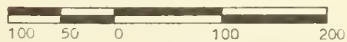
⊙
R. G. 6



LEGEND

- Watershed Boundary
- Natural Waterway
- 44 — Contours
- ⊕ Gaging Station
- ⊙ Recording Raingage

Scale in Feet



Contour Interval 2 Feet

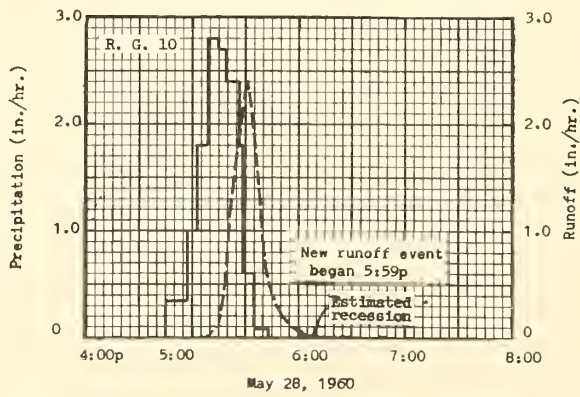
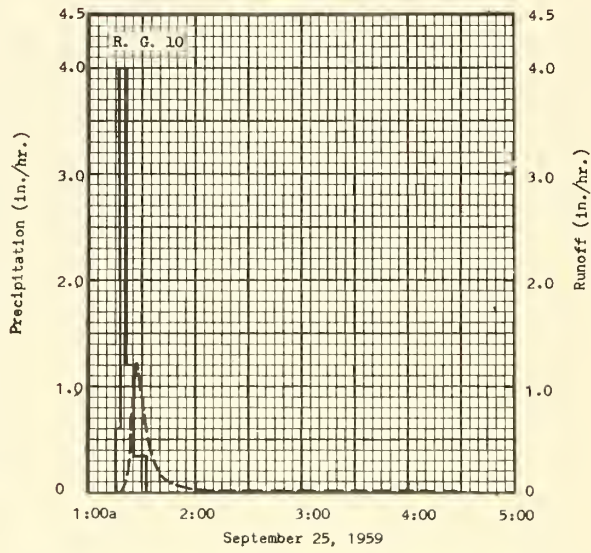
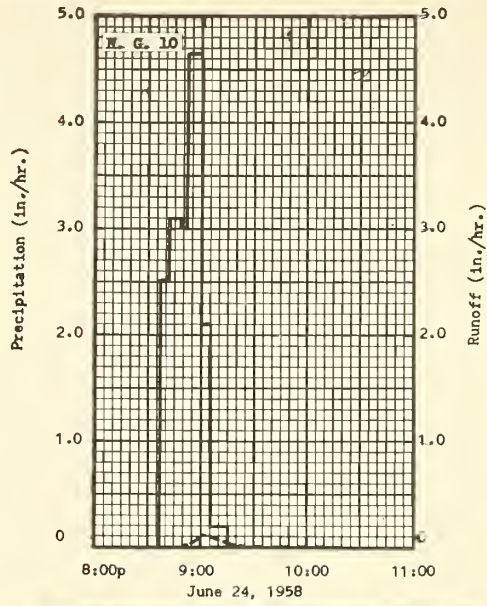
CHEROKEE, OKLAHOMA

Watershed W-5

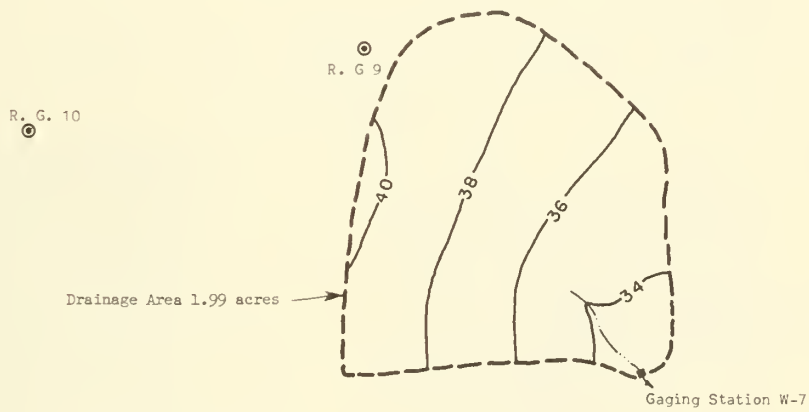
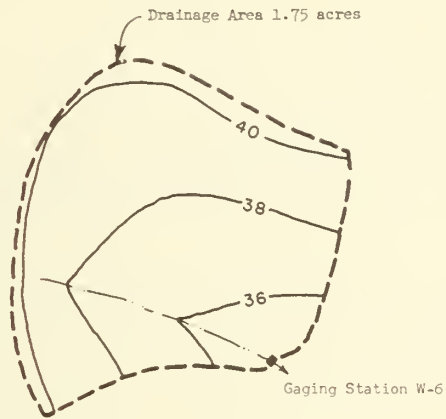
| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | | Cherokee, Oklahoma Watershed W-6 (Area - 1.75 acres) | | | | | | | | |
|---|-------------------|-----------------|---|-------------------|---------------|---------------|--------------|---|-------------|--------------|--------------|-----------|-----------|----------------|--------|------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year | | |
| 1956 | P Q | 0.11 0 | 0.12 0 | 0.50 0 | 0.34 0 | 1.07 0 | 2.20 T | 2.51 0 | 2.07 .04 | 0.17 0 | 0.81 T | 0.45 0 | 1.00 0 | 11.35 .04 | | |
| 1957 | P Q | .73 0 | 1.02 0 | 3.81 T | 7.17 2.76 | 10.62 3.61 | 8.11 3.51 | 2.21 1.07 | .55 0 | 6.41 .10 | 2.42 0 | 1.48 0 | .16 0 | 44.69 11.05 | | |
| 1958 | P Q | .76 0 | .08 0 | 2.28 0 | 1.85 T | 1.76 0 | 6.24 1.41 | 4.23 .30 | 3.17 .01 | 2.99 .20 | .35 0 | .98 0 | .33 0 | 25.02 1.92 | | |
| 1959 | P Q | .24 0 | .12 0 | 1.95 .01 | 3.09 .37 | 6.40 1.80 | 1.6 T | .58 0 | 1.60 0 | 5.91 1.03 | 5.01 1.38 | .13 0 | 1.16 0 | 27.80 4.59 | | |
| 1960 | P Q | 1.16 .03 | 1.82 .12 | .82 0 | .90 0 | 4.52 1.14 | 3.23 .50 | 1/ 1/ | | | | | | 12.45 1.79 | | |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | | Cherokee, Oklahoma Watershed W-6 | | | | | | | | |
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1958 | 6-25 | 1.45 | 6-25 | 0.88 | 6-25 | 0.96 | 6-25 | 0.97 | 6-24 | 1.41 | 6-24 | 1.41 | 6-24 | 1.41 | 6-24 | 1.41 |
| 1959 | 10-2 | 2.48 | 5-26 | 1.36 | 5-25 | 1.54 | 5-25 | 1.68 | 5-25 | 1.69 | 5-25 | 1.69 | 5-25 | 1.69 | 9-24 | 2.30 |
| 1960 | 5-28 | 2.40 | 5-28 | .77 | 5-28 | 1.15 | 5-28 | 1.15 | 5-28 | 1.15 | 5-28 | 1.15 | 5-28 | 1.15 | 5-28 | 1.15 |
| <p>Notes: Quality of records: P-good, Q-good. 1/ Watershed discontinued July 1, 1960. Watershed Conditions: Continuous wheat 1956-60. Tillage: 1956,57- chisel 6 inches deep; 1958-8foot sweep 4 inches deep; 1959 8 foot sweep 3 inches deep. All years disc and spring tooth harrows as necessary for weed control.</p> | | | | | | | | | | | | | | | | |
| SELECTED RUNOFF EVENTS | | | | | | | | Cherokee, Oklahoma Watershed W-6 | | | | | | | | |
| Antecedent conditions | | | Rainfall | | | | Runoff | | | | | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | | | | | | |
| Event of June 24, 1958 | | | | | | | | | | | | | | | | |
| 5-29-58 | 0.74 | 0 | 6-24-58 | Raingage | 10 | 6-24-58 | | | | | | | | | | |
| 6-16 | 1.31 | 0 | 8:37p | 0 | 0 | 8:46p | 0 | 0 | | | | | | | | |
| 6-18 | .07 | 0 | :42 | 2.52 | .21 | :47 | .001 | T | | | | | | | | |
| 6-20 | .50 | 0 | :48 | 3.10 | .52 | :48 | .003 | T | | | | | | | | |
| 6-21 | .63 | 0 | :52 | 3.00 | .72 | :49 | .006 | T | | | | | | | | |
| 6-22 | .05 | 0 | 9:00 | 4.65 | 1.34 | :52 | .015 | .01 | | | | | | | | |
| | | | :06 | 2.10 | 1.55 | :55 | .035 | .02 | | | | | | | | |
| | | | :15 | .22 | 1.59 | :57 | .051 | .04 | | | | | | | | |
| | | | | | | 9:00 | .099 | .08 | | | | | | | | |
| | | | | | | :04 | .121 | .17 | | | | | | | | |
| | | | | | | :09 | .094 | .28 | | | | | | | | |
| | | | | | | :15 | .048 | .37 | | | | | | | | |
| | | | | | | :19 | .029 | .40 | | | | | | | | |
| | | | | | | :25 | .014 | .42 | | | | | | | | |
| | | | | | | :33 | .004 | .44 | | | | | | | | |
| | | | | | | :39 | .002 | .44 | | | | | | | | |
| | | | | | | :51 | .001 | .44 | | | | | | | | |
| | | | | | | 10:05 | T | .44 | | | | | | | | |
| | | | | | | :19 | 0 | .44 | | | | | | | | |
| Event of September 25, 1959 | | | | | | | | | | | | | | | | |
| 8-28-59 | 0.02 | 0 | 9-25-59 | Raingage | 10 | 9-25-59 | | | | | | | | | | |
| 8-30 | .33 | 0 | 1:15a | 0 | 0 | 1:18a | 0 | 0 | | | | | | | | |
| 9-3 | .79 | 0 | :18 | 0.60 | .06 | :19 | .020 | T | | | | | | | | |
| 9-17 | .12 | 0 | :21 | 4.00 | .26 | :20 | .048 | T | | | | | | | | |
| 9-22 | .76 | .031 | :25 | 1.20 | .34 | :21 | .095 | T | | | | | | | | |
| 9-23 | .28 | .002 | :32 | .34 | .38 | :22 | .274 | T | | | | | | | | |
| 9-24 | 3.11 | .755 | | | | :23 | .539 | .01 | | | | | | | | |
| | | | | | | :24 | .754 | .02 | | | | | | | | |
| | | | | | | :27 | 1.22 | .07 | | | | | | | | |
| | | | | | | :29 | 1.05 | .11 | | | | | | | | |
| <p>Notes: To convert runoff in in/hr to cf- multiply by 1.7646.</p> | | | | | | | | | | | | | | | | |

| SELECTED RUNOFF EVENTS | | | Cherokee, Oklahoma Watershed W-6 | | | | | |
|---|-------------------|-----------------|----------------------------------|-------------------|---------------|-------------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of September 25, 1959 - Continued | | | | | | | | |
| | | | | | | 9-25-59 | | |
| | | | | | | 1:32a | 0.650 | 0.16 |
| | | | | | | :36 | .324 | .19 |
| | | | | | | :40 | .150 | .20 |
| | | | | | | :49 | .064 | .22 |
| | | | | | | :56 | .034 | .22 |
| | | | | | | 2:12 | .016 | .23 |
| | | | | | | :48 | .008 | .23 |
| | | | | | | 3:08 | .008 | .24 |
| | | | | | | 4:28 | .001 | .24 |
| | | | | | | 5:28 | 0 | .24 |
| Event of May 28, 1960 | | | | | | | | |
| 4-28-60 | 0.01 | 0 | 5-28-60 | Raingage | 10 | 5-28-60 | | |
| 5-3 | .23 | 0 | 4:45p | 0 | 0 | 4:51p | 0 | 0 |
| 5-4 | .31 | 0 | :57 | 0.35 | .07 | :53 | .001 | T |
| 5-5 | .12 | 0 | 5:03 | 1.00 | .17 | 5:05 | .001 | T |
| 5-6 | .07 | 0 | :09 | 1.80 | .35 | :06 | .002 | T |
| 5-17 | .65 | 0 | :15 | 2.30 | .63 | :07 | .006 | T |
| 5-20 | .28 | 0 | :19 | 2.70 | .81 | :11 | .030 | T |
| 5-24 | .53 | 0 | :26 | 2.40 | 1.09 | :15 | .159 | .01 |
| 5-28 | .34 | 0 | :28 | 1.80 | 1.15 | :18 | .424 | .02 |
| | | | :35 | .60 | 1.22 | :20 | .754 | .03 |
| | | | :43 | .08 | 1.23 | :22 | 1.11 | .07 |
| | | | | | | :27 | 1.78 | .18 |
| | | | | | | :29 | 2.23 | .25 |
| | | | | | | :31 | 2.40 | .32 |
| | | | | | | :35 | 1.78 | .46 |
| | | | | | | :41 | .816 | .60 |
| | | | | | | :47 | .351 | .65 |
| | | | | | | :55 | .117 | .68 |
| | | | | | | ^{1/} :59 | .076 | .68 |
| | | | | | | 6:04 | e .038 | e .59 |
| | | | | | | :09 | e .019 | e .69 |
| | | | | | | :14 | e .010 | e .69 |
| | | | | | | :21 | e .004 | e .69 |
| | | | | | | :32 | e .001 | e .69 |
| | | | | | | 7:04 | e 0 | e .69 |
| Watershed Conditions: 100% of area in wheat in dough stage. Good stand. | | | | | | | | |

Notes: To convert runoff in in/hr to cfs multiply by 1.7646. ^{1/} New runoff event began 5:59p. Rece... estimated.



CHEROKEE, OKLAHOMA Watershed W-6



LEGEND

--- Watershed Boundary

~ Natural Waterway

— 40 — Contours

⊕ Gaging Station

⊙ Recording Raingage

Scale in Feet



Contour Interval 2 Feet

CHEROKEE, OKLAHOMA

Watersheds W-6, W-7

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Cherokee, Oklahoma Watershed W-7 (Area - 1.99 acres) | | | | | | |
|---|------|------|------|------|-------|------|---|------|-------|------|------|------|-------|
| Year \ Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 P | 0.13 | 0.10 | 0.56 | 0.33 | 1.07 | 2.15 | 2.62 | 2.02 | 0.16 | 0.84 | 0.46 | 1.01 | 11.45 |
| Q | 0 | 0 | 0 | 0 | 0 | T | T | .01 | 0 | T | 0 | 0 | .01 |
| 1957 P | .76 | 1.02 | 3.94 | 7.14 | 10.85 | 8.13 | 2.24 | .56 | 6.19 | 2.61 | 1.47 | .16 | 45.07 |
| Q | 0 | 0 | .01 | 3.40 | 4.92 | 3.45 | 1.18 | 0 | T | 0 | 0 | 0 | 12.96 |
| 1958 P | .67 | .09 | 2.25 | 1.79 | 1.66 | 6.18 | 4.15 | 3.39 | 2.80 | .35 | .95 | .26 | 24.54 |
| Q | T | 0 | T | .04 | 0 | 1.74 | .44 | .01 | .04 | 0 | T | 0 | 2.27 |
| 1959 P | .17 | .12 | 1.94 | 2.98 | 6.50 | 1.65 | .57 | 1.64 | 6.40 | 5.09 | .13 | 1.12 | 28.31 |
| Q | 0 | 0 | T | .49 | 1.87 | 0 | 0 | 0 | .10 | 1.63 | 0 | 0 | 4.09 |
| 1960 P | 1.17 | 1.61 | .73 | .90 | 4.62 | 3.24 | 1/ | | | | | | 12.27 |
| Q | .07 | .23 | 0 | 0 | 1.27 | .64 | 1/ | | | | | | 2.21 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS Cherokee, Oklahoma Watershed W-7

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
| | Date | Rate | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | | | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1958 | 6-25 | 1.52 | 6-25 | 0.77 | 6-25 | 1.18 | 6-25 | 1.20 | 6-24 | 1.74 | 6-24 | 1.74 | 6-24 | 1.74 | 6-16 | 1.74 |
| 1959 | 5-26 | 2.49 | 5-26 | 1.42 | 5-25 | 1.59 | 5-25 | 1.67 | 5-25 | 1.68 | 5-25 | 1.68 | 5-25 | 1.68 | 9-24 | 2.30 |
| 1960 | 5-28 | 2.41 | 5-28 | .84 | 5-28 | 1.26 | 5-28 | 1.26 | 5-28 | 1.26 | 5-28 | 1.26 | 5-28 | 1.26 | 5-28 | 1.27 |

Notes: Quality of records: P-good, Q-good. 1/ Watershed discontinued July 1, 1960. Watershed Conditions: Continuous wheat 1956-60. Tillage: 1956, 57- chisel 6 inches deep; 1958- 8 foot sweep 4 inches deep; 1959- 8 foot sweep 3 inches deep. All years disc and spring tooth harrows as necessary for weed control.

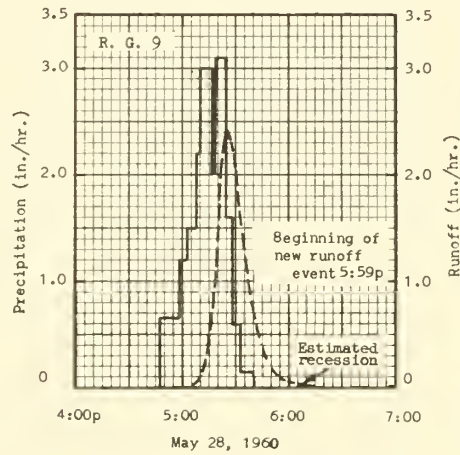
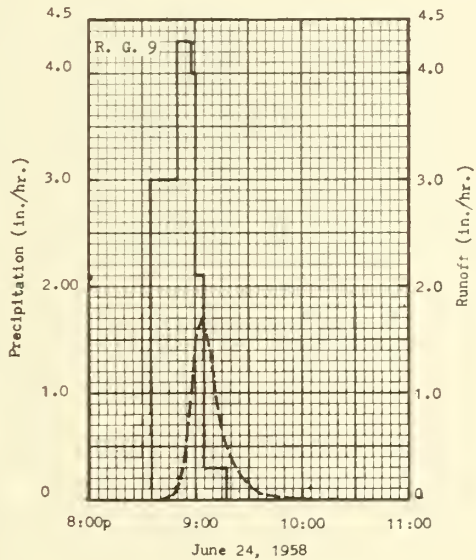
SELECTED RUNOFF EVENTS Cherokee, Oklahoma Watershed W-7

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|------------------------|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of June 24, 1958 | | | | | | | | |
| 5-29-58 | 0.71 | 0 | 6-24-58 | Raingage | 9 | 6-24-58 | | |
| 6-16 | 1.22 | T | 8:35p | 0 | 0 | 8:37p | 0 | 0 |
| 6-18 | .08 | 0 | :51 | 3.00 | .80 | :43 | .007 | T |
| 6-20 | .58 | 0 | :58 | 4.28 | 1.30 | :46 | .027 | T |
| 6-21 | .58 | .002 | 9:01 | 4.00 | 1.50 | :49 | .067 | T |
| 6-22 | .05 | 0 | :05 | 2.10 | 1.64 | :53 | .251 | .01 |
| | | | :17 | .30 | 1.70 | :55 | .458 | .02 |
| | | | | | | :57 | .797 | .04 |
| | | | | | | :59 | 1.17 | .08 |
| | | | | | | 9:02 | 1.54 | .14 |
| | | | | | | :04 | 1.69 | .20 |
| | | | | | | :05 | 1.69 | .23 |
| | | | | | | :09 | 1.28 | .33 |
| | | | | | | :14 | .797 | .42 |
| | | | | | | :19 | .444 | .47 |
| | | | | | | :25 | .241 | .50 |
| | | | | | | :39 | .061 | .53 |
| | | | | | | :47 | .027 | .54 |
| | | | | | | 10:09 | .004 | .54 |
| | | | | | | :18 | .001 | .54 |
| | | | | | | :37 | 0 | .54 |
| Event of May 28, 1960 | | | | | | | | |
| 4-28-60 | 0.01 | 0 | 5-28-60 | Raingage | 9 | 5-28-60 | | |
| 5-3 | .24 | 0 | 4:47p | 0 | 0 | 4:54p | 0 | 0 |
| 5-4 | .33 | 0 | :58 | .55 | .10 | 5:01 | .004 | T |
| 5-5 | .14 | 0 | 5:03 | 1.20 | .20 | :03 | .009 | T |
| 5-6 | .09 | 0 | :07 | 1.50 | .30 | :06 | .020 | T |
| 5-17 | .61 | 0 | :10 | 2.20 | .41 | :08 | .038 | T |
| 5-20 | .25 | 0 | :16 | 3.00 | .71 | :10 | .096 | T |
| 5-24 | .55 | 0 | :19 | 2.00 | .81 | :12 | .274 | .01 |
| 5-28 | .35 | 0 | :25 | 3.10 | 1.12 | :14 | .386 | .02 |

Notes: To convert runoff in in/hr to cfs multiply by 2.0066. For map of watershed, see page 34.6-4.

| SELECTED RUNOFF EVENTS | | | Cherokee, Oklahoma Watershed W-7 | | | | | |
|--|-------------------|-----------------|----------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of May 28, 1960 - Continued | | | | | | | | |
| Watershed Conditions: 100% of area in wheat. Good stand. Wheat in dough stage. | | | 5-28-60 | | | 5-28-60 | | |
| | | | 5:28p | 1.60 | 1.20 | 5:16p | 0.643 | 0.04 |
| | | | :32 | .60 | 1.24 | :19 | 1.07 | .08 |
| | | | :40 | .15 | 1.26 | :21 | 1.69 | .12 |
| | | | | | | :23 | 2.22 | .19 |
| | | | | | | :26 | 2.41 | .30 |
| | | | | | | :30 | 2.00 | .46 |
| | | | | | | :34 | 1.45 | .57 |
| | | | | | | :38 | .822 | .64 |
| | | | | | | :44 | .415 | .70 |
| | | | | | | :48 | .285 | .73 |
| | | | | | | :54 | .124 | .75 |
| | | | | | | :58 | .090 | .75 |
| | | | | | | 1/ 5:59 | .084 | .76 |
| | | | | | | 6:05 | e .042 | e .76 |
| | | | | | :11 | e .022 | e .76 | |
| | | | | | :18 | e .010 | e .77 | |
| | | | | | :29 | e .003 | e .77 | |
| | | | | | :39 | e .001 | e .77 | |
| | | | | | 7:00 | e 0 | e .77 | |

Notes: To convert runoff in in/hr to cfs multiply by 2.0066. 1/ Beginning of new runoff event. Recession estimated.



| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Cherokee, Oklahoma Watershed W-8 (Area - 4.72 acres) | | | | | | | |
|---|-------|------|------|------|------|--------|---|------|------|-------|------|------|------|-------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 | P | 0.13 | 0.10 | 0.56 | 0.33 | 1.07 | 2.15 | 2.62 | 2.02 | 0.16 | 0.84 | 0.46 | 1.01 | 11.45 |
| | Q | | | | | | | 1/0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1957 | P | .76 | 1.02 | 3.94 | 7.14 | 10.85 | 8.13 | 2.24 | .56 | 6.19 | 2.61 | 1.47 | .16 | 45.07 |
| | Q | 0 | 0 | 0 | 2.34 | e 4.12 | 2.64 | .90 | 0 | 0 | 0 | 0 | 0 | 10.00 |
| 1958 | P | .67 | .09 | 2.25 | 1.79 | 1.66 | 6.18 | 4.15 | 3.39 | 2.80 | .35 | .95 | .26 | 24.54 |
| | Q | T | 0 | 0 | .01 | 0 | 1.16 | .14 | .02 | .02 | 0 | 0 | 0 | 1.35 |
| 1959 | P | .17 | .12 | 1.94 | 2.98 | 6.50 | 1.65 | .57 | 1.64 | 6.40 | 5.09 | .13 | 1.12 | 28.31 |
| | Q | 0 | 0 | 0 | .31 | 1.42 | 0 | 0 | 0 | .30 | 1.03 | 0 | 0 | 3.06 |
| 1960 | P | 1.17 | 1.61 | .73 | .90 | 4.62 | 3.24 | 5.52 | 2.71 | 2/ | | | | 20.50 |
| | Q | .04 | .12 | 0 | 0 | .99 | .44 | .82 | 0 | 2/ | | | | 2.41 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS Cherokee, Oklahoma Watershed W-8

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1958 | 6-25 | 0.95 | 6-25 | 0.49 | 6-25 | 0.69 | 6-25 | 0.86 | 6-24 | 1.16 | 6-24 | 1.16 | 6-24 | 1.16 | 6-24 | 1.16 |
| 1959 | 10-2 | 2.14 | 5-26 | 1.18 | 5-26 | 1.31 | 5-25 | 1.38 | 5-25 | 1.38 | 5-25 | 1.38 | 5-25 | 1.38 | 5-22 | 1.38 |
| 1960 | 5-28 | 1.36 | 5-28 | .63 | 5-28 | .98 | 5-28 | .99 | 5-28 | .99 | 5-28 | .99 | 5-28 | .99 | 5-28 | .99 |

Notes: Quality of records: P-good, Q-good. 1/ Station reestablished July 1, 1956. 2/ Watershed discontinued August 31, 1960. Watershed conditions: Continuous wheat 1956-60. Tillage: 1956,57- offset disc plow, chisel 6 inches deep, 8 foot sweep 6 inches deep; 1958- offset disc, chisel 6 inches deep; 1959- 8 foot sweep 3 inches deep. All years spring tooth harrow as necessary for weed control.

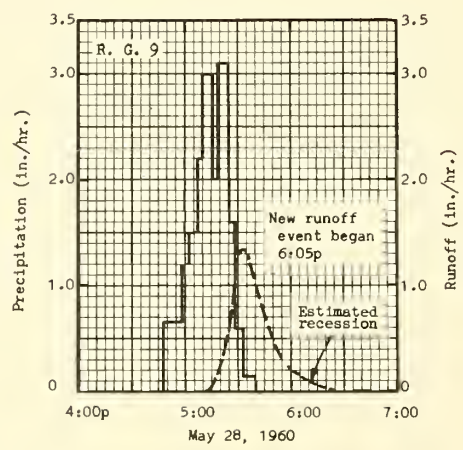
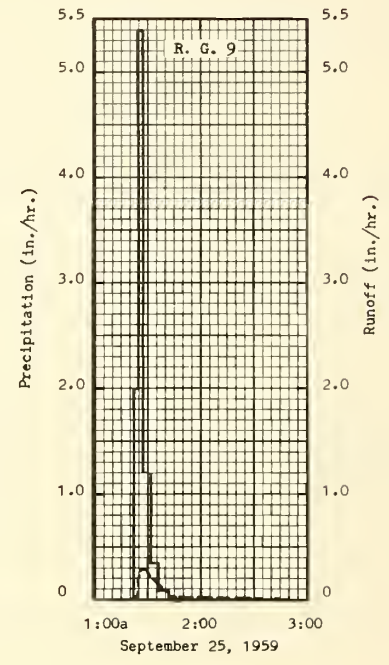
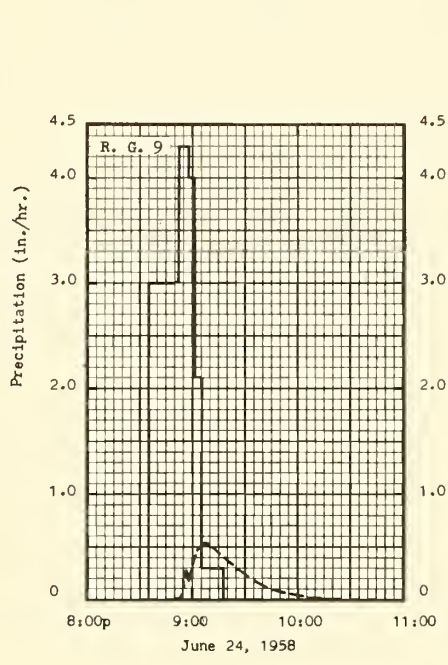
SELECTED RUNOFF EVENTS Cherokee, Oklahoma Watershed W-8

| Antecedent conditions | | | Rainfall | | | Runoff | | | |
|--|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|-----|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | |
| Event of June 24, 1958 | | | | | | | | | |
| 5-29-58 | 0.71 | 0 | 6-24-58 | Rainage | 9 | 6-24-58 | | | |
| 6-16 | 1.22 | 0 | 8:35p | 0 | 0 | 8:47p | 0 | 0 | |
| 6-18 | .08 | 0 | :51 | 3.00 | .80 | :49 | T | T | |
| 6-20 | .58 | 0 | :58 | 4.28 | 1.30 | :51 | .003 | T | |
| 6-21 | .58 | 0 | 9:01 | 4.00 | 1.50 | :52 | .017 | T | |
| 6-22 | .05 | 0 | :05 | 2.10 | 1.64 | :54 | 1.57 | T | |
| | | | :17 | .30 | 1.70 | :56 | .286 | .01 | |
| Watershed Conditions: 100% of area in wheat stubble. Wheat harvested 6-14. | | | | | | | :57 | .187 | .01 |
| | | | | | | :58 | .248 | .02 | |
| | | | | | | 9:02 | .483 | .04 | |
| | | | | | | :04 | .540 | .06 | |
| | | | | | | :08 | .540 | .09 | |
| | | | | | | :11 | .506 | .12 | |
| | | | | | | :17 | .401 | .16 | |
| | | | | | | :27 | .256 | .22 | |
| | | | | | | :35 | .181 | .25 | |
| | | | | | | :50 | .080 | .28 | |
| | | | | | | 10:10 | .018 | .30 | |
| | | | | | | :21 | .007 | .30 | |
| | | | | | | :33 | T | .30 | |
| | | | | | | :41 | T | .30 | |
| | | | | | | :51 | T | .30 | |
| Event of September 25, 1959 | | | | | | | | | |
| 8-28-59 | 0.01 | 0 | 9-25-59 | Rainage | 9 | 9-25-59 | | | |
| 8-30 | .37 | 0 | 1:22a | 0 | 0 | 1:22a | 0 | 0 | |
| 9-3 | .80 | 0 | :25 | 2.00 | .10 | :23 | .040 | T | |
| 9-17 | .13 | 0 | :27 | 5.40 | .28 | :24 | .120 | T | |
| 9-22 | .76 | 0 | :31 | 1.20 | .36 | :25 | .220 | T | |
| 9-23 | .30 | 0 | :36 | .36 | .39 | :27 | .302 | .01 | |
| 9-24 | 3.52 | 0 | :42 | .10 | .40 | :28 | .302 | .02 | |
| | | | | | | :31 | .256 | .03 | |
| | | | | | | :35 | .187 | .05 | |
| | | | | | | :41 | .106 | .06 | |

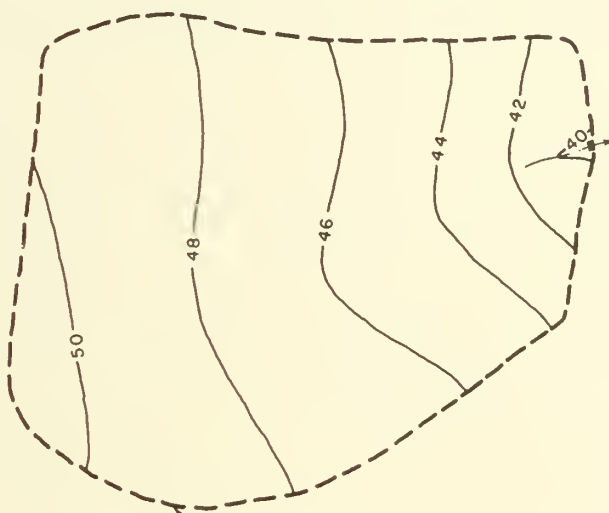
Notes: To convert runoff in in/hr to cfs multiply by 4.7593

| SELECTED RUNOFF EVENTS | | | Cherokee, Oklahoma Watershed W-8 | | | | | | | | |
|---|-------------------|-----------------|---|-------------------|---------------|-----------------------|--------------|---------------|---------|-------|------|
| Antecedent conditions | | | Rainfall | | | Runoff | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | |
| Watershed Conditions: 100% of area fallow. Offset disc tilled 8-21. Spring tooth harrowed 9-10. | | | Event of September 25, 1959 - Continued | | | | | | | | |
| | | | | | | 9-25-59 | | | | | |
| | | | | | | | | | 1:47a | 0.066 | 0.07 |
| | | | | | | | | | 2:04 | .018 | .08 |
| | | | | | | | | | :14 | .007 | .08 |
| | | | | | | | | | :22 | .003 | .08 |
| | | | | | | | | | :25 | .002 | .08 |
| | | | | | | | | | :30 | T | .08 |
| | | | | | | | | | :48 | 0 | .08 |
| | | | Watershed Conditions: 100% of area in wheat, dough stage. Good stand. | | | Event of May 28, 1960 | | | | | |
| 4-28-60 | 0.01 | 0 | | | | 5-28-60 | Raingage | 9 | 5-28-60 | | |
| 5-3 | .24 | 0 | | | | 4:47p | 0 | 0 | 5:01p | 0 | 0 |
| 5-4 | .33 | 0 | | | | :58 | .67 | .10 | :08 | T | T |
| 5-5 | .14 | 0 | | | | 5:03 | 1.20 | .20 | :11 | T | T |
| 5-6 | .09 | 0 | | | | :07 | 1.50 | .30 | :13 | .004 | T |
| 5-17 | .61 | 0 | | | | :10 | 2.20 | .41 | :15 | .038 | T |
| 5-20 | .25 | 0 | | | | :16 | 3.00 | .71 | :18 | .157 | .01 |
| 5-24 | .55 | 0 | | | | :19 | 2.00 | .81 | :20 | .271 | .01 |
| 5-28 | .35 | 0 | | | | :25 | 3.10 | 1.12 | :22 | .441 | .02 |
| | | | | | | :28 | 1.60 | 1.20 | :26 | .756 | .06 |
| | | | | | | :32 | .60 | 1.24 | :29 | 1.05 | .11 |
| | | | | | | :40 | .15 | 1.26 | :31 | 1.28 | .15 |
| | | | | | | | | | :33 | 1.36 | .19 |
| | | | | | | | | | :36 | 1.30 | .26 |
| | | | | | | | | | :41 | 1.00 | .36 |
| | | | | | | | | | :49 | .540 | .46 |
| | | | | | | | | | :55 | .328 | .50 |
| | | | | | | | | | 6:01 | .206 | .52 |
| | | | | | | | | | :03 | .180 | .53 |
| | | | | | | 1/ :05 | .157 | .54 | | | |
| | | | | | | :14 | e .086 | e .55 | | | |
| | | | | | | :22 | e .042 | e .56 | | | |
| | | | | | | :31 | e .020 | e .57 | | | |
| | | | | | | :40 | e .010 | e .57 | | | |
| | | | | | | :49 | e .005 | e .57 | | | |
| | | | | | | 7:10 | e .001 | e .57 | | | |
| | | | | | | :40 | e 0 | e .57 | | | |

Notes: To convert runoff in in/hr to cfs multiply by 4.7593. 1/ Beginning of new runoff event. Recession estimated.



CHEROKEE, OKLAHOMA Watershed W-8



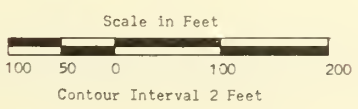
Gaging Station W-8

Drainage Area 4.72 acres

⊙
R. G. 9

LEGEND

- Watershed Boundary
- Natural Waterway
- 44 — Contours
- ⊥ Gaging Station
- ⊙ Recording Raingage

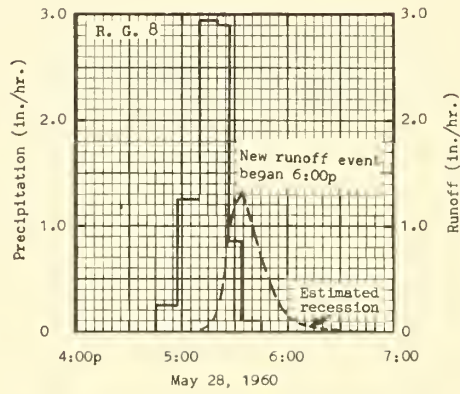
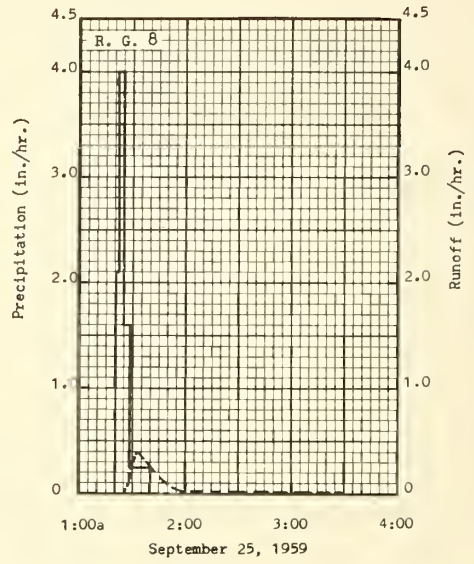
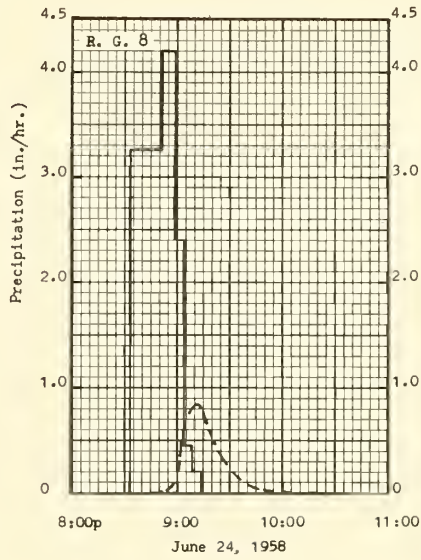


CHEROKEE, OKLAHOMA
Watershed W-8

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Cherokee, Oklahoma Watershed W-9 (Area - 8.50 acres) | | | | | | | | | |
|---|-------------------|-----------------|---|-------------------|---------------|---------------|---|---------------|----------|-------|-------|------|--------|-------|--------|------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year | | |
| 1956 | P | 0.11 | 0.11 | 0.53 | 0.29 | 0.97 | 2.03 | 2.48 | 1.88 | 0.14 | 0.81 | 0.44 | 1.03 | 10.82 | | |
| | Q | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| 1957 | P | .72 | 1.02 | 3.92 | 6.97 | 10.56 | 8.13 | 2.32 | .49 | 6.05 | 2.44 | 1.52 | .16 | 44.30 | | |
| | Q | 0 | 0 | T | 2.63 | 5.10 | 3.61 | 1.15 | 0 | .26 | .02 | 0 | 0 | 12.77 | | |
| 1958 | P | .75 | .10 | 2.29 | 1.78 | 1.66 | 6.14 | 4.25 | 3.33 | 2.55 | .34 | .98 | .35 | 24.52 | | |
| | Q | 0 | 0 | 0 | .02 | T | 1.27 | .21 | .01 | .01 | 0 | 0 | 0 | 1.52 | | |
| 1959 | P | .19 | .12 | 1.95 | 2.96 | 6.34 | 1.67 | .61 | 1.55 | 6.02 | 4.95 | .12 | 1.18 | 27.66 | | |
| | Q | 0 | 0 | 0 | .32 | 1.57 | 0 | 0 | 0 | .52 | 1.20 | 0 | 0 | 3.61 | | |
| 1960 | P | 1.13 | 1.57 | .76 | .91 | 4.47 | 3.11 | 5.35 | 2.63 | 1/ | | | | 19.93 | | |
| | Q | .04 | .11 | 0 | 0 | .98 | .48 | .30 | 0 | 1/ | | | | 1.91 | | |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | Cherokee, Oklahoma Watershed W-9 | | | | | | | | | |
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1958 | 6-25 | 1.04 | 6-25 | 0.69 | 6-25 | 0.79 | 6-25 | 0.82 | 6-24 | 1.27 | 6-24 | 1.27 | 6-24 | 1.27 | 6-16 | 1.27 |
| 1959 | 5-26 | 1.96 | 5-26 | 1.17 | 5-25 | 1.32 | 5-25 | 1.38 | 5-25 | 1.39 | 5-25 | 1.39 | 5-25 | 1.39 | 9-24 | 1.50 |
| 1960 | 5-28 | 1.31 | 5-28 | .58 | 5-28 | .89 | 5-28 | .90 | 5-28 | .90 | 5-28 | .90 | 5-28 | .90 | 5-28 | .90 |
| Notes: Quality of records: P-good, Q-good. 1/ Watershed discontinued August 31, 1960. Watershed Conditions: Continuous wheat 1956-60. Tillage: 1956,57- offset disc plow, chisel 6 inches deep, 8 foot sweep 6 inches deep; 1958- offset disc, chisel 6 inches deep; 1959- 8 foot sweep 3 inches deep. All years spring tooth harrow as necessary for weed control. | | | | | | | | | | | | | | | | |
| SELECTED RUNOFF EVENTS | | | | | | | Cherokee, Oklahoma Watershed W-9 | | | | | | | | | |
| Antecedent conditions | | | Rainfall | | | | Runoff | | | | | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | | | | | | |
| Event of June 24, 1958 | | | | | | | | | | | | | | | | |
| 5-29-58 | 0.71 | T | 6-24-58 | Raingage | 8 | 6-24-58 | | | | | | | | | | |
| 6-16 | 1.20 | .001 | 8:33p | 0 | 0 | 8:44p | 0 | 0 | | | | | | | | |
| 6-18 | .08 | 0 | :51 | 3.26 | .98 | :53 | .012 | T | | | | | | | | |
| 6-20 | .57 | 0 | :58 | 4.20 | 1.47 | :55 | .038 | T | | | | | | | | |
| 6-21 | .50 | T | 9:03 | 2.40 | 1.67 | :57 | .095 | T | | | | | | | | |
| 6-22 | .05 | 0 | :07 | .45 | 1.70 | :58 | .125 | .01 | | | | | | | | |
| | | | :13 | .20 | 1.72 | 9:00 | .204 | .01 | | | | | | | | |
| | | | | | | :01 | .320 | .01 | | | | | | | | |
| | | | | | | :03 | .489 | .03 | | | | | | | | |
| | | | | | | :05 | .650 | .05 | | | | | | | | |
| | | | | | | :07 | .756 | .07 | | | | | | | | |
| | | | | | | :09 | .836 | .10 | | | | | | | | |
| | | | | | | :10 | .848 | .11 | | | | | | | | |
| | | | | | | :11 | .860 | .12 | | | | | | | | |
| | | | | | | :12 | .848 | .14 | | | | | | | | |
| | | | | | | :14 | .790 | .17 | | | | | | | | |
| | | | | | | :16 | .734 | .19 | | | | | | | | |
| | | | | | | :20 | .552 | .24 | | | | | | | | |
| | | | | | | :24 | .369 | .27 | | | | | | | | |
| | | | | | | :28 | .267 | .29 | | | | | | | | |
| | | | | | | :32 | .189 | .30 | | | | | | | | |
| | | | | | | :37 | .130 | .32 | | | | | | | | |
| | | | | | | :43 | .075 | .32 | | | | | | | | |
| | | | | | | :52 | .036 | .33 | | | | | | | | |
| | | | | | | 10:02 | .018 | .34 | | | | | | | | |
| | | | | | | :22 | .004 | .34 | | | | | | | | |
| | | | | | | 11:06 | 0 | .34 | | | | | | | | |
| Notes: To convert runoff in in/hr to cfs multiply by 8.5809. For map of watershed refer to Selected Runoff Events for Small Agricultural Watersheds in the United States, ARS, SWC, January 1960, page 34.9-4. | | | | | | | | | | | | | | | | |

| SELECTED RUNOFF EVENTS | | | Cherokee, Oklahoma Watershed W-9 | | | | | |
|---|-------------------|-----------------|----------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of September 25, 1959 | | | | | | | | |
| 8-28-59 | 0.01 | 0 | 9-25-59 | Raingage | 8 | 9-25-59 | | |
| 8-30 | .35 | 0 | 1:20a | 0 | 0 | 1:18a | 0 | 0 |
| 9-3 | .81 | 0 | :22 | 2.10 | .07 | :20 | T | T |
| 9-17 | .11 | 0 | :25 | 4.00 | .27 | :22 | .009 | T |
| 9-22 | .66 | 0 | :28 | 1.60 | .35 | :23 | .014 | T |
| 9-23 | .27 | 0 | :40 | .25 | .40 | :25 | .030 | T |
| 9-24 | 3.33 | .352 | | | | :26 | .050 | T |
| Watershed Conditions: 100% of area fallow. Offset disc plowed 8-24, Spring tooth harrowed 9-10. | | | | | | :28 | .130 | T |
| | | | | | | :31 | .326 | .02 |
| | | | | | | :33 | .407 | .03 |
| | | | | | | :35 | .384 | .04 |
| | | | | | | :38 | .326 | .06 |
| | | | | | | :46 | .138 | .09 |
| | | | | | | :52 | .072 | .10 |
| | | | | | | 2:00 | .036 | .11 |
| | | | | | | :10 | .021 | .11 |
| | | | | | | :26 | .014 | .12 |
| | | | | | | :40 | .008 | .12 |
| | | | | | | :54 | .003 | .12 |
| | | | | | | 3:00 | .002 | .12 |
| | | | | | | :16 | .001 | .12 |
| | | | :24 | T | .12 | | | |
| | | | :32 | T | .12 | | | |
| | | | 4:04 | Q | .12 | | | |
| Event of May 28, 1960 | | | | | | | | |
| 4-28-60 | 0.01 | 0 | 5-28-60 | Raingage | 8 | 5-28-60 | | |
| 5-3 | .23 | 0 | 4:45p | 0 | 0 | 5:06p | 0 | 0 |
| 5-4 | .32 | 0 | :57 | .25 | .05 | :07 | T | T |
| 5-5 | .14 | 0 | 5:10 | 1.25 | .32 | :09 | .001 | T |
| 5-6 | .11 | 0 | :20 | 2.94 | .81 | :13 | .009 | T |
| 5-17 | .59 | 0 | :26 | 2.90 | 1.10 | :18 | .113 | T |
| 5-19 | .25 | 0 | :33 | .86 | 1.20 | :20 | .250 | .01 |
| 5-24 | .55 | 0 | :45 | .10 | 1.22 | :22 | .355 | .02 |
| 5-28 | .35 | 0 | | | | :24 | .650 | .04 |
| Watershed Conditions: 100% of area in wheat in dough stage. Good stand. | | | | | | :26 | .873 | .06 |
| | | | | | | :29 | 1.15 | .11 |
| | | | | | | :32 | 1.26 | .18 |
| | | | | | | :34 | 1.31 | .22 |
| | | | | | | :36 | 1.26 | .26 |
| | | | | | | :42 | .947 | .38 |
| | | | | | | :46 | .650 | .43 |
| | | | | | | :52 | .384 | .48 |
| | | | | | | :56 | .238 | .50 |
| | | | | | | 1/ 6:00 | .155 | .51 |
| | | | | | | :07 | e .080 | e .53 |
| | | | | | | :14 | e .038 | e .53 |
| | | | | | | :21 | e .019 | e .54 |
| | | | | | | :30 | e .008 | e .54 |
| | | | :37 | e .004 | e .54 | | | |
| | | | :44 | e .002 | e .54 | | | |
| | | | :51 | e .001 | e .54 | | | |
| | | | 7:14 | e 0 | e .54 | | | |

Notes: To convert runoff in in/hr to cfs multiply by 8.5809. 1/ New runoff event began. Recession estimated.



CHEROKEE, OKLAHOMA Watershed W-9

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Stillwater, Oklahoma Watershed W-1 (Area - 16.7 acres) | | | | | | | |
|---|-------------|-------------|-------------|--------------|--------------|--------------|---|---------------|-----------|--------------|---------------|-------------|-------------|----------------|
| Year \ Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year | |
| 1950 | P Q 0 | 0.50 0 | 0.81 0 | 0.52 0 | 1.24 0 | 2.28 0 | 1.98 0 | 3.32 0 | 0.73 0 | 0.15 0 | 1.52 0 | 1.55 0 | 1.46 0 | 16.06 0 |
| 1957 | P Q 0 | .60 0 | 1.36 0 | 2.54 0 | 8.11 5.24 | 9.44 4.55 | 11.30 1.05 | 1.50 .59 | 1.02 0 | 4.48 0 | 1.38 0 | 2.10 .03 | .66 0 | 45.09 16.46 |
| 1958 | P Q 0 | 1.13 .07 | 1.05 .15 | 4.40 3.54 | 1.50 .27 | 1.71 0 | 3.97 0 | 6.23 .07 | 3.10 0 | 3.30 .02 | .20 0 | .67 0 | .70 0 | 28.35 4.12 |
| 1959 | P Q 0 | .27 0 | .84 0 | 1.73 .16 | 3.38 4.0 | 5.08 1.24 | 3.76 .01 | 10.47 3.87 | 2.41 0 | 8.24 1.82 | 10.00 7.85 | .15 0 | 1.87 .24 | 48.20 16.08 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS

Stillwater, Oklahoma Watershed W-1

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 4-18 | 1.33 | 4-18 | 6.51 | 4-18 | 2.89 | 4-18 | 3.01 | 4-18 | 3.05 | 4-18 | 3.13 | 4-18 | 3.23 | 4-18 | 4.05 |
| 1958 | 3-26 | .54 | 3-28 | 4.0 | 3-28 | .57 | 3-28 | .19 | 3-28 | .77 | 3-28 | .81 | 3-28 | .84 | 3-23 | 1.48 |
| 1959 | 10-2 | 2.37 | 10-2 | 1.23 | 10-2 | 1.98 | 10-2 | 2.66 | 10-2 | 4.52 | 10-1 | 4.78 | 10-1 | 5.58 | 7-29 | 7.12 |

Notes: Quality of records: Precipitation and Runoff, good.
Watershed Conditions: 1956 - poor cover; 1957-1959 - good to excellent cover.

SELECTED RUNOFF EVENTS

Stillwater, Oklahoma Watershed W-1

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|-------------------------|------------------------------------|--------------------|------------------|----------------------|------------------|------------------|-----------------|------------------|
| Date | Rainfall ^{2/} (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of April 17, 1957 | | | | | | | | |
| 3-20-57 | .61 | 0 | 4-16-57 | rain gauge | R-3 | 4-16-57 | | |
| 3-23 | .50 | 0 | 12:20a | 0 | 0 | 2:26a | .0032 | 0 |
| 3-26 | .05 | 0 | 25 | .60 | .05 | 3f | .0047 | .001 |
| 3-30 | .45 | 0 | 20 | .4 | .12 | 44 | .0050 | .002 |
| 4-3 | .93 | .254 | 25 | .00 | .12 | 3:02 | .0214 | .005 |
| 4-4 | 0 | .032 | 30 | .00 | .12 | :09 | .0025 | .000 |
| 4-7 | .27 | 0 | 45 | .12 | .13 | :16 | .0112 | .018 |
| 4-12 | .16 | 0 | 50 | .24 | .15 | :23 | .0245 | .039 |
| | | | 55 | .76 | .15 | :29 | .0522 | .084 |
| | | | 1:00 | 1.20 | .28 | :33 | .085 | .139 |
| | | | 1:05 | 1.72 | .44 | :42 | 1.35 | .314 |
| | | | :10 | .74 | .51 | :50 | 2.10 | .644 |
| | | | :15 | .12 | .72 | :57 | .735 | .908 |
| | | | :20 | .00 | .92 | 4:02 | 4.15 | 1.157 |
| | | | :50 | .12 | .57 | :04 | 5.55 | 1.319 |
| | | | :55 | .10 | .53 | :04 | .49 | 1.737 |
| | | | 2:00 | .12 | .54 | :11 | 7.88 | 2.309 |
| | | | :10 | .00 | .54 | :15 | 7.23 | 2.225 |
| | | | :15 | .24 | .65 | :21 | 1.55 | 2.435 |
| | | | :20 | .24 | .57 | :26 | 1.1 | 2.564 |
| | | | :25 | .12 | .59 | :33 | .509 | 2.51 |
| | | | :30 | .00 | .59 | :36 | .550 | 2.760 |
| | | | :35 | .76 | .22 | :40 | .510 | 2.715 |
| | | | :40 | .12 | .55 | :48 | .513 | 2.724 |
| | | | :45 | .00 | .51 | :57 | .307 | 2.545 |
| | | | :50 | .12 | .75 | 5:10 | .138 | 2.477 |
| | | | :55 | .12 | .76 | :45 | .0725 | 2.067 |
| | | | :00 | .36 | .79 | :27 | .0210 | 2.003 |
| | | | :05 | .4 | .86 | 7:12 | .0167 | 3.021 |
| | | | :10 | 1.72 | .97 | 8:12 | .0049 | 3.034 |

Notes: 16.839 .
2/ All antecedent rainfall measured using Raingage R-3.

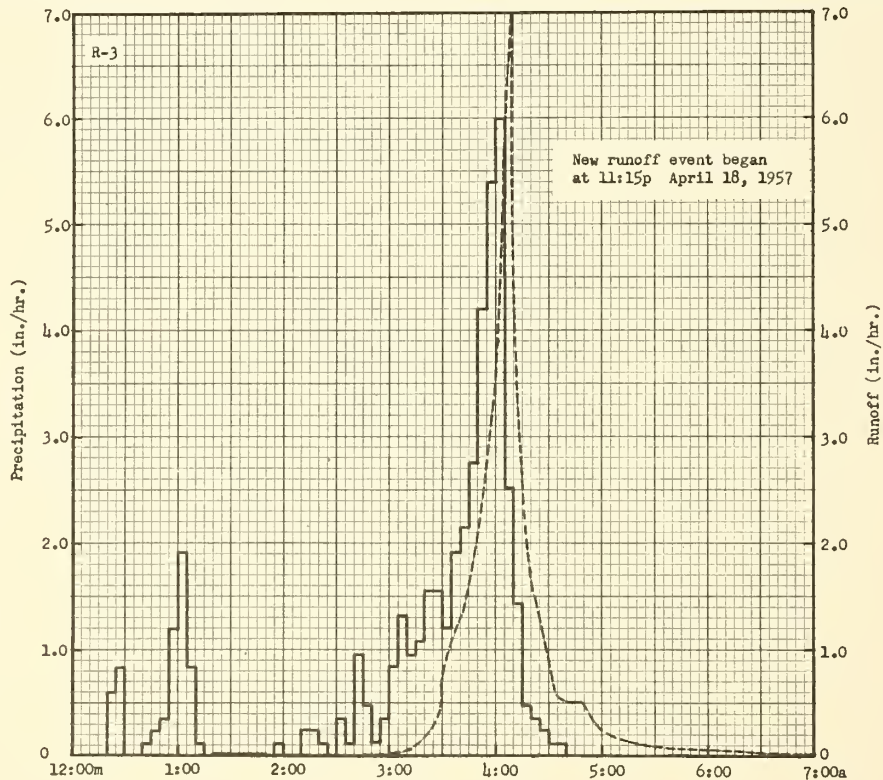
| SELECTED RUNOFF EVENTS | | | Stillwater, Oklahoma Watershed W-1 | | | | | |
|--|-------------------|-----------------|------------------------------------|-------------------|---------------|----------------------|---------------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of April 18, 1957 - Continued</u> | | | | | | | | |
| | | | 3:15a | .96 | 1.05 | 8:48a | .0066 | 3.039 |
| | | | :20 | 1.08 | 1.11 | 10:30 | .0032 | 3.047 |
| | | | :25 | 1.56 | 1.27 | 12:00a | .0022 | 3.051 |
| | | | :30 | 1.56 | 1.40 | 11:15p ^{1/} | .0004 ^{1/} | 3.065 |
| | | | :35 | 1.20 | 1.50 | | | |
| | | | :40 | 1.92 | 1.66 | | | |
| | | | :45 | 2.16 | 1.81 | | | |
| | | | :50 | 2.76 | 2.07 | | | |
| | | | :55 | 4.20 | 2.42 | | | |
| | | | 4:00 | 5.40 | 2.97 | | | |
| | | | :05 | 6.00 | 3.47 | | | |
| | | | :10 | 2.52 | 3.68 | | | |
| | | | :15 | 1.44 | 3.80 | | | |
| | | | :20 | .48 | 3.81 | | | |
| | | | :25 | .36 | 3.87 | | | |
| | | | :30 | .24 | 3.89 | | | |
| | | | :40 | .12 | 3.91 | | | |
| <u>Event of June 27 and 28, 1957</u> | | | | | | | | |
| 5-30-57 | .89 | .103 | 6-27-57 | Raingage | R-3 | 6-27-57 | | |
| 5-31 | .37 | 0 | 10:32p | 0 | 0 | 10:42p | 0 | 0 |
| 6-1 | .05 | 0 | :37 | 1.68 | .11 | :46 | .0066 | 0 |
| 6-2 | .73 | .398 | :42 | 6.12 | .65 | :47 | .0167 | 0 |
| 6-3 | .20 | .117 | :47 | 3.36 | .93 | :48 | .0375 | .001 |
| 6-4 | .16 | .133 | :52 | .81 | 1.00 | :49 | .0774 | .002 |
| 6-9 | .57 | .185 | :57 | .12 | 1.01 | :50 | .123 | .004 |
| 6-10 | 1.30 | .878 | | | | :52 | .250 | .010 |
| 6-12 | .58 | .201 | | | | :54 | 1.030 | .031 |
| 6-17 | .86 | .009 | | | | :55 | 1.652 | .054 |
| 6-18 | 2.32 | 1.804 | | | | :56 | 2.28 | .056 |
| 6-22 | .50 | 0 | | | | :58 | 2.46 | .166 |
| 6-23 | 2.42 | 1.653 | | | | 11:00 | 1.46 | .231 |
| 6-26 | .52 | 0 | | | | :06 | .780 | .343 |
| | | | | | | :12 | .520 | .408 |
| | | | | | | :20 | .433 | .472 |
| | | | | | | :32 | .238 | .539 |
| | | | | | | 12:00m | .0975 | .613 |
| | | | | | | 6-28-57 | | |
| | | | | | | 12:22a | .0452 | .641 |
| | | | | | | :48 | .0214 | .655 |
| | | | | | | 1:06 | .0122 | .660 |
| | | | | | | :39 | .0060 | .665 |
| | | | | | | 2:08 | .0036 | .667 |
| | | | | | | 4:40 | 0 | .672 |
| <u>Event of October 1 and 2, 1959</u> | | | | | | | | |
| 9-1-59 | 1.33 | .040 | 10-1-59 | Raingage | R-3 | 10-1-59 | | |
| 9-2 | 0 | .012 | 9:35p | 0 | 0 | 10:22p | .0097 | 0 |
| 9-3 | .39 | .012 | :55 | .12 | .04 | 12:00m | .0358 | .054 |
| 9-4 | 0 | .010 | 10:00 | .24 | .06 | 10-2-59 | | |
| 9-5 | 0 | .010 | :10 | .24 | .10 | 1:56a | .0512 | .122 |
| 9-6 | 0 | .009 | :20 | .24 | .11 | 2:09 | .117 | .139 |
| 9-7 | 0 | .007 | :30 | .06 | .15 | :30 | .184 | .194 |
| 9-17 | .08 | 0 | :35 | .12 | .16 | :51 | .410 | .278 |
| 9-23 | .49 | 0 | ceased | | | 3:00 | .872 | .379 |
| 9-24 | 1.42 | .517 | 11:35 | 0 | .16 | :08 | 1.084 | .511 |
| 9-25 | 3.70 | 1.016 | 10-2-59 | | | :17 | .970 | .667 |
| 9-26 | 0 | .018 | 12:05a | .08 | .20 | :29 | .606 | .833 |
| 9-27 | 0 | .011 | :40 | 0 | .20 | :40 | .524 | .937 |
| 9-28 | 0 | .010 | 1:05 | .06 | .23 | :50 | .676 | 1.034 |
| 9-29 | .32 | .009 | :35 | .12 | .29 | :54 | 1.046 | 1.088 |
| Notes: | | | | | | | | |
| 1/ convert runoff from inches to feet. Multiply by 16.839. | | | | | | | | |
| 2/ Beginning of new runoff event. | | | | | | | | |

| SELECTED RUNOFF EVENTS | | | Stillwater, Oklahoma Watershed W-1 | | | | | |
|---|--------------------|-----------------|------------------------------------|-------------------|---------------|-------------------|---------------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of October 1 and 2, 1959 Cont'd.</u> | | | | | | | | |
| 9-30-59 | .51 | .135 | 1:50a | .20 | .34 | 3:57a | 1.979 | 1.161 |
| 10-1 | .74 ^{1/} | .591 | :55 | .04 | .35 | :58 | 2.256 | 1.196 |
| | | | 2:00 | 1.44 | .47 | 4:04 | 2.669 | 1.442 |
| | | | :05 | .36 | .50 | :10 | 2.130 | 1.685 |
| | | | :20 | .12 | .53 | :16 | 1.363 | 1.862 |
| | | | :25 | .12 | .54 | :20 | .962 | 1.940 |
| | | | :30 | .36 | .57 | :25 | .584 | 2.006 |
| | | | :35 | .60 | .62 | :28 | .730 | 2.039 |
| | | | :40 | 1.56 | .75 | :30 | .675 | 2.063 |
| | | | :45 | 2.16 | .93 | :46 | .503 | 2.212 |
| | | | :50 | 1.20 | 1.03 | 5:10 | .410 | 2.400 |
| | | | :55 | .96 | 1.11 | :41 | .238 | 2.559 |
| | | | 3:00 | .96 | 1.19 | 6:37 | .0964 | 2.707 |
| | | | :05 | 1.32 | 1.30 | 9:16 | .0155 ^{2/} | 2.810 |
| | | | :10 | .96 | 1.38 | :19 ^{2/} | .0155 ^{2/} | 2.810 |
| | | | :15 | .48 | 1.42 | | | |
| | | | :20 | .24 | 1.44 | | | |
| | | | :25 | .36 | 1.47 | | | |
| | | | :30 | .24 | 1.49 | | | |
| | | | :35 | .60 | 1.54 | | | |
| | | | :40 | .96 | 1.62 | | | |
| | | | :45 | 2.04 | 1.79 | | | |
| | | | :50 | 1.20 | 1.89 | | | |
| | | | :55 | 5.28 | 2.33 | | | |
| | | | 4:00 | 2.04 | 2.50 | | | |
| | | | :05 | .96 | 2.58 | | | |
| | | | :10 | .72 | 2.64 | | | |
| | | | :15 | .24 | 2.66 | | | |
| | | | :20 | .48 | 2.70 | | | |
| | | | :25 | .48 | 2.74 | | | |
| | | | :30 | .24 | 2.76 | | | |
| | | | :35 | .24 | 2.78 | | | |
| | | | :40 | .72 | 2.84 | | | |
| | | | :45 | .96 | 2.93 | | | |
| | | | :50 | .36 | 2.96 | | | |
| | | | :55 | .24 | 2.98 | | | |
| | | | 5:00 | .12 | 2.99 | | | |
| | | | :05 | .12 | 3.00 | | | |
| | | | :15 | 0 | 3.00 | | | |
| | | | :20 | 1.08 | 3.09 | | | |
| | | | :25 | .24 | 3.11 | | | |
| <u>Event of October 2 and 3, 1959</u> | | | | | | | | |
| 9-1-59 | 1.33 | .040 | 10-2-59 | Rainage | R-3 | 10-2-59 | | |
| 9-2 | 0 | .012 | 7:40a | 0 | 0 | 9:19a | .0155 | 0 |
| 9-3 | .39 | .012 | 8:20 | .03 | .02 | :26 | .0637 | .003 |
| 9-4 | 0 | .010 | 9:20 | .02 | .04 | :30 | .168 | .010 |
| 9-5 | 0 | .010 | :25 | 4.08 | .38 | :34 | .347 | .026 |
| 9-6 | 0 | .009 | :30 | 3.60 | .68 | :37 | 1.26 | .063 |
| 9-7 | 0 | .007 | :35 | 2.76 | .91 | :40 | 1.76 | .142 |
| 9-17 | .08 | 0 | :40 | 1.80 | 1.06 | :42 | 1.82 | .202 |
| 9-23 | .49 | 0 | :45 | .96 | 1.14 | :46 | 1.66 | .316 |
| 9-24 | 1.42 | .517 | :50 | 1.56 | 1.27 | :51 | 1.41 | .444 |
| 9-25 | 3.70 | 1.316 | :55 | .60 | 1.32 | 10:00 | 1.02 | .623 |
| 9-26 | 0 | .018 | 10:00 | 1.32 | 1.43 | :06 | .904 | .719 |
| 9-27 | 0 | .011 | :05 | .60 | 1.48 | :12 | .811 | .805 |
| 9-28 | 0 | .010 | :10 | .96 | 1.56 | :18 | .685 | .879 |
| 9-29 | .32 | .009 | :15 | .36 | 1.59 | :25 | .557 | .952 |
| 9-30 | .51 | .135 | :20 | .12 | 1.60 | :33 | .478 | 1.020 |
| 10-1 | 1.44 | .645 | :25 | .24 | 1.62 | :43 | .362 | 1.090 |
| 10-2 | 2.91 ^{3/} | 2.756 | :30 | .24 | 1.64 | :50 | .299 | 1.129 |
| | | | :35 | .36 | 1.67 | :53 | .283 | 1.143 |
| | | | :40 | .12 | 1.68 | :56 | .299 | 1.158 |

Notes: To convert runoff in in/hr to cfs, multiply by 16.839 . 1/ Rainfall 5:45a to 5:20p. 2/ Beginning of new event. 3/ Rainfall 12:01a to 5:25a.

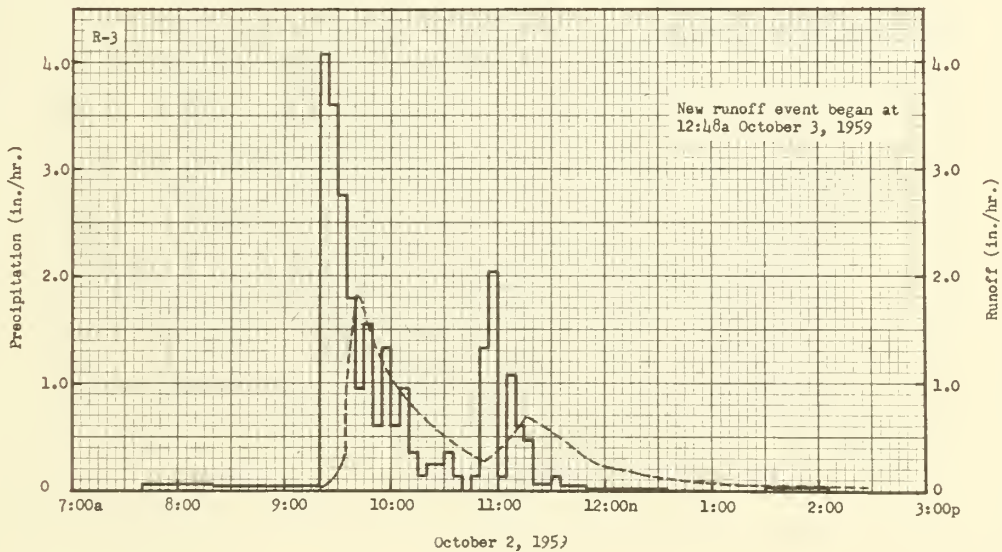
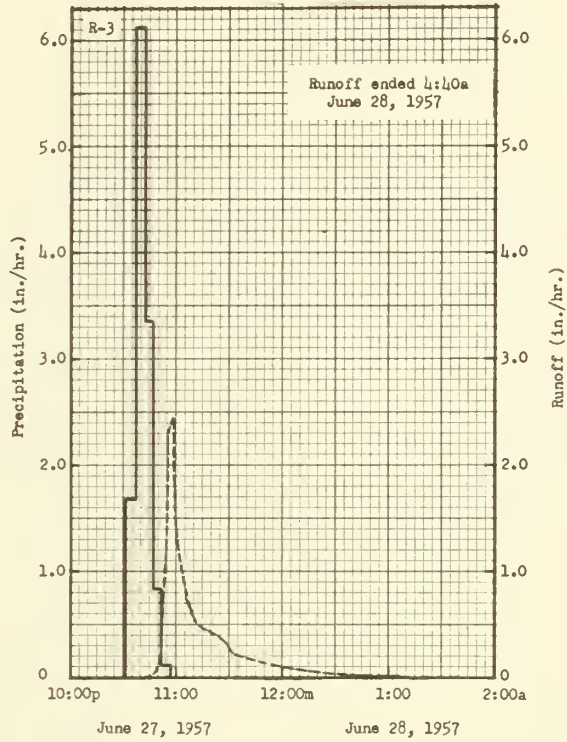
| SELECTED RUNOFF EVENTS | | | Stillwater, Oklahoma Watershed W-1 | | | | | |
|---|-------------------|-----------------|------------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of October 2 and 3, 1959 - Continued | | | | | | | | |
| Watershed Conditions: All of the area was in native grass pasture lightly to moderately grazed, generally in very good condition. | | | 10:45a | 0 | 1.58 | 11:03a | .410 | 1.199 |
| | | | :50 | .12 | 1.69 | :11 | .566 | 1.262 |
| | | | :55 | 1.32 | 1.80 | :16 | .682 | 1.315 |
| | | | 11:00 | 2.04 | 1.97 | :20 | .663 | 1.359 |
| | | | :05 | .12 | 1.98 | :25 | .606 | 1.412 |
| | | | :10 | 1.08 | 2.07 | :35 | .486 | 1.501 |
| | | | :15 | .60 | 2.12 | :43 | .393 | 1.560 |
| | | | :20 | .48 | 2.16 | :54 | .267 | 1.620 |
| | | | :30 | .06 | 2.17 | 12:04p | .211 | 1.660 |
| | | | :35 | .12 | 2.18 | :19 | .154 | 1.706 |
| | | | :50 | .04 | 2.19 | :37 | .112 | 1.746 |
| | | | 12:35p | .01 | 2.20 | :57 | .0774 | 1.777 |
| | | | 1:30 | 0 | 2.20 | 1:24 | .0512 | 1.806 |
| | | | 2:05 | .02 | 2.21 | 2:28 | .0292 | 1.847 |
| | | | | | | 3:52 | .0179 | 1.880 |
| | | | 5:21 | .0105 | 1.900 | | | |
| | | | 7:34 | .0060 | 1.918 | | | |
| | | | 9:56 | .0036 | 1.929 | | | |
| | | | 12:00m | .0022 | 1.935 | | | |
| | | | 10-3-59 | | | | | |
| | | | 12:48a | .00171 | 1.937 | | | |

Notes: To convert runoff in in/hr to cfs, multiply by 16.839 .
 1/ Beginning of new runoff event.

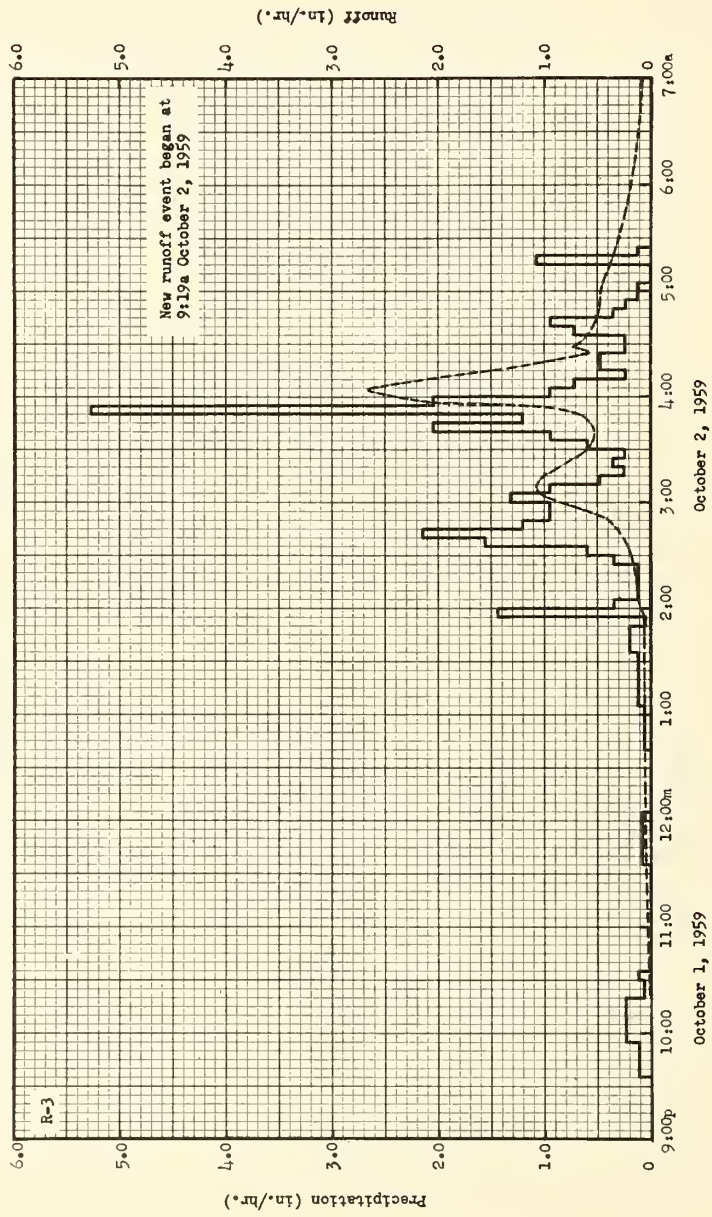


April 18, 1957

STILLWATER, OKLAHOMA WATERSHED W-1



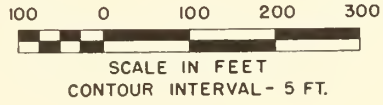
STILLWATER, OKLAHOMA WATERSHED W-1



STILLWATER, OKLAHOMA WATERSHED W-1

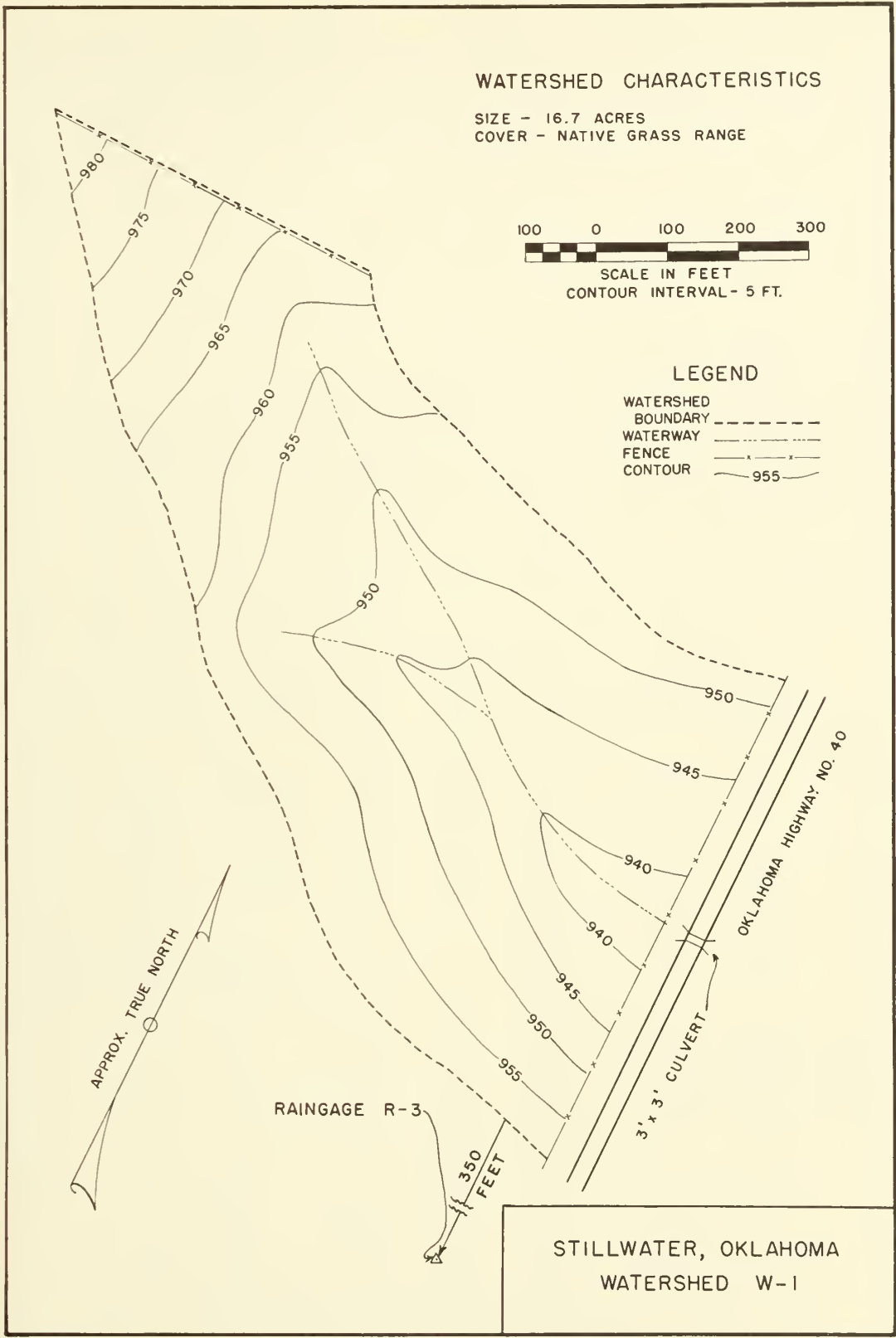
WATERSHED CHARACTERISTICS

SIZE - 16.7 ACRES
COVER - NATIVE GRASS RANGE



LEGEND

- WATERSHED BOUNDARY - - - - -
- WATERWAY - - - - -
- FENCE - - - - -
- CONTOUR - - - - - 955



| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Stillwater, Oklahoma Watershed W-3 (Area - 92.0 acres) | | | | | | | |
|---|----------------------|-------------|-------------|--------------|--------------|--------------|---|---------------|-------------|--------------|---------------|-------------|-------------|----------------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 | P Q ^{1/} | 0.50 0 | 0.81 0 | 0.52 0 | 1.24 0 | 2.28 0 | 1.98 0 | 3.32 .01 | 0.73 0 | 0.15 0 | 1.52 0 | 1.55 0 | 1.46 0 | 16.06 .01 |
| 1957 | P Q | .60 0 | 1.96 0 | 2.54 .07 | 8.11 4.99 | 9.94 4.77 | 11.30 6.32 | 1.60 .68 | 1.02 0 | 4.48 .04 | 1.38 0 | 2.40 .03 | .66 0 | 15.99 16.90 |
| 1958 | P Q | 1.13 .09 | 1.05 .07 | 4.40 2.65 | 1.50 .29 | 1.71 .91 | 3.97 0 | 6.23 .06 | 3.40 .01 | 3.30 .02 | .20 0 | .67 0 | .79 0 | 28.35 3.19 |
| 1959 | P Q | .27 0 | .84 0 | 1.73 .04 | 3.38 .38 | 5.08 .91 | 3.76 0 | 10.47 3.93 | 2.41 .10 | 8.24 1.95 | 10.00 8.03 | .15 0 | 1.87 .65 | 48.20 15.99 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 4-18 | 4.52 | 4-18 | 2.08 | 4-18 | 2.50 | 4-18 | 2.67 | 4-18 | 2.70 | 4-18 | 2.76 | 4-18 | 2.89 | 4-18 | 4.70 |
| 1958 | 3-28 | .41 | 3-28 | .35 | 3-28 | .51 | 3-28 | .63 | 3-28 | .66 | 3-28 | .67 | 3-22 | .71 | 3-22 | 1.45 |
| 1959 | 10-2 | 1.75 | 10-2 | 1.24 | 10-2 | 2.05 | 10-2 | 2.87 | 10-2 | 4.96 | 10-1 | 5.18 | 10-1 | 6.08 | 9-30 | 8.08 |

Notes: Quality of records: Precipitation and Runoff, good. Watershed Conditions: 1956 - poor cover; 1957-1959 - good to excellent cover. Runoff retained by pond added to runoff total. ^{1/} No significant runoff in 1956.

SELECTED RUNOFF EVENTS

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|---------------------------------------|------------------------------------|--------------------|------------------|----------------------|------------------|------------------|-----------------|------------------|
| Date | Rainfall ^{2/} (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of October 1 and 2, 1959</u> | | | | | | | | |
| 9-1-59 | 1.33 | .050 | 10-1-59 | Raingage | R-3 | 10-1-59 | | |
| 9-2 | 0 | .004 | 9:35p | 0 | 0 | 9:50p | .0056 | 0 |
| 9-3 | .39 | .004 | :55 | .12 | .04 | 10:31 | .0114 | .005 |
| 9-4 | 0 | .002 | 10:00 | .24 | .06 | :53 | .0207 | .011 |
| 9-17 | .08 | 0 | :10 | .24 | .10 | 12:00m | .0319 | .040 |
| 9-23 | .49 | 0 | :20 | .24 | .14 | 10-2-59 | | |
| 9-24 | 1.42 | .643 | :30 | .06 | .15 | 12:20a | .0331 | .051 |
| 9-25 | 3.70 | 1.174 | :35 | .12 | .16 | 1:03 | .0285 | .073 |
| 9-26 | 0 | .008 | ceased | | | :32 | .0314 | .087 |
| 9-27 | 0 | .002 | 11:35 | 0 | .16 | :54 | .0431 | .101 |
| 9-29 | .32 | 0 | 10-2-59 | | | 2:06 | .0751 | .112 |
| 9-30 | .51 | .059 | 12:05a | .08 | .20 | :13 | .101 | .122 |
| 10-1 | .94 ^{2/} | .585 | :40 | 0 | .20 | :29 | .157 | .156 |
| | | | 1:05 | .06 | .23 | :40 | .197 | .188 |
| | | | :35 | .12 | .29 | :47 | .275 | .215 |
| | | | :50 | .20 | .34 | :53 | .406 | .249 |
| | | | :55 | .12 | .35 | :58 | .555 | .288 |
| | | | 2:00 | 1.44 | .47 | 3:04 | .698 | .350 |
| | | | :05 | .36 | .50 | :15 | .919 | .502 |
| | | | :20 | .12 | .53 | :21 | .938 | .595 |
| | | | :25 | .12 | .54 | :25 | .913 | .657 |
| | | | :30 | .36 | .57 | :36 | .789 | .811 |
| | | | :35 | .60 | .62 | :46 | .757 | .942 |
| | | | :40 | 1.56 | .75 | :52 | .826 | 1.020 |
| | | | :45 | 2.16 | .93 | :56 | 1.062 | 1.082 |
| | | | :50 | 1.20 | 1.03 | :59 | 1.267 | 1.139 |
| | | | :55 | .96 | 1.11 | 4:01 | 1.374 | 1.183 |
| | | | 3:00 | .96 | 1.19 | :03 | 1.606 | 1.233 |
| | | | :05 | 1.32 | 1.30 | :07 | 1.749 | 1.343 |
| | | | :10 | .96 | 1.38 | :14 | 1.748 | 1.547 |

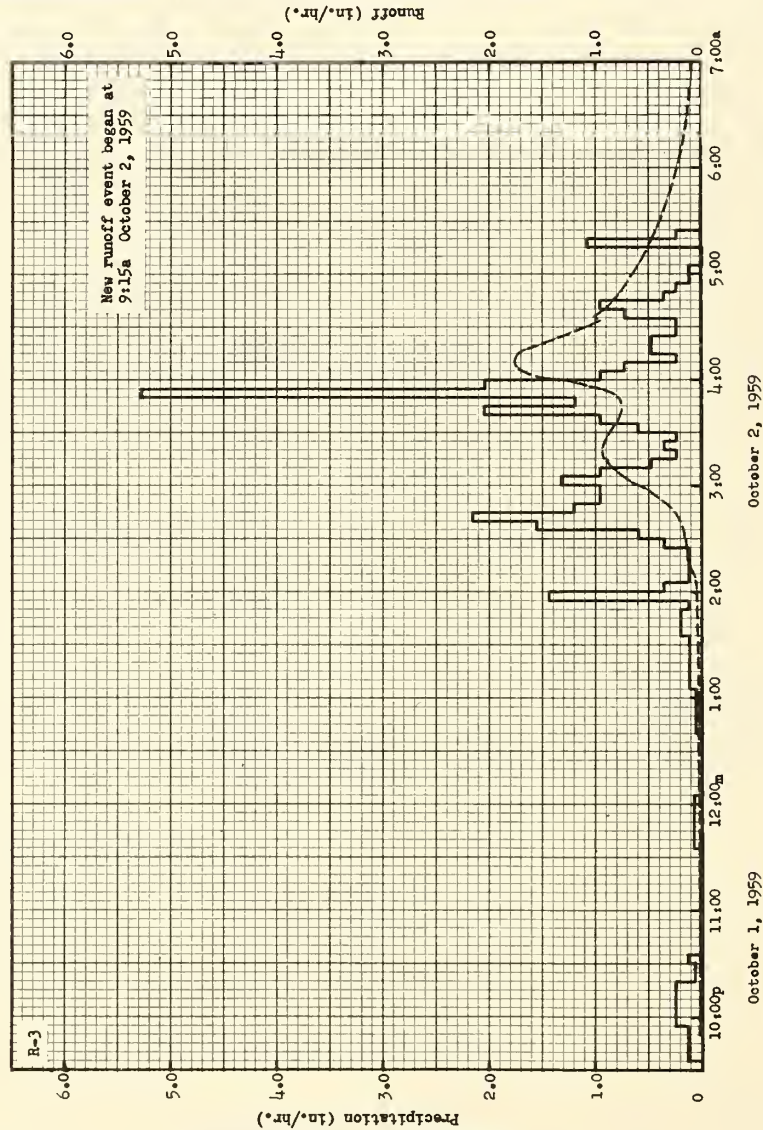
Notes: To convert runoff in in/hr to cfs, multiply by 92.766. For map of watershed, see page 37.2-6, Selected Runoff Events for Small Agricultural Watersheds in the United States, ARS, SWC, January 1960. ^{2/} All antecedent rainfall measured by Raingage R-3. ^{3/} Rainfall to 5:25p.

| SELECTED RUNOFF EVENTS | | | Stillwater, Oklahoma Watershed W-3 | | | | | |
|---|---------------------|-----------------|------------------------------------|-------------------|---------------|---------------------|---------------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of October 1 and 2, 1959 - Continued</u> | | | | | | | | |
| | | | 3:15 | .48 | 1.42 | 4:18 | 1.620 | 1.660 |
| | | | :20 | .24 | 1.44 | :22 | 1.439 | 1.762 |
| | | | :25 | .36 | 1.47 | :29 | 1.160 | 1.913 |
| | | | :30 | .24 | 1.49 | :32 | 1.019 | 1.968 |
| | | | :35 | .60 | 1.54 | :33 | .957 | 1.985 |
| | | | :40 | .96 | 1.62 | :34 | .990 | 2.001 |
| | | | :45 | 2.04 | 1.79 | :36 | 1.023 | 2.035 |
| | | | :50 | 1.20 | 1.89 | :40 | .907 | 2.099 |
| | | | :55 | 5.28 | 2.33 | :47 | .797 | 2.198 |
| | | | 4:00 | 2.04 | 2.50 | :59 | .681 | 2.346 |
| | | | :05 | .96 | 2.58 | 5:16 | .498 | 2.511 |
| | | | :10 | .72 | 2.64 | :28 | .414 | 2.602 |
| | | | :15 | .24 | 2.66 | :50 | .285 | 2.731 |
| | | | :20 | .48 | 2.70 | 6:05 | .213 | 2.793 |
| | | | :25 | .48 | 2.74 | :47 | .101 | 2.902 |
| | | | :30 | .24 | 2.76 | 7:33 | .0495 | 2.958 |
| | | | :35 | .24 | 2.78 | :59 | .0361 | 2.976 |
| | | | :40 | .72 | 2.84 | 8:43 | .0230 | 2.997 |
| | | | :45 | .96 | 2.93 | 9:15a ^{1/} | .0181 ^{1/} | 3.008 |
| | | | :50 | .36 | 2.96 | | | |
| | | | :55 | .24 | 2.98 | | | |
| | | | 5:00 | .12 | 2.99 | | | |
| | | | :05 | .12 | 3.00 | | | |
| | | | :15 | 0 | 3.00 | | | |
| | | | :20 | 1.08 | 3.09 | | | |
| | | | :25a | .24 | 3.11 | | | |
| <u>Event of October 2 and 3, 1959</u> | | | | | | | | |
| 9-1-59 | 1.33 | .050 | 10-2-59 | Raingage | R-3 | 10-2-59 | | |
| 9-2 | 0 | .004 | 7:40a | 0 | 0 | 9:15a | .0181 | 0 |
| 9-3 | .39 | .004 | 8:20 | .03 | .02 | :21 | .0322 | .002 |
| 9-4 | 0 | .002 | 9:20 | .02 | .04 | :25 | .0646 | .005 |
| 9-17 | .08 | 0 | :25 | 4.08 | .38 | :30 | .142 | .013 |
| 9-23 | .49 | 0 | :30 | 3.60 | .68 | :35 | .267 | .030 |
| 9-24 | 1.42 | .643 | :35 | 2.76 | .91 | :40 | .524 | .063 |
| 9-25 | 3.70 | 1.174 | :40 | 1.80 | 1.06 | :45 | .867 | .120 |
| 9-26 | 0 | .008 | :45 | .96 | 1.14 | :49 | 1.04 | .185 |
| 9-27 | 0 | .002 | :50 | 1.56 | 1.27 | :54 | 1.18 | .278 |
| 9-29 | .32 | 0 | :55 | .60 | 1.32 | :57 | 1.22 | .338 |
| 9-30 | .51 | .059 | 10:00 | 1.32 | 1.43 | 10:00 | 1.24 | .400 |
| 10-1 | 1.10 | .625 | :05 | .60 | 1.48 | :03 | 1.23 | .462 |
| 10-2 | 2.952 ^{2/} | 2.968 | :10 | .96 | 1.56 | :05 | 1.21 | .502 |
| | | | :15 | .36 | 1.59 | :10 | 1.17 | .601 |
| | | | :20 | .12 | 1.60 | :15 | 1.10 | .695 |
| | | | :25 | .24 | 1.62 | :21 | .948 | .798 |
| | | | :30 | .24 | 1.64 | :26 | .874 | .875 |
| | | | :35 | .36 | 1.67 | :33 | .766 | .970 |
| | | | :40 | .12 | 1.68 | :39 | .675 | 1.042 |
| | | | :45 | 0 | 1.68 | :45 | .581 | 1.105 |
| | | | :50 | .12 | 1.69 | :51 | .494 | 1.159 |
| | | | :55 | 1.32 | 1.80 | :57 | .465 | 1.207 |
| | | | 11:00 | 2.04 | 1.97 | 11:01 | .466 | 1.238 |
| | | | :05 | .12 | 1.98 | :06 | .482 | 1.277 |
| | | | :10 | 1.08 | 2.07 | :15 | .557 | 1.355 |
| | | | :15 | .60 | 2.12 | :25 | .633 | 1.455 |
| | | | :20 | .48 | 2.16 | :35 | .625 | 1.562 |
| | | | :30 | .06 | 2.17 | :44 | .550 | 1.650 |
| | | | :35 | .12 | 2.18 | :52 | .467 | 1.718 |
| | | | :50 | .04 | 2.19 | 12:01p | .388 | 1.782 |
| | | | 12:35p | .01 | 2.20 | :15 | .269 | 1.858 |
| | | | 1:30 | 0 | 2.20 | :32 | .192 | 1.922 |
| | | | 2:05 | .03 | 2.22 | :56 | .111 | 1.983 |
| | | | | | | 1:27 | .0625 | 2.026 |
| <p><u>Watershed Conditions:</u> 100% of the area was in native grass pasture. The upper or western third was in poor to fair condition, the lower portion was in very good condition.</p> | | | | | | | | |

Notes: To convert runoff in in/hr to cfs, multiply by 92.766. ^{1/} Beginning of new runoff event. ^{2/} Rainfall to 5:25a.

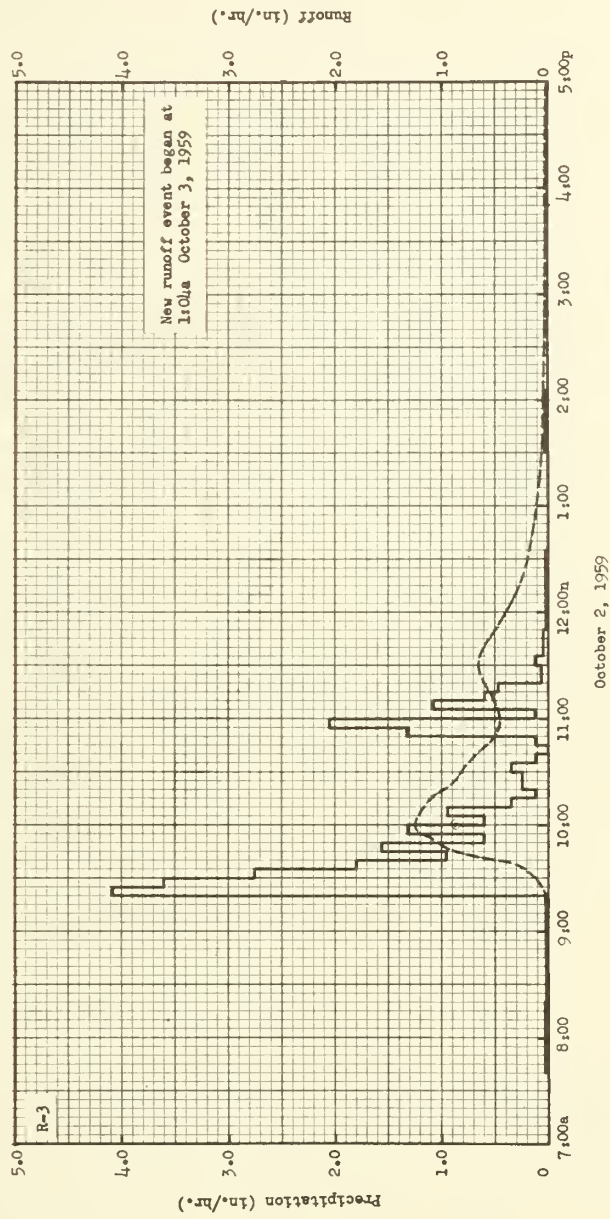
| SELECTED RUNOFF EVENTS | | | Stillwater, Oklahoma Watershed W-3 | | | | | |
|------------------------|-------------------|-----------------|--|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| | | | Event of October 2 and 3, 1959 - Continued | | | | | |
| | | | | | | 2:11p | .037h | 2.061 |
| | | | | | | 4:2h | .0155 | 2.11h |
| | | | | | | 5:4h | .009h | 2.131 |
| | | | | | | 7:40 | .0058 | 2.145 |
| | | | | | | 9:58 | .003h | 2.155 |
| | | | | | | 12:00m | .0026 | 2.161 |
| | | | | | | 10-3-59 | | |
| | | | | | | 1:04a1/ | .00251/ | 2.16h |

Notes: To convert runoff in in/hr to cfs, multiply by 92.766. 1/ Beginning of new runoff event.



STILLWATER, OKLAHOMA WATERSHED W-3

STILLWATER, OKLAHOMA WATERSHED W-3



| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Stillwater, Oklahoma Watershed W-4 (Area - 206 acres) | | | | | | | |
|---|-------|------|------|------|------|------|--|-------|------|-------|-------|------|------|-------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 | P | 0.45 | 0.69 | 0.54 | 1.10 | 2.42 | 1.83 | 3.70 | 0.84 | 0.19 | 0.88 | 1.41 | 1.39 | 15.74 |
| | Q | 0 | 0 | 0 | 0 | 0 | 0 | .38 | 0 | 0 | 0 | .01 | 0 | .39 |
| 1957 | P | .54 | 2.27 | 2.95 | 7.26 | 9.68 | 10.21 | 1.56 | .82 | 4.56 | 1.52 | 2.19 | .70 | 44.26 |
| | Q | 0 | .02 | .05 | 3.48 | 4.10 | 6.11 | .71 | 0 | .23 | 0 | 0 | 0 | 14.70 |
| 1958 | P | .82 | .85 | 4.15 | 1.44 | 1.28 | 4.51 | 5.20 | 3.23 | 3.56 | .22 | .33 | .58 | 26.17 |
| | Q | .06 | .05 | 1.95 | .22 | .02 | .16 | .23 | .01 | .07 | 0 | 0 | 0 | 2.77 |
| 1959 | P | .17 | .69 | 1.72 | 3.18 | 5.05 | 3.81 | 10.04 | 2.48 | 8.06 | 10.13 | .18 | 1.73 | 47.24 |
| | Q | 0 | 0 | .02 | .14 | .38 | .02 | 3.33 | .02 | 1.50 | 6.78 | 0 | .37 | 12.56 |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | Stillwater, Oklahoma Watershed W-4 | | | | | | | | | |
|---|-------------------|------|---|------|---------|------|------------------------------------|------|----------|------|-------|------|--------|------|--------|------|
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1956 | 7-5 | .45 | 7-5 | 0.33 | 7-5 | 0.37 | 7-5 | 0.38 | 7-5 | 0.38 | 7-5 | 0.38 | 7-5 | 0.38 | 7-5 | 0.38 |
| 1957 | 4-18 | 2.39 | 4-18 | 1.48 | 4-18 | 1.75 | 5-16 | 1.92 | 5-16 | 1.95 | 5-16 | 2.00 | 5-16 | 2.06 | 6-17 | 3.51 |
| 1958 | 3-28 | .39 | 3-28 | .32 | 3-28 | .45 | 3-28 | .56 | 3-28 | .60 | 3-28 | .63 | 3-28 | .64 | 3-23 | 1.06 |
| 1959 | 10-2 | 1.63 | 10-2 | 1.19 | 10-2 | 1.19 | 10-2 | 2.63 | 10-2 | 4.49 | 10-2 | 4.71 | 10-1 | 5.23 | 9-30 | 6.77 |

Notes: Quality of records: Precipitation and Runoff, good. Watershed Conditions: 1956 - poor cover; 1957-1959 good to excellent cover.

| SELECTED RUNOFF EVENTS | | | | | Stillwater, Oklahoma Watershed W-4 | | | | |
|-------------------------|----------------------|-----------------|---------------|-------------------|------------------------------------|---------------|--------------|---------------|--|
| Antecedent conditions | | | Rainfall | | | Runoff | | | |
| Date | Rainfall 1/ (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | |
| Event of April 18, 1957 | | | | | | | | | |
| 3-20-57 | .32 | 0 | 4-18-57 | Raingage | R-4 | 4-18-57 | | | |
| 3-21 | .34 | 0 | 12:20a | 0 | 0 | 1:10a | 0 | 0 | |
| 3-23 | .55 | .0152 | :25 | .12 | .01 | :12 | .0005 | .0001 | |
| 3-24 | 0 | .0005 | :30 | .12 | .02 | :14 | .0020 | .0001 | |
| 3-26 | .08 | 0 | :35 | .12 | .03 | :17 | .0032 | .0002 | |
| 3-30 | .13 | 0 | :40 | 0 | .03 | :30 | .0012 | .0007 | |
| 3-31 | .52 | .0082 | :45 | .12 | .04 | :37 | .0007 | .0008 | |
| 4-3 | .80 | .0891 | :50 | .12 | .05 | :38 | .0015 | .0008 | |
| 4-4 | 0 | .0039 | :55 | .24 | .07 | :39 | .0037 | .0009 | |
| 4-7 | .10 | 0 | 1:00 | .48 | .11 | :40 | .0061 | .0010 | |
| 4-8 | .05 | 0 | :05 | 2.04 | .28 | :45 | .0112 | .0017 | |
| 4-12 | .13 | 0 | :10 | .96 | .36 | 2:00 | .0061 | .0038 | |
| | | | :15 | .24 | .38 | :08 | .0061 | .0047 | |
| | | | :20 | .12 | .39 | :42 | .0030 | .0072 | |
| | | | :50 | 0 | .39 | :46 | .0027 | .0074 | |
| | | | :55 | .12 | .40 | :58 | .0055 | .0082 | |
| | | | 2:15 | 0 | .40 | 3:02 | .0059 | .0086 | |
| | | | :20 | .72 | .46 | :14 | .0197 | .0112 | |
| | | | :25 | .24 | .48 | :18 | .0368 | .0131 | |
| | | | :30 | .12 | .49 | :21 | .0569 | .0154 | |
| | | | :35 | .12 | .50 | :23 | .0800 | .0177 | |
| | | | :40 | .12 | .51 | :28 | .137 | .0267 | |
| | | | :45 | .48 | .55 | :34 | .268 | .0470 | |
| | | | :50 | .72 | .61 | :44 | .606 | .1199 | |
| | | | :55 | .36 | .64 | :54 | .855 | .2416 | |
| | | | 3:00 | .36 | .67 | 4:00 | 1.06 | .3375 | |
| | | | :05 | 1.08 | .76 | :04 | 1.73 | .4305 | |
| | | | :10 | .60 | .81 | :06 | 2.50 | .5011 | |
| | | | :15 | 1.08 | .90 | :08 | 2.79 | .5894 | |
| | | | :20 | .84 | .97 | :12 | 2.74 | .7738 | |

Notes: To convert runoff in in/hr to cfs, multiply by 207.72 .
 1/ All antecedent rainfall measured by Raingage R-4.

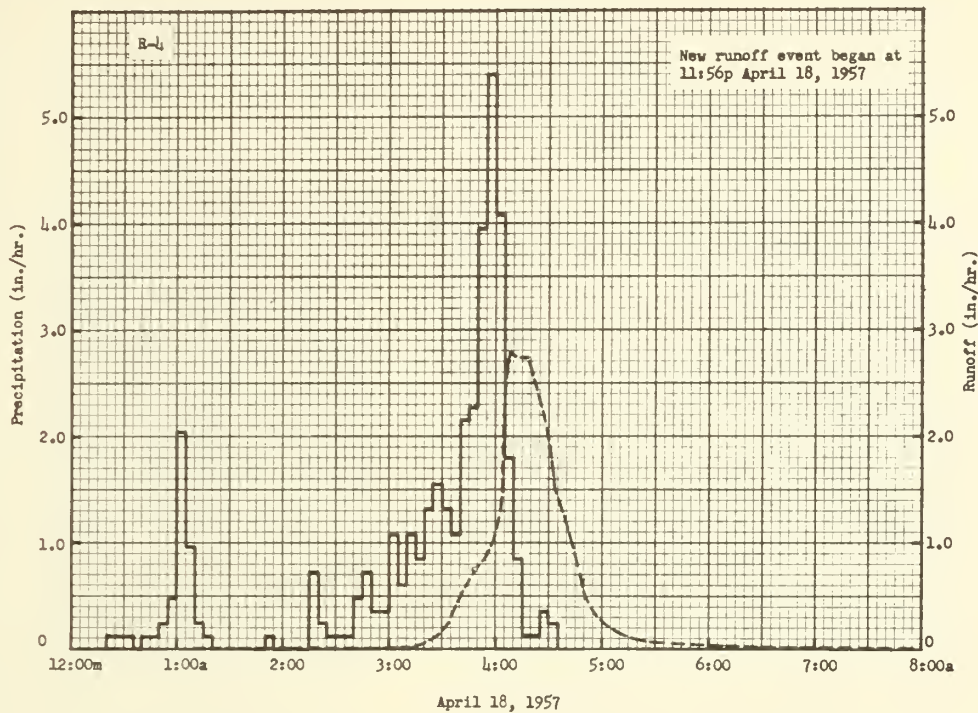
| SELECTED RUNOFF EVENTS | | | Stillwater, Oklahoma Watershed W-4 | | | | | |
|--|-------------------|-----------------|------------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of April 18, 1957 - Continued</u> | | | | | | | | |
| | | | 3:25a | 1.32 | 1.08 | 4:18a | 2.74 | 1.0483 |
| | | | :30 | 1.56 | 1.21 | :22 | 2.58 | 1.2256 |
| | | | :35 | 1.32 | 1.32 | :28 | 2.13 | 1.4610 |
| | | | :40 | 1.08 | 1.41 | :34 | 1.50 | 1.6420 |
| | | | :45 | 2.16 | 1.59 | :38 | 1.13 | 1.7293 |
| | | | :50 | 2.28 | 1.78 | :44 | .951 | 1.8333 |
| | | | :55 | 3.96 | 2.11 | :48 | .629 | 1.8859 |
| | | | 4:00 | 5.40 | 2.56 | :52 | .467 | 1.9224 |
| | | | :05 | 4.08 | 2.90 | 5:00 | .256 | 1.9706 |
| | | | :10 | 1.80 | 3.05 | :17 | .109 | 2.0223 |
| | | | :15 | .84 | 3.12 | :30 | .0701 | 2.0417 |
| | | | :20 | .12 | 3.13 | :44 | .0467 | 2.0554 |
| | | | :25 | .12 | 3.14 | 6:04 | .0262 | 2.0675 |
| | | | :30 | .36 | 3.17 | :22 | .0189 | 2.0743 |
| | | | :35 | .24 | 3.19 | :58 | .0103 | 2.0830 |
| | | | | | | 8:12 | .0044 | 2.0921 |
| | | | | | | 10:22 | .0019 | 2.0989 |
| | | | | | | 3:12p | .0007 | 2.1052 |
| | | | | | | 11:561/ | .00031/ | 2.1096 |
| <u>Event of June 27, 28 and 29, 1957</u> | | | | | | | | |
| 5-30-57 | .83 | .0790 | 6-27-57 | Raingage | R-4 | 6-27-57 | | |
| 5-31 | .16 | .0013 | 10:35p | 0 | 0 | 10:35p | .0002 | 0 |
| 6-1 | .27 | .0306 | :40 | 5.64 | .47 | :39 | .0029 | .0002 |
| 6-2 | .61 | .3660 | :45 | 3.60 | .77 | :41 | .0065 | .0003 |
| 6-3 | .24 | .1014 | :50 | 1.68 | .91 | :43 | .0141 | .0007 |
| 6-4 | .18 | .1428 | 11:00 | .06 | .92 | :44 | .0212 | .0009 |
| 6-9 | .45 | .0769 | | | | :45 | .0318 | .0014 |
| 6-10 | 1.21 | .8150 | | | | :46 | .0465 | .0020 |
| 6-11 | 0 | .0076 | | | | :47 | .0627 | .0029 |
| 6-12 | .64 | .3587 | | | | :48 | .0927 | .0042 |
| 6-13 | 0 | .0097 | | | | :50 | .136 | .0081 |
| 6-17 | .47 | .0139 | | | | :53 | .256 | .0179 |
| 6-18 | 2.16 | 1.5331 | | | | :57 | .585 | .0459 |
| 6-19 | 0 | .0193 | | | | 11:01 | .728 | .0896 |
| 6-20 | 0 | .0008 | | | | :12 | .865 | .2357 |
| 6-22 | .56 | 0 | | | | :23 | .604 | .3704 |
| 6-23 | 2.23 | 1.9365 | | | | :29 | .464 | .4238 |
| 6-24 | 0 | .0118 | | | | :39 | .271 | .4850 |
| 6-26 | .51 | .0333 | | | | 12:00m | .1087 | .5445 |
| 6-27 | 0 | .00682/ | | | | 6-28-57 | | |
| | | | | | | 12:23a | .0614 | .5791 |
| | | | | | | :39 | .0435 | .5931 |
| | | | | | | 1:11 | .0258 | .6115 |
| | | | | | | :47 | .0159 | .6240 |
| | | | | | | 2:43 | .0094 | .6359 |
| | | | | | | 4:28 | .0046 | .6481 |
| | | | | | | 7:47 | .0022 | .6594 |
| | | | | | | 12:00m | .0003 | .6742 |
| | | | | | | 6-29-57 | | |
| | | | | | | 2:51a | .0002 | .6756 |
| | | | | | | e 11:51p | 0 | .6765 |
| <u>Event of October 1 and 2, 1959</u> | | | | | | | | |
| 9-1-59 | 1.09 | .0567 | 10-1-59 | Raingage | R-4 | 10-1-59 | | |
| 9-2 | 0 | .0015 | 9:30p | 0 | 0 | 10:35p | .0062 | 0 |
| 9-3 | .41 | .0033 | :45 | .04 | .01 | 12:00m | .0178 | .0265 |
| 9-4 | 0 | .0001 | 10:25 | .24 | .17 | 10-2-59 | | |
| 9-17 | .06 | 0 | 11:20 | 0 | .17 | 12:19a | .0156 | .0318 |
| 9-23 | .63 | 0 | 12:00m | .03 | .19 | 2:02 | .0271 | .0587 |
| 9-24 | 3.75 | .5062 | 10-2-59 | | | :28 | .0772 | .0796 |
| 9-25 | 1.36 | .8589 | 12:40a | .02 | .20 | :39 | .112 | .0967 |
| 9-26 | 0 | .0113 | 1:50 | .09 | .31 | :52 | .232 | .1306 |

Watershed Conditions: 100% of the area was in native grass, most in pasture except for a small part in meadow. Some recovery from drought was evident and the range was in poor to fair condition.

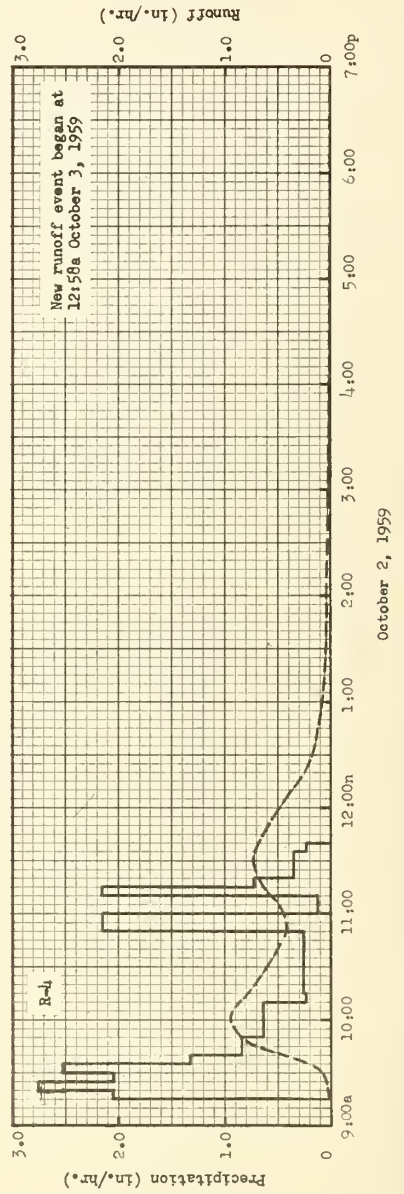
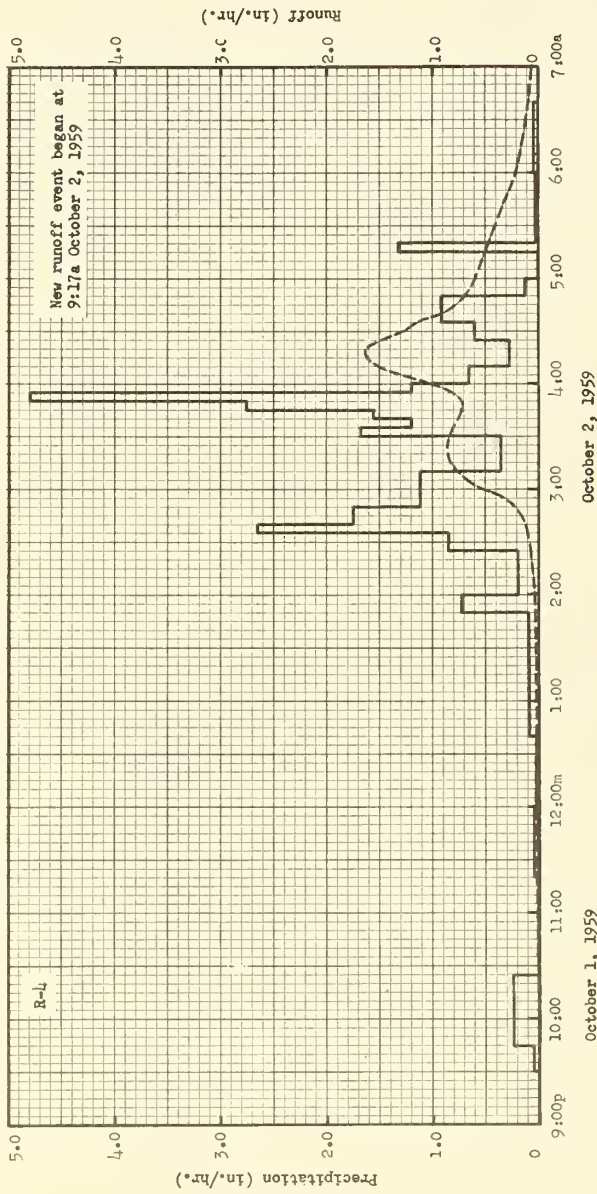
Notes: To convert runoff in in/hr to cfs, multiply by 207.72 .
 1/ Beginning of new runoff event. 2/ Runoff to 10:35p.

| SELECTED RUNOFF EVENTS | | | | | | Stillwater, Oklahoma Watershed W-4 | | |
|--|---------------------|-----------------------|---------------|-------------------|---------------------|------------------------------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of October 1 and 2, 1959 - Continued | | | | | | | | |
| 9-27-59 | 0 | .0041 | 2:00a | .72 | .43 | 2:59a | .497 | .1715 |
| 9-28 | 0 | .0001 | :25 | .19 | .51 | 3:06 | .689 | .2412 |
| 9-29 | .13 | 0 | :35 | .84 | .65 | :12 | .794 | .3164 |
| 9-30 | .63 | .0389 | :40 | 2.64 | .87 | :18 | .847 | .3995 |
| 10-1 | 1.01 ^{1/2} | .3818 ^{2/3} | :50 | 1.74 | 1.16 | :24 | .956 | .4848 |
| Watershed Conditions: 100% of the area was in native grass, most in pasture except for a small part in meadow. Good rains for past two years had helped recovery of range but heavy stocking kept it down to fair condition. | | | 3:10 | 1.11 | 1.53 | :50 | .724 | .8207 |
| | | | :30 | .36 | 1.65 | :56 | .833 | .8973 |
| | | | :35 | 1.68 | 1.79 | 4:02 | 1.103 | .9971 |
| | | | :40 | 1.20 | 1.89 | :07 | 1.378 | 1.1004 |
| | | | :45 | 1.56 | 2.02 | :13 | 1.594 | 1.2517 |
| | | | :50 | 2.76 | 2.25 | :19 | 1.633 | 1.4137 |
| | | | :55 | 4.80 | 2.65 | :27 | 1.403 | 1.6203 |
| | | | 4:00 | 1.20 | 2.75 | :37 | 1.066 | 1.8274 |
| | | | :10 | .66 | 2.86 | :43 | .8099 | 1.9214 |
| | | | :25 | .28 | 2.93 | :56 | .617 | 2.0748 |
| | | | :35 | .60 | 2.96 | 5:30 | .408 | 2.3729 |
| | | | :50 | .92 | 3.19 | :58 | .217 | 2.5134 |
| | | | 5:00 | .12 | 3.21 | 6:30 | .106 | 2.5953 |
| | | | :15 | 0 | 3.21 | 7:19 | .0531 | 2.6574 |
| | | | :20 | 1.32 | 3.32 | 8:22 | .0264 | 2.6969 |
| | | 6:00 | .02 | 3.33 | 9:10 | .0166 | 2.7133 | |
| | | :40 | .03 | 3.35 | 9:17 ^{3/4} | .0166 ^{3/4} | 2.7152 | |
| Event of October 2 and 3, 1959 | | | | | | | | |
| 9-1-59 | 1.09 | .0567 | 10-2-59 | Raingage | R-4 | 10-2-59 | | |
| 9-2 | 0 | .0015 | 9:15a | 0 | 0 | 9:17a | .0166 | 0 |
| 9-3 | .41 | .0033 | :20 | 2.04 | .17 | :19 | .0202 | .0006 |
| 9-4 | 0 | .0001 | :25 | 2.76 | .40 | :23 | .0299 | .0023 |
| 9-17 | .06 | 0 | :30 | 2.04 | .57 | :28 | .0725 | .0061 |
| 9-23 | .63 | 0 | :35 | 2.52 | .79 | :33 | .127 | .0144 |
| 9-24 | 3.75 | .5062 | :40 | 1.32 | .89 | :38 | .368 | .0332 |
| 9-25 | 1.36 | .9589 | :45 | .94 | .96 | :43 | .609 | .0765 |
| 9-26 | 0 | .0113 | :50 | .94 | 1.03 | :50 | .844 | .1644 |
| 9-27 | 0 | .0041 | 10:10 | .63 | 1.24 | :57 | .932 | .2651 |
| 9-28 | 0 | .0001 | :15 | .24 | 1.26 | 10:00 | .939 | .3118 |
| 9-29 | .13 | 0 | :50 | .26 | 1.44 | :03 | .931 | .3586 |
| 9-30 | .63 | .0389 | 11:00 | 2.16 | 1.77 | :12 | .825 | .4908 |
| 10-1 | 1.20 | .4083 | :10 | .12 | 1.79 | :22 | .698 | .6183 |
| 10-2 | 3.16 ^{4/5} | 2.6887 ^{5/6} | :15 | 2.16 | 1.97 | :31 | .591 | .7152 |
| Watershed Conditions: 100% of the area was in native grass, most in pasture except for a small part in meadow. Good rains for past two years had helped recovery of range but heavy stocking kept it down to fair condition. | | | :20 | .72 | 2.03 | :45 | .456 | .9365 |
| | | | :35 | .36 | 2.12 | :55 | .419 | .7079 |
| | | | :40 | .24 | 2.14 | 11:09 | .529 | 1.0150 |
| | | | | | | :19 | .680 | 1.1162 |
| | | | | | | :31 | .723 | 1.2586 |
| | | | | | | :42 | .666 | 1.3862 |
| | | | | | | :53 | .547 | 1.4981 |
| | | | | | | 12:05p | .426 | 1.5964 |
| | | | | | | :16 | .294 | 1.6620 |
| | | | | | | :25 | .203 | 1.6993 |
| | | | | | | :47 | .117 | 1.7557 |
| | | | | | | 1:19 | .0635 | 1.8009 |
| | | | | | | 2:04 | .0381 | 1.8375 |
| | | | | | | 3:10 | .0205 | 1.8691 |
| | | | | | | 4:10 | .0122 | 1.8849 |
| | | | | | 5:36 | .0071 | 1.8984 | |
| | | | | | 6:44 | .0051 | 1.9054 | |
| | | | | | 8:10 | .0038 | 1.9117 | |
| | | | | | 10:00 | .0028 | 1.9178 | |
| | | | | | 12:00m | .0022 | 1.9227 | |
| | | | | | 10-3-59 | | | |
| | | | | | 12:10a | .0021 | 1.9231 | |
| | | | | | :58 ^{5/6} | .0019 ^{5/6} | 1.9247 | |

Notes: To convert runoff in in/hr to cfs, multiply by 207.72. 1/ Rain ended at 5:30p. 2/ Runoff to 10:35p. 3/ Beginning of new event. 4/ Rain ended at 6:40a. 5/ Runoff to 9:17a. 6/ Beginning of new event.



STILLWATER, OKLAHOMA WATERSHED W-4



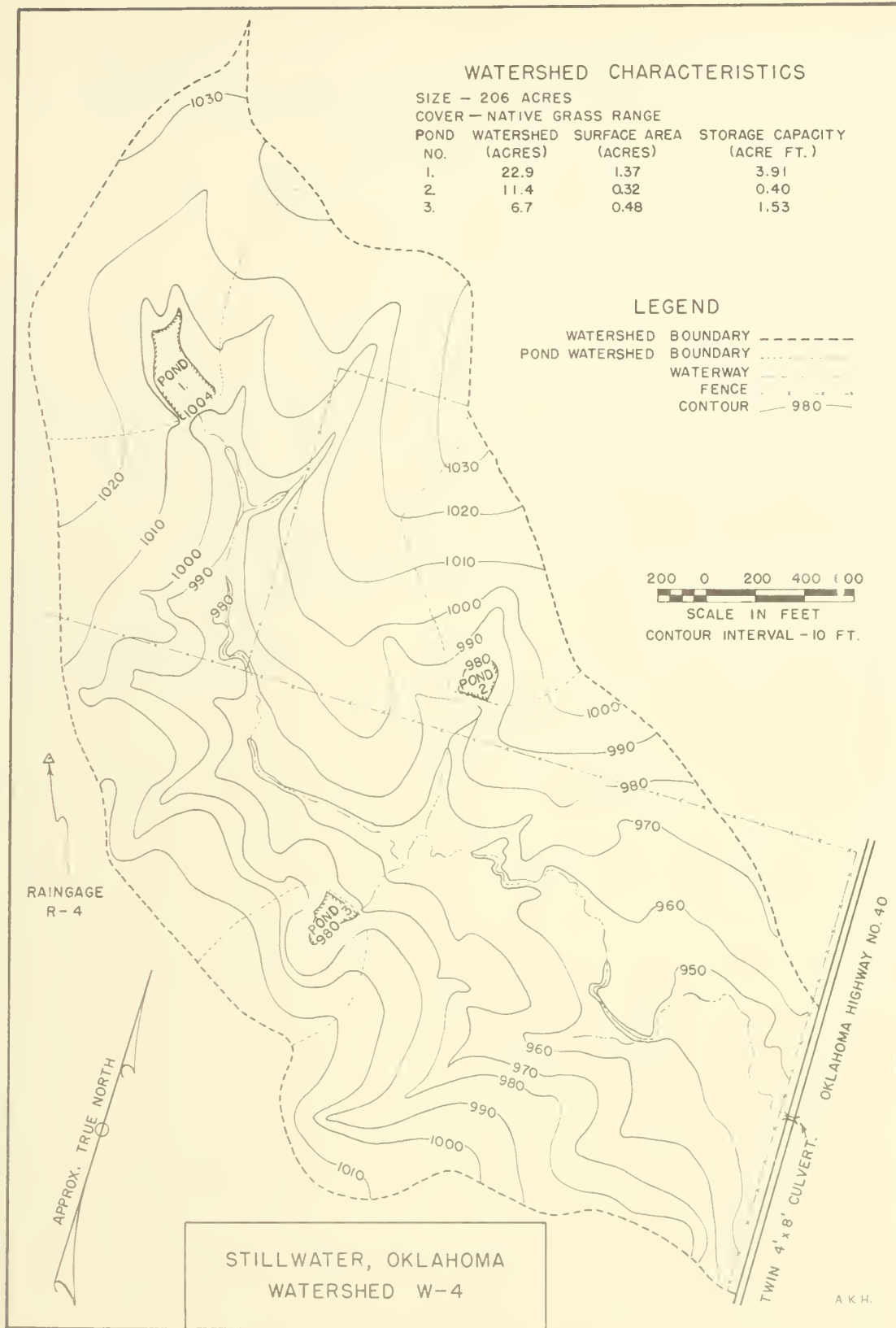
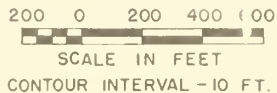
WATERSHED CHARACTERISTICS

SIZE - 206 ACRES
 COVER - NATIVE GRASS RANGE

| POND NO. | WATERSHED (ACRES) | SURFACE AREA (ACRES) | STORAGE CAPACITY (ACRE FT.) |
|----------|-------------------|----------------------|-----------------------------|
| 1. | 22.9 | 1.37 | 3.91 |
| 2. | 11.4 | 0.32 | 0.40 |
| 3. | 6.7 | 0.48 | 1.53 |

LEGEND

| | |
|-------------------------|-----|
| WATERSHED BOUNDARY | --- |
| POND WATERSHED BOUNDARY | --- |
| WATERWAY | --- |
| FENCE | --- |
| CONTOUR | 980 |



| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Riesel (Waco), Texas | | | | | | Watershed C (Area - 579 acres) | |
|---|-------|------|------|------|-------|------|----------------------|------|------|-------|------|------|-----------------------------------|-------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 | P | 2.53 | 2.21 | 0.18 | 0.65 | 4.72 | 1.25 | 0.64 | 2.25 | 0 | 0.41 | 4.25 | 1.95 | 21.54 |
| | Q | 0 | .16 | 0 | 0 | .46 | 0 | 0 | 0 | 0 | 0 | .61 | 0 | 1.23 |
| 1957 | P | 1.40 | 2.98 | 5.66 | 15.72 | 6.85 | 1.72 | .04 | .30 | 4.22 | 3.12 | 4.23 | .75 | 51.93 |
| | Q | 0 | .15 | 1.62 | 10.04 | 3.70 | T | 0 | 0 | 1.75 | .95 | T | T | 17.81 |
| 1958 | P | 2.05 | 3.22 | 1.35 | 3.08 | 2.04 | 1.78 | 1.08 | 5.17 | 0.48 | 2.38 | 1.44 | 1.25 | 31.96 |
| | Q | .05 | .72 | .01 | .03 | .41 | 0 | 0 | .26 | 1.75 | .61 | T | T | 3.24 |
| 1959 | P | .36 | 3.56 | .91 | 3.76 | 3.10 | 8.06 | 3.66 | 1.85 | 2.61 | 0.11 | 1.77 | 1.05 | 42.19 |
| | Q | T | .36 | T | .22 | T | 1.73 | T | 0 | 0 | 2.95 | .28 | .75 | 5.34 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|--------|---|--------|---------|--------|---------|------|----------|------|-------|------|--------|------|--------|--------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 4-19 | e 1.33 | 4-19 | e 1.33 | 4-19 | e 2.02 | 4-23 | 2.80 | 4-23 | 3.04 | 4-23 | 3.10 | 4-23 | 4.54 | 4-19 | e 8.76 |
| 1958 | 9-19 | .80 | 9-19 | .67 | 9-19 | .98 | 9-19 | 1.27 | 9-19 | 1.58 | 9-19 | 1.63 | 9-19 | 1.64 | 6-19 | 1.75 |
| 1959 | 6-23 | .62 | 6-23 | .59 | 6-23 | 1.00 | 6-23 | 1.39 | 10-4 | 1.73 | 10-4 | 1.86 | 10-4 | 1.88 | 10-4 | 1.89 |

Notes: Quality of records: monthly P and Q, good; Annual Max. discharges and volumes, good. Watershed conditions: no appreciable change in land use or conservation practices since 1955. See page 42.2-1, Monthly Precipitation and Runoff for Small Agricultural Watersheds in the United States, ARS, SWC, June 1957 (reprinted 1961).

SELECTED RUNOFF EVENTS

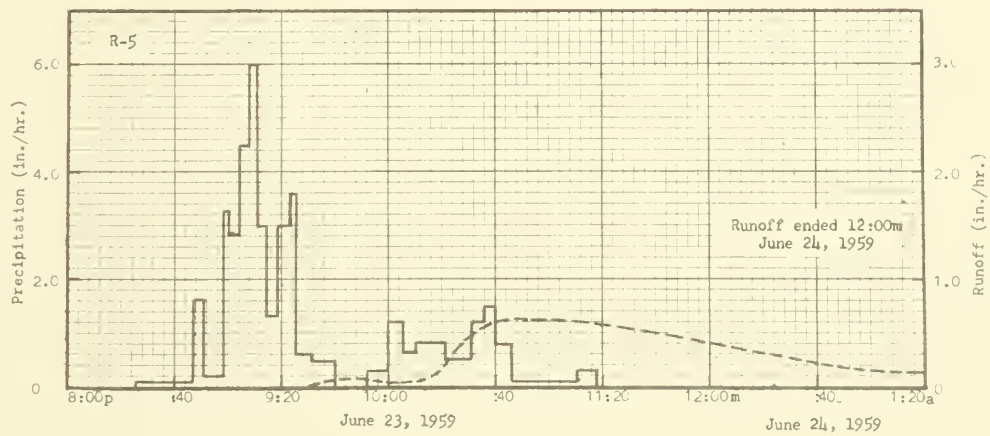
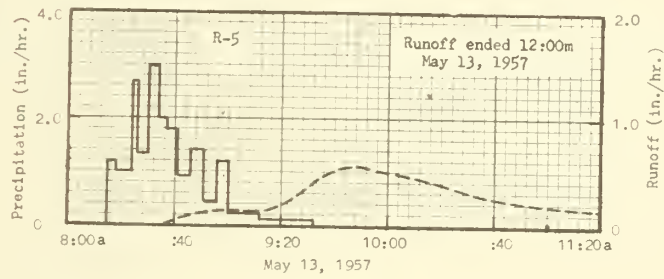
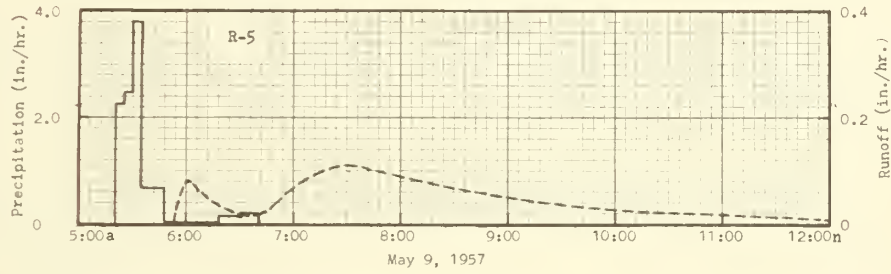
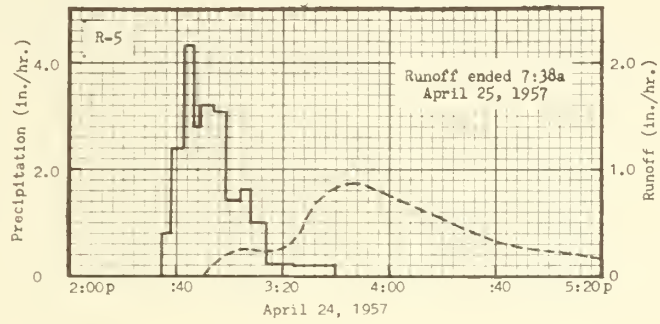
| Antecedent conditions | | | Rainfall | | | Runoff | | | | | | | | | | | |
|--|-------------------|-----------------|---------------|-----------------------|---------------|---------------|--------------|---------------|--|--|--|--|--|--|------|-------|--------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | | | | | | | |
| <u>Event of April 24, 25, 1957</u> | | | | | | | | | | | | | | | | | |
| 3-24, 26-57 | 0 | 0.0017 | 4-24-57 | Raingage | 5 | 4-24-57 | | | | | | | | | | | |
| 3-27 | 1.18 | .4182 | 2:35p | 0 | 0 | 2:38p | 0.0007 | 0 | | | | | | | | | |
| 3-28, 30 | 0 | .0633 | :38 | .80 | .04 | :50 | .0044 | .0003 | | | | | | | | | |
| 3-31 | 1.24 | .5282 | :42 | 2.40 | .20 | :52 | .0236 | .0007 | | | | | | | | | |
| 4-1, 2 | 0 | .0725 | :46 | 4.35 | .49 | :53 | .0603 | .0014 | | | | | | | | | |
| 4-3 | .13 | .0019 | :49 | 2.80 | .63 | :54 | .100 | .0027 | | | | | | | | | |
| 4-4 | .13 | .0011 | :54 | 3.24 | .90 | :58 | .197 | .0130 | | | | | | | | | |
| 4-5, 7 | 0 | .0137 | :59 | 3.12 | 1.16 | 3:04 | .252 | .0363 | | | | | | | | | |
| 4-8 | .02 | .0001 | 3:04 | 1.44 | 1.28 | :07 | .252 | .0489 | | | | | | | | | |
| 4-9, 12 | 0 | T | :08 | 1.65 | 1.39 | :14 | .244 | .0779 | | | | | | | | | |
| 4-13 | .05 | T | :14 | 1.00 | 1.49 | :16 | .244 | .0850 | | | | | | | | | |
| 4-14 | 0 | T | :24 | .24 | 1.53 | :22 | .276 | .1120 | | | | | | | | | |
| 4-15 | .06 | T | :40 | .23 | 1.59 | :26 | .385 | .1337 | | | | | | | | | |
| 4-16, 18 | 0 | T | Raingage | 14 | 1.79 | :28 | .468 | .1479 | | | | | | | | | |
| 4-19 | 5.68 | 2.2388 | Raingage | 20 | 1.62 | :32 | .668 | .1858 | | | | | | | | | |
| 4-20 | .34 | .7588 | Weighted | Average ^{2/} | 1.64 | :36 | .791 | .2344 | | | | | | | | | |
| 4-21 | .36 | .1147 | | | | :43 | .863 | .3280 | | | | | | | | | |
| 4-22 | .33 | .1145 | | | | :46 | .868 | .3713 | | | | | | | | | |
| 4-23 | 3.71 | 3.0894 | | | | :51 | .844 | .4427 | | | | | | | | | |
| 4-24 ^{1/} | .04 | .0199 | | | | 4:02 | .728 | .5878 | | | | | | | | | |
| Watershed Conditions: 41% of area in corn generally planted first of March; 12% bedded for cotton, no crop; 3% row grain sorghum planted first of April; 3% sorghum hay, broadcast first of April; 5% oats and oats-clover, oats in bloom stage; 5% broadcast sweet clover; 28% of pasture, including brushy and open; 3% farmsteads and gravel and paved roads. | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | :14 | .590 | .7196 |
| | | | | | | | | | | | | | | | :25 | .474 | .8168 |
| | | | | | | | | | | | | | | | :38 | .365 | .9075 |
| | | | | | | | | | | | | | | | :52 | .276 | .9817 |
| | | | | | | | | | | | | | | | 5:07 | .211 | 1.0426 |
| | | | | | | | | | | | | | | | :17 | .183 | 1.0755 |
| | | | | | | | | | | | | | | | 6:02 | .102 | 1.1779 |
| | | | | | | | | | | | | | | | 7:02 | .0521 | 1.2512 |
| | | | | | | | | | | | | | | | 8:26 | .0247 | 1.3617 |
| | | | | | | 11:00 | .0098 | 1.3424 | | | | | | | | | |

Notes: To convert runoff in in/hr to cfs, multiply by 583.82. 1/ Prior to event beginning 2:35p. 2/ Thiessen method. For map of watershed, see page 42.4-6.

| SELECTED RUNOFF EVENTS | | | Riesel (Waco), Texas | | | Watershed C | | |
|---|-------------------|-----------------|----------------------|-----------------------|---------------|--------------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of April 24-25, 1957 - Continued</u> | | | | | | | | |
| | | | | | | 4-24-57 12:00pm | .0074 | 1.351 |
| | | | | | | 4-25-57 2:44a | .0040 | 1.360 |
| | | | | | | 7:38 | .0019 | 1.3796 |
| <u>Event of May 9, 1957</u> | | | | | | | | |
| 4-9, 12-57 | 0 | T | 5-9-57 | Raingage | 5 | 5-9-57 | | |
| 4-13 | .39 | T | 5:20a | 0 | | 5:49a | 0.0002 | 0 |
| 4-14, 1a | 0 | T | :25 | 2.28 | .10 | :53 | .0006 | .0001 |
| 4-19 | 5.58 | 2.2388 | :30 | 2.52 | .41 | :55 | .0411 | .0005 |
| 4-20 | .34 | .7588 | :35 | 3.84 | .72 | :56 | .0538 | .0013 |
| 4-21 | .36 | .1147 | :48 | .69 | .87 | :57 | .0651 | .0022 |
| 4-22 | .33 | .1145 | 6:18 | .04 | .80 | 6:00 | .0800 | .0059 |
| 4-23 | 3.71 | 3.0894 | :31 | .18 | .93 | :02 | .0800 | .0086 |
| 4-24 | 1.70 | 1.4282 | :41 | .24 | .97 | :12 | .0538 | .0200 |
| 4-25 | 0 | .0445 | 1:58p | | 1.07 | :30 | .0219 | .0304 |
| 4-26 | 1.29 | .5630 | 2:03 | .96 | 1.15 | :36 | .0197 | .0324 |
| 4-27 | .21 | .4157 | :11 | .38 | 1.20 | :38 | .0197 | .0331 |
| 4-28 | 1.69 | .9864 | :15 | 1.55 | 1.31 | :47 | .0332 | .0368 |
| 4-29 | .02 | .1877 | :24 | .27 | 1.35 | :58 | .0665 | .0461 |
| 4-30 | T | .0116 | :31 | .43 | 1.40 | 7:21 | .1000 | .0811 |
| 5-1 | .20 | .0034 | :51 | .06 | 1.42 | :29 | .112 | .0958 |
| 5-2 | 0 | .0037 | Raingage | 14 | 1.32 | :33 | .112 | .1033 |
| 5-3 | .83 | .3669 | Raingage | 20 | 1.23 | 8:04 | .0932 | .1568 |
| 5-4, 8 | 0 | .0276 | Weighted | Average ^{2/} | 1.38 | :22 | .0791 | .1826 |
| 5-9 | 0 | T | | | | :57 | .0558 | .2218 |
| Watershed Conditions: 41% corn; 12% bedded, no crop; 3% row grain sorghum; 3% broadcast grain sorghum; 5% oats and oats-clover, oats in dough stage; 5% sweet clover; 28% pasture; 3% farmsteads, gravel and paved roads. | | | | | | | | |
| | | | | | | 9:50 | .0339 | .2607 |
| | | | | | | 10:25 | .0231 | .2774 |
| | | | | | | 11:21 | .0154 | .2950 |
| | | | | | | :56 | .0120 | .3030 |
| | | | | | | 1:58p | .0059 | .3204 |
| <u>Event of May 13, 1957</u> | | | | | | | | |
| 4-13-57 | .35 | T | 5-13-57 | Raingage | 5 | 5-13-57 | | |
| 4-14 | | T | 8:15a | 0 | 0 | 8:18a | 0.0003 | 0 |
| 4-15 | .06 | T | :18 | 1.20 | .06 | :31 | .0005 | .0001 |
| 4-1, 1a | | T | :24 | 1.00 | .16 | :37 | .0072 | .0002 |
| 4-19 | 5.58 | 2.2388 | :26 | 2.70 | .25 | :40 | .0572 | .0021 |
| 4-20 | .34 | .7588 | :30 | 1.35 | .34 | :44 | .0952 | .0073 |
| 4-21 | .36 | .1147 | :34 | 3.00 | .54 | :48 | .122 | .0146 |
| 4-22 | .33 | .1145 | :37 | 2.00 | .64 | :52 | .135 | .0232 |
| 4-23 | 3.71 | 3.0894 | :41 | 1.80 | .76 | :59 | .140 | .0394 |
| 4-24 | 1.7 | 1.4282 | :46 | .96 | .84 | 9:08 | .130 | .0596 |
| 4-25 | | .0445 | :51 | 1.44 | .96 | :11 | .130 | .0661 |
| 4-26 | 1.29 | .5630 | :56 | .48 | 1.00 | :19 | .163 | .0853 |
| 4-27 | .21 | .4157 | 8:00 | 1.20 | 1.08 | :25 | .248 | .1054 |
| 4-28 | 1.69 | .9864 | :16 | .26 | 1.15 | :31 | .388 | .1368 |
| 4-29 | .02 | .1877 | :32 | .15 | 1.19 | :38 | .504 | .1893 |
| 4-30 | T | .0116 | :43 | .27 | 1.24 | :47 | .566 | .2704 |
| 5-1 | .20 | .0034 | :56 | .28 | 1.30 | :50 | .566 | .2986 |
| 5-2 | | .0037 | 10:10 | .17 | 1.34 | 10:06 | .489 | .4410 |
| 5-3 | .83 | .3669 | :30 | .12 | 1.38 | :14 | .430 | .5024 |
| 5-4, 0 | 0 | .0276 | Raingage | 14 | 1.32 | :29 | .324 | .5971 |
| 5-9 | 1.41 | .5385 | Raingage | 20 | 1.34 | :43 | .252 | .6640 |
| 5-10 | 0 | .0257 | Weighted | Average ^{2/} | 1.36 | 11:01 | .192 | .7301 |
| 5-11 | 2.42 | 1.3983 | | | | :13 | .166 | .7659 |
| 5-12 | 0 | .2611 | | | | 12:11p | .0932 | .8886 |
| 5-13 | 0 | .0034 | | | | 1:1 | .0471 | .9554 |
| Watershed Conditions: 41% corn; 12% bedded, no crop; 3% row grain sorghum; 3% broadcast grain sorghum; 5% oats and oats-clover, oats in dough stage; 5% sweet clover; 28% pasture; 3% farmsteads, gravel and paved roads. | | | | | | | | |
| | | | | | | 2:31 | .0219 | .9922 |
| | | | | | | 4:51 | .0085 | 1.0320 |
| | | | | | | 8:45 | .0030 | 1.0520 |
| | | | | | | 12:00m | .0018 | 1.0596 |
| Notes: To convert runoff in in/hr to cfs, multiply by 583.82. 1/ Runoff prior to 5:49a. 2/ Thiessen method. | | | | | | | | |
| 3/ Runoff prior to 8:18a. | | | | | | | | |

| SELECTED RUNOFF EVENTS | | | Riesel (Waco), Texas | | | Watershed C | | |
|---|-------------------|-----------------|----------------------|-----------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of June 23, 24, 1959</u> | | | | | | | | |
| 5-23-59 | 0.25 | 0.0002 | 6-23-59 | Raingage | 5 | 6-23-59 | | |
| 5-24 | .04 | .0001 | 8:25p | 0 | 0 | 9:06p | 0.0002 | 0 |
| 5-25 | .07 | T | :47 | .14 | .05 | :14 | .0012 | .0001 |
| 5-26, 31 | 0 | T | :51 | 1.65 | .16 | :30 | .0083 | .0010 |
| 6-2 | .26 | T | :58 | .26 | .19 | :34 | .0466 | .0026 |
| 6-3 | .01 | T | 9:00 | 3.30 | .30 | :37 | .0685 | .0055 |
| 6-4 | 1.13 | .0004 | :04 | 2.85 | .49 | :39 | .0817 | .0080 |
| 6-5 | .95 | .1083 | :08 | 4.50 | .79 | :43 | .0853 | .0136 |
| 6-6, 11 | 0 | .0177 | :11 | 6.00 | 1.09 | :49 | .0783 | .0218 |
| 6-12 | .29 | T | :15 | 3.00 | 1.29 | :57 | .0658 | .0314 |
| 6-13, 14 | 0 | T | :19 | 1.35 | 1.38 | 10:03 | .0553 | .0374 |
| 6-20 | .98 | .0001 | :23 | 3.00 | 1.58 | :16 | .0961 | .0506 |
| 6-21 | 0 | T | :25 | 3.60 | 1.70 | :20 | .170 | .0596 |
| 6-22 | 1.08 | .0070 | :31 | .60 | 1.76 | :23 | .276 | .0706 |
| 6-23 ^{1/} | 0 | .0036 | :40 | .53 | 1.84 | :29 | .426 | .1054 |
| <u>Watershed Conditions:</u> 22% of area in corn, grain in dough stage; 7% cotton, beginning to bloom; 1% row grain sorghum, grain in dough stage; 4% broadcast grain sorghum in bloom stage; 11% wheat, oats and oats-clover, wheat and oats harvested; 8% sudan; 23% pasture, all classes; 9% idle crop land, annual and perennial forbs and grasses; 3% farmsteads and gravel and paved roads. | | | :52 | 0 | 1.84 | :35 | .546 | .1550 |
| | | | 10:00 | .30 | 1.88 | :45 | .610 | .2514 |
| | | | :05 | 1.20 | 1.98 | :53 | .625 | .3737 |
| | | | :14 | .67 | 2.08 | 11:07 | .610 | .4778 |
| | | | :21 | .87 | 2.18 | :29 | .546 | .6897 |
| | | | :31 | .54 | 2.27 | :43 | .485 | .8100 |
| | | | :36 | 1.20 | 2.37 | 12:00m | .406 | .9362 |
| | | | :40 | 1.50 | 2.47 | 6-24-59 | | |
| | | | :46 | .80 | 2.55 | 12:17a | .310 | 1.0380 |
| | | | 11:11 | .14 | 2.61 | :35 | .228 | 1.1182 |
| | | | :18 | .34 | 2.65 | :55 | .170 | 1.1842 |
| | | | Raingage | 14 | 2.46 | 2:00 | .0817 | 1.3134 |
| | | | Raingage | 20 | 2.84 | 3:05 | .0406 | 1.3766 |
| | | | Weighted | Average ^{2/} | 2.60 | 4:40 | .0188 | 1.4198 |
| | | | | | | 7:19 | .0089 | 1.4549 |
| | | | 12:10p | .0036 | 1.4828 | | | |
| | | | 4:32 | .0018 | 1.4941 | | | |
| | | | 12:00m | .0007 | 1.5029 | | | |

Notes: To convert runoff in in/hr to cfs, multiply by 583.82. ^{1/} Runoff prior to 9:06p. ^{2/} Thiessen method.



RIESEL (WACO), TEXAS Watershed C

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Riesel (Waco), Texas Watershed D Area - 1110 acres (1.73 sq. mi.) | | | | | | | | | |
|---|-------------------|-----------------|---|-----------------------|---------------|---------------|--|---------------|----------|--------|-------|--------|--------|--------|--------|--------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year | | |
| 1956 | P | 2.60 | 2.24 | 0.20 | 0.63 | 4.52 | 1.18 | 0.60 | 2.45 | 0 | 0.73 | 4.27 | 2.02 | 21.44 | | |
| | Q | 0 | .10 | 0 | 0 | .35 | 0 | 0 | T | 0 | 0 | .47 | T | .92 | | |
| 1957 | P | 1.35 | 2.93 | 5.49 | 15.58 | 6.97 | 1.75 | .04 | .32 | 4.22 | 8.03 | 4.29 | .82 | 51.79 | | |
| | Q | 0 | .08 | 1.33 | 11.05 | 5.12 | .02 | 0 | 0 | 0 | 2.21 | .57 | T | 20.38 | | |
| 1958 | P | 2.04 | 3.20 | 1.37 | 3.04 | 2.06 | 1.80 | 1.16 | 5.91 | 6.62 | 2.60 | 1.49 | 1.28 | 32.57 | | |
| | Q | .05 | .71 | .01 | .03 | .44 | 0 | 0 | e .49 | 1.92 | .10 | T | T | e 3.80 | | |
| 1959 | P | .35 | 3.58 | .97 | 3.77 | 3.23 | 7.84 | 3.64 | 3.56 | 2.56 | 6.84 | 1.82 | 3.72 | 41.88 | | |
| | Q | 0 | .44 | .02 | .30 | T | 1.93 | .01 | T | T | 1.86 | .33 | .73 | 5.62 | | |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | Riesel (Waco), Texas Watershed D | | | | | | | | | |
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 4-19 | e 1.03 | 4-19 | e 0.90 | 4-19 | e 1.77 | 4-23 | 3.43 | 4-23 | 3.54 | 4-23 | 3.72 | 4-23 | 5.42 | 4-19 | e 9.66 |
| 1958 | 9-19 | e .49 | 9-19 | e .46 | 9-19 | e .81 | 9-19 | e 1.31 | 9-19 | e 1.66 | 9-19 | e 1.72 | 9-19 | e 1.73 | 9-19 | e 1.91 |
| 1959 | 6-23 | .60 | 6-23 | .57 | 6-23 | 1.03 | 6-23 | 1.58 | 6-23 | 1.67 | 10-4 | 1.71 | 10-4 | 1.72 | 6-22 | 1.82 |
| Notes: Quality of records: monthly P, good; monthly Q, good except Aug., Sept. 1958, fair; Annual Max. discharges and volumes, good except 1957-58, fair. Watershed conditions: no appreciable change in land use or conservation practices since 1955. See page 42.3-1, Monthly Precipitation and Runoff for Small Agricultural Watersheds in the United States, ARS, SWC, June 1957 (reprinted 1961). | | | | | | | | | | | | | | | | |
| SELECTED RUNOFF EVENTS | | | | | | | Riesel (Waco), Texas Watershed D | | | | | | | | | |
| Antecedent conditions | | | | Rainfall | | | | Runoff | | | | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | | | | | | |
| <u>Event of May 3-4, 1957</u> | | | | | | | | | | | | | | | | |
| 4-3-57 | 0.14 | 0.0012 | 5-3-57 | Raingage | 14 | 5-3-57 | | | | | | | | | | |
| 4-4 | .12 | .0013 | 1:30p | 0 | 0 | 1:29p | 0.0008 | 0 | | | | | | | | |
| 4-5, 7 | 0 | .0058 | :33 | 4.20 | .21 | :37 | .0031 | .0002 | | | | | | | | |
| 4-8 | .02 | T | :36 | 2.00 | .31 | :40 | .0069 | .0004 | | | | | | | | |
| 4-13 | .05 | 0 | :40 | 2.55 | .48 | :42 | .0148 | .0008 | | | | | | | | |
| 4-15 | .05 | 0 | :48 | 3.75 | .98 | :44 | .0330 | .0016 | | | | | | | | |
| 4-19 | 5.60 | 2.1179 | :52 | 1.20 | 1.06 | :48 | .0631 | .0047 | | | | | | | | |
| 4-20 | .33 | .7455 | :57 | .96 | 1.14 | :50 | .107 | .0075 | | | | | | | | |
| 4-21 | .38 | .1172 | 2:10 | .28 | 1.20 | :52 | .155 | .0119 | | | | | | | | |
| 4-22 | .33 | .1111 | :26 | .08 | 1.22 | :56 | .276 | .0261 | | | | | | | | |
| 4-23 | 3.65 | 3.7184 | :32 | .50 | 1.27 | :58 | .371 | .0370 | | | | | | | | |
| 4-24 | 1.72 | 1.6849 | Raingage | 5 | .21 | 2:00 | .469 | .0510 | | | | | | | | |
| 4-25 | 0 | .0383 | Raingage | 20 | 1.14 | :05 | .618 | .0969 | | | | | | | | |
| 4-26 | 1.31 | .7439 | Weighted | Average ^{2/} | .55 | :11 | .670 | .1610 | | | | | | | | |
| 4-27 | .21 | .3884 | | | | :15 | .646 | .2047 | | | | | | | | |
| 4-28 | 1.64 | 1.1609 | | | | :25 | .542 | .3041 | | | | | | | | |
| 4-29 | .03 | .1521 | | | | :35 | .405 | .3831 | | | | | | | | |
| 4-30 | T | .0058 | | | | :45 | .276 | .4394 | | | | | | | | |
| 5-1 | .19 | .0023 | | | | :50 | .238 | .4607 | | | | | | | | |
| 5-2 | 0 | .0022 | | | | :55 | .205 | .4791 | | | | | | | | |
| 5-3 ^{1/} | .19 | .0113 | | | | 3:03 | .175 | .5043 | | | | | | | | |
| Watershed Conditions: 34% of area in corn, planted generally first of March; 16% bedded for cotton, no crop; 9% row grain sorghum, planted first of April; 4% broadcast grain sorghum, planted first of April; 3% oats and oats-clover, oats in bloom or milk stage; 7% sweet clover; 24% pasture, open and brushy; 3% farmsteads and gravel and paved roads. | | | | | | | | | | | | | | | | |
| Notes: To convert runoff in in/hr to cfs, multiply by 1119.25. ^{1/} Prior to event beginning 1:30p. ^{2/} Thiessen method. For map of watershed, see page 42.4-6. | | | | | | | | | | | | | | | | |

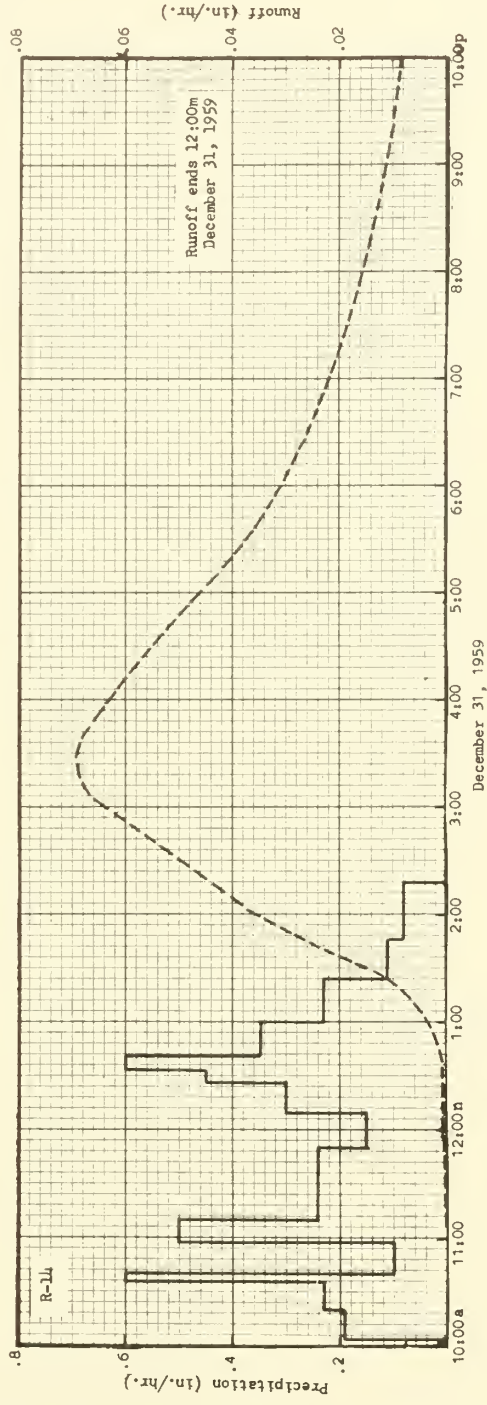
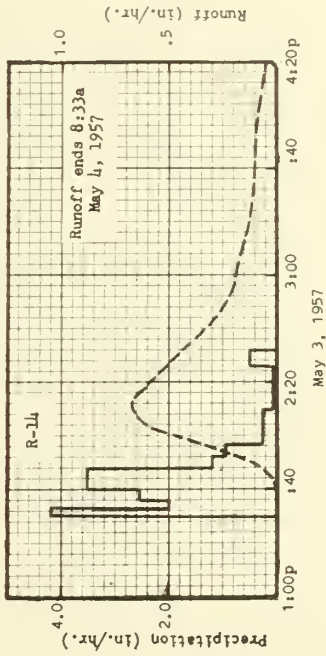
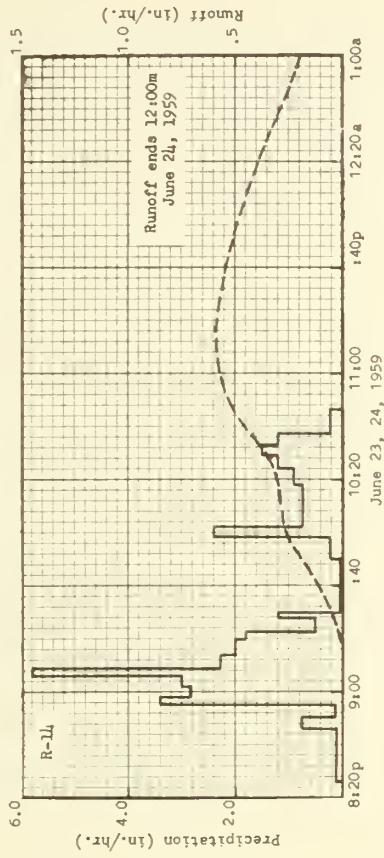
| SELECTED RUNOFF EVENTS | | | Riesel (Waco), Texas | | | Watershed D | | |
|---|-------------------|-----------------|----------------------|-----------------------|---------------|-----------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of May 3-4, 1957 - Continued</u> | | | | | | | | |
| | | | | | | 5-4-57 3:57a | 0.0016 | 0.7669 |
| | | | | | | 8:33 | .0009 | .7725 |
| <u>Event of June 23, 24, 1959</u> | | | | | | | | |
| 5-23-59 | 0.30 | 0.0002 | 6-23-59 | Raingage | 14 | 6-23-59 | | |
| 5-24 | .04 | T | 8:26p | 0 | 0 | 9:02p | 0.0002 | 0 |
| 5-25 | .11 | T | :46 | .12 | .04 | :07 | .0006 | 0 |
| 5-26 | 0 | T | :50 | .75 | .09 | :13 | .0017 | .0002 |
| 6-2 | .27 | T | :55 | .12 | .10 | :17 | .0044 | .0003 |
| 6-3 | .01 | T | :58 | 3.40 | .27 | :19 | .0083 | .0005 |
| 6-4 | 1.12 | .0059 | 9:02 | 2.85 | .46 | :22 | .0155 | .0011 |
| 6-5 | .82 | .0880 | :06 | 3.00 | .66 | :26 | .0314 | .0027 |
| 6-6, 10 | 0 | .0127 | :09 | 5.80 | .95 | :30 | .0466 | .0053 |
| 6-12 | .27 | T | :14 | 2.28 | 1.14 | :34 | .0704 | .0090 |
| 6-13 | 0 | T | :20 | 2.00 | 1.34 | :41 | .113 | .0199 |
| 6-20 | .96 | 0 | :23 | 1.80 | 1.43 | :47 | .154 | .0332 |
| 6-22 ^{1/} | .98 | .0072 | :28 | .48 | 1.47 | :52 | .204 | .0479 |
| 6-23 ^{1/} | .02 | .0027 | :30 | 1.20 | 1.51 | :59 | .269 | .0762 |
| | | | :50 | .06 | 1.53 | 10:16 | .294 | .1566 |
| | | | :58 | .23 | 1.56 | :28 | .350 | .2199 |
| | | | 10:02 | 2.40 | 1.72 | :35 | .418 | .2644 |
| | | | :18 | .75 | 1.92 | :42 | .487 | .3172 |
| | | | :24 | .90 | 2.01 | 11:09 | .598 | .5676 |
| | | | :29 | 1.20 | 2.11 | :12 | .604 | .5975 |
| | | | :33 | 1.50 | 2.21 | :18 | .604 | .6576 |
| | | | :37 | 1.20 | 2.29 | :33 | .580 | .8049 |
| | | | :46 | .27 | 2.33 | :46 | .541 | .9258 |
| | | | :58 | .20 | 2.37 | 12:00m | .487 | 1.0456 |
| | | | 11:09 | .16 | 2.40 | 6-24-59 | | |
| | | | :15 | .40 | 2.44 | 12:18a | .418 | 1.1813 |
| | | | 12:00m | .01 | 2.45 | :30 | .354 | 1.2582 |
| | | | Raingage | 5 | 2.69 | :46 | .266 | 1.3398 |
| | | | Raingage | 20 | 2.81 | :58 | .213 | 1.3878 |
| | | | Raingage | 26A | 3.02 | 1:16 | .144 | 1.4400 |
| | | | Weighted | Average ^{2/} | 2.64 | :37 | .104 | 1.4830 |
| | | | | | | 2:21 | .0606 | 1.5409 |
| | | | | | | 3:16 | .0381 | 1.5846 |
| | | | | | | 4:25 | .0216 | 1.6184 |
| | | | | | | 5:01 | .0169 | 1.6299 |
| | | | | | | :12 | .0173 | 1.6330 |
| | | | | | | :17 | .0173 | 1.6345 |
| | | | | | | :51 | .0141 | 1.6433 |
| | | | | | | 6:31 | .0116 | 1.6518 |
| | | | | | | 9:21 | .0056 | 1.6748 |
| | | | | | | 12:11p | .0031 | 1.6868 |
| | | | | | | 6:29 | .0011 | 1.6988 |
| | | | | | | 12:00m | .0006 | 1.7034 |
| <u>Event of December 31, 1959</u> | | | | | | | | |
| 12-10-59 | 0.10 | 0 | 12-31-59 | Raingage | 14 | 12-31-59 | | |
| 12-11 | .68 | .0011 | 10:04a | 0 | 0 | 9:00a | T | 0 |
| 12-12, 14 | 0 | .0006 | :20 | .19 | .05 | 10:07 | T | .0001 |
| 12-15 | 1.34 | .2811 | :36 | .23 | .11 | 11:07 | .0001 | .0001 |
| 12-16 | 0 | .0659 | :40 | .60 | .15 | :33 | .0004 | .0002 |
| 12-17 | .21 | .0286 | :58 | .10 | .18 | 12:37p | .0012 | .0010 |
| 12-18, 22 | 0 | .0285 | 11:10 | .50 | .28 | :57 | .0030 | .0017 |
| 12-23 | .01 | .0012 | :50 | .24 | .44 | 1:13 | .0062 | .0029 |
| 12-24, 26 | 0 | .0028 | 12:10p | .15 | .49 | :25 | .0112 | .0046 |
| 12-27 | .18 | .0016 | :26 | .30 | .57 | :43 | .0248 | .0097 |
| 12-28, 30 | 0 | .0017 | :34 | .45 | .63 | 2:03 | .0376 | .0203 |
| 12-31 ^{3/} | .05 | .0001 | :41 | .60 | .70 | :47 | .0581 | .0548 |
| | | | 1:00 | .35 | .81 | 3:05 | .0664 | .0734 |

Notes: To convert runoff in in/hr to cfs, multiply by 1119.25. ^{1/} Prior to event beginning 8:26p. ^{2/} Thiessen method. ^{3/} Prior to event beginning 10:04a.

| SELECTED RUNOFF EVENTS | | | Riesel (Waco), Texas | | | Watershed D | | |
|--|-------------------|-----------------|----------------------|-----------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of December 31, 1959 - Continued</u> | | | | | | | | |
| Watershed Conditions: 6% oats and wheat, fall seeded; 22% bedded or plowed, no crop; 48% annual and perennial forbs and grasses, dormant; 21% pasture, all classes, generally dormant but some winter annuals; 3% farmsteads and gravel and paved roads. | | | 12-31-59 | Raingage | 14 | 12-31-59 | | |
| | | | 1:24p | 0.23 | 0.90 | 3:25p | 0.0697 | 0.0960 |
| | | | :46 | .11 | .94 | :39 | .0686 | .1121 |
| | | | 2:18 | .08 | 1.00 | 4:27 | .0560 | .1619 |
| | | | Raingage | 5 | 1.03 | 5:29 | .0376 | .2103 |
| | | | Raingage | 20 | 1.09 | 6:43 | .0248 | .2490 |
| | | | Raingage | 26A | 1.09 | 7:25 | .0188 | .2642 |
| | | | Weighted | Average ^{1/} | 1.04 | 8:13 | .0144 | .2774 |
| | | | | | | 9:07 | .0112 | .2889 |
| | | | | | | 10:17 | .0085 | .3004 |
| | | | | | | 12:00m | .0059 | .3125 |

Notes: To convert runoff in in/hr to cfs, multiply by 1119.25. ^{1/} Thiessen method.

RIESEL (WACO), TEXAS WATERSHED D



| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | | Riesel (Waco), Texas Watershed G Area - 4380 acres (6.84 sq. mi.) | | | | | |
|---|--------|------|------|------|------|------|------|--|-------|------|------|------|-------|
| Month Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| | 1957 P | | | | | | | 0.02 | 0.56 | 4.30 | 8.15 | 4.58 | 0.84 |
| 1957 Q | | | | | | | 0 | 0 | 0 | 1.64 | .70 | T | 2.34 |
| 1958 P | 1.94 | 3.29 | 1.37 | 3.12 | 2.04 | 2.12 | 1.10 | 6.51 | 5.93 | 2.90 | 1.47 | 1.34 | 33.13 |
| 1958 Q | .06 | .65 | .02 | .02 | .43 | 0 | 0 | .55 | 1.29 | .22 | T | T | 3.24 |
| 1959 P | .36 | 3.40 | 1.04 | 3.93 | 3.77 | 8.00 | 3.95 | 3.22 | 2.08 | 6.73 | 1.97 | 3.79 | 42.24 |
| 1959 Q | T | .42 | .02 | .51 | .14 | 2.24 | .05 | 0 | 0 | 1.63 | .53 | .83 | 6.37 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS Riesel (Waco), Texas Watershed G

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|--------------------|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 ^{2/} | | | | | | | | | | | | | | | | |
| 1958 | 9-19 | 0.16 | 9-19 | 0.15 | 9-19 | 0.30 | 9-19 | 0.71 | 9-19 | 1.00 | 9-19 | 1.08 | 9-19 | 1.09 | 9-19 | 1.28 |
| 1959 | 6-23 | .38 | 6-23 | .37 | 6-23 | .70 | 6-23 | 1.39 | 6-23 | 1.59 | 6-23 | 1.63 | 6-23 | 1.91 | 6-23 | 1.94 |

Notes: Quality of records: monthly P and Q, good; Annual Max. discharges and volumes, good. Watershed conditions: 1957-1959 land use essentially same as for 1939 with minor increase of conservation work, mainly terracing.* 1/ Station reestablished July 1, 1957. 2/ Peak rates and maximum volumes occurred at all stations prior to date of reestablishment of Station G.

SELECTED RUNOFF EVENTS Riesel (Waco), Texas Watershed G

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|-----------------------------------|-------------------|-----------------|---------------|-----------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of February 14, 1959</u> | | | | | | | | |
| 1-14, 17-59 | 0 | T | 2-14-59 | Raingage | 65A | 2-14-59 | | |
| 1-30 | .28 | T | 2:00a | 0 | | 3:14a | 0.0003 | 0 |
| 1-31 | 0 | T | :03 | 1.80 | .09 | :25 | .0009 | .0001 |
| 2-1 | .45 | T | :11 | .30 | .13 | :36 | .0029 | .0004 |
| 2-2 | .42 | .0028 | :45 | .02 | .15 | 4:00 | .0075 | .0023 |
| 2-3, 7 | 0 | .0019 | :56 | 1.03 | .34 | :23 | .0166 | .0068 |
| 2-8 | .03 | T | 3:03 | 1.38 | .50 | 5:00 | .0268 | .0207 |
| 2-9, 10 | 0 | .0002 | :06 | 2.20 | .61 | :36 | .0340 | .0389 |
| 2-11 | .11 | T | :10 | 1.50 | .71 | 6:06 | .0401 | .0574 |
| 2-12 | .22 | .0001 | :14 | 1.65 | .82 | :56 | .0455 | .0933 |
| 2-13 | .10 | .0003 | :21 | .86 | .92 | 7:54 | .0487 | .1389 |
| 2-14 ^{1/} | .02 | .0002 | :37 | .34 | 1.01 | 8:44 | .0480 | .1797 |
| | | | 4:00 | .13 | 1.06 | 9:59 | .0419 | .2364 |
| | | | :19 | .19 | 1.12 | 10:36 | .0374 | .2608 |
| | | | :38 | .25 | 1.20 | 11:33 | .0299 | .2928 |
| | | | :53 | .28 | 1.27 | :55 | .0279 | .3033 |
| | | | 5:05 | .25 | 1.32 | 12:35p | .0225 | .3201 |
| | | | :15 | .30 | 1.37 | :53 | .0206 | .3265 |
| | | | 6:30 | .16 | 1.39 | 1:42 | .0152 | .3411 |
| | | | Raingage | 5 | 1.30 | 3:40 | .0070 | .3612 |
| | | | Raingage | 14 | 1.34 | 5:26 | .0045 | .3712 |
| | | | Raingage | 20 | 1.30 | 8:42 | .0026 | .3827 |
| | | | Raingage | 26-A | 1.35 | 12:00m | .0016 | .3894 |
| | | | Raingage | 30-A | 1.31 | | | |
| | | | Raingage | 48-A | 1.19 | | | |
| | | | Raingage | 56-A | 1.34 | | | |
| | | | Raingage | 70 | 1.42 | | | |
| | | | Raingage | 84-A | 1.37 | | | |
| | | | Raingage | 89 | 1.46 | | | |
| | | | Weighted | Average ^{2/} | 1.33 | | | |

Notes: To convert runoff in in/hr to cfs, multiply by 4416.48. 1/ Prior to event beginning 2:00a. 2/ Thiessen method. * See page 42.4-1, Monthly Precipitation and Runoff for Small Agricultural Watersheds in the United States, ARS, SWC, June 1957 (reprinted 1961).

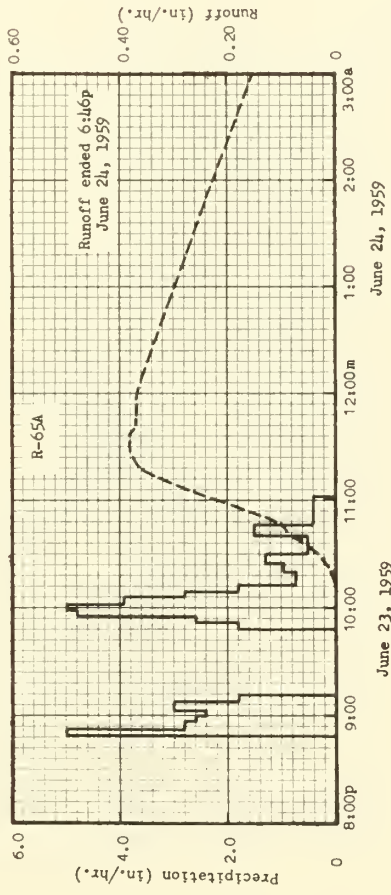
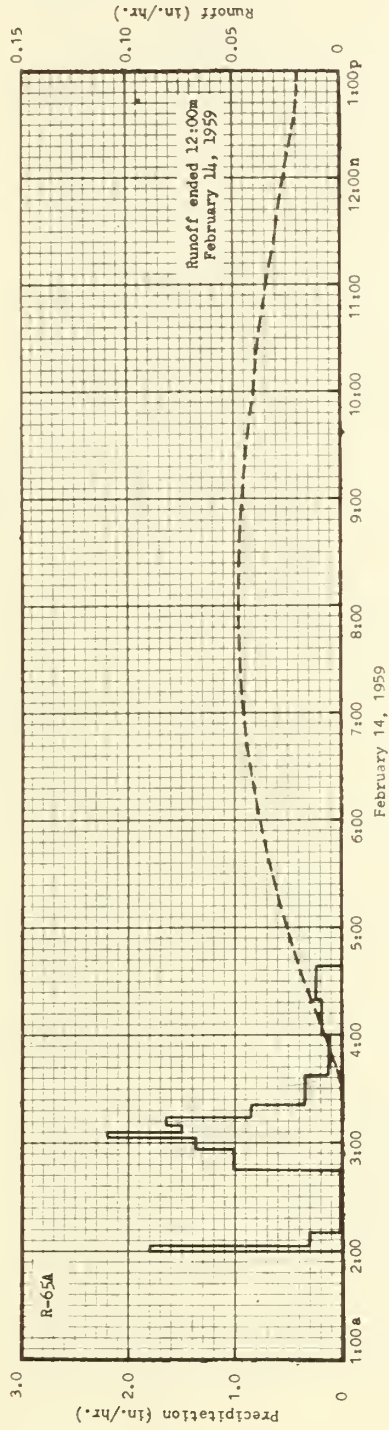
| SELECTED RUNOFF EVENTS | | | Riesel (Waco), Texas | | | Watershed G | | |
|---------------------------|-------------------|-----------------|----------------------|-----------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of June 23-24, 1959 | | | | | | | | |
| 5-23-59 | .29 | 0.0432 | 6-23-59 | Raingage | 65A | 6-23-59 | | |
| 5-24 | .04 | .0104 | 8:49p | 0 | 0 | 9:56p | 0.0001 | 0 |
| 5-25 | .16 | .0105 | :52 | 5.00 | .25 | 10:02 | .0010 | T |
| 5-26, 30 | 0 | .0058 | :57 | 2.88 | .49 | :08 | .0040 | .0003 |
| 6-2 | .22 | 0 | 9:00 | 2.60 | .62 | :14 | .0090 | .0009 |
| 6-3 | .02 | 0 | :03 | 2.40 | .74 | :18 | .0143 | .0017 |
| 6-4 | 1.29 | .0935 | :08 | 3.00 | .99 | :30 | .0317 | .0060 |
| 6-5 | .80 | .1895 | :12 | 1.80 | 1.11 | :36 | .0571 | .0104 |
| 6-6, 11 | 0 | .0259 | :48 | 0 | 1.11 | :42 | .0881 | .0176 |
| 6-12 | .22 | 0 | :52 | 1.80 | 1.23 | :48 | .104 | .0281 |
| 6-20 | .86 | 0 | :55 | 2.60 | 1.36 | :54 | .176 | .0430 |
| 6-22 | .64 | 0 | :58 | 4.80 | 1.60 | 11:00 | .229 | .0634 |
| 6-23 ^{1/} | .08 | T | 10:01 | 5.00 | 1.85 | :06 | .274 | .0885 |
| | | | :06 | 3.96 | 2.18 | :12 | .321 | .1183 |
| | | | :09 | 2.80 | 2.32 | :18 | .362 | .1525 |
| | | | :13 | 1.80 | 2.44 | :29 | .384 | .2218 |
| | | | :20 | .77 | 2.53 | :31 | .384 | .2347 |
| | | | :25 | .96 | 2.61 | :34 | .384 | .2539 |
| | | | :30 | 1.32 | 2.72 | :45 | .379 | .3239 |
| | | | :41 | .49 | 2.81 | 12:00 m | .372 | .4174 |
| | | | :45 | 1.50 | 2.91 | 6-24-59 | | |
| | | | 11:02 | .40 | 2.94 | 12:15a | .356 | .5084 |
| | | | 12:00 m | .07 | 3.01 | :42 | .326 | .6622 |
| | | | Raingage | 5 | 2.64 | 1:06 | .297 | .7872 |
| | | | Raingage | 14 | 2.41 | :42 | .253 | .9523 |
| | | | Raingage | 20 | 2.75 | 2:04 | .223 | 1.0396 |
| | | | Raingage | 26A | 2.99 | :27 | .194 | 1.1195 |
| | | | Raingage | 30A | 3.23 | 3:02 | .152 | 1.2198 |
| | | | Raingage | 48A | 3.17 | :54 | .108 | 1.3311 |
| | | | Raingage | 56A | 3.52 | 5:15 | .0662 | 1.4458 |
| | | | Raingage | 70 | 2.73 | 5:19 | .0451 | 1.5048 |
| | | | Raingage | 84A | 2.69 | 7:27 | .0279 | 1.5454 |
| | | | Raingage | 89 | 2.62 | 9:05 | .0147 | 1.5799 |
| | | | Weighted | Average ^{2/} | 2.92 | 10:12 | .0084 | 1.5925 |
| | | | | | | 12:36p | .0046 | 1.6070 |
| | | | | | | 3:08 | .0027 | 1.6160 |
| | | | | | | 6:46 | .0013 | 1.6227 |
| Event of November 4, 1959 | | | | | | | | |
| 10-4-59 | 4.06 | 1.4172 | 11-4-59 | Raingage | 65A | 11-4-59 | | |
| 10-5 | .01 | .0649 | 12:09a | 0 | 0 | 12:40a | 0.0008 | 0 |
| 10-6, 12 | 0 | .0054 | :12 | .80 | .04 | 1:00 | .0021 | .0004 |
| 10-13 | 1.50 | .0694 | :15 | 1.20 | .10 | :31 | .0051 | .0023 |
| 10-14, 26 | 0 | .0763 | :18 | .60 | .13 | :56 | .0087 | .0052 |
| 10-29 | .34 | T | :21 | 2.20 | .24 | 2:18 | .0147 | .0093 |
| 10-30 | .24 | .0001 | :25 | .75 | .29 | :54 | .0369 | .0238 |
| 10-31 | .10 | .0004 | 1:29 | .90 | .38 | 3:18 | .0612 | .0435 |
| 11-1 | .02 | .0003 | :33 | 1.35 | .47 | :58 | .0743 | .0904 |
| 11-2 | 0 | .0002 | :44 | .05 | .48 | 4:12 | .0725 | .1075 |
| 11-3 ^{3/} | .73 | .0005 | :55 | .22 | .52 | :50 | .0643 | .1509 |
| 11-4 ^{3/} | .01 | .0005 | 2:01 | .60 | .58 | 5:24 | .0598 | .1861 |
| | | | :06 | .24 | .60 | 6:08 | .0555 | .2284 |
| | | | :13 | .60 | .67 | 7:16 | .0483 | .2875 |
| | | | :25 | .10 | .69 | 8:25 | .0396 | .3381 |
| | | | :28 | 1.60 | .77 | 9:06 | .0356 | .3638 |
| | | | :33 | 1.08 | .86 | :46 | .0310 | .3859 |
| | | | :41 | .30 | .90 | 10:22 | .0281 | .4036 |
| | | | 3:13 | .04 | .92 | 11:14 | .0227 | .4256 |
| | | | :25 | .20 | .96 | 11:58 | .0186 | .4406 |
| | | | :47 | .03 | .97 | 1:01p | .0139 | .4582 |
| | | | Raingage | 5 | .79 | | | |
| | | | Raingage | 14 | .79 | | | |
| | | | Raingage | 20 | .86 | | | |

(Continued - next page)

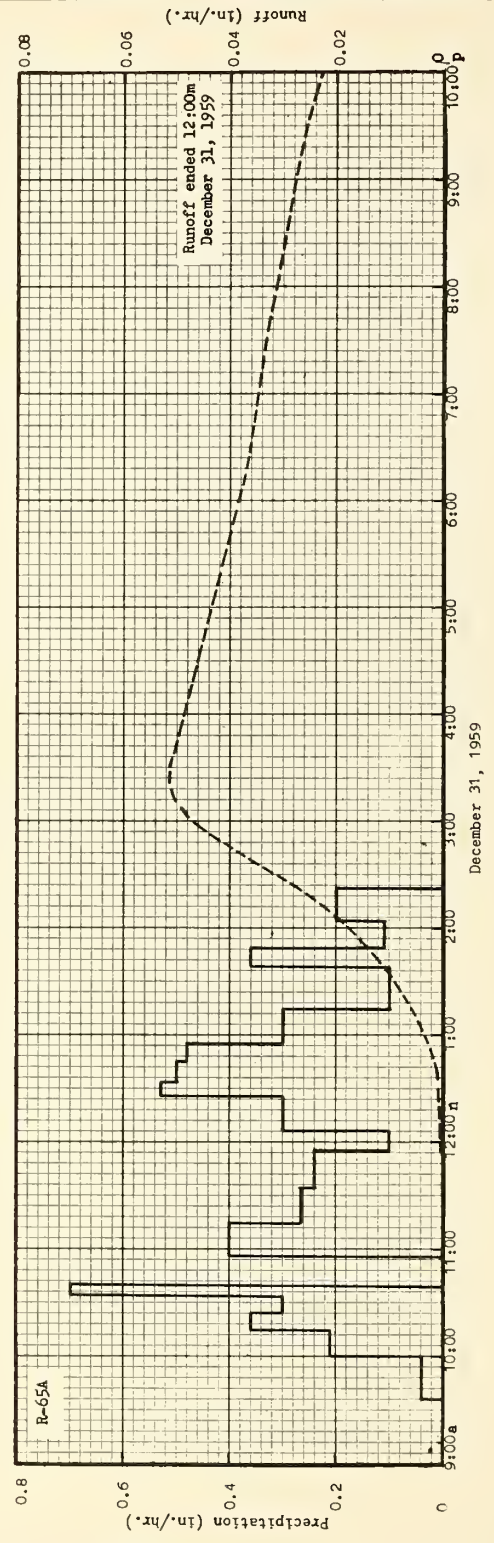
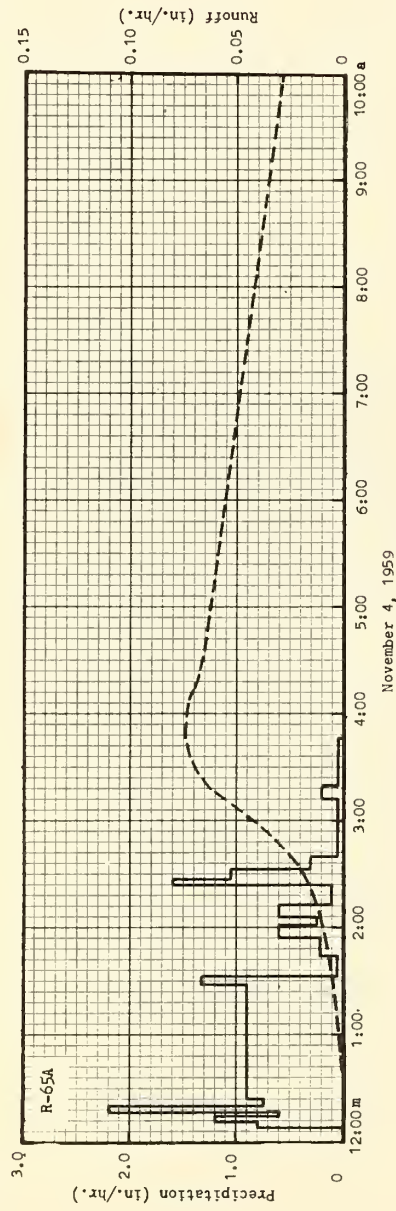
Notes: To convert runoff in in/hr to cfs, multiply by 4416.48. 1/ Prior to event beginning 8:49p. 2/ Thiessen method. 3/ Prior to event beginning 12:09a.

| SELECTED RUNOFF EVENTS | | | | | Riesel (Waco), Texas | | Watershed G | |
|--|-------------------|-----------------|---------------|-----------------------|----------------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of November 4, 1959 - Continued | | | | | | | | |
| | | | 11-4-59 | | | 11-4-59 | | |
| | | | Raingage | 26A | 0.86 | 2:21 | .0087 | .4729 |
| | | | Raingage | 30A | .93 | 5:54 | .0034 | .4919 |
| | | | Raingage | 56A | 1.04 | 11:02 | .0016 | .5042 |
| | | | Raingage | 65A | .97 | 12:00m | .0014 | .5057 |
| | | | Raingage | 70 | 1.03 | 11-5-59 | | |
| | | | Raingage | 84A | .98 | 9:18a | .0005 | .5138 |
| | | | Raingage | 89 | .94 | 12:00m | .0002 | .5185 |
| | | | Weighted | Average ^{1/} | .92 | | | |
| Event of December 31, 1959 | | | | | | | | |
| 11-30, | | | 12-31-59 | Raingage | 65A | 12-31-59 | | |
| 12-9-59 | 0 | 0.0002 | 9:37a | 0 | 0 | 11:54a | 0.0003 | 0 |
| 12-10 | .09 | I | 10:01 | .04 | .02 | 12:40p | .0011 | .0005 |
| 12-11 | .77 | I | :15 | .21 | .07 | :56 | .0028 | .0009 |
| 12-12, 14 | 0 | .0066 | :25 | .36 | .13 | 1:06 | .0043 | .0015 |
| 12-15 | 1.29 | .2848 | :35 | .30 | .18 | :24 | .0080 | .0034 |
| 12-16 | .09 | .0880 | :41 | .70 | .25 | :42 | .0123 | .0064 |
| 12-17 | .20 | .0390 | :57 | 0 | .25 | :56 | .0165 | .0098 |
| 12-18, 22 | 0 | .0389 | 11:15 | .40 | .37 | 2:24 | .0279 | .0199 |
| 12-23 | .01 | .0021 | :35 | .27 | .46 | :50 | .0430 | .0356 |
| 12-24, 26 | 0 | .0058 | :55 | .24 | .54 | 3:14 | .0507 | .0545 |
| 12-27 | .16 | .0034 | 12:07p | .10 | .56 | :28 | .0517 | .0664 |
| 12-28, 30 | 0 | .0037 | :25 | .30 | .65 | :38 | .0503 | .0749 |
| 12-31. 2/ | .03 | .0005 | :33 | .53 | .72 | 4:28 | .0462 | .1150 |
| | | | :45 | .50 | .82 | :58 | .0439 | .1376 |
| | | | :55 | .48 | .90 | 5:36 | .0406 | .1644 |
| | | | 1:15 | .30 | 1.00 | 6:20 | .0372 | .1929 |
| | | | :39 | .10 | 1.04 | 7:46 | .0326 | .2426 |
| | | | :49 | .36 | 1.10 | 8:24 | .0308 | .2627 |
| | | | 2:05 | .11 | 1.13 | 9:18 | .0272 | .2889 |
| | | | :23 | .20 | 1.19 | 10:12 | .0215 | .3112 |
| | | | Raingage | 5 | 1.07 | 11:08 | .0165 | .3288 |
| | | | Raingage | 14 | 1.01 | 12:00m | .0130 | .3416 |
| | | | Raingage | 20 | 1.13 | | | |
| | | | Raingage | 26A | 1.11 | | | |
| | | | Raingage | 30A | 1.15 | | | |
| | | | Raingage | 48A | 1.23 | | | |
| | | | Raingage | 56A | 1.15 | | | |
| | | | Raingage | 70 | 1.12 | | | |
| | | | Raingage | 84A | 1.16 | | | |
| | | | Raingage | 89 | 1.21 | | | |
| | | | Weighted | Average ^{1/} | 1.14 | | | |
| <p>Watershed Conditions: 4% of area in fall seeded oats, poor growth; 19% pasture, all classes, dormant except some winter annuals; 2% native grass meadow, dormant; 47% cropland tilled, no crop growing; 25% idle crop land, untilled, dormant vegetation; 3% farmsteads and gravel and paved roads.</p> | | | | | | | | |

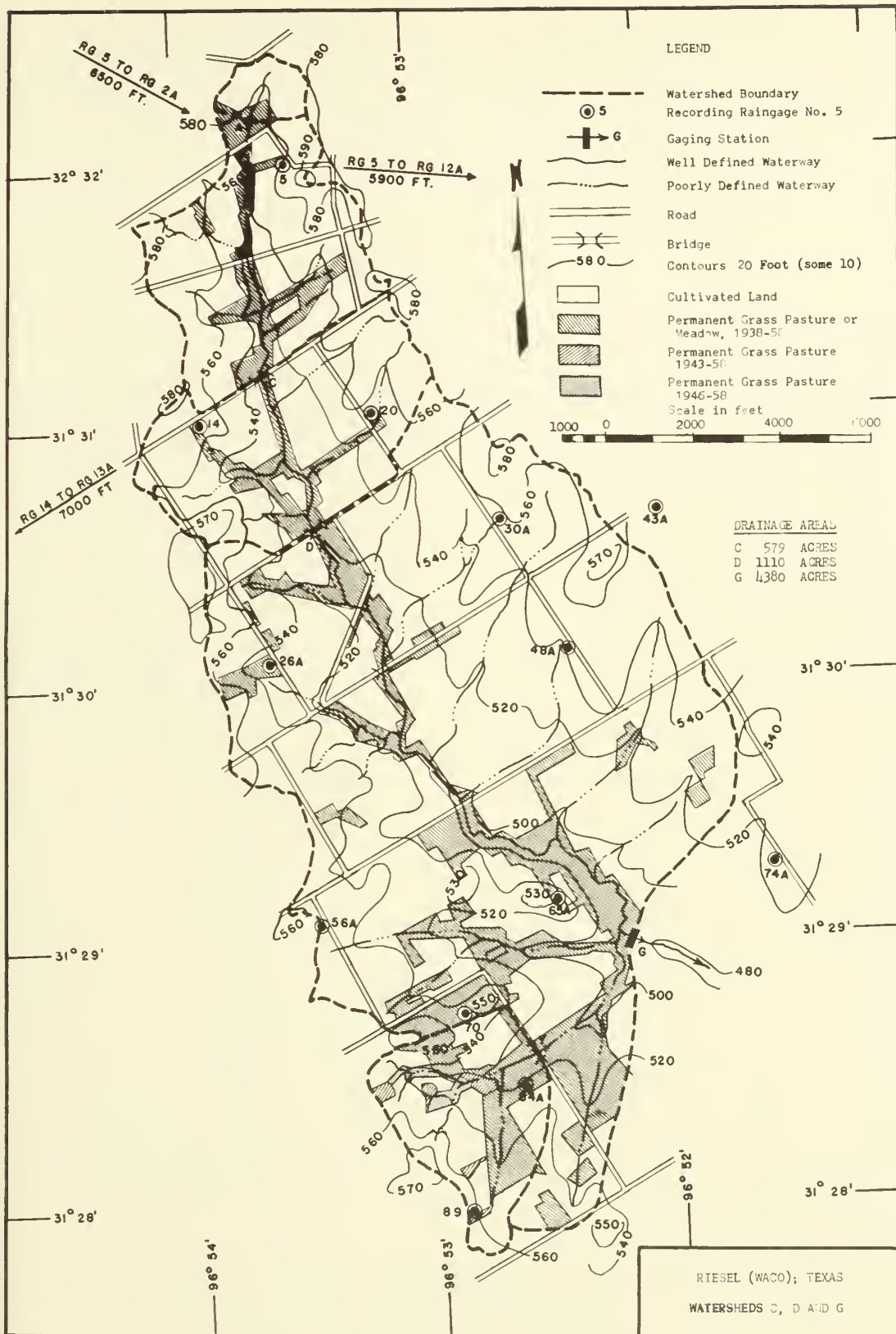
Notes: To convert runoff in in/hr to cfs, multiply by 4416.48. ^{1/}Thiessen method. ^{2/} Prior to event beginning 9:37a.



RIESEL (WACO), TEXAS Watershed G



RIESEL (WACO), TEXAS Watershed G



| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Riesel (Waco), Texas | | | | | | | Watershed W-1 (Area - 176 acres) | | |
|---|-------------------|-----------------|---|-----------------------|---------------|---------------|----------------------|---------------|----------|------|-------|------|--------|-------------------------------------|--------|------|
| Month Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year | | | |
| 1956 P | 2.17 | 2.52 | 0.42 | 0.75 | 4.33 | 1.53 | 1.72 | 2.62 | 0 | 0.26 | 4.44 | 2.06 | 22.82 | | | |
| Q | 0 | 0 | 0 | 0 | .03 | 0 | 0 | 0 | 0 | 0 | .38 | T | .41 | | | |
| 1957 P | 1.46 | 3.05 | 5.58 | 14.67 | 8.13 | 4.21 | .10 | 1.00 | 4.09 | 8.41 | 4.75 | .88 | 56.33 | | | |
| Q | 0 | .02 | .70 | 9.96 | 5.57 | .80 | T | 0 | 0 | 1.83 | .81 | .04 | 19.73 | | | |
| 1958 P | 1.73 | 3.51 | 1.33 | 3.25 | 1.98 | 2.34 | 1.16 | 6.30 | 5.27 | 2.66 | 1.36 | 1.48 | 32.37 | | | |
| Q | .10 | 1.08 | .08 | .08 | .63 | .01 | T | .36 | .57 | .26 | .02 | .02 | 3.21 | | | |
| 1959 P | .41 | 3.42 | 1.09 | 4.14 | 3.96 | 7.01 | 4.56 | 3.22 | 1.93 | 7.22 | 1.92 | 3.64 | 42.52 | | | |
| Q | .02 | .67 | .06 | .73 | .41 | 2.10 | .23 | .03 | .01 | 1.94 | .66 | .95 | 7.81 | | | |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | Riesel (Waco), Texas | | | | | | | Watershed W-1 | | |
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 4-19 | 2.87 | 4-19 | 2.22 | 4-19 | 2.68 | 4-23 | 3.43 | 4-23 | 3.50 | 4-23 | 3.51 | 4-23 | 5.15 | 4-19 | 9.30 |
| 1958 | 8-24 | .31 | 8-24 | .19 | 8-24 | .26 | 5-3 | .39 | 2-22 | .57 | 2-22 | .91 | 2-22 | 1.00 | 2-21 | 1.05 |
| 1959 | 6-23 | 1.89 | 6-23 | 1.24 | 6-23 | 1.51 | 6-23 | 1.63 | 6-23 | 1.66 | 6-23 | 1.66 | 6-23 | 1.76 | 6-22 | 1.77 |
| Notes: Quality of records: monthly P and Q, excellent; Annual Max. discharges and volumes, excellent. Watershed conditions: No appreciable change in land use since 1955. See page 42.6-1, Monthly Precipitation and Runoff for Small Agricultural Watersheds in the United States, ARS, SMC, June 1957 (reprinted 1961). | | | | | | | | | | | | | | | | |
| SELECTED RUNOFF EVENTS | | | | | | | Riesel (Waco), Texas | | | | | | | Watershed W-1 | | |
| Antecedent conditions | | | Rainfall | | | | Runoff | | | | | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | | | | | | |
| Event of May 13, 1957 | | | | | | | | | | | | | | | | |
| 4-13-57 | 0.04 | 0 | 5-13-57 | Raingage | W-2A | 5-13-57 | | | | | | | | | | |
| 4-15 | .02 | 0 | 8:22a | 0 | 0 | 8:00a | 0.0001 | 0 | | | | | | | | |
| 4-19 | 4.82 | 2.7346 | :25 | 2.00 | .10 | :27 | .0007 | .0001 | | | | | | | | |
| 4-20 | .23 | .2107 | :29 | 1.95 | .23 | :31 | .0022 | .0002 | | | | | | | | |
| 4-21 | .21 | .0086 | :33 | 2.25 | .38 | :33 | .0070 | .0003 | | | | | | | | |
| 4-22 | .30 | .0588 | :36 | 4.60 | .61 | :35 | .0360 | .0010 | | | | | | | | |
| 4-23 | 3.99 | 3.5059 | :41 | 1.92 | .77 | :38 | .0598 | .0034 | | | | | | | | |
| 4-24 | 1.85 | 1.6413 | :45 | 1.50 | .87 | :40 | .171 | .0069 | | | | | | | | |
| 4-25 | 0 | .0122 | :51 | 2.40 | 1.11 | :42 | .470 | .0186 | | | | | | | | |
| 4-26 | 1.43 | .7975 | :56 | .96 | 1.19 | :44 | .762 | .0386 | | | | | | | | |
| 4-27 | .27 | .3343 | :59 | 1.80 | 1.28 | :48 | 1.26 | .1061 | | | | | | | | |
| 4-28 | 1.12 | .5871 | 9:14 | .24 | 1.34 | :52 | 1.52 | .1993 | | | | | | | | |
| 4-29 | .06 | .0532 | :38 | .20 | 1.42 | :55 | 1.62 | .2776 | | | | | | | | |
| 4-30 | .01 | .0025 | :52 | .26 | 1.48 | :57 | 1.64 | .3317 | | | | | | | | |
| 5-1 | .35 | .0737 | 10:10 | .20 | 1.54 | :59 | 1.63 | .3861 | | | | | | | | |
| 5-2 | 0 | .0043 | :20 | .24 | 1.58 | 9:04 | 1.51 | .5175 | | | | | | | | |
| 5-3 | .93 | .5798 | :37 | .14 | 1.62 | :12 | 1.19 | .6977 | | | | | | | | |
| 5-4, 7 | 0 | .0076 | Raingage | 75A | 1.60 | :16 | 1.04 | .7718 | | | | | | | | |
| 5-8 | .02 | .0001 | Raingage | 89 | 1.62 | :20 | .858 | .6354 | | | | | | | | |
| 5-9 | .91 | .2095 | Raingage | W-4 | 1.61 | :24 | .694 | .6871 | | | | | | | | |
| 5-10 | 0 | .0031 | Weighted | Average ^{2/} | 1.62 | :26 | .489 | .9261 | | | | | | | | |
| 5-11 | 3.89 | 3.2110 | | | | :38 | .353 | .9949 | | | | | | | | |
| 5-12 | 0 | .0836 | | | | 10:00 | .224 | 1.0941 | | | | | | | | |
| 5-13 ^{1/} | 0 | .0013 | | | | :13 | .202 | 1.1402 | | | | | | | | |
| | | | | | | :32 | .184 | 1.2010 | | | | | | | | |
| Watershed Conditions: 20% of area in corn cultivated mid-April; 28% bedded for cotton, no crop; 9% row grain sorghum planted second week of April; 2% sorghum hay broadcast second week of April; 19% oats in bloom stage; 3% native grass (Continued) | | | | | | | 11:13 | .0915 | 1.2990 | | | | | | | |
| | | | | | | :35 | .0526 | 1.3253 | | | | | | | | |
| | | | | | | 12:20p | .0238 | 1.3519 | | | | | | | | |
| | | | | | | 1:00 | .0138 | 1.3641 | | | | | | | | |
| | | | | | | 2:05 | .0068 | 1.3747 | | | | | | | | |
| Notes: To convert runoff in in/hr to cfs, multiply by 177.41. ^{1/} Runoff prior to 8:00a. ^{2/} Thiessen method. For map of watershed, see page 42.6-6, Selected Runoff Events for Small Agricultural Watersheds in the United States, ARS, SMC, January 1960. | | | | | | | | | | | | | | | | |

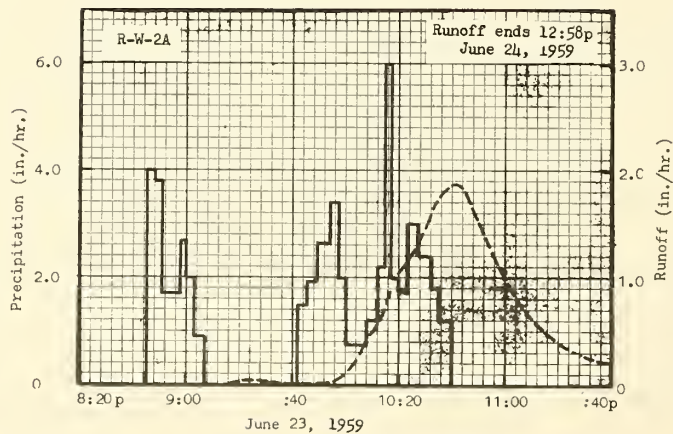
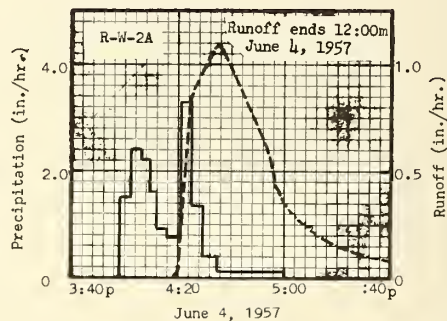
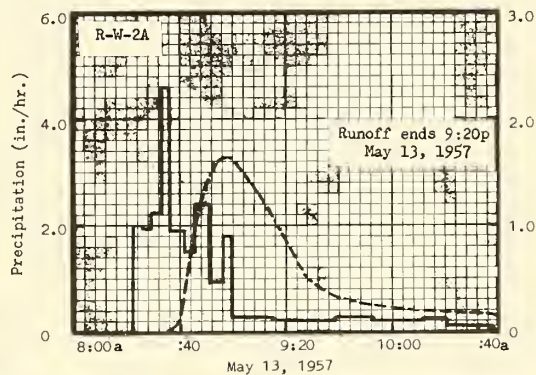
Cooperative research project of USDA and Texas Agricultural Experiment Station

| SELECTED RUNOFF EVENTS | | | Riesel (Waco), Texas | | | Watershed W-1 | | |
|---|-------------------|-----------------|----------------------|-----------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/ →) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of May 13, 1957 - Continued | | | | | | | | |
| meadow, dense growth; 14% Bermuda grass and weeds 8" high, fair cover; 5% farmsteads and gravel roads. Straight row cultivation. | | | | | | 5-13-57 | | |
| | | | | | | 3:30p | 0.0035 | 1.3818 |
| | | | | | | 4:50 | .0020 | 1.3854 |
| | | | | | | 7:00 | .0011 | 1.3886 |
| | | | | | | 9:20 | .0006 | 1.3906 |
| Event of June 4, 1957 | | | | | | | | |
| 5-4, 7-57 | 0 | 0.0076 | 6-4-57 | Raingage | W-2A | 6-4-57 | | |
| 5-8 | .02 | .0001 | 3:58p | 0 | 0 | 4:06p | 0.0009 | 0 |
| 5-9 | .91 | .2095 | 4:02 | 1.50 | .10 | :10 | .0022 | .0001 |
| 5-10 | 0 | .0031 | :06 | 2.40 | .26 | :17 | .0045 | .0005 |
| 5-11 | 3.89 | 3.2110 | :09 | 2.22 | .37 | :18 | .0062 | .0006 |
| 5-12 | 0 | .0836 | :12 | 1.60 | .45 | :20 | .0238 | .0011 |
| 5-13 | 1.66 | 1.3933 | :16 | .90 | .51 | :22 | .428 | .0054 |
| 5-14, 15 | 0 | .0055 | :21 | 2.76 | .74 | :24 | .847 | .0287 |
| 5-16 | .5 | .0003 | :25 | 3.30 | .96 | :31 | 1.00 | 1.371 |
| 5-17 | 0 | .0002 | :29 | 1.35 | 1.05 | :33 | 1.06 | 1.714 |
| 5-18 | .04 | .0003 | :35 | .40 | 1.09 | :35 | 1.09 | .2071 |
| 5-19, 22 | 0 | .0009 | 5:00 | .10 | 1.13 | :37 | 1.06 | .2428 |
| 5-23 | .14 | .0003 | Raingage | 75A | 1.73 | :41 | .948 | .3099 |
| 5-24 | 0 | .0001 | Raingage | 89 | 1.39 | :46 | .824 | .3827 |
| 5-25 | .02 | .0001 | Raingage | W-4 | .84 | :51 | .666 | .4452 |
| 5-26 | .08 | .0002 | Weighted | Average ^{2/} | 1.20 | :56 | .476 | .4930 |
| 5-27, 31 | 0 | .0005 | | | | 5:00 | .347 | .5197 |
| 6-1 | 1.15 | .0132 | | | | :08 | .239 | .5581 |
| 6-2 | 0 | .0028 | | | | :20 | .146 | .5955 |
| 6-3 | .44 | .0192 | | | | :35 | .0875 | .6241 |
| 6-4 ^{1/} | .12 | .0009 | | | | 6:05 | .0366 | .6531 |
| Watershed Conditions: 20% corn; 9% grain sorghum, cultivated mid-May; 28% cotton planted last of May; 2% sorghum (drilled), good stand; 19% oats stubble; 3% native grass meadow; 14% Bermuda grass pasture mowed in May; 5% farmstead and roads. Straight rows. | | | | | | :55 | .0164 | .6737 |
| | | | | | | 8:00 | .0096 | .6868 |
| | | | | | | :25 | .0096 | .6908 |
| | | | | | | 9:45 | .0044 | .6996 |
| | | | | | | 12:00m | .0025 | .7070 |
| Event of June 23, 24, 1959 | | | | | | | | |
| 5-23-59 | 0.15 | 0.1156 | 6-23-59 | Raingage | W-2A | 6-23-59 | | |
| 5-24 | .03 | .0048 | 8:45p | 0 | 0 | 9:13p | 0.0019 | 0 |
| 5-25 | 1 | .0019 | :48 | 4.00 | .20 | :16 | .0072 | .0002 |
| 5-26, 31 | 0 | .0072 | :51 | 3.80 | .39 | :19 | .0266 | .0011 |
| 6-1 | 0 | .0011 | :58 | 1.71 | .59 | :25 | .0393 | .0045 |
| 6-2 | .20 | .0018 | :00 | 2.70 | .68 | :34 | .0287 | .0096 |
| 6-3 | .02 | .0013 | :03 | 2.00 | .78 | :40 | .0211 | .0121 |
| 6-4 | 1.40 | .2079 | :07 | .90 | .84 | :50 | .0160 | .0151 |
| 6-5 | .54 | .0921 | :41 | 0 | .84 | :55 | .0194 | .0166 |
| 6-6, 11 | 0 | .0151 | :45 | 1.50 | .94 | :56 | .0266 | .0170 |
| 6-12 | .24 | .0017 | :49 | 1.95 | 1.07 | :58 | .0576 | .0183 |
| 6-13, 19 | 0 | .0032 | :54 | 2.64 | 1.29 | 10:00 | .112 | .0210 |
| 6-20 | .76 | .0031 | :57 | 3.40 | 1.46 | :04 | .244 | .0126 |
| 6-21 | 0 | .0008 | 10:00 | 2.00 | 1.56 | :08 | .440 | .0543 |
| 6-22 | .32 | .0019 | :08 | .75 | 1.66 | :12 | .553 | .0885 |
| 5-23 ^{3/} | 0 | .0015 | :12 | 1.20 | 1.74 | :16 | .824 | .1347 |
| | | | :15 | 2.20 | 1.85 | :20 | 1.08 | .1981 |
| | | | :17 | 6.00 | 2.05 | :28 | 1.36 | .3600 |
| | | | :20 | 2.07 | 2.15 | :32 | 1.59 | .4581 |
| | | | :23 | 1.80 | 2.24 | :37 | 1.82 | .6012 |
| Watershed Conditions: 47% of area in cotton, beginning to bloom, cultivated mid-June; 19% corn in hard dough stage; 12% oats stubble, oats harvested; 3% native grass meadow, dense growth; 14% Bermuda grass and weed pasture, fair cover; 5% farmsteads and gravel roads. Straight row cultivation. | | | | | | :40 | 1.89 | .6939 |
| | | | :27 | 3.00 | 2.44 | :40 | 1.89 | .6939 |
| | | | :32 | 2.40 | 2.64 | :45 | 1.81 | .8477 |
| | | | :35 | 1.80 | 2.73 | :50 | 1.49 | .9852 |
| | | | :40 | 1.20 | 2.83 | :58 | 1.06 | 1.1545 |
| | | | Raingage | 75A | 2.79 | 11:05 | .745 | 1.2575 |
| | | | Raingage | 89 | 2.82 | :15 | .476 | 1.3578 |
| | | | Raingage | W-4 | 2.95 | :27 | .294 | 1.4318 |
| | | | Weighted | Average ^{2/} | 2.83 | :36 | .215 | 1.4695 |

Notes: To convert runoff in in/hr to cfs, multiply by 177.41. ^{1/} Prior rainfall ended 10:50a. ^{2/} Thiessen method. ^{3/} Runoff prior to 9:13p.

| SELECTED RUNOFF EVENTS | | | Riesel (Waco), Texas | | | Watershed W-1 | | |
|--|-------------------|-----------------|----------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of June 23, 24, 1959 - Continued | | | | | | | | |
| | | | | | | 6-23-59 | | |
| | | | | | | 12:00m | 0.114 | 1.5319 |
| | | | | | | 6-24-59 | | |
| | | | | | | 12:30a | .0627 | 1.5743 |
| | | | | | | :52 | .0408 | 1.5932 |
| | | | | | | 1:41 | .0211 | 1.6169 |
| | | | | | | 3:04 | .0096 | 1.6370 |
| | | | | | | 4:52 | .0043 | 1.6487 |
| | | | | | | 6:24 | .0024 | 1.6537 |
| | | | | | | 9:08 | .0011 | 1.6581 |
| | | | | | | 12:58p | .0005 | 1.6610 |

Notes: To convert runoff in in/hr to cfs, multiply by 177.41.



RIESEL (WACO), TEXAS Watershed W-1

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Riesel (Waco), Texas | | | | | | | Watershed W-2 (Area - 130 acres) | |
|---|-------|------|------|------|-------|------|----------------------|------|------|-------|------|------|------|-------------------------------------|--|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year | |
| 1956 | P | 2.09 | 2.66 | 3.38 | 0.74 | 3.80 | 1.22 | 1.18 | 3.08 | 0 | 0.24 | 4.42 | 1.87 | 21.68 | |
| | Q | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .19 | |
| 1957 | P | 1.43 | 2.86 | 5.52 | 15.18 | 7.85 | 4.35 | .19 | .79 | 3.99 | 8.24 | 4.75 | .88 | 56.03 | |
| | Q | 0 | .01 | .43 | 9.40 | 5.35 | .64 | .03 | 0 | 0 | 1.54 | 1.31 | .31 | 19.02 | |
| 1958 | P | 1.74 | 3.56 | 1.34 | 3.13 | 2.26 | 2.48 | 1.00 | 6.57 | 5.57 | 2.65 | 1.29 | 1.43 | 33.02 | |
| | Q | .37 | 1.49 | .39 | .29 | .73 | .08 | .01 | .05 | .41 | .24 | .10 | .07 | 4.23 | |
| 1959 | P | .43 | 3.46 | 1.14 | 4.28 | 3.99 | 7.09 | 4.96 | 3.13 | 1.70 | 7.40 | 1.98 | 3.72 | 43.28 | |
| | C | .05 | .64 | .31 | .71 | .46 | 1.58 | .34 | .11 | .02 | 1.99 | .98 | 1.43 | 8.62 | |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS

Riesel (Waco), Texas

Watershed W-2

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 4-19 | 2.82 | 4-19 | 2.12 | 4-19 | 2.52 | 5-11 | 3.21 | 5-11 | 3.33 | 5-11 | 3.46 | 4-23 | 4.87 | 4-19 | 8.80 |
| 1958 | 5-3 | .11 | 5-3 | .09 | 5-3 | .17 | 2-22 | .39 | 2-22 | .61 | 2-22 | 1.02 | 2-22 | 1.16 | 2-21 | 1.28 |
| 1959 | 6-23 | 1.87 | 6-23 | .86 | 6-23 | 1.03 | 6-23 | 1.13 | 6-23 | 1.15 | 6-23 | 1.15 | 6-23 | 1.16 | 6-20 | 1.27 |

Notes: Quality of records: monthly P and Q, excellent; Annual Max. discharges and volumes, excellent. Watershed conditions: conservation practices including terrace systems started in Sept. 1956, completed Sept. 1957. No appreciable change in land use since 1955. * Approximately 1/2 of the crop land was in oats and clover and 1/2 in row crops each year; all tillage operations were parallel to the terraces or on the contour.

SELECTED RUNOFF EVENTS

Riesel (Waco), Texas

Watershed W-2

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|-------------------------|-------------------|-----------------|---------------|-----------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of April 24, 1957 | | | | | | | | |
| 3-27-57 | 0.89 | 0.0218 | 4-24-57 | Raingage | W-4 | 4-24-57 | | |
| 3-28 | 0 | .0065 | 2:32p | 0 | 0 | 2:26p | 0.0002 | 0 |
| 3-31 | 1.34 | .2221 | :41 | .94 | .14 | :40 | .0005 | .0001 |
| 4-1, 2 | 0 | .1138 | :45 | 2.85 | .33 | :49 | .0007 | .0001 |
| 4-3 | .27 | .0002 | :48 | 2.40 | .45 | :53 | .0031 | .0003 |
| 4-4 | .01 | 0 | :50 | 6.00 | .65 | :55 | .0089 | .0004 |
| 4-8 | .02 | 0 | :56 | 3.40 | .99 | :57 | .153 | .0030 |
| 4-13 | .05 | 0 | 3:00 | 3.00 | 1.19 | :59 | .192 | .0088 |
| 4-15 | .02 | 0 | :03 | 3.80 | 1.38 | 3:02 | .413 | .0234 |
| 4-19 | 4.99 | 2.5715 | :07 | 3.15 | 1.59 | :04 | .584 | .0399 |
| 4-20 | .23 | .1718 | :14 | 1.89 | 1.81 | :08 | 1.15 | .0971 |
| 4-21 | .19 | .3024 | :18 | 1.65 | 1.92 | :12 | 1.60 | .1908 |
| 4-22 | .32 | .0156 | :24 | 1.20 | 2.02 | :18 | 2.00 | .3742 |
| 4-23 _{1/2} | 3.86 | 3.2204 | :30 | .40 | 2.06 | :20 | 2.04 | .4418 |
| 4-24 _{1/2} | .04 | .0055 | Raingage | W-6 | 1.84 | :22 | 2.04 | .5101 |
| | | | Weighted | Average ^{2/} | 1.97 | :29 | 1.82 | .7379 |
| | | | | | | :37 | 1.38 | .9529 |
| | | | | | | :43 | 1.08 | 1.0758 |
| | | | | | | :46 | .927 | 1.1262 |
| | | | | | | :50 | .790 | 1.1837 |
| | | | | | | :58 | .568 | 1.2738 |
| | | | | | | 4:10 | .361 | 1.3651 |
| | | | | | | :23 | .236 | 1.4283 |
| | | | | | | :42 | .137 | 1.4861 |
| | | | | | | :53 | .105 | 1.5081 |
| | | | | | | 5:27 | .0547 | 1.5506 |
| | | | | | | 6:10 | .0308 | 1.5801 |
| | | | | | | 8:50 | .0077 | 1.6228 |
| | | | | | | 12:00m | .0026 | 1.6366 |

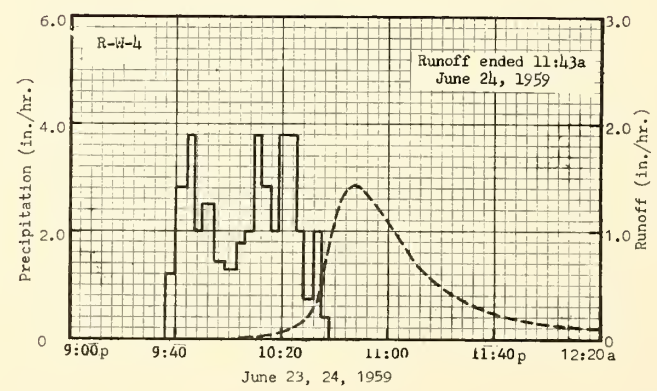
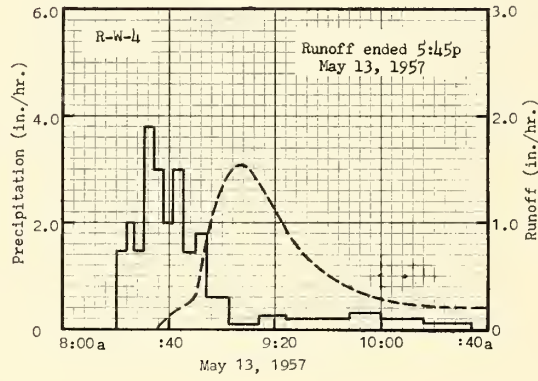
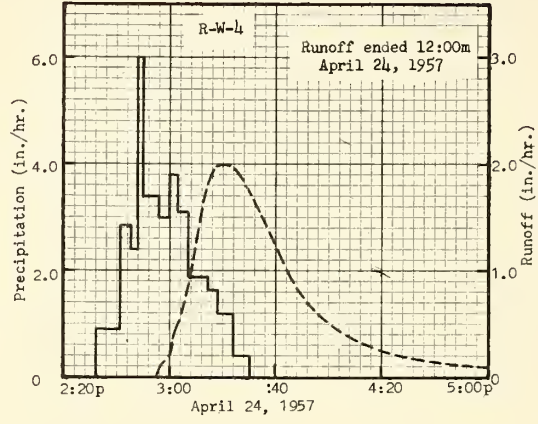
Notes: To convert runoff in in/hr to cfs, multiply by 131.04. ^{1/} Prior to event beginning 2:32p. ^{2/} Thiessen method. * See page 42.7-1, Monthly Precipitation and Runoff for Small Agricultural Watersheds in the United States, ARS, SWC, June 1957 (reprinted 1961).

| SELECTED RUNOFF EVENTS | | | | | | Riesel (Waco), Texas | Watershed W-2 | | | |
|---|-------------------|-----------------|---------------|-----------------------|--------------|----------------------|---------------|---------------|--|--|
| Antecedent conditions | | | Rainfall | | | Runoff | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | |
| <u>Event of May 12, 1957</u> | | | | | | | | | | |
| 4-13-57 | 0.05 | 0 | 5-13-57 | Raingage | W-4 | 5-13-57 | | | | |
| 4-15 | .02 | 0 | 8:20a | 0 | 0 | 8:10a | 0.0004 | 0 | | |
| 4-19 | 4.99 | 2.5715 | :24 | 1.50 | .10 | :29 | .0009 | .0002 | | |
| 4-20 | .23 | .1718 | :27 | 2.00 | .20 | :36 | .0118 | .0005 | | |
| 4-21 | .19 | .0024 | :31 | 1.50 | .30 | :40 | .126 | .0053 | | |
| 4-22 | .32 | .0156 | :34 | 3.80 | .49 | :45 | .210 | .0192 | | |
| 4-23 | 3.86 | 3.2204 | :38 | 3.00 | .69 | :49 | .277 | .0345 | | |
| 4-24 | 2.06 | 1.6421 | :41 | 2.00 | .79 | :52 | .616 | .0563 | | |
| 4-25 | 0 | .0151 | :45 | 3.00 | .99 | :54 | .836 | .0806 | | |
| 4-26 | 1.62 | .7890 | :50 | 1.44 | 1.11 | :58 | 1.20 | .1488 | | |
| 4-27 | .29 | .3777 | :54 | 1.80 | 1.23 | 9:00 | 1.35 | .1916 | | |
| 4-28 | 1.19 | .5011 | 9:03 | .60 | 1.32 | :03 | 1.49 | .2631 | | |
| 4-29 | .06 | .0735 | :14 | .11 | 1.34 | :06 | 1.54 | .3390 | | |
| 4-30 | .01 | .0072 | :24 | .24 | 1.38 | :12 | 1.44 | .4897 | | |
| 5-1 | .35 | .0759 | :48 | .20 | 1.46 | :16 | 1.28 | .5805 | | |
| 5-2 | 0 | .0121 | 10:00 | .30 | 1.52 | :20 | 1.11 | .6603 | | |
| 5-3 | .52 | .1706 | :16 | .23 | 1.58 | :24 | .927 | .7285 | | |
| 5-4, 7 | 0 | .0334 | :34 | .17 | 1.63 | :32 | .658 | .8327 | | |
| 5-8 | .03 | .0066 | Raingage | W-6 | 1.69 | :42 | .452 | .9241 | | |
| 5-9 | .86 | .1037 | Weighted | Average ^{2/} | 1.65 | :56 | .302 | 1.0104 | | |
| 5-10 | 0 | .0116 | | | | 10:20 | .219 | 1.1108 | | |
| 5-11 | 4.02 | 3.2312 | | | | 11:00 | .166 | 1.2430 | | |
| 5-12 ^{1/} | 0 | .1339 | | | | :32 | .0875 | 1.3110 | | |
| 5-13 ^{1/} | 0 | .0039 | | | | 12:55p | .0240 | 1.3739 | | |
| | | | | | | 2:25 | .0106 | 1.3991 | | |
| | | | | | | 5:45 | .0031 | 1.4190 | | |
| <p><u>Watershed Conditions:</u> 3% of the area in corn, straight rows; 10% bedded on contour for cotton, no crop; 3% row grain sorghum, terraced, contour tilled; 10% row grain sorghum, unterraced, contour tilled; 4% broadcast sorghum hay; 7% oats-clover, terraced; 28% oats-clover, unterraced, oats in dough stage, clover growing, good growth; 6% native grass meadow, dense growth; 24% Bermuda grass pasture, grass and weeds 10" high, good cover; 5% gravel roads.</p> | | | | | | | | | | |
| <u>Event of June 23, 24, 1959</u> | | | | | | | | | | |
| 5-23-59 | 0.16 | 0.0486 | 6-23-59 | Raingage | W-4 | 6-23-59 | | | | |
| 5-24 | .02 | .0126 | 9:36p | 0 | 0 | 8:49p | 0.0008 | 0 | | |
| 5-25 | T | .0119 | :40 | 1.20 | .08 | :55 | .0019 | .0001 | | |
| 5-26, 6-1 | 0 | .0627 | :44 | 2.85 | .27 | 9:03 | .0031 | .0004 | | |
| 6-2 | .25 | .0104 | :47 | 3.80 | .46 | :22 | .0031 | .0014 | | |
| 6-3 | .02 | .0096 | :50 | 2.00 | .56 | :47 | .0052 | .0031 | | |
| 6-4 | 1.45 | .0922 | :54 | 2.55 | .73 | 10:04 | .0096 | .0054 | | |
| 6-5 | .45 | .0303 | :59 | 1.44 | .85 | :10 | .0142 | .0066 | | |
| 6-6, 11 | 0 | .0665 | 10:03 | 1.35 | .94 | :16 | .0511 | .0093 | | |
| 6-12 | .24 | .0114 | :06 | 1.80 | 1.03 | :22 | .0920 | .0166 | | |
| 6-13, 19 | 0 | .0456 | :09 | 2.00 | 1.13 | :26 | .127 | .0239 | | |
| 6-20 | .72 | .0152 | :12 | 3.80 | 1.32 | :30 | .219 | .0352 | | |
| 6-21 | 0 | .0074 | :16 | 2.85 | 1.51 | :34 | .428 | .0561 | | |
| 6-22 ^{3/} | .28 | .0104 | :19 | 2.00 | 1.61 | :40 | 1.12 | .1354 | | |
| 6-23 ^{3/} | .84 | .0066 | :25 | 3.80 | 1.99 | :43 | 1.36 | .1982 | | |
| | | | :28 | 2.00 | 2.09 | :47 | 1.42 | .2910 | | |
| | | | :32 | .75 | 2.14 | :51 | 1.38 | .3843 | | |
| | | | :35 | 2.00 | 2.24 | :57 | 1.19 | .5133 | | |
| | | | :38 | .40 | 2.26 | 11:04 | .950 | .6371 | | |
| | | | Raingage | W-2A | 1.99 | :08 | .798 | .6956 | | |

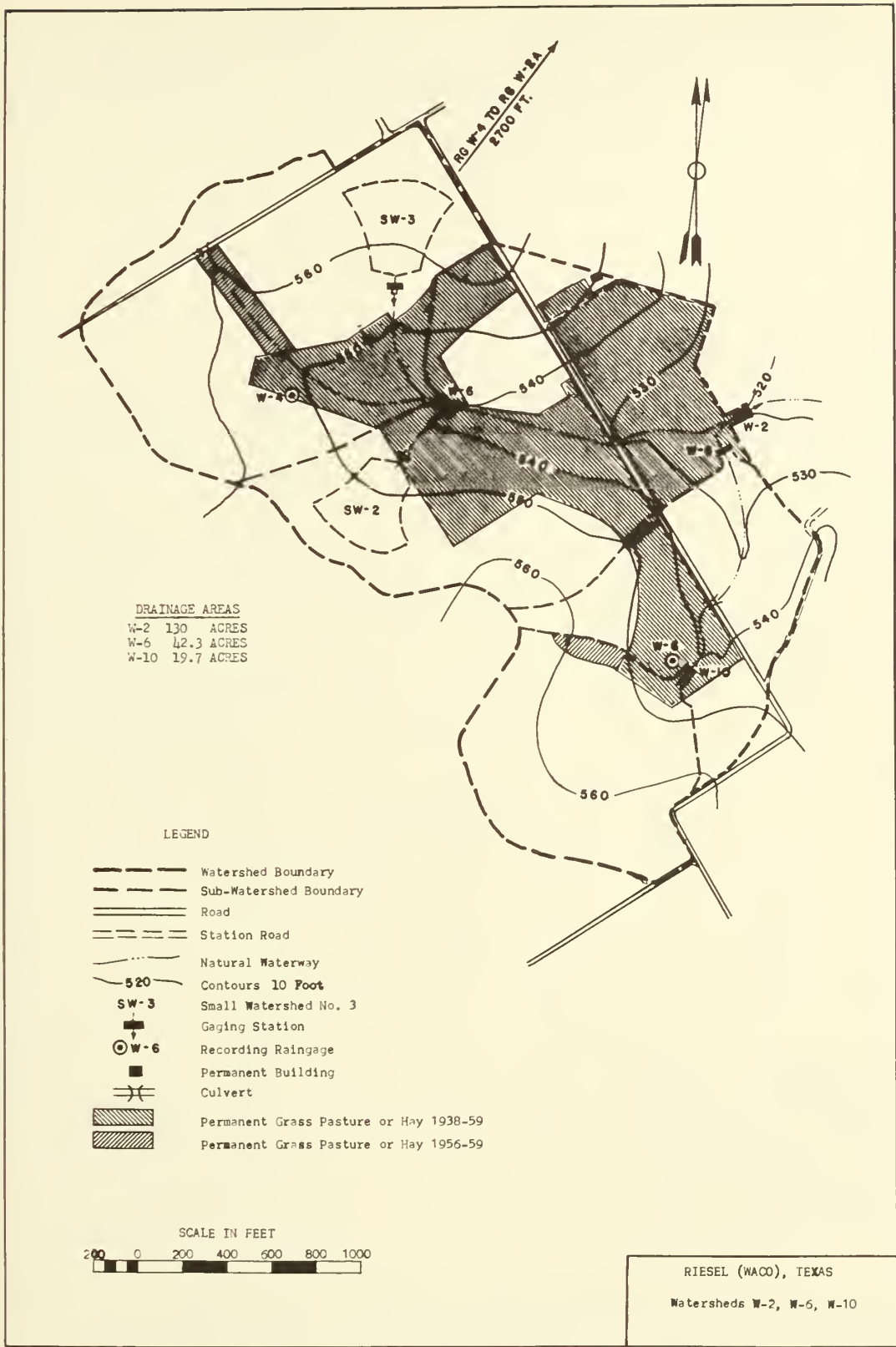
Notes: To convert runoff in in/hr to cfs, multiply by 131.04. ^{1/} Runoff prior to 8:10a. ^{2/} Thiessen method. ^{3/} Prior rainfall ended 9:02p.

| SELECTED RUNOFF EVENTS | | | RIESEL (WACO), TEXAS | | | Watershed W-2 | | | |
|---|-------------------|-----------------|----------------------|-------------------|-----------------------|---------------|--------------|---------------|-------|
| Antecedent conditions | | | Rainfall | | | Runoff | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | |
| Event of June 23, 24, 1959 - Continued | | | | | | | | | |
| <p>Watershed Conditions: 3% of area in Johnson grass, mature; 4% broadcast sorghum hay in bloom stage; 11% row grain sorghum, terraced, contour tilled; 7% row grain sorghum, unterraced, contour tilled, grain in dough stage; 9% cotton, terraced, contour tilled; 4% cotton unterraced, contour tilled, cotton blooming; 9% oats-clover, terraced; 18% oats-clover, unterraced, oats harvested, clover growing, good cover; 6% native grass meadow, dense growth; 24% Bermuda grass pasture with weeds, good cover; 5% gravel roads.</p> | | | 6-23-59 | Raingage | W-4 | 6-23-59 | | | |
| | | | | Raingage | W-6 | 11:12p | 0.658 | 0.7443 | |
| | | | | Weighted | Average ^{1/} | 2.13 | :18 | .528 | .8037 |
| | | | | | | :28 | .354 | .8763 | |
| | | | | | | :39 | .253 | .9316 | |
| | | | | | | :50 | .186 | .9716 | |
| | | | | | | 12:00m | .146 | .9993 | |
| | | | | | | 6-24-59 | | | |
| | | | | | | 12:10a | .118 | 1.0218 | |
| | | | | | | :15 | .105 | 1.0311 | |
| | | | | | | :30 | .0741 | 1.0536 | |
| | | | | | | 1:18 | .0333 | 1.0919 | |
| | | | | | | 2:43 | .0118 | 1.1210 | |
| | | | | | | 4:00 | .0058 | 1.1336 | |
| | | | | | | 5:28 | .0032 | 1.1393 | |
| | | | | | 7:17 | .0019 | 1.1438 | | |
| | | | | | 11:43 | .0008 | 1.1495 | | |

Notes: To convert runoff in in/hr to cfs, multiply by 131.04. ^{1/} Thiessen method.



RIESEL (WACO), TEXAS Watershed W-2



| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Riesel (Waco), Texas | | | | | | Watershed W-6 (Area - 42.3 acres) | |
|---|------|------|------|-------|------|------|----------------------|------|-------|------|------|------|--------------------------------------|--|
| Year \ Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year | |
| 1956 P | 2.05 | 2.56 | 0.38 | 0.76 | 3.85 | 1.19 | 1.07 | 2.89 | 0 | 0.21 | 4.25 | 1.83 | 21.04 | |
| 1956 Q | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 1957 P | 1.44 | 2.84 | 5.50 | 15.36 | 7.74 | 4.20 | .08 | .83 | 3.90 | 8.13 | 4.68 | .85 | 55.55 | |
| 1957 Q | 0 | 0 | .49 | 9.75 | 5.41 | .88 | .05 | 0 | 0 | 1.34 | .52 | .09 | 18.53 | |
| 1958 P | 1.74 | 3.51 | 1.35 | 3.24 | 2.24 | 2.50 | 1.06 | 6.54 | 5.64 | 2.65 | 1.32 | 1.45 | 33.24 | |
| 1958 Q | .04 | .71 | .05 | .03 | .29 | .01 | 0 | T | .20 | .04 | T | 0 | 1.37 | |
| 1959 P | .41 | 3.44 | 1.12 | 4.27 | 3.97 | 7.19 | 4.74 | 3.06 | 1.64 | 7.36 | 2.01 | 3.61 | 42.82 | |
| 1959 Q | 0 | .31 | .05 | .28 | .11 | 1.26 | .09 | .01 | 0 | 1.25 | .61 | .50 | 4.47 | |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | Riesel (Waco), Texas | | | | | | Watershed W-6 | | | |
|---|-------------------|------|---|------|---------|------|----------------------|------|----------|------|-------|------|---------------|------|--------|------|
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 4-19 | 3.12 | 4-19 | 2.33 | 4-19 | 2.78 | 5-11 | 3.13 | 5-11 | 3.21 | 5-11 | 3.23 | 4-23 | 4.85 | 4-19 | 9.06 |
| 1958 | 2-23 | .09 | 2-23 | .07 | 2-23 | .14 | 2-22 | .29 | 2-22 | .42 | 2-22 | .60 | 2-22 | .65 | 2-21 | .69 |
| 1959 | 6-23 | 1.60 | 6-23 | .97 | 6-23 | 1.10 | 6-23 | 1.15 | 6-23 | 1.15 | 6-23 | 1.15 | 6-23 | 1.16 | 6-23 | 1.19 |

Notes: Quality of records: monthly P and Q, excellent; Annual Max. discharges and volumes, excellent. Watershed conditions: conservation practices applied in 1956 consisting of contour cultivation and improved cropping practices. No appreciable change in land use since 1955.* Approximately 1/2 of the crop land in oats and clover and 1/2 in row crops.

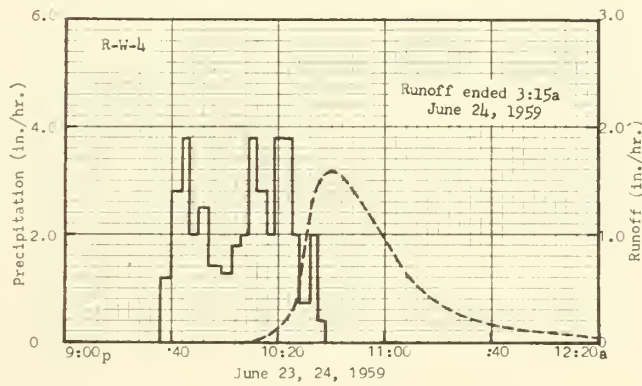
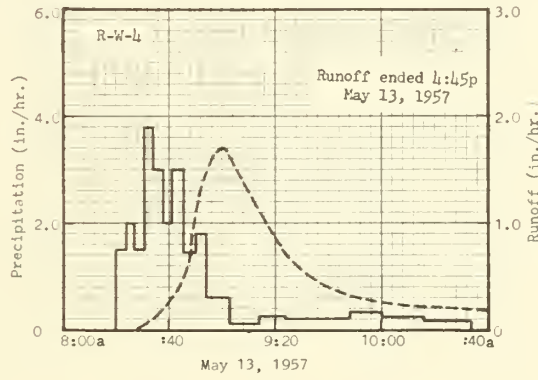
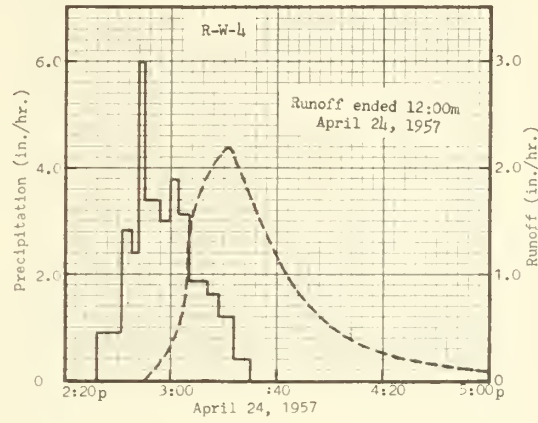
| SELECTED RUNOFF EVENTS | | | | | | Riesel (Waco), Texas | | | | | | Watershed W-6 | | |
|--------------------------------|-------------------|-----------------|---------------|-------------------|---------------|----------------------|--------------|---------------|--|--|--|---------------|--|--|
| Antecedent conditions | | | Rainfall | | | Runoff | | | | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | | | | |
| <u>Event of April 24, 1957</u> | | | | | | | | | | | | | | |
| 3-27-57 | 0.88 | 0.030 | 4-24-57 | Raingage | W-4 | 4-24-57 | | | | | | | | |
| 3-28 | 0 | .001 | 2:32p | 0 | 0 | 2:46p | 0.0011 | 0 | | | | | | |
| 3-31 | 1.38 | .262 | :41 | .94 | .14 | :50 | .0059 | T | | | | | | |
| 4-1 | 0 | .004 | :45 | 2.85 | .33 | :53 | .0495 | .001 | | | | | | |
| 4-3 | .28 | 0 | :48 | 2.40 | .45 | :56 | .181 | .006 | | | | | | |
| 4-4 | .01 | 0 | :50 | 6.00 | .65 | 3:00 | .321 | .024 | | | | | | |
| 4-8 | .02 | 0 | :56 | 3.40 | .99 | :04 | .642 | .050 | | | | | | |
| 4-13 | .04 | 0 | 3:00 | 3.00 | 1.19 | :06 | 1.33 | .084 | | | | | | |
| 4-15 | .02 | 0 | :03 | 3.80 | 1.38 | :08 | 1.57 | .133 | | | | | | |
| 4-19 | 5.07 | 2.803 | :07 | 3.15 | 1.59 | :12 | 1.85 | .248 | | | | | | |
| 4-20 | .23 | .139 | :14 | 1.89 | 1.81 | :16 | 2.07 | .378 | | | | | | |
| 4-21 | .21 | T | :18 | 1.65 | 1.92 | :21 | 2.20 | .558 | | | | | | |
| 4-22 | .31 | .012 | :24 | 1.20 | 2.02 | :23 | 2.16 | .632 | | | | | | |
| 4-23 | 3.84 | 3.170 | :30 | .40 | 2.06 | :27 | 1.94 | .768 | | | | | | |
| 4-24 | .04 | .002 | | | | :32 | 1.59 | .916 | | | | | | |
| | | | | | | :36 | 1.37 | 1.014 | | | | | | |
| | | | | | | :40 | 1.16 | 1.098 | | | | | | |
| | | | | | | :48 | .830 | 1.230 | | | | | | |
| | | | | | | :52 | .708 | 1.281 | | | | | | |
| | | | | | | :58 | .558 | 1.344 | | | | | | |
| | | | | | | 4:05 | .413 | 1.400 | | | | | | |
| | | | | | | :14 | .307 | 1.454 | | | | | | |
| | | | | | | :28 | .200 | 1.512 | | | | | | |
| | | | | | | :46 | .121 | 1.559 | | | | | | |
| | | | | | | :51 | .107 | 1.569 | | | | | | |
| | | | | | | 5:41 | .0410 | 1.625 | | | | | | |
| | | | | | | 6:54 | .0154 | 1.655 | | | | | | |
| | | | | | | 8:15 | .0064 | 1.669 | | | | | | |
| | | | | | | 12:00m | .0013 | 1.680 | | | | | | |

Notes: To convert runoff in in/hr to cfs, multiply by 42.64. 1/ Prior to event beginning 2:32p. For map of watershed, see page 42.7-5. * See page 42.8-1, Monthly Precipitation and Runoff for Small Agricultural Watersheds in the United States, ARS, SWC, June 1957 (reprinted 1961).

| SELECTED RUNOFF EVENTS | | | Riesel (Waco), Texas | | | Watershed #6 | | |
|--|-------------------|-----------------|----------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of May 13, 1957 | | | | | | | | |
| 4-13-57 | 0.04 | 0 | 5-13-57 | Raingage | W-4 | 5-13-57 | | |
| 4-15 | .02 | 0 | 8:20a | 0 | 0 | 8:15a | 0.0006 | 0 |
| 4-19 | 5.07 | 2.803 | :24 | 1.50 | .10 | :29 | .0038 | T |
| 4-20 | .23 | .139 | :27 | 2.00 | .20 | :32 | .0886 | .002 |
| 4-21 | .21 | T | :31 | 1.50 | .30 | :36 | .141 | .010 |
| 4-22 | .31 | .012 | :34 | 3.80 | .49 | :38 | .181 | .016 |
| 4-23 | 3.84 | 3.170 | :38 | 3.00 | .69 | :40 | .265 | .023 |
| 4-24 | 2.14 | 1.682 | :41 | 2.00 | .79 | :44 | .352 | .044 |
| 4-25 | 0 | .008 | :45 | 3.00 | .99 | :48 | .699 | .075 |
| 4-26 | 1.59 | .878 | :50 | 1.44 | 1.11 | :52 | 1.33 | .143 |
| 4-27 | .29 | .372 | :54 | 1.80 | 1.23 | :56 | 1.57 | .241 |
| 4-28 | 1.24 | .617 | 9:03 | .60 | 1.32 | 9:03 | 1.64 | .435 |
| 4-29 | .06 | .053 | :14 | .11 | 1.34 | :09 | 1.36 | .585 |
| 4-30 | .01 | .009 | :24 | .24 | 1.38 | :17 | 1.00 | .743 |
| 5-1 | .28 | .019 | :48 | .20 | 1.46 | :25 | .699 | .855 |
| 5-2 | 0 | .012 | 10:00 | .30 | 1.52 | :32 | .516 | .924 |
| 5-3 | .51 | .215 | :16 | .23 | 1.58 | :42 | .366 | .997 |
| 5-4, 7 | 0 | .060 | :34 | .17 | 1.63 | :58 | .251 | 1.078 |
| 5-8 | .04 | .014 | | | | 10:09 | .219 | 1.121 |
| 5-9 | .89 | .092 | | | | :24 | .206 | 1.173 |
| 5-10 | 0 | .018 | | | | :38 | .181 | 1.218 |
| 5-11 | 3.94 | 3.150 | | | | 11:15 | .110 | 1.312 |
| 5-12 ₁ | 0 | .107 | | | | :45 | .0596 | 1.354 |
| 5-13 ₁ | 0 | .005 | | | | 12:25p | .0281 | 1.382 |
| | | | | | | 2:00 | .0082 | 1.407 |
| | | | | | | 4:45 | .0028 | 1.420 |
| <p>Watershed Conditions: 9% of area in corn, straight rows, cultivated mid-April; 14% bedded on contour for cotton, no crop; 11% grain sorghum contour rows; 41% oats-clover, oats in dough stage, clover growing; 2% native grass meadow, dense growth; 16% Bermuda grass pasture with weeds, good cover; 7% gravel roads. No terraces.</p> | | | | | | | | |
| Event of June 23, 24, 1959 | | | | | | | | |
| 5-23-59 | 0.20 | 0.004 | 6-23-59 | Raingage | W-4 | 6-23-59 | | |
| 5-24 | .01 | .003 | 9:36p | 0 | 0 | 9:42p | 0.0003 | 0 |
| 5-25 | T | .002 | :40 | 1.20 | .08 | :53 | .0028 | T |
| 5-26, 6-1 | 0 | .012 | :44 | 2.85 | .27 | :58 | .0049 | T |
| 6-2 | .22 | .002 | :47 | 3.80 | .46 | 10:05 | .0082 | .001 |
| 6-3 | .02 | .002 | :50 | 2.00 | .56 | :08 | .0154 | .002 |
| 6-4 | 1.45 | .016 | :54 | 2.55 | .73 | :12 | .0410 | .004 |
| 6-5 | .45 | .005 | :59 | 1.44 | .85 | :16 | .0771 | .007 |
| 6-6, 11 | 0 | .017 | 10:03 | 1.35 | .94 | :20 | .136 | .014 |
| 6-12 | .23 | .004 | :06 | 1.80 | 1.03 | :24 | .314 | .029 |
| 6-13, 19 | 0 | .015 | :09 | 2.00 | 1.13 | :28 | .497 | .056 |
| 6-20 | .74 | .002 | :12 | 3.80 | 1.32 | :32 | 1.19 | .106 |
| 6-21 | 0 | .002 | :16 | 2.85 | 1.51 | :37 | 1.56 | .223 |
| 6-22 ₂ | .28 | .002 | :19 | 2.00 | 1.61 | :40 | 1.60 | .302 |
| 6-23 ₂ | .88 | .002 | :25 | 3.80 | 1.99 | :44 | 1.56 | .408 |
| | | | :28 | 2.00 | 2.09 | :48 | 1.46 | .508 |
| | | | :32 | .75 | 2.14 | :59 | 1.00 | .733 |
| | | | :35 | 2.00 | 2.24 | 11:07 | .689 | .845 |
| | | | :38 | .40 | 2.26 | :13 | .506 | .904 |
| | | | | | | :20 | .373 | .956 |
| | | | | | | :30 | .251 | 1.007 |
| | | | | | | :45 | .147 | 1.055 |
| | | | | | | :54 | .110 | 1.075 |
| | | | | | | 12:00m | .0933 | 1.085 |
| | | | | | | 6-24-59 | | |
| <p>Watershed Conditions: 11% of area in cotton planted on contour, beginning to bloom, last cultivation mid-June; 14% grain sorghum, contour rows, grain in dough stage, last cultivation mid-May; 41% oats-clover, oats harvested, clover growing; 2% native grass meadow, dense growth; 9% Johnson grass, seed maturing; 16% Bermuda grass pasture, weeds mowed mid-May, good cover; 7% gravel roads. No terraces.</p> | | | | | | | | |
| <p>Notes: To convert runoff in in/hr to cfs, multiply by 42.64. 1/ Runoff prior to 8:15a. 2/ Prior rainfall ended 9:02p.</p> | | | | | | | | |

| SELECTED RUNOFF EVENTS | | | Riesel (Waco), Texas Watershed W-6 | | | | | |
|------------------------|-------------------|-----------------|--|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| | | | Event of June 23, 24, 1959 - Continued | | | | | |
| | | | | | | 6-24-59 | | |
| | | | | | | 12:10a | 0.0734 | 1.099 |
| | | | | | | :19 | .0560 | 1.108 |
| | | | | | | :49 | .0260 | 1.128 |
| | | | | | | 1:15 | .0126 | 1.136 |
| | | | | | | :45 | .0064 | 1.140 |
| | | | | | | 2:28 | .0028 | 1.144 |
| | | | | | | 3:15 | .0013 | 1.145 |

Notes: To convert runoff in in/hr to cfs, multiply by 42.64.



RIESEL (WACO), TEXAS Watershed W-6

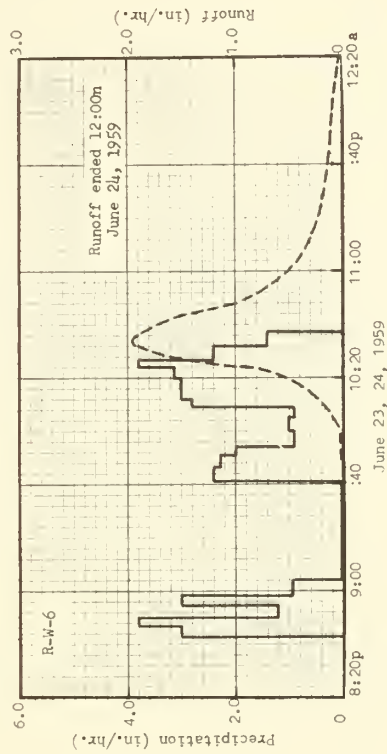
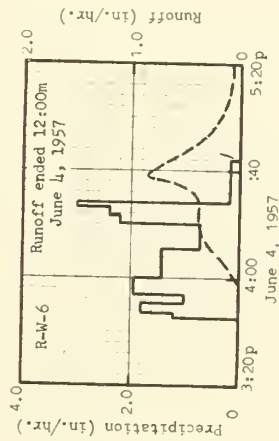
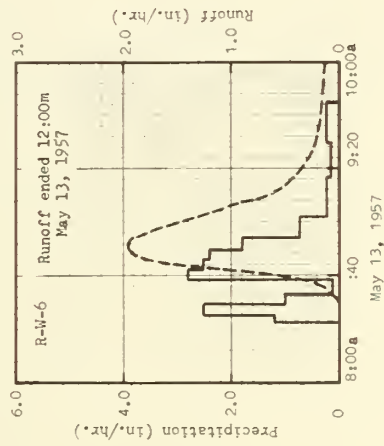
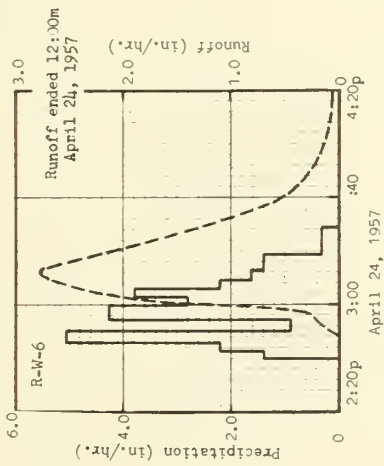
| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Riesel (Waco), Texas | | | | | | Watershed W-10 (Area - 12.7 acres) | | | |
|--|-------------------|---|---------------|-------------------|---------------|---------------|----------------------|---------------|-------|-------|------|--------|---------------------------------------|--------|------|------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year | | |
| 1956 | P | 2.15 | 2.81 | 0.38 | 0.70 | 3.72 | 1.28 | 1.35 | 3.37 | 0 | 0.29 | 4.67 | 1.92 | 22.64 | | |
| | Q | 0 | 0 | 0 | 0 | .04 | 0 | 0 | 0 | 0 | 0 | .87 | 0 | .91 | | |
| 1957 | P | 1.41 | 2.90 | 5.55 | 14.90 | 8.02 | 4.57 | .33 | .74 | 4.08 | 8.34 | 4.83 | .91 | 56.58 | | |
| | Q | 0 | T | .49 | 8.87 | 4.56 | .63 | 0 | 0 | 0 | 2.15 | .88 | 0 | 17.58 | | |
| 1958 | P | 1.75 | 3.61 | 1.32 | 3.00 | 2.29 | 2.47 | .92 | 6.62 | 5.49 | 2.66 | 1.26 | 1.41 | 32.80 | | |
| | Q | .06 | 1.29 | .01 | .01 | .49 | 0 | 0 | .27 | .72 | .17 | 0 | T | 3.02 | | |
| 1959 | P | .45 | 3.49 | 1.17 | 4.30 | 4.01 | 6.99 | 5.24 | 3.21 | 1.75 | 7.46 | 1.95 | 3.84 | 43.86 | | |
| | Q | 0 | .42 | .02 | .50 | .12 | 1.42 | .26 | .05 | T | 2.55 | .55 | 1.17 | 7.06 | | |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | Riesel (Waco), Texas | | | | | | Watershed W-10 | | | |
| YEAR | MAXIMUM DISCHARGE | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | | |
| | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | | |
| | | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | |
| 1957 | 4-19 | 4.24 | 4-19 | 2.31 | 4-19 | 2.55 | 5-11 | 3.00 | 5-11 | 3.02 | 5-11 | 3.02 | 4-23 | 4.43 | 4-19 | 8.29 |
| 1958 | 8-24 | .31 | 8-24 | .18 | 8-24 | .22 | 9-19 | .49 | 2-22 | .68 | 2-22 | 1.13 | 2-22 | 1.22 | 2-21 | 1.28 |
| 1959 | 6-23 | 1.96 | 6-23 | .98 | 6-23 | 1.14 | 6-23 | 1.21 | 10-4 | 1.47 | 10-4 | 1.75 | 10-4 | 1.82 | 10-4 | 1.83 |
| Notes: Quality of records: monthly P and Q, excellent; Annual Max. discharges and volumes, excellent. Watershed conditions: contour cultivation started; grassed waterway constructed in 1956; crop land use changed to 1/2 in oats and clover, 1/4 in cotton, and 1/4 in grain sorghum since 1955.* Terrace system constructed Sept. 1957, with tillage parallel to the terraces. | | | | | | | | | | | | | | | | |
| SELECTED RUNOFF EVENTS | | | | | | | Riesel (Waco), Texas | | | | | | Watershed W-10 | | | |
| Antecedent conditions | | | Rainfall | | | Runoff | | | | | | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | | | | | | |
| Event of April 24, 1957 | | | | | | | | | | | | | | | | |
| 3-27-57 | 0.87 | 0.056 | 4-24-57 | Raingage | W-6 | 4-24-57 | | | | | | | | | | |
| 3-28 | 0 | T | 2:40p | 0 | 0 | 2:44p | 0 | 0 | | | | | | | | |
| 3-31 | 1.30 | .236 | :43 | 1.40 | .07 | :47 | .0010 | T | | | | | | | | |
| 4-1 | 0 | .001 | :46 | 2.20 | .18 | :49 | .0079 | T | | | | | | | | |
| 4-3 | .26 | 0 | :51 | 5.10 | .63 | :51 | .0645 | .001 | | | | | | | | |
| 4-4 | .01 | 0 | :55 | .90 | .69 | :53 | .197 | .006 | | | | | | | | |
| 4-8 | .02 | 0 | 3:00 | 4.32 | 1.05 | :55 | .310 | .012 | | | | | | | | |
| 4-13 | .06 | 0 | :03 | 2.80 | 1.19 | :56 | .234 | .016 | | | | | | | | |
| 4-15 | .02 | 0 | :06 | 3.80 | 1.38 | :57 | .288 | .020 | | | | | | | | |
| 4-19 | 4.86 | 2.577 | :09 | 2.20 | 1.49 | 3:00 | 1.05 | .050 | | | | | | | | |
| 4-20 | .24 | .070 | :13 | 1.65 | 1.60 | :03 | 2.19 | .137 | | | | | | | | |
| 4-21 | .15 | 0 | :19 | 1.40 | 1.74 | :08 | 2.58 | .340 | | | | | | | | |
| 4-22 | .33 | .009 | :29 | .36 | 1.80 | :12 | 2.79 | .522 | | | | | | | | |
| 4-23 | 3.89 | 2.960 | | | | :17 | 2.48 | .749 | | | | | | | | |
| 4-24 | .08 | 0 | | | | :24 | 1.74 | .999 | | | | | | | | |
| Watershed Conditions: 25% of area bedded on contour for cotton, no crop; 25% grain sorghum, rows on contour, planted mid-April, 3" high; 48% oats-clover, oats in bloom stage; 2% Bermuda grass pasture, good cover. | | | | | | | :29 | 1.24 | 1.122 | | | | | | | |
| | | | | | | | :34 | .942 | 1.213 | | | | | | | |
| | | | | | | | :39 | .605 | 1.275 | | | | | | | |
| | | | | | | | :44 | .383 | 1.317 | | | | | | | |
| | | | | | | | :48 | .300 | 1.339 | | | | | | | |
| | | | | | | | :52 | .207 | 1.356 | | | | | | | |
| | | | | | | | 4:04 | .126 | 1.390 | | | | | | | |
| | | | | | | | :16 | .0754 | 1.410 | | | | | | | |
| | | | | | | | :39 | .0358 | 1.430 | | | | | | | |
| | | | | | | | 5:18 | .0173 | 1.447 | | | | | | | |
| 6:00 | .0079 | 1.455 | | | | | | | | | | | | | | |
| :40 | .0042 | 1.459 | | | | | | | | | | | | | | |
| 7:58 | .0018 | 1.463 | | | | | | | | | | | | | | |
| 10:41 | .0005 | 1.466 | | | | | | | | | | | | | | |
| 12:00m | .0001 | 1.466 | | | | | | | | | | | | | | |
| Notes: To convert runoff in in/hr to cfs, multiply by 19.86. 1/ Prior to event beginning 2:40p. For map of watershed, see page 42.7-5. * See page 42.10-1, Monthly Precipitation and Runoff for Small Agricultural Watersheds in the United States, ARS, SWC, June 1957 (reprinted in 1961). | | | | | | | | | | | | | | | | |

| SELECTED RUNOFF EVENTS | | | Riesel (Waco), Texas | | | Watershed W-10 | | |
|--|-------------------|-----------------|----------------------|-------------------|---------------|----------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of May 13, 1957</u> | | | | | | | | |
| 4-13-57 | 0.06 | 0 | 5-13-57 | Raingage | W-6 | 5-13-57 | | |
| 4-15 | .02 | 0 | 8:22a | 0 | 0 | 8:27a | 0 | 0 |
| 4-19 | 4.86 | 2.577 | :25 | 1.20 | .06 | :30 | .0091 | T |
| 4-20 | .24 | .070 | :29 | 2.55 | .23 | :32 | .0326 | .001 |
| 4-21 | .15 | 0 | :33 | 1.05 | .30 | :36 | .126 | .006 |
| 4-22 | .33 | .009 | :39 | .10 | .66 | :42 | 1.03 | .059 |
| 4-23 | 3.89 | 2.960 | :42 | 2.80 | .80 | :45 | 1.83 | .158 |
| 4-24 | 1.94 | 1.466 | :46 | 2.55 | .97 | :50 | 1.98 | .290 |
| 4-25 | 0 | .001 | :49 | 2.40 | 1.09 | :55 | 1.89 | .456 |
| 4-26 | 1.66 | .893 | :54 | 1.80 | 1.24 | :58 | 1.65 | .547 |
| 4-27 | .28 | .319 | 9:02 | .75 | 1.34 | 9:00 | 1.45 | .600 |
| 4-28 | 1.11 | .551 | :17 | .24 | 1.40 | :04 | 1.14 | .689 |
| 4-29 | .06 | .023 | :30 | .18 | 1.44 | :08 | .917 | .759 |
| 4-30 | .01 | 0 | :45 | .24 | 1.50 | :22 | .299 | .904 |
| 5-1 | .46 | .149 | | | | :40 | .178 | .971 |
| 5-2 | 0 | .001 | | | | 11:05 | .0868 | 1.172 |
| 5-3 | .53 | .097 | | | | :19 | .0428 | 1.187 |
| 5-4 | 0 | .001 | | | | :34 | .0217 | 1.195 |
| 5-8 | .02 | 0 | | | | :52 | .0105 | 1.200 |
| 5-9 | .80 | .080 | | | | 12:21p | .0059 | 1.204 |
| 5-11 | 4.14 | 3.005 | | | | 1:05 | .0028 | 1.207 |
| 5-12 | 0 | .019 | | | | 2:52 | .0010 | 1.210 |
| | | | | | | 12:00m | T | 1.212 |
| Watershed Conditions: 25% of area bedded on contour for cotton, no crop; 25% grain sorghum, contour rows; 48% oats-clover, oats in dough stage; 2% Bermuda grass pasture, good cover. | | | | | | | | |
| <u>Event of June 4, 1957</u> | | | | | | | | |
| 5-4-57 | 0 | 0.001 | 6-4-57 | Raingage | W-6 | 6-4-57 | | |
| 5-8 | .02 | 0 | 3:45p | 0 | 0 | 3:50p | 0 | 0 |
| 5-9 | .80 | .080 | :47 | 1.20 | .04 | :54 | .0010 | T |
| 5-11 | 4.14 | 3.005 | :50 | 1.80 | .13 | :58 | .0091 | T |
| 5-12 | 0 | .019 | :53 | 1.00 | .18 | 4:00 | .0217 | .001 |
| 5-13 | 1.73 | 1.212 | 4:00 | 1.98 | .41 | :04 | .0927 | .004 |
| 5-14 | 0 | T | :11 | 1.46 | .68 | :07 | .178 | .011 |
| 5-16 | .08 | 0 | :20 | .74 | .79 | :11 | .277 | .026 |
| 5-18 | .03 | 0 | :23 | 2.20 | .90 | :16 | .359 | .052 |
| 5-23 | .13 | 0 | :26 | 2.40 | 1.02 | :22 | .371 | .091 |
| 5-25 | T | 0 | :28 | 3.00 | 1.12 | :33 | .469 | .170 |
| 5-26 | .10 | 0 | :44 | .15 | 1.16 | :35 | .635 | .189 |
| 6-1 | 1.10 | .049 | | | | :38 | .853 | .228 |
| 6-3 | .53 | .010 | | | | :43 | .694 | .295 |
| 6-4 1/2 | .10 | 0 | | | | :47 | .462 | .335 |
| | | | | | | :55 | .266 | .383 |
| | | | | | | 5:00 | .163 | .402 |
| | | | | | | :10 | .0987 | .424 |
| | | | | | | :16 | .0754 | .433 |
| | | | | | | :43 | .0267 | .453 |
| | | | | | | 6:17 | .0105 | .463 |
| | | | | | | 7:52 | .0050 | .472 |
| | | | | | | 12:00m | .0008 | .481 |
| Watershed Conditions: 25% of area in cotton planted on contour last of May, cotton up; 25% grain sorghum, contour rows, cultivated mid-May; 48% oats-clover, oats harvested last of May, clover growing; 2% Bermuda grass pasture, good cover. | | | | | | | | |

Notes: To convert runoff in in/hr to cfs, multiply by 19.86. 1/ Prior to event beginning 3:45p.

| SELECTED RUNOFF EVENTS | | | Riesel (Waco), Texas | | | Watershed W-10 | | |
|--|-------------------|-----------------|----------------------|-------------------|---------------|----------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of June 23, 24, 1959</u> | | | | | | | | |
| 5-23-59 | 0.12 | 0.044 | 6-23-59 | Raingage | W-6 | 6-23-59 | | |
| 5-24 | .02 | .001 | 8:43p | 0 | 0 | 9:30p | 0 | 0 |
| 5-25 | .01 | T | :47 | 3.00 | .20 | :39 | .0018 | T |
| 6-1 | .29 | 0 | :50 | 3.80 | .39 | :49 | .0079 | .001 |
| 6-3 | .02 | 0 | :55 | 1.20 | .49 | 10:00 | .0267 | .004 |
| 6-4 | 1.46 | .119 | :59 | 3.00 | .69 | :03 | .0595 | .006 |
| 6-5 | .44 | .025 | 9:04 | .96 | .77 | :06 | .0987 | .010 |
| 6-6, 7 | 0 | .004 | :41 | .03 | .79 | :09 | .159 | .017 |
| 6-12 | .25 | 0 | :46 | 2.40 | .99 | :13 | .258 | .031 |
| 6-20 | .70 | 0 | :51 | 2.28 | 1.18 | :18 | .409 | .059 |
| 6-22 | .28 | 0 | :54 | 2.00 | 1.28 | :24 | 1.05 | .131 |
| | | | 10:00 | .90 | 1.37 | :28 | 1.54 | .220 |
| | | | :05 | 1.08 | 1.46 | :30 | 1.78 | .276 |
| | | | :09 | .90 | 1.52 | :33 | 1.96 | .371 |
| | | | :12 | 2.80 | 1.66 | :40 | 1.71 | .594 |
| | | | :20 | 3.00 | 2.06 | :44 | 1.42 | .699 |
| | | | :24 | 3.15 | 2.27 | :48 | 1.07 | .784 |
| | | | :27 | 3.80 | 2.46 | :55 | .679 | .886 |
| | | | :32 | 2.40 | 2.66 | 11:01 | .462 | .943 |
| | | | :37 | 1.44 | 2.78 | :11 | .310 | 1.006 |
| | | | | | | :38 | .141 | 1.104 |
| | | | | | | 12:00m | .0838 | 1.146 |
| | | | | | | 6-24-59 | | |
| | | | | | | 12:14a | .0550 | 1.162 |
| | | | | | | :51 | .0217 | 1.185 |
| | | | | | | 1:30 | .0105 | 1.195 |
| | | | | | | 2:28 | .0042 | 1.202 |
| | | | | | | 4:55 | .0010 | 1.207 |
| | | | | | | 12:00n | T | 1.210 |
| <p>Watershed Conditions: 23% of area in cotton, beginning to bloom, cultivated first of June; 23% row grain sorghum, grain in dough stage, cultivated mid-May; 52% oats-clover, oats harvested, clover growing; 2% Bermuda grass pasture, good cover; cropland terraced, contour tilled.</p> | | | | | | | | |

Notes: To convert runoff in in/hr to cfs, multiply by 19.86.



RIESEL (WACO), TEXAS Watershed W-10

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Riesel (Waco), Texas Watershed Y (Area - 309 acres) | | | | | | | |
|---|-------|------|------|------|-------|------|--|------|------|-------|------|------|------|-------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 | P | 2.16 | 2.37 | 0.39 | 0.65 | 4.44 | 1.91 | 2.03 | 2.54 | 0 | 0.39 | 4.47 | 2.01 | 23.36 |
| | Q | 0 | 0 | 0 | 0 | 0 | 0 | 0 | T | 0 | 0 | .07 | 0 | .07 |
| 1957 | P | 1.52 | 3.19 | 5.49 | 14.76 | 8.39 | 4.86 | .03 | 1.10 | 4.09 | 8.21 | 4.60 | .87 | 57.11 |
| | Q | 0 | .02 | .46 | 10.21 | 5.48 | 1.10 | 0 | 0 | 0 | 1.31 | 1.06 | .04 | 19.68 |
| 1958 | P | 1.78 | 3.39 | 1.37 | 3.27 | 1.94 | 2.36 | 1.03 | 6.36 | 4.94 | 2.92 | 1.40 | 1.42 | 32.18 |
| | Q | .12 | 1.08 | .12 | .04 | .52 | 0 | 0 | .05 | .17 | .11 | .01 | .01 | 2.23 |
| 1959 | P | .38 | 3.33 | .98 | 4.02 | 4.04 | 7.23 | 4.35 | 3.12 | 1.90 | 6.91 | 1.98 | 3.55 | 41.79 |
| | Q | .01 | .47 | .02 | .41 | .22 | 1.10 | .06 | T | T | .97 | .56 | .81 | 4.63 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS Riesel (Waco), Texas Watershed Y

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|--------|---|------|---------|--------|---------|--------|----------|--------|-------|--------|--------|------|--------|--------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 4-19 | e 2.54 | 4-19 | 2.15 | 4-19 | e 2.74 | 4-19 | e 3.48 | 4-19 | e 3.66 | 4-19 | e 3.70 | 4-23 | 4.65 | 4-19 | e 9.36 |
| 1958 | 5-3 | .11 | 5-3 | .10 | 5-3 | .19 | 2-23 | .34 | 2-22 | .54 | 2-22 | .85 | 2-22 | .98 | 2-21 | 1.04 |
| 1959 | 6-23 | .57 | 6-23 | .50 | 6-23 | .67 | 6-23 | .78 | 6-23 | .80 | 6-23 | .81 | 6-23 | .90 | 6-22 | .91 |

Notes: Quality of records: monthly P and Q, good; Annual Max. discharges and volumes, good. Watershed conditions: no appreciable change in land use or conservation practices since 1955. See page 42.11-1, Monthly Precipitation and Runoff for Small Agricultural Watersheds in the United States, ARS, SWC, June 1957 (reprinted 1961).

SELECTED RUNOFF EVENTS Riesel (Waco), Texas Watershed Y

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|---|-------------------|---------------------|---------------|-----------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of March 31 - April 1, 1957</u> | | | | | | | | |
| 3-2-57 | 0.14 | 0 | 3-31-57 | Raingage | 84A | 3-31-57 | | |
| 3-6 | .82 | 0 | 5:40p | 0 | 0 | 5:31p | 0.0024 | 0 |
| 3-11 | .94 | .0012 | :42 | 4.80 | .16 | :50 | .0096 | .0011 |
| 3-12, 16 | 0 | T | :45 | 1.80 | .25 | 6:01 | .0179 | .0037 |
| 3-17 | .22 | T | :47 | 5.10 | .42 | :07 | .0357 | .0064 |
| 3-20 | 1.88 | .1668 | :51 | .60 | .46 | :13 | .0512 | .0106 |
| 3-21, 22 | 0 | .0327 | 7:21 | .03 | .50 | :16 | .0930 | .0142 |
| 3-23 | T | 0 | :31 | .12 | .52 | :21 | .119 | .0233 |
| 3-24, 26 | 0 | T | :51 | .06 | .54 | :35 | .150 | .0551 |
| 3-27 | .97 | .0269 | Raingage | 69 | .70 | :44 | .113 | .0752 |
| 3-28, 29 | 0 | .0062 | Raingage | 70 | .49 | :53 | .0930 | .0909 |
| 3-31 | .75 ^{1/} | .0143 ^{2/} | Raingage | 75A | .33 | 7:02 | .0762 | .1037 |
| | | | Raingage | 89 | .61 | :11 | .0623 | .1143 |
| | | | Raingage | W-2A | .67 | 8:24 | .0275 | .1649 |
| | | | Weighted | Average ^{3/} | .51 | 10:02 | .0123 | .1959 |
| Watershed Conditions: 7% corn, planted second week March (no crop growing); 98% bedded, no crop; 1% oats 10" high; 19% oats-clover, oats 10" high, good cover; 34% Bermuda and native grass pasture with burr clover and weeds, good cover; 1% in farmstead and gravel roads, cultivated land terraced, contour tilled. | | | | | | | | |
| <u>Event of April 24, 25, 1957</u> | | | | | | | | |
| 3-24-57 | 0 | T | 4-24-57 | Raingage | 84A | 4-24-57 | | |
| 3-27 | .97 | .0269 | 2:33p | 0 | 0 | 1:30p | 0.0006 | 0 |
| 3-28-29 | 0 | .0062 | :39 | .50 | .05 | 2:33 | .0007 | .0006 |
| 3-31 | 1.27 | .2271 | :43 | 1.50 | .15 | :45 | .0017 | .0008 |
| 4-1, 2 | 0 | .0284 | :48 | 2.52 | .36 | :48 | .0033 | .0010 |
| 4-3 | .26 | .0011 | :51 | 4.00 | .56 | :51 | .0077 | .0012 |
| 4-4 | .02 | .0002 | :58 | 2.31 | .83 | :54 | .0144 | .0018 |
| 4-5, 7 | 0 | T | 3:01 | 3.20 | .99 | :56 | .0204 | .0024 |
| 4-8 | .03 | T | :08 | 2.31 | 1.26 | :57 | .0283 | .0028 |
| 4-9 | 0 | T | :14 | 1.50 | 1.41 | :58 | .0512 | .0035 |

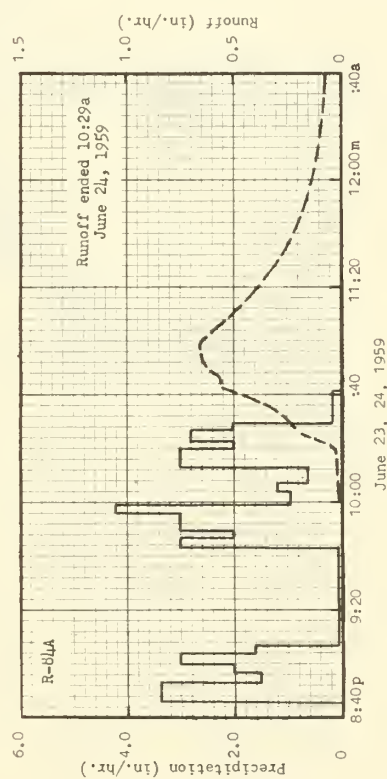
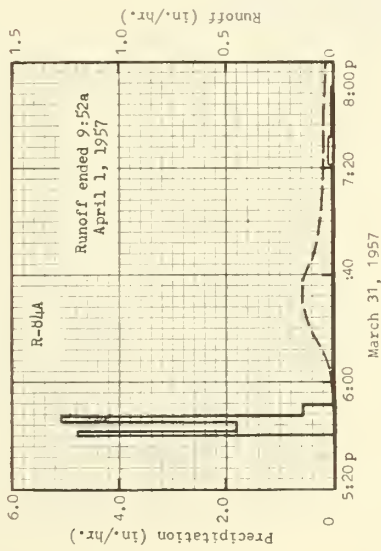
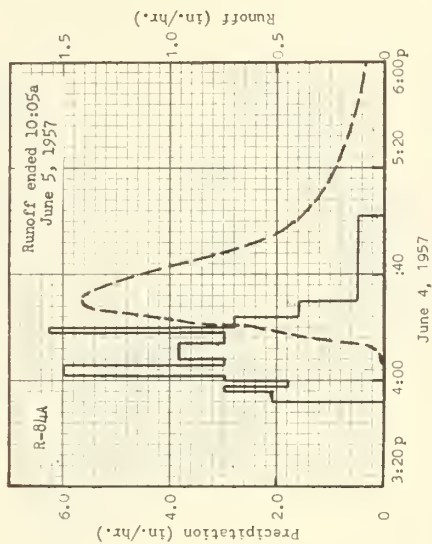
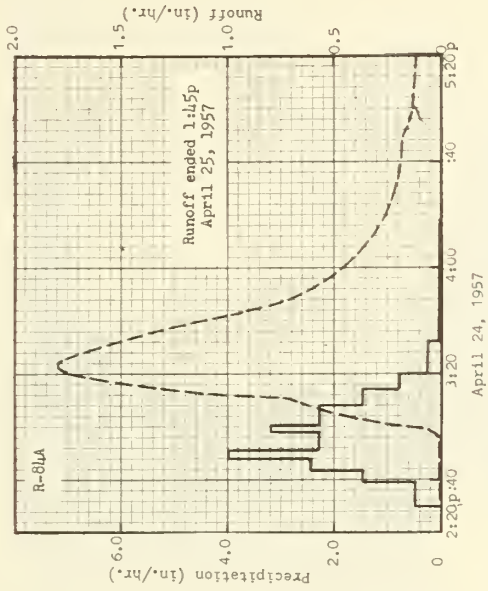
Notes: To convert runoff in in/hr to cfs, multiply by 311.57. ^{1/} Prior precipitation ended 1:41p. ^{2/} Runoff prior to 5:31p. ^{3/} Thiessen method.

| SELECTED RUNOFF EVENTS | | | Riesel (Waco), Texas | | Watershed Y | | | |
|--|-------------------|---------------------|----------------------|-----------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of April 24, 25, 1957 - Continued</u> | | | | | | | | |
| 4-13-57 | 0.05 | 0 | 4-24-57 | | | 4-24-59 | | |
| 4-15 | .03 | 0 | 3:20p | 0.80 | 1.49 | 2:59p | 0.0977 | 0.0047 |
| 4-19 | 5.06 | 2.8003 | :32 | .30 | 1.55 | 3:00 | .143 | .0068 |
| 4-20 | .27 | .9034 | 4:18 | .03 | 1.57 | :01 | .212 | .0098 |
| 4-21 | .21 | .0095 | e 11:02 | | 1.60 | :02 | .296 | .0141 |
| 4-22 | .32 | .0436 | Raingage | 69 | 1.81 | :03 | .398 | .0200 |
| 4-23 | 3.83 | 2.7867 | Raingage | 70 | 1.77 | :04 | .455 | .0272 |
| 4-24 ^{1/} | .03 | .0097 | Raingage | 75A | 1.84 | :05 | .500 | .0353 |
| Watershed Conditions: 7% in corn, fair stand 3" high; 2% bedded for cotton, no crop; 1% row grain sorghum 2" high; 4% row sudan 1" high, sorghum and sudan planted mid-April; 1% oats in bloom stage; 1% oats-clover, good cover, oats 20" high in bloom stage; 34% Bermuda and native grass and weed pasture, grass and weeds 10" high, good cover; 1% in farmstead and gravel roads; cultivated land terraced, contour tilled. | | | Raingage | 89 | 1.81 | :09 | .661 | .0749 |
| | | | Raingage | W-2A | 1.79 | :10 | .743 | .0868 |
| | | | Weighted | Average ^{2/} | 1.76 | :11 | 1.02 | .1017 |
| | | | | | | :14 | 1.30 | .1610 |
| | | | | | | :16 | 1.45 | .2074 |
| | | | | | | :18 | 1.61 | .2593 |
| | | | | | | :20 | 1.75 | .3161 |
| | | | | | | :22 | 1.81 | .3763 |
| | | | | | | :25 | 1.77 | .4674 |
| | | | | | | :34 | 1.44 | .7157 |
| | | | | | | :36 | 1.35 | .7630 |
| | | | | | | :42 | 1.03 | .8840 |
| | | | | | | :43 | .967 | .9009 |
| | | | | | | :45 | .860 | .9319 |
| | | | | | | :48 | .702 | .9716 |
| | | | :55 | .547 | 1.0451 | | | |
| | | | 4:15 | .298 | 1.816 | | | |
| | | | :47 | .191 | 1.3053 | | | |
| | | | :51 | .183 | 1.3179 | | | |
| | | | :54 | .160 | 1.3266 | | | |
| | | | :59 | .143 | 1.3394 | | | |
| | | | 6:07 | .108 | 1.4858 | | | |
| | | | 8:30 | .0500 | 1.6659 | | | |
| | | | 12:00m | .0224 | 1.7876 | | | |
| | | | 4-25-57 | | | | | |
| | | | 4:10a | .0092 | 1.8517 | | | |
| | | | 6:50 | .0044 | 1.8701 | | | |
| | | | 9:00 | .0022 | 3.7469 | | | |
| | | | 1:45p | .0008 | 1.8830 | | | |
| <u>Event of June 4, 5, 1957</u> | | | | | | | | |
| 5-4, 7-57 | 0 | 0.0411 | 6-4-57 | Raingage | 84A | 6-4-57 | | |
| 5-8 | .03 | .0028 | 3:52p | 0 | 0 | 3:53p | 0.0008 | 0 |
| 5-9 | .97 | .2373 | :56 | 2.10 | .14 | 4:00 | .0017 | .0001 |
| 5-10 | 0 | .0116 | :58 | 3.00 | .24 | :03 | .0036 | .0002 |
| 5-11 | 3.72 | 2.5000 | 4:00 | 1.80 | .30 | :07 | .0092 | .0007 |
| 5-12 | 0 | .3267 | :02 | 3.00 | .40 | :10 | .0275 | .0015 |
| 5-13 | 1.64 | 1.3000 | :06 | 6.00 | .80 | :11 | .0449 | .0021 |
| 5-14, 15 | 0 | .0253 | :08 | 3.00 | .90 | :13 | .119 | .0047 |
| 5-16 | .04 | .0044 | :14 | 3.90 | 1.29 | :15 | .273 | .0114 |
| 5-17 | 0 | .0030 | :18 | 3.00 | 1.49 | :18 | .481 | .0310 |
| 5-18 | .03 | .0030 | :20 | 6.30 | 1.70 | :20 | .620 | .0498 |
| 5-19, 22 | 0 | .0071 | :24 | 2.85 | 1.89 | :22 | .977 | .0749 |
| 5-23 | .13 | .0014 | :30 | 1.60 | 2.05 | :23 | 1.07 | .0922 |
| 5-24 | 0 | .0015 | e 5:02 | .57 | 2.08 | :24 | 1.16 | .1111 |
| 5-25 | .02 | .0005 | Raingage | 69 | 1.55 | :27 | 1.36 | .1754 |
| 5-26 | .10 | .0010 | Raingage | 70 | 1.67 | :29 | 1.42 | .2224 |
| 5-27, 31 | 0 | .0008 | Raingage | 75A | 2.02 | :30 | 1.43 | .2465 |
| 6-1 | .98 | .0048 | Raingage | 89 | 1.66 | :32 | 1.42 | .2946 |
| 6-2 | 0 | .0027 | Raingage | W-2A | 1.13 | :36 | 1.28 | .3865 |
| 6-3 | .41 | .0055 | Weighted | Average ^{2/} | 1.85 | :44 | 1.03 | .5420 |
| 6-4 | .24 ^{3/} | .0049 ^{4/} | | | | :47 | .904 | .5916 |
| | | | | | | :52 | .629 | .6542 |
| | | | | | | :56 | .500 | .6931 |
| | | | | | | 5:02 | .373 | .7366 |

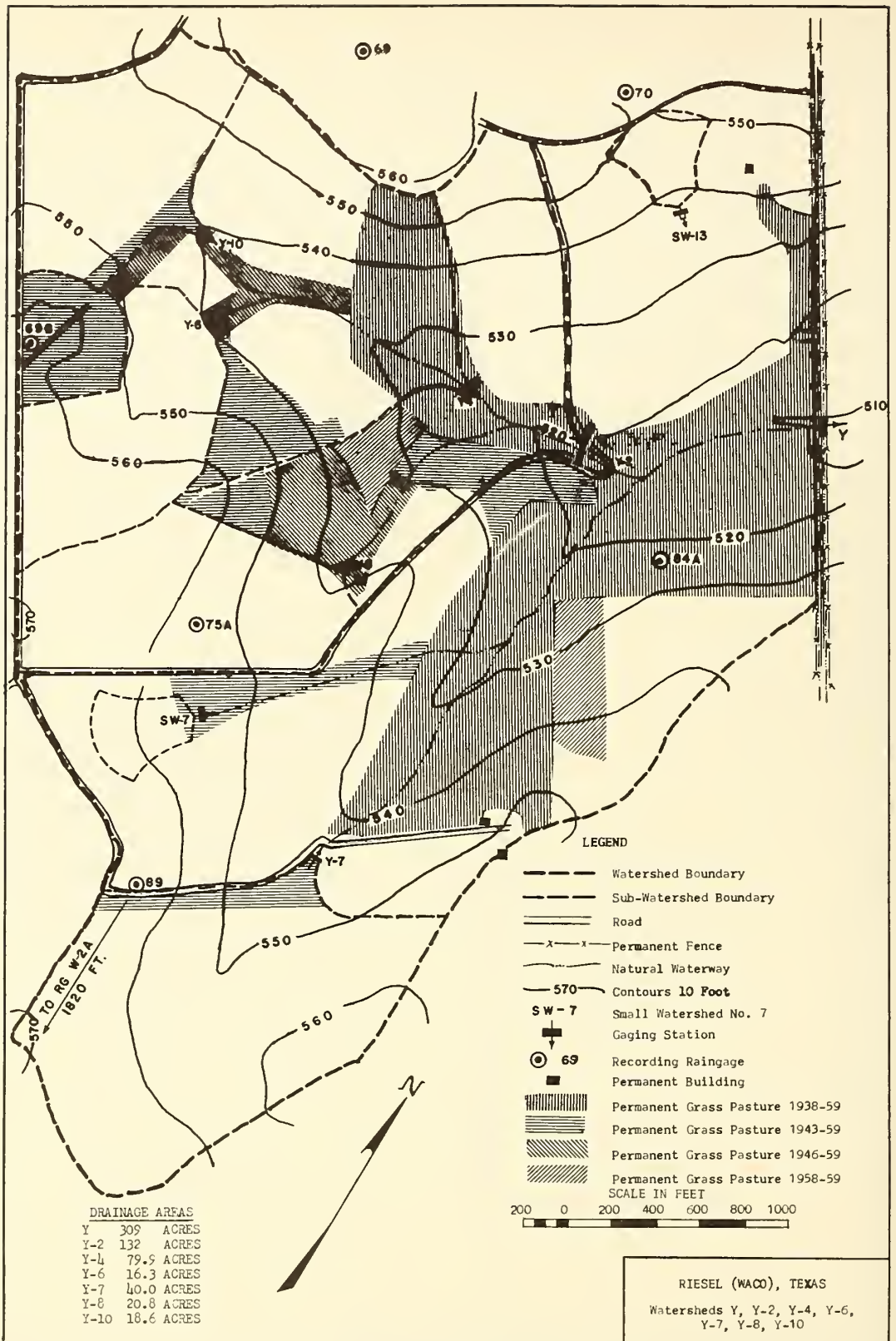
Notes: To convert runoff in in/hr to cfs, multiply by 311.57. ^{1/} Prior to event beginning 2:33p. ^{2/} Thiessen method. ^{3/} Rainfall ended 10:58a. ^{4/} Runoff prior to 3:53p.

| SELECTED RUNOFF EVENTS | | | Riesel (Waco), Texas | | | Watershed Y | | |
|--|-------------------|-----------------|----------------------|-------------------|---------------|-----------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of June 4, 5, 1957 - Continued | | | | | | | | |
| Watershed Conditions: 7% in corn, cultivated mid-May; 23% cotton planted last week of May; 11% row grain sorghum 24" high, cultivated mid-May; 4% row sudan 24" high; 1% oats, harvested; 19% oats-clover, oats harvested, clover 12" high; 34% Bermuda and native grass and weed pasture 12" high; 1% farmstead and gravel roads; cropland terraced, contour tilled. | | | | | | 6-4-57 5:10p | 0.304 | 0.7825 |
| | | | | | | :23 | .225 | .8401 |
| | | | | | | :40 | .146 | .8928 |
| | | | | | | :47 | .127 | .9090 |
| | | | | | | 6:04 | .0863 | .9393 |
| | | | | | | :24 | .0575 | .9632 |
| | | | | | | 7:45 | .0198 | 1.0088 |
| | | | | | | 10:25 | .0062 | 1.0383 |
| | | | | | | 12:00m | .0038 | 1.0461 |
| | | | | | | 6-5-57 5:20a | .0016 | 1.0595 |
| | | | 10:05 | .0009 | 1.0656 | | | |
| Event of June 23, 24, 1959 | | | | | | | | |
| 5-23-59 | 0.18 | 0.0878 | 6-23-59 | Raingage | 84A | 6-23-59 | | |
| 5-24 | .04 | .0049 | 8:46p | 0 | 0 | 8:55p | T | 0 |
| 5-25 | .03 | .0016 | :53 | 3.34 | .39 | 9:18 | .0004 | .0002 |
| 5-26, 6-1 | 0 | .0027 | :57 | 1.50 | .49 | :30 | .0007 | .0003 |
| 6-2 | .19 | .0005 | 9:00 | 2.00 | .59 | :46 | .0017 | .0006 |
| 6-3 | .02 | .0005 | :04 | 3.00 | .79 | :58 | .0044 | .0012 |
| 6-4 | 1.44 | .0909 | :07 | 1.60 | .87 | 10:05 | .0133 | .0022 |
| 6-5 | .63 | .0834 | :43 | .01 | .88 | :17 | .0231 | .0059 |
| 6-6, 11 | 0 | .0146 | :47 | 3.00 | 1.08 | :19 | .0357 | .0068 |
| 6-12 | .18 | .0009 | :50 | 2.00 | 1.18 | :21 | .0537 | .0083 |
| 6-13, 16 | 0 | .0004 | :56 | 3.00 | 1.48 | :23 | .100 | .0108 |
| 6-20 | .72 | .0009 | :59 | 4.20 | 1.69 | :26 | .203 | .0187 |
| 6-21 | 0 | .0001 | 10:04 | .96 | 1.77 | :29 | .239 | .0300 |
| 6-22 ₁ | .36 | .0010 | :09 | 1.20 | 1.87 | :33 | .278 | .0475 |
| 6-23 ₁ | 0 | .0002 | :13 | .60 | 1.91 | :35 | .319 | .0576 |
| Watershed Conditions: 9% in corn in dough stage; 25% in cotton on contour, good stand 16" high, beginning to bloom, last cultivation in mid-June; 11% in row grain sorghum, 5' high, grain in dough stage, last cultivation mid-May; 1% oats harvested; 14% in oats-clover, oats harvested, clover 12" high; 35% Bermuda and native grass pasture, grass 10" high, good cover; 4% in sudan, 5' high; 1% farmstead and gravel roads; cropland terraced, contour tilled. | | | :20 | 3.09 | 2.27 | :37 | .364 | .0692 |
| | | | :23 | 2.00 | 2.37 | :39 | .462 | .0831 |
| | | | :27 | 2.85 | 2.56 | :41 | .515 | .0997 |
| | | | :30 | 2.00 | 2.66 | :47 | .575 | .1552 |
| | | | :42 | 1.15 | 2.89 | :50 | .629 | .1858 |
| | | | Raingage | 69 | 3.00 | :57 | .651 | .2624 |
| | | | Raingage | 70 | 2.87 | :59 | .661 | .2846 |
| | | | Raingage | 75A | 2.79 | 11:03 | .613 | .3277 |
| | | | Raingage | 89 | 2.82 | :07 | .556 | .3673 |
| | | | Raingage | W-2A | 2.83 | :12 | .500 | .4119 |
| Raingage | 698 | 2.87 | :16 | .449 | .4440 | | | |
| Weighted Average ^{2/} | 2.86 | | :24 | .357 | .4977 | | | |
| | | | :34 | .273 | .5510 | | | |
| | | | :43 | .199 | .5884 | | | |
| | | | :53 | .168 | .6193 | | | |
| | | | 12:00m | | | .143 | .6378 | |
| | | | 6-24-59 12:09a | | | .116 | .6577 | |
| | | | :18 | .0952 | .6738 | | | |
| | | | :29 | .0781 | .6999 | | | |
| | | | 1:23 | .0348 | .7371 | | | |
| | | | 2:31 | .0173 | .7660 | | | |
| | | | 4:19 | .0065 | .7858 | | | |
| | | | 7:16 | .0023 | .7970 | | | |
| | | | 10:29 | .0010 | .8021 | | | |

Notes: To convert runoff in in/hr to cfs, multiply by 311.57. ^{1/} Runoff prior to 8:55p ^{2/} Thiessen method.



RIESEL (MACO), TEXAS Watershed Y



| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Riesel (Waco), Texas | | | | | | | Watershed Y-2 (Area - 132 acres) | | |
|--|-------------------|-----------------|---|-------------------|---------------|---------------|----------------------|---------------|----------|-------|-------|------|--------|-------------------------------------|--------|------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year | | |
| 1956 | P | 2.21 | 2.38 | 0.37 | 0.62 | 4.49 | 1.94 | 1.88 | 2.55 | 0 | 0.41 | 4.50 | 1.99 | 23.34 | | |
| | Q | 0 | 0 | | 0 | 0 | 0 | 0 | .02 | 0 | 0 | .11 | 0 | .13 | | |
| 1957 | P | 1.54 | 3.17 | 5.54 | 14.98 | 8.41 | 4.78 | .01 | 1.17 | 4.13 | 8.31 | 4.64 | .86 | 57.54 | | |
| | Q | 0 | .02 | .38 | 10.01 | 6.00 | 1.30 | 0 | 0 | 0 | 1.71 | 1.11 | .03 | 20.56 | | |
| 1958 | P | 1.78 | 3.44 | 1.39 | 3.27 | 1.91 | 2.44 | .99 | 6.44 | 5.05 | 3.00 | 1.36 | 1.39 | 32.46 | | |
| | Q | .08 | 1.07 | .08 | .01 | .54 | 0 | 0 | .01 | .17 | .13 | 0 | T | 2.09 | | |
| 1959 | P | .37 | 3.31 | .95 | 3.99 | 3.95 | 7.18 | 4.39 | 3.18 | 1.88 | 6.83 | 2.01 | 3.55 | 41.59 | | |
| | Q | T | .42 | .01 | .30 | .09 | 1.24 | .01 | 0 | 0 | 1.13 | .59 | .69 | 4.48 | | |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | Riesel (Waco), Texas | | | | | | | Watershed Y-2 | | |
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 4-19 | 2.58 | 4-19 | 2.20 | 4-19 | 2.81 | 4-23 | 3.18 | 4-23 | 3.32 | 4-23 | 3.33 | 4-23 | 4.95 | 4-19 | 9.20 |
| 1958 | 5-3 | .13 | 5-3 | .12 | 5-3 | .21 | 2-22 | .38 | 2-22 | .57 | 2-22 | .91 | 2-22 | 1.01 | 2-21 | 1.03 |
| 1959 | 6-23 | .80 | 6-23 | .63 | 6-23 | .97 | 6-23 | 1.03 | 6-23 | 1.07 | 6-23 | 1.07 | 6-23 | 1.12 | 6-23 | 1.12 |
| Notes: Quality of records: monthly P and Q, excellent; Annual Max. discharges and volumes, excellent. Watershed conditions: No appreciable change in land use or conservation practices since 1955. See page 42.12-1, Monthly Precipitation and Runoff for Small Agricultural Watersheds in the United States, ARS, SWC, June 1957 (reprinted 1961). | | | | | | | | | | | | | | | | |
| SELECTED RUNOFF EVENTS | | | | | | | Riesel (Waco), Texas | | | | | | | Watershed Y-2 | | |
| Antecedent conditions | | | Rainfall | | | Runoff | | | | | | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | | | | | | |
| <u>Event of April 24, 1957</u> | | | | | | | | | | | | | | | | |
| 3-27-57 | 1.02 | 0.0180 | 4-24-57 | Raingage | 75A | 4-24-57 | | | | | | | | | | |
| 3-28 | 0 | .0026 | 2:35p | 0 | 0 | 2:40p | 0.0004 | 0 | | | | | | | | |
| 3-31 | 1.30 | .2176 | :39 | 1.20 | .04 | :50 | .0025 | .0001 | | | | | | | | |
| 4-1, 2 | 0 | .0227 | :45 | 2.50 | .29 | :51 | .0048 | .0002 | | | | | | | | |
| 4-3 | .25 | .0002 | :48 | 1.60 | .37 | :52 | .0316 | .0005 | | | | | | | | |
| 4-4 | .02 | T | :50 | 3.60 | .49 | :53 | .0857 | .0015 | | | | | | | | |
| 4-8 | .03 | 0 | :54 | 4.35 | .78 | :55 | .164 | .0058 | | | | | | | | |
| 4-13 | .05 | 0 | :57 | 2.00 | .88 | :59 | .391 | .0206 | | | | | | | | |
| 4-15 | .04 | 0 | 3:00 | 3.60 | 1.06 | 3:00 | .545 | .0284 | | | | | | | | |
| 4-19 | 5.21 | 2.8853 | :03 | 3.00 | 1.21 | :01 | .642 | .0383 | | | | | | | | |
| 4-20 | .29 | .3554 | :06 | 3.40 | 1.38 | :03 | .789 | .0622 | | | | | | | | |
| 4-21 | .20 | .0040 | :10 | 2.85 | 1.57 | :04 | .887 | .0762 | | | | | | | | |
| 4-22 | .33 | .0327 | :17 | .94 | 1.68 | :05 | .992 | .0918 | | | | | | | | |
| 4-23 | 3.84 | 3.3278 | :23 | .80 | 1.76 | :07 | 1.25 | .1295 | | | | | | | | |
| 4-24 | .03 | .0055 | 4:03 | .12 | 1.84 | :09 | 1.40 | .1738 | | | | | | | | |
| Watershed Conditions: 19% of area bedded for cotton, no crop; 21% row grain sorghum planted mid-April, 2" high; 10% row sudan planted mid-April, 1" high; 18% of fall seeded oats-clover, oats 20" high in bloom stage; 31% Bermuda grass pasture, grass and weeds 10" high, good cover; 1% gravel roads; cropland terraced, contour tilled. | | | Raingage | 69 | 1.79 | :11 | 1.53 | .2227 | | | | | | | | |
| | | | Raingage | 70 | 1.75 | :13 | 1.62 | .2751 | | | | | | | | |
| | | | Raingage | 84A | 1.54 | :15 | 1.67 | .3298 | | | | | | | | |
| | | | Weighted Average ^{2/} | 1.79 | 1.79 | :17 | 1.68 | .3855 | | | | | | | | |
| | | | | | | :20 | 1.67 | .4691 | | | | | | | | |
| | | | | | | :22 | 1.63 | .5241 | | | | | | | | |
| | | | | | | :26 | 1.50 | .6286 | | | | | | | | |
| | | | | | | :30 | 1.34 | .7237 | | | | | | | | |
| | | | | | | :34 | 1.19 | .8082 | | | | | | | | |
| | | | | | | :38 | 1.04 | .8825 | | | | | | | | |
| | | | | | | :42 | .902 | .9472 | | | | | | | | |
| | | | | | | :46 | .781 | 1.0033 | | | | | | | | |
| | | | | | | :53 | .618 | 1.0841 | | | | | | | | |
| | | | | | | 4:00 | .492 | 1.1482 | | | | | | | | |
| | | | | | | :10 | .370 | 1.2193 | | | | | | | | |
| Notes: To convert runoff in in/hr to cfs, multiply by 133.05. ^{1/} Prior to event beginning 2:35p. ^{2/} Thiessen method. For map of watershed, see page 42.11-5. | | | | | | | | | | | | | | | | |

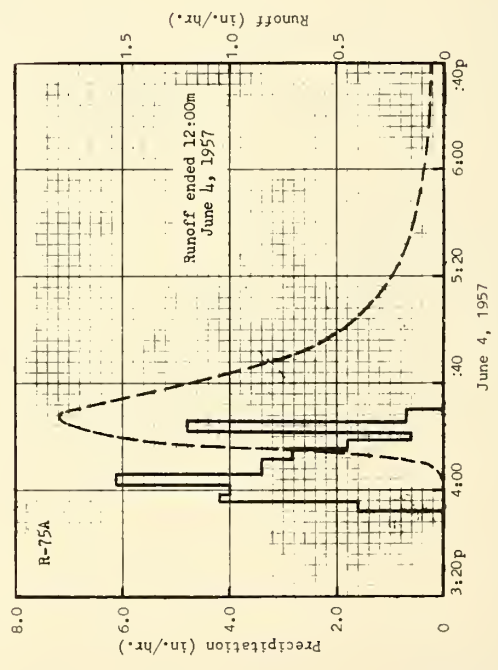
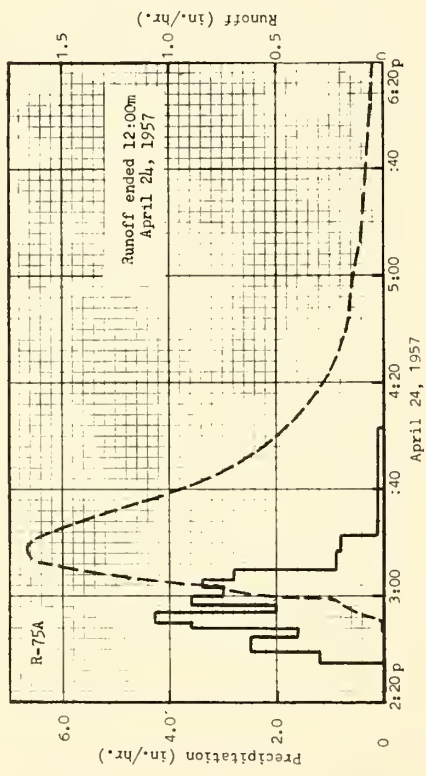
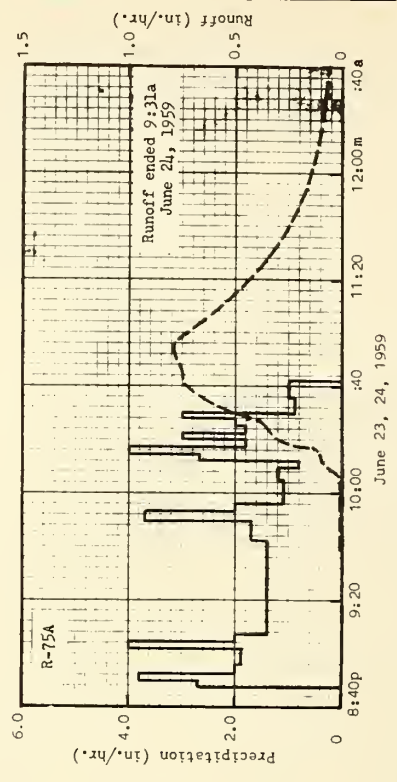
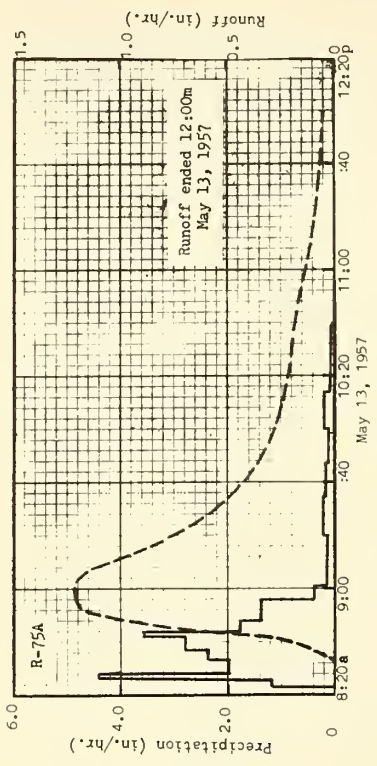
Cooperative Research Project of USDA and Texas Agricultural Experiment Station

| SELECTED RUNOFF EVENTS | | | Riesel (Waco), Texas | | | Watershed Y-2 | | |
|--|-------------------|-----------------|----------------------|-----------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of April 24, 1957 - Continued</u> | | | | | | | | |
| | | | | | | 4-24-57 | | |
| | | | | | | 4:19p | 0.305 | 1.2691 |
| | | | | | | :24 | .268 | 1.2930 |
| | | | | | | :36 | .205 | 1.3400 |
| | | | | | | :45 | .168 | 1.3679 |
| | | | | | | :55 | .142 | 1.3934 |
| | | | | | | 5:13 | .114 | 1.4314 |
| | | | | | | 6:20 | .0534 | 1.5250 |
| | | | | | | 7:00 | .0304 | 1.5524 |
| | | | | | | 8:17 | .0146 | 1.5799 |
| | | | | | | 9:20 | .0092 | 1.5924 |
| | | | | | | 12:00m | .0034 | 1.6076 |
| <u>Event of May 13, 1957</u> | | | | | | | | |
| 4-13-57 | 0.05 | 0 | 5-13-57 | Raingage | 75A | 5-13-57 | | |
| 4-15 | .04 | 0 | 8:23a | 0 | 0 | 8:20a | 0.0002 | 0 |
| 4-19 | 5.21 | 2.8853 | :26 | 1.20 | .06 | :30 | .0014 | .0001 |
| 4-20 | .29 | .3554 | :28 | 4.50 | .21 | :35 | .0493 | .0010 |
| 4-21 | .20 | .0040 | :33 | 2.04 | .38 | :37 | .118 | .0038 |
| 4-22 | .33 | .0327 | :37 | 2.40 | .54 | :41 | .216 | .0144 |
| 4-23 | 3.84 | 3.3278 | :42 | 2.88 | .78 | :43 | .492 | .0254 |
| 4-24 | 1.83 | 1.6131 | :44 | 3.60 | .90 | :44 | .626 | .0347 |
| 4-25 | 0 | .0173 | :48 | 1.80 | 1.02 | :46 | .819 | .0589 |
| 4-26 | 1.25 | .5649 | :56 | 1.42 | 1.21 | :48 | .961 | .0886 |
| 4-27 | .27 | .4047 | 9:01 | .48 | 1.25 | :50 | 1.08 | .1227 |
| 4-28 | 1.30 | .6943 | :20 | .19 | 1.31 | :52 | 1.19 | .1606 |
| 4-29 | .03 | .0806 | :35 | .24 | 1.37 | :55 | 1.23 | .2212 |
| 4-30 | .03 | .0042 | :47 | .20 | 1.41 | 9:00 | 1.24 | .3245 |
| 5-1 | .23 | .0176 | 10:00 | .18 | 1.45 | :04 | 1.21 | .4061 |
| 5-2 | 0 | .0047 | :14 | .21 | 1.50 | :08 | 1.13 | .4840 |
| 5-3 | 1.57 | 1.2044 | :39 | .14 | 1.56 | :12 | 1.01 | .5551 |
| 5-4, 7 | 0 | .0148 | Raingage | 69 | 1.54 | :16 | .887 | .6182 |
| 5-8 | .03 | .0003 | Raingage | 70 | 1.50 | :22 | .736 | .6997 |
| 5-9 | .98 | .2567 | Raingage | 84A | 1.64 | :28 | .609 | .7667 |
| 5-10 | 0 | .0053 | Weighted | Average ^{2/} | 1.57 | :34 | .507 | .8223 |
| 5-11 | 3.68 | 2.9195 | | | | :40 | .426 | .8687 |
| 5-12 | 0 | .1727 | | | | :49 | .350 | .9268 |
| 5-13 ^{1/} | .04 | .0018 | | | | 10:10 | .262 | 1.0331 |
| | | | | | | :25 | .228 | 1.0943 |
| | | | | | | :40 | .195 | 1.1471 |
| | | | | | | 11:00 | .144 | 1.2034 |
| | | | | | | :45 | .0721 | 1.2787 |
| | | | | | | 12:15p | .0437 | 1.3077 |
| | | | | | | 1:25 | .0179 | 1.3398 |
| | | | | | | 2:28 | .0098 | 1.3540 |
| | | | | | | 3:45 | .0052 | 1.3611 |
| | | | | | | 5:50 | .0022 | 1.3703 |
| | | | | | | 12:00m | .0007 | 1.3778 |
| <u>Event of June 4, 1957</u> | | | | | | | | |
| 5-4, 7-57 | 0 | 0.0148 | 6-4-57 | Raingage | 75A | 6-4-57 | | |
| 5-8 | .03 | .0003 | 3:52p | 0 | 0 | 3:54p | 0.0010 | 0 |
| 5-9 | .98 | .2567 | :55 | 1.60 | .08 | 4:00 | .0037 | .0002 |
| 5-10 | 0 | .0053 | :58 | 4.20 | .29 | :02 | .0070 | .0003 |
| 5-11 | 3.68 | 2.9195 | 4:01 | 4.05 | .56 | :04 | .0123 | .0007 |
| 5-12 | 0 | .1727 | :05 | 6.15 | .97 | :06 | .0187 | .0012 |
| 5-13 | 1.62 | 1.3796 | :11 | 3.40 | 1.31 | :08 | .0316 | .0020 |
| 5-14, 15 | 0 | .0121 | :15 | 2.85 | 1.50 | :12 | .244 | .0098 |
| 5-16 | .04 | .0013 | :18 | 1.80 | 1.59 | :14 | .618 | .0241 |
| 5-17 | 0 | .0012 | :21 | .60 | 1.62 | :16 | 1.04 | .0516 |
| 5-18 | .03 | .0018 | :25 | 4.80 | 1.94 | :18 | 1.34 | .0917 |
| 5-19, 22 | 0 | .0031 | :30 | .72 | 2.00 | :20 | 1.52 | .1394 |
| 5-23 | .12 | .0007 | Raingage | 69 | 1.71 | :24 | 1.71 | .2478 |

Notes: To convert runoff in in/hr to cfs, multiply by 133.06. ^{1/} Prior to event beginning 8:23a. ^{2/} Thiessen method.

| SELECTED RUNOFF EVENTS | | | Riesel (Waco), Texas | | | Watershed Y-2 | | |
|---|-------------------|---------------------|----------------------|-----------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of June 4, 1957 - Continued | | | | | | | | |
| 5-24-57 | 0 | 0.0006 | 6-4-57 | | | 6-4-57 | | |
| 5-25 | .01 | .0002 | Raingage | 70 | 1.67 | 4:25p | 1.76 | 0.2767 |
| 5-26 | .09 | .0005 | Raingage | 84A | 2.05 | :26 | 1.79 | .3063 |
| 5-27, 28 | 0 | .0003 | Weighted | Average ^{3/} | 1.88 | :28 | 1.79 | .3659 |
| 6-1 | .91 | .0038 | | | | :30 | 1.73 | .4245 |
| 6-2 | 0 | .0015 | | | | :34 | 1.53 | .5333 |
| 6-3 | .39 | .0038 | | | | :36 | 1.40 | .5820 |
| 6-4 | .24 ^{1/} | .0054 ^{2/} | | | | :38 | 1.29 | .6269 |
| | | | | | | :40 | 1.18 | .6680 |
| | | | | | | :44 | .977 | .7397 |
| | | | | | | :48 | .804 | .7984 |
| | | | | | | :52 | .667 | .8475 |
| | | | | | | :56 | .561 | .8883 |
| | | | | | | 5:00 | .470 | .9226 |
| | | | | | | :04 | .398 | .9515 |
| | | | | | | :14 | .286 | 1.0078 |
| | | | | | | :40 | .140 | 1.0940 |
| | | | | | | 6:04 | .0992 | 1.1407 |
| | | | | | | :25 | .0696 | 1.1706 |
| | | | | | | 7:10 | .0316 | 1.2064 |
| | | | | | | :55 | .0196 | 1.2249 |
| | | | | | | 9:10 | .0104 | 1.2432 |
| | | | | | | 10:50 | .0056 | 1.2557 |
| | | | | | | 12:00m | .0040 | 1.2614 |
| Event of June 23, 24, 1959 | | | | | | | | |
| 5-23-59 | 0.20 | 0.0474 | 6-23-59 | Raingage | 75A | 6-23-59 | | |
| 5-24 | .04 | .0009 | 8:47p | 0 | 0 | 9:32p | 0 | 0 |
| 5-25 | .01 | .0001 | :49 | 2.70 | .09 | :39 | .0131 | .0011 |
| 6-2 | .18 | 0 | :52 | 3.80 | .28 | :51 | .0110 | .0035 |
| 6-3 | .02 | 0 | :55 | 2.00 | .38 | :59 | .0131 | .0051 |
| 6-4 | 1.45 | .0547 | 9:01 | 1.90 | .57 | 10:07 | .0257 | .0072 |
| 6-5 | .63 | .0675 | :04 | 4.00 | .77 | :09 | .0578 | .0085 |
| 6-6, 7 | 0 | .0040 | :07 | 2.00 | .87 | :10 | .0857 | .0097 |
| 6-12 | .17 | 0 | :42 | 1.40 | .89 | :16 | .122 | .0204 |
| 6-20 | .72 | 0 | :49 | 1.72 | 1.09 | :18 | .244 | .0264 |
| 6-22 | .36 | 0 | :53 | 3.75 | 1.34 | :20 | .318 | .0357 |
| 6-23 | .06 ^{4/} | 0 | :56 | 2.00 | 1.44 | :25 | .357 | .0638 |
| | | | 10:05 | 1.14 | 1.61 | :28 | .426 | .0832 |
| | | | :09 | 1.20 | 1.69 | :30 | .492 | .0986 |
| | | | :12 | .80 | 1.73 | :33 | .601 | .1263 |
| | | | :14 | 2.70 | 1.82 | :36 | .667 | .1580 |
| | | | :17 | 4.00 | 2.02 | :42 | .751 | .2294 |
| | | | :20 | 1.80 | 2.11 | :48 | .774 | .3053 |
| | | | :22 | 3.00 | 2.21 | :54 | .796 | .3838 |
| | | | :25 | 1.80 | 2.30 | :56 | .796 | .4104 |
| | | | :28 | 2.00 | 2.40 | 11:01 | .736 | .4742 |
| | | | :30 | 3.00 | 2.50 | :05 | .667 | .5209 |
| | | | :36 | .90 | 2.59 | :13 | .538 | .6012 |
| | | | :42 | 1.00 | 2.69 | :16 | .500 | .6271 |
| | | | Raingage | 69 | 2.90 | :20 | .447 | .6587 |
| | | | Raingage | 69B | 2.95 | :30 | .337 | .7239 |
| | | | Raingage | 70 | 2.87 | :40 | .262 | .7738 |
| | | | Raingage | 84A | 2.79 | 12:00m | .168 | .8441 |
| | | | Weighted | Average ^{3/} | 2.83 | 6-24-59 | | |
| | | | | | | 12:27a | .118 | .9072 |
| | | | | | | 1:16 | .0672 | .9813 |
| | | | | | | :56 | .0370 | 1.0159 |
| | | | | | | 2:50 | .0187 | 1.0401 |
| | | | | | | :51 | .0092 | 1.0536 |
| | | | | | | :58 | .0048 | 1.0611 |
| | | | | | | 7:12 | .0016 | 1.0674 |
| | | | | | | 9:31 | .0006 | 1.0697 |
| <p>Watershed Conditions: 19% in cotton planted last week of May; 21% row grain sorghum 24" high cultivated mid-May; 10% row sudan, 24" high, good stand; 16% oats-clover, oats harvested, clover growing 12" high; 31% Bermuda grass and weed pasture, 12" high, good cover; 1% gravel roads; cropland terraced, contour tilled.</p> <p>Watershed Conditions: 20% in cotton, good stand 16" high, beginning to bloom, last cultivation mid-June; 23% row grain sorghum, good stand, 5' high, grain in dough stage, last cultivation in mid-May; 16% oats-clover, oats harvested, clover growing, 12" high; 8% row sudan 5' high; 32% Bermuda grass pasture, grass 10" high, good cover; 1% gravel roads; cropland terraced, contour tilled.</p> | | | | | | | | |

Notes: To convert runoff in in/hr to cfs, multiply by 133.06. ^{1/} Prior rainfall ended 11:30a. ^{2/} Runoff prior to 3:54p. ^{3/} Thiessen method. ^{4/} Rainfall prior to 8:47p.



RIESEL (WACO), TEXAS Watershed Y-2

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Riesel (Waco), Texas | | | | | | | Watershed Y-4 (Area - 79.9 acres) | |
|---|-------|------|------|------|-------|------|----------------------|------|------|-------|------|------|------|--------------------------------------|--|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year | |
| 1956 | P | 2.25 | 2.38 | 0.36 | 0.60 | 4.54 | 1.94 | 1.78 | 2.54 | 0 | 0.40 | 4.49 | 1.96 | 23.24 | |
| | Q | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .16 | 0 | .16 | |
| 1957 | P | 1.55 | 3.18 | 5.57 | 15.22 | 8.43 | 4.61 | .01 | 1.20 | 4.16 | 8.42 | 4.71 | .85 | 57.91 | |
| | Q | 0 | .03 | .48 | 10.34 | 6.35 | 1.37 | 0 | 0 | 0 | 1.79 | 1.24 | .03 | 21.63 | |
| 1958 | P | 1.79 | 3.48 | 1.40 | 3.27 | 1.86 | 2.50 | .98 | 6.53 | 5.21 | 3.07 | 1.36 | 1.40 | 32.85 | |
| | Q | .09 | 1.08 | .09 | .02 | .66 | 0 | 0 | .03 | .22 | .19 | 0 | T | 2.38 | |
| 1959 | P | .38 | 3.32 | .92 | 4.01 | 3.96 | 7.22 | 4.45 | 3.29 | 1.88 | 6.81 | 2.04 | 3.58 | 41.86 | |
| | Q | T | .48 | .01 | .35 | .06 | 1.11 | .01 | 0 | 0 | 1.21 | .54 | .79 | 4.56 | |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | Riesel (Waco), Texas | | | | | | | Watershed Y-4 | | |
|---|-------------------|------|---|------|---------|------|----------------------|------|----------|------|-------|------|--------|---------------|--------|------|
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 4-19 | 2.52 | 4-19 | 2.16 | 4-19 | 2.85 | 4-23 | 3.25 | 4-23 | 3.40 | 4-23 | 3.43 | 4-23 | 5.12 | 4-19 | 9.46 |
| 1958 | 5-3 | .15 | 5-3 | .12 | 5-3 | .22 | 5-3 | .40 | 5-3 | .56 | 2-22 | .86 | 2-22 | 1.00 | 2-21 | 1.07 |
| 1959 | 6-23 | .79 | 6-23 | .57 | 6-23 | .79 | 6-23 | .95 | 6-23 | .97 | 10-4 | 1.03 | 10-4 | 1.07 | 10-4 | 1.07 |

Notes: Quality of records: monthly P and Q, excellent; Annual Max. discharges and volumes, excellent. Watershed conditions: no appreciable change in land use or conservation practices since 1955. See page 42.13-1, Monthly Precipitation and Runoff for Small Agricultural Watersheds in the United States, ARS, SWC, June 1957 (reprinted 1961).

| SELECTED RUNOFF EVENTS | | | Riesel (Waco), Texas | | | Watershed Y-4 | | |
|---|-------------------|-----------------|----------------------|---------------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of April 24, 25, 1957 | | | | | | | | |
| 3-27-57 | 1.06 | 0.036 | 4-24-57 | Raingage | 69 | 4-24-57 | | |
| 3-28, 29 | 0 | .003 | 2:33p | 0 | 0 | 2:34p | 0.0009 | 0 |
| 3-31 | 1.32 | .281 | :36 | 1.80 | .09 | :44 | .0020 | T |
| 4-1, 2 | 0 | .038 | :39 | 2.40 | .21 | :50 | .0050 | T |
| 4-3 | .25 | .002 | :44 | 2.04 | .38 | :53 | .0108 | .001 |
| 4-4 | .02 | .017 | :49 | 2.40 | .58 | :57 | .0201 | .002 |
| 4-8 | .03 | 0 | :55 | 3.50 | .93 | 3:00 | .0421 | .003 |
| 4-13 | .05 | 0 | 3:00 | 2.64 | 1.15 | :02 | .148 | .006 |
| 4-15 | .04 | 0 | :03 | 3.40 | 1.32 | :03 | .213 | .009 |
| 4-19 | 5.37 | 2.935 | :08 | 2.16 | 1.50 | :04 | .302 | .013 |
| 4-20 | .30 | .416 | :13 | 1.20 | 1.60 | :05 | .415 | .019 |
| 4-21 | .20 | .015 | :17 | 1.65 | 1.71 | :10 | 1.04 | .086 |
| 4-22 | .33 | .055 | :27 | .24 | 1.75 | :13 | 1.24 | .143 |
| 4-23 | 3.88 | 3.42 | :51 | .10 | 1.79 | :15 | 1.39 | .186 |
| 4-24 ^{1/} | 0 | .014 | Raingage | 75A | 1.76 | :18 | 1.54 | .260 |
| Watershed Conditions: 32% of area bedded for cotton, no crop growing; 7% row grain sorghum, planted mid-April, 2" high; 29% oats-clover, good growth, oats 20" high in bloom stage; 31% Bermuda grass and weed pasture, grass and weeds 10" high, good cover; 1% gravel roads; cropland terraced, contour tilled. | | | | | | | | |
| | | | Raingage Weighted | 84A Average ^{2/} | 1.56 | :22 | 1.61 | .365 |
| | | | | | 1.77 | :26 | 1.56 | .471 |
| | | | | | | :29 | 1.49 | .547 |
| | | | | | | :35 | 1.30 | .686 |
| | | | | | | :40 | 1.14 | .788 |
| | | | | | | :46 | .947 | .892 |
| | | | | | | :54 | .742 | 1.002 |
| | | | | | | 4:01 | .599 | 1.082 |
| | | | | | | :12 | .468 | 1.179 |
| | | | | | | :22 | .370 | 1.248 |
| | | | | | | :36 | .262 | 1.322 |
| | | | | | | :53 | .191 | 1.383 |
| | | | | | | 5:10 | .169 | 1.435 |
| | | | | | | :39 | .0870 | 1.493 |
| | | | | | | 7:06 | .0457 | 1.579 |

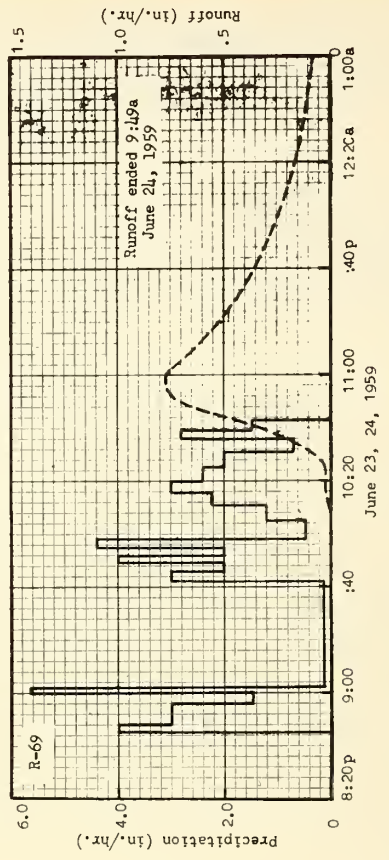
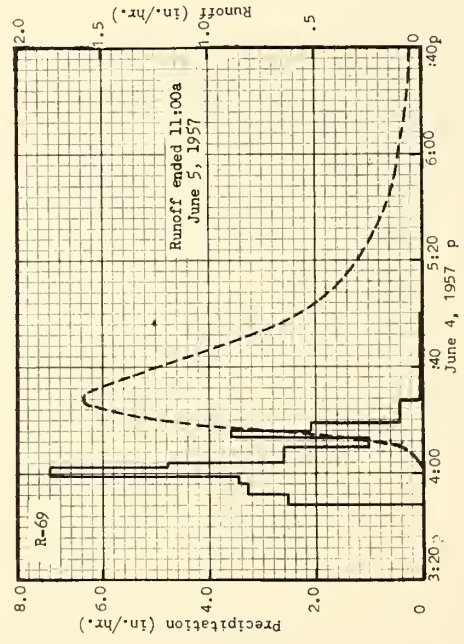
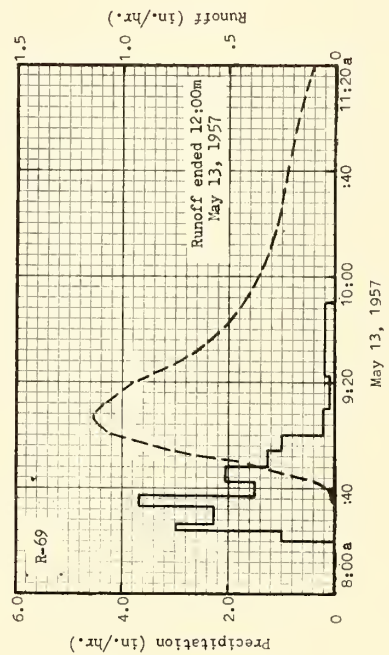
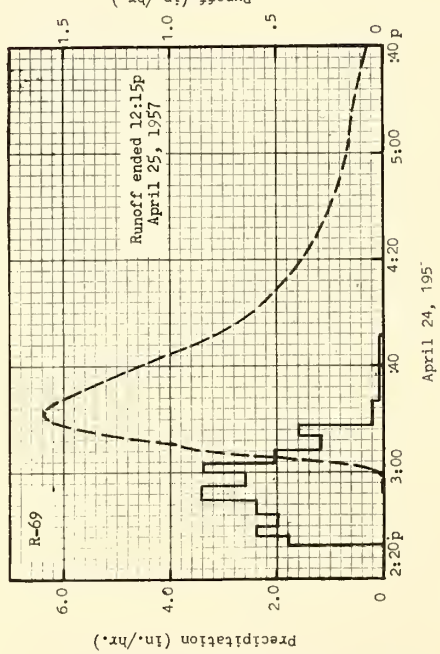
Notes: To convert runoff in in/hr to cfs, multiply by 80.54. ^{1/} Runoff prior to 2:34p. ^{2/} Thiessen method. For map of watershed, see page 42.11-5.

| SELECTED RUNOFF EVENTS | | | | | | Riesel (Waco), Texas | Watershed Y-4 | |
|--|-------------------|--------------------|---------------|-----------------------|---------------|----------------------|---------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of April 24, 25, 1957 - Continued</u> | | | | | | | | |
| | | | | | | 4-24-57 | | |
| | | | | | | 8:41p | 0.0213 | 1.629 |
| | | | | | | 9:57 | .0125 | 1.649 |
| | | | | | | 12:00m | .0068 | 1.668 |
| | | | | | | 4-25-57 | | |
| | | | | | | 4:15a | .0026 | 1.684 |
| | | | | | | 12:15p | .0010 | 1.698 |
| <u>Event of May 13, 1957</u> | | | | | | | | |
| 4-13-57 | 0.05 | 0 | 5-13-57 | Raingage | 69 | 5-13-57 | | |
| 4-15 | .04 | 0 | 8:20a | 0 | 0 | 8:20a | 0.0004 | 0 |
| 4-19 | 5.37 | 2.935 | :24 | 1.05 | .07 | :33 | .0033 | I |
| 4-20 | .30 | .416 | :26 | 3.00 | .17 | :36 | .0085 | I |
| 4-21 | .20 | .015 | :33 | 2.32 | .44 | :40 | .0482 | .002 |
| 4-22 | .33 | .055 | :37 | 3.75 | .69 | :44 | .180 | .009 |
| 4-23 | 3.88 | 3.425 | :42 | 1.56 | .82 | :46 | .302 | .017 |
| 4-24 | 1.85 | 1.682 | :48 | 2.10 | 1.03 | :48 | .370 | .028 |
| 4-25 | 0 | .036 | :54 | 1.30 | 1.16 | :50 | .452 | .042 |
| 4-26 | 1.26 | .512 | 9:00 | 1.00 | 1.26 | :51 | .626 | .051 |
| 4-27 | .26 | .384 | :10 | .24 | 1.30 | :53 | .761 | .074 |
| 4-28 | 1.32 | .683 | :22 | .15 | 1.33 | :57 | .916 | .130 |
| 4-29 | .03 | .131 | :50 | .21 | 1.43 | 9:01 | 1.06 | .196 |
| 4-30 | .04 | .011 | Raingage | 75A | 1.49 | :04 | 1.11 | .251 |
| 5-1 | .23 | .027 | Raingage | 84A | 1.48 | :06 | 1.14 | .288 |
| 5-2 | 0 | .011 | Weighted | Average ^{2/} | 1.46 | :07 | 1.14 | .307 |
| 5-3 | 1.57 | 1.322 | | | | :11 | 1.09 | .382 |
| 5-4, 8 | 0 | .042 | | | | :19 | .957 | .519 |
| 5-9 | .98 | .249 | | | | :30 | .706 | .671 |
| 5-10 | 0 | .012 | | | | :46 | .468 | .824 |
| 5-11 | 3.68 | 2.946 | | | | 10:01 | .362 | .926 |
| 5-12 ^{1/} | 0 | .267 | | | | :10 | .321 | .977 |
| 5-13 ^{4/} | .04 | .004 | | | | :35 | .243 | 1.094 |
| Watershed Conditions: 32% of area bedded for cotton, no crop growing; 7% row grain sorghum 8" high; 29% oats-clover, oats 40" high in dough stage, clover growing; 31% Bermuda grass and weed pasture, grass and weeds 12" high, good cover; 1% gravel roads; cropland terraced, contour tilled. | | | | | | :51 | .196 | 1.152 |
| | | | | | | 11:13 | .133 | 1.211 |
| | | | | | | 12:12p | .0633 | 1.305 |
| | | | | | | :46 | .0362 | 1.334 |
| | | | | | | 2:50 | .0135 | 1.382 |
| 4:40 | .0062 | 1.399 | | | | | | |
| 6:00 | .0040 | 1.406 | | | | | | |
| 12:00m | .0015 | 1.420 | | | | | | |
| <u>Event of June 4, 5, 1957</u> | | | | | | | | |
| 5-4, 7-57 | 0 | 0.039 | 6-4-57 | Raingage | 69 | 6-4-57 | | |
| 5-8 | .03 | .003 | 3:48p | 0 | 0 | 3:52p | 0.0007 | 0 |
| 5-9 | .97 | .249 | :52 | 2.55 | .17 | :56 | .0015 | I |
| 5-10 | 0 | .012 | :54 | 3.30 | .28 | :59 | .0029 | I |
| 5-11 | 3.66 | 2.946 | :59 | 3.48 | .57 | 4:01 | .0055 | I |
| 5-12 | 0 | .267 | 4:02 | 7.00 | .92 | :04 | .0166 | .001 |
| 5-13 | 1.62 | 1.424 | :04 | 4.80 | 1.08 | :06 | .0314 | .002 |
| 5-14, 15 | 0 | .026 | :10 | 2.60 | 1.34 | :08 | .0525 | .003 |
| 5-16 | .03 | .003 | :13 | 1.00 | 1.39 | :12 | .226 | .010 |
| 5-17 | 0 | .002 | :15 | 3.60 | 1.51 | :14 | .508 | .021 |
| 5-18 | .02 | .002 | :19 | 2.10 | 1.65 | :16 | .866 | .044 |
| 5-19, 22 | 0 | .007 | :27 | .45 | 1.71 | :18 | 1.08 | .077 |
| 5-23 | .12 | .002 | 5:00 | .02 | 1.72 | :20 | 1.21 | .115 |
| 5-24 | 0 | .001 | Raingage | 75A | 2.02 | :22 | 1.35 | .157 |
| 5-25 | .01 | .001 | Raingage | 84A | 2.08 | :24 | 1.50 | .205 |
| 5-26 | .09 | I | Weighted | Average ^{2/} | 1.85 | :25 | 1.55 | .230 |
| 5-27, 31 | 0 | I | | | | :26 | 1.59 | .256 |
| 6-1 | .87 | .006 | | | | :29 | 1.59 | .336 |
| 6-2 | 0 | .001 | | | | :31 | 1.55 | .389 |
| 6-3 | .37 | .005 | | | | :35 | 1.40 | .487 |
| 6-4 | .24 ^{3/} | .009 ^{4/} | | | | :39 | 1.27 | .577 |

Notes: To convert runoff in in/hr to cfs, multiply by 80.54. 1/ Prior to event beginning 8:20a. 2/ Thiessen method. 3/ Prior rainfall ended 12:00m. 4/ Runoff prior to 3:52p.

| SELECTED RUNOFF EVENTS | | | Riesel (Waco), Texas | | | Watershed Y-4 | | | | |
|---|-------------------|-----------------|----------------------|-----------------------|---------------|---------------|--------------|---------------|-------|-------|
| Antecedent conditions | | | Rainfall | | | Runoff | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | |
| <u>Event of June 4, 5, 1957 - Continued</u> | | | | | | | | | | |
| <p>Watershed Conditions: 32% in cotton planted last week of May; 7% row grain sorghum 24" high, cultivated mid-May; 29% oats-clover, oats harvested, clover growing, 12" high; 31% Bermuda grass and weed pasture, 12" high, good cover; 1% gravel roads; cropland terraced, contour tilled.</p> | | | | | | 6-4-57 | | | | |
| | | | | | | 4:45p | | | 1.03 | 0.692 |
| | | | | | | 5:01 | | | .818 | .784 |
| | | | | | | 5:00 | | | .582 | .888 |
| | | | | | | :06 | | | .475 | .941 |
| | | | | | | :18 | | | .315 | 1.019 |
| | | | | | | :26 | | | .249 | 1.057 |
| | | | | | | :44 | | | .158 | 1.117 |
| | | | | | | 6:05 | | | .104 | 1.162 |
| | | | | | | :20 | | | .0788 | 1.185 |
| | | | | | | :40 | | | .0525 | 1.206 |
| | | | | | | 7:45 | | | .0268 | 1.247 |
| | | | | | | 9:12 | | | .0135 | 1.276 |
| | | | | | | 12:00m | | | .0052 | 1.300 |
| | | | | | | 6-5-47 | | | | |
| | | | 5:30a | | | .0020 | 1.318 | | | |
| | | | 11:00 | | | .0010 | 1.327 | | | |
| <u>Event of June 23, 24, 1959</u> | | | | | | | | | | |
| 5-23-59 | C.21 | 0.030 | 6-23-59 | Raingage | 69 | 6-23-59 | | | | |
| 5-24 | .04 | .001 | 8:45p | 0 | 0 | 9:51p | T | 0 | | |
| 5-25 | T | T | :48 | 4.00 | .20 | :58 | .0026 | T | | |
| 6-2 | .18 | 0 | :56 | 3.00 | .60 | 10:08 | .0066 | .001 | | |
| 6-3 | .02 | 0 | 9:00 | 1.50 | .70 | :16 | .0166 | .002 | | |
| 6-4 | 1.45 | .032 | :02 | 5.70 | .89 | :25 | .0314 | .006 | | |
| 6-5 | .65 | .069 | :42 | 1.50 | .99 | :29 | .0561 | .009 | | |
| 6-6, 7 | C | .005 | :46 | 3.00 | 1.19 | :31 | .100 | .011 | | |
| 6-12 | .16 | 0 | :49 | 2.00 | 1.29 | :33 | .133 | .015 | | |
| 6-20 | .74 | 0 | :52 | 4.00 | 1.49 | :35 | .199 | .021 | | |
| 6-22 | .37 | 0 | :55 | 2.00 | 1.59 | :38 | .276 | .033 | | |
| 6-23 ^{1/} | 0 | T | :58 | 4.40 | 1.81 | :40 | .343 | .043 | | |
| | | | 10:05 | .51 | 1.87 | :43 | .415 | .062 | | |
| | | | :11 | 1.20 | 1.99 | :46 | .580 | .085 | | |
| | | | :16 | 2.28 | 2.18 | :49 | .669 | .114 | | |
| <p>Watershed Conditions: 8% in cotton, good stand 16" high, beginning to bloom, last cultivation mid-June; 22% oats-clover, oats harvested, clover growing, 12" high; 38% row grain sorghum 5' high, good stand, grain in dough stage, last cultivation mid-May; 31% Bermuda grass pasture, grass 10" high, good cover; 1% gravel roads; cropland terraced, contour tilled.</p> | | | :20 | 3.00 | 2.38 | :51 | .734 | .137 | | |
| | | | :25 | 2.40 | 2.58 | :55 | .789 | .188 | | |
| | | | :31 | 2.00 | 2.78 | :58 | .789 | .227 | | |
| | | | :36 | .72 | 2.84 | 11:05 | .715 | .315 | | |
| | | | :39 | 2.80 | 2.90 | :15 | .573 | .423 | | |
| | | | :43 | 1.50 | 3.00 | :27 | .444 | .525 | | |
| | | | Raingage | 69B | 2.95 | :43 | .328 | .629 | | |
| | | | Raingage | 75A | 2.79 | 12:00m | .241 | .709 | | |
| | | | Raingage | 84A | 2.89 | 6-24-59 | | | | |
| | | | Weighted | Average ^{2/} | 2.94 | 12:21a | .153 | .777 | | |
| | | | | | | 1:10 | .0748 | .866 | | |
| | | | | | | 2:19 | .0298 | .922 | | |
| | | | | | | 3:20 | .0155 | .945 | | |
| | | | | | | 4:32 | .0078 | .958 | | |
| | | | | | | 5:33 | .0040 | .964 | | |
| | | | 7:04 | .0020 | .968 | | | | | |
| | | | 9:49 | .0007 | .972 | | | | | |

Notes: To convert runoff in in/hr to cfs, multiply by 80.54. ^{1/} Runoff prior to 9:51p. ^{2/} Thiessen method.



RIESEL (WACO), TEXAS Watershed Y-4

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Riesel (Waco), Texas | | | | | | Watershed Y-6 (Area - 16.3 acres) | |
|---|------|------|------|-------|------|------|----------------------|------|-------|------|------|------|--------------------------------------|--|
| Month Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year | |
| 1956 P | 2.16 | 2.45 | 0.38 | 0.64 | 4.42 | 1.93 | 1.99 | 2.54 | 0 | 0.37 | 4.53 | 2.02 | 23.43 | |
| Q | 0 | 0 | 0 | 0 | .09 | 0 | 0 | 0 | 0 | 0 | .31 | 0 | .40 | |
| 1957 P | 1.53 | 3.10 | 5.50 | 14.69 | 8.36 | 5.10 | T | 1.18 | 4.15 | 8.39 | 4.71 | .85 | 57.56 | |
| Q | 0 | .01 | .19 | 8.15 | 5.40 | 1.19 | 0 | 0 | 0 | 3.09 | 1.10 | .02 | 19.15 | |
| 1958 P | 1.75 | 3.50 | 1.39 | 3.31 | 1.89 | 2.47 | .99 | 6.39 | 5.01 | 3.02 | 1.35 | 1.40 | 32.47 | |
| Q | .06 | .70 | .05 | .02 | .43 | 0 | 0 | T | .13 | .21 | 0 | 0 | 1.60 | |
| 1959 P | .38 | 3.34 | .93 | 4.01 | 3.91 | 7.14 | 4.45 | 3.33 | 1.89 | 6.89 | 2.02 | 3.54 | 41.83 | |
| Q | 0 | .31 | T | .50 | .14 | .89 | .01 | 0 | 0 | 1.45 | .57 | .56 | 4.43 | |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | | | | | | | | Riesel (Waco), Texas | | Watershed Y-6 | |
|---|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|----------------------|--------|---------------|--|
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | |
| 1957 | 4-19 | 1.64 | 4-19 | 1.37 | 4-19 | 1.99 | 4-23 | 2.65 | 5-11 | 2.87 | 5-11 | 2.90 | 4-23 | 4.26 | 4-19 | 8.49 | |
| 1958 | 10-21 | .14 | 10-21 | .11 | 10-21 | .17 | 5-3 | .23 | 5-3 | .35 | 2-22 | .47 | 2-22 | .60 | 2-21 | .68 | |
| 1959 | 6-23 | 1.03 | 6-23 | .61 | 6-23 | .73 | 10-4 | .90 | 10-4 | 1.26 | 10-4 | 1.30 | 10-4 | 1.32 | 10-4 | 1.32 | |

Notes: Quality of records: monthly P and Q, excellent; Annual Max. discharges and volumes, excellent. Watershed conditions: area changed to 16.3 acres Jan. 1956. Cultivated land use changed to single crop by year as follows: grain sorghum - 1956 and 1959, oats and clover - 1957, cotton - 1958. See page 42.14-1, Monthly Precipitation and Runoff for Small Agricultural Watersheds in the United States, ARS, SWC, June 1957 (reprinted 1961).

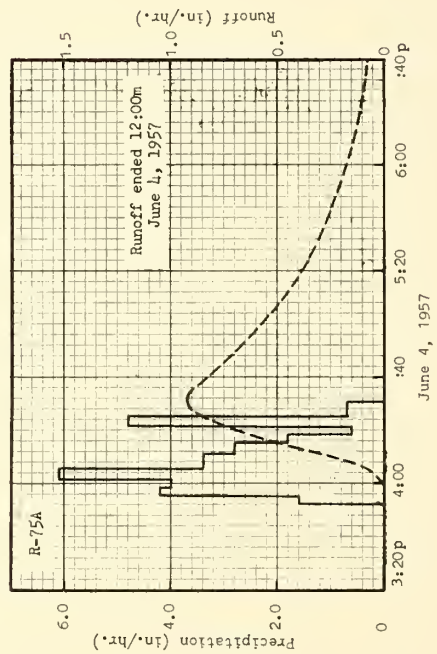
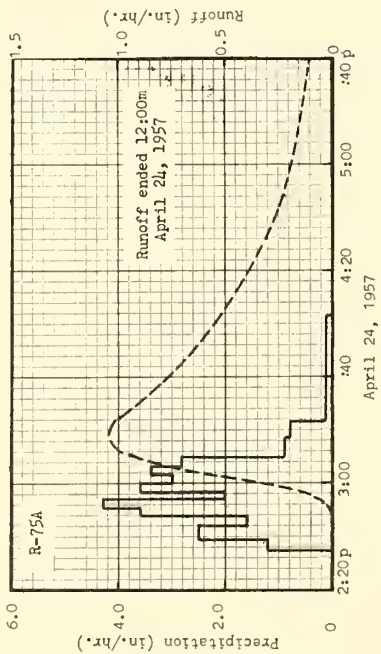
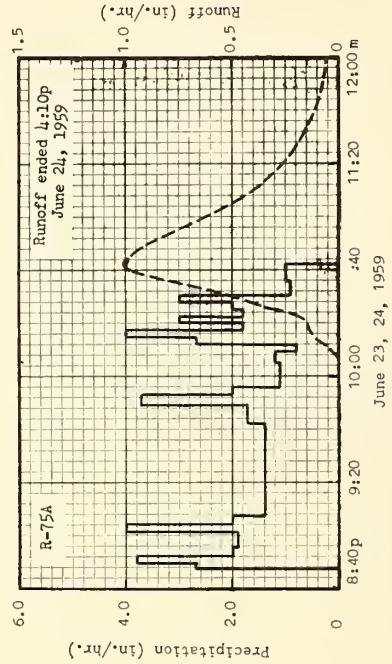
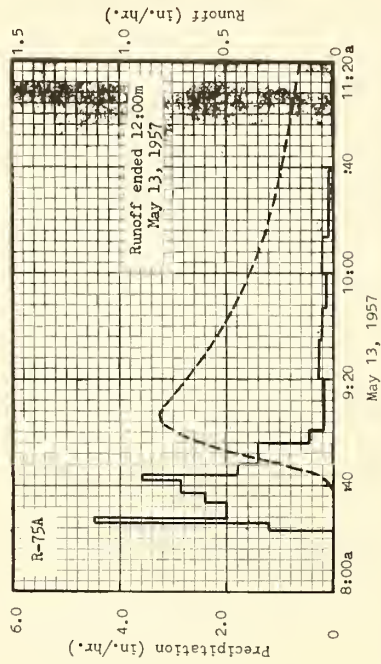
| SELECTED RUNOFF EVENTS | | | | | | Riesel (Waco), Texas | | | Watershed Y-6 | | |
|-------------------------|-------------------|-----------------|---------------|-----------------------|---------------|----------------------|--------------|---------------|---------------|--|--|
| Antecedent conditions | | | Rainfall | | | Runoff | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | |
| Event of April 24, 1957 | | | | | | | | | | | |
| 3-27-57 | 0.93 | 0.002 | 4-24-57 | Raingage | 75A | 4-24-57 | | | | | |
| 3-28 | 0 | T | 2:35p | 0 | 0 | 2:30p | T | 0 | | | |
| 3-31 | 1.30 | .137 | :39 | 1.20 | .04 | :39 | .0023 | T | | | |
| 4-1 | 0 | .006 | :45 | 2.50 | .29 | :48 | .0148 | .001 | | | |
| 4-3 | .27 | 0 | :48 | 1.60 | .37 | :51 | .0217 | .002 | | | |
| 4-4 | .03 | 0 | :50 | 3.60 | .49 | :54 | .0639 | .004 | | | |
| 4-8 | .03 | 0 | :54 | 4.35 | .78 | :56 | .124 | .007 | | | |
| 4-13 | .05 | 0 | :57 | 2.00 | .88 | :58 | .195 | .012 | | | |
| 4-15 | .03 | 0 | 3:00 | 3.60 | 1.06 | 3:00 | .350 | .021 | | | |
| 4-19 | 4.94 | 2.058 | :03 | 3.00 | 1.21 | :02 | .455 | .034 | | | |
| 4-20 | .28 | .386 | :06 | 3.40 | 1.38 | :04 | .583 | .052 | | | |
| 4-21 | .20 | 0 | :10 | 2.85 | 1.59 | :06 | .742 | .074 | | | |
| 4-22 | .32 | .001 | :17 | .94 | 1.68 | :10 | .949 | .131 | | | |
| 4-23 ^{1/} | 3.83 | 2.819 | :23 | .80 | 1.76 | :17 | 1.05 | .249 | | | |
| 4-24 ^{1/} | .02 | .006 | 4:03 | .12 | 1.84 | :19 | 1.05 | .284 | | | |
| | | | Raingage | 69 | 1.81 | :27 | .967 | .418 | | | |
| | | | Weighted | Average ^{2/} | 1.84 | :40 | .797 | .610 | | | |
| | | | | | | :53 | .615 | .762 | | | |
| | | | | | | 4:04 | .502 | .864 | | | |
| | | | | | | :19 | .381 | .973 | | | |
| | | | | | | :38 | .276 | 1.078 | | | |
| | | | | | | 5:09 | .176 | 1.192 | | | |
| | | | | | | 6:00 | .0846 | 1.298 | | | |
| | | | | | | 7:04 | .0401 | 1.360 | | | |
| | | | | | | 8:15 | .0186 | 1.392 | | | |
| | | | | | | 10:30 | .0066 | 1.418 | | | |
| | | | | | | 12:00m | .0038 | 1.425 | | | |

Notes: To convert runoff in in/hr to cfs, multiply by 16.43. ^{1/} Prior to event beginning 2:35p. ^{2/} Thiessen method. For map of watershed, see page 42.11-5.

| SELECTED RUNOFF EVENTS | | | | | | Riesel (Waco), Texas | Watershed Y-6 | |
|---|-------------------|--------------------|---------------|-----------------------|---------------|----------------------|---------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of May 13, 1957 | | | | | | | | |
| 4-13-57 | 0.05 | 0 | 5-13-57 | Raingage | 75A | 5-13-57 | | |
| 4-15 | .03 | 0 | 8:23a | 0 | 0 | 8:00a | 0.0006 | 0 |
| 4-19 | 4.94 | 2.058 | :26 | 1.20 | .06 | :30 | .0047 | T |
| 4-20 | .28 | .386 | :28 | 4.50 | .21 | :38 | .0166 | .002 |
| 4-21 | .20 | 0 | :33 | 2.04 | .38 | :43 | .0472 | .004 |
| 4-22 | .32 | .001 | :37 | 2.40 | .54 | :45 | .124 | .006 |
| 4-23 | 3.83 | 2.819 | :42 | 2.88 | .78 | :48 | .262 | .016 |
| 4-24 | 1.86 | 1.431 | :44 | 3.60 | .90 | :50 | .350 | .026 |
| 4-25 | 0 | .018 | :48 | 1.80 | 1.02 | :57 | .669 | .087 |
| 4-26 | 1.26 | .384 | :56 | 1.42 | 1.21 | 9:03 | .797 | .160 |
| 4-27 | .28 | .393 | 9:01 | .48 | 1.25 | :07 | .803 | .214 |
| 4-28 | 1.24 | .528 | :20 | .19 | 1.31 | :10 | .797 | .254 |
| 4-29 | .04 | .118 | :35 | .24 | 1.37 | :27 | .633 | .456 |
| 4-30 | .03 | .006 | :47 | .20 | 1.41 | :45 | .486 | .622 |
| 5-1 | .24 | .016 | 10:00 | .18 | 1.45 | 10:20 | .319 | .857 |
| 5-2 | 0 | .006 | :14 | .21 | 1.50 | :55 | .206 | 1.008 |
| 5-3 | 1.42 | 1.008 | :39 | .14 | 1.56 | 11:49 | .0967 | 1.140 |
| 5-4, 5 | 0 | .024 | Raingage | 69 | 1.58 | 12:45p | .0472 | 1.204 |
| 5-8 | .02 | 0 | Weighted | Average ^{2/} | 1.56 | 1:40 | .0228 | 1.235 |
| 5-9 | 1.01 | .119 | | | | 3:00 | .0116 | 1.257 |
| 5-10 | 0 | .011 | | | | 4:45 | .0066 | 1.273 |
| 5-11 | 3.74 | 2.616 | | | | 12:00m | .0018 | 1.298 |
| 5-12 | 0 | .282 | | | | | | |
| 5-13 ^{1/} | .04 | .004 | | | | | | |
| <p>Watershed Conditions: 94% of area in oats-clover, oats 40" high in dough stage, clover growing; 4% sodded waterway; 2% gravel roads; terraced cropland.</p> | | | | | | | | |
| Event of June 4, 1957 | | | | | | | | |
| 5-3-57 | 1.42 | 1.008 | 5-4-57 | Raingage | 75A | 6-4-57 | | |
| 5-4, 5 | 0 | .024 | 3:52p | 0 | 0 | 3:53p | .0012 | 0 |
| 5-8 | .02 | 0 | :55 | 1.60 | .08 | :57 | .0066 | T |
| 5-9 | 1.01 | .119 | :58 | 4.20 | .29 | 4:00 | .0148 | .001 |
| 5-10 | 0 | .011 | 4:01 | 4.05 | .56 | :04 | .0401 | .002 |
| 5-11 | 3.74 | 2.616 | :05 | 6.15 | .97 | :07 | .131 | .006 |
| 5-12 | 0 | .282 | :11 | 3.40 | 1.31 | :09 | .249 | .012 |
| 5-13 | 1.62 | 1.302 | :15 | 2.85 | 1.50 | :11 | .353 | .022 |
| 5-14, 15 | 0 | .020 | :18 | 1.80 | 1.59 | :15 | .502 | .052 |
| 5-16 | .05 | T | :21 | .60 | 1.62 | :19 | .633 | .090 |
| 5-17 | 0 | T | :25 | 4.80 | 1.94 | :25 | .852 | .165 |
| 5-18 | .04 | T | :30 | .72 | 2.00 | :30 | .931 | .240 |
| 5-19, 20 | 0 | T | 5:02 | .02 | 2.02 | :32 | .931 | .271 |
| 5-23 | .13 | 0 | Raingage | 69 | 1.72 | :39 | .852 | .375 |
| 5-25 | .02 | 0 | Weighted | Average ^{2/} | 2.01 | :49 | .706 | .506 |
| 5-26 | .08 | 0 | | | | 5:01 | .551 | .632 |
| 6-1 | .97 | .004 | | | | :23 | .360 | .794 |
| 6-2 | 0 | .002 | | | | :58 | .186 | .946 |
| 6-3 | .44 | .008 | | | | 6:12 | .139 | .984 |
| 6-4 | .19 ^{3/} | .019 ^{4/} | | | | :36 | .0846 | 1.028 |
| <p>Watershed Conditions: 94% of area in oats-clover, oats ripe, clover 12" high; 4% in sodded waterway; 2% gravel roads; terraced cropland.</p> | | | | | | | | |
| <p>Notes: To convert runoff in in/hr to cfs, multiply by 16.43. ^{1/} Prior to event beginning 8:23a. ^{2/} Thiessen method, ^{3/} Rainfall prior to 11:30a. ^{4/} Runoff prior to 3:53p.</p> | | | | | | | | |

| SELECTED RUNOFF EVENTS | | | Riesel (Waco), Texas | | | Watershed Y-6 | | |
|----------------------------|-------------------|-----------------|----------------------|-----------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of June 23, 24, 1959 | | | | | | | | |
| 5-23-59 | 0.23 | 0.059 | 6-23-59 | Raingage | 75A | 6-23-59 | | |
| 5-24 | .04 | .006 | 8:47p | 0 | 0 | 9:45p | T | 0 |
| 5-25 | T | 0 | :49 | 2.70 | .09 | :57 | .0102 | T |
| 6-2 | .19 | 0 | :52 | 3.80 | .28 | 10:08 | .0253 | .003 |
| 6-3 | .02 | 0 | :55 | 2.00 | .38 | :10 | .0418 | .004 |
| 5-4 | 1.44 | .053 | 9:01 | 1.90 | .57 | :12 | .0688 | .002 |
| 5-5 | .63 | .047 | :04 | 4.00 | .77 | :16 | .131 | .013 |
| 5-6, 7 | 0 | .006 | :07 | 2.00 | .87 | :21 | .158 | .025 |
| 6-12 | .16 | 0 | :42 | 1.40 | .89 | :24 | .237 | .035 |
| 6-20 | .71 | 0 | :49 | 1.72 | 1.09 | :26 | .353 | .045 |
| 6-22 | .36 | 0 | :53 | 3.75 | 1.34 | :28 | .425 | .058 |
| 6-23 ₁ | .10 | T | :56 | 2.00 | 1.44 | :31 | .534 | .082 |
| | | | 10:05 | 1.14 | 1.61 | :34 | .706 | .113 |
| | | | :09 | 1.20 | 1.69 | :38 | .894 | .167 |
| | | | :12 | .80 | 1.73 | :41 | 1.01 | .214 |
| | | | :14 | 2.70 | 1.83 | :43 | 1.03 | .248 |
| | | | :17 | 4.00 | 2.02 | :50 | .913 | .363 |
| | | | :20 | 1.80 | 2.11 | :59 | .669 | .482 |
| | | | :22 | 3.00 | 2.21 | 11:06 | .494 | .550 |
| | | | :25 | 1.80 | 2.30 | :12 | .367 | .593 |
| | | | :28 | 2.00 | 2.40 | :37 | .139 | .688 |
| | | | :30 | 3.00 | 2.50 | :50 | .0846 | .711 |
| | | | :36 | .90 | 2.59 | 12:00 m | .0593 | .723 |
| | | | :42 | 1.00 | 2.69 | 6-24-59 | | |
| | | | Raingage | 69B | 2.87 | 12:24a | .0279 | .741 |
| | | | Weighted | Average ^{2/} | 2.82 | :47 | .0148 | .749 |
| | | | | | | 1:31 | .0066 | .756 |
| | | | | | | 4:10 | .0012 | .764 |

Notes: To convert runoff in in/hr to cfs, multiply by 16.43. 1/ Prior to event beginning 8:47p. 2/ Thiessen method.



RIESEL (WACO), TEXAS WATERSHED Y-6

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Riesel (Waco), Texas | | | | | | Watershed Y-7 (Area - 40.0 acres) | |
|---|-------|------|------|------|-------|------|----------------------|------|------|-------|------|------|--------------------------------------|-------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 | P | 2.15 | 2.46 | 0.46 | 0.74 | 4.35 | 1.78 | 1.90 | 2.45 | 0 | 0.28 | 4.41 | 2.02 | 23.00 |
| | Q | 0 | 0 | 0 | 0 | .06 | 0 | 0 | 0 | 0 | 0 | .24 | 0 | .30 |
| 1957 | P | 1.44 | 3.19 | 5.55 | 15.00 | 8.36 | 4.53 | .05 | 1.03 | 4.07 | 8.13 | 4.64 | .90 | 56.89 |
| | Q | 0 | .01 | .81 | 9.59 | 5.58 | .91 | 0 | 0 | 0 | 1.97 | 1.14 | 0 | 20.01 |
| 1958 | P | 1.74 | 3.35 | 1.37 | 3.27 | 1.94 | 2.31 | 1.17 | 6.21 | 4.83 | 2.78 | 1.45 | 1.53 | 31.95 |
| | Q | .02 | 1.19 | .01 | .01 | .88 | 0 | 0 | .34 | .48 | .19 | T | T | 3.12 |
| 1959 | P | .42 | 3.49 | 1.03 | 4.19 | 3.98 | 7.10 | 4.43 | 3.22 | 2.03 | 7.04 | 1.91 | 3.64 | 42.48 |
| | Q | T | .59 | T | .82 | .52 | 1.98 | .32 | .01 | T | 1.95 | .73 | 1.05 | 7.97 |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | | | | | | | | Riesel (Waco), Texas | | Watershed Y-7 | |
|---|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|----------------------|--------|---------------|--|
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | |
| 1957 | 4-19 | 3.15 | 4-19 | 2.34 | 4-19 | 2.76 | 4-23 | 3.28 | 4-23 | 3.31 | 4-23 | 3.31 | 4-23 | 4.86 | 4-19 | 8.89 | |
| 1958 | 5-3 | .24 | 5-3 | .20 | 5-3 | .35 | 5-3 | .59 | 5-3 | .79 | 2-22 | 1.11 | 2-22 | 1.17 | 2-21 | 1.19 | |
| 1959 | 6-23 | 1.76 | 6-23 | 1.10 | 6-23 | 1.27 | 6-23 | 1.35 | 6-23 | 1.36 | 6-23 | 1.37 | 6-23 | 1.56 | 6-23 | 1.56 | |

Notes: Quality of records: monthly P and Q, excellent; Annual Max. discharges and volumes, excellent. Watershed conditions: no appreciable change in land use or conservation practices since 1955. See page L2.15-1, Monthly Precipitation for Small Agricultural Watersheds in the United States, ARC, SWC, June 1957 (reprinted 1961).

| SELECTED RUNOFF EVENTS | | | | | | Riesel (Waco), Texas | | Watershed Y-7 | |
|--------------------------------|-------------------|-----------------|---------------|-----------------------|---------------|----------------------|--------------|---------------|--|
| Antecedent conditions | | | Rainfall | | | Runoff | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | |
| <u>Event of April 24, 1957</u> | | | | | | | | | |
| 3-27-57 | 1.93 | 0.10 | 4-24-57 | Raingage | 89 | 4-24-57 | | | |
| 3-28 | 0 | .001 | 2:34p | 0 | 0 | 2:43p | 0.0005 | 0 | |
| 3-31 | 1.32 | .257 | :38 | .45 | .03 | :48 | .0037 | T | |
| 4-1 | 0 | .004 | :42 | 3.00 | .23 | :50 | .0077 | T | |
| 4-3 | .02 | 0 | :45 | 1.35 | .32 | :54 | .0233 | .001 | |
| 4-8 | .02 | 0 | :50 | 5.25 | .67 | :56 | .167 | .004 | |
| 4-13 | .05 | 0 | :58 | 2.40 | .99 | :58 | .845 | .021 | |
| 4-15 | .03 | 0 | 3:00 | 5.40 | 1.17 | 3:00 | 1.37 | .058 | |
| 4-19 | 5.01 | 2.782 | :05 | 2.28 | 1.36 | :02 | 1.76 | .111 | |
| 4-20 | .24 | .170 | :08 | 2.80 | 1.50 | :04 | 1.95 | .173 | |
| 4-21 | .21 | .006 | :17 | 1.14 | 1.67 | :07 | 2.16 | .276 | |
| 4-22 | .31 | .055 | :21 | .60 | 1.74 | :12 | 2.35 | .465 | |
| 4-23 | 4.04 | 3.313 | :30 | .27 | 1.78 | :14 | 2.36 | .543 | |
| 4-24 ^{1/} | .04 | .001 | 4:30 | .03 | 1.81 | :18 | 2.25 | .698 | |
| | | | Raingage | W-2A | 1.75 | :22 | 2.01 | .840 | |
| | | | Weighted | Average ^{2/} | 1.90 | :28 | 1.55 | 1.019 | |
| | | | | | | :32 | 1.28 | 1.115 | |
| | | | | | | :36 | 1.03 | 1.192 | |
| | | | | | | :39 | .845 | 1.239 | |
| | | | | | | :43 | .664 | 1.289 | |
| | | | | | | :51 | .407 | 1.358 | |
| | | | | | | :58 | .268 | 1.397 | |
| | | | | | | 4:05 | .198 | 1.424 | |
| | | | | | | :17 | .117 | 1.455 | |
| | | | | | | :40 | .0630 | 1.489 | |
| | | | | | | :58 | .0407 | 1.504 | |
| | | | | | | 5:14 | .0253 | 1.513 | |
| | | | | | | :43 | .0134 | 1.522 | |
| | | | | | | 6:09 | .0087 | 1.526 | |
| | | | | | | 8:32 | .0021 | 1.536 | |
| | | | | | | 12:00 | .0006 | 1.540 | |

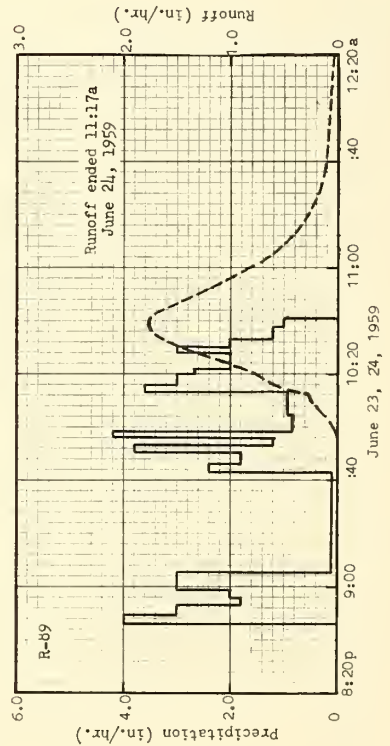
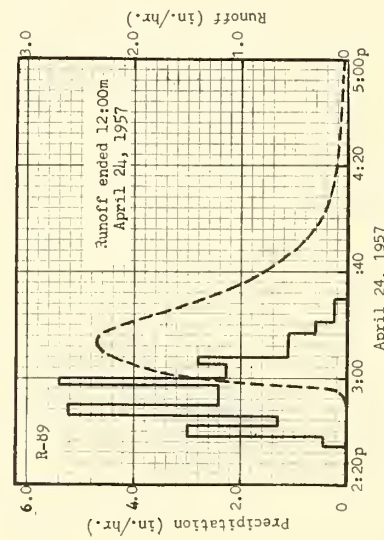
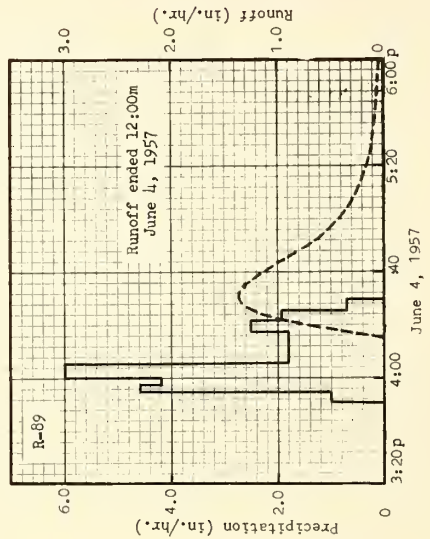
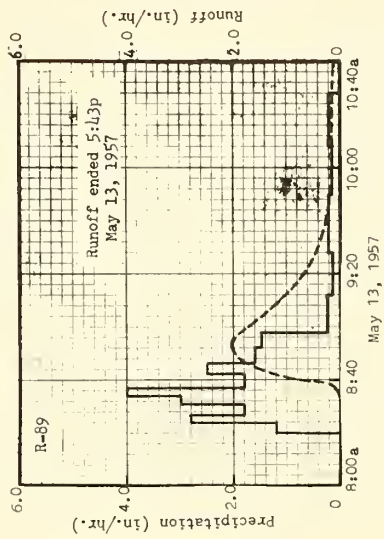
Notes: To convert runoff in in/hr to cfs, multiply by 40.32. ^{1/} Prior to event beginning 2:34p. ^{2/} Thiessen method. For map of watershed, see page L2.11-5.

| SELECTED RUNOFF EVENTS | | | Riesel (Waco), Texas | | Watershed Y-7 | | | | |
|---|-------------------|-----------------|----------------------|-----------------------|---------------|---------------|--------------|---------------|-------|
| Antecedent conditions | | | Rainfall | | | Runoff | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | |
| <u>Event of May 13, 1957</u> | | | | | | | | | |
| 4-13-57 | 0.06 | 0 | 5-13-57 | Raingage | 89 | 5-13-57 | | | |
| 4-15 | .03 | 0 | 8:20a | 0 | 0 | 8:20a | T | 0 | |
| 4-19 | 5.01 | 2.782 | :24 | 1.20 | .08 | :28 | .0007 | T | |
| 4-20 | .24 | .170 | :27 | 2.80 | .22 | :30 | .0027 | T | |
| 4-21 | .21 | .006 | :31 | 1.80 | .34 | :32 | .0072 | T | |
| 4-22 | .31 | .055 | :34 | 3.00 | .49 | :34 | .0120 | .001 | |
| 4-23 | 4.04 | 3.313 | :37 | 4.00 | .69 | :37 | .0322 | .002 | |
| 4-24 | 1.86 | 1.541 | :42 | 1.80 | .84 | :39 | .278 | .005 | |
| 4-25 | 0 | .003 | :46 | 2.55 | 1.01 | :41 | .855 | .024 | |
| 4-26 | 1.41 | .717 | :52 | 1.60 | 1.17 | :44 | 1.49 | .084 | |
| 4-27 | .27 | .304 | :58 | 1.50 | 1.32 | :47 | 1.82 | .168 | |
| 4-28 | 1.19 | .674 | 9:12 | .26 | 1.38 | :52 | 2.03 | .330 | |
| 4-29 | .05 | .016 | :28 | .15 | 1.42 | :53 | 2.03 | .364 | |
| 4-30 | .01 | T | :50 | .27 | 1.52 | :58 | 1.89 | .528 | |
| 5-1 | .33 | .103 | 10:08 | .17 | 1.57 | 9:04 | 1.57 | .700 | |
| 5-2 | 0 | T | :28 | .21 | 1.64 | :08 | 1.33 | .796 | |
| 5-3 | 1.18 | .639 | :58 | .04 | 1.66 | :12 | 1.08 | .876 | |
| 5-4 | 0 | .001 | Raingage | W-2A | 1.66 | :16 | .855 | .941 | |
| 5-8 | .04 | 0 | Weighted | Average ^{2/} | 1.66 | :20 | .674 | .993 | |
| 5-9 | .97 | .251 | | | | :24 | .531 | 1.033 | |
| 5-10 | 0 | .002 | | | | :28 | .426 | 1.064 | |
| 5-11 | 3.83 | 3.096 | | | | :34 | .322 | 1.102 | |
| 5-12 | 0 | .039 | | | | :50 | .205 | 1.169 | |
| 5-13 | 0 | T | | | | 10:01 | .188 | 1.205 | |
| <p>Watershed Conditions: 50% of area bedded for cotton, no crop; 29% corn; 10% oats 30" high in dough stage; 3% row grain sorghum 8" high; 8% Bermuda grass and weed pasture, grass and weeds 10" high, good cover; cropland terraced, contour tilled.</p> | | | | | | | :24 | .166 | 1.273 |
| | | | | | | | 11:16 | .0888 | 1.389 |
| | | | | | | | :39 | .0407 | 1.413 |
| | | | | | | | :51 | .0253 | 1.419 |
| | | | | | | | 12:14p | .0134 | 1.426 |
| | | | | | | | :46 | .0068 | 1.431 |
| 3:12 | .0016 | 1.441 | | | | | | | |
| 5:43 | .0003 | 1.442 | | | | | | | |
| <u>Event of June 4, 1957</u> | | | | | | | | | |
| 5-4-57 | 0 | 0.001 | 6-4-57 | Raingage | 89 | 6-4-57 | | | |
| 5-8 | .04 | 0 | 3:51p | 0 | 0 | 3:58p | 0 | 0 | |
| 5-9 | .97 | .251 | :55 | 1.05 | .07 | 4:10 | .0007 | T | |
| 5-10 | 0 | .002 | :58 | 4.60 | .30 | :12 | .0032 | T | |
| 5-11 | 3.83 | 3.096 | 4:00 | 4.20 | .44 | :15 | .0196 | T | |
| 5-12 | 0 | .039 | :05 | 6.00 | .94 | :17 | .352 | .007 | |
| 5-13 | 1.67 | 1.444 | :17 | 1.80 | 1.30 | :20 | .744 | .034 | |
| 5-14 | 0 | .001 | :21 | 2.55 | 1.47 | :22 | 1.03 | .064 | |
| 5-15 | 0 | T | :25 | 1.95 | 1.60 | :25 | 1.23 | .121 | |
| 5-16 | .05 | 0 | :30 | .72 | 1.66 | :30 | 1.36 | .230 | |
| 5-18 | .03 | 0 | :47 | .08 | 1.68 | :31 | 1.37 | .252 | |
| 5-23 | .15 | 0 | Raingage | W-2A | 1.15 | :32 | 1.36 | .275 | |
| 5-25 | .02 | 0 | Weighted | Average ^{2/} | 1.62 | :36 | 1.28 | .363 | |
| 5-26 | .10 | 0 | | | | :41 | 1.11 | .463 | |
| 6-1 | 1.08 | 0 | | | | :47 | .836 | .560 | |
| 6-3 | .46 | 0 | | | | :55 | .531 | .649 | |
| 6-4 | .06 | 0 | | | | 5:00 | .417 | .688 | |
| <p>Watershed Conditions: 50% of area in cotton planted last of May (no crop growing); 29% corn cultivated mid-May; 10% oats stubble, oats harvested; 3% row grain sorghum 20" high; 8% Bermuda grass and weed pasture, grass and weeds 12" high, good cover; cropland terraced, contour tilled.</p> | | | | | | | :10 | .247 | .743 |
| | | | | | | | :37 | .0888 | .809 |
| | | | | | | | 6:04 | .0407 | .836 |
| | | | | | | | :27 | .0196 | .847 |
| | | | | | | | 7:35 | .0087 | .861 |
| | | | | | | | 9:07 | .0040 | .872 |
| 12:00m | .0029 | .880 | | | | | | | |

Notes: To convert runoff in in/hr to cfs, multiply by 40.32. ^{1/} Runoff prior to 8:20a. ^{2/} Thiessen method. ^{3/} Rainfall prior to 3:51p.

| SELECTED RUNOFF EVENTS | | | Riesel (Waco), Texas | | | Watershed Y-7 | | |
|----------------------------|-------------------|-----------------|----------------------|-----------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of June 23, 24, 1959 | | | | | | | | |
| 5-23-59 | 0.18 | 0.167 | 6-23-59 | Raingage | 89 | 6-23-59 | | |
| 5-24 | .04 | .005 | 8:46p | 0 | 0 | 9:41p | 0 | 0 |
| 5-25 | .01 | T | :49 | 4.00 | .20 | :49 | .0011 | T |
| 6-2 | .21 | 0 | :53 | 3.00 | .40 | :51 | .0087 | T |
| 6-3 | .02 | 0 | :56 | 1.80 | .49 | :57 | .0196 | .002 |
| 6-4 | 1.44 | .245 | :59 | 2.00 | .59 | :59 | .0322 | .002 |
| 6-5 | .60 | .156 | 9:05 | 3.00 | .89 | 10:02 | .0888 | .005 |
| 6-6, 7 | 0 | .012 | :43 | .09 | .95 | :06 | .166 | .014 |
| 6-12 | .20 | 0 | :46 | 2.40 | 1.07 | :12 | .265 | .034 |
| 6-20 | .73 | 0 | :50 | 1.80 | 1.19 | :15 | .553 | .054 |
| 6-22 | .36 | 0 | :53 | 3.80 | 1.38 | :18 | .699 | .085 |
| | | | :56 | 1.20 | 1.44 | :20 | .781 | .110 |
| | | | :58 | 4.20 | 1.58 | :24 | 1.04 | .170 |
| | | | 10:05 | .86 | 1.68 | :27 | 1.25 | .228 |
| | | | :13 | .90 | 1.80 | :29 | 1.46 | .273 |
| | | | :16 | 3.60 | 1.98 | :33 | 1.68 | .378 |
| | | | :20 | 3.00 | 2.18 | :38 | 1.76 | .521 |
| | | | :22 | 2.70 | 2.27 | :44 | 1.65 | .692 |
| | | | :28 | 2.00 | 2.47 | :48 | 1.44 | .794 |
| | | | :30 | 3.00 | 2.57 | :54 | 1.13 | .923 |
| | | | :33 | 2.00 | 2.67 | :59 | .855 | 1.004 |
| | | | :38 | 1.20 | 2.77 | 11:05 | .610 | 1.077 |
| | | | :41 | 1.00 | 2.82 | :12 | .404 | 1.134 |
| | | | Raingage | W-2A | 2.84 | :16 | .340 | 1.159 |
| | | | Weighted | Average ^{1/} | 2.82 | :24 | .218 | .196 |
| | | | | | | :30 | .167 | 1.215 |
| | | | | | | :40 | .127 | 1.240 |
| | | | | | | :50 | .111 | 1.260 |
| | | | | | | 12:00m | .0868 | 1.276 |
| | | | | | | 6-24-59 | | |
| | | | | | | 12:09a | .0707 | 1.288 |
| | | | | | | :20 | .0555 | 1.299 |
| | | | | | | 1:05 | .0214 | 1.327 |
| | | | | | | :59 | .0108 | 1.340 |
| | | | | | | 3:19 | .0052 | 1.350 |
| | | | | | | 6:01 | .0021 | 1.359 |
| | | | | | | 11:17 | .0005 | 1.366 |

Notes: To convert runoff in in/hr to cfs, multiply by 40.32. ^{1/} Thiessen method.



RIESEL (WACO), TEXAS Watershed Y-7

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | | Riesel (Waco), Texas Watershed Y-8 (Area - 20.8 acres) | | | | | | |
|---|-------|------|------|------|-------|------|------|---|------|-------|------|------|------|-------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| | | 1956 | P | 2.15 | 2.45 | 0.40 | 0.64 | 4.41 | 1.93 | 1.99 | 2.54 | 0 | 0.37 | 4.53 |
| | Q | 0 | 0 | 0 | 0 | .05 | 0 | 0 | 0 | 0 | 0 | .01 | 0 | 1.05 |
| 1957 | P | 1.53 | 3.09 | 5.49 | 14.66 | 8.36 | 5.13 | .01 | 1.17 | 4.08 | 8.12 | 4.50 | .88 | 57.57 |
| | Q | 0 | .01 | .33 | 9.92 | 5.80 | 1.10 | 0 | 0 | 0 | 1.63 | .46 | 0 | 19.25 |
| 1958 | P | 1.74 | 3.40 | 1.37 | 3.27 | 1.99 | 2.33 | 1.01 | 6.21 | 4.66 | 2.81 | 1.32 | 1.35 | 31.46 |
| | Q | .05 | 1.14 | .03 | T | .29 | 0 | 0 | .03 | .16 | .02 | 0 | 0 | 1.72 |
| 1959 | P | .37 | 3.30 | 1.00 | 3.97 | 3.78 | 6.89 | 4.32 | 3.08 | 1.91 | 6.86 | 1.91 | 3.49 | 40.88 |
| | Q | 0 | .22 | T | .35 | .31 | 1.70 | .04 | 0 | 0 | 1.07 | .70 | .35 | 4.74 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS Riesel (Waco), Texas Watershed Y-8

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 4-19 | 3.23 | 4-19 | 2.41 | 4-19 | 2.80 | 4-23 | 3.32 | 4-23 | 3.37 | 4-23 | 3.37 | 4-23 | 4.95 | 4-19 | 9.10 |
| 1958 | 2-23 | .13 | 2-23 | .12 | 2-23 | .22 | 2-22 | .43 | 2-22 | .67 | 2-22 | 1.02 | 2-22 | 1.11 | 2-21 | 1.13 |
| 1959 | 6-23 | 1.75 | 6-23 | 1.05 | 6-23 | 1.20 | 6-23 | 1.28 | 6-23 | 1.28 | 6-23 | 1.28 | 6-23 | 1.36 | 6-23 | 1.37 |

Notes: Quality of records: monthly P and Q, excellent; Annual Max. discharges and volumes, excellent. Watershed conditions: cultivated land use changed to single crop by year as follows: cotton - 1956 and 1959, grain sorghum - 1957, oats and clover - 1958.

SELECTED RUNOFF EVENTS Riesel (Waco), Texas Watershed Y-8

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|-------------------------|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of April 24, 1957 | | | | | | | | |
| 3-27-57 | 0.92 | 0.012 | 4-24-57 | Raingage | 75A | 4-24-57 | | |
| 3-28 | 0 | T | 2:35p | 0 | 0 | 2:38p | 0.0008 | 0 |
| 3-31 | 1.30 | .143 | :39 | 1.20 | .04 | :47 | .0048 | T |
| 4-1 | 0 | .028 | :45 | 2.50 | .29 | :48 | .0725 | .001 |
| 4-3 | .27 | 0 | :48 | 1.60 | .37 | :50 | .877 | .018 |
| 4-4 | .03 | 0 | :50 | 3.60 | .49 | :52 | 1.41 | .059 |
| 4-8 | .03 | 0 | :54 | 4.35 | .78 | :54 | 2.02 | .114 |
| 4-13 | .05 | 0 | :57 | 2.00 | .88 | :57 | 2.34 | .224 |
| 4-15 | .03 | 0 | 3:00 | 3.60 | 1.06 | 3:02 | 2.54 | .426 |
| 4-19 | 4.92 | 2.836 | :03 | 3.00 | 1.21 | :05 | 2.71 | .557 |
| 4-20 | .28 | .228 | :06 | 3.40 | 1.38 | :08 | 2.71 | .692 |
| 4-21 | .20 | .005 | :10 | 2.85 | 1.57 | :11 | 2.46 | .822 |
| 4-22 | .32 | .052 | :17 | .94 | 1.68 | :15 | 2.06 | .972 |
| 4-23 | 3.83 | 3.372 | :23 | .80 | 1.76 | :18 | 1.64 | 1.064 |
| 4-24 | .02 | .004 | 4:03 | .12 | 1.84 | :23 | 1.27 | 1.183 |
| | | | | | | :30 | .825 | 1.302 |
| | | | | | | :40 | .400 | 1.396 |
| | | | | | | :48 | .235 | 1.437 |
| | | | | | | 4:07 | .107 | 1.486 |
| | | | | | | :27 | .0529 | 1.511 |
| | | | | | | :53 | .0313 | 1.529 |
| | | | | | | 5:28 | .0166 | 1.542 |
| | | | | | | 6:53 | .0056 | 1.555 |
| | | | | | | 9:00 | .0027 | 1.564 |
| | | | | | | 12:00m | .0013 | 1.569 |

Watershed Conditions: 95% of area in row grain sorghum planted 4-11, 2" high, fair stand; 4% in sodded waterway; 1% gravel roads; cropland terraced, contour tilled.

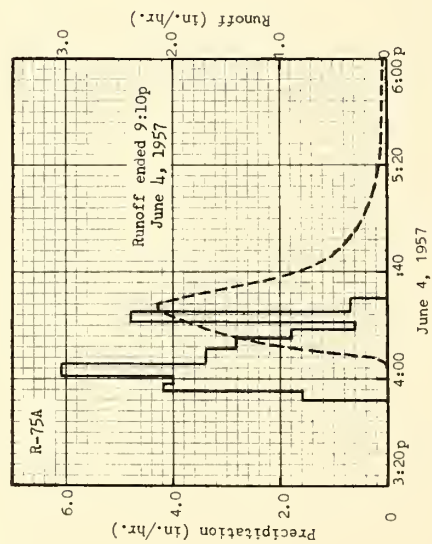
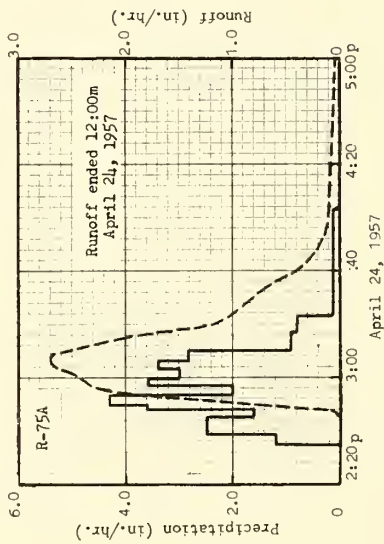
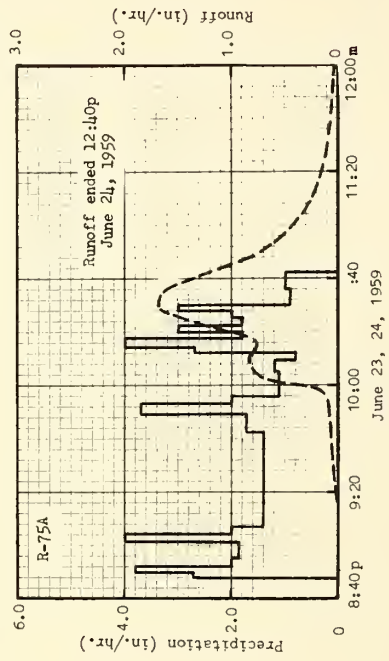
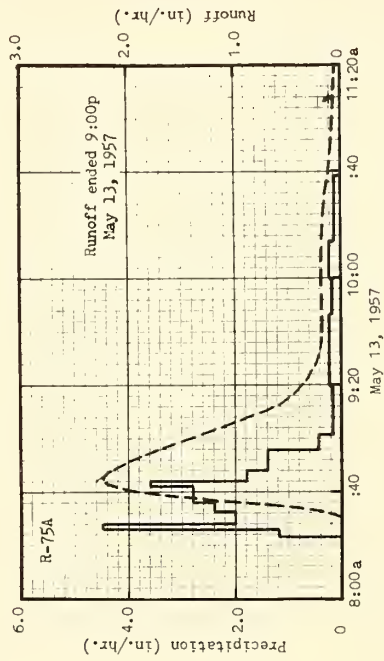
Notes: To convert runoff in in/hr to cfs, multiply by 20.97. 1/ Prior to event beginning 2:35p. For map of watershed, see page 42.11-5.

| SELECTED RUNOFF EVENTS | | | | | | Riesel (Waco), Texas | Watershed Y-8 | | |
|---|-------------------|-----------------|---------------|-------------------|---------------|----------------------|---------------|---------------|--|
| Antecedent conditions | | | Rainfall | | | Runoff | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | |
| <u>Event of May 13, 1957</u> | | | | | | | | | |
| 4-13-57 | 0.05 | 0 | 5-13-57 | Raingage | 75A | 5-13-57 | | | |
| 4-15 | .03 | 0 | 8:23a | 0 | 0 | 8:20a | T | 0 | |
| 4-19 | 4.92 | 2.836 | :26 | 1.20 | .06 | :30 | .0115 | T | |
| 4-20 | .28 | .228 | :28 | 4.50 | .21 | :32 | .121 | .002 | |
| 4-21 | .20 | .005 | :33 | 2.04 | .38 | :34 | .419 | .011 | |
| 4-22 | .32 | .052 | :37 | 2.40 | .54 | :36 | .944 | .034 | |
| 4-23 | 3.83 | 3.372 | :42 | 2.88 | .78 | :38 | 1.31 | .071 | |
| 4-24 | 1.86 | 1.574 | :44 | 3.60 | .90 | :40 | 1.84 | .124 | |
| 4-25 | 0 | .010 | :48 | 1.80 | 1.02 | :42 | 2.15 | .191 | |
| 4-26 | 1.26 | .711 | :56 | 1.42 | 1.21 | :44 | 2.23 | .264 | |
| 4-27 | .28 | .312 | 9:01 | .48 | 1.25 | :49 | 2.13 | .447 | |
| 4-28 | 1.23 | .769 | :20 | .19 | 1.31 | :52 | 2.02 | .551 | |
| 4-29 | .04 | .027 | :35 | .24 | 1.37 | :56 | 1.73 | .676 | |
| 4-30 | .03 | .002 | :47 | .20 | 1.41 | 9:00 | 1.56 | .785 | |
| 5-1 | .24 | .046 | 10:00 | .18 | 1.45 | :04 | 1.25 | .880 | |
| 5-2 | 0 | .003 | :14 | .21 | 1.50 | :06 | 1.05 | .918 | |
| 5-3 | 1.41 | 1.050 | :39 | .14 | 1.56 | :08 | .906 | .951 | |
| 5-4 | 0 | .003 | | | | :12 | .625 | 1.002 | |
| 5-8 | .02 | 0 | | | | :19 | .369 | 1.058 | |
| 5-9 | 1.01 | .275 | | | | :22 | .369 | 1.076 | |
| 5-10 | 0 | T | | | | :29 | .235 | 1.110 | |
| 5-11 | 3.74 | 2.999 | | | | :40 | .180 | 1.147 | |
| 5-12 | 0 | .033 | | | | 10:10 | .180 | 1.237 | |
| 5-13 ^{1/} | .04 | T | | | | :25 | .162 | 1.279 | |
| | | | | | | :38 | .136 | 1.312 | |
| | | | | | | :50 | .107 | 1.336 | |
| | | | | | | 11:01 | .0668 | 1.352 | |
| | | | | | | :20 | .0313 | 1.367 | |
| | | | | | | :39 | .0166 | 1.374 | |
| | | | | | | 12:00 n | .0101 | 1.379 | |
| | | | | | | :30p | .0056 | 1.382 | |
| | | | | | | 1:45 | .0027 | 1.387 | |
| | | | | | | 3:40 | .0010 | 1.391 | |
| | | | | | | 9:00 | .0001 | 1.393 | |
| <u>Event of June 4, 1957</u> | | | | | | | | | |
| 5-8-57 | 0.02 | 0 | 6-4-57 | Raingage | 75A | 6-4-57 | | | |
| 5-9 | 1.01 | .275 | 3:52p | 0 | 0 | 3:52p | T | 0 | |
| 5-10 | 0 | T | :55 | 1.60 | .08 | 4:04 | .0056 | T | |
| 5-11 | 3.74 | 2.999 | :58 | 4.20 | .29 | :07 | .0572 | .002 | |
| 5-12 | 0 | .033 | 4:01 | 4.05 | .56 | :08 | .136 | .003 | |
| 5-13 | 1.62 | 1.393 | :05 | 6.15 | .97 | :10 | .432 | .012 | |
| 5-14, 15 | 0 | .001 | :11 | 3.40 | 1.31 | :12 | .877 | .033 | |
| 5-16 | .05 | 0 | :15 | 2.85 | 1.50 | :14 | 1.23 | .068 | |
| 5-18 | .04 | 0 | :18 | 1.80 | 1.59 | :18 | 1.61 | .165 | |
| 5-23 | .13 | 0 | :21 | .60 | 1.62 | :22 | 1.93 | .282 | |
| 5-25 | .02 | 0 | :25 | 4.80 | 1.94 | :26 | 2.15 | .418 | |
| 5-26 | .08 | 0 | :30 | .72 | 2.00 | :28 | 2.15 | .490 | |
| 6-1 | .98 | T | | | | :30 | 2.02 | .559 | |
| 6-2 | 0 | T | | | | :32 | 1.80 | .623 | |
| 6-3 | .44 | .001 | | | | :35 | 1.46 | .704 | |
| 6-4 | .19 ^{2/} | T ^{3/} | | | | :38 | 1.06 | .767 | |
| | | | | | | :42 | .701 | .825 | |
| | | | | | | :47 | .496 | .874 | |
| | | | | | | :55 | .288 | .925 | |
| | | | | | | 5:07 | .153 | .966 | |
| | | | | | | :19 | .095 | .991 | |
| | | | | | | :43 | .045 | 1.017 | |
| | | | | | | 6:12 | .023 | 1.032 | |
| | | | | | | 7:10 | .012 | 1.048 | |
| | | | | | | 9:10 | .006 | 1.067 | |
| <p>Watershed Conditions: 95% of area in row grain sorghum, 8" high; 4% sodded waterway; 1% gravel roads; cropland terraced, contour tilled.</p> | | | | | | | | | |
| <p>Watershed Conditions: 95% of area in row grain sorghum, 24" high, good cover; 4% in sodded waterway; 1% gravel roads; cropland terraced, contour tilled.</p> | | | | | | | | | |

Notes: To convert runoff in in/hr to cfs, multiply by 20.97. ^{1/} Prior to event beginning 8:23a. ^{2/} Rain ended 11:30a. ^{3/} Runoff prior to 3:52p.

| SELECTED RUNOFF EVENTS | | | Riesel (Waco), Texas | | | Watershed Y-8 | | |
|---|-------------------|-----------------|----------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of June 23, 24, 1959 | | | | | | | | |
| 5-23-59 | 0.16 | 0.121 | 6-23-59 | Raingage | 75A | 6-23-59 | | |
| 5-24 | .06 | .001 | 8:47p | 0 | 0 | 9:15p | 0 | 0 |
| 5-25 | T | 0 | :49 | 2.70 | .09 | :17 | .0257 | T |
| 6-2 | .18 | 0 | :52 | 3.80 | .28 | :28 | .0529 | .009 |
| 6-3 | .02 | 0 | :55 | 2.00 | .38 | :36 | .0782 | .018 |
| 6-4 | 1.46 | .191 | 9:01 | 1.90 | .57 | :54 | .101 | .039 |
| 6-5 | .58 | .128 | :04 | 4.00 | .77 | :58 | .190 | .049 |
| 6-6 | 0 | .004 | :07 | 2.00 | .87 | 10:00 | .304 | .056 |
| 6-12 | .16 | 0 | :42 | 1.40 | .89 | :02 | .682 | .073 |
| 6-20 | .69 | 0 | :49 | 1.72 | 1.09 | :08 | .877 | .156 |
| 6-22 | .35 | 0 | :53 | 3.75 | 1.34 | :12 | .811 | .212 |
| 6-23 | .10 $\frac{1}{2}$ | 0 | :56 | 2.00 | 1.44 | :15 | .768 | .251 |
| Watershed Conditions: 95% of area in cotton, good stand, 16" high, beginning to bloom; 4% in sodded waterway; 1% gravel roads; cropland terraced, contour tilled. | | | 10:05 | 1.14 | 1.61 | :18 | .877 | .292 |
| | | | :09 | 1.20 | 1.69 | :20 | 1.05 | .324 |
| | | | :12 | .80 | 1.73 | :23 | 1.35 | .385 |
| | | | :14 | 2.70 | 1.83 | :29 | 1.68 | .536 |
| | | | :17 | 4.00 | 2.02 | :37 | 1.59 | .762 |
| | | | :20 | 1.80 | 2.11 | :42 | 1.28 | .880 |
| | | | :22 | 3.00 | 2.21 | :48 | .877 | .986 |
| | | | :25 | 1.80 | 2.30 | :52 | .682 | 1.039 |
| | | | :28 | 2.00 | 2.40 | :58 | .438 | 1.093 |
| | | | :30 | 3.00 | 2.50 | 11:04 | .339 | 1.132 |
| | | | :36 | .90 | 2.59 | :12 | .230 | 1.169 |
| | | | :42 | 1.00 | 2.69 | :26 | .121 | 1.208 |
| | | | :39 | .0725 | 1.229 | | | |
| | | | | | | 12:00m | .0377 | 1.248 |
| | | | | | | 6-24-59 | | |
| | | | | | | :21a | .0208 | 1.258 |
| | | | | | | :50 | .0101 | 1.265 |
| | | | | | | 1:45 | .0040 | 1.271 |
| | | | | | | 2:56 | .0017 | 1.274 |
| | | | | | | 12:40p | 0 | 1.278 |

Notes: To convert runoff in in/hr to cfs, multiply by 20.97. $\frac{1}{2}$ Rainfall prior to 8:47p.



RIESEL (WACO), TEXAS Watershed Y-8

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Riesel (Waco), Texas | | | | | | | Watershed Y-10 (Area - 16.6 acres) | |
|---|-------|------|------|------|-------|------|----------------------|------|------|-------|------|------|------|---------------------------------------|------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year | |
| | | 1956 | P | 2.31 | 2.34 | 0.34 | 0.58 | 4.61 | 1.94 | 1.64 | 2.54 | 0 | 0.42 | 4.48 | 1.93 |
| | Q | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .16 | 0 | .16 | |
| 1957 | P | 1.57 | 3.24 | 5.63 | 15.57 | 8.47 | 4.29 | T | 1.20 | 4.17 | 8.48 | 4.76 | .85 | 58.23 | |
| | Q | 0 | .01 | .60 | 11.59 | 6.05 | 1.30 | 0 | 0 | 0 | 2.17 | 1.06 | 0 | 22.78 | |
| 1958 | P | 1.79 | 3.51 | 1.41 | 3.28 | 1.84 | 2.54 | .98 | 6.58 | 5.30 | 3.12 | 1.37 | 1.42 | 33.14 | |
| | Q | .01 | 1.01 | T | .01 | .83 | 0 | 0 | .27 | .65 | .38 | 0 | T | 3.16 | |
| 1959 | P | .38 | 3.33 | .91 | 4.02 | 3.98 | 7.27 | 4.48 | 3.34 | 1.88 | 6.81 | 2.07 | 3.59 | 42.06 | |
| | Q | 0 | .49 | T | .02 | T | 1.15 | .06 | T | 0 | 1.70 | .57 | .46 | 4.45 | |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|-------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 4-19 | 3.73 | 4-19 | 2.90 | 4-19 | 3.48 | 4-19 | 3.62 | 4-19 | 3.86 | 4-19 | 3.91 | 4-23 | 5.34 | 4-19 | 10.57 |
| 1958 | 5-3 | .32 | 5-3 | .23 | 5-3 | .37 | 5-2 | .57 | 5-2 | .75 | 2-22 | .91 | 2-22 | .99 | 2-21 | 1.01 |
| 1959 | 6-23 | .70 | 6-23 | .59 | 6-23 | .93 | 6-23 | 1.11 | 10-4 | 1.45 | 10-4 | 1.61 | 10-4 | 1.65 | 10-4 | 1.65 |

Notes: Quality of records: monthly P and Q, excellent; Annual Max. discharges and volumes, excellent. Watershed conditions: area changed to 18.6 acres Jan., 1956. Cultivated land use changed to single crop by year as follows: oats and clover - 1956 and 1959, cotton-1957, grain sorghum - 1958. See page 42.17-1, Monthly Precipitation and Runoff for Small Agricultural Watersheds in the United States, ARS, Ed., June 1957 (reprinted 1961).

SELECTED RUNOFF EVENTS

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|---|-------------------|-----------------|---------------|-------------------|-----------------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of April 24, 1957 | | | | | | | | |
| 3-27-57 | 1.14 | 0.074 | 4-24-57 | Raingage | 69 | 4-24-57 | | |
| 3-28 | 0 | .002 | 2:33p | 0 | 0 | 2:34p | 0.0025 | 0 |
| 3-31 | 1.33 | .390 | | :36 | 1.80 | :40 | .0259 | T |
| 4-1, 2 | 0 | .050 | | :39 | 2.40 | :42 | .263 | .006 |
| 4-3 | .23 | .005 | | :44 | 2.04 | :45 | .399 | .022 |
| 4-4 | .02 | 0 | | :49 | 2.40 | :47 | .575 | .038 |
| 4-8 | .03 | 0 | | :55 | 3.50 | :49 | .821 | .062 |
| 4-13 | .05 | 0 | | 3:00 | 2.64 | :51 | 1.07 | .093 |
| 4-15 | .05 | 0 | | :03 | 3.40 | :54 | 1.53 | .158 |
| 4-19 | 5.64 | 3.592 | | :08 | 2.16 | :59 | 2.15 | .314 |
| 4-20 | .31 | .322 | | :13 | 1.20 | 3:05 | 2.55 | .550 |
| 4-21 | .20 | .029 | | :17 | 1.65 | :09 | 2.70 | .724 |
| 4-22 | .34 | .095 | | :27 | .24 | :11 | 2.66 | .814 |
| 4-23 | 3.90 | 3.584 | | :51 | .10 | :16 | 2.29 | .978 |
| 4-24 ^{1/} | .04 | .015 | | Raingage | 75A | :20 | 1.92 | 1.162 |
| Watershed Conditions: 9% bedded for cotton, beds cultivated first week of April; 4% in sodded waterway; 3% in gravel roads; cropland terraced contour tilled. | | | | | | | | |
| | | | | Weighted | Average ^{2/} | | 1.79 | |
| | | | | | | :28 | 1.16 | 1.369 |
| | | | | | | :38 | .543 | 1.510 |
| | | | | | | :42 | .379 | 1.541 |
| | | | | | | :53 | .171 | 1.586 |
| | | | | | | 4:00 | .135 | 1.604 |
| | | | | | | :21 | .0639 | 1.637 |
| | | | | | | 5:10 | .0287 | 1.673 |
| | | | | | | 6:15 | .0146 | 1.695 |
| | | | | | | 8:30 | .0063 | 1.716 |
| | | | | | | 12:00m | .0030 | 1.732 |

Notes: To convert runoff in in/hr to cfs, multiply by 18.75. ^{1/} Prior to event beginning 2:33p. ^{2/} Thiessen method. For map of watershed, see page 42.11-5.

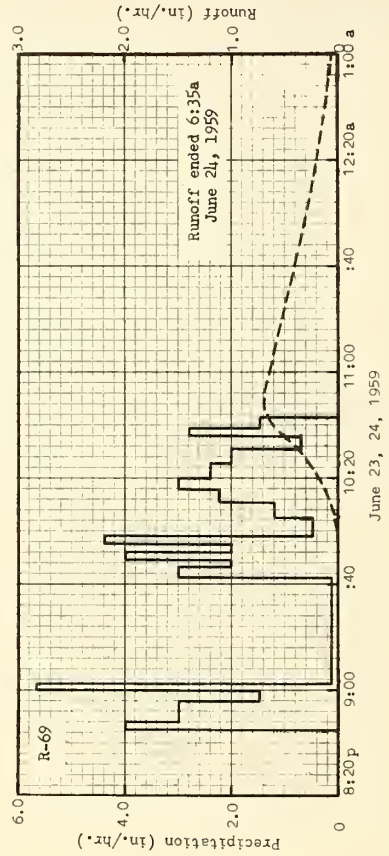
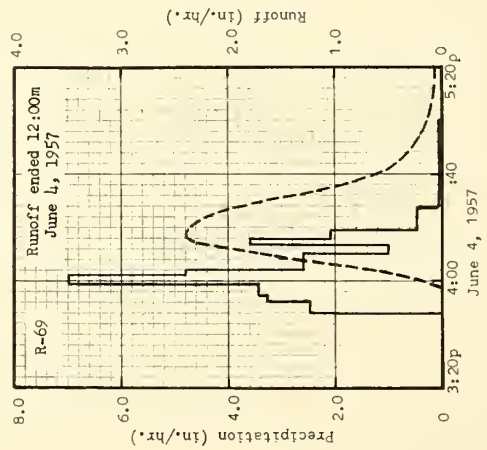
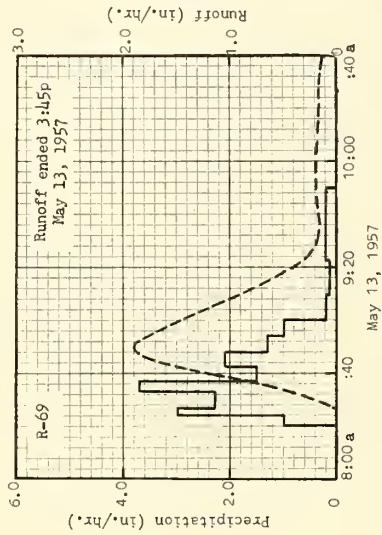
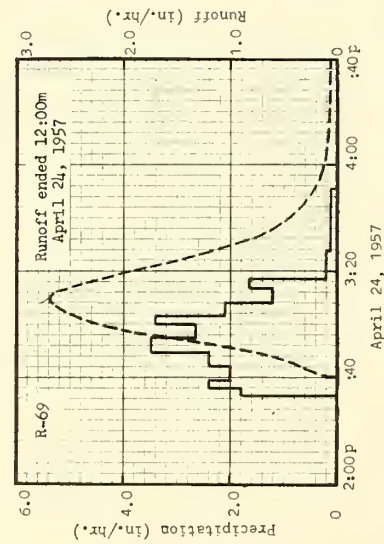
| SELECTED RUNOFF EVENTS | | | | | | Riesel (Waco), Texas | Watershed Y-10 | | |
|---|-------------------|-----------------|---------------|-----------------------|---------------|----------------------|----------------|---------------|-------|
| Antecedent conditions | | | Rainfall | | | Runoff | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | |
| <u>Event of May 13, 1957</u> | | | | | | | | | |
| 4-13-57 | 0.05 | 0 | 5-13-57 | Raingage | 69 | 5-13-57 | | | |
| 4-15 | .05 | 0 | 8:20a | 0 | 0 | 8:24a | 0 | 0 | |
| 4-19 | 5.64 | 3.592 | :24 | 1.05 | .07 | :27 | .0025 | T | |
| 4-20 | .31 | .322 | :26 | 3.00 | .17 | :29 | .135 | .002 | |
| 4-21 | .20 | .029 | :33 | 2.32 | .44 | :32 | .338 | .014 | |
| 4-22 | .34 | .095 | :37 | 3.75 | .69 | :36 | .682 | .045 | |
| 4-23 | 3.90 | 3.584 | :42 | 1.56 | .82 | :40 | 1.29 | .113 | |
| 4-24 | 1.85 | 1.747 | :48 | 2.10 | 1.03 | :44 | 1.68 | .214 | |
| 4-25 | 0 | .021 | :54 | 1.30 | 1.16 | :46 | 1.80 | .272 | |
| 4-26 | 1.27 | .834 | 9:00 | 1.00 | 1.26 | :49 | 1.91 | .365 | |
| 4-27 | .25 | .345 | :10 | .24 | 1.30 | :50 | 1.91 | .397 | |
| 4-28 | 1.37 | .923 | :22 | .15 | 1.33 | :52 | 1.88 | .460 | |
| 4-29 | .02 | .046 | :50 | .21 | 1.43 | 9:01 | 1.48 | .717 | |
| 4-30 | .04 | .001 | 10:00 | .48 | 1.47 | :08 | 1.01 | .863 | |
| 5-1 | .21 | .024 | :20 | .21 | 1.54 | :16 | .570 | .966 | |
| 5-2 | 0 | .002 | 11:00 | .06 | 1.58 | :20 | .420 | .998 | |
| 5-3 | 1.78 | 1.394 | Raingage | 75A | 1.60 | :27 | .201 | 1.033 | |
| 5-4 | 0 | .006 | Weighted | Average ^{2/} | 1.58 | :40 | .196 | 1.071 | |
| 5-8 | .04 | 0 | | | | :55 | .201 | 1.121 | |
| 5-9 | .95 | .355 | | | | 10:07 | .196 | 1.161 | |
| 5-10 | 0 | T | | | | :24 | .175 | 1.213 | |
| 5-11 | 3.61 | 2.910 | | | | :43 | .119 | 1.262 | |
| 5-12 ^{1/} | 0 | .027 | | | | 11:02 | .0591 | 1.289 | |
| 5-13 ^{1/} | .04 | 0 | | | | :23 | .0287 | 1.304 | |
| Watershed Conditions: 93% bedded cultivated first week of April; 4% in sodded waterway; 3% in gravel roads; cropland terraced, contour tilled. | | | | | | | :48 | .0146 | 1.313 |
| | | | | | | 1:10p | .0045 | 1.323 | |
| | | | | | | 3:45 | .0011 | 1.329 | |
| <u>Event of June 4, 1957</u> | | | | | | | | | |
| 5-4-57 | 0 | 0.006 | 6-4-57 | Raingage | 69 | 6-4-57 | | | |
| 5-8 | .04 | 0 | 3:48p | 0 | 0 | 3:51p | 0 | 0 | |
| 5-9 | .95 | .355 | :52 | 2.55 | .17 | :57 | .0045 | T | |
| 5-10 | 0 | T | :54 | 3.30 | .28 | :58 | .0591 | .001 | |
| 5-11 | 3.61 | 2.910 | :59 | 3.48 | .57 | 4:00 | .212 | .005 | |
| 5-12 | 0 | .027 | 4:02 | 7.00 | .92 | :04 | .586 | .033 | |
| 5-13 | 1.62 | 1.331 | :04 | 4.80 | 1.08 | :06 | .980 | .058 | |
| 5-14 | 0 | T | :10 | 2.60 | 1.34 | :08 | 1.40 | .098 | |
| 5-16 | .02 | 0 | :13 | 1.00 | 1.39 | :12 | 2.01 | .213 | |
| 5-18 | .02 | 0 | :15 | 3.60 | 1.51 | :15 | 2.38 | .324 | |
| 5-23 | .12 | 0 | :19 | 2.10 | 1.65 | :17 | 2.40 | .404 | |
| 5-25 | T | 0 | :27 | .45 | 1.71 | :20 | 2.36 | .523 | |
| 5-26 | .10 | 0 | 5:00 | .02 | 1.72 | :27 | 2.01 | .784 | |
| 6-1 | .80 | 0 | Raingage | 75A | 2.02 | :31 | 1.50 | .902 | |
| 6-3 | .33 | 0 | Weighted | Average ^{2/} | 1.74 | :34 | 1.17 | .969 | |
| 6-4 | .26 ^{3/} | T ^{4/} | | | | :38 | .799 | 1.033 | |
| Watershed Conditions: 93% in cotton, planted May 24, cotton up to good stand 2" high; 4% in sodded waterway; 3% in gravel roads; cropland terraced, contour tilled. | | | | | | | :44 | .385 | 1.091 |
| | | | | | | :50 | .251 | 1.122 | |
| | | | | | | :58 | .152 | 1.147 | |
| | | | | | | 5:06 | .0932 | 1.164 | |
| | | | | | | :14 | .0746 | 1.175 | |
| | | | | | | :43 | .0350 | 1.199 | |
| | | | | | | 6:40 | .0146 | 1.221 | |
| | | | | | | 7:10 | .0120 | 1.227 | |
| | | | | | | :30 | .0146 | 1.232 | |
| | | | | | | :50 | .0146 | 1.237 | |
| | | | | | | 9:20 | .0068 | 1.251 | |
| | | | | | | 12:00 m | .0045 | 1.267 | |

Notes: To convert runoff in in/hr to cfs, multiply by 18.75. ^{1/} Prior to event beginning 8:20a. ^{2/} Thiessen method. ^{3/} Rainfall ended 12:00n. ^{4/} Runoff prior to 3:51p

| SELECTED RUNOFF EVENTS | | | Riesel (Waco), Texas | | | Watershed Y-10 | | |
|----------------------------|-------------------|-----------------|----------------------|-----------------------|---------------|----------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of June 23, 24, 1959 | | | | | | | | |
| 5-23-59 | 0.03 | 0 | 6-23-59 | Raingage | 69 | 6-23-59 | | |
| 5-25 | T | 0 | 8:45p | 0 | 0 | 9:39p | 0 | 0 |
| 6-2 | .19 | 0 | :48 | 4.00 | .20 | :50 | .0011 | T |
| 6-3 | .02 | 0 | :56 | 3.00 | .60 | :56 | .0063 | T |
| 6-4 | 1.45 | .010 | 9:00 | 1.50 | .70 | 10:01 | .0165 | .001 |
| 6-5 | .66 | .021 | :02 | 5.70 | .89 | :04 | .0258 | .002 |
| 6-12 | .16 | 0 | :42 | 1.50 | .99 | :08 | .0421 | .005 |
| 6-20 | .74 | 0 | :46 | 3.00 | 1.19 | :12 | .0693 | .008 |
| 6-22 | .37 | 0 | :49 | 2.00 | 1.29 | :17 | .112 | .016 |
| | | | :52 | 4.00 | 1.49 | :22 | .191 | .028 |
| | | | :55 | 2.00 | 1.59 | :29 | .334 | .060 |
| | | | :58 | 4.40 | 1.81 | :34 | .440 | .092 |
| | | | 10:05 | .51 | 1.87 | :38 | .554 | .125 |
| | | | :11 | 1.20 | 1.99 | :44 | .693 | .188 |
| | | | :16 | 2.28 | 2.18 | :49 | .703 | .246 |
| | | | :20 | 3.00 | 2.38 | :55 | .682 | .315 |
| | | | :25 | 2.40 | 2.58 | 11:13 | .586 | .506 |
| | | | :31 | 2.00 | 2.78 | :25 | .511 | .615 |
| | | | :36 | .72 | 2.84 | :38 | .440 | .718 |
| | | | :39 | 2.80 | 2.90 | :48 | .385 | .787 |
| | | | :43 | 1.50 | 3.00 | 12:00m | .315 | .857 |
| | | | Raingage | 698 | 2.95 | 6-24-59 | | |
| | | | Weighted | Average ^{1/} | 2.97 | 12:07a | .286 | .892 |
| | | | | | | :15 | .251 | .928 |
| | | | | | | :45 | .119 | 1.018 |
| | | | | | | 1:06 | .0746 | 1.051 |
| | | | | | | :41 | .0350 | 1.081 |
| | | | | | | 2:17 | .0186 | 1.097 |
| | | | | | | 3:05 | .0085 | 1.107 |
| | | | | | | 4:18 | .0030 | 1.114 |
| | | | | | | 6:35 | .0005 | 1.117 |

Watershed Conditions: 93% in oats-clover, oats harvested, clover growing, 12" high; 4% in sodded waterway; 3% in gravel roads; cropland terraced; contour tilled.

Notes: To convert runoff in in/hr to cfs, multiply by 18.75. ^{1/} Thiessen method.



RIESEL (WACO), TEXAS Watershed Y-10

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Riesel (Waco), Texas | | | | | | Watershed SW-12 (Area - 2.97 acres) | |
|---|------|------|------|------|-------|------|----------------------|------|------|-------|------|------|--|-------|
| Month | Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 | P | 2.28 | 2.27 | 0.36 | 0.62 | 4.58 | 2.01 | 1.77 | 2.61 | 0 | 0.55 | 4.45 | 2.06 | 23.56 |
| | Q | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1957 | P | 1.58 | 3.30 | 5.67 | 14.90 | 8.54 | 4.52 | .02 | 1.04 | 4.28 | 8.43 | 4.67 | .86 | 57.81 |
| | Q | C | .01 | .09 | 8.95 | 6.60 | .30 | 0 | 0 | 0 | .04 | .63 | 0 | 16.62 |
| 1958 | P | 1.88 | 3.35 | 1.37 | 3.13 | 1.91 | 2.47 | 1.01 | 6.81 | 5.41 | 3.18 | 1.43 | 1.45 | 33.40 |
| | Q | .10 | 1.19 | .03 | .01 | .52 | 0 | 0 | .02 | .03 | .01 | T | T | 1.91 |
| 1959 | P | .37 | 3.23 | .99 | 3.97 | 4.04 | 7.37 | 4.24 | 2.87 | 1.87 | 6.61 | 2.11 | 3.48 | 41.15 |
| | Q | 0 | .35 | T | .27 | .01 | .42 | .01 | T | 0 | .05 | .27 | .86 | 2.24 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS Riesel (Waco), Texas Watershed SW-12

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 4-19 | 3.47 | 4-19 | 2.42 | 4-19 | 2.76 | 4-23 | 3.29 | 4-23 | 3.34 | 4-23 | 3.34 | 4-23 | 4.61 | 4-19 | 8.53 |
| 1958 | 2-22 | .14 | 2-22 | .12 | 2-22 | .21 | 2-22 | .35 | 2-22 | .58 | 2-22 | 1.11 | 2-22 | 1.19 | 2-21 | 1.19 |
| 1959 | 6-23 | .71 | 6-23 | .37 | 12-31 | .44 | 12-31 | .63 | 12-31 | .63 | 12-31 | .65 | 12-31 | .65 | 12-31 | 1.08 |

Notes: Quality of records: monthly P and Q, excellent except Apr., May 1957, good; Annual Max. discharges and volumes, excellent except Apr., May 1957, good. Watershed conditions: no appreciable change in land use or conservation practices since 1955. See page 42.24-1, Monthly Precipitation and Runoff for Small Agricultural Watersheds in the United States, ARS, SMC, June 1957 (reprinted 1961).

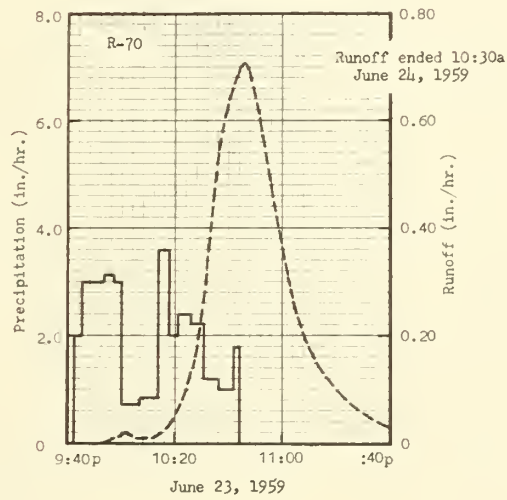
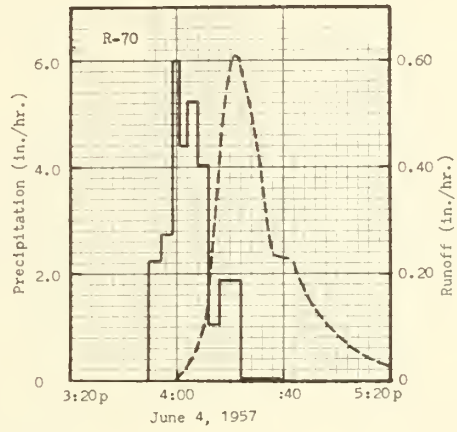
SELECTED RUNOFF EVENTS Riesel (Waco), Texas Watershed SW-12

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|--|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of June 4, 1957</u> | | | | | | | | |
| 5-4-57 | 0 | 0.01 | 6-4-57 | Raingage | 70 | 6-4-57 | | |
| 5-8 | .02 | 0 | 3:49p | 0 | 0 | 3:51p | 0 | 0 |
| 5-9 | .99 | .07 | :54 | 2.28 | .19 | 4:00 | .0077 | T |
| 5-10 | 0 | T | :59 | 2.76 | .42 | :04 | .0230 | T |
| 5-11 | 3.63 | 3.27 | 4:01 | 6.00 | .62 | :08 | .0690 | T |
| 5-12 | 0 | .06 | :04 | 4.40 | .84 | :12 | .176 | .01 |
| 5-13 | 1.62 | 1.51 | :08 | 5.25 | 1.19 | :16 | .318 | .03 |
| 5-16 | .01 | 0 | :12 | 4.05 | 1.46 | :20 | .580 | .06 |
| 5-18 | .03 | 0 | :16 | 1.05 | 1.53 | :22 | .610 | .08 |
| 5-23 | .11 | 0 | :24 | 1.88 | 1.78 | :26 | .564 | .12 |
| 5-25 | T | 0 | :59 | .03 | 1.80 | :32 | .383 | .16 |
| 5-26 | .11 | 0 | | | | :36 | .241 | .18 |
| 6-1 | .91 | 0 | | | | :44 | .232 | .22 |
| 6-3 | .29 | 0 | | | | :50 | .161 | .24 |
| 6-4 | .46 1/ | 0 | | | | :55 | .116 | .25 |
| Watershed Conditions: 100% native grass meadow, dense grass growing, no weeds. | | | | | | | | |
| | | | | | | 5:04 | .0644 | .26 |
| | | | | | | :16 | .0343 | .27 |
| <u>Event of June 23, 24, 1959</u> | | | | | | | | |
| 5-23-59 | 0.25 | 0.06 | 6-23-59 | Raingage | 70 | 6-23-59 | | |
| 5-24 | .04 | 0 | 9:42p | 0 | 0 | 9:44p | T | 0 |
| 5-25 | .01 | 0 | :45 | 2.00 | .10 | :52 | .0077 | T |
| 6-2 | .18 | 0 | :53 | 3.00 | .50 | :58 | .0157 | T |
| 6-3 | .02 | 0 | :57 | 3.15 | .71 | 10:02 | .0203 | T |
| 6-4 | 1.47 | .01 | 10:00 | 3.00 | .86 | :05 | .0180 | T |
| 6-5 | .70 | T | :07 | .77 | .95 | :16 | .0190 | .01 |
| 6-12 | .18 | 0 | :14 | .86 | 1.05 | :20 | .0520 | .01 |
| 6-20 | .70 | 0 | :18 | 3.60 | 1.29 | :24 | .110 | .01 |
| 6-22 | .36 | 0 | :21 | 2.00 | 1.39 | :28 | .176 | .02 |
| 6-23 | .89 2/ | T 3/ | :26 | 2.40 | 1.59 | :32 | .350 | .04 |

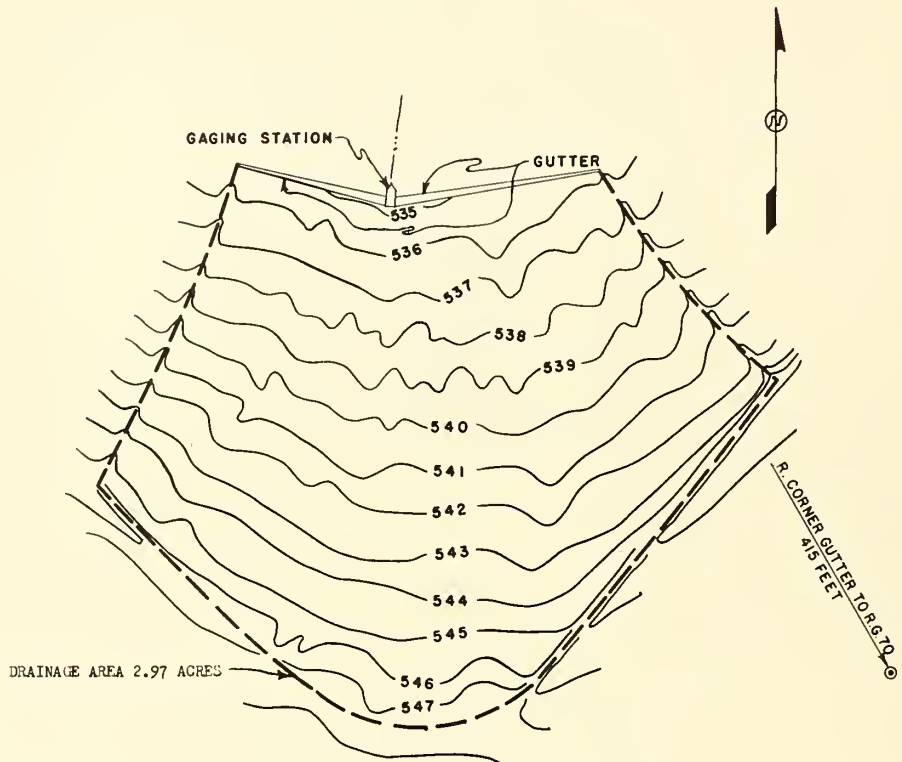
Notes: To convert runoff in in/hr to cfs, multiply by 2.994. 1/ Prior rainfall ended 2:50p. 2/ Rainfall ended 9:14p. 3/ Trace of runoff prior to 9:44p.

| SELECTED RUNOFF EVENTS | | | Riesel (Waco), Texas | | | Watershed SW-12 | | |
|--|-------------------|-----------------|----------------------|-------------------|---------------|-----------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of June 23, 24, 1959 - Continued | | | | | | | | |
| Watershed Conditions: 100% native grass meadow, good cover, 20" high, ready to harvest, no weeds. | | | 6-23-59 | Raingage | 70 | 6-23-59 | | |
| | | | 10:31p | 2.28 | 1.78 | 10:37p | 0.564 | 0.08 |
| | | | :36 | 1.20 | 1.88 | :46 | .714 | .18 |
| | | | :42 | 1.00 | 1.98 | :52 | .594 | .24 |
| | | | :44 | 1.80 | 2.04 | 11:01 | .350 | .31 |
| | | | | | | :12 | .161 | .35 |
| | | | | | | :23 | .0830 | .38 |
| | | | | | | :34 | .0447 | .39 |
| | | | | | | :40 | .0313 | .39 |
| | | | | | | :55 | .0157 | .40 |
| | | | | | | 6-24-59 | | |
| | | | | | | 12:14a | .0077 | .40 |
| | | | | | | :58 | .0023 | .40 |
| | | | | | | 10:30 | 0 | .41 |

Notes: To convert runoff in in/hr to cfs, multiply by 2.994.

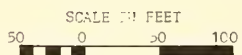


RIESEL (WACO), TEXAS Watershed SW-12



LEGEND

- Watershed Boundary
- ~ Natural Waterway
- 540 — Contours 1 Foot
- ⊙ Rain Gage



RIESEL (WACO), TEXAS
Watershed SW-12

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Riesel (Waco), Texas | | | | | | Watershed SW-17 (Area - 2.99 acres) | | | |
|--|-------------------|-----------------|---|-------------------|---------------|---------------|----------------------|---------------|-------------|--------------|-------------|--------------|--|------|--------|------|
| Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year | | | |
| 1956 | P 2.19 0 | 2.54 0 | 0.41 0 | 0.76 0 | 4.34 0 | 1.43 0 | 1.67 0 | 2.67 .01 | 0 0 | 0.25 0 | 4.46 .02 | 2.08 0 | 22.80 .03 | | | |
| 1957 | P 1.46 6 | 3.01 T | 5.60 .32 | 14.52 10.12 | 8.05 5.21 | 4.05 .39 | .12 0 | .99 0 | 4.10 0 | 8.53 .86 | 4.80 .68 | .87 0 | 56.10 17.58 | | | |
| 1958 | P 1.72 C | 3.57 1.35 | 1.32 .58 | 3.24 .17 | 2.00 .76 | 2.35 0 | 1.16 0 | 6.33 .06 | 5.46 .25 | 2.61 .08 | 1.33 0 | 1.47 0 | 32.56 3.29 | | | |
| 1959 | P .40 Q | 3.40 .98 | 1.12 .02 | 4.13 .39 | 3.96 .76 | 6.98 1.91 | 4.62 .27 | 3.22 .01 | 1.89 0 | 7.31 2.03 | 1.93 .80 | 3.65 1.49 | 42.61 8.66 | | | |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | Riesel (Waco), Texas | | | | | | Watershed SW-17 | | | |
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 4-19 | 3.45 | 4-19 | 2.54 | 4-19 | 2.96 | 4-23 | 3.31 | 4-23 | 3.35 | 4-23 | 3.35 | 4-23 | 5.15 | 4-19 | 9.42 |
| 1958 | 8-24 | .19 | 2-22 | .14 | 2-22 | .26 | 2-22 | .41 | 2-22 | .67 | 2-22 | 1.23 | 2-22 | 1.30 | 2-21 | 1.34 |
| 1959 | 6-23 | 2.17 | 6-23 | 1.32 | 6-23 | 1.48 | 6-23 | 1.53 | 6-23 | 1.53 | 6-23 | 1.53 | 6-23 | 1.54 | 6-23 | 1.59 |
| Notes: Quality of records: monthly P and Q, excellent; Annual Max. discharges and volumes, excellent. Watershed conditions: No appreciable change in land use or conservation practices since 1955. See page 42.28-1, Monthly Precipitation for Small Agricultural Watersheds in the United States, ARS, S.C., June 1957 (reprinted 1961). | | | | | | | | | | | | | | | | |
| SELECTED RUNOFF EVENTS | | | | | | | Riesel (Waco), Texas | | | | | | Watershed SW-17 | | | |
| Antecedent conditions | | | Rainfall | | | | Runoff | | | | | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | | | | | | |
| Event of March 31, 1957 | | | | | | | | | | | | | | | | |
| 3-2-57 | 0.09 | 0 | 3-31-57 | Raingage | W-2A | 3-31-57 | | | | | | | | | | |
| 3-6 | .10 | 0 | 5:37p | 0 | 0 | 5:38p | 0 | 0 | | | | | | | | |
| 3-11 | 1.00 | T | :40 | 3.80 | .14 | :41 | .0076 | T | | | | | | | | |
| 3-17 | .27 | 0 | :43 | 5.00 | .39 | :44 | .0166 | T | | | | | | | | |
| 3-20 | 1.91 | .08 | :48 | 1.20 | .49 | :46 | .0481 | T | | | | | | | | |
| 3-27 | .88 | T | 6:14 | .14 | .55 | :48 | .103 | T | | | | | | | | |
| 3-31 | .76 ^{1/} | T ^{2/} | :30 | .08 | .57 | :52 | .405 | .02 | | | | | | | | |
| | | | :40 | .12 | .59 | :54 | .441 | .04 | | | | | | | | |
| | | | | | | :59 | .358 | .07 | | | | | | | | |
| | | | | | | 6:09 | .222 | .12 | | | | | | | | |
| | | | | | | :19 | .130 | .15 | | | | | | | | |
| | | | | | | :42 | .0557 | .18 | | | | | | | | |
| | | | | | | 7:09 | .0282 | .20 | | | | | | | | |
| | | | | | | :55 | .0202 | .21 | | | | | | | | |
| | | | | | | 8:20 | .0156 | .22 | | | | | | | | |
| | | | | | | :55 | .0076 | .23 | | | | | | | | |
| | | | | | | 10:11 | .0023 | .23 | | | | | | | | |
| | | | | | | 12:00m | .0007 | .24 | | | | | | | | |
| Event of April 24, 1957 | | | | | | | | | | | | | | | | |
| 3-27-57 | 0.88 | T | 4-24-57 | Raingage | W-2A | 4-24-57 | | | | | | | | | | |
| 3-31 | 1.35 | .24 | 2:32p | 0 | 0 | 2:33p | T | 0 | | | | | | | | |
| 4-1 | 0 | T | :40 | .23 | .03 | :42 | .0096 | T | | | | | | | | |
| 4-3 | .24 | 0 | :44 | 2.85 | .22 | :46 | .222 | .01 | | | | | | | | |
| 4-4 | .03 | 0 | :48 | 1.50 | .32 | :49 | .703 | .03 | | | | | | | | |
| 4-8 | .04 | 0 | :52 | 5.10 | .66 | :52 | 1.37 | .08 | | | | | | | | |
| 4-13 | .04 | 0 | :56 | 2.10 | .80 | :56 | 1.97 | .19 | | | | | | | | |
| 4-15 | .02 | 0 | :59 | 3.80 | .99 | 3:00 | 2.41 | .34 | | | | | | | | |
| 4-19 | 4.73 | 3.00 | 3:03 | 3.30 | 1.21 | :08 | 2.90 | .70 | | | | | | | | |
| 4-20 | .23 | .12 | :11 | 2.10 | 1.49 | :14 | 2.34 | .96 | | | | | | | | |
| Notes: To convert runoff in in/hr to cfs, multiply by 3.014. ^{1/} Prior precipitation ended 1:40p. ^{2/} Runoff prior to 5:38p. | | | | | | | | | | | | | | | | |

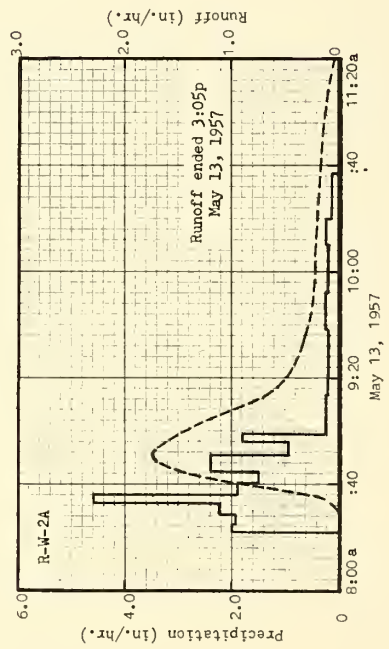
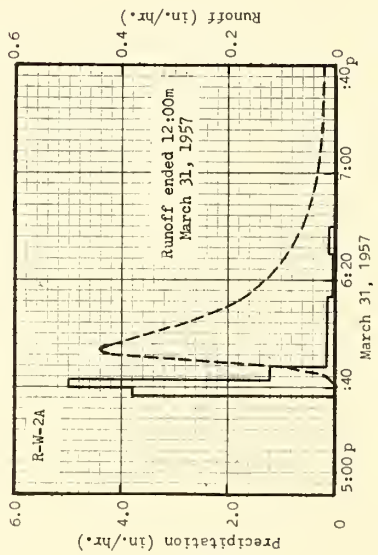
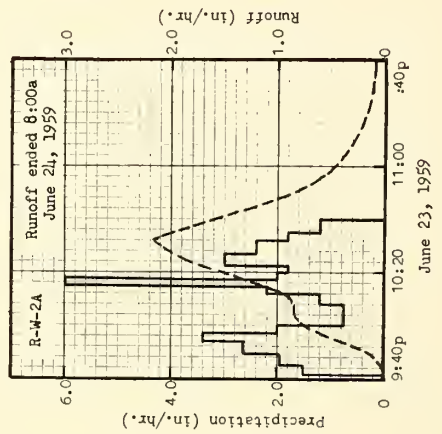
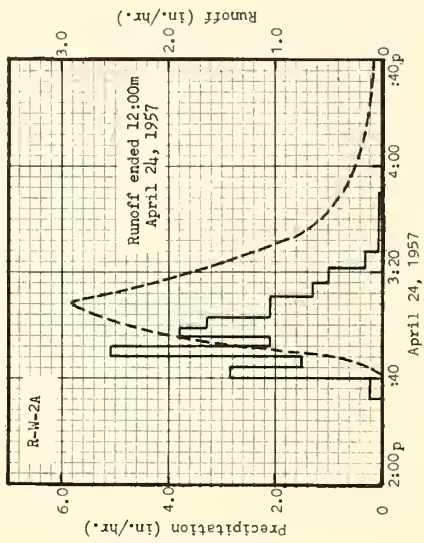
Cooperative Research Project of USDA and Texas Agricultural Experiment Station

| SELECTED RUNOFF EVENTS | | | | | | Riesel (Waco), Texas | | Watershed SW-17 | |
|---|-------------------|-----------------|---------------|-------------------|---------------|----------------------|--------------|-----------------|--|
| Antecedent conditions | | | Rainfall | | | Runoff | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | |
| Event of April 24, 1957 - Continued | | | | | | | | | |
| 4-21-57 | 0.21 | T | 4-24-57 | Raingage | W-2A | 4-24-57 | | | |
| 4-22 | .30 | T | 3:16p | 1.32 | 1.60 | 3:21p | 1.70 | 1.20 | |
| 4-23 | 3.98 | 3.35 | :22 | 1.00 | 1.70 | :34 | .770 | 1.46 | |
| 4-24 | .02 <u>1/</u> | 0 | :28 | .30 | 1.73 | :43 | .498 | 1.55 | |
| | | | :50 | .05 | 1.75 | :53 | .310 | 1.62 | |
| Watershed Conditions: 100% Bermuda grass pasture with weeds and grass 10" high. | | | | | | 4:06 | .182 | 1.67 | |
| | | | | | | :21 | .112 | 1.70 | |
| | | | | | | :38 | .0710 | 1.73 | |
| | | | | | | :56 | .0464 | 1.75 | |
| | | | | | | 5:45 | .0202 | 1.77 | |
| | | | | | | 7:40 | .0046 | 1.79 | |
| | | | | | | 12:00m | .0007 | 1.80 | |
| Event of May 13, 1957 | | | | | | | | | |
| 4-13-57 | 0.04 | 0 | 5-13-57 | Raingage | W-2A | 5-13-57 | | | |
| 4-15 | .02 | 0 | 8:22a | 0 | 0 | 8:24a | 0.0003 | 0 | |
| 4-19 | 4.73 | 3.00 | :25 | 2.00 | .10 | :28 | .0013 | 0 | |
| 4-20 | .23 | .12 | :29 | 1.95 | .23 | :30 | .0063 | T | |
| 4-21 | .21 | T | :33 | 2.25 | .38 | :32 | .0282 | T | |
| 4-22 | .30 | T | :36 | 4.60 | .61 | :34 | .0981 | T | |
| 4-23 | 3.98 | 3.35 | :41 | 1.92 | .77 | :36 | .295 | .01 | |
| 4-24 | 1.83 | 1.80 | :45 | 1.50 | .87 | :38 | .604 | .02 | |
| 4-25 | 0 | T | :51 | 2.40 | 1.11 | :40 | .816 | .05 | |
| 4-26 | 1.44 | .81 | :56 | .96 | 1.19 | :45 | 1.48 | .15 | |
| 4-27 | .27 | .35 | :59 | 1.80 | 1.28 | :50 | 1.74 | .28 | |
| 4-28 | 1.09 | .65 | 9:14 | .24 | 1.34 | :56 | 1.66 | .45 | |
| 4-29 | .06 | .04 | :38 | .20 | 1.42 | 9:00 | 1.50 | .56 | |
| 4-30 | .01 | T | :52 | .26 | 1.48 | :06 | 1.13 | .69 | |
| 5-1 | .37 | T | 10:10 | .20 | 1.54 | :12 | .763 | .78 | |
| 5-2 | 0 | T | :20 | .24 | 1.58 | :18 | .574 | .85 | |
| 5-3 | .84 | .48 | :37 | .14 | 1.62 | :24 | .451 | .90 | |
| 5-4, 7 | 0 | .01 | | | | :29 | .381 | .94 | |
| 5-8 | .02 | T | | | | :44 | .266 | 1.02 | |
| 5-9 | .89 | .02 | | | | 10:12 | .214 | 1.13 | |
| 5-10 | 0 | .01 | | | | :36 | .178 | 1.21 | |
| 5-11 | 3.92 | 3.11 | | | | :59 | .115 | 1.27 | |
| 5-12 | 0 | .06 | | | | 11:19 | .0687 | 1.30 | |
| 5-13 | 0 | T <u>2/</u> | | | | :37 | .0444 | 1.31 | |
| Watershed Conditions: 100% Bermuda grass pasture with grass and weeds 12" high, dense growth. | | | | | | 12:05p | .0255 | 1.33 | |
| | | | | | | :40 | .0156 | 1.34 | |
| | | | | | | 2:15 | .0046 | 1.35 | |
| | | | | | | 3:05 | .0023 | 1.36 | |
| Event of June 23, 24, 1959 | | | | | | | | | |
| 5-23-59 | 0.14 | 0.06 | 6-23-59 | Raingage | W-2A | 6-23-59 | | | |
| 5-24 | .02 | .02 | 9:41p | 0 | 0 | 9:42p | 0.0027 | 0 | |
| 5-25 | T | .02 | :45 | 1.50 | .10 | :44 | .0046 | T | |
| 5-26, 6-1 | 0 | .09 | :49 | 1.95 | .23 | :46 | .0312 | T | |
| 6-2 | .19 | .01 | :54 | 2.64 | .45 | :48 | .0481 | T | |
| 6-3 | .02 | .01 | :57 | 3.40 | .62 | :51 | .190 | .01 | |
| 6-4 | 1.39 | .15 | 10:00 | 2.00 | .72 | :53 | .315 | .02 | |
| 6-5 | .51 | .04 | :08 | .75 | .82 | :55 | .451 | .03 | |
| 6-6, 11 | 0 | .03 | :12 | 1.20 | .90 | 10:00 | .763 | .08 | |
| 6-12 | .26 | T | :15 | 2.20 | 1.01 | :04 | .833 | .13 | |
| 6-13, 19 | 0 | .06 | :17 | 6.00 | 1.21 | :09 | .869 | .20 | |
| 6-20 | .77 | .01 | :20 | 2.00 | 1.31 | :13 | 1.01 | .26 | |
| 6-21 | 0 | T | :23 | 1.80 | 1.40 | :18 | 1.35 | .36 | |
| 6-22 | .31 | T | :27 | 3.00 | 1.60 | :23 | 1.77 | .49 | |
| 6-23 | .84 <u>3/</u> | .01 <u>4/</u> | :32 | 2.40 | 1.80 | :28 | 2.00 | .65 | |
| Watershed Conditions: 100% Bermuda grass pasture, grass 12" high, no weeds, dense growth. | | | | | | :35 | 2.17 | .79 | |
| | | | :40 | 1.20 | 1.99 | :35 | 1.94 | .89 | |
| | | | | | | :41 | 1.50 | 1.07 | |
| | | | | | | :46 | 1.13 | 1.17 | |

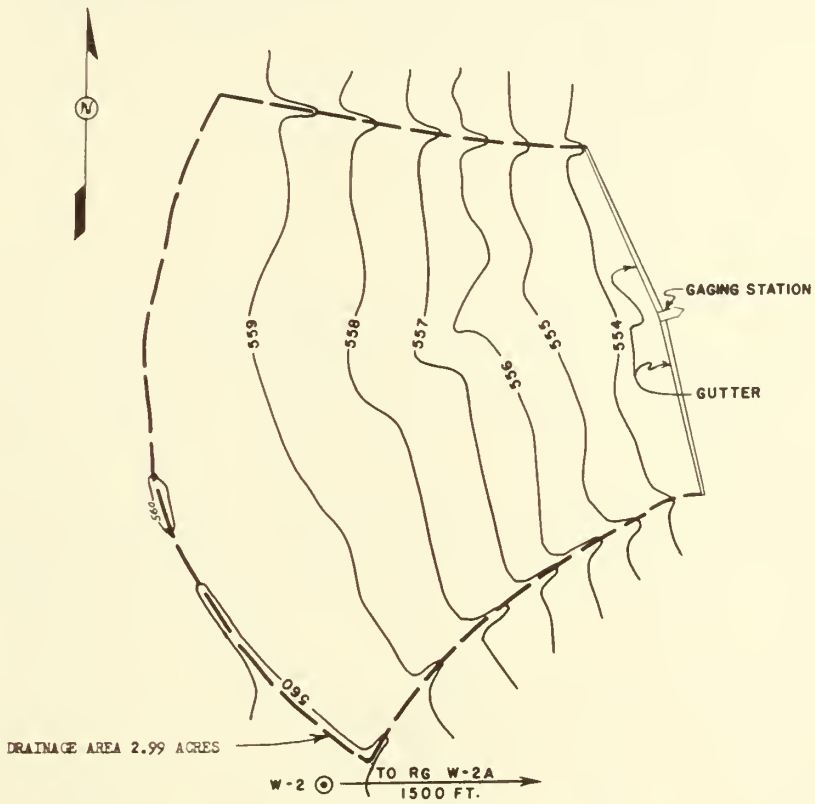
Notes: To convert runoff in in/hr to cfs, multiply by 3.014. 1/ Precipitation prior to 2:32p. 2/ Runoff prior to 8:24a. 3/ Rainfall ended 9:07p. 4/ Runoff prior to 9:42p.

| SELECTED RUNOFF EVENTS | | | Riesel (Waco), Texas | | | Watershed SW-17 | | |
|---|-------------------|-----------------|----------------------|-------------------|---------------|-----------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of June 23, 24, 1959 - Continued</u> | | | | | | | | |
| | | | | | | 6-23-59 | | |
| | | | | | | 10:56p | 0.561 | 1.31 |
| | | | | | | 11:06 | .315 | 1.38 |
| | | | | | | :16 | .190 | 1.42 |
| | | | | | | :29 | .115 | 1.45 |
| | | | | | | :39 | .0826 | 1.47 |
| | | | | | | :50 | .0517 | 1.48 |
| | | | | | | 12:00 m | .0375 | 1.49 |
| | | | | | | 6-24-59 | | |
| | | | | | | 12:31a | .0202 | 1.50 |
| | | | | | | :50 | .0116 | 1.51 |
| | | | | | | 1:30 | .0046 | 1.52 |
| | | | | | | 2:15 | .0023 | 1.52 |
| | | | | | | 3:00 | .0007 | 1.52 |
| | | | | | | 8:00 | T | 1.52 |

Notes: To convert runoff in in/hr to cfs, multiply by 3.014.

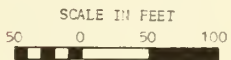


RIESEL (WACO), TEXAS Watershed SW-17



LEGEND

- Watershed Boundary
- ⊙ Recording Ringage
- 555 — Contours 1 Foot



RIESEL (WACO), TEXAS

Watershed SW-17

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Hastings, Nebraska Watershed W-3 (Area - 481 acres) | | | | | | | |
|---|------|------|------|------|------|------|--|------|------|-------|------|------|------|-------|
| Month | Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 | P | 0.22 | 0.10 | 0.29 | 1.17 | 0.65 | 4.25 | 2.61 | 1.40 | 1.26 | 0.86 | 0.09 | 0.05 | 12.95 |
| | Q | 0 | T | 0 | T | 0 | .79 | .26 | .07 | .09 | .03 | 0 | 0 | 1.24 |
| 1957 | P | .14 | .06 | 1.75 | 2.92 | 6.66 | 11.30 | .18 | 5.32 | .52 | 1.31 | .53 | .15 | 30.84 |
| | Q | 0 | 0 | T | .40 | 1.78 | 5.06 | 0 | .89 | 0 | 0 | 0 | 0 | 8.13 |
| 1958 | P | .10 | 1.33 | 2.20 | 1.76 | 1.50 | 2.81 | 4.47 | 3.72 | 1.56 | .06 | .44 | .05 | 20.00 |
| | Q | 0 | .02 | .38 | .13 | 0 | .31 | .30 | .36 | .02 | 0 | 0 | 0 | 1.52 |
| 1959 | P | .27 | .29 | 3.58 | .86 | 6.31 | 4.76 | 2.93 | 2.99 | 4.56 | 1.83 | 0 | .08 | 28.46 |
| | Q | 0 | .15 | .31 | .01 | 1.04 | .83 | 1.80 | .13 | .72 | .09 | 0 | 0 | 5.08 |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | Hastings, Nebraska Watershed W-3 | | | | | | | | | |
|---|-------------------|------|---|------|---------|------|----------------------------------|------|----------|------|-------|------|--------|------|--------|------|
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1956 | 6-26 | .21 | 6-26 | .19 | 6-26 | .30 | 6-25 | .38 | 6-25 | .38 | 6-25 | .38 | 6-25 | .64 | 6-25 | .96 |
| 1957 | 6-15 | 1.18 | 6-15 | .64 | 6-15 | 1.07 | 6-15 | 2.28 | 6-15 | 3.12 | 6-15 | 3.52 | 6-15 | 4.69 | 6-10 | 4.80 |
| 1958 | 6-12 | .18 | 6-12 | .15 | 6-12 | .24 | 6-12 | .27 | 6-12 | .28 | 6-12 | .31 | 6-12 | .32 | 3-29 | .50 |
| 1959 | 7-3 | 2.00 | 7-3 | 1.32 | 7-3 | 1.67 | 7-3 | 1.80 | 7-3 | 1.80 | 7-3 | 1.80 | 7-3 | 1.80 | 6-28 | 2.35 |

Notes: Quality of Records: Monthly P, excellent; monthly Q, good to excellent except during Dec., Jan., Feb. and March which are fair. Watershed conditions: 1956 - crops, including pasture, were fair to poor; 1957 - crops, pasture, meadow excellent until June storms which caused washing and replanting of crops. Crops were good. Wheat was good to excellent. 1958 and 1959 - crops were good to excellent. 1/ 1956 values are revised and supersede those previously reported.

| SELECTED RUNOFF EVENTS | | | | Hastings, Nebraska Watershed W-3 | | | | |
|--|----------------------|-----------------|---------------|----------------------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | Runoff | | | |
| Date | Rainfall 2/ (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of April 22 and 23, 1957 | | | | | | | | |
| 3-23, 25-57 | 1.16 | T | 4-22-57 | Raingage | B-32-R | 4-22-57 | | |
| 3-31 | .07 | 0 | 6:10p | 0 | 0 | 7:50p | 0 | 0 |
| 4-2 | .61 | .01 | 7:30 | .05 | .08 | :58 | .0020 | .0001 |
| 4-3 | .52 | .01 | :40 | .18 | .11 | 8:02 | .0064 | .0004 |
| 4-11 | .02 | 0 | :50 | 1.74 | .40 | :10 | .158 | .0119 |
| 4-17 | .02 | 0 | :56 | 2.80 | .68 | :16 | .197 | .0297 |
| | | | 8:10 | 1.68 | 1.07 | :26 | .173 | .0605 |
| | | | 10:00 | .15 | 1.34 | :30 | .219 | .0736 |
| | | | :30 | .02 | 1.35 | :36 | .404 | .1042 |
| | | | :50 | .18 | 1.41 | :40 | .404 | .1311 |
| Watershed Conditions: Crops in following condition: | | | | | | | | |
| Corn - not planted | | | | | | | | |
| Wheat - 3" high, good condition | | | | | | | | |
| Oats - just planted | | | | | | | | |
| Sorghum - not planted | | | | | | | | |
| Alfalfa - fair condition, with some winter kill. | | | | | | | | |
| Pasture and meadow dormant with fair cover. Seed bed preparation for corn and sorghum was well under way. The land use in percentage of the watershed area was as follows: | | | | | | | | |
| Oats | 6.5% | | 11:00 | .00 | 1.41 | 9:00 | .223 | .2373 |
| Wheat | 16.5% | | 12:00m | .01 | 1.42 | :30 | .0903 | .3160 |
| Fallow | 9.0% | | | | | :50 | .0419 | .3380 |
| Sorghum | 38.0% | | 4-22-57 | Raingage | A-31-R | 10:20 | .0202 | .3535 |
| Alfalfa | 1.5% | | 6:00p | 0 | 0 | :50 | .0145 | .3622 |
| Sweet Clover | 2.0% | | 7:30 | .02 | .03 | 11:20 | .0091 | .3681 |
| Sudan | 2.5% | | :36 | .10 | .04 | 4-23-57 | | |
| Pasture | 18.5% | | :40 | 2.85 | .23 | 7:30a | 0 | .3771 |
| Meadow | 2.0% | | :44 | 1.95 | .36 | | | |
| Roads | 1.0% | | 8:00 | 2.51 | 1.03 | | | |
| Farmsteads | 2.5% | | | | | | | |
| | | | 4-22-57 | Raingage | B-10-R 3/ | | | |
| | | | 5:40p | 0 | 0 | | | |
| | | | 6:30 | .05 | .04 | | | |
| | | | 7:30 | .00 | .04 | | | |
| | | | :36 | 1.00 | .14 | | | |

Notes: To convert runoff in in/hr to cfs, multiply by 485.0. Weighted precipitation for event of April 22-23, 1957 is 1.50 inches by the Thiessen method. For map of watershed, see page 44.1-8 or refer to Selected Runoff Events for Small Agricultural Watersheds in the United States, ARS, SWC, January 1960, page 44.1-8. 2/ All antecedent rainfall is weighted by Thiessen method using same raingages as those shown for the event. 3/ Raingage B-10-R is located approximately 3/4 mile NW of gaging station, west side of road and on the watershed boundary.

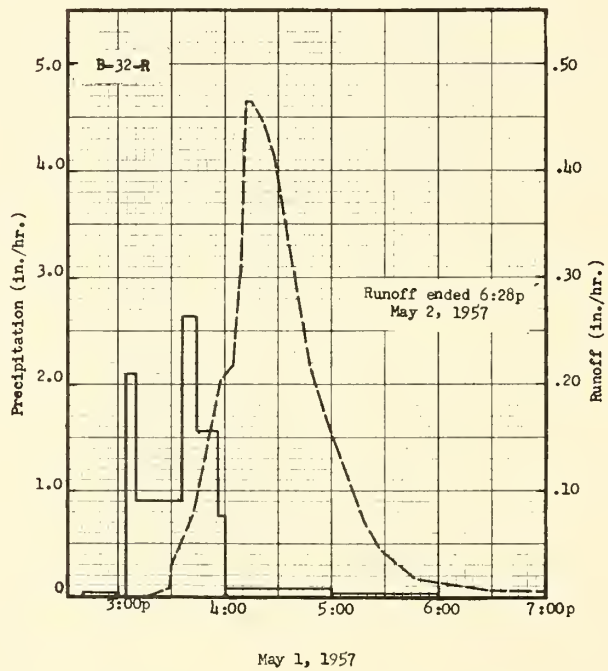
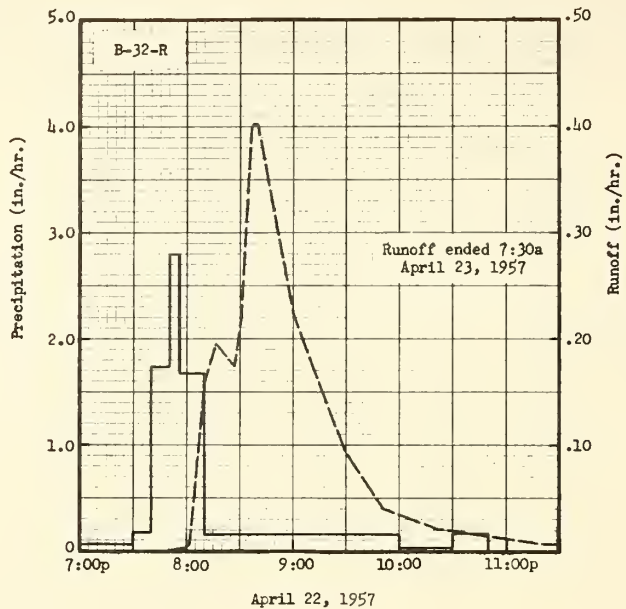
| SELECTED RUNOFF EVENTS | | | Hastings, Nebraska Watershed W-3 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|-------------------|-----------------|----------------------------------|-------------------|---------------|---------------|--------------|---------------|------|------|-------|-------|--------|------|---------|-------|---------|------|--------------|------|-------|------|---------|-------|--------|------|-------|------|------------|------|
| Antecedent conditions | | | Rainfall | | | Runoff | | | | | | | | | | | | | | | | | | | | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | | | | | | | | | | | | | | | | | | | | |
| Event of April 22 and 23, 1957 (continued) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 7:40p | 2.70 | .32 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | :46 | 1.90 | .51 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | :48 | 3.00 | .61 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | :52 | 2.55 | .78 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | :58 | 1.80 | .96 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 8:00 | .90 | .99 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | :06 | 2.10 | 1.20 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 11:00 | .12 | 1.56 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 4-22-57 | Raingage | Met. | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 5:56p | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 11:03 | | 1.43 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 4-22-57 | Raingage | B-33-R | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 6:16p | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 11:00 | | 1.45 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 4-22-57 | Raingage | B-36-R | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 6:10p | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 11:00 | | 1.48 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Event of May 1 and 2, 1957 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-2-57 | .61 | .01 | 5-1-57 | Raingage | B-32-R | 5-1-57 | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-3 | .52 | .01 | 2:40p | 0 | 0 | 3:16p | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | |
| 4-11 | .02 | 0 | 3:00 | .03 | .01 | :28 | .0091 | .0003 | | | | | | | | | | | | | | | | | | | | | | |
| 4-17 | .02 | 0 | :04 | 0 | .01 | :30 | .0301 | .0010 | | | | | | | | | | | | | | | | | | | | | | |
| 4-22 | 1.50 | .38 | :10 | 2.10 | .22 | :42 | .0779 | .0124 | | | | | | | | | | | | | | | | | | | | | | |
| 4-30 | .25 | 0 | :36 | .90 | .61 | :58 | .205 | .0506 | | | | | | | | | | | | | | | | | | | | | | |
| | | | :44 | 2.63 | .96 | 4:04 | .219 | .0718 | | | | | | | | | | | | | | | | | | | | | | |
| | | | :56 | 1.55 | 1.27 | :08 | .301 | .0895 | | | | | | | | | | | | | | | | | | | | | | |
| | | | 4:00 | .75 | 1.32 | :12 | .466 | .1158 | | | | | | | | | | | | | | | | | | | | | | |
| | | | 5:00 | .08 | 1.40 | :16 | .466 | .1469 | | | | | | | | | | | | | | | | | | | | | | |
| | | | 6:00 | .02 | 1.42 | :22 | .447 | .1925 | | | | | | | | | | | | | | | | | | | | | | |
| | | | 5-1-57 | Raingage | A-31-R | :28 | .412 | .2355 | | | | | | | | | | | | | | | | | | | | | | |
| | | | 2:20p | 0 | 0 | :48 | .219 | .3420 | | | | | | | | | | | | | | | | | | | | | | |
| | | | 3:00 | .04 | .03 | :58 | .165 | .3740 | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | 5:18 | .0716 | .4128 | | | | | | | | | | | | | | | | | | | | | | |
| | | | :20 | 1.11 | .40 | :28 | .0427 | .4224 | | | | | | | | | | | | | | | | | | | | | | |
| | | | :24 | .30 | .42 | :48 | .0197 | .4322 | | | | | | | | | | | | | | | | | | | | | | |
| | | | :40 | 1.84 | .91 | 6:28 | .0066 | .4403 | | | | | | | | | | | | | | | | | | | | | | |
| | | | :50 | 1.14 | 1.10 | 5-2-57 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | :54 | 2.10 | 1.24 | 6:28p | 0 | .4470 | | | | | | | | | | | | | | | | | | | | | | |
| | | | 4:34 | .16 | 1.35 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 6:04 | .05 | 1.42 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 5-1-57 | Raingage | B-10-R | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 2:34p | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | :40 | .10 | .01 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 3:03 | 0 | .01 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | :10 | 1.54 | .19 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | :22 | 1.10 | .41 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | :34 | .45 | .50 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | :40 | 3.10 | .81 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | :56 | 1.31 | 1.16 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 4:06 | .24 | 1.20 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | :38 | .04 | 1.22 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | :50 | 0 | 1.22 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 8:00 | .01 | 1.27 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 5-1-57 | Raingage | Met. | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 2:20p | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 5:20 | | 1.51 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 5-1-57 | Raingage | B-33-R | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | NR | | 1.36 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 5-1-57 | Raingage | B-36-R | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 2:30 p | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 6:04 | | 1.41 | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Watershed Conditions: Crops in following condition: Corn - not planted Wheat - 4" high, good condition Oats - just coming up Sorghum - not planted Alfalfa - good condition Meadow - 2" high, good condition Pasture - 2" high, good condition Moisture down 26" on crop land and 19" on meadow. Seed bed preparation for sorghum and corn almost completed. Watershed predominantly in straight row farming. The land use in percentage of the watershed area was as follows:</p> <table border="0"> <tr><td>Oats</td><td>6.5%</td></tr> <tr><td>Wheat</td><td>16.5%</td></tr> <tr><td>Fallow</td><td>9.0%</td></tr> <tr><td>Sorghum</td><td>38.0%</td></tr> <tr><td>Alfalfa</td><td>1.5%</td></tr> <tr><td>Sweet clover</td><td>2.0%</td></tr> <tr><td>Sudan</td><td>2.5%</td></tr> <tr><td>Pasture</td><td>18.5%</td></tr> <tr><td>Meadow</td><td>2.0%</td></tr> <tr><td>Roads</td><td>1.0%</td></tr> <tr><td>Farmsteads</td><td>2.5%</td></tr> </table> | | | | | | | | | Oats | 6.5% | Wheat | 16.5% | Fallow | 9.0% | Sorghum | 38.0% | Alfalfa | 1.5% | Sweet clover | 2.0% | Sudan | 2.5% | Pasture | 18.5% | Meadow | 2.0% | Roads | 1.0% | Farmsteads | 2.5% |
| Oats | 6.5% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Wheat | 16.5% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Fallow | 9.0% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sorghum | 38.0% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Alfalfa | 1.5% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sweet clover | 2.0% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sudan | 2.5% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pasture | 18.5% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Meadow | 2.0% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Roads | 1.0% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Farmsteads | 2.5% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Notes: To convert runoff in in/hr to cfs, multiply by 485.00.
 Weighted Precipitation for May 1-2, 1957 is 1.36 inches by the Thiessen polygon method.

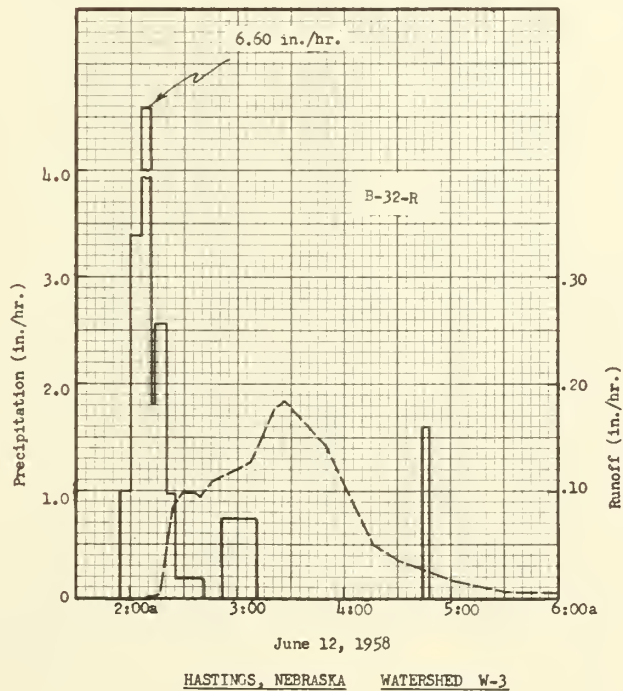
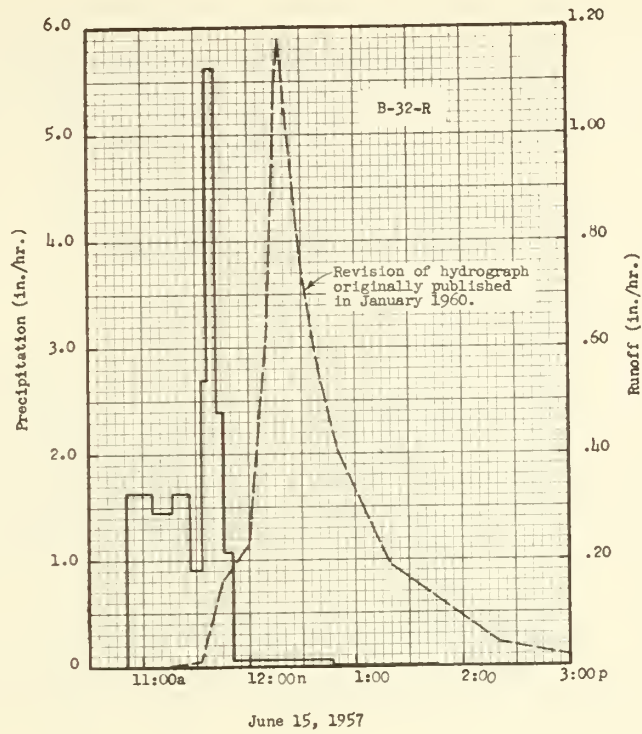
| SELECTED RUNOFF EVENTS | | | | | | Hastings, Nebraska Watershed W-3 | | |
|--|-------------------|-----------------|---------------|-------------------|---------------|----------------------------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of June 15, 1957 1/</u> | | | | | | | | |
| 5-29-57 | 0.84 | 0.04 | 6-15-57 | Raingage | B-32-R | 6-15-57 | | |
| 5-31 | .33 | .01 | 10:51a | 0 | 0 | 11:16a | 0 | 0 |
| 6-10 | .78 | .04 | 11:05 | 1.63 | .38 | :32 | .0091 | .0009 |
| 6-13 | .86 | .09 | :17 | 1.45 | .67 | :45 | .160 | .0236 |
| | | | :27 | 1.62 | .94 | 12:00n | .233 | .0705 |
| | | | :33 | .90 | 1.03 | :10p | .629 | .1363 |
| | | | :37 | 2.70 | 1.21 | :15 | 1.10 | .2084 |
| | | | :42 | 5.64 | 1.68 | :18 | 1.18 | .2654 |
| | | | :46 | 2.40 | 1.84 | :30 | .767 | .4600 |
| | | | :51 | 1.08 | 1.93 | :40 | .555 | .5701 |
| | | | 12:46p | .05 | 1.98 | :50 | .412 | .6506 |
| | | | 1:46 | .01 | 1.99 | 1:20 | .197 | .7913 |
| | | | 6-15-57 | Raingage | A-31-R | 2:20 | .0443 | .9088 |
| | | | 10:58a | 0 | 0 | 3:00 | .0145 | .9266 |
| | | | 11:02 | 1.05 | .07 | 5:30 2/ | .0022 | .9406 |
| | | | :08 | 1.60 | .23 | | | |
| | | | :10 | 2.10 | .30 | | | |
| | | | :16 | 1.20 | .42 | | | |
| | | | :21 | 1.32 | .53 | | | |
| | | | :25 | 2.70 | .71 | | | |
| | | | :38 | 1.52 | 1.04 | | | |
| | | | :43 | 3.00 | 1.29 | | | |
| | | | :46 | 5.20 | 1.55 | | | |
| | | | :50 | 2.25 | 1.70 | | | |
| | | | :55 | .96 | 1.78 | | | |
| | | | 12:00n | .48 | 1.82 | | | |
| | | | :10p | .24 | 1.86 | | | |
| | | | 6-15-57 | Raingage | B-10-R | | | |
| | | | | | NR | | | |
| | | | 6-15-57 | Raingage | B-33-R | | | |
| | | | 10:59a | 0 | 0 | | | |
| | | | 11:05 | .50 | .05 | | | |
| | | | :11 | 1.30 | .18 | | | |
| | | | :15 | 3.00 | .38 | | | |
| | | | :25 | 1.08 | .56 | | | |
| | | | :35 | 1.62 | .83 | | | |
| | | | :45 | 1.20 | 1.03 | | | |
| | | | :55 | 4.08 | 1.71 | | | |
| | | | 12:01p | 1.50 | 1.86 | | | |
| | | | :31 | .14 | 1.93 | | | |
| | | | 6-15-57 | Raingage | Met | | | |
| | | | 11:04a | 0 | 0 | | | |
| | | | 12:34p | | 1.92 | | | |
| | | | 6-15-57 | Raingage | B-36-R | | | |
| | | | 11:04a | 0 | 0 | | | |
| | | | 1:40p | | 2.09 | | | |
| <u>Event of June 12, 1958</u> | | | | | | | | |
| 5-13-58 | 0.10 | 0 | 6-12-58 | Raingage | B-32-R | 6-12-58 | | |
| 5-14,15 | .64 | 0 | 1:54a | 0 | 0 | 2:08a | 0 | 0 |
| 5-16 | .25 | 0 | 2:00 | 1.00 | .10 | :16 | .0043 | .0001 |
| 5-26 | .29 | 0 | :06 | 3.40 | .44 | :24 | .0829 | .0059 |
| 5-27 | .15 | 0 | :11 | 6.60 | .99 | :28 | .0977 | .0119 |
| 6-6 | .12 | 0 | :13 | 1.80 | 1.05 | :36 | .0992 | .0250 |
| | | | :20 | 2.57 | 1.35 | :38 | .0940 | .0283 |
| | | | :25 | .96 | 1.43 | :45 | .109 | .0401 |
| | | | :42 | .18 | 1.48 | 3:06 | .127 | .0814 |
| | | | :52 | 0 | 1.48 | :20 | .176 | .1166 |
| <p>Notes: To convert runoff in in/hr to cfs, multiply by 485,00. Weighted precipitation of June 15, 1957 event is 1.95 inches by the Thiessen method. The weighted rainfall for the event of June 12, 1958 is 1.69 by the Thiessen method. 1/ This event has been revised and the values shown for this event in Selected Runoff Events for Small Agricultural Watersheds in the United States, ARS, SAC, January 1960 (pages 44.1-4 & 5) are to be disregarded. 2/ Beginning of second runoff event of June 15, 1957.</p> | | | | | | | | |

| SELECTED RUNOFF EVENTS | | | Hastings, Nebraska Watershed W-3 | | | | | |
|---|-------------------|-----------------|----------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of June 12, 1958 (continued) | | | | | | | | |
| Watershed Conditions: Fields in corn and sorghum worked between May 14 and June 1. All corn planted by June 1; all sorghum, by June 12. Crops in following condition: | | | 3:11a | .73 | 1.71 | 3:27 a | .182 | .1375 |
| Corn - 6" high, poor stand | | | 4:44 | 0 | 1.71 | :50 | .140 | .2001 |
| Wheat - 4' high, excellent | | | :47 | 1.60 | 1.79 | 4:16 | .0509 | .2398 |
| Oats - 2' high, good condition | | | 6-12-58 | Raingage | A-31-R | :28 | .0394 | .2488 |
| Alfalfa - cut, excellent condition | | | 5:00 | | | 5:00 | .0163 | .2636 |
| Meadow - 10" high, good condition | | | 1:58a | 0 | 0 | 5:28 | .0069 | .2690 |
| Watershed predominantly straight row farmed. The land use in percentage of the watershed area was as follows: | | | 2:02 | 3.30 | .22 | 1:16p | 0 | .2751 |
| Corn 15.5% | | | :13 | 3.93 | .94 | | | |
| Wheat 9.5% | | | :22 | 1.87 | 1.22 | | | |
| Barley 1.5% | | | :32 | .36 | 1.28 | | | |
| Fallow 34.0% | | | :56 | .05 | 1.30 | | | |
| Sorghum 11.5% | | | 3:16 | .54 | 1.48 | | | |
| Alfalfa 1.5% | | | 4:46 | 0 | 1.48 | | | |
| Sudan 2.5% | | | :49 | .60 | 1.51 | | | |
| Pasture 18.5% | | | 6-12-58 | Raingage | B-10-R | | | |
| Meadow 2.0% | | | 1:52a | 0 | 0 | | | |
| Roads 1.0% | | | 2:02 | 1.20 | .20 | | | |
| Farmsteads 2.5% | | | :06 | 3.00 | .40 | | | |
| | | | :15 | 4.67 | 1.10 | | | |
| | | | :21 | 2.20 | 1.32 | | | |
| | | | :38 | .42 | 1.44 | | | |
| | | | :55 | 0 | 1.44 | | | |
| | | | 3:17 | .60 | 1.66 | | | |
| | | | 4:42 | 0 | 1.66 | | | |
| | | | :46 | .30 | 1.68 | | | |
| | | | 6-12-58 | Raingage | Met. | | | |
| | | | 1:52a | 0 | 0 | | | |
| | | | 5:06 | | 1.84 | | | |
| | | | 6-12-58 | Raingage | B-33-R | | | |
| | | | 1:52a | 0 | 0 | | | |
| | | | 3:18 | | 1.52 | | | |
| | | | 6-12-58 | Raingage | B-36-R | | | |
| | | | 1:49a | 0 | 0 | | | |
| | | | 4:51 | | 1.72 | | | |

Notes: To convert runoff in in/hr to cfs, multiply by 485.00.



HASTINGS, NEBRASKA WATERSHED W-3



| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | | Hastings, Nebraska Watershed W-5 (Area - 411 acres) | | | | | | |
|---|--------|-----------|-------------|-------------|-------------|--------------|---------------|--|-------------|-------------|-------------|-----------|-----------|---------------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 | P Q | 0.24 0 | 0.20 0 | 0.28 0 | 0.92 T | 0.82 0 | 4.24 .40 | 2.81 .18 | 1.46 .02 | 1.19 .01 | 0.68 .01 | 0.23 0 | 0.05 0 | 13.12 .62 |
| 1957 | P Q | .17 0 | .17 0 | 2.35 .01 | 3.05 .11 | 7.42 1.13 | 11.98 5.28 | .20 0 | 5.27 .70 | .41 0 | 1.27 0 | .60 0 | .18 0 | 33.07 7.23 |
| 1958 | P Q | .12 0 | 1.28 .01 | 2.43 .30 | 2.01 .13 | 1.40 0 | 3.59 .38 | 5.02 .25 | 3.58 .13 | 1.62 T | .20 0 | .52 0 | .04 0 | 21.81 1.20 |
| 1959 | P Q | .23 0 | .31 .02 | 3.68 .20 | .99 .01 | 7.31 1.27 | 4.73 .52 | 2.68 1.36 | 3.80 .46 | 4.52 .36 | 2.09 .07 | T 0 | .09 0 | 30.43 4.37 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS

Hastings, Nebraska Watershed W-5

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1956 | 6-26 | 0.14 | 6-26 | 0.12 | 6-25 | 0.19 | 6-25 | 0.24 | 6-25 | 0.25 | 6-25 | 0.25 | 6-25 | 0.35 | 6-25 | 0.56 |
| 1957 | 6-15 | .92 | 6-15 | .73 | 6-15 | 1.27 | 6-15 | 2.77 | 6-15 | 3.15 | 6-15 | 3.45 | 6-15 | 4.95 | 6-13 | 4.98 |
| 1958 | 6-12 | .32 | 6-12 | .22 | 6-12 | .30 | 6-12 | .34 | 6-12 | .35 | 6-12 | .37 | 6-12 | .38 | 6-12 | .38 |
| 1959 | 7-3 | 1.15 | 7-3 | .93 | 7-3 | 1.20 | 7-3 | 1.34 | 7-3 | 1.36 | 7-3 | 1.36 | 7-3 | 1.36 | 6-27 | 1.80 |

Notes: Quality of records: Precipitation and runoff, good to excellent except the winter months of Dec., Jan., Feb. & March which are fair to good. Watershed Conditions: 1956 - crops and cover, poor; 1957 - meadow and pasture good to excellent; wheat, good; sorghum replanted after June 15th storm; crops, good. 1958 and 1959 - crops fair at beginning of season; good to excellent at harvest time. 1956 values are revised and supersede those previously reported.

SELECTED RUNOFF EVENTS

Hastings, Nebraska Watershed W-5

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|------------------------------|-------------------------|--------------------|------------------|----------------------|------------------|------------------|-----------------|------------------|
| Date | Rainfall 2/ (Inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of May 29 and 30, 1957 | | | | | | | | |
| 4-30-57 | 0.24 | 0 | 5-29-57 | Rainage | 0-4:5-P | 5-29-57 | | |
| 5-1 | 1.38 | .30 | 4:17p | 0 | 0 | 4:20p | 0 | 0 |
| 5-9 | 1.65 | .13 | :22 | 1.92 | .16 | :16 | .0111 | .0003 |
| 5-11,12 | .41 | .01 | :27 | .60 | .21 | :32 | .0468 | .0028 |
| 5-13,14 | 1.58 | .40 | :34 | 3.17 | .58 | :38 | .159 | .0135 |
| 5-15,16 | .94 | .12 | :37 | 2.20 | .69 | :44 | .159 | .0294 |
| | | | :47 | 1.14 | .88 | :50 | .143 | .0445 |
| | | | :52 | .36 | .91 | 5:10 | .0668 | .0788 |
| | | | 6:12 | .04 | .96 | :40 | .0328 | .1030 |
| | | | | | | 6:00 | .0204 | .1215 |
| | | | 5-29-57 | Rainage | D-4:5-R | :23 | .0111 | .1300 |
| | | | 4:10p | 0 | 0 | 7:30 | .0052 | .1354 |
| | | | :16 | .50 | .05 | 5-30-57 | | |
| | | | :19 | 1.60 | .13 | 12:00n | 0 | .1469 |
| | | | :24 | 4.80 | .53 | | | |
| | | | :26 | 6.30 | .74 | | | |
| | | | :30 | 3.60 | .98 | | | |
| | | | :34 | 2.10 | 1.12 | | | |
| | | | :38 | 1.05 | 1.19 | | | |
| | | | 5:54 | .06 | 1.26 | | | |
| | | | 5-29-57 | Rainage | D-50-R | | | |
| | | | 4:16p | 0 | 0 | | | |
| | | | :24 | .37 | .05 | | | |
| | | | :27 | 3.00 | .20 | | | |
| | | | :32 | 6.36 | .73 | | | |
| | | | :34 | 5.10 | .90 | | | |
| | | | :36 | 3.90 | 1.03 | | | |
| | | | :44 | 1.88 | 1.28 | | | |
| | | | :58 | .30 | 1.35 | | | |
| | | | 5:18 | .09 | 1.38 | | | |

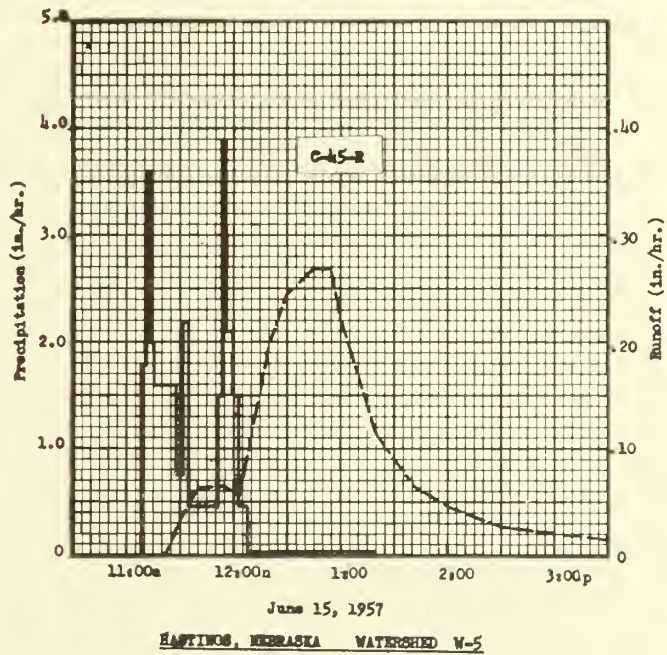
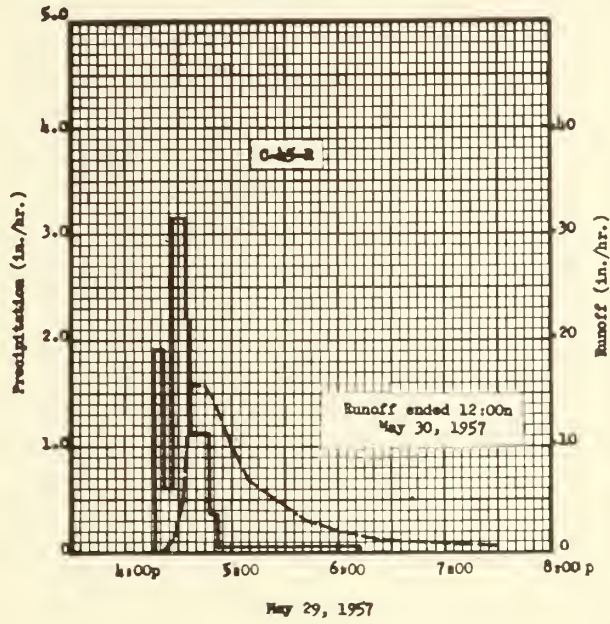
Notes: To convert runoff in in/hr to cfs, multiply by 44.4.
Weighted precipitation for the event of May 29 and 30, 1957 is 1.11 inches by the Thiessen method.
2/ All antecedent rainfall is weighted using the Thiessen method.

| SELECTED RUNOFF EVENTS | | | Hastings, Nebraska Watershed W-5 | | | | | |
|---|-------------------|-----------------|----------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of June 15, 1957</u> | | | | | | | | |
| 5-15-57 | 0.93 | 0.12 | 6-15-57 | Raingage | C-45-R | 6-15-57 | | |
| 5-29 | 1.11 | .15 | 11:08a | 0 | 0 | 11:20a | 0 | 0 |
| 5-31 | .36 | .03 | :11 | 1.80 | .09 | :22 | .0011 | T |
| 6-6 | .10 | 0 | :13 | 3.60 | .21 | :30 | .0335 | .0026 |
| 6-10 | .54 | 0 | :16 | 2.00 | .31 | :40 | .0635 | .0107 |
| 6-13,14 | .93 | .03 | :28 | 1.60 | .63 | :55 | .0656 | .0268 |
| Watershed Conditions: The wheat was fully headed, about 4' high and in excellent condition. The sorghum was not out of the ground. Pasture was in excellent condition at a height of 12". Meadow was in excellent condition, heading out, at about 11" inches in height. About 90% of cultivation was contour and 10% straight row. The land use in percentage of the watershed area was as follows: Corn 6.0% Oats 1.0% Wheat 5.5% Fallow 23.5% Sorghum 25.0% Alfalfa 7.0% Sweet Clover 2.0% Sudan5% Brome 7.0% Pasture 10.0% Meadow 9.5% Roads5% Farmsteads 2.5% | | | :32 | .75 | .68 | 12:00n | .0591 | .0320 |
| | | | :35 | 2.20 | .79 | :04p | .0591 | .0360 |
| | | | :52 | .46 | .92 | :20 | .203 | .0693 |
| | | | :54 | 1.50 | .97 | :30 | .244 | .1065 |
| | | | 11:56 | 3.90 | 1.10 | :45 | .270 | .1708 |
| | | | 12:00n | 2.10 | 1.24 | :55 | .270 | .2158 |
| | | | :04p | 1.50 | 1.34 | 1:00 | .223 | .2363 |
| | | | :08 | .45 | 1.37 | :20 | .114 | .2925 |
| | | | 1:18 | .03 | 1.40 | :40 | .0668 | .3227 |
| | | | 6-15-57 | Raingage | D-45-R | 2:00 | .0451 | .3413 |
| 11:02a | 0 | 0 | :30 | .0277 | .3595 | | | |
| :11 | .20 | .03 | 4:00 | .0087 | .3845 | | | |
| :15 | 2.10 | .19 | 5:10 | .0055 | .3927 | | | |
| :30 | 1.50 | .55 | | | | | | |
| :35 | .48 | .59 | | | | | | |
| :38 | 2.20 | .70 | | | | | | |
| :47 | .67 | .80 | | | | | | |
| :57 | .06 | .81 | | | | | | |
| 12:08p | 1.42 | 1.07 | | | | | | |
| 1:08 | .01 | 1.08 | | | | | | |
| 6-15-57 | Raingage | D-50-R | | | | | | |
| 10:40a | 0 | 0 | | | | | | |
| :09 | .10 | .05 | | | | | | |
| :12 | 1.10 | .12 | | | | | | |
| :14 | 3.90 | .25 | | | | | | |
| :16 | .60 | .27 | | | | | | |
| :29 | 1.85 | .67 | | | | | | |
| :33 | .45 | .70 | | | | | | |
| :37 | 1.80 | .82 | | | | | | |
| :41 | .45 | .85 | | | | | | |
| :45 | 1.05 | .92 | | | | | | |
| :55 | .12 | .94 | | | | | | |
| :58 | 3.10 | 1.11 | | | | | | |
| 12:03p | 1.68 | 1.25 | | | | | | |
| :08 | .60 | 1.30 | | | | | | |
| 2:08 | .01 | 1.32 | | | | | | |
| <u>Event of June 12, 1958</u> | | | | | | | | |
| 5-13,14-58 | 0.17 | 0 | 6-12-58 | Raingage | C-45-R | 6-12-58 | | |
| 5-15,16 | .40 | 0 | 1:50a | 0 | 0 | 1:56a | 0 | 0 |
| 5-16 | .20 | 0 | :54 | .60 | .04 | 2:06 | .0003 | T |
| 5-19 | .10 | 0 | 2:00 | 2.20 | .16 | :08 | .0111 | .0002 |
| 5-26 | .31 | 0 | :04 | 2.55 | .33 | :12 | .114 | .0047 |
| Watershed Conditions: Corn was 8" high, poor stand; wheat, 4' high, turning and in excellent condition. Sorghum planted about June 1. Meadow in good condition. Pasture 6" high and in good condition. Summer fallow ground all worked within two weeks preceding June 12th storm. | | | :06 | 4.80 | .49 | :20 | .203 | .0270 |
| | | | :11 | 10.44 | 1.36 | :34 | .130 | .0659 |
| | | | :16 | 3.96 | 1.69 | :42 | .171 | .0859 |
| | | | :21 | 2.76 | 1.92 | :50 | .282 | .1169 |
| | | | :37 | .45 | 2.04 | :56 | .323 | .1472 |
| | | | :49 | .00 | 2.04 | 3:04 | .290 | .1881 |
| | | | 3:10 | .54 | 2.23 | :20 | .159 | .2478 |
| | | | 4:43 | .00 | 2.23 | :30 | .101 | .2694 |
| | | | :48 | .24 | 2.25 | :42 | .0729 | .2868 |
| | | | 6-12-58 | Raingage | D-45-R | 4:20 | .0306 | .3189 |
| 1:48a | 0 | 0 | 5:00 | .0119 | .3331 | | | |
| 2:00 | .50 | .10 | :42 | .0052 | .3391 | | | |
| | | | 3:08p | 0 | .3470 | | | |

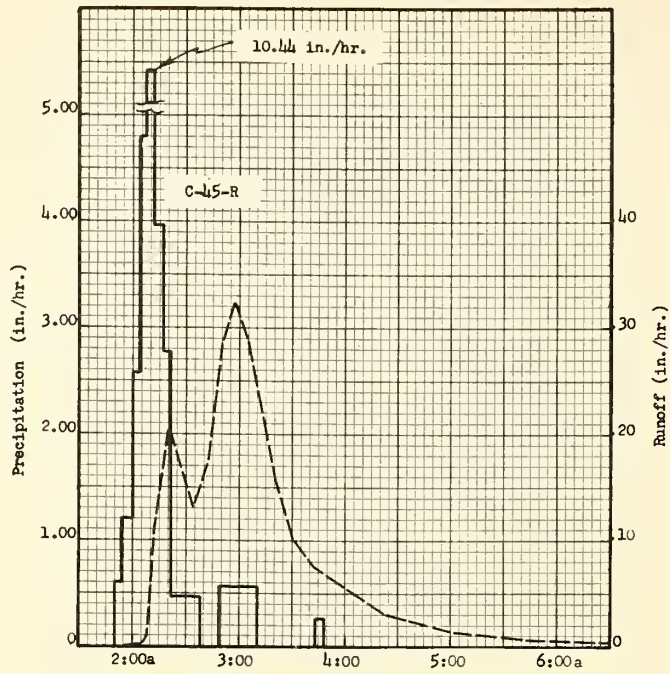
Notes: Weighted precipitation for the event of June 15, 1957 is 1.37 inches by the Thiessen method. The weighted precipitation for the event of June 12, 1958 is 2.21 inches by the Thiessen method. 1/ Beginning of second runoff event of June 15, 1957.

| SELECTED RUNOFF EVENTS | | | | | Hastings, Nebraska Watershed W-5 | | | |
|--|-------------------|-----------------|---------------|-------------------|----------------------------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of June 12, 1958 (continued) | | | | | | | | |
| The land use in percentage of the watershed area was as follows: | | | 2:06 a | 2.70 | .37 | | | |
| Corn 9.5% | | | :16 | 6.72 | 1.49 | | | |
| Oats 3.0% | | | :20 | 2.85 | 1.68 | | | |
| Wheat 19.0% | | | :34 | .94 | 1.90 | | | |
| Fallow 9.0% | | | :48 | 0 | 1.90 | | | |
| Sorghum 13.5% | | | 3:07 | .54 | 2.07 | | | |
| Alfalfa 11.0% | | | 4:46 | 0 | 2.07 | | | |
| Sudan5% | | | :48 | 2.10 | 2.14 | | | |
| Pasture 14.0% | | | 6-12-58 | Raingage | D-50-R | | | |
| Meadow 17.0% | | | 1:56a | 0 | 0 | | | |
| Roads5% | | | 2:00 | 1.20 | .08 | | | |
| Farmsteads 3.0% | | | :06 | 2.20 | .30 | | | |
| | | | :13 | 6.86 | 1.10 | | | |
| | | | :20 | 4.46 | 1.62 | | | |
| | | | :30 | 1.08 | 1.80 | | | |
| | | | 3:02 | .39 | 2.01 | | | |
| | | | :08 | .90 | 2.10 | | | |
| | | | 4:44 | 0 | 2.10 | | | |
| | | | :48 | .30 | 2.12 | | | |
| | | | 9:24 | 0 | 2.12 | | | |
| | | | :28 | .30 | 2.14 | | | |
| Event of July 3-5, 1959 | | | | | | | | |
| 6-18-59 | T | 0 | 7-3-59 | Raingage | C-45-R | 7-3-59 | | |
| 6-19 | .54 | 0 | 8:31p | 0 | 0 | 8:36p | 0 | 0 |
| 6-20 | 1.40 | .18 | :35 | 3.45 | .23 | :40 | .0002 | T |
| 6-27,28 | 1.85 | .40 | :39 | 5.40 | .59 | :50 | .145 | .0131 |
| 6-29 | .25 | .01 | :41 | 4.50 | .74 | :54 | .171 | .0237 |
| 6-30 | .29 | .02 | :45 | 2.40 | .90 | 9:08 | .199 | .0673 |
| | | | :51 | 1.70 | 1.07 | :12 | .244 | .0816 |
| | | | :53 | 2.40 | 1.15 | :24 | 1.05 | .2255 |
| | | | :55 | 3.00 | 1.25 | :34 | 1.15 | .4098 |
| | | | 9:03 | 1.35 | 1.43 | :38 | 1.15 | .4864 |
| Watershed Conditions: Corn was 1' high, thin stand and in poor condition. Wheat was 3-4' high, ripe and in good condition. Sorghum was 6" high, with a good stand. Oats 2' high, thin stand. Alfalfa, first cutting out, 2nd growth about 4" high. Meadow 8" high and in good condition. Most of fallow ground had been plowed before the storm. The watershed is predominantly contour farmed. The land use in percentage of the watershed area was as follows: | | | :13 | 3.42 | 2.00 | :44 | 1.13 | .6004 |
| | | | :15 | 2.40 | 2.08 | 10:29 | .314 | 1.1377 |
| | | | :20 | .24 | 2.10 | :44 | .194 | 1.1999 |
| | | | :30 | .06 | 2.11 | 11:14 | .0820 | 1.2662 |
| | | | | | | 12:00m | .0335 | 1.3076 |
| | | | 7-3-59 | Raingage | D-45-R | 7-4-59 | | |
| | | | 8:30p | 0 | 0 | 12:20a | .0239 | 1.3172 |
| | | | :35 | .84 | .07 | 2:30 | .0052 | 1.3433 |
| | | | :37 | 4.20 | .21 | 10:30p | T | 1.3583 |
| | | | :43 | 5.40 | .75 | 7-5-59 | | |
| | | | :47 | 3.60 | .99 | 6:00a | 0 | 1.3583 |
| | | | :58 | 2.56 | 1.46 | | | |
| | | | 9:02 | 1.50 | 1.56 | | | |
| | | | :17 | 3.20 | 2.36 | | | |
| | | | :21 | .75 | 2.41 | | | |
| | | | :41 | .15 | 2.46 | | | |
| | | | 7-3-59 | Raingage | D-50-R | | | |
| | | | | nr | 2.00 | | | |
| Corn 5.5% | | | | | | | | |
| Oats 2.0% | | | | | | | | |
| Wheat 18.0% | | | | | | | | |
| Fallow 12.0% | | | | | | | | |
| Sorghum 17.0% | | | | | | | | |
| Alfalfa 7.0% | | | | | | | | |
| Sudan 1.0% | | | | | | | | |
| Pasture 13.0% | | | | | | | | |
| Meadow 21.0% | | | | | | | | |
| Roads 1.0% | | | | | | | | |
| Farmsteads 2.5% | | | | | | | | |

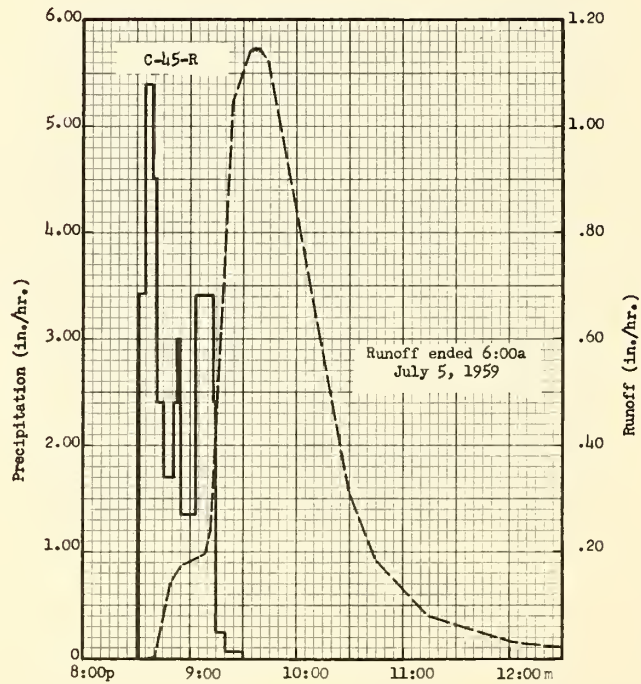
Notes: The weighted rainfall for the event of July 3-5, 1959 is 2.10 inches by the Thiessen method.



HASTINGS, NEBRASKA WATERSHED W-5

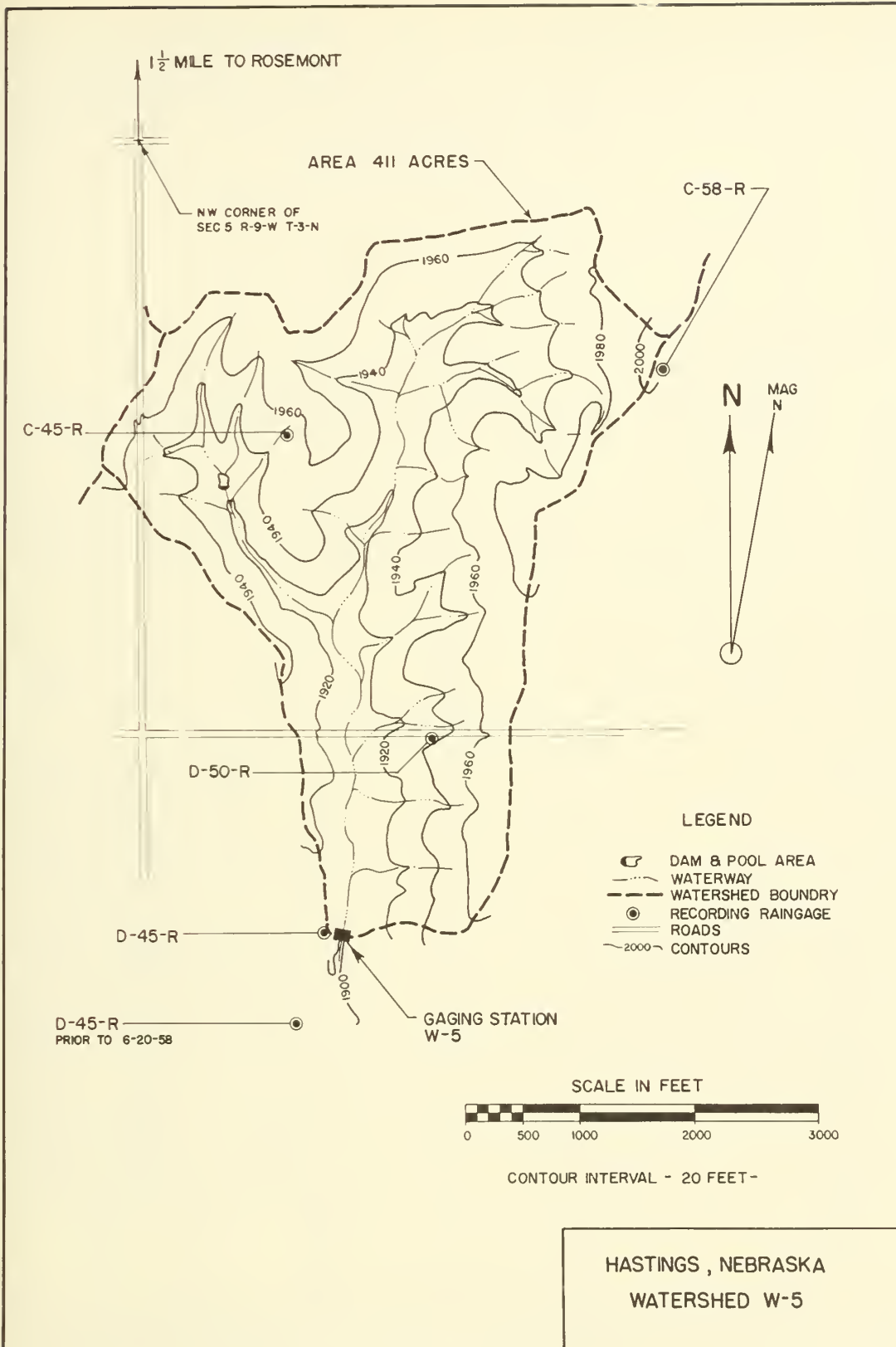


June 12, 1958



July 3, 1959

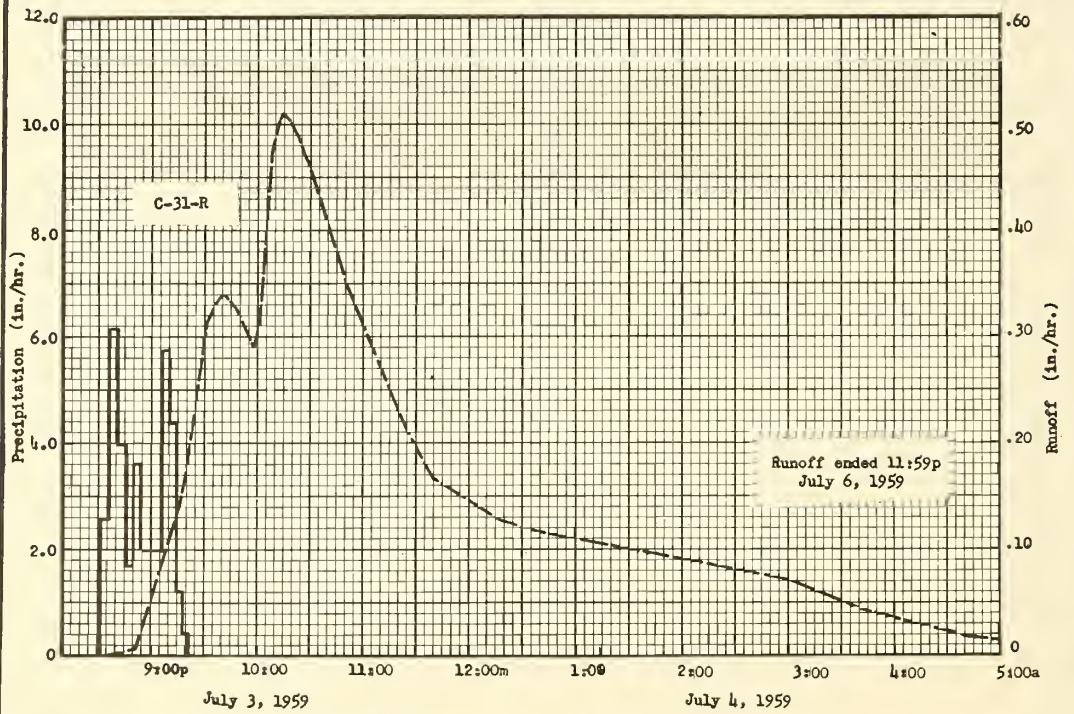
HASTINGS, NEBRASKA, WATERSHED W-5



| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Hastings, Nebraska Watershed W-8 Area - 2086 acres (3,259 sq. mi.) | | | | | | | | | |
|--|----------------------|-----------------|---|-------------------|---------------|---------------|---|---------------|--------------|-------------|-------------|-----------|-----------|---------------|--------|------|
| Year \ Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year | | | |
| 1956 | P Q | 0.23 0 | 0.16 .05 | 0.26 0 | 1.06 0 | 0.73 0 | 3.89 .58 | 2.81 .29 | 1.54 .10 | 1.18 .01 | 0.71 T | 0.09 0 | 0.04 0 | 12.70 1.03 | | |
| 1957 | P Q | .15 0 | .05 0 | 1.82 T | 2.99 .29 | 6.94 1.82 | 11.70 5.55 | .20 0 | 5.45 1.41 | .47 0 | 1.31 0 | .58 0 | .21 0 | 31.87 9.07 | | |
| 1958 | P Q | .10 0 | 1.37 T | 2.51 .24 | 1.86 .07 | 1.41 0 | 3.27 .44 | 4.71 .34 | 3.68 .36 | 1.71 .01 | .07 0 | .48 0 | .05 0 | 21.22 1.46 | | |
| 1959 | P Q | .30 0 | .34 .08 | 3.70 .13 | .91 .03 | 6.26 .75 | 4.80 .82 | 2.96 1.28 | 3.43 .07 | 4.60 .63 | 2.00 .08 | T 0 | .07 0 | 29.37 3.87 | | |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | Hastings, Nebraska Watershed W-8 | | | | | | | | | |
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1958 | 6-12 | .14 | 6-12 | .12 | 6-12 | .20 | 6-12 | .32 | 6-12 | .38 | 6-12 | .40 | 6-12 | .42 | 6-12 | .44 |
| 1959 | 7-3 | .51 | 7-3 | .42 | 7-3 | .71 | 7-3 | 1.17 | 7-3 | 1.27 | 7-3 | 1.27 | 7-3 | 1.28 | 6-28 | 1.84 |
| Notes: Quality of Records: Monthly P - excellent except Dec., Jan., Feb. and Mar. which were fair to good; monthly Q, annual maximum discharges & volumes, fair. Watershed Conditions: Mixed cover watershed with about 64% in cultivation, 2% in native grass, 8% in alfalfa and 4% in roads and farmsteads. Cultivated area was almost all straight-row farmed with a wheat, corn, sorghum & fallow rotation. All crops poor in 1956 and good to excellent in 1957, 1958 and 1959. e - estimated or partially estimated. | | | | | | | | | | | | | | | | |
| SELECTED RUNOFF EVENTS | | | | | | | Hastings, Nebraska Watershed W-8 | | | | | | | | | |
| Antecedent conditions | | | Rainfall | | | Runoff | | | | | | | | | | |
| Date | Rainfall 1/ (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | | | | | | |
| <u>Event of June 12, 1958</u> | | | | | | | | | | | | | | | | |
| 5-13, 14-57 | .35 | 0 | 6-12-58 | Raingage | C-31-R | 6-12-58 | | | | | | | | | | |
| 5-15 | .29 | 0 | 1:54a | 0 | 0 | 2:16a | 0 | 0 | | | | | | | | |
| 5-16 | .27 | T | 2:00 | .60 | .06 | :30 | .0012 | .0001 | | | | | | | | |
| 5-26 | .28 | 0 | :05 | 1.68 | .20 | :40 | .0082 | .0006 | | | | | | | | |
| 5-27 | .14 | 0 | :08 | 4.00 | .40 | :45 | .0362 | .0026 | | | | | | | | |
| 6-6 | .12 | 0 | :12 | 7.50 | .90 | :49 | .0491 | .0055 | | | | | | | | |
| | | | :14 | 5.70 | 1.09 | 3:02 | .0812 | .0199 | | | | | | | | |
| | | | :20 | 3.20 | 1.41 | :20 | .126 | .0516 | | | | | | | | |
| | | | :24 | 1.50 | 1.51 | :26 | .134 | .0646 | | | | | | | | |
| | | | :30 | .40 | 1.55 | :33 | .136 | .0803 | | | | | | | | |
| | | | :50 | .18 | 1.61 | :42 | .133 | .1005 | | | | | | | | |
| | | | 3:05 | .56 | 1.75 | 4:10 | .0983 | .1552 | | | | | | | | |
| | | | :09 | 1.05 | 1.82 | :30 | .0694 | .1831 | | | | | | | | |
| | | | 4:48 | .01 | 1.83 | :41 | .0522 | .1943 | | | | | | | | |
| | | | :50 | .60 | 1.85 | 5:01 | .0320 | .2079 | | | | | | | | |
| Fields in corn and sorghum worked between May 14 and June 1. All corn planted by June 1, all sorghum planted by June 12. Watershed predominantly straight row farmed. The land use (partly estimated) in percentage of the watershed area was as follows: | | | | | | | | | | | | | | | | |
| Corn | 11% | :32 | 6-12-58 | Raingage | A-31-R | :36 | .0213 | .2226 | | | | | | | | |
| Wheat | 14% | :56 | 1:58a | 0 | 0 | 6:20 | .0179 | .2367 | | | | | | | | |
| Oats | 1% | 3:08 | 2:10 | 3.70 | .74 | 7:01 | .0269 | .2508 | | | | | | | | |
| Sorghum in rows | 15% | :11 | :13 | 4.00 | .94 | :28 | .0392 | .2657 | | | | | | | | |
| Fallow | 19% | :16 | :22 | 1.87 | 1.22 | 8:13 | .0495 | .3000 | | | | | | | | |
| Sudan | 1% | | | | | | | | | | | | | | | |
| Alfalfa | 9% | 4:46 | | 0 | 1.48 | 11:55 2/ | .0002 | .3884 | | | | | | | | |
| Clover | 2% | :49 | | .60 | 1.51 | | | | | | | | | | | |
| Meadow | 3% | | | | | | | | | | | | | | | |
| Pasture | 21% | 6-12-58 | | Raingage | B-32-R | | | | | | | | | | | |
| Farmsteads | 2% | 1:54a | | 0 | 0 | | | | | | | | | | | |
| Roads | 2% | 2:00 | | 1.00 | .10 | | | | | | | | | | | |
| | | :04 | | 2.85 | .29 | | | | | | | | | | | |
| | | :08 | | 4.80 | .61 | | | | | | | | | | | |
| Notes: To convert runoff in in/hr to cfs, multiply by 2103. Weighted precipitation for event of 6-12-58 is 1.85 inches by the Thiessen method. 1/ All antecedent rainfall is weighted using Thiessen method. 2/ Beginning of new storm. For map of watershed, refer to page 44.4-8. | | | | | | | | | | | | | | | | |

| SELECTED RUNOFF EVENTS | | | Hastings, Nebraska Watershed W-8 | | | | | |
|---|-------------------|-----------------|----------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of June 12, 1958 (continued)</u> | | | | | | | | |
| | | | 2:11a | 7.60 | .99 | | | |
| | | | :20 | 2.40 | 1.35 | | | |
| | | | :25 | .96 | 1.43 | | | |
| | | | :42 | .13 | 1.48 | | | |
| | | | :52 | 0 | 1.48 | | | |
| | | | 3:11 | .73 | 1.71 | | | |
| | | | 4:44 | 0 | 1.71 | | | |
| | | | :47 | 1.60 | 1.79 | | | |
| | | | 6-12-58 | Raingage | D-31-R | | | |
| | | | 1:56a | 0 | 0 | | | |
| | | | 2:00 | 1.35 | .09 | | | |
| | | | :03 | .20 | .10 | | | |
| | | | :09 | 2.00 | .30 | | | |
| | | | :14 | 7.68 | .94 | | | |
| | | | :20 | 5.20 | 1.46 | | | |
| | | | :28 | 2.55 | 1.80 | | | |
| | | | :35 | .86 | 1.90 | | | |
| | | | :44 | .27 | 1.94 | | | |
| | | | :49 | 0 | 1.94 | | | |
| | | | 3:02 | .65 | 2.08 | | | |
| | | | :06 | 1.80 | 2.20 | | | |
| | | | :10 | .30 | 2.22 | | | |
| | | | 4:47 | 0 | 2.22 | | | |
| | | | :52 | .48 | 2.26 | | | |
| <u>Event of July 3-6, 1959</u> | | | | | | | | |
| 6-18-59 | .03 | 0 | 7-3-59 | Raingage | C-31-R | 7-3-59 | | |
| 6-19 | .55 | T | 8:32p | 0 | 0 | 8:35p | 0 | 0 |
| 6-20,21 | 1.26 | .22 | :36 | 2.55 | .17 | :52 | .0077 | .0005 |
| 6-27,28 | 1.83 | .53 | :41 | 6.12 | .68 | 9:16 | .142 | .0309 |
| 6-29,30 | .43 | .03 | :46 | 3.96 | 1.01 | :20 | .178 | .0416 |
| | | | :50 | 1.65 | 1.12 | :32 | .316 | .0908 |
| | | | :54 | 3.60 | 1.36 | :36 | .332 | .1124 |
| | | | 9:06 | 1.95 | 1.75 | :40 | .342 | .1348 |
| | | | :10 | 5.70 | 2.13 | :48 | .326 | .1795 |
| | | | :14 | 4.35 | 2.42 | :58 | .290 | .2305 |
| | | | :18 | 1.20 | 2.50 | 10:00 | .309 | .2406 |
| | | | :22 | .45 | 2.53 | :08 | .473 | .2934 |
| | | | 7-4-59 | | | | | |
| | | | 12:00n | T | 2.57 | :12 | .501 | .3259 |
| | | | 7-3-59 | Raingage | A-31-R | | | |
| | | | 8:31p | 0 | 0 | :18 | .601 | .3764 |
| | | | :40 | 6.47 | .97 | :28 | .465 | .4571 |
| | | | :44 | 4.20 | 1.25 | :52 | .6197 | .6197 |
| | | | :49 | 2.64 | 1.47 | 11:24 | .349 | .7691 |
| | | | :52 | 1.40 | 1.54 | :40 | .166 | .8216 |
| | | | 9:02 | 2.34 | 1.93 | 7-4-59 | .126 | |
| | | | :13 | 1.80 | 2.26 | 12:20a | .117 | .9165 |
| | | | :17 | .75 | 2.31 | :40 | .0703 | .9570 |
| | | | :37 | .06 | 2.33 | 3:00 | .0443 | 1.1758 |
| | | | | | | :40 | | 1.2149 |
| | | | 7-3-59 | Raingage | B-32-R | 4:40 | .0189 | 1.2442 |
| | | | 8:32p | 0 | 0 | 5:20 | .0110 | 1.2541 |
| | | | :44 | 5.75 | 1.15 | 11:00 | .0010 | 1.2721 |
| | | | 9:02 | 2.13 | 1.79 | 12:00n | .0001 | 1.2763 |
| | | | :06 | 2.70 | 1.97 | 7-5-59 | | |
| | | | :10 | 3.75 | 2.22 | 12:00n | T | 1.2773 |
| | | | :14 | 2.70 | 2.40 | 7-6-59 | | |
| | | | :17 | .80 | 2.44 | 11:59p | 0 | 1.2773 |
| | | | :25 | .15 | 2.46 | | | |
| | | | 7-4-59 | | | | | |
| | | | 3:00p | T | 2.48 | | | |
| | | | 7-3-59 | Raingage | I-31-R | | | |
| | | | Total | nr | 2.36 | | | |

Notes: Weighted precipitation for event of July 3-6, 1959 is 2.46 inches by the Thiessen polygon method.



HASTINGS, NEBRASKA WATERSHED W-3

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | | Hastings, Nebraska Watershed W-11 Area - 3490 acres (5.45 sq. mi.) | | | | | | |
|---|-------|------|------|-------|------|------|-------|---|------|-------|------|------|------|-------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1956 | P | 0.24 | 0.20 | 0.25 | 0.94 | 0.85 | 3.61 | 2.90 | 1.60 | 1.18 | 0.68 | 0.09 | 0.05 | 12.59 |
| | Q | 0 | T | T | 0 | 0 | .39 | .26 | .10 | .01 | 0 | 0 | 0 | .76 |
| 1957 | P | .16 | .06 | 1.92 | 3.03 | 6.38 | 11.77 | .28 | 5.46 | .46 | 1.25 | .59 | .22 | 31.58 |
| | Q | 0 | 0 | T | .19 | 1.39 | 5.22 | 0 | 1.19 | 0 | 0 | 0 | 0 | 7.99 |
| 1958 | P | .12 | 1.30 | 2.59 | 1.82 | 1.46 | 3.37 | 4.80 | 3.74 | 1.80 | .13 | .50 | .05 | 21.68 |
| | Q | 0 | T | e .25 | .09 | 0 | .26 | .33 | .38 | .07 | 0 | 0 | 0 | 1.38 |
| 1959 | P | .30 | .34 | 3.65 | .89 | 6.49 | 4.92 | 2.98 | 3.61 | 4.61 | 2.01 | 0 | .07 | 29.87 |
| | Q | 0 | .01 | .13 | .03 | .80 | .86 | 1.26 | .23 | .59 | .09 | 0 | 0 | 4.00 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS HASTINGS, NEBRASKA, WATERSHED W-11

| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|---------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1958 | 8-16 | 0.03 | 8-16 | .03 | 8-16 | .06 | 8-16 | .16 | 8-16 | .26 | 8-16 | .33 | 8-16 | .33 | 3-26 | e .331/ |
| 1959 | 7-3 | .24 | 7-3 | .22 | 7-3 | .40 | 7-3 | .84 | 7-3 | 1.19 | 7-3 | 1.25 | 7-3 | 1.25 | 6-27 | 1.84 |

Notes: Quality of Records: Monthly P - excellent except Dec., Jan., Feb. and Mar. which were fair to good; monthly Q, annual maximum discharges and volumes, fair. Watershed conditions: Mixed cover watershed with about 66% in cultivation, 25% in native grasses, 5% in alfalfa, and 4% in roads and farmsteads. All crops were poor in 1956 and good to excellent in 1957, 1958 and 1959. A wheat, corn, sorghum and fallow rotation was followed. e - estimated or partially estimated. 1/ .33 also occurred beginning 8-16-58.

SELECTED RUNOFF EVENTS HASTINGS, NEBRASKA WATERSHED W-11

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|---|----------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall 2/ (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of June 15 and 16, 1957 | | | | | | | | |
| 5-16-57 | .06 | T | 6-15-57 | Raingage | D-31-R | 6-15-57 | | |
| 5-29 | .77 | .06 | 11:06a | 0 | 0 | 11:10a | .0002 | 0 |
| 5-31 | .21 | .02 | :10 | 3.30 | .22 | 12:20p | .0009 | .0005 |
| 6-6 | .08 | 0 | :25 | 1.60 | .62 | 1:30 | .0128 | .0082 |
| 6-10 | .55 | T | :29 | .30 | .64 | 2:30 | .0294 | .0311 |
| 6-13, 14 | .89 | .03 | :33 | 1.80 | .76 | 3:30 | .0394 | .0653 |
| 6-15 | 0 | .01 | :51 | .37 | .87 | 4:30 | .0588 | .1119 |
| Watershed Conditions: | | | 12:00n | 2.13 | 1.19 | 6:00 | .107 | .2356 |
| Corn - 5" high, poor condition. | | | :04p | .60 | 1.23 | :30 | .163 | .3031 |
| Wheat - 4' high, headed and in good condition. | | | 4:50 | 0 | 1.23 | :50 | .219 | .3668 |
| Sorghum - being replanted. | | | 5:36 | .43 | 1.56 | 7:00 | .238 | .4049 |
| Oats - 20" high, good condition. | | | :48 | 1.05 | 1.77 | :32 | .240 | .5319 |
| Alfalfa - most of it cut, good condition. | | | :57 | 3.27 | 2.26 | 8:02 | .355 | .6808 |
| Meadow and pasture - excellent condition. | | | 6:18 | .97 | 2.60 | :33 | .375 | .8681 |
| The corn was all planted by June 1; the fallow ground was plowed and void of cover prior to the storm. | | | :29 | 3.11 | 3.17 | :56 | .406 | 1.0182 |
| Watershed predominantly straight-row farmed. The land use in percentage of the watershed area was as follows: | | | :50 | 1.28 | 3.62 | 9:16 | .415 | 1.1552 |
| Corn 5% | | | 7:50 | .54 | 4.16 | :30 | .406 | 1.2510 |
| Wheat 14% | | | 8:30 | 1.56 | 5.20 | :56 | .375 | 1.4198 |
| Oats 2% | | | :55 | .62 | 5.46 | 10:30 | .313 | 1.6156 |
| Sorghum in rows 27% | | | 11:06 | .29 | 6.09 | 11:00 | .274 | 1.7263 |
| Fallow 17% | | | :48 | .04 | 6.12 | 6-16-57 | | |
| Clover 1% | | | 6-16-57 | | | 12:30a | .219 | 2.1263 |
| Alfalfa 6% | | | 12:10a | .58 | 6.23 | 1:00 | .213 | 2.2343 |
| Pasture 22% | | | 6:10 | .03 | 6.40 | 2:00 | .171 | 2.4251 |
| Meadow 2% | | | | | | 3:30 | .147 | 2.6654 |
| Farmsteads 2% | | | | | | 5:30 | .0984 | 2.9081 |
| Roads 2% | | | | | | 6:30 | .0819 | 2.9982 |
| | | | | | | 9:00 | .0656 | 3.1821 |
| | | | | | | 11:00 | .0124 | 3.2644 |
| | | | | | | 2:00p | .0027 | 3.2812 |
| | | | | | | 9:10 3/ | .0008 | 3.2920 |

Notes: To convert runoff in in/hr to cfs, multiply by 3519. Weighted precipitation for event of 6-15 and 16-57 is 6.06 inches by the Thiessen method. 2/ All antecedent rainfall is weighted using the Thiessen method. 3/ Beginning of new storm.

| SELECTED RUNOFF EVENTS | | | Hastings, Nebraska Watershed W-11 | | | | | |
|---|-------------------|-----------------|-----------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of June 15 and 16, 1957 - Continued | | | | | | | | |
| | | | 6-15-57 | Rain gauge | A-31-R | | | |
| | | | 10:58a | 0 | 0 | | | |
| | | | 11:10 | 1.50 | .30 | | | |
| | | | :38 | 1.59 | 1.02 | | | |
| | | | :50 | 3.30 | 1.70 | | | |
| | | | 12:10p | .48 | 1.86 | | | |
| | | | 5:10 | T | 1.88 | | | |
| | | | :39 | .33 | 2.04 | | | |
| | | | 6:35 | 1.21 | 3.17 | | | |
| | | | 7:40 | .38 | 3.58 | | | |
| | | | 8:34 | .86 | 4.35 | | | |
| | | | 9:39 | .03 | 4.38 | | | |
| | | | :58 | 1.04 | 4.71 | | | |
| | | | 10:18 | .09 | 4.74 | | | |
| | | | :51 | 1.02 | 5.30 | | | |
| | | | 11:41 | 0 | 5.30 | | | |
| | | | :52 | .98 | 5.48 | | | |
| | | | 6-16-57 | | | | | |
| | | | 9:00a | .02 | 5.67 | | | |
| | | | 6-15-57 | Rain gauge | B-32-R | | | |
| | | | 10:51a | 0 | 0 | | | |
| | | | 10:50p | | 5.51 | | | |
| | | | 6-16-57 | | | | | |
| | | | 12:50p | | 5.85 | | | |
| | | | 6-15-57 | Rain gauge | C-31-R | | | |
| | | | 11:06a | 0 | 0 | | | |
| | | | :10 | .75 | .05 | | | |
| | | | :30 | 2.46 | .87 | | | |
| | | | :54 | .75 | 1.17 | | | |
| | | | 12:04p | 2.82 | 1.41 | | | |
| | | | :10 | .50 | 1.70 | | | |
| | | | 2:10 | .01 | 1.72 | | | |
| | | | 5:00 | 0 | 1.72 | | | |
| | | | :48 | .25 | 1.92 | | | |
| | | | 6:02 | 2.19 | 2.43 | | | |
| | | | :22 | .37 | 2.72 | | | |
| | | | :54 | 1.41 | 3.47 | | | |
| | | | 7:34 | .38 | 3.72 | | | |
| | | | :58 | 1.15 | 4.13 | | | |
| | | | 8:12 | .51 | 4.30 | | | |
| | | | :34 | 1.91 | 5.00 | | | |
| | | | 9:30 | .15 | 5.14 | | | |
| | | | :58 | 0 | 5.14 | | | |
| | | | 10:10 | 1.00 | 5.34 | | | |
| | | | :36 | .16 | 5.41 | | | |
| | | | 1:06 | .36 | 5.84 | | | |
| | | | 6-16-57 | | | | | |
| | | | 3:00a | .13 | 6.12 | | | |
| | | | 6-15-57 | Rain gauge | E-30-R | | | |
| | | | 10:23a | 0 | 0 | | | |
| | | | 11:04p | | 5.35 | | | |
| | | | 6-16-57 | | | | | |
| | | | 1:20a | | 6.05 | | | |
| | | | 6-15-57 | Rain gauge | G-42-R | | | |
| | | | 11:06a | 0 | 0 | | | |
| | | | :18 | .30 | .06 | | | |
| | | | :42 | .98 | .45 | | | |
| | | | 12:32p | .06 | .50 | | | |
| | | | 2:32 | 0 | .50 | | | |
| | | | 3:32 | .02 | .52 | | | |
| | | | 5:00 | 0 | .52 | | | |
| | | | :45 | .49 | .89 | | | |
| | | | :58 | 2.17 | 1.35 | | | |
| | | | 6:13 | .72 | 1.53 | | | |
| | | | :48 | 2.74 | 3.13 | | | |
| | | | 8:18 | .49 | 3.86 | | | |
| | | | 9:15 | 1.54 | 5.40 | | | |
| | | | 6-16-57 | | | | | |
| | | | 12:08a | .12 | 5.74 | | | |
| | | | 7:28 | .02 | 5.89 | | | |

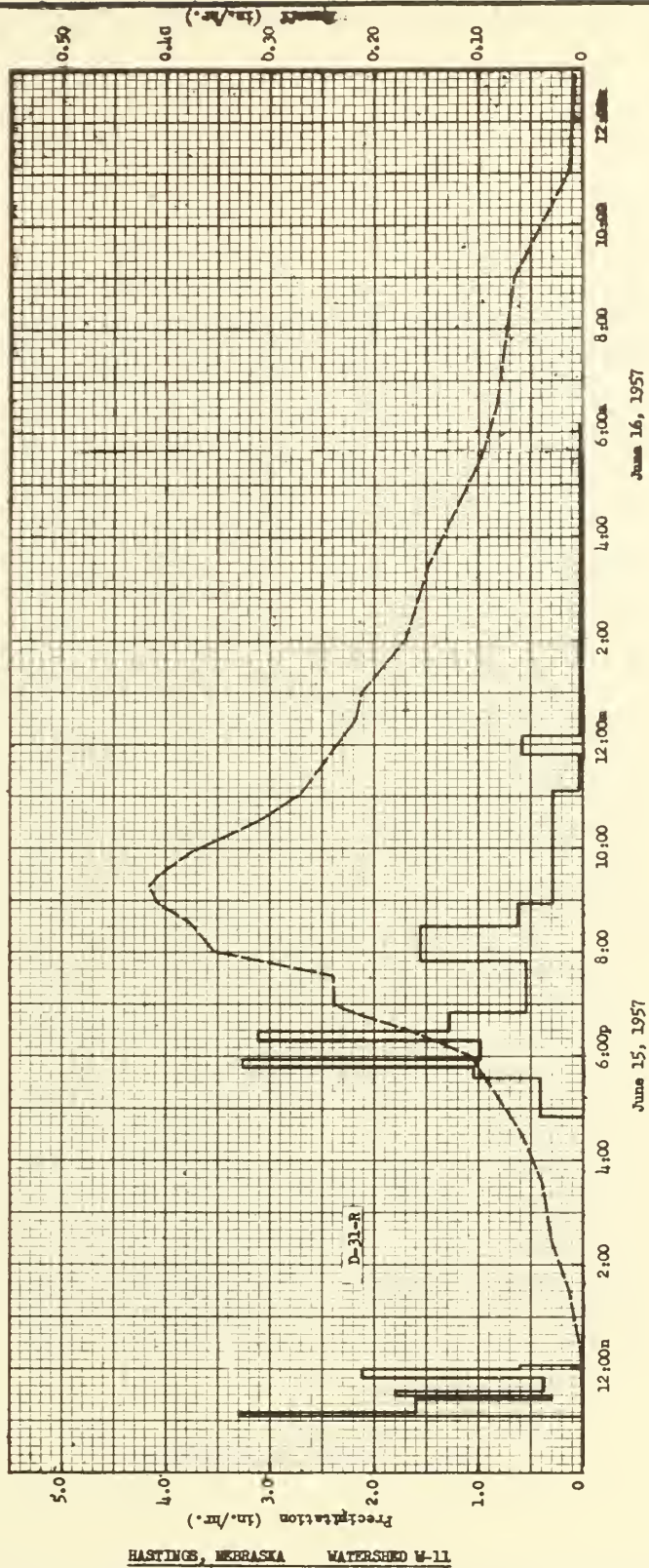
Notes:

| SELECTED RUNOFF EVENTS | | | Hastings, Nebraska Watershed W-11 | | | | | |
|--|-------------------|-----------------|-----------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of August 28 - September 1, 1957 | | | | | | | | |
| 3-2,3-57 | .76 | 0 | 8-28-57 | Raingage | D-31-R | 8-29-57 | | |
| 8-15,16 | 1.92 | .0129 | 11:53p | 0 | 0 | 12:07a | 0 | 0 |
| 8-23 | .09 | 0 | 8-29-57 | | | :21 | .0068 | .0004 |
| 8-28 | .09 | 0 | 12:08a | .92 | .23 | :35 | .0959 | .0116 |
| | | | :11 | 3.00 | .36 | :38 | .0934 | .0163 |
| Watershed Conditions: | | | | | | | | |
| Corn - in roasting-ear stage, | | | :27 | 5.02 | 1.72 | :48 | .105 | .0329 |
| damage from grasshoppers. | | | :37 | 1.56 | 1.98 | 1:08 | .0854 | .0647 |
| Sorghum - 2' high and heading, | | | :43 | .30 | 2.01 | :28 | .118 | .0972 |
| good condition. | | | :47 | 1.95 | 2.14 | :33 | .117 | .1070 |
| Alfalfa - 3rd cutting about | | | 1:03 | .34 | 2.23 | :55 | .0915 | .1451 |
| Apr. 24. Good condition. | | | | | | | | |
| Pasture - 6" high, fair condition. | | | :13 | 1.50 | 2.48 | 2:10 | .0796 | .1665 |
| The fall plowing of the stubble | | | 3:03 | .20 | 2.84 | 3:00 | .0666 | .2282 |
| ground had started and the fallow | | | 1:08p | .01 | 2.92 | 4:20 | .0544 | .3088 |
| ground was ready for planting of fall | | | | | | :50 | .0549 | .3362 |
| wheat. The watershed is predominant- | | | 8-28-57 | Raingage | A-31-R | 6:25 | .0903 | .4525 |
| ly straight-row farmed. The land use | | | 11:58p | 0 | 0 | | | |
| in percentage of the watershed area | | | 8-29-57 | | | 8:20 | .0897 | .6254 |
| was as follows: | | | 12:10a | .35 | .07 | 10:00 | .0927 | .7754 |
| Corn 5% | | | :20 | 1.20 | .27 | 12:00n | .0878 | .9587 |
| Wheat 14% | | | | | | 1:00p | .0819 | 1.0436 |
| Oats 2% | | | :29 | 2.93 | .71 | :30 | .0744 | 1.0826 |
| Sorghum in rows 27% | | | :44 | .80 | .91 | | | |
| Fallow 17% | | | :50 | 2.10 | 1.12 | 2:15 | .0379 | 1.1259 |
| Clover 1% | | | 1:06 | .68 | 1.30 | 3:05 | .0147 | 1.1466 |
| Alfalfa 6% | | | :20 | 2.74 | 1.94 | 4:10 | .0048 | 1.1564 |
| Meadow 2% | | | | | | 9:00 | .0009 | 1.1656 |
| Pasture 22% | | | 3:00 | .11 | 2.12 | 9-1-57 | | |
| Farmsteads 2% | | | 7:30 | 0 | 2.12 | | | |
| Roads 2% | | | 10:00 | .01 | 2.15 | 10:00a | 0 | 1.1718 |
| | | | | | | | | |
| | | | 8-28-57 | Raingage | E-32-R | | | |
| | | | 11:50p | 0 | 0 | | | |
| | | | 8-29-57 | | | | | |
| | | | 12:11a | .55 | .22 | | | |
| | | | :28 | 2.57 | .82 | | | |
| | | | | | | | | |
| | | | :43 | .76 | 1.01 | | | |
| | | | :50 | 1.71 | 1.21 | | | |
| | | | 1:06 | .49 | 1.34 | | | |
| | | | 1:17 | 2.73 | 1.84 | | | |
| | | | 3:02 | .11 | 2.04 | | | |
| | | | | | | | | |
| | | | 9:00 | 0 | 2.04 | | | |
| | | | 11:30 | .01 | 2.07 | | | |
| | | | | | | | | |
| | | | 8-28-57 | Raingage | C-31-R | | | |
| | | | Note: | Clock Stopped | | | | |
| | | | Total | | 2.50 | | | |
| | | | | | | | | |
| | | | 8-28-57 | Raingage | E-30-R | | | |
| | | | 11:50p | 0 | 0 | | | |
| | | | :56 | .20 | .02 | | | |
| | | | 8-29-57 | | | | | |
| | | | 12:12a | 1.42 | .40 | | | |
| | | | | | | | | |
| | | | :18 | 4.50 | .85 | | | |
| | | | :30 | 3.40 | 1.53 | | | |
| | | | :50 | .81 | 1.80 | | | |
| | | | 1:04 | .13 | 1.83 | | | |
| | | | :08 | 1.65 | 1.94 | | | |
| | | | | | | | | |
| | | | :11 | 4.70 | 2.41 | | | |
| | | | :17 | 4.07 | 2.55 | | | |
| | | | 2:02 | .21 | 2.71 | | | |
| | | | 5:02 | .05 | 2.85 | | | |
| | | | | | | | | |
| | | | 8-28-57 | Raingage | G-42-R | | | |
| | | | 11:46p | 0 | 0 | | | |
| | | | :51 | .36 | .03 | | | |
| | | | 8-29-57 | | | | | |
| | | | 12:06a | 1.88 | .50 | | | |
| | | | | | | | | |
| | | | :25 | 4.36 | 1.88 | | | |
| | | | 1:06 | .72 | 2.37 | | | |
| | | | 1:14 | 3.75 | 2.87 | | | |
| | | | 5:24 | .05 | 3.10 | | | |

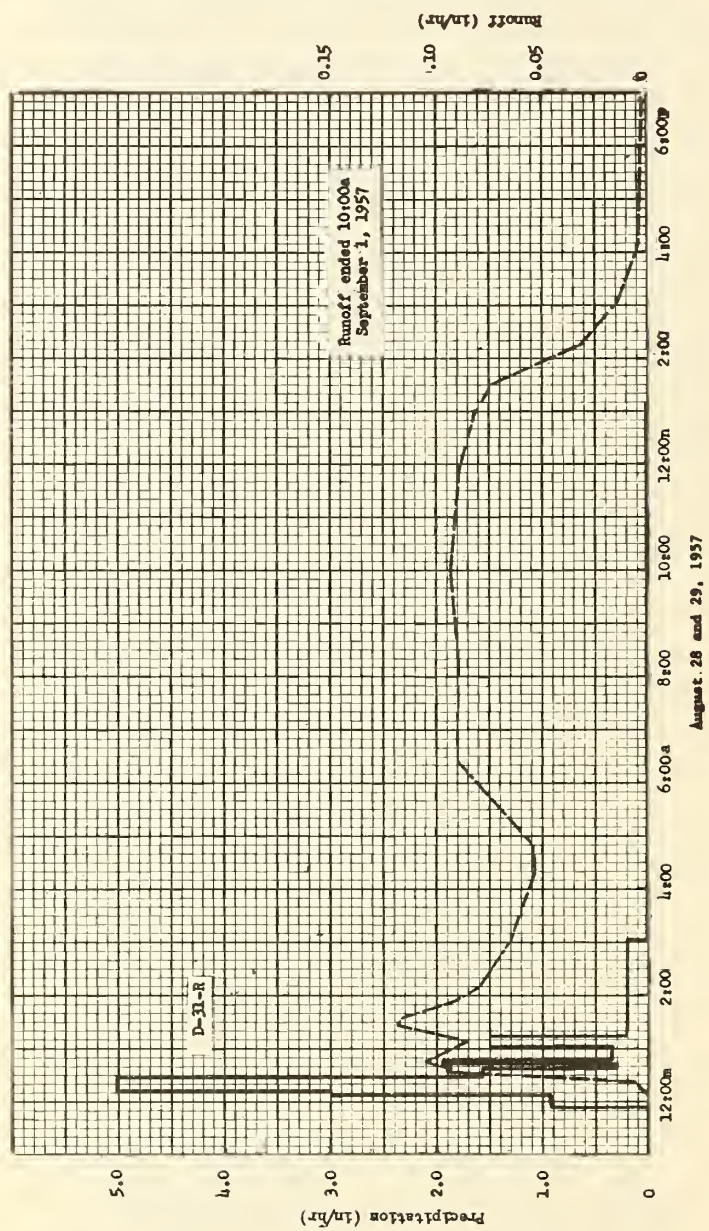
Notes: Weighted precipitation for the event of August 28 - September 1, 1957 is 2.60 inches by the Thiessen method.

| SELECTED RUNOFF EVENTS | | | | | | HASTINGS, NEBRASKA WATERSHED W-11 | | |
|---|-------------------|-----------------|---------------|-------------------|---------------|-----------------------------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of July 3 to 6, 1959 | | | | | | | | |
| 6-19-59 | .67 | .01 | 7-3-59 | Raingage | E-30-R | 7-3-59 | | |
| 6-20 | 1.23 | .19 | 8:20p | 0 | 0 | 8:41p | 0 | 0 |
| 6-21,22 | .26 | .07 | :34 | .13 | .03 | :49 | .0014 | .0001 |
| 6-27,28 | 1.87 | .54 | :40 | 3.50 | .38 | 9:01 | .0258 | .0031 |
| 6-29,30 | .35 | .05 | :48 | 4.80 | 1.02 | :29 | .145 | .0432 |
| Watershed Conditions: | | | :52 | 3.15 | 1.23 | :33 | .145 | .0529 |
| Corn - 1' high, thin stand, poor condition. | | | 9:00 | 2.02 | 1.50 | 10:01 | .115 | .1134 |
| Wheat - 3-4' high, ripe, good condition. | | | :04 | 2.70 | 1.68 | :21 | .0970 | .1486 |
| Sorghum - 6" high, good stand. | | | :08 | 6.00 | 2.08 | :45 | .0910 | .1861 |
| Oats - 2' high, thin stand. | | | :12 | 4.20 | 2.36 | :57 | .0925 | .2044 |
| Alfalfa - 1st cutting picked up; 2nd growth about 4" high. | | | .16 | 2.40 | 2.52 | 11:01 | .103 | .2109 |
| Fallow - ground bare, loose and rough. | | | :20 | 1.65 | 2.63 | :09 | .152 | .2277 |
| Meadow - 8" high, good condition | | | :30 | .12 | 2.65 | :25 | .221 | .2781 |
| Pasture - good cover, good condition. | | | 7-4-59 | 0 | 2.65 | :41 | .237 | .3401 |
| Most of fallow ground had been plowed before the storm. The watershed is predominantly straight row farmed. The land use (partly estimated) in percentage of the watershed area was as follows: | | | 10:00a | 0 | 2.65 | 7-4-59 | | |
| Corn | 9% | | 3:30 | T | 2.68 | 12:01a | .223 | .4174 |
| Wheat | 21% | | 7-3-59 | Raingage | A-31-R | 2:01 | .109 | .7401 |
| Oats | 1% | | 8:31p | 0 | 0 | 3:01 | .0853 | .8360 |
| Sorghum in rows | 19% | | :40 | 6.47 | .97 | 5:01 | .0635 | .9826 |
| Fallow | 15% | | :44 | 4.20 | 1.25 | 7:01 | .0530 | 1.0986 |
| Sudan | 1% | | :49 | 2.64 | 1.47 | 9:21 | .0369 | 1.2054 |
| Alfalfa | 5% | | :52 | 1.40 | 1.47 | 10:33 | .0119 | 1.2347 |
| Pasture | 22% | | :02 | 1.54 | 1.54 | 12:01p | .0028 | 1.2460 |
| Meadow | 3% | | 9:02 | 2.34 | 1.93 | 7-5-59 | | |
| Farmsteads | 2% | | :13 | 1.00 | 2.26 | 12:01a | .0001 | 1.2525 |
| Roads | 2% | | :17 | .75 | 2.31 | 7-6-59 | | |
| | | | :37 | .06 | 2.33 | 11:30p 1/ | T | 1.2526 |
| | | | 7-3-59 | Raingage | B-32-R | | | |
| | | | 8:32p | 0 | 0 | | | |
| | | | :44 | 5.75 | 1.15 | | | |
| | | | 9:02 | 1.89 | 1.79 | | | |
| | | | :06 | 2.70 | 1.97 | | | |
| | | | :10 | 3.75 | 2.22 | | | |
| | | | :14 | 2.70 | 2.40 | | | |
| | | | :17 | .80 | 2.44 | | | |
| | | | :25 | .15 | 2.46 | | | |
| | | | 7-4-59 | | | | | |
| | | | 10:00a | 0 | 2.46 | | | |
| | | | 3:30p | T | 2.48 | | | |
| | | | 7-3-59 | Raingage | C-31-R | | | |
| | | | 8:32p | 0 | 0 | | | |
| | | | :36 | 2.55 | .17 | | | |
| | | | :41 | 6.12 | .68 | | | |
| | | | :46 | 3.96 | 1.01 | | | |
| | | | :50 | 1.65 | 1.12 | | | |
| | | | :54 | 3.60 | 1.36 | | | |
| | | | 9:06 | 1.95 | 1.75 | | | |
| | | | :14 | 5.02 | 2.42 | | | |
| | | | :18 | 1.20 | 2.50 | | | |
| | | | :22 | .45 | 2.53 | | | |
| | | | 7-4-59 | | | | | |
| | | | 12:00n | T | 2.57 | | | |
| | | | 7-3-59 | Raingage | D-31-R | | | |
| | | | Total | nr | 2.36 | | | |
| | | | 7-3-59 | Raingage | G-42-R | | | |
| | | | 8:40p | 0 | 0 | | | |
| | | | :42 | 2.40 | .08 | | | |
| | | | :48 | 4.00 | .48 | | | |
| | | | :55 | 2.49 | .77 | | | |
| | | | 9:00 | .84 | .84 | | | |
| | | | :07 | 2.66 | 1.15 | | | |
| | | | :25 | 4.40 | 2.47 | | | |
| | | | :30 | .36 | 2.49 | | | |
| | | | 10:00 | .02 | 2.51 | | | |

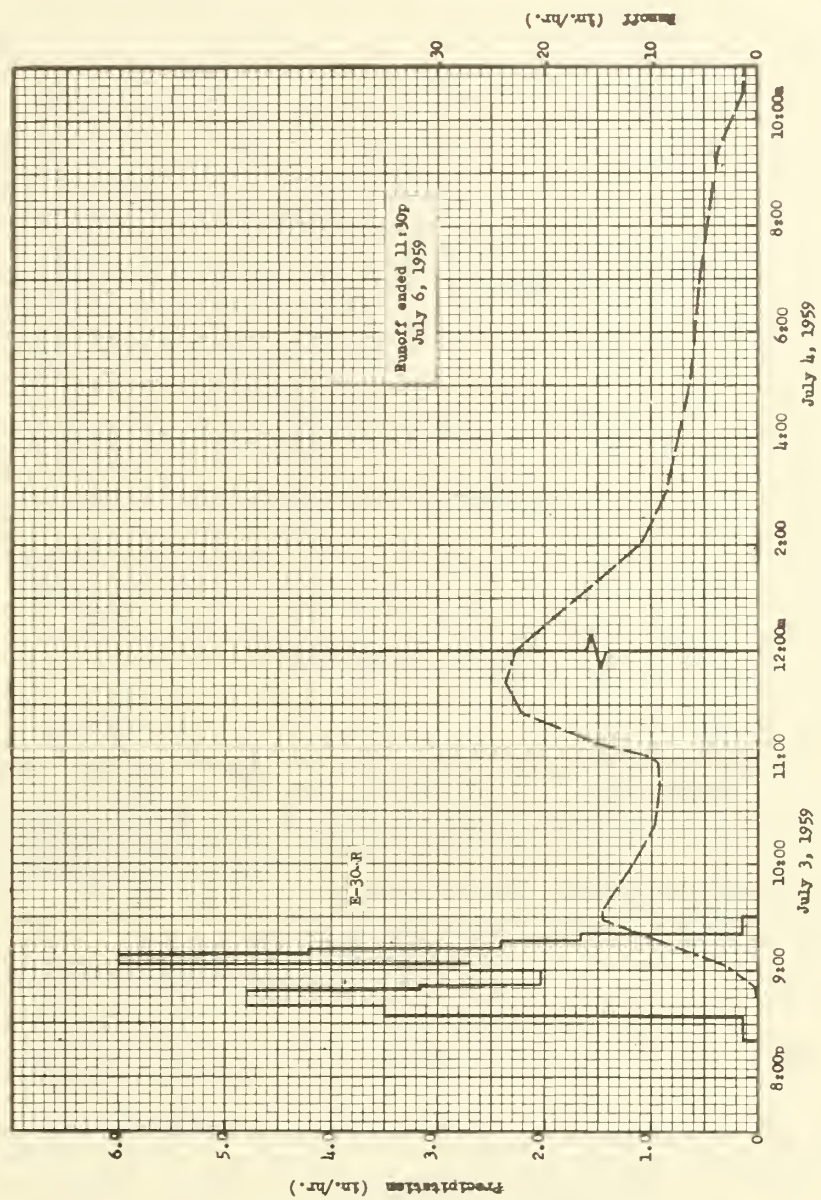
Notes: Weighted precipitation for the event of July 3-6, 1959 is 2.49 inches by the Thiessen method.
 1/ Beginning of new rainfall event.



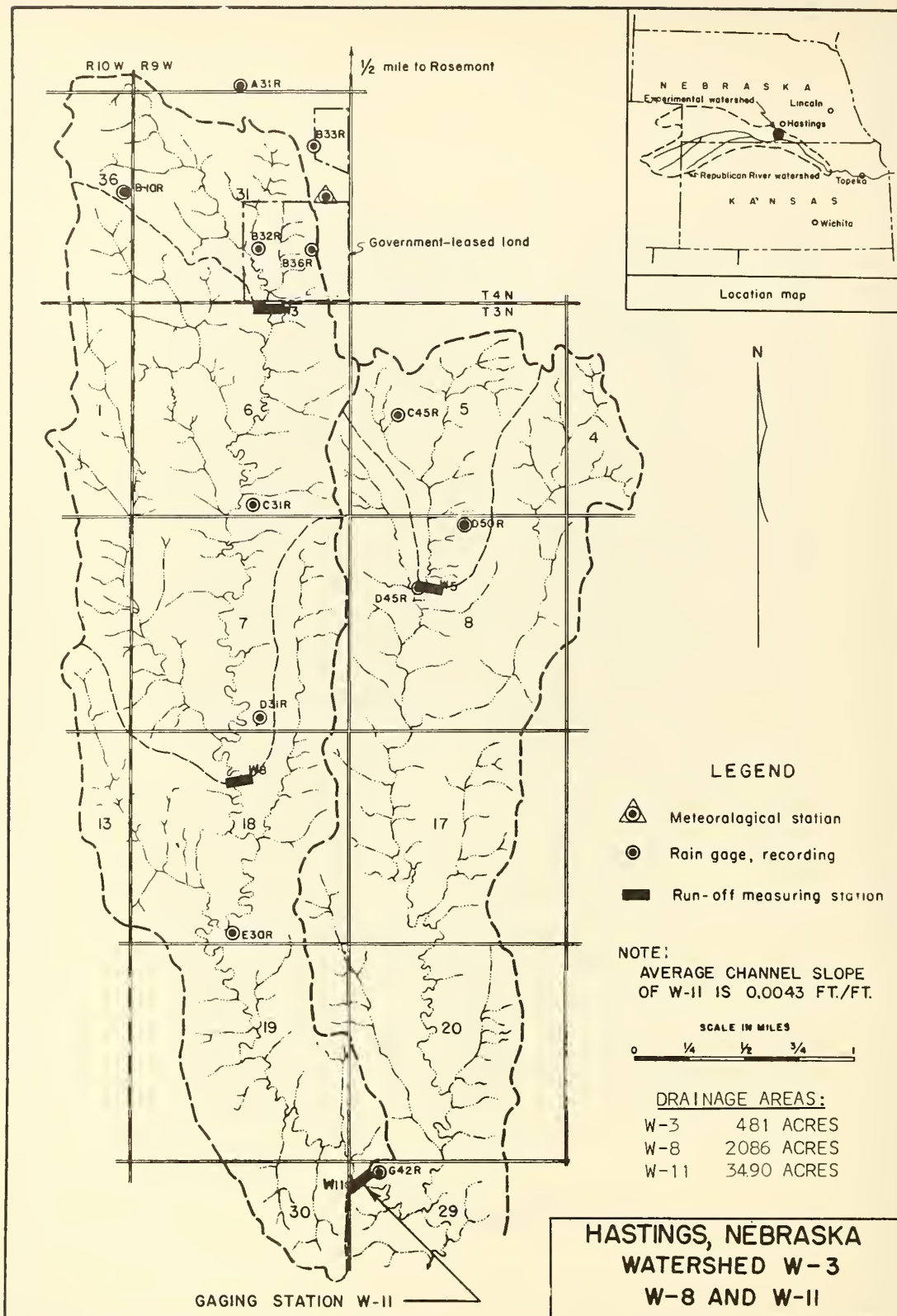
HASTINGS, NEBRASKA WATERSHED W-11



HASTINGS, NEBRASKA WATERSHED W-11



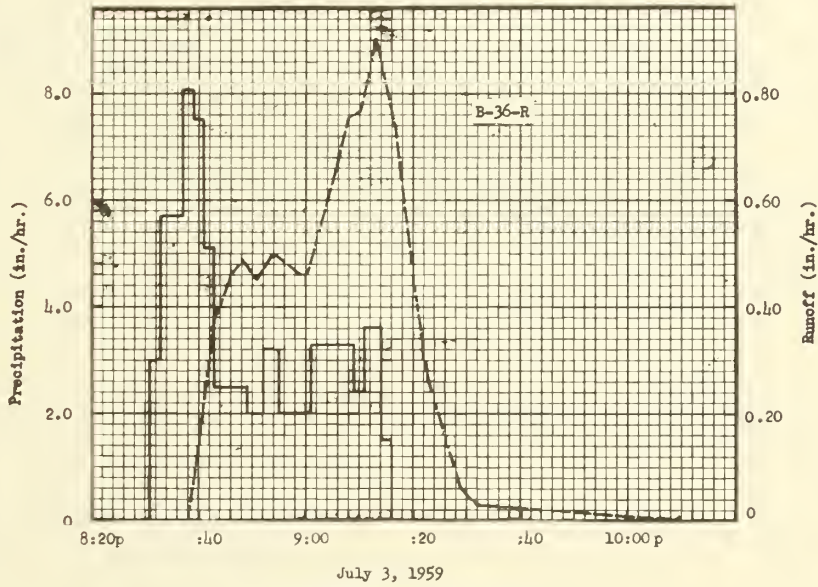
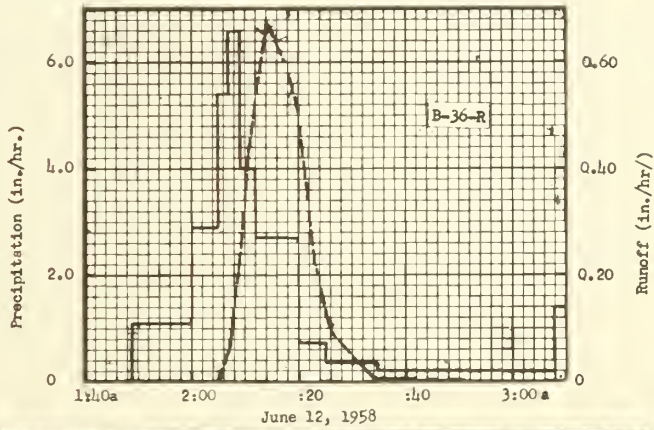
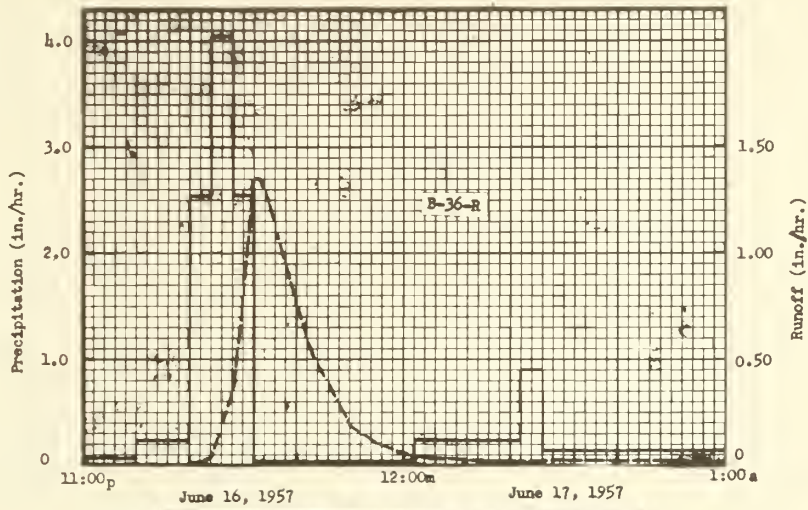
HASTINGS, NEBRASKA WATERSHED W-11



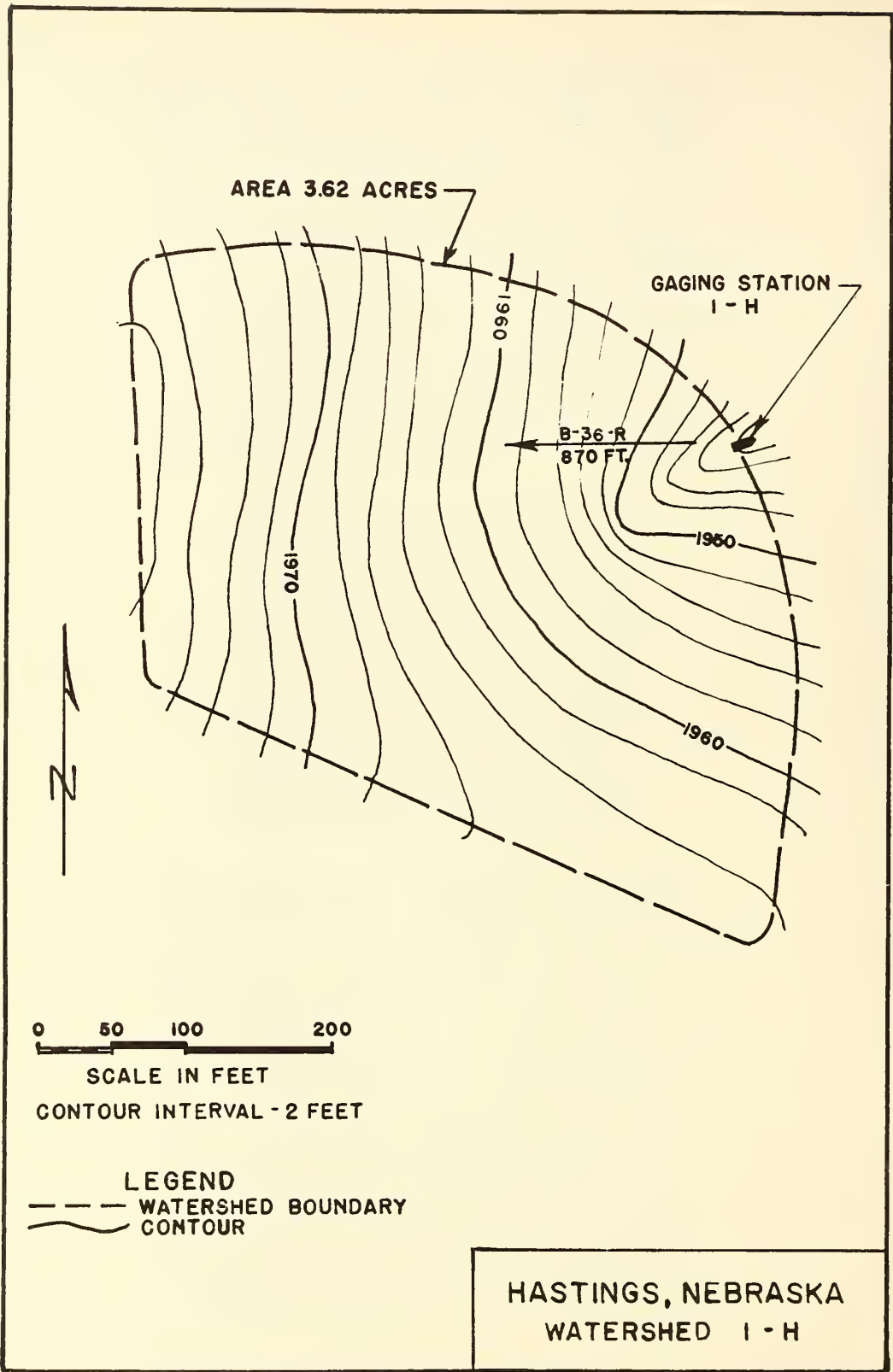
| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Hastings, Nebraska Watershed 1-H (Area = 3.62 acres) | | | | | | | | | |
|--|-------------------|-----------------|---|-------------------|---------------|---------------|---|---------------|-------------|-----------|-----------|-----------|-----------|---------------|--------|------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year | | |
| 1956 | P Q | 0.18 0 | 0.03 T | 0.30 0 | 1.10 0 | 0.56 0 | 4.22 0 | 2.68 0 | 1.59 0 | 1.24 0 | 0.81 0 | 0.10 0 | 0.05 0 | 12.91 T | | |
| 1957 | P Q | .13 0 | .08 0 | 1.85 0 | 3.01 0 | 6.93 T | 11.33 1.13 | .19 0 | 5.46 .04 | .44 0 | 1.31 0 | .58 0 | .12 0 | 31.43 1.17 | | |
| 1958 | P Q | .07 0 | 1.24 T | 1.97 0 | 1.73 0 | 1.50 0 | 2.88 .14 | 4.74 0 | 3.51 0 | 1.49 0 | .08 0 | .45 0 | .03 0 | 19.69 .14 | | |
| 1959 | P Q | .21 0 | .25 T | 3.29 .02 | .88 0 | 6.26 T | 4.89 0 | 3.12 .42 | 3.32 .01 | 4.80 T | 1.87 0 | T 0 | .06 0 | 28.95 .45 | | |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | Hastings, Nebraska Watershed 1-H | | | | | | | | | |
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1957 | 6-16 | 1.35 | 6-16 | 0.32 | 6-15 | 0.47 | 6-15 | 0.60 | 6-15 | 0.60 | 6-15 | 0.60 | 6-15 | 0.96 | 6-10 | 1.13 |
| 1958 | 5-12 | .58 | 6-12 | .14 | 6-12 | .14 | 6-12 | .14 | 6-12 | .14 | 6-12 | .14 | 6-12 | .14 | 6-12 | .14 |
| 1959 | 7-3 | .90 | 7-3 | .42 | 7-3 | .42 | 7-3 | .42 | 7-3 | .42 | 7-3 | .42 | 7-3 | .42 | 7-3 | .42 |
| Notes: Quality of Records: Monthly P and Q values, annual maximum discharges and volumes - good to excellent. Watershed Conditions: Native grass meadow - 1956, grass was fair; 1957, 1958, and 1959, very good to excellent. | | | | | | | | | | | | | | | | |
| SELECTED RUNOFF EVENTS | | | | | | | Hastings, Nebraska Watershed 1-H | | | | | | | | | |
| Antecedent conditions | | | Rainfall | | | Runoff | | | | | | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | | | | | | |
| <u>Event of June 16 and 17, 1957</u> | | | | | | | | | | | | | | | | |
| 5-29-57 | .24 | 0 | 6-16-57 | Rainage | B-36-R | 6-16-57 | | | | | | | | | | |
| 5-31 | .32 | 0 | 11:10p | .06 | 0 | 11:20p | .0012 | 0 | | | | | | | | |
| 6-4 | .08 | 0 | :20 | .24 | .04 | :24 | .0367 | T | | | | | | | | |
| 6-10 | .77 | .05 | :24 | 2.55 | .21 | :28 | .353 | .01 | | | | | | | | |
| 6-13 | .37 | .13 | :28 | 4.05 | .48 | :30 | .800 | .03 | | | | | | | | |
| 6-15 | 5.82 | .60 | :32 | 2.55 | .45 | :32 | 1.35 | .07 | | | | | | | | |
| 6-16 1/2 | .83 | .01 | 6-17-60 | | | :33 | 1.35 | .09 | | | | | | | | |
| | | | 12:02a | .04 | .67 | :35 | 1.25 | .13 | | | | | | | | |
| | | | :22 | .24 | .75 | :40 | .784 | .22 | | | | | | | | |
| | | | :25 | .90 | .81 | :43 | .537 | .25 | | | | | | | | |
| | | | 2:00 | .13 | 1.01 | :50 | .198 | .30 | | | | | | | | |
| | | | | | | :55 | .105 | .31 | | | | | | | | |
| | | | | | | 12:00m | .0567 | .31 | | | | | | | | |
| | | | | | | 6-17-57 | | | | | | | | | | |
| | | | | | | 12:05a | .0310 | .32 | | | | | | | | |
| | | | | | | :20 | .0167 | .32 | | | | | | | | |
| | | | | | | :30 | .0283 | .33 | | | | | | | | |
| | | | | | | 3:00 | 0 | .34 | | | | | | | | |
| <u>Event of June 12, 1958</u> | | | | | | | | | | | | | | | | |
| 5-11 | .52 | 0 | 6-12-58 | Rainage | B-36-R | 6-12-58 | | | | | | | | | | |
| 5-15 | .22 | 0 | 1:49a | 0 | 0 | 2:05a | 0 | 0 | | | | | | | | |
| 5-16 | .25 | 0 | 2:00 | 1.09 | .20 | :07 | .0603 | T | | | | | | | | |
| 5-26 | .30 | 0 | :05 | 2.88 | .44 | :09 | .228 | .01 | | | | | | | | |
| 5-27 | .15 | 0 | :07 | 5.40 | .62 | :11 | .441 | .02 | | | | | | | | |
| 6-6 | .12 | 0 | :09 | 6.60 | .84 | :14 | .677 | .05 | | | | | | | | |
| | | | :12 | 4.00 | 1.04 | :18 | .592 | .09 | | | | | | | | |
| | | | :20 | 2.70 | 1.40 | :20 | .512 | .11 | | | | | | | | |
| | | | :25 | .72 | 1.46 | :23 | .228 | .13 | | | | | | | | |
| | | | :35 | .36 | 1.52 | :26 | .0951 | .13 | | | | | | | | |
| | | | 3:08 | .20 | 1.63 | :29 | .0337 | .14 | | | | | | | | |
| | | | :11 | 1.40 | 1.70 | :34 | .0095 | .14 | | | | | | | | |
| | | | | | | :51 | 0 | .14 | | | | | | | | |
| Notes: To convert runoff in in/hr to cfs, multiply by 3.650. 1/2 Rainfall and runoff prior to event beginning 11:10p on 6-16-57. | | | | | | | | | | | | | | | | |

| SELECTED RUNOFF EVENTS | | | | | | Hastings, Nebraska Watershed 1-H | | |
|---|-------------------|-----------------|---------------|-------------------|---------------|----------------------------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of July 3, 1959</u> | | | | | | | | |
| 6-18-59 | .05 | 0 | 7-3-59 | Raingage | B-36-R | 7-3-59 | | |
| 6-19 | .37 | 0 | 8:31p | 0 | 0 | 8:38p | 0 | 0 |
| 6-20 | 1.31 | T | :33 | 3.00 | .10 | :40 | .138 | T |
| 6-21 | .03 | 0 | :37 | 5.70 | .48 | :43 | .375 | .01 |
| 6-27, 28 | 1.93 | 0 | :39 | 3.10 | .75 | :46 | .463 | .03 |
| 6-29 | .19 | 0 | :41 | 7.50 | 1.00 | :48 | .488 | .05 |
| 6-30 | .22 | 0 | :43 | 5.10 | 1.17 | :51 | .452 | .07 |
| | | | :49 | 2.50 | 1.42 | :54 | .501 | .10 |
| | | | :52 | 2.00 | 1.52 | :59 | .463 | .14 |
| | | | :55 | 3.20 | 1.68 | 9:00 | .463 | .15 |
| Watershed Conditions: Native grass meadow - 18" high, early grass ripe, in excellent condition. | | | 9:01 | 2.00 | 1.88 | :06 | .677 | .20 |
| | | | :09 | 3.30 | 2.32 | :08 | .751 | .23 |
| | | | :11 | 2.40 | 2.40 | :10 | .767 | .25 |
| | | | :14 | 3.60 | 2.58 | :13 | .901 | .30 |
| | | | :16 | 1.50 | 2.63 | :17 | .737 | .35 |
| | | | | | | :21 | .397 | .39 |
| | | | | | | :23 | .261 | .40 |
| | | | | | | :29 | .0603 | .41 |
| | | | | | | :32 | .0310 | .42 |
| | | | | | | 10:10 | 0 | .42 |

Notes:



HASTINGS, NEBRASKA WATERSHED 1-H



| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Hastings, Nebraska Watershed 2-H (Area - 3.40 acres) | | | | | | | |
|---|-------|------|------|------|------|------|---|------|------|-------|------|------|------|-------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| 1958 1/ | P | 0.07 | 1.24 | 1.97 | 1.73 | 1.50 | 2.88 | 4.74 | 3.51 | 1.27 | 0.08 | 0.45 | 0.03 | 19.59 |
| | Q | 0 | 0 | 0 | 0 | 0 | .18 | 0 | 0 | 0 | 0 | 0 | 0 | .18 |
| 1959 | P | .21 | .25 | 3.29 | .88 | 6.26 | 4.89 | 3.12 | 3.32 | 4.80 | 1.87 | T | .06 | 28.95 |
| | Q | 0 | T | 0 | T | .09 | .09 | 1.41 | .03 | .06 | 0 | 0 | 0 | 1.58 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS Hastings, Nebraska Watershed 2-H

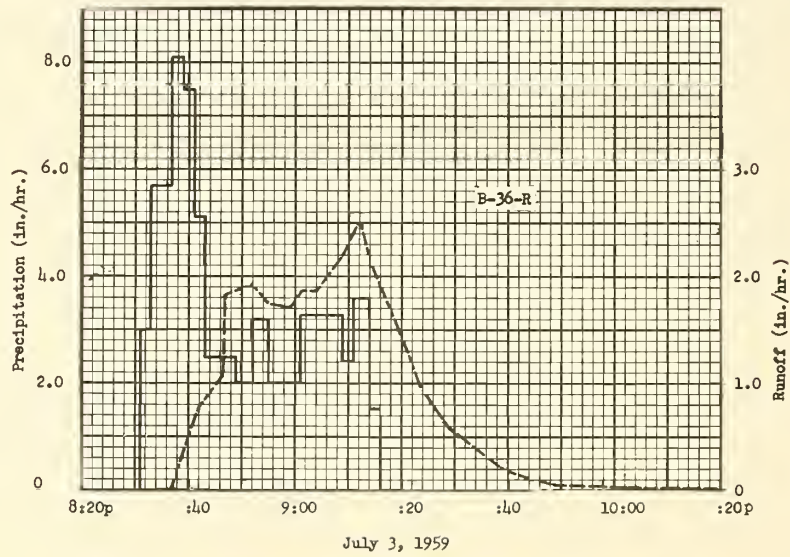
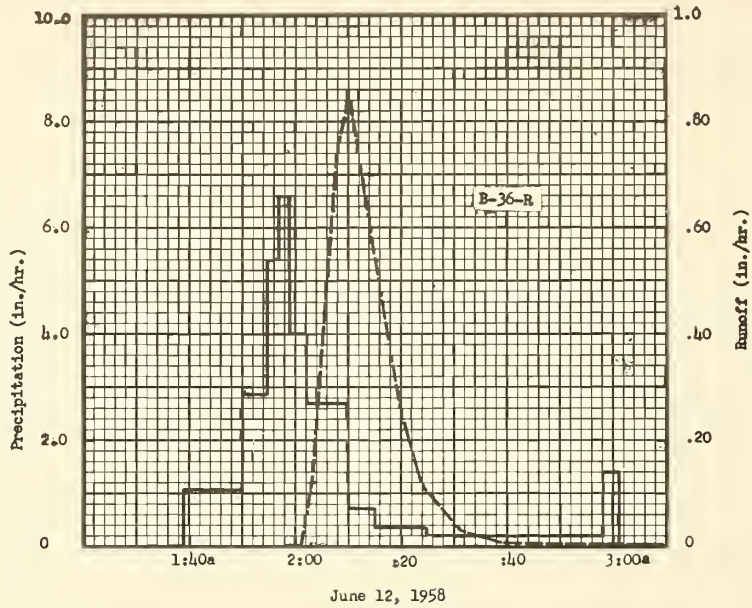
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
|------|-------------------|------|---|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1958 | 6-12 | 0.35 | 6-12 | 0.18 | 6-12 | 0.18 | 6-12 | 0.18 | 6-12 | 0.18 | 6-12 | 0.18 | 6-12 | 0.18 | 6-12 | 0.18 |
| 1959 | 7-3 | 2.52 | 7-3 | 1.38 | 7-3 | 1.41 | 7-3 | 1.41 | 7-3 | 1.41 | 7-3 | 1.41 | 7-3 | 1.41 | 6-27 | 1.49 |

Notes: 1/ Runoff records discontinued 1-4-55; re-established 1-8-58. Quality of Records: Monthly P and Q values, annual maximum discharges and volumes - good to excellent. Watershed Conditions: Native grass meadow - good to excellent, 1958 and 1959.

SELECTED RUNOFF EVENTS Hastings, Nebraska Watershed 2-H

| Antecedent conditions | | | Rainfall | | | Runoff | | |
|------------------------|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of June 12, 1958 | | | | | | | | |
| 5-14-58 | .52 | 0 | 6-12-58 | Rain gage | B-36-R | 6-12-58 | | |
| 5-15 | .22 | 0 | 1:49a | 0 | 0 | 2:08a | 0 | 0 |
| 5-16 | .25 | 0 | 2:00 | 1.09 | .20 | :11 | .0006 | T |
| 5-26 | .30 | 0 | :05 | 2.43 | .44 | :13 | .117 | T |
| 5-27 | .15 | 0 | :07 | 5.40 | .52 | :18 | .750 | .04 |
| 6-6 | .12 | 0 | :09 | 6.60 | .84 | :20 | .849 | .06 |
| | | | :12 | 4.00 | 1.04 | :24 | .613 | .11 |
| | | | :20 | 2.70 | 1.40 | :30 | .260 | .16 |
| | | | :25 | .72 | 1.46 | :34 | .117 | .17 |
| | | | :35 | .35 | 1.52 | :41 | .0330 | .18 |
| | | | 3:08 | .20 | 1.63 | :49 | .0068 | .18 |
| | | | :11 | 1.40 | 1.70 | 3:43 | 0 | .18 |
| Event of July 3, 1959 | | | | | | | | |
| 6-18-59 | .05 | 0 | 7-3-59 | Rain gage | B-36-R | 7-3-59 | | |
| 6-19 | .37 | T | 8:31p | 0 | 0 | 8:31p | 0 | 0 |
| 6-20 | 1.31 | .01 | :33 | 3.00 | .10 | :37 | .0012 | T |
| 6-21 | .03 | 0 | :37 | 5.70 | .48 | :39 | .315 | T |
| 6-27,28 | 1.93 | .08 | :39 | 8.10 | .75 | :42 | .750 | .03 |
| 6-29 | .19 | T | :41 | 7.50 | 1.00 | :46 | 1.03 | .09 |
| 6-30 | .22 | 0 | :43 | 5.10 | 1.17 | :47 | 1.01 | .11 |
| | | | :49 | 2.50 | 1.42 | :52 | 1.92 | .27 |
| | | | :52 | 2.00 | 1.52 | :55 | 1.76 | .36 |
| | | | :55 | 3.20 | 1.68 | :59 | 1.73 | .48 |
| | | | 9:01 | 2.00 | 1.88 | 9:01 | 1.86 | .54 |
| | | | :09 | 3.30 | 2.32 | :04 | 1.86 | .63 |
| | | | :11 | 2.40 | 2.40 | :09 | 2.21 | .80 |
| | | | :14 | 3.60 | 2.53 | :12 | 2.52 | .92 |
| | | | :16 | 1.50 | 2.63 | :14 | 2.15 | 1.00 |
| | | | | | | :21 | 1.32 | 1.20 |
| | | | | | | :24 | .954 | 1.26 |
| | | | | | | :29 | .593 | 1.32 |
| | | | | | | :39 | .210 | 1.39 |
| | | | | | | :44 | .106 | 1.40 |
| | | | | | | :49 | .0525 | 1.41 |
| | | | | | | 10:04 | .0119 | 1.41 |
| | | | | | | :51 | 0 | 1.41 |

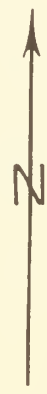
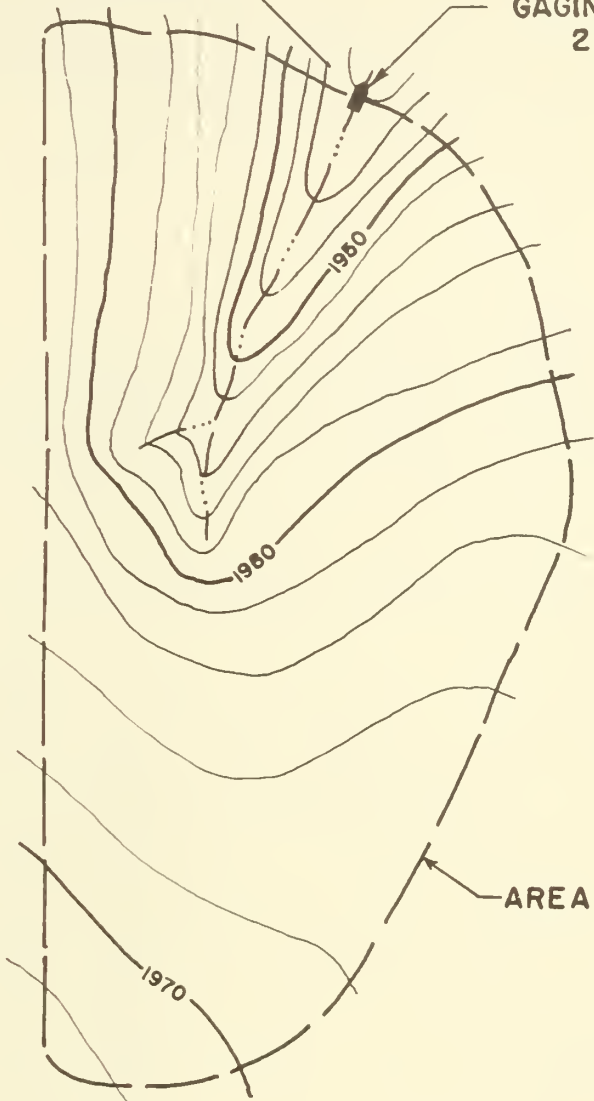
Notes: To convert runoff in in/hr to cfs, multiply by 3.428.



HASTINGS, NEBRASKA WATERSHED 2-H

RAINGAGE B-36-R
960 FT.

GAGING STATION
2-H



AREA 3.40 ACRES



SCALE IN FEET

CONTOUR INTERVAL - 2 FEET

LEGEND

- WATERSHED BOUNDARY
- CONTOUR
- - - WATERWAY

HASTINGS, NEBRASKA
WATERSHED 2 - H

| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Hastings, Nebraska Watershed 3-H (Area - 3.95 or 3.77 acres) <u>1/</u> | | | | | | | |
|---|--------|-----------|-------------|-------------|-------------|-------------|---|--------------|-------------|--------------|-------------|-----------|-----------|---------------|
| Month Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year | |
| 1958 <u>2/</u> | P Q | 0.07 0 | 1.24 .03 | 1.97 0 | 1.73 .11 | 1.50 0 | 2.88 .06 | 4.74 .83 | 3.51 .61 | 1.49 T | 0.08 0 | 0.45 0 | 0.03 0 | 19.69 1.64 |
| 1959 | P Q | .21 0 | .25 .01 | 3.29 .06 | .88 T | 6.26 .83 | 4.89 1.72 | 3.12 2.35 | 3.32 .22 | 4.80 1.27 | 1.87 .32 | T 0 | .06 0 | 28.95 6.78 |

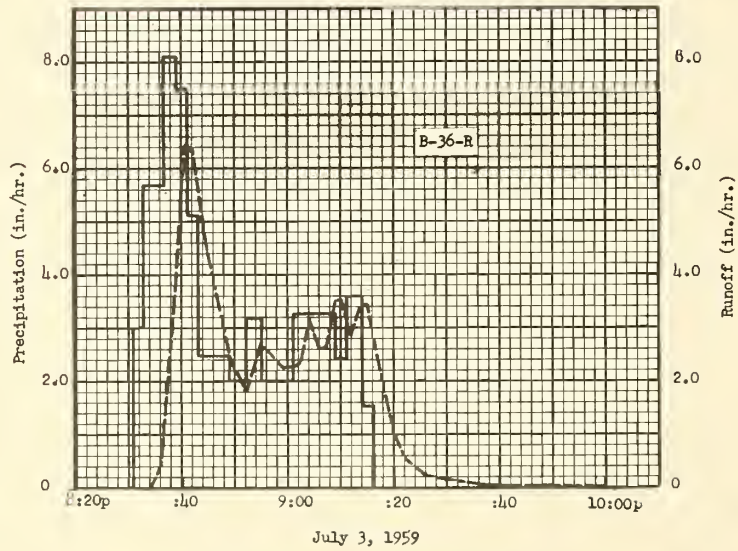
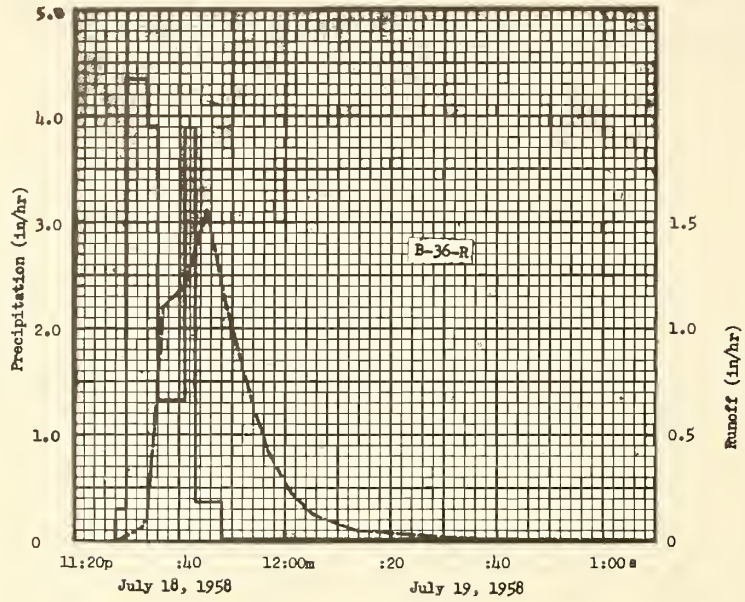
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | Hastings, Nebraska Watershed 3-H | | | | | | | | | |
|---|-------------------|------|---|------|---------|------|----------------------------------|------|----------|------|-------|------|--------|------|--------|------|
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1958 | 7-18 | 1.56 | 7-18 | .44 | 7-18 | .45 | 8-16 | .49 | 8-16 | .49 | 8-16 | .49 | 7-17 | .65 | 7-17 | .83 |
| 1959 | 7-3 | 6.45 | 7-3 | 2.34 | 7-3 | 2.35 | 7-3 | 2.35 | 7-3 | 2.35 | 7-3 | 2.35 | 7-3 | 2.35 | 6-28 | 3.44 |

Notes: 2/Runoff records discontinued between 1-4-55 and 1-1-58. Quality of Records: Monthly P and Q values good except the Q values for the months of Feb., March and April which are fair. Maximum rates and volumes are good to excellent. Watershed conditions: 1958, wheat subtitled, and 1959, sorghum subtitled.

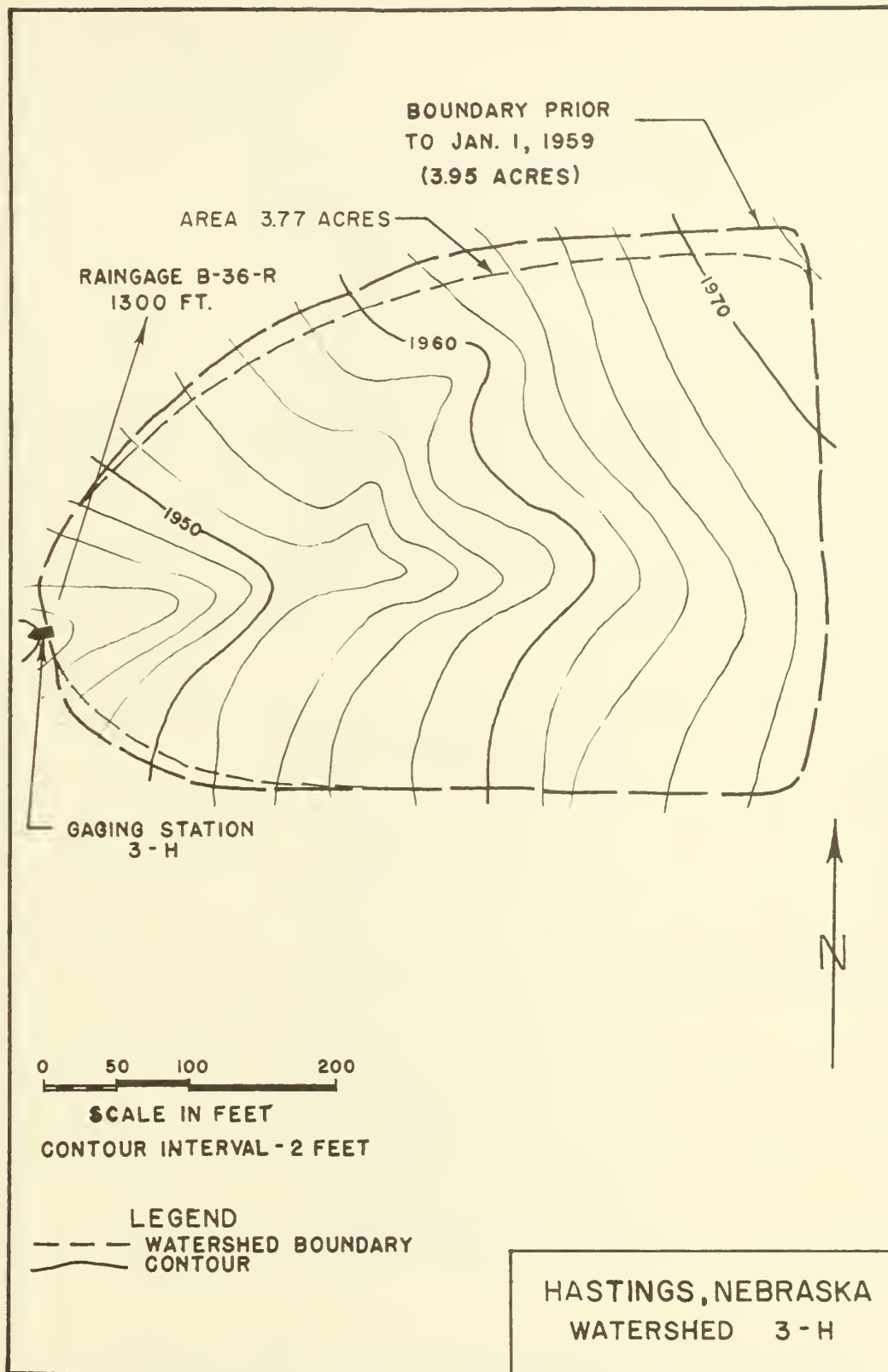
| SELECTED RUNOFF EVENTS | | | | | | | Hastings, Nebraska Watershed 3-H | | | | | |
|---|-------------------|-----------------|---------------|-------------------|---------------|----------------|----------------------------------|---------------|--|--|--|--|
| Antecedent conditions | | | Rainfall | | | Runoff | | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | | |
| <u>Event of July 18 and 19, 1958 (Area - 3.95 acres)</u> | | | | | | | | | | | | |
| 6-20-58 | .20 | 0 | 7-18-58 | Raingage | B-36-R | 7-18-58 | | | | | | |
| 6-21,25 | .20 | 0 | 11:28p | 0 | 0 | 11:28p | 0 | 0 | | | | |
| 7-3 | .95 | T | :30 | .30 | .01 | :33 | .0588 | T | | | | |
| 7-4 | .38 | 0 | :34 | 4.35 | .30 | :34 | .132 | T | | | | |
| 7-10 | .42 | T | :36 | 3.90 | .43 | :37 | 1.10 | .02 | | | | |
| 7-12 | .08 | 0 | :41 | 1.32 | .54 | :41 | 1.20 | .11 | | | | |
| 7-15 | .31 | 0 | :43 | 3.90 | .67 | :45 | 1.56 | .20 | | | | |
| 7-16 | .08 | 0 | :48 | .36 | .70 | :49 | 1.10 | .29 | | | | |
| 7-17 | 1.07 | .20 | 7-19-58 | | | :54 | .630 | .36 | | | | |
| | | | 12:48a | .02 | .72 | :57 | .402 | .39 | | | | |
| Watershed Conditions: Wheat harvested on July 8 and 9. Stubble 1 ft. high. | | | | | | 7-19-58 | | | | | | |
| | | | | | | 12:01a | .223 | .41 | | | | |
| | | | | | | :05 | .127 | .42 | | | | |
| | | | | | | :13 | .0588 | .43 | | | | |
| | | | | | | :37 | .0135 | .44 | | | | |
| | | | | | | 2:06 <u>3/</u> | .0018 | .45 | | | | |
| <u>Event of July 3, 1959 (Area - 3.77 acres)</u> | | | | | | | | | | | | |
| 6-18-59 | .05 | 0 | 7-3-59 | Raingage | B-36-R | 7-3-59 | | | | | | |
| 6-19 | .37 | T | 8:31p | 0 | 0 | 8:34p | 0 | 0 | | | | |
| 6-20 | 1.31 | .62 | :33 | 3.00 | .10 | :35 | .421 | .01 | | | | |
| 6-21 | .03 | 0 | :37 | 5.70 | .48 | :38 | 2.87 | .06 | | | | |
| 6-27,28 | 1.93 | 1.04 | :39 | 8.10 | .75 | :41 | 6.45 | .31 | | | | |
| 6-29 | .19 | .02 | :41 | 7.50 | 1.00 | :42 | 6.39 | .41 | | | | |
| 6-30 | .22 | .03 | :43 | 5.10 | 1.17 | :45 | 4.39 | .69 | | | | |
| | | | :49 | 2.50 | 1.42 | :49 | 2.45 | .92 | | | | |
| Watershed Conditions: Sorghum - about 6" high and in good condition. Weeds beginning to grow. Last field operations on June 16. | | | | | | :52 | 1.85 | 1.03 | | | | |
| | | | :55 | 3.20 | 1.68 | :55 | 2.74 | 1.14 | | | | |
| | | | 9:01 | 2.00 | 1.88 | :59 | 2.27 | 1.30 | | | | |
| | | | :09 | 3.30 | 2.32 | 9:01 | 2.27 | 1.38 | | | | |
| | | | :11 | 2.40 | 2.40 | :02 | 2.31 | 1.42 | | | | |
| | | | :14 | 3.60 | 2.58 | :04 | 3.19 | 1.51 | | | | |

Notes: To convert runoff in in/hr to cfs, multiply by 3.983 for event of July 18-19, 1958; by 3.802 for event of July 3, 1959. 1/ Area changed 1-1-58 from 3.95 acres to 3.77 acres. 3/ Beginning of new runoff event.

| SELECTED RUNOFF EVENTS | | | Hastings, Nebraska Watershed 3-H | | | | | |
|--|----------------------|--------------------|----------------------------------|----------------------|------------------|------------------|-----------------|------------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of July 3, 1959 - Continued</u> | | | | | | | | |
| | | | 9:16p | 1.50 | 2.63 | 9:06p | 2.61 | 1.61 |
| | | | | | | :07 | 2.67 | 1.65 |
| | | | | | | :09 | 3.52 | 1.75 |
| | | | | | | :10 | 3.52 | 1.81 |
| | | | | | | :12 | 2.37 | 1.92 |
| | | | | | | :14 | 3.45 | 2.02 |
| | | | | | | :15 | 3.45 | 2.08 |
| | | | | | | :20 | 1.09 | 2.27 |
| | | | | | | :22 | .592 | 2.29 |
| | | | | | | :26 | .259 | 2.32 |
| | | | | | | :30 | .151 | 2.33 |
| | | | | | | :37 | .0616 | 2.34 |
| | | | | | | 10:00 | .0062 | 2.35 |
| | | | | | | :45 | 0 | 2.35 |
| Notes: | | | | | | | | |



HASTINGS, NEBRASKA WATERSHED 3-H



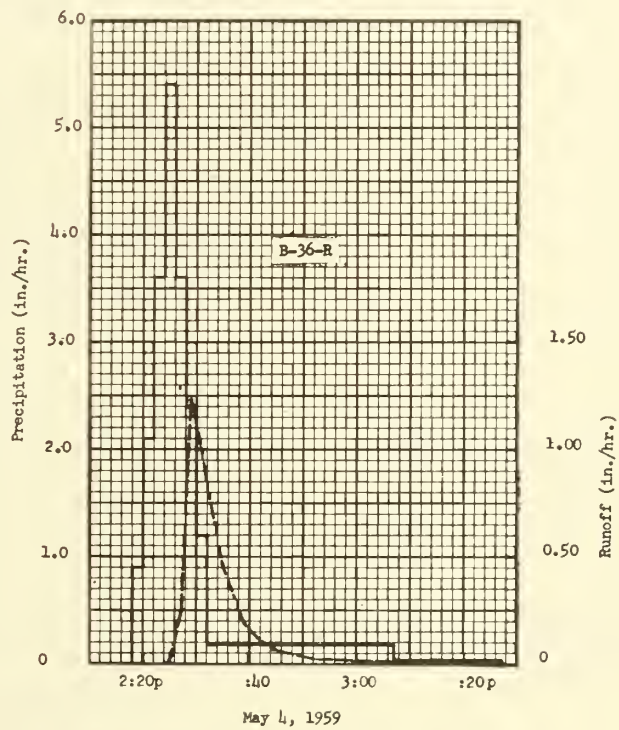
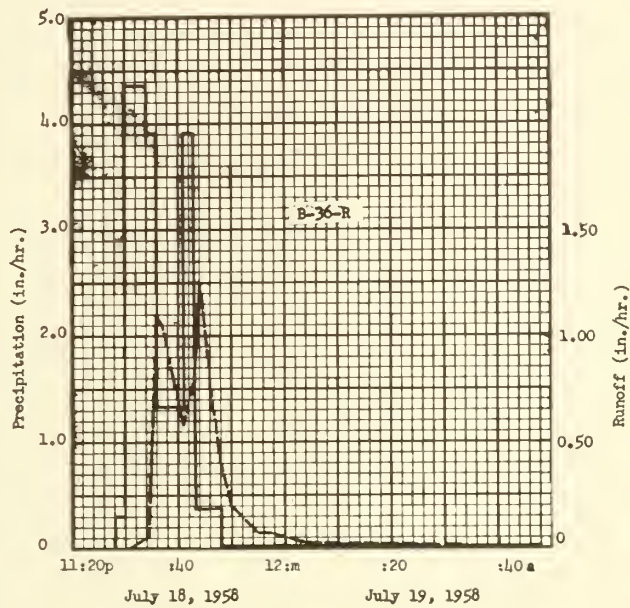
| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | Hastings, Nebraska Watershed 4-H (Area - 3.84 or 3.64 acres) 1/ | | | | | | | |
|---|--------|----------|------------|-------------|-------------|--------------|--|--------------|-------------|--------------|-------------|-----------|-----------|---------------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
| | | 1958 2/ | P Q | 0.07 0 | 1.24 .01 | 1.97 0 | 1.73 .03 | 1.50 0 | 2.88 .09 | 4.74 .38 | 3.51 .03 | 1.49 0 | 0.08 0 | 0.45 0 |
| 1959 | P Q | .21 0 | .25 .01 | 3.29 .24 | .88 .03 | 6.26 2.01 | 4.89 1.03 | 3.12 2.15 | 3.32 .53 | 4.80 2.54 | 1.87 .73 | T 0 | .06 0 | 28.95 9.27 |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | Hastings, Nebraska Watershed 4-H 3/ | | | | | | | | | |
|---|-------------------|------|---|------|---------|------|-------------------------------------|------|----------|------|-------|------|--------|------|--------|------|
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1958 | 7-18 | 1.25 | 7-18 | .22 | 7-18 | .23 | 7-18 | .23 | 7-18 | .23 | 7-18 | .23 | 7-17 | .27 | 7-17 | .38 |
| 1959 | 7-3 | 4.50 | 7-3 | 2.15 | 7-3 | 2.15 | 7-3 | 2.15 | 7-3 | 2.15 | 7-3 | 2.15 | 7-3 | 2.15 | 6-28 | 2.88 |

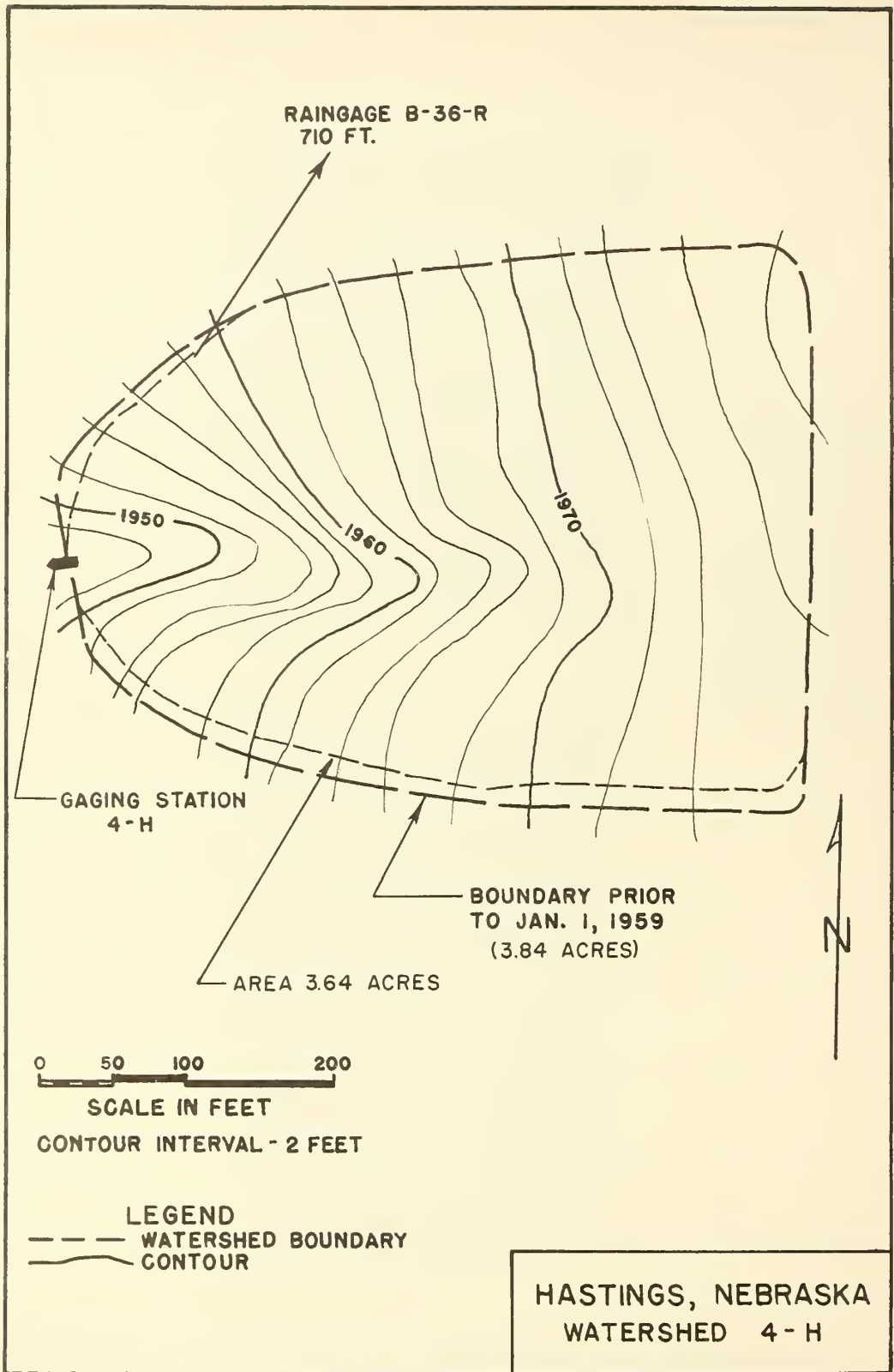
Notes: 2/ Runoff records discontinued between 1-4-55 and 1-1-58. Quality of Records: Monthly P and Q, maximum rates and volumes - good to excellent. Estimated values are fair. Watershed conditions: 1958, sorghum subtitled; 1959 - fallow subtitled. e - estimated or partially estimated. 3/ Correction: Maximum Discharge, Rate, 1941, should be 1.19.

| SELECTED RUNOFF EVENTS | | | | | | Hastings, Nebraska Watershed 4-H | | | |
|---|-------------------|-----------------|---------------|-------------------|---------------|----------------------------------|--------------|---------------|--|
| Antecedent conditions | | | Rainfall | | | Runoff | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | |
| Event of July 18 and 19, 1958 (Area - 3.84 acres) | | | | | | | | | |
| 6-20-58 | .30 | 0 | 7-18-58 | Raingage | E-36-R | 7-18-58 | | | |
| 6-24,25 | .20 | 0 | 11:20p | 0 | 0 | 11:31p | 0 | 0 | |
| 7-3 | .95 | 0 | :30 | .30 | .01 | :34 | .0604 | T | |
| 7-4 | .38 | 0 | :34 | 4.35 | .30 | :36 | 1.09 | .02 | |
| 7-10 | .42 | T | :36 | 3.90 | .43 | :37 | 1.05 | .04 | |
| 7-12 | .08 | 0 | :41 | 1.32 | .54 | :38 | .930 | .06 | |
| 7-15 | .31 | 0 | :43 | 3.90 | .67 | :41 | .581 | .10 | |
| 7-16 | .08 | 0 | :48 | .36 | .71 | :43 | .783 | .12 | |
| 7-17 | 1.07 | .04 | 7-19-58 | | | :44 | 1.25 | .13 | |
| | | | 12:48a | .02 | .72 | :46 | .752 | .17 | |
| Watershed Conditions: Sorghum - about 1' high, in good condition. Crop was replanted about June 27. Went over the field with a treader on July 8. | | | | | | | | | |
| | | | | | | :48 | .413 | .19 | |
| | | | | | | :50 | .200 | .20 | |
| | | | | | | :55 | .0755 | .21 | |
| | | | | | | :57 | .0755 | .21 | |
| | | | | | | 7-19-58 | | | |
| | | | | | | 12:03a | .0346 | .22 | |
| | | | | | | :33 | .0105 | .22 | |
| | | | | | | 1:30 | 0 | .23 | |
| Event of May 4, 1959 (Area - 3.64 acres) | | | | | | | | | |
| 4-10-59 | .02 | 0 | 5-4-59 | Raingage | E-36-R | 5-4-59 | | | |
| 4-17 | .34 | 0 | 2:13p | 0 | 0 | 2:25p | 0 | 0 | |
| 4-19 | .51 | .03 | :20 | .90 | .03 | :27 | .243 | T | |
| 5-2 | .25 | 0 | :22 | 2.10 | .10 | :29 | 1.23 | .03 | |
| 5-3 | .14 | 0 | :24 | 2.60 | .22 | :31 | .997 | .07 | |
| Watershed Conditions: Fallow - good residue cover. | | | | | | | | | |
| | | | :26 | 5.40 | .40 | :35 | .461 | .11 | |
| | | | :28 | 3.60 | .52 | :39 | .196 | .13 | |
| | | | :30 | 2.40 | .60 | :42 | .110 | .14 | |
| | | | :32 | 1.20 | .64 | :45 | .0637 | .15 | |
| | | | 3:07 | .19 | .75 | :52 | .0236 | .15 | |
| | | | :27 | .03 | .76 | 3:09 | .0095 | .16 | |
| | | | 4:30 | 0 | .76 | :49 | .0051 | .16 | |
| | | | 5:50 | .06 | .84 | 5:49 | 0 | .16 | |

Notes: To convert runoff in in/hr to cfs, multiply by 3.872 for event of 7-18 and 19-58; by 3.670 for event of May 4, 1959. 1/ Area changed 1-1-59 from 3.84 acres to 3.64 acres.



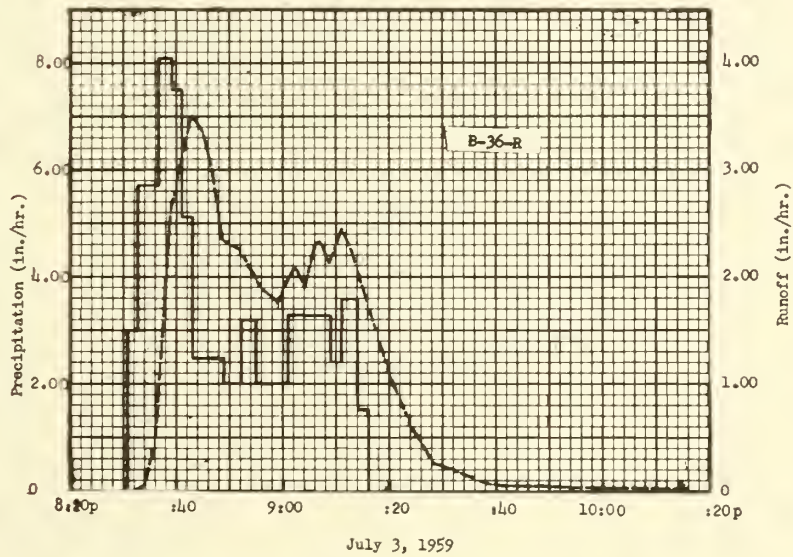
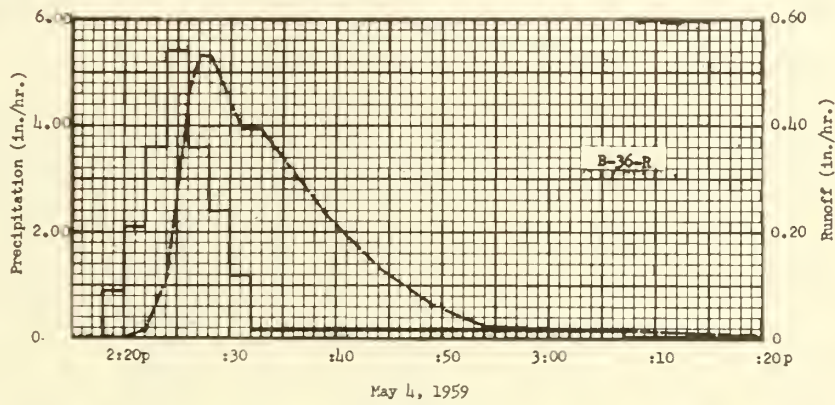
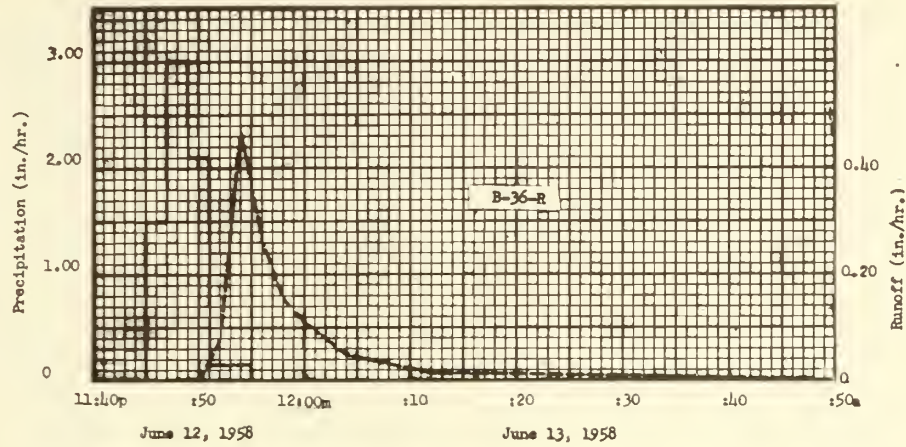
HASTINGS, NEBRASKA WATERSHED 4-H



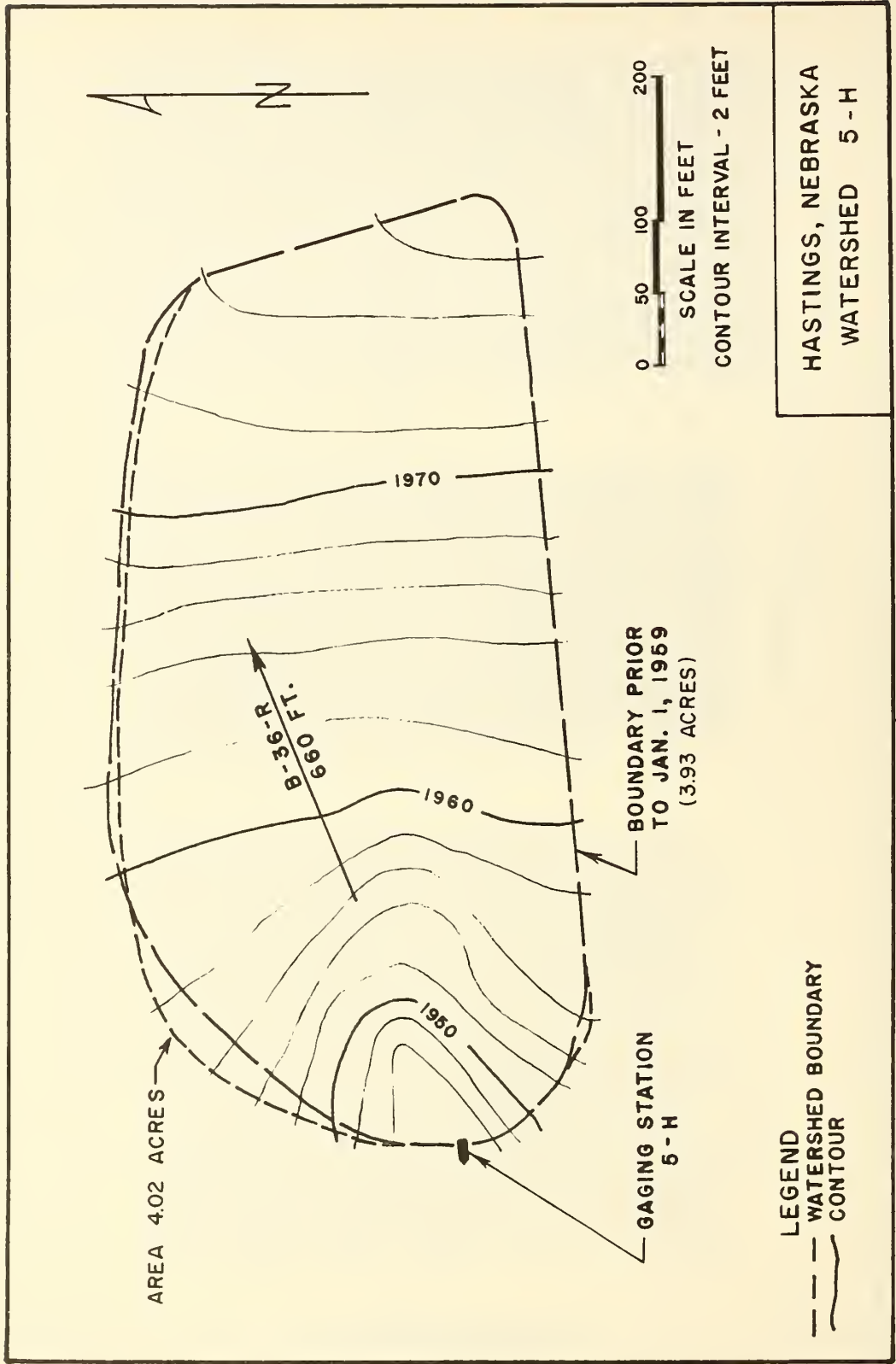
| MONTHLY PRECIPITATION AND RUNOFF (Inches) | | | | | | | | Hastings, Nebraska Watershed 5-H (Area - 3.93 or 4.02 acres) 1/ | | | | | | | | |
|--|-------------------|-----------------|---|-------------------|---------------|---------------|--------------|--|-------------|-------------|-------------|-------------|-----------|---------------|-----------|--------------|
| Year | Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year | | |
| | | 1956 | P C | 0.18 0 | 0.08 T | 0.30 0 | 1.10 0 | 0.56 0 | 4.22 .67 | 2.68 .07 | 1.59 .05 | 1.24 .02 | 0.81 T | 0.10 0 | 0.05 0 | 12.91 .81 |
| 1958 | 2/ P C | 0.07 0 | 1.24 .02 | 1.97 0 | 1.73 .13 | 1.50 .01 | 2.88 .23 | 4.74 .49 | 3.51 .18 | 1.49 .02 | 0.08 0 | 0.45 0 | 0.03 0 | 19.69 1.08 | | |
| 1959 | P C | .21 0 | .25 e .07 | 3.29 .24 | .88 .02 | 6.26 1.46 | 4.89 .52 | 3.12 1.77 | 3.32 .27 | 4.80 .19 | 1.87 T | T 0 | .06 0 | 28.95 4.54 | | |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS | | | | | | | | Hastings, Nebraska Watershed 5-H | | | | | | | | |
| YEAR | MAXIMUM DISCHARGE | | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL | | | | | | | | | | | | | |
| | | | 1 hour | | 2 hours | | 6 hours | | 12 hours | | 1 day | | 2 days | | 8 days | |
| | Date | Rate | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. | Date | Vol. |
| 1958 | 7-18 | 1.43 | 7-18 | .30 | 7-18 | .30 | 7-18 | .30 | 7-18 | .30 | 7-18 | .30 | 7-17 | .34 | 7-17 | .49 |
| 1959 | 7-3 | 3.50 | 7-3 | 1.75 | 7-3 | 1.77 | 7-3 | 1.77 | 7-3 | 1.77 | 7-3 | 1.77 | 7-3 | 1.77 | 6-28 | 2.20 |
| Notes: 2/ Runoff records discontinued between 1-7-57 and 1-8-58. Quality of Records: Monthly P and C, Annual maximum discharges and volumes excellent except those which are estimated which are fair. Watershed Conditions: 1956 - corn, straight-row; 1958 - fallow, subtitled; 1959 - wheat, subtitled. Crop poor in 1956; very good in 1959. e - estimated or partially estimated. | | | | | | | | | | | | | | | | |
| SELECTED RUNOFF EVENTS | | | | | | | | Hastings, Nebraska Watershed 5-H | | | | | | | | |
| Antecedent conditions | | | Rainfall | | | | Runoff | | | | | | | | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) | | | | | | | | |
| Event of June 12 and 13, 1958 (Area - 3.93 acres) | | | | | | | | | | | | | | | | |
| 5-11-58 | .52 | .01 | 6-12-58 | Raingage | B-36-R | 6-12-58 | | | | | | | | | | |
| 5-15 | .22 | 0 | 11:45p | 0 | 0 | 11:50p | 0 | 0 | | | | | | | | |
| 5-16 | .25 | T | :47 | 1.50 | .05 | :52 | .0787 | T | | | | | | | | |
| 5-26 | .30 | 0 | :49 | 3.00 | .15 | :54 | .469 | .01 | | | | | | | | |
| 5-27 | .15 | 0 | :51 | 2.10 | .22 | :56 | .265 | .02 | | | | | | | | |
| 6-5 | .12 | 0 | :55 | .15 | .23 | :58 | .156 | .03 | | | | | | | | |
| 6-12 | 3/ 1.72 | .19 | | | | 12:00m | .111 | .03 | | | | | | | | |
| Watershed Conditions: Fallow - last field operation May 22 with the 7-ft. sweep to kill weeds. Little cover at time of storm. | | | | | | 6-13-58 | | | | | | | | | | |
| | | | | | | 12:04a | .0522 | .04 | | | | | | | | |
| | | | | | | :12 | .0154 | .04 | | | | | | | | |
| | | | | | | :55 | 0 | .05 | | | | | | | | |
| Event of May 4, 1959 (Area - 4.02 acres) | | | | | | | | | | | | | | | | |
| 4-10-59 | .02 | 0 | 5-4-59 | Raingage | B-36-R | 5-4-59 | | | | | | | | | | |
| 4-17 | .34 | 0 | 2:18p | 0 | 0 | 2:20p | 0 | 0 | | | | | | | | |
| 4-19 | .51 | .02 | :20 | .90 | .03 | :22 | .0189 | T | | | | | | | | |
| 5-2 | .25 | 0 | :22 | 2.10 | .10 | :24 | .119 | T | | | | | | | | |
| 5-3 | .14 | 0 | :24 | 3.60 | .22 | :26 | .471 | .01 | | | | | | | | |
| Watershed Conditions: Wheat - 6" high and in good condition. | | | :26 | 5.10 | .40 | :27 | .531 | .02 | | | | | | | | |
| | | | :28 | 3.60 | .52 | :28 | .531 | .03 | | | | | | | | |
| | | | :30 | 2.10 | .60 | :31 | .395 | .05 | | | | | | | | |
| | | | :32 | 1.20 | .64 | :33 | .395 | .07 | | | | | | | | |
| | | | 3:07 | .19 | .75 | :39 | .235 | .10 | | | | | | | | |
| | | | :27 | .03 | .76 | :44 | .136 | .11 | | | | | | | | |
| | | | | | | :49 | .0651 | .12 | | | | | | | | |
| | | | | | | :54 | .0279 | .13 | | | | | | | | |
| | | | | | | 3:34 | 0 | .13 | | | | | | | | |
| Notes: To convert runoff in in/hr to cfs, multiply by 3.963 for event of June 12-13, 1958; by 4.054 for event of May 4, 1959. 1/ Area changed 1-1-58 from 3.93 acres to 4.02 acres. | | | | | | | | | | | | | | | | |
| 3/ Rainfall and runoff prior to event beginning 11:45p on 6-12-58. | | | | | | | | | | | | | | | | |

| SELECTED RUNOFF EVENTS | | | | | | Hastings, Nebraska Watershed 5-H | | |
|--|-------------------|-----------------|---------------|-------------------|---------------|----------------------------------|--------------|---------------|
| Antecedent conditions | | | Rainfall | | | Runoff | | |
| Date | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of July 3, 1959 (Area - 4.02 acres) | | | | | | | | |
| 6-18-59 | .05 | 0 | 7-3-59 | Rainage | B-36-R | 7-3-59 | | |
| 6-19 | .37 | 0 | 8:31p | 0 | 0 | 8:32 p | 0 | 0 |
| 6-20 | 1.31 | .02 | :33 | 3.00 | .10 | :34 | .0578 | T |
| 6-21 | .03 | 0 | :37 | 5.70 | .48 | :36 | .508 | .01 |
| 6-27,28 | 1.93 | .42 | :39 | 8.10 | .75 | :39 | 2.64 | .09 |
| 6-29 | .19 | T | :41 | 7.50 | 1.00 | :41 | 3.03 | .19 |
| 6-30 | .22 | 0 | :43 | 5.10 | 1.17 | :43 | 3.50 | .30 |
| Watershed Conditions: Wheat - 3' high. Ripe and ready to cut. Good stand. | | | :49 | 2.50 | 1.42 | :45 | 3.35 | .41 |
| | | | :52 | 2.00 | 1.52 | :47 | 2.96 | .52 |
| | | | :55 | 3.20 | 1.68 | :49 | 2.34 | .60 |
| | | | 9:01 | 2.00 | 1.88 | :52 | 2.25 | .72 |
| | | | :09 | 3.30 | 2.32 | :56 | 1.92 | .86 |
| | | | :11 | 2.40 | 2.40 | :59 | 1.77 | .95 |
| | | | :14 | 3.60 | 2.58 | 9:02 | 2.10 | 1.05 |
| | | | :10 | 1.50 | 2.63 | :04 | 1.90 | 1.11 |
| | | | | | | :06 | 2.30 | 1.18 |
| | | | | | | :07 | 2.34 | 1.22 |
| | | | | | | :09 | 2.13 | 1.30 |
| | | | | | | :11 | 2.45 | 1.37 |
| | | | | | | :13 | 2.22 | 1.45 |
| | | | | | | :20 | 1.10 | 1.64 |
| | | | | | | :24 | .620 | 1.70 |
| | | | | | | :28 | .284 | 1.73 |
| | | | | | | :30 | .249 | 1.74 |
| | | | | | | :39 | .0770 | 1.76 |
| | | | | | | :53 | .0116 | 1.77 |
| | | | | | | 11:04 | 0 | 1.81 |

Notes: To convert runoff in in/hr to cfs, multiply by 4.054 for event of July 3, 1959.



HASTINGS, NEBRASKA WATERSHED 5-H



LEGEND
 - - - WATERSHED BOUNDARY
 ~~~~~ CONTOUR

HASTINGS, NEBRASKA  
 WATERSHED 5 - H



| MONTHLY PRECIPITATION AND RUNOFF (Inches) |        |           |              |             |              |                |               | Hastings, Nebraska Watershed 6-H<br>(Area - 4.16 or 4.01 acres) <sup>1/</sup> |             |             |             |           |           |               |
|-------------------------------------------|--------|-----------|--------------|-------------|--------------|----------------|---------------|-------------------------------------------------------------------------------|-------------|-------------|-------------|-----------|-----------|---------------|
| Year                                      | Month  | Jan.      | Feb.         | Mar.        | Apr.         | May            | June          | July                                                                          | Aug.        | Sept.       | Oct.        | Nov.      | Dec.      | Year          |
| 1956                                      | P<br>Q | 0.18<br>0 | 0.08<br>T    | 0.30<br>0   | 1.10<br>.02  | 0.56<br>0      | 4.22<br>.97   | 2.68<br>.17                                                                   | 1.59<br>.14 | 1.24<br>.05 | 0.81<br>.01 | 0.10<br>0 | 0.05<br>0 | 12.91<br>1.36 |
| 1958 <sup>2/</sup>                        | P<br>Q | 0.07<br>0 | 1.24<br>.02  | 1.97<br>0   | 1.73<br>.17  | 1.50<br>.03    | 2.88<br>.18   | 4.74<br>.50                                                                   | 3.51<br>.22 | 1.49<br>.01 | .08<br>0    | .45<br>0  | .03<br>0  | 19.69<br>1.13 |
| 1959                                      | P<br>Q | 0.21<br>0 | .25<br>e .08 | 3.29<br>.19 | .88<br>e .01 | 6.26<br>e 1.39 | 4.89<br>e .48 | 3.12<br>1.66                                                                  | 3.32<br>.21 | 4.80<br>.10 | 1.87<br>0   | T<br>0    | .06<br>0  | 28.95<br>4.12 |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS |                   |      |                                           |      |         |      |         | Hastings, Nebraska Watershed 6-H <sup>3/</sup> |          |      |       |      |        |      |        |      |
|-------------------------------------------------------------------------------------------------------------------------|-------------------|------|-------------------------------------------|------|---------|------|---------|------------------------------------------------|----------|------|-------|------|--------|------|--------|------|
| YEAR                                                                                                                    | MAXIMUM DISCHARGE |      | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |      |         |      |         |                                                |          |      |       |      |        |      |        |      |
|                                                                                                                         |                   |      | 1 hour                                    |      | 2 hours |      | 6 hours |                                                | 12 hours |      | 1 day |      | 2 days |      | 8 days |      |
|                                                                                                                         | Date              | Rate | Date                                      | Vol. | Date    | Vol. | Date    | Vol.                                           | Date     | Vol. | Date  | Vol. | Date   | Vol. | Date   | Vol. |
| 1958                                                                                                                    | 7-18              | 1.48 | 7-18                                      | .29  | 7-18    | .30  | 7-18    | .30                                            | 7-18     | .30  | 7-18  | .30  | 7-17   | .36  | 7-17   | .50  |
| 1959                                                                                                                    | 7-3               | 3.24 | 7-3                                       | 1.65 | 7-3     | 1.66 | 7-3     | 1.66                                           | 7-3      | 1.66 | 7-3   | 1.66 | 7-3    | 1.66 | 6-28   | 2.06 |

Notes: <sup>2/</sup>Runoff records discontinued between 1-7-57 and 1-8-58. Quality of Records: P - Excellent; Q - Excellent except those which are estimated which are fair. Watershed Conditions: 1956 - wheat, straight-row; 1958 - fallow, subtitled; 1959 - wheat, subtitled. Crop poor in 1956; very good in 1959. e - estimated or partially estimated. <sup>3/</sup> Correction: Maximum Discharge, Date and Rate, 1947, should be 6-26 and 1.23.

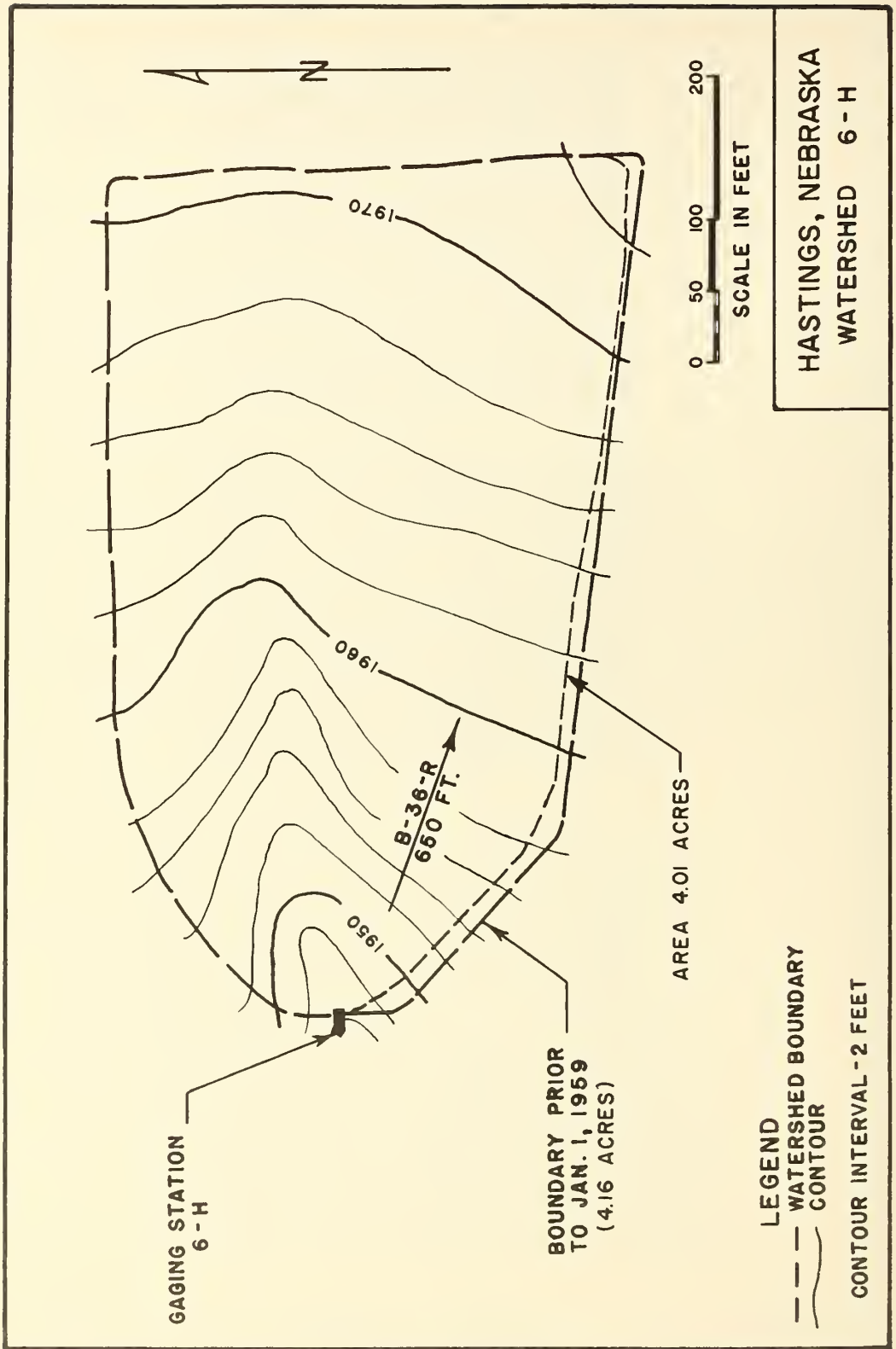
| SELECTED RUNOFF EVENTS                                                                                            |                   |                 |               |                   |               | Hastings, Nebraska Watershed 6-H |              |               |     |
|-------------------------------------------------------------------------------------------------------------------|-------------------|-----------------|---------------|-------------------|---------------|----------------------------------|--------------|---------------|-----|
| Antecedent conditions                                                                                             |                   |                 | Rainfall      |                   |               | Runoff                           |              |               |     |
| Date                                                                                                              | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time                    | Rate (in/hr) | Acc. (inches) |     |
| <b>Event of June 27, 1956 (Area - 4.16 acres)</b>                                                                 |                   |                 |               |                   |               |                                  |              |               |     |
| 5-31-56                                                                                                           | .21               | 0               | 6-27-56       | Raingage          | B-36-R        | 6-27-56                          |              |               |     |
| 6-6                                                                                                               | .22               | 0               | 10:10a        | 0                 | 0             | 10:12a                           | 0            | 0             |     |
| 6-7                                                                                                               | .76               | 0               | :14           | 1.35              | .09           | :15                              | .0183        | T             |     |
| 6-19                                                                                                              | .04               | 0               | :18           | 3.45              | .32           | :17                              | .136         | T             |     |
| 6-21                                                                                                              | .11               | 0               | :22           | 2.10              | .46           | :18                              | .257         | .01           |     |
| 6-22                                                                                                              | .09               | 0               | :26           | 1.50              | .56           | :20                              | 1.39         | .04           |     |
| 6-23                                                                                                              | .14               | 0               | 11:05         | .06               | .60           | :21                              | 1.46         | .06           |     |
| 6-25, 26                                                                                                          | 1.56              | .45             |               |                   |               | :22                              | 1.48         | .09           |     |
|                                                                                                                   |                   |                 |               |                   |               | :23                              | 1.46         | .11           |     |
|                                                                                                                   |                   |                 |               |                   |               | :25                              | 1.27         | .16           |     |
| Watershed Conditions: Corn - 2' high in fair condition.                                                           |                   |                 |               |                   |               |                                  | :28          | .873          | .21 |
|                                                                                                                   |                   |                 |               |                   |               | :32                              | .455         | .25           |     |
|                                                                                                                   |                   |                 |               |                   |               | :37                              | .154         | .28           |     |
|                                                                                                                   |                   |                 |               |                   |               | :40                              | .0827        | .28           |     |
|                                                                                                                   |                   |                 |               |                   |               | :50                              | .0164        | .29           |     |
|                                                                                                                   |                   |                 |               |                   |               | 11:05 <sup>4/</sup>              | .0056        | .29           |     |
| <b>Event of June 12-13, 1958 (Area - 4.16 acres)</b>                                                              |                   |                 |               |                   |               |                                  |              |               |     |
| 5-11-58                                                                                                           | .52               | .01             | 6-12-58       | Raingage          | B-36-R        | 6-12-58                          |              |               |     |
| 5-15                                                                                                              | .22               | 0               | 11:45p        | 0                 | 0             | 11:49p                           | 0            | 0             |     |
| 5-16                                                                                                              | .25               | .02             | :47           | 1.50              | .05           | :50                              | .0145        | T             |     |
| 5-26                                                                                                              | .30               | 0               | :49           | 3.00              | .15           | :52                              | .381         | .01           |     |
| 5-27                                                                                                              | .15               | 0               | :51           | 2.10              | .22           | :53                              | .424         | .01           |     |
| 6-6                                                                                                               | .12               | 0               | :55           | .15               | .23           | :54                              | .381         | .02           |     |
| 6-12 <sup>5/</sup>                                                                                                | 1.72              | .14             |               |                   |               | :57                              | .125         | .03           |     |
|                                                                                                                   |                   |                 |               |                   |               | :59                              | .0706        | .03           |     |
| Watershed Conditions: Fallow - last field operation May 22 with the 7 ft. sweep to kill weeds. Very little cover. |                   |                 |               |                   |               | 6-13-58                          |              |               |     |
|                                                                                                                   |                   |                 |               |                   |               | 12:02a                           | .0401        | .04           |     |
|                                                                                                                   |                   |                 |               |                   |               | :07                              | .0183        | .04           |     |
|                                                                                                                   |                   |                 |               |                   |               | :11                              | .0083        | .04           |     |
|                                                                                                                   |                   |                 |               |                   |               | :40                              | 0            | .04           |     |

Notes: To convert runoff in in/hr to cfs, multiply by 4.195 for event of June 27, 1956; by 4.195 for event of June 12-13, 1958; and by 4.044 for event of July 3, 1959. <sup>1/</sup> Area changed 1-1-59 from 4.16 acres to 4.01 acres. <sup>4/</sup> Beginning of new runoff event. <sup>5/</sup> Rainfall and runoff prior to event beginning 11:45p on 6-12-58.

| SELECTED RUNOFF EVENTS                                                          |                      |                    |                  |                      | Hastings, Nebraska Watershed 6-4 |                  |                 |                  |
|---------------------------------------------------------------------------------|----------------------|--------------------|------------------|----------------------|----------------------------------|------------------|-----------------|------------------|
| Antecedent conditions                                                           |                      |                    | Rainfall         |                      |                                  | Runoff           |                 |                  |
| Date                                                                            | Rainfall<br>(inches) | Runoff<br>(inches) | Date and<br>time | Intensity<br>(in/hr) | Acc.<br>(inches)                 | Date and<br>time | Rate<br>(in/hr) | Acc.<br>(inches) |
| Event of July 3, 1959 (Area - 4.01 acres)                                       |                      |                    |                  |                      |                                  |                  |                 |                  |
| 6-18-59                                                                         | .05                  | 0                  | 7-3-59           | Raingage             | B-36-R                           | 7-3-59           |                 |                  |
| 6-19                                                                            | .37                  | 0                  | 8:31p            | 0                    | 0                                | 8:31p            | 0               | 0                |
| 6-20                                                                            | 1.31                 | .03                | :33              | 3.00                 | .10                              | :32              | .0086           | T                |
| 6-21                                                                            | .03                  | 0                  | :37              | 5.70                 | .48                              | :33              | .160            | T                |
| 6-27,28                                                                         | 1.93                 | .39                | :39              | 0.10                 | .75                              | :37              | 2.08            | .07              |
| 6-29                                                                            | .19                  | T                  | :41              | 7.50                 | 1.00                             | :38              | 2.67            | .11              |
| 6-30                                                                            | .22                  | 0                  | :43              | 5.10                 | 1.17                             | :41              | 3.16            | .26              |
| Watershed Conditions: Wheat - 3' high<br>ripe and ready to harvest. Good stand, |                      |                    | :49              | 2.50                 | 1.42                             | :42              | 3.24            | .31              |
|                                                                                 |                      |                    | :52              | 2.00                 | 1.52                             | :44              | 3.14            | .42              |
|                                                                                 |                      |                    | :55              | 3.20                 | 1.68                             | :50              | 2.08            | .68              |
|                                                                                 |                      |                    | 9:01             | 2.00                 | 1.88                             | :53              | 2.00            | .18              |
|                                                                                 |                      |                    | :09              | 3.30                 | 2.32                             | :58              | 1.65            | .93              |
|                                                                                 |                      |                    | :11              | 2.40                 | 2.40                             | :59              | 1.65            | .96              |
|                                                                                 |                      |                    | :14              | 3.60                 | 2.58                             | 9:01             | 1.87            | 1.02             |
|                                                                                 |                      |                    | :16              | 1.50                 | 2.63                             | :03              | 1.81            | 1.08             |
|                                                                                 |                      |                    |                  |                      |                                  | :06              | 2.08            | 1.17             |
|                                                                                 |                      |                    |                  |                      |                                  | :07              | 2.08            | 1.21             |
|                                                                                 |                      |                    |                  |                      |                                  | :09              | 2.02            | 1.28             |
|                                                                                 |                      |                    |                  |                      |                                  | :11              | 2.17            | 1.35             |
|                                                                                 |                      |                    |                  |                      |                                  | :12              | 2.14            | 1.38             |
|                                                                                 |                      |                    |                  |                      |                                  | :16              | 1.42            | 1.50             |
|                                                                                 |                      |                    |                  |                      |                                  | :19              | .957            | 1.56             |
|                                                                                 |                      |                    |                  |                      |                                  | :23              | .532            | 1.61             |
|                                                                                 |                      |                    |                  |                      |                                  | :25              | .395            | 1.62             |
|                                                                                 |                      |                    |                  |                      |                                  | :31              | .153            | 1.65             |
|                                                                                 |                      |                    |                  |                      |                                  | :37              | .0445           | 1.66             |
|                                                                                 |                      |                    |                  |                      |                                  | 10:04            | 0               | 1.66             |

Notes: To convert runoff in in/hr to cfs, multiply by 4.044 for event of July 3, 1959.



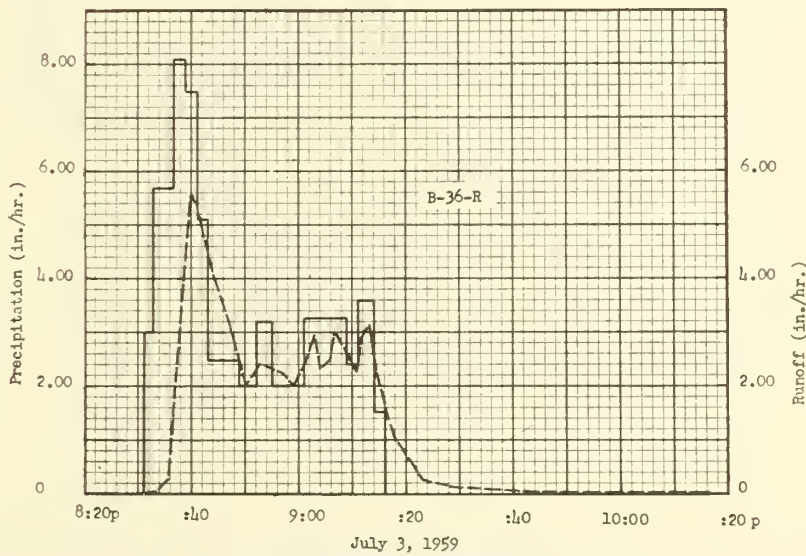
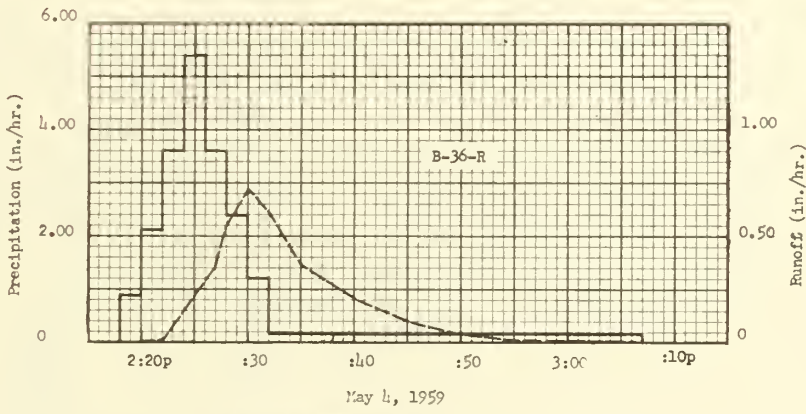
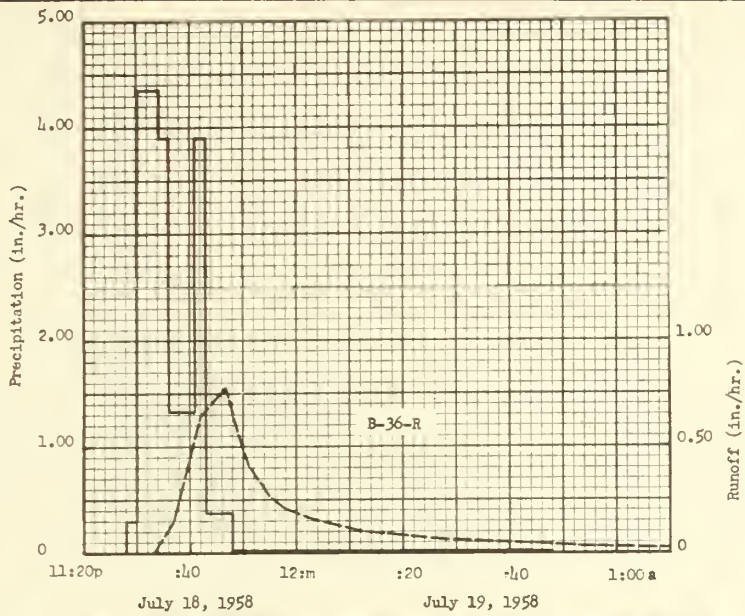


| MONTHLY PRECIPITATION AND RUNOFF (Inches)                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |                 |                                           |                   |               |               | Hastings, Nebraska Watershed 7-H<br>(Area - 4.15 or 4.26 acres) 1/ |               |             |              |             |           |           |               |        |      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------------|-------------------------------------------|-------------------|---------------|---------------|--------------------------------------------------------------------|---------------|-------------|--------------|-------------|-----------|-----------|---------------|--------|------|
| Year                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Month             | Jan.            | Feb.                                      | Mar.              | Apr.          | May           | June                                                               | July          | Aug.        | Sept.        | Oct.        | Nov.      | Dec.      | Year          |        |      |
| 1956                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | P<br>Q            | 0.18<br>0       | 0.08<br>T                                 | 0.30<br>0         | 1.10<br>T     | 0.56<br>0     | 4.22<br>.84                                                        | 2.68<br>.04   | 1.59<br>T   | 1.24<br>T    | 0.81<br>.02 | 0.10<br>0 | 0.05<br>0 | 12.91<br>.90  |        |      |
| 1958 2/                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | P<br>Q            | .07<br>0        | 1.24<br>.02                               | 1.97<br>0         | 1.73<br>T     | 1.50<br>0     | 2.88<br>.08                                                        | 4.74<br>.49   | 3.51<br>.24 | 1.49<br>.01  | 0.08<br>0   | 0.45<br>0 | .03<br>0  | 19.69<br>.84  |        |      |
| 1959                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | P<br>Q            | .21<br>0        | .25<br>e .18                              | 3.29<br>.21       | .88<br>.01    | 6.26<br>.90   | 4.89<br>.45                                                        | 3.12<br>2.06  | 3.32<br>.20 | 4.80<br>1.35 | 1.87<br>.28 | T<br>0    | .06<br>0  | 28.95<br>5.64 |        |      |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS                                                                                                                                                                                                                                                                                                                                                     |                   |                 |                                           |                   |               |               | Hastings, Nebraska Watershed 7-H 3/                                |               |             |              |             |           |           |               |        |      |
| YEAR                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | MAXIMUM DISCHARGE |                 | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |                   |               |               |                                                                    |               |             |              |             |           |           |               |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |                 | 1 hour                                    |                   | 2 hours       |               | 6 hours                                                            |               | 12 hours    |              | 1 day       |           | 2 days    |               | 8 days |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Date              | Rate            | Date                                      | Vol.              | Date          | Vol.          | Date                                                               | Vol.          | Date        | Vol.         | Date        | Vol.      | Date      | Vol.          | Date   | Vol. |
| 1958                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 7-18              | .78             | 7-18                                      | .23               | 7-18          | .26           | 7-18                                                               | .29           | 7-18        | .29          | 7-18        | .29       | 7-17      | .33           | 7-17   | .49  |
| 1959                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 7-3               | 2.56            | 7-3                                       | 2.04              | 7-3           | 2.06          | 7-3                                                                | 2.06          | 7-3         | 2.06         | 7-3         | 2.06      | 7-3       | 2.06          | 6-28   | 2.50 |
| Notes: 2/Runoff records discontinued between 1-7-57 and 1-8-58. Quality of Records: Monthly P and Q, Annual Maximum discharges and volumes - excellent except those that are estimated or partially estimated which are fair. Watershed Conditions: 1956 - oats, straight-row; 1958 - sorghum, subtitled; 1959 - fallow, subtitled. Crop poor in 1956; very good in 1958. e - estimated or partially estimated. 3/ Correction: Maximum Discharge, Date, 1953 should be 6-7. |                   |                 |                                           |                   |               |               |                                                                    |               |             |              |             |           |           |               |        |      |
| SELECTED RUNOFF EVENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                   |                 |                                           |                   |               |               | Hastings, Nebraska Watershed 7-H                                   |               |             |              |             |           |           |               |        |      |
| Antecedent conditions                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                   |                 | Rainfall                                  |                   |               | Runoff        |                                                                    |               |             |              |             |           |           |               |        |      |
| Date                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Rainfall (inches) | Runoff (inches) | Date and time                             | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr)                                                       | Acc. (inches) |             |              |             |           |           |               |        |      |
| July 18 and 19, 1958 (Area - 4.15 acres)                                                                                                                                                                                                                                                                                                                                                                                                                                    |                   |                 |                                           |                   |               |               |                                                                    |               |             |              |             |           |           |               |        |      |
| 6-20-58                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | .20               | 0               | 7-18-58                                   | Rain gauge        | B-36-R        | 7-18-58       |                                                                    |               |             |              |             |           |           |               |        |      |
| 6-24, 25                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | .20               | 0               | 11:28p                                    | 0                 | 0             | 11:33p        | 0                                                                  | 0             |             |              |             |           |           |               |        |      |
| 7-3                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | .95               | 0               | :30                                       | .30               | .01           | :37           | .166                                                               | T             |             |              |             |           |           |               |        |      |
| 7-4                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | .38               | 0               | :34                                       | 4.35              | .30           | :42           | .641                                                               | .04           |             |              |             |           |           |               |        |      |
| 7-10                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | .42               | T               | :36                                       | 3.90              | .43           | :47           | .782                                                               | .10           |             |              |             |           |           |               |        |      |
| 7-12                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | .08               | 0               | :41                                       | 1.32              | .54           | :49           | .576                                                               | .12           |             |              |             |           |           |               |        |      |
| 7-15                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | .31               | 0               | :43                                       | 3.90              | .67           | :51           | .413                                                               | .14           |             |              |             |           |           |               |        |      |
| 7-16                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | .08               | 0               | :46                                       | .36               | .70           | :55           | .265                                                               | .16           |             |              |             |           |           |               |        |      |
| 7-17                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1.07              | .06             | 7-19-58                                   |                   |               | :58           | .206                                                               | .17           |             |              |             |           |           |               |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |                 | 12:48a                                    | .02               | .72           | 7-19-58       |                                                                    |               |             |              |             |           |           |               |        |      |
| Watershed Conditions: Sorghum - about 1' high, in good condition. Was re-planted June 27. Last field operation July 8 with treader.                                                                                                                                                                                                                                                                                                                                         |                   |                 | 1:50                                      | 0                 | .72           | 12:03a        | .160                                                               | .19           |             |              |             |           |           |               |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |                 | 2:20                                      | .04               | .74           | :12           | .105                                                               | .20           |             |              |             |           |           |               |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |                 |                                           |                   |               | :27           | .0631                                                              | .23           |             |              |             |           |           |               |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |                 |                                           |                   |               | :52           | .0373                                                              | .25           |             |              |             |           |           |               |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |                 |                                           |                   |               | 2:02          | .0129                                                              | .27           |             |              |             |           |           |               |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |                 |                                           |                   |               | :22 4/        | .0097                                                              | .28           |             |              |             |           |           |               |        |      |
| Event of May 4, 1959 (Area - 4.26 acres)                                                                                                                                                                                                                                                                                                                                                                                                                                    |                   |                 |                                           |                   |               |               |                                                                    |               |             |              |             |           |           |               |        |      |
| 4-10-59                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | .02               | 0               | 5-4-59                                    | Rain gauge        | B-36-R        | 5-4-59        |                                                                    |               |             |              |             |           |           |               |        |      |
| 4-17                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | .34               | T               | 2:18p                                     | 0                 | 0             | 2:20p         | 0                                                                  | 0             |             |              |             |           |           |               |        |      |
| 4-19                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | .51               | .01             | :20                                       | .90               | .03           | :22           | .0178                                                              | T             |             |              |             |           |           |               |        |      |
| 5-2                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | .25               | 0               | :22                                       | 2.10              | .10           | :27           | .372                                                               | .01           |             |              |             |           |           |               |        |      |
| 5-3                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | .14               | T               | :24                                       | 2.60              | .22           | :28           | .547                                                               | .02           |             |              |             |           |           |               |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |                 | :26                                       | 5.40              | .40           | :30           | .720                                                               | .04           |             |              |             |           |           |               |        |      |
| Watershed Conditions: Fallow - good residue cover.                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |                 | :28                                       | 3.50              | .52           | :32           | .624                                                               | .06           |             |              |             |           |           |               |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |                 | :30                                       | 2.40              | .60           | :35           | .372                                                               | .09           |             |              |             |           |           |               |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |                 | :32                                       | 1.20              | .64           | :40           | .244                                                               | .11           |             |              |             |           |           |               |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |                 | 3:07                                      | .19               | .75           | :45           | .102                                                               | .13           |             |              |             |           |           |               |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |                 |                                           |                   |               | :50           | .0419                                                              | .13           |             |              |             |           |           |               |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |                 |                                           |                   |               | :55           | .0142                                                              | .14           |             |              |             |           |           |               |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |                 |                                           |                   |               | 3:06          | 0                                                                  | .14           |             |              |             |           |           |               |        |      |
| Notes: To convert runoff in in/hr to cfs, multiply by 4.185 for event of July 18-19, 1958; by 4.296 for event of May 4, 1959. 1/ Area changed 1-1-58 from 4.15 acres to 4.26 acres. 4/ Beginning of new storm.                                                                                                                                                                                                                                                              |                   |                 |                                           |                   |               |               |                                                                    |               |             |              |             |           |           |               |        |      |

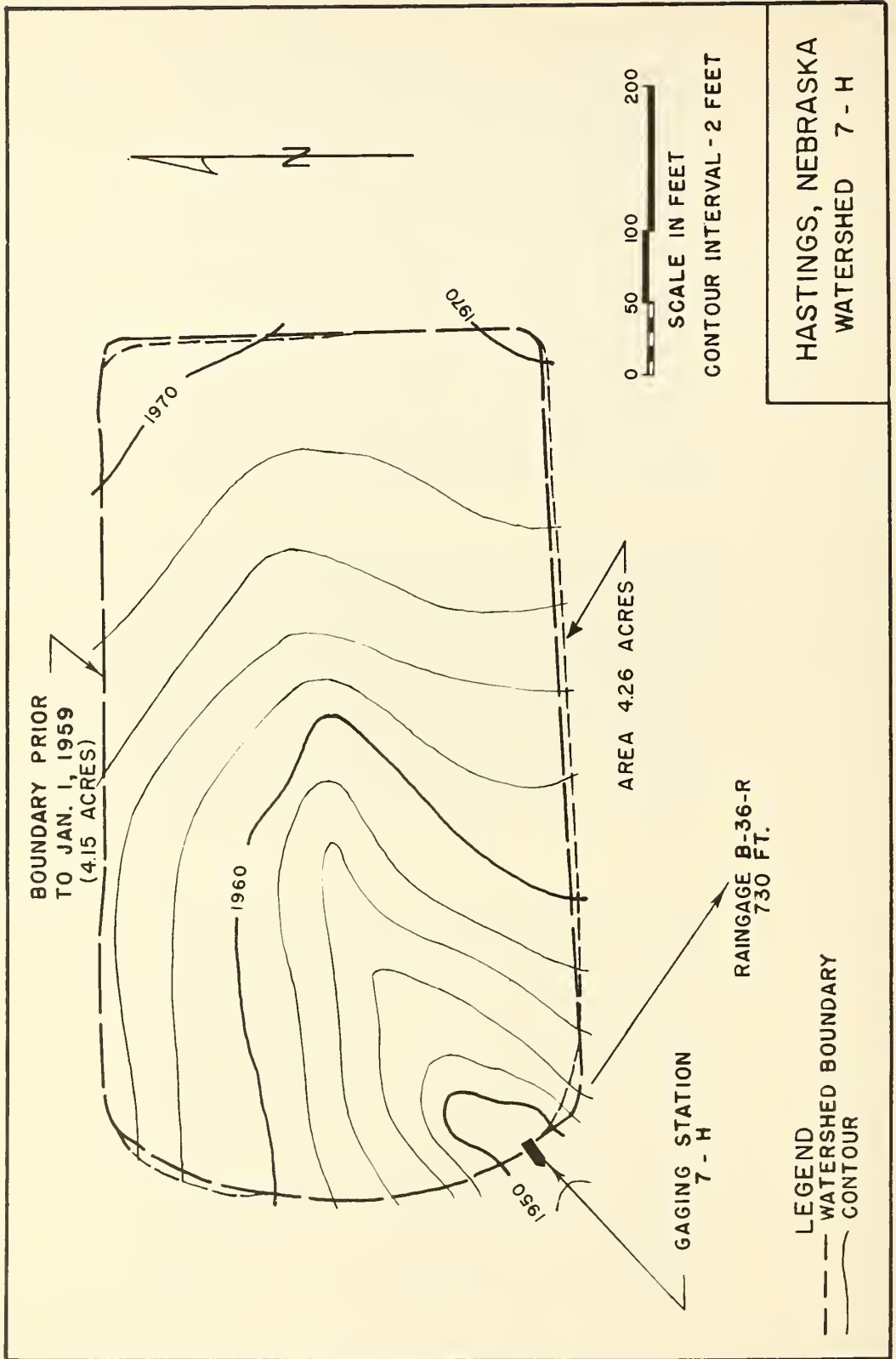


| SELECTED RUNOFF EVENTS                                                                                   |                   |                 | Hastings, Nebraska Watershed 7-H |                   |               |               |              |               |
|----------------------------------------------------------------------------------------------------------|-------------------|-----------------|----------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions                                                                                    |                   |                 | Rainfall                         |                   |               | Runoff        |              |               |
| Date                                                                                                     | Rainfall (inches) | Runoff (inches) | Date and time                    | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of July 3, 1959 (Area - 4.26 acres)                                                                |                   |                 |                                  |                   |               |               |              |               |
| 6-18-59                                                                                                  | .05               | 0               | 7-3-59                           | Rain-gage         | B-36-R        | 7-3-59        |              |               |
| 6-19                                                                                                     | .37               | 0               | 8:31p                            | 0                 | 0             | 8:31p         | 0            | 0             |
| 6-20                                                                                                     | 1.31              | .02             | :33                              | 3.00              | .10           | :33           | .0081        | T             |
| 6-21                                                                                                     | .03               | 0               | :37                              | 5.70              | .48           | :35           | .207         | T             |
| 6-27,28                                                                                                  | 1.93              | .42             | :39                              | 8.10              | .75           | :37           | 2.17         | .04           |
| 6-29                                                                                                     | .19               | 0               | :41                              | 7.50              | 1.00          | :40           | 5.56         | .23           |
| 6-30                                                                                                     | .22               | .01             | :43                              | 5.10              | 1.17          | :41           | 5.29         | .32           |
|                                                                                                          |                   |                 | :49                              | 2.50              | 1.42          | :44           | 4.10         | .56           |
|                                                                                                          |                   |                 | :52                              | 2.00              | 1.52          | :47           | 3.18         | .74           |
|                                                                                                          |                   |                 | :55                              | 3.20              | 1.68          | :50           | 2.04         | .87           |
| Watershed Conditions: Fallow - last field operation June 27 with treader. Little cover at time of storm. |                   |                 | :57                              | 1.80              | 1.74          | :53           | 2.42         | .98           |
|                                                                                                          |                   |                 | :59                              | 2.40              | 1.82          | :57           | 2.22         | 1.13          |
|                                                                                                          |                   |                 | 9:01                             | 1.80              | 1.88          | :59           | 2.01         | 1.20          |
|                                                                                                          |                   |                 | :04                              | 3.60              | 2.06          | 9:01          | 2.42         | 1.27          |
|                                                                                                          |                   |                 | :07                              | 2.60              | 2.19          | :03           | 2.98         | 1.37          |
|                                                                                                          |                   |                 | :09                              | 3.90              | 2.32          | :04           | 2.31         | 1.41          |
|                                                                                                          |                   |                 | :11                              | 2.40              | 2.40          | :05           | 2.40         | 1.45          |
|                                                                                                          |                   |                 | :14                              | 3.60              | 2.58          | :07           | 3.03         | 1.54          |
|                                                                                                          |                   |                 | :16                              | 1.50              | 2.63          | :11           | 2.31         | 1.72          |
|                                                                                                          |                   |                 |                                  |                   |               | :12           | 2.93         | 1.76          |
|                                                                                                          |                   |                 |                                  |                   |               | :13           | 3.12         | 1.81          |
|                                                                                                          |                   |                 |                                  |                   |               | :14           | 2.31         | 1.86          |
|                                                                                                          |                   |                 |                                  |                   |               | :16           | 1.51         | 1.92          |
|                                                                                                          |                   |                 | :18                              | 1.07              | 1.96          |               |              |               |
|                                                                                                          |                   |                 | :23                              | .258              | 2.01          |               |              |               |
|                                                                                                          |                   |                 | :29                              | .144              | 2.03          |               |              |               |
|                                                                                                          |                   |                 | :43                              | .0312             | 2.05          |               |              |               |
|                                                                                                          |                   |                 | 10:43                            | 0                 | 2.06          |               |              |               |

Notes: To convert runoff in in/hr to cfs, multiply by 4.296 for event of July 3, 1959.



HASTINGS, NEBRASKA WATERSHED 7-H



| MONTHLY PRECIPITATION AND RUNOFF (Inches) |        |          |          |           |           |             |             | Hastings, Nebraska Watershed 8-H<br>(Area - 3.93 or 3.97 acres) 1/ |             |             |             |           |           |               |
|-------------------------------------------|--------|----------|----------|-----------|-----------|-------------|-------------|--------------------------------------------------------------------|-------------|-------------|-------------|-----------|-----------|---------------|
| Year                                      | Month  | Jan.     | Feb.     | Mar.      | Apr.      | May         | June        | July                                                               | Aug.        | Sept.       | Oct.        | Nov.      | Dec.      | Year          |
|                                           |        | 1958 2/  | P<br>Q   | 0.07<br>0 | 1.24<br>T | 1.97<br>0   | 1.73<br>.07 | 1.50<br>0                                                          | 2.88<br>.01 | 4.74<br>.24 | 3.51<br>.15 | 1.49<br>0 | 0.08<br>0 | 0.45<br>0     |
| 1959                                      | P<br>Q | .21<br>0 | .25<br>T | 3.29<br>T | .88<br>0  | 6.26<br>.07 | 4.89<br>.78 | 3.12<br>1.69                                                       | 3.32<br>.01 | 4.80<br>.24 | 1.87<br>0   | T<br>0    | .06<br>0  | 28.95<br>2.79 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS Hastings, Nebraska Watershed 8-H

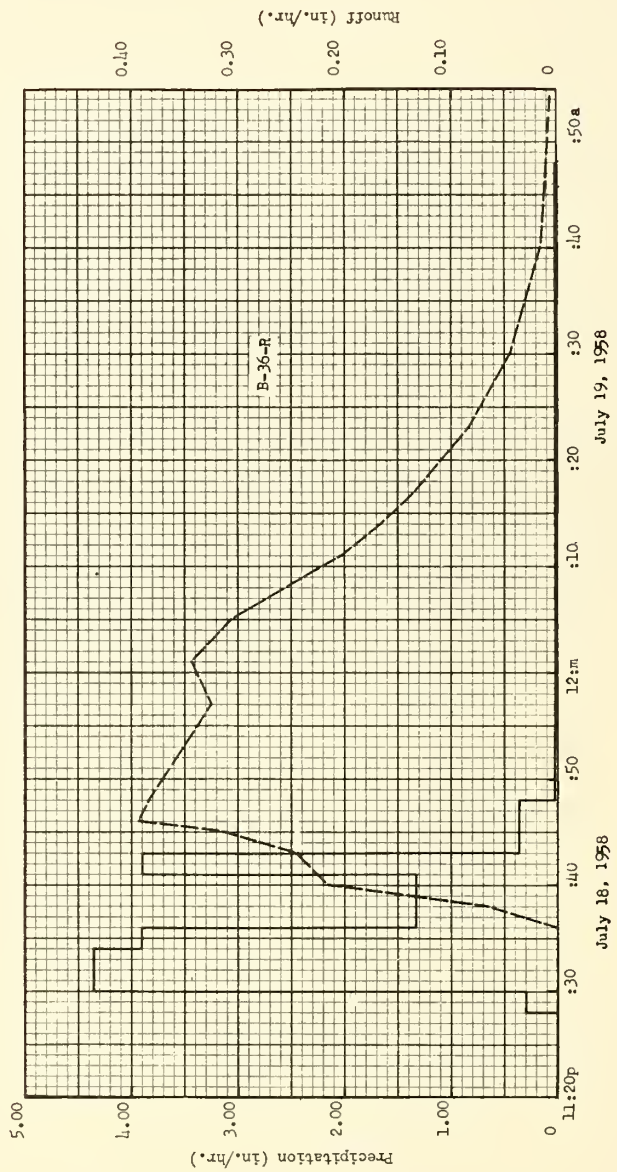
| YEAR | MAXIMUM DISCHARGE |      | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |      |         |      |         |      |          |      |       |      |        |      |        |      |
|------|-------------------|------|-------------------------------------------|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
|      |                   |      | 1 hour                                    |      | 2 hours |      | 6 hours |      | 12 hours |      | 1 day |      | 2 days |      | 8 days |      |
|      | Date              | Rate | Date                                      | Vol. | Date    | Vol. | Date    | Vol. | Date     | Vol. | Date  | Vol. | Date   | Vol. | Date   | Vol. |
| 1958 | 7-18              | 0.39 | 7-18                                      | .21  | 7-18    | .21  | 7-18    | .21  | 7-18     | .21  | 7-18  | .21  | 7-17   | .23  | 7-17   | .24  |
| 1959 | 7-3               | 3.42 | 7-3                                       | 1.67 | 7-3     | 1.70 | 7-3     | 1.70 | 7-3      | 1.70 | 7-3   | 1.70 | 7-3    | 1.70 | 6-28   | 2.33 |

Notes: 2/ Runoff records discontinued between Jan. 4, 1955 and Jan. 8, 1958. Quality of Records: Monthly P and Q, Annual Max. discharges and volumes - excellent. Watershed Conditions: 1958 - wheat, subtitled; 1959 - sorghum subtitled. Good to excellent crop both years.

SELECTED RUNOFF EVENTS Hastings, Nebraska Watershed 8-H

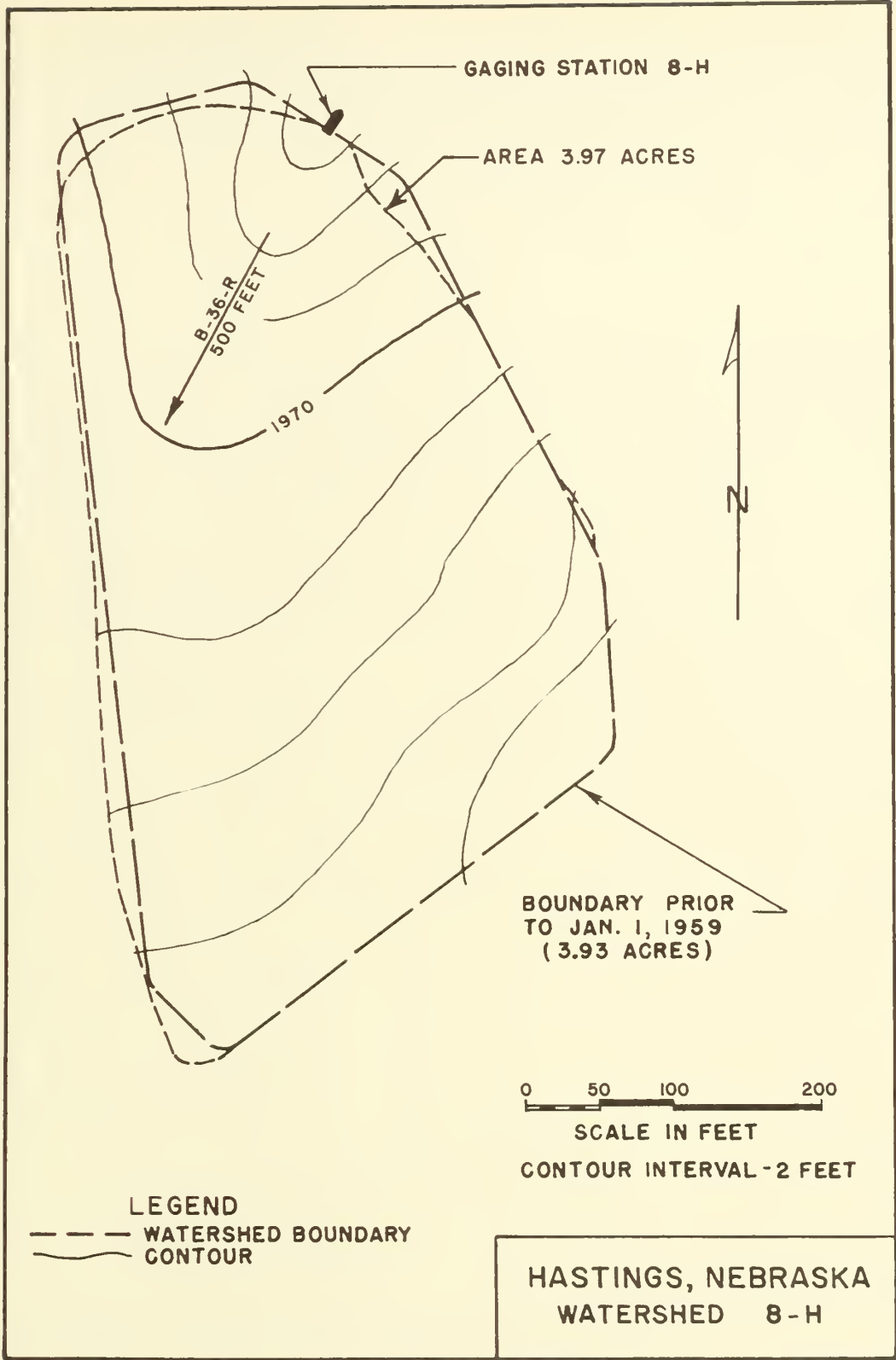
| Antecedent conditions                                                                   |                   |                 | Rainfall      |                   |               | Runoff        |              |               |     |
|-----------------------------------------------------------------------------------------|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|-----|
| Date                                                                                    | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |     |
| Event of July 18 and 19, 1958 (area - 3.93 acres)                                       |                   |                 |               |                   |               |               |              |               |     |
| 6-20-58                                                                                 | .20               | 0               | 7-18-58       |                   |               | 7-18-58       |              |               |     |
| 6-24, 25                                                                                | .20               | 0               | 11:28p        | 0                 | 0             | 11:36p        | 0            | 0             |     |
| 7-3                                                                                     | .95               | 0               | :30           | .30               | .01           | :38           | .0666        | T             |     |
| 7-4                                                                                     | .38               | 0               | :34           | 4.35              | .30           | :40           | .217         | .01           |     |
| 7-10                                                                                    | .42               | 0               | :36           | 3.90              | .43           | :43           | .248         | .02           |     |
| 7-12                                                                                    | .31               | 0               | :41           | 1.32              | .54           | :45           | .316         | .03           |     |
| 7-16                                                                                    | .08               | 0               | :43           | 3.90              | .67           | :46           | .394         | .03           |     |
| 7-17                                                                                    | 1.07              | .02             | :48           | .36               | .70           | :48           | .310         | .05           |     |
|                                                                                         |                   |                 | 7-19-58       |                   |               | :57           | .325         | .10           |     |
|                                                                                         |                   |                 | 12:48a        | .02               | .72           | 7-19-58       |              |               |     |
| Watershed Conditions: Wheat - combined July 8; about 6000 lbs. straw residue on ground. |                   |                 |               |                   |               |               | 12:01a       | .343          | .16 |
|                                                                                         |                   |                 |               |                   |               |               | :05          | .308          | .14 |
|                                                                                         |                   |                 |               |                   |               |               | :11          | .203          | .17 |
|                                                                                         |                   |                 |               |                   |               |               | :14          | .159          | .18 |
|                                                                                         |                   |                 |               |                   |               |               | :17          | .133          | .18 |
|                                                                                         |                   |                 |               |                   |               |               | :23          | .0830         | .20 |
|                                                                                         |                   |                 |               |                   |               |               | :30          | .0454         | .20 |
|                                                                                         |                   |                 |               |                   |               |               | :40          | .0154         | .21 |
| 1:04                                                                                    | 0                 | .21             |               |                   |               |               |              |               |     |

Notes: To convert runoff in in/hr to cfs, multiply by 3.963 for event of July 18 and 19, 1958. 1/ Area changed 1-1-59 from 3.93 acres to 3.97 acres.



HASTINGS, NEBRASKA WATERSHED 8-H





GAGING STATION 8-H

AREA 3.97 ACRES

B-36-R  
500 FEET

1970



BOUNDARY PRIOR  
TO JAN. 1, 1959  
(3.93 ACRES)

0 50 100 200

SCALE IN FEET

CONTOUR INTERVAL - 2 FEET

LEGEND

--- WATERSHED BOUNDARY  
— CONTOUR

HASTINGS, NEBRASKA  
WATERSHED 8-H

| MONTHLY PRECIPITATION AND RUNOFF (Inches)                                                                                                                                                                                                                                                                                                                                                  |                         |                 |                                           |                   |               |               | Hastings, Nebraska Watershed 18-H<br>(Area - 3.74 acres) |                |             |             |           |           |           |               |        |      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-----------------|-------------------------------------------|-------------------|---------------|---------------|----------------------------------------------------------|----------------|-------------|-------------|-----------|-----------|-----------|---------------|--------|------|
| Year                                                                                                                                                                                                                                                                                                                                                                                       | Month                   | Jan.            | Feb.                                      | Mar.              | Apr.          | May           | June                                                     | July           | Aug.        | Sept.       | Oct.      | Nov.      | Dec.      | Year          |        |      |
| 1957                                                                                                                                                                                                                                                                                                                                                                                       | <sup>1/</sup><br>P<br>Q | 0.13<br>nr      | 0.06<br>nr                                | 1.67<br>0         | 2.82<br>e .15 | 6.38<br>.18   | 11.12<br>3.59                                            | 0.09<br>0      | 5.44<br>.38 | 0.59<br>0   | 1.22<br>0 | 0.64<br>0 | 0.11<br>0 | 30.27<br>4.30 |        |      |
| 1958                                                                                                                                                                                                                                                                                                                                                                                       | P<br>Q                  | .07<br>0        | 1.59<br>.03                               | 2.06<br>0         | 1.66<br>T     | 1.44<br>0     | 2.56<br>.45                                              | 4.47<br>.13    | 3.57<br>.13 | 1.54<br>0   | .07<br>0  | .42<br>0  | .04<br>0  | 19.49<br>.74  |        |      |
| 1959                                                                                                                                                                                                                                                                                                                                                                                       | P<br>Q                  | .19<br>0        | .28<br>.20                                | 3.44<br>0         | .86<br>0      | 6.74<br>e .64 | 4.84<br>e .66                                            | 3.08<br>e 2.05 | 3.08<br>.01 | 4.43<br>.01 | 1.71<br>0 | T<br>0    | .07<br>0  | 28.72<br>3.57 |        |      |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS                                                                                                                                                                                                                                                                    |                         |                 |                                           |                   |               |               | Hastings, Nebraska Watershed 18-H                        |                |             |             |           |           |           |               |        |      |
| YEAR                                                                                                                                                                                                                                                                                                                                                                                       | MAXIMUM DISCHARGE       |                 | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |                   |               |               |                                                          |                |             |             |           |           |           |               |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                            |                         |                 | 1 hour                                    |                   | 2 hours       |               | 6 hours                                                  |                | 12 hours    |             | 1 day     |           | 2 days    |               | 8 days |      |
|                                                                                                                                                                                                                                                                                                                                                                                            | Date                    | Rate            | Date                                      | Vol.              | Date          | Vol.          | Date                                                     | Vol.           | Date        | Vol.        | Date      | Vol.      | Date      | Vol.          | Date   | Vol. |
| 1957                                                                                                                                                                                                                                                                                                                                                                                       | 6-15                    | 2.07            | 6-15                                      | 0.74              | 6-15          | 1.08          | 6-15                                                     | 2.00           | 6-15        | 2.71        | 6-15      | 2.81      | 6-15      | 3.57          | 6-10   | 3.58 |
| 1958                                                                                                                                                                                                                                                                                                                                                                                       | 6-12                    | 1.31            | 6-12                                      | .44               | 6-12          | .45           | 6-12                                                     | .45            | 6-12        | .45         | 6-12      | .45       | 6-12      | .45           | 6-12   | .45  |
| 1959                                                                                                                                                                                                                                                                                                                                                                                       | 7-3                     | 2.42            | 7-3                                       | 2.01              | 7-3           | 2.05          | 7-3                                                      | 2.05           | 7-3         | 2.05        | 7-3       | 2.05      | 7-3       | 2.05          | 6-28   | 2.57 |
| Notes: <sup>1/</sup> Runoff records discontinued 7-1-55; re-established 2-8-57. Quality of Records: Monthly P and Q values, annual maximum discharges and volumes - excellent except those that are estimated or partially estimated which are fair. Watershed Conditions: Native grass pasture - good to excellent conditions, 1957, 1958 and 1959. e - estimated or partially estimated. |                         |                 |                                           |                   |               |               |                                                          |                |             |             |           |           |           |               |        |      |
| SELECTED RUNOFF EVENTS                                                                                                                                                                                                                                                                                                                                                                     |                         |                 |                                           |                   |               |               | Hastings, Nebraska Watershed 18-H                        |                |             |             |           |           |           |               |        |      |
| Antecedent conditions                                                                                                                                                                                                                                                                                                                                                                      |                         |                 | Rainfall                                  |                   |               | Runoff        |                                                          |                |             |             |           |           |           |               |        |      |
| Date                                                                                                                                                                                                                                                                                                                                                                                       | Rainfall (inches)       | Runoff (inches) | Date and time                             | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr)                                             | Acc. (inches)  |             |             |           |           |           |               |        |      |
| Event of June 15, 1957                                                                                                                                                                                                                                                                                                                                                                     |                         |                 |                                           |                   |               |               |                                                          |                |             |             |           |           |           |               |        |      |
| 5-15-57                                                                                                                                                                                                                                                                                                                                                                                    | .06                     | 0               | 6-15-57                                   | Raingage          | D-33-R        | 6-15-57       |                                                          |                |             |             |           |           |           |               |        |      |
| 5-29                                                                                                                                                                                                                                                                                                                                                                                       | .64                     | .02             | 10:59a                                    | 0                 | 0             | 11:19a        | 0                                                        | 0              |             |             |           |           |           |               |        |      |
| 5-31                                                                                                                                                                                                                                                                                                                                                                                       | .31                     | 0               | 11:05                                     | .50               | .05           | :21           | .0446                                                    | T              |             |             |           |           |           |               |        |      |
| 6-5                                                                                                                                                                                                                                                                                                                                                                                        | .11                     | 0               | :11                                       | 1.30              | .18           | :32           | .0330                                                    | .01            |             |             |           |           |           |               |        |      |
| 6-10                                                                                                                                                                                                                                                                                                                                                                                       | .74                     | .01             | :15                                       | 3.00              | .38           | :34           | .120                                                     | .02            |             |             |           |           |           |               |        |      |
| 6-13                                                                                                                                                                                                                                                                                                                                                                                       | 1.00                    | T               | :45                                       | 1.30              | 1.03          | :44           | .237                                                     | .05            |             |             |           |           |           |               |        |      |
| Watershed Conditions: Native grass pasture - 12" high, heading and in excellent condition.                                                                                                                                                                                                                                                                                                 |                         |                 | :55                                       | 4.08              | 1.71          | :50           | .305                                                     | .07            |             |             |           |           |           |               |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                            |                         |                 | 12:01 p                                   | 1.50              | 1.96          | :54           | .546                                                     | .10            |             |             |           |           |           |               |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                            |                         |                 | :31                                       | .14               | 1.93          | :58           | 1.42                                                     | .16            |             |             |           |           |           |               |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                            |                         |                 |                                           |                   |               | :59           | 1.75                                                     | .19            |             |             |           |           |           |               |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                            |                         |                 |                                           |                   |               | 12:02p        | 2.02                                                     | .28            |             |             |           |           |           |               |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                            |                         |                 |                                           |                   |               | :03           | 2.07                                                     | .32            |             |             |           |           |           |               |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                            |                         |                 |                                           |                   |               | :05           | 2.02                                                     | .39            |             |             |           |           |           |               |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                            |                         |                 |                                           |                   |               | :10           | 1.42                                                     | .53            |             |             |           |           |           |               |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                            |                         |                 |                                           |                   |               | :20           | .520                                                     | .69            |             |             |           |           |           |               |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                            |                         |                 |                                           |                   |               | :25           | .305                                                     | .72            |             |             |           |           |           |               |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                            |                         |                 | :30                                       | .171              | .74           |               |                                                          |                |             |             |           |           |           |               |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                            |                         |                 | :40                                       | .0700             | .75           |               |                                                          |                |             |             |           |           |           |               |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                            |                         |                 | 1:00                                      | .0125             | .78           |               |                                                          |                |             |             |           |           |           |               |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                            |                         |                 | :40                                       | 0                 | .78           |               |                                                          |                |             |             |           |           |           |               |        |      |
| Event of June 12, 1958                                                                                                                                                                                                                                                                                                                                                                     |                         |                 |                                           |                   |               |               |                                                          |                |             |             |           |           |           |               |        |      |
| 5-14-58                                                                                                                                                                                                                                                                                                                                                                                    | .50                     | T               | 6-12-58                                   | Raingage          | B-33-P        | 6-12-58       |                                                          |                |             |             |           |           |           |               |        |      |
| 5-15                                                                                                                                                                                                                                                                                                                                                                                       | .12                     | 0               | 1:52a                                     | 0                 | 0             | 2:09a         | 0                                                        | 0              |             |             |           |           |           |               |        |      |
| 5-15                                                                                                                                                                                                                                                                                                                                                                                       | .30                     | 0               | :56                                       | .60               | .04           | :13           | .170                                                     | 0              |             |             |           |           |           |               |        |      |
| 5-25                                                                                                                                                                                                                                                                                                                                                                                       | .30                     | 0               | 2:02                                      | 1.80              | .22           | :17           | .684                                                     | T              |             |             |           |           |           |               |        |      |
| 5-27                                                                                                                                                                                                                                                                                                                                                                                       | .16                     | 0               | :07                                       | 3.00              | .47           | :19           | 1.07                                                     | .03            |             |             |           |           |           |               |        |      |
| 6-6                                                                                                                                                                                                                                                                                                                                                                                        | .11                     | 0               | :09                                       | 4.50              | .62           | :21           | 1.25                                                     | .11            |             |             |           |           |           |               |        |      |
| Watershed Conditions: Native grass pasture - 5" high, in good condition.                                                                                                                                                                                                                                                                                                                   |                         |                 | :14                                       | 3.96              | .95           | :25           | 1.31                                                     | .19            |             |             |           |           |           |               |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                            |                         |                 | :16                                       | 3.30              | 1.06          | :26           | 1.29                                                     | .21            |             |             |           |           |           |               |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                            |                         |                 | :26                                       | 1.50              | 1.31          | :30           | 1.03                                                     | .29            |             |             |           |           |           |               |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                            |                         |                 | 3:09                                      | .11               | 1.39          | :34           | .697                                                     | .34            |             |             |           |           |           |               |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                            |                         |                 |                                           |                   |               |               |                                                          |                |             |             |           |           |           |               |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                            |                         |                 |                                           |                   |               |               |                                                          |                |             |             |           |           |           |               |        |      |
| Notes: To convert runoff in in/hr to cfs, multiply by 3.771.                                                                                                                                                                                                                                                                                                                               |                         |                 |                                           |                   |               |               |                                                          |                |             |             |           |           |           |               |        |      |

SELECTED RUNOFF EVENTS

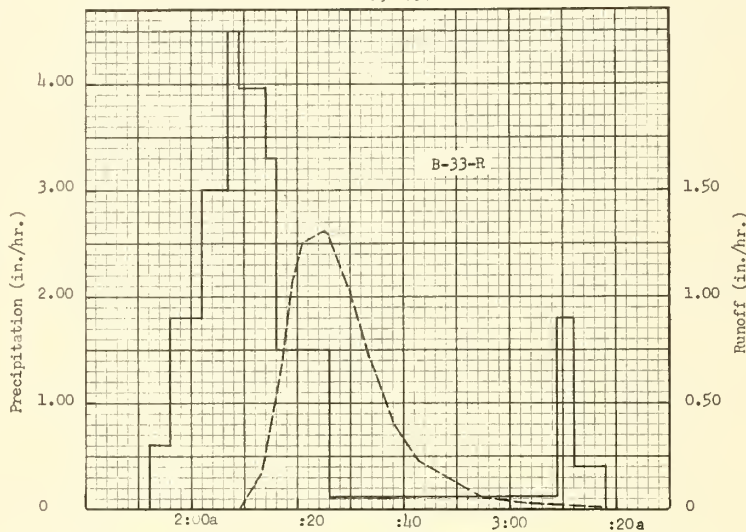
Hastings, Nebraska Watershed 1-F

| Antecedent conditions                                                                  |                   |                 | Rainfall      |                   |               | Runoff        |              |               |
|----------------------------------------------------------------------------------------|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date                                                                                   | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of June 10, 1950 - Continued</u>                                              |                   |                 |               |                   |               |               |              |               |
|                                                                                        |                   |                 | 3:12a         | 1.0               | 1.48          | 2:30a         | .627         | .34           |
|                                                                                        |                   |                 | :13           | .40               | 1.52          | :43           | .237         | .41           |
|                                                                                        |                   |                 |               |                   |               | :55           | .0023        | .43           |
|                                                                                        |                   |                 |               |                   |               | 3:3           | .0300        | .44           |
|                                                                                        |                   |                 |               |                   |               | :17           | .113         | .45           |
|                                                                                        |                   |                 |               |                   |               | 4:2           | 0            | .45           |
| <u>Event of May 1, 1950</u>                                                            |                   |                 |               |                   |               |               |              |               |
| 5-1-50                                                                                 | .50               | 0               | 5-1-50        | Rate              | E-33-R        | 5-1-50        |              |               |
| 5-2                                                                                    | .30               | 0               | 7:37a         | 0                 | 0             | :50           |              |               |
| 5-3                                                                                    | .15               | 0               | :57           | .1                | .05           | :07           | .0300        | .05           |
| 5-4                                                                                    | .91               | .01             | :59           |                   | .05           | :11           | .237         | .04           |
| 5-5,6                                                                                  | .91               | .01             | :05           | .70               | .1            | :10           | .315         | .08           |
| 5-9, 1/                                                                                | 1.05              | .1              | :11           | 1.05              | .73           | :17           | .427         | .14           |
|                                                                                        |                   |                 | :23           | .70               | .17           | :20           | .395         | .09           |
|                                                                                        |                   |                 | :51           | .1                | .13           | :24           | .215         | .10           |
|                                                                                        |                   |                 | :53           | .1                | .14           | :31           | .253         | .13           |
|                                                                                        |                   |                 | :53           | .1                | .09           | :35           | .155         | .15           |
|                                                                                        |                   |                 |               |                   |               | :43           | .107         | .19           |
|                                                                                        |                   |                 |               |                   |               | :51           | .0023        | .17           |
|                                                                                        |                   |                 |               |                   |               | :00           | .030         | .13           |
|                                                                                        |                   |                 |               |                   |               | :20           | .0002        | .19           |
|                                                                                        |                   |                 |               |                   |               | :50           | 0            | .19           |
| Watershed Conditions: Native grass pasture - 1 <sup>1/2</sup> high, in good condition. |                   |                 |               |                   |               |               |              |               |

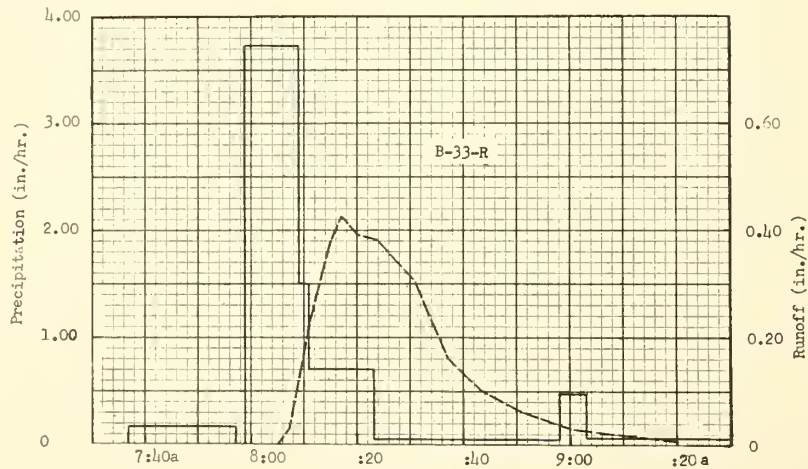
Notes: 1/ Rainfall and runoff prior to event beginning 7:37a on 5-18-59.



June 15, 1957

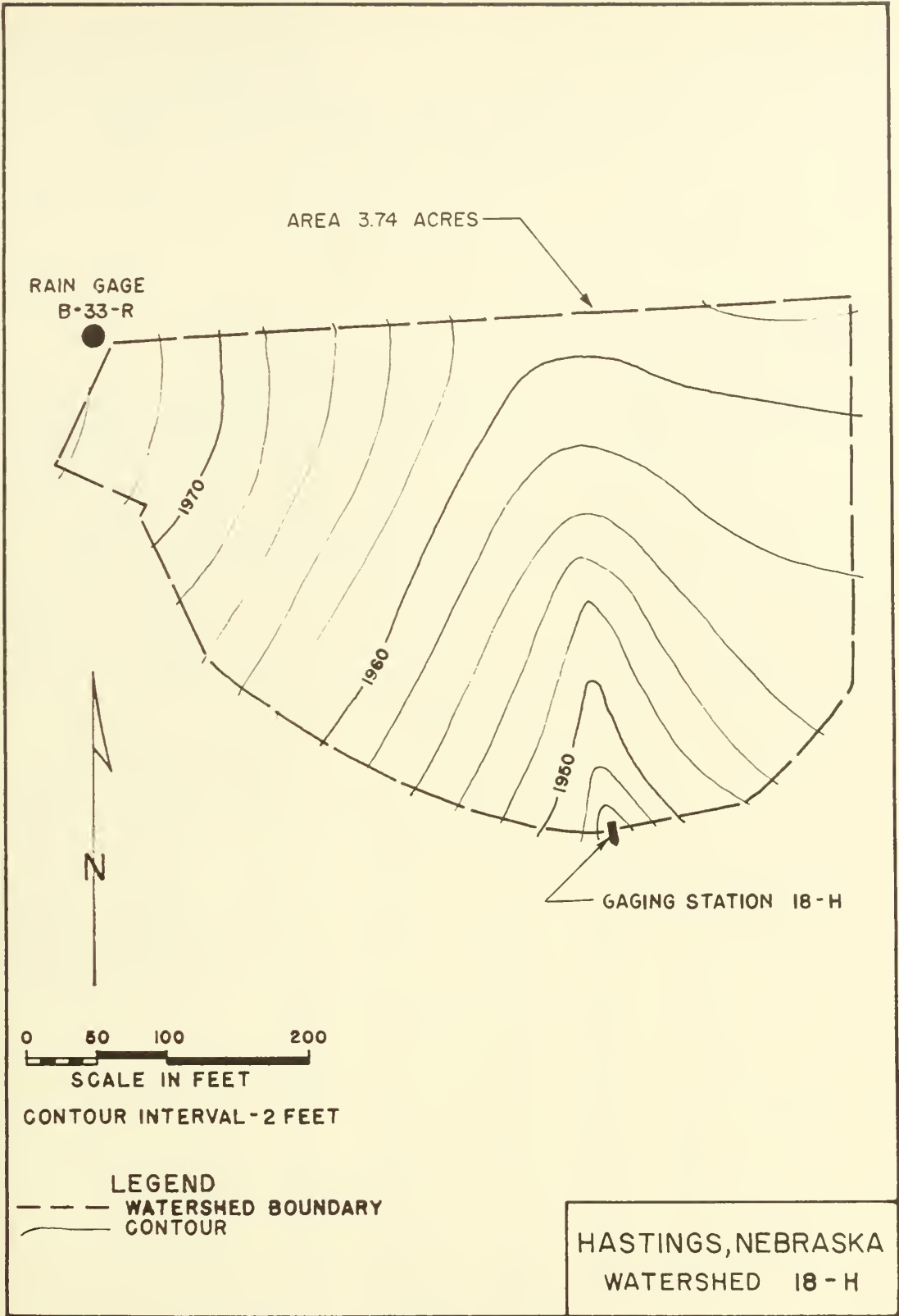


June 12, 1958



May 18, 1959

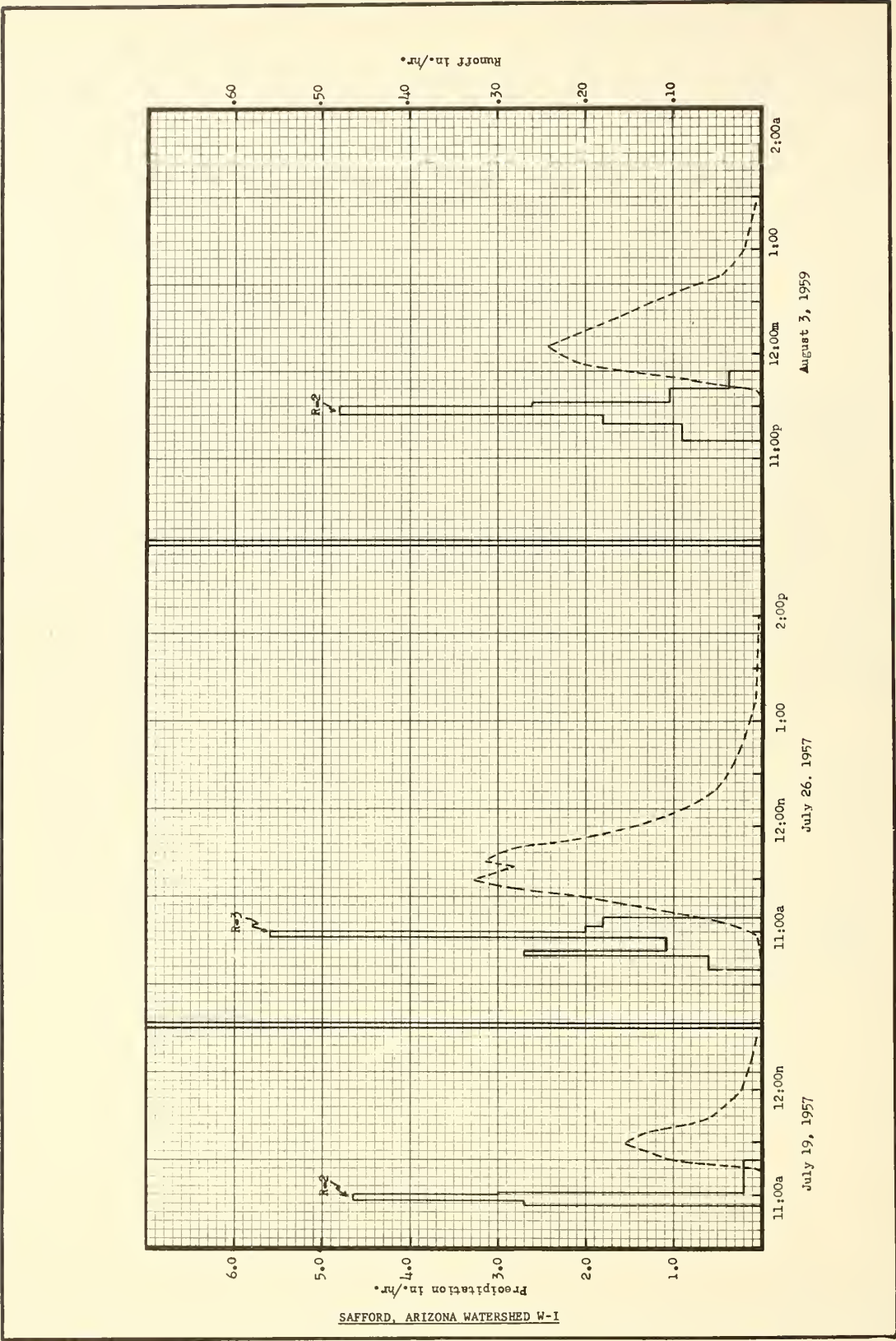
HASTINGS, NEBR. SGA WATERSHED 18-H

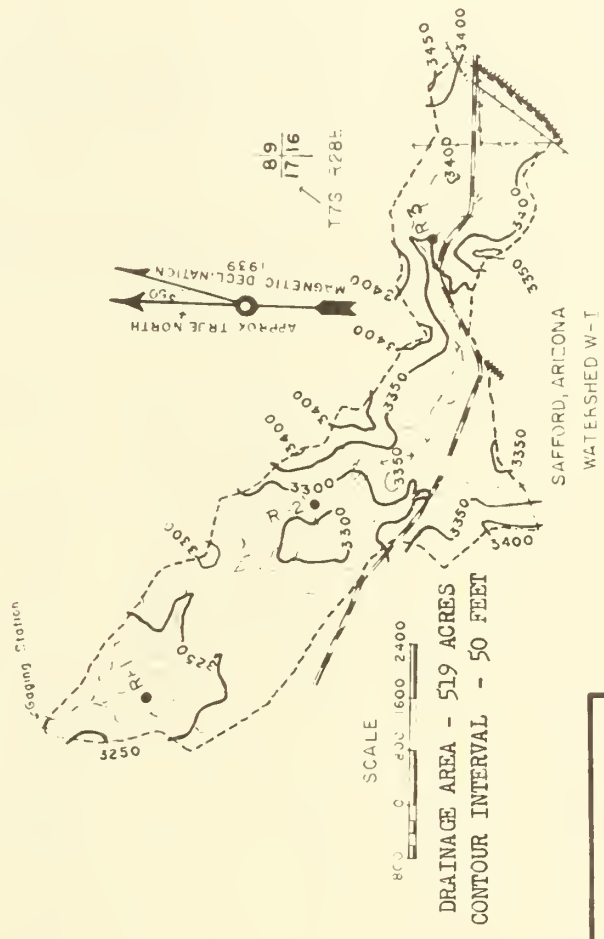






| SELECTED RUNOFF EVENTS                                                                                                                                                                               |                   |                 | Safford, Arizona Watershed W-I |                   |               |               |              |               |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------------|--------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions                                                                                                                                                                                |                   |                 | Rainfall                       |                   |               | Runoff        |              |               |
| Date                                                                                                                                                                                                 | Rainfall (inches) | Runoff (inches) | Date and time                  | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of July 26, 1957                                                                                                                                                                               |                   |                 |                                |                   |               |               |              |               |
|                                                                                                                                                                                                      | Raingage R-3      |                 | 7-26-57                        | Raingage R-3      |               | 7-26-57       |              |               |
| 7-16-57                                                                                                                                                                                              | 0.54              | 0               | 10:38a                         | 0                 | 0             | 10:45a        | 0            | 0             |
| 7-19                                                                                                                                                                                                 | .50               | .07             | :46                            | .60               | .07           | :57           | .0044        | .0001         |
| 7-25                                                                                                                                                                                                 | .40               | 0               | :48                            | 2.70              | .16           | 11:02         | .0231        | .0011         |
| 7-26 1/                                                                                                                                                                                              | .22               | 0               | :57                            | 1.07              | .32           | :05           | .0434        | .0028         |
|                                                                                                                                                                                                      | Raingage R-2      |                 | 11:00                          | 5.60              | .60           | :08           | .0772        | .0058         |
| 7-1-57                                                                                                                                                                                               | .09               | 0               | :03                            | 2.00              | .70           | :15           | .1423        | .0190         |
| 7-15                                                                                                                                                                                                 | .10               | 0               | :08                            | 1.80              | .85           | :20           | .2025        | .0330         |
| 7-17                                                                                                                                                                                                 | .49               | 0               |                                |                   |               | :25           | .2884        | .0533         |
| 7-19                                                                                                                                                                                                 | .50               | .07             |                                |                   |               | :29           | .3266        | .0738         |
| 7-25                                                                                                                                                                                                 | .28               | 0               |                                |                   |               | :37           | .2827        | .1136         |
| 8-1                                                                                                                                                                                                  | 0                 | T               |                                |                   |               | :40           | .3132        | .1283         |
|                                                                                                                                                                                                      |                   |                 |                                |                   |               | :48           | .2731        | .1672         |
|                                                                                                                                                                                                      |                   |                 |                                |                   |               | :51           | .2407        | .1800         |
|                                                                                                                                                                                                      |                   |                 |                                |                   |               | :55           | .1883        | .1943         |
|                                                                                                                                                                                                      |                   |                 |                                |                   |               | 12:00n        | .1461        | .2082         |
|                                                                                                                                                                                                      |                   |                 |                                |                   |               | :10p          | .0896        | .2273         |
|                                                                                                                                                                                                      |                   |                 |                                |                   |               | :20           | .0538        | .2393         |
|                                                                                                                                                                                                      |                   |                 |                                |                   |               | :45           | .0237        | .2554         |
|                                                                                                                                                                                                      |                   |                 |                                |                   |               | 1:10          | .0087        | .2614         |
|                                                                                                                                                                                                      |                   |                 |                                |                   |               | 2:00          | .0046        | .2667         |
|                                                                                                                                                                                                      |                   |                 |                                |                   |               | 12:36a        | 0            | .2729         |
| Event of August 3, 1959                                                                                                                                                                              |                   |                 |                                |                   |               |               |              |               |
|                                                                                                                                                                                                      | Raingage R-2      |                 | 8-3-59                         | Raingage R-2      |               | 8-3-59        |              |               |
| 7-3-59                                                                                                                                                                                               | .22               | 0               | 11:10p                         | 0                 | 0             | 11:36p        | 0            | 0             |
| 7-25                                                                                                                                                                                                 | .20               | 0               | :20                            | .90               | .15           | :38           | .0044        | .0001         |
| 7-28                                                                                                                                                                                                 | .05               | 0               | :25                            | 1.80              | .30           | :40           | .0152        | .0004         |
| 7-29                                                                                                                                                                                                 | .58               | 0               | :30                            | 4.80              | .70           | :41           | .0256        | .0007         |
| 8-1                                                                                                                                                                                                  | .35               | T               | :33                            | 2.60              | .83           | :42           | .0395        | .0012         |
|                                                                                                                                                                                                      |                   |                 | :40                            | 1.03              | .95           | :45           | .0772        | .0041         |
|                                                                                                                                                                                                      |                   |                 | :50                            | .36               | 1.01          | :50           | .1161        | .0131         |
|                                                                                                                                                                                                      |                   |                 |                                |                   |               | :55           | .2082        | .0257         |
|                                                                                                                                                                                                      | Raingage R-3      |                 |                                |                   |               | 8-4-59        |              |               |
| 7-3-59                                                                                                                                                                                               | .39               | 0               |                                |                   |               | 12:05a        | .2426        | .0633         |
| 7-24                                                                                                                                                                                                 | .10               | 0               |                                |                   |               | :20           | .1564        | .1144         |
| 7-25                                                                                                                                                                                                 | .13               | 0               |                                |                   |               | :30           | .1234        | .1386         |
| 7-28                                                                                                                                                                                                 | .40               | 0               |                                |                   |               | :45           | .0493        | .1602         |
| 8-1                                                                                                                                                                                                  | .27               | T               |                                |                   |               | 1:00          | .0195        | .1688         |
|                                                                                                                                                                                                      |                   |                 |                                |                   |               | :27           | .0044        | .1742         |
|                                                                                                                                                                                                      |                   |                 |                                |                   |               | 10:04a        | 0            | .1764         |
| <p>Watershed Conditions: 85% of area is bare. Sparse vegetation is predominantly shrubs (creosotebush, snakeweed, and catclaw), with some short grasses (tobosa, three-awn, and curly mesquite).</p> |                   |                 |                                |                   |               |               |              |               |
| <p>Notes: To convert runoff in in/hr. to cfs, multiply by 523.32.<br/> 1/ Rainfall occurred at 2:30 a.m. and is separate from event reported.</p>                                                    |                   |                 |                                |                   |               |               |              |               |





SAFFORD, ARIZONA  
 WATERSHED W-I

| MONTHLY PRECIPITATION AND RUNOFF (Inches) <sup>1/</sup> |       |      |      |      |      |      | Safford, Arizona Watershed W-II<br>Area - 682 acres |      |      |       |      |      |      |       |
|---------------------------------------------------------|-------|------|------|------|------|------|-----------------------------------------------------|------|------|-------|------|------|------|-------|
| Year                                                    | Month | Jan. | Feb. | Mar. | Apr. | May  | June                                                | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year  |
| 1956                                                    | P     | 1.08 | 0.48 | 0    | 0.29 | 0.33 | 0.01                                                | 1.22 | 2.06 | 0     | 0.38 | 0    | 0.32 | 6.17  |
|                                                         | Q     | 0    | 0    | 0    | 0    | 0    | 0                                                   | 0    | .17  | 0     | 0    | 0    | 0    | .17   |
| 1957                                                    | P     | 1.28 | .30  | .34  | .27  | .48  | .18                                                 | 2.43 | 2.86 | 0     | 2.38 | .68  | .82  | 12.02 |
|                                                         | Q     | 0    | 0    | 0    | 0    | 0    | 0                                                   | 0    | .01  | 0     | .03  | 0    | 0    | .04   |
| 1958                                                    | P     | 0    | 1.75 | 2.05 | .63  | 0    | .67                                                 | 1.71 | 2.12 | 1.07  | .48  | .40  | 0    | 10.88 |
|                                                         | Q     | 0    | 0    | 0    | 0    | 0    | 0                                                   | 0    | 0    | 0     | 0    | 0    | 0    | 0     |
| 1959                                                    | P     | 0    | .55  | 0    | .02  | 0    | .03                                                 | 3.32 | 2.02 | 0     | 1.95 | .39  | 1.24 | 9.52  |
|                                                         | Q     | 0    | 0    | 0    | 0    | 0    | 0                                                   | .45  | .02  | 0     | 0    | 0    | 0    | .47   |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS |                   |                                           |       |         |       |         | Safford, Arizona Watershed W-II |          |       |       |       |        |       |        |       |      |
|-------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------------------------------|-------|---------|-------|---------|---------------------------------|----------|-------|-------|-------|--------|-------|--------|-------|------|
| YEAR                                                                                                                    | MAXIMUM DISCHARGE | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |       |         |       |         |                                 |          |       |       |       |        |       |        |       |      |
|                                                                                                                         |                   | 1 hour                                    |       | 2 hours |       | 6 hours |                                 | 12 hours |       | 1 day |       | 2 days |       | 8 days |       |      |
|                                                                                                                         |                   | Date                                      | Rate  | Date    | Vol.  | Date    | Vol.                            | Date     | Vol.  | Date  | Vol.  | Date   | Vol.  | Date   | Vol.  |      |
| 1956                                                                                                                    | 8-20              | 0.41                                      | 8-20  | 0.12    | 8-20  | 0.13    | 8-20                            | 0.13     | 8-20  | 0.13  | 8-20  | 0.13   | 8-20  | 0.13   | 8-16  | 0.17 |
| 1957                                                                                                                    | 8-30              | .06                                       | 10-12 | .02     | 10-12 | .03     | 10-12                           | .03      | 10-12 | .03   | 10-12 | .03    | 10-12 | .03    | 10-12 | .03  |
| 1958                                                                                                                    |                   | 0                                         |       | 0       |       | 0       |                                 | 0        |       | 0     |       | 0      |       |        |       | 0    |
| 1959                                                                                                                    | 7-16              | 1.20                                      | 7-16  | .41     | 7-16  | .41     | 7-16                            | .41      | 7-16  | .41   | 7-16  | .41    | 7-16  | .41    | 7-16  | .41  |

Notes: Quality of records: monthly P and Q, excellent; Annual Max discharges and volume, excellent. Watershed conditions: Sparsely vegetated rangeland. About 75% of area is bare. Vegetative cover is about equally divided between short grasses (black, hairy and side-oats grama) and shrubs (creosotebush, beargrass and mesquite). <sup>1/</sup> All monthly P values weighted by Thiessen method, using 3 raingages.

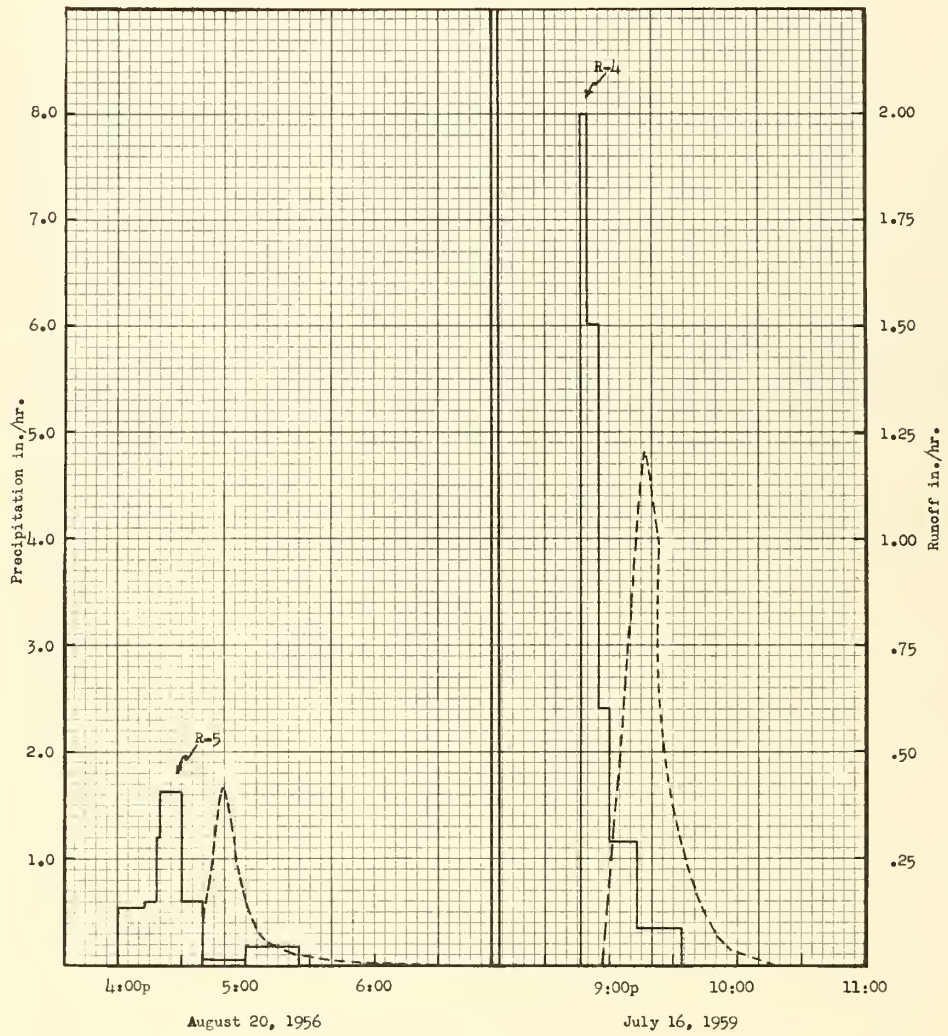
| SELECTED RUNOFF EVENTS                     |                   |                 |               |                            |               | Safford, Arizona Watershed W-II |              |               |
|--------------------------------------------|-------------------|-----------------|---------------|----------------------------|---------------|---------------------------------|--------------|---------------|
| Antecedent conditions                      |                   |                 | Rainfall      |                            |               | Runoff                          |              |               |
| Date                                       | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr)          | Acc. (inches) | Date and time                   | Rate (in/hr) | Acc. (inches) |
| Event of August 20, 1956                   |                   |                 |               |                            |               |                                 |              |               |
| 7-20-56                                    | Raingage R-5      |                 | 8-20-56       | Raingage R-5 <sup>1/</sup> |               | 8-20-56                         |              |               |
|                                            | 0.10              | 0               | 4:00p         | 0                          | 0             | 4:39p                           | 0            | 0             |
| 7-23                                       | .36               | 0               | :13           | .55                        | .12           | :40                             | .1115        | .0017         |
| 7-26                                       | .37               | 0               | :18           | .60                        | .17           | :43                             | .1986        | .0092         |
| 7-29                                       | .10               | 0               | :20           | 1.20                       | .25           | :46                             | .3175        | .0216         |
| 8-11                                       | .36               | 0               | :30           | 1.62                       | .52           | :49                             | .4118        | .0395         |
| 8-12                                       | .05               | 0               | :40           | .60                        | .62           | :54                             | .3117        | .0707         |
| 8-13                                       | .41               | 0               | 5:00          | .04                        | .63           | :56                             | .2436        | .0799         |
| 8-15                                       | .12               | 0               | :25           | .19                        | .71           | :59                             | .1769        | .0901         |
| 8-16                                       | .48               | .04             |               |                            |               | 5:01                            | .1302        | .0951         |
|                                            |                   |                 |               |                            |               | 5:05                            | .0838        | .1020         |
|                                            |                   |                 |               |                            |               | :10                             | .0569        | .1076         |
|                                            |                   |                 |               |                            |               | :20                             | .0333        | .1150         |
|                                            |                   |                 |               |                            |               | :30                             | .0195        | .1192         |
|                                            |                   |                 |               |                            |               | :55                             | .0084        | .1237         |
|                                            |                   |                 |               |                            |               | 6:04                            | .0052        | .1247         |
|                                            |                   |                 |               |                            |               | :30                             | 0            | .1260         |
| Watershed Conditions:<br>(see notes above) |                   |                 |               |                            |               |                                 |              |               |

Notes: To convert runoff in in/hr. to cfs, multiply by 687.68.  
<sup>1/</sup> R-7 Weekly Gage had 0.90 rainfall for August 20, 1956.  
 For watershed map see Selected Runoff Events for Small Agricultural Watersheds in the United States, ARS-30C, January, 1960.



| SELECTED RUNOFF EVENTS                                                                                                                                                                                                                      |                   |                 | Safford, Arizona Watershed W-II |                   |               |               |              |               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------------|---------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions                                                                                                                                                                                                                       |                   |                 | Rainfall                        |                   |               | Runoff        |              |               |
| Date                                                                                                                                                                                                                                        | Rainfall (inches) | Runoff (inches) | Date and time                   | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of July 16, 1959</u>                                                                                                                                                                                                               |                   |                 |                                 |                   |               |               |              |               |
|                                                                                                                                                                                                                                             | Raingage R-4      |                 | 7-16-59                         | Raingage R-4      |               | 7-16-59       |              |               |
| 7-1-59                                                                                                                                                                                                                                      | 0.45              | 0               | 8:47p                           | 0                 | 0             | 8:57p         | 0            | 0             |
| 7-12                                                                                                                                                                                                                                        | .10               | 0               | :50                             | 8.00              | 0.40          | 9:01          | .2160        | .0113         |
| 7-15                                                                                                                                                                                                                                        | .13               | 0               | :55                             | 6.00              | .90           | :02           | .2798        | .0160         |
|                                                                                                                                                                                                                                             |                   |                 | 9:00                            | 2.40              | 1.10          | :04           | .3915        | .0277         |
|                                                                                                                                                                                                                                             | Raingage R-5      |                 | :13                             | 1.15              | 1.35          | :05           | .4596        | .0353         |
| 7-1-59                                                                                                                                                                                                                                      | .30               | 0               | :34                             | .34               | 1.47          | :06           | .5191        | .0438         |
| 7-12                                                                                                                                                                                                                                        | .10               | 0               |                                 |                   |               | :08           | .6873        | .0611         |
| 7-15                                                                                                                                                                                                                                        | .13               | 0               |                                 |                   |               | :10           | .7830        | .0817         |
|                                                                                                                                                                                                                                             |                   |                 |                                 |                   |               | :17           | 1.2035       | .1990         |
|                                                                                                                                                                                                                                             | Raingage R-7      |                 |                                 |                   |               | :24           | .9976        | .3076         |
| 7-1-59                                                                                                                                                                                                                                      | .10               | 0               |                                 |                   |               | :26           | .5191        | .3373         |
| 7-12                                                                                                                                                                                                                                        | .13               | 0               |                                 |                   |               | :31           | .3538        | .3658         |
| 7-15                                                                                                                                                                                                                                        | .05               | 0               |                                 |                   |               | :40           | .1769        | .3918         |
|                                                                                                                                                                                                                                             |                   |                 |                                 |                   |               | :45           | .1115        | .4011         |
|                                                                                                                                                                                                                                             |                   |                 |                                 |                   |               | :50           | .0683        | .4068         |
|                                                                                                                                                                                                                                             |                   |                 |                                 |                   |               | :56           | .0392        | .4121         |
|                                                                                                                                                                                                                                             |                   |                 |                                 |                   |               | 10:17         | 0            | .4126         |
| <p>Watershed Conditions: Sparsely vegetated rangeland. About 75% of area is bare. Vegetative cover is about equally divided between short grasses (black, hairy and side-oats grama) and shrubs (creosotebush, beargrass and mesquite).</p> |                   |                 |                                 |                   |               |               |              |               |

Notes: To convert runoff in in/hr. to cfs multiply by 687.68.



SAFFORD, ARIZONA WATERSHED W-II

| MONTHLY PRECIPITATION AND RUNOFF (Inches) <u>1/</u> |        |      |      |      |      |      | Safford, Arizona Watershed W-IV<br>Area- Area - 764 acres |      |       |      |      |      |       |
|-----------------------------------------------------|--------|------|------|------|------|------|-----------------------------------------------------------|------|-------|------|------|------|-------|
| Month                                               | Jan.   | Feb. | Mar. | Apr. | May  | June | July                                                      | Aug. | Sept. | Oct. | Nov. | Dec. | Year  |
| 1956                                                | P 0.21 | 0.16 | 0    | 0.16 | 0.06 | 0.07 | 1.63                                                      | 0.17 | 0.12  | 0.26 | 0    | 0.36 | 3.20  |
|                                                     | Q 0    | 0    | 0    | 0    | 0    | 0    | .03                                                       | 0    | 0     | 0    | 0    | 0    | .03   |
| 1957                                                | P 1.38 | .33  | .68  | .12  | .08  | .10  | 2.52                                                      | 1.74 | .10   | 1.02 | .40  | .24  | 8.71  |
|                                                     | Q 0    | 0    | 0    | 0    | 0    | 0    | .03                                                       | .05  | 0     | 0    | 0    | 0    | .08   |
| 1958                                                | P .09  | 1.16 | 1.44 | .75  | .11  | 1.47 | 2.85                                                      | 2.20 | 2.48  | .45  | .20  | 0    | 13.20 |
|                                                     | Q 0    | 0    | 0    | 0    | 0    | T    | .19                                                       | .37  | 0     | 0    | 0    | 0    | .56   |
| 1959                                                | P .03  | .26  | 0    | 0    | 0    | 0    | 1.05                                                      | 2.68 | 0     | 1.56 | .07  | .80  | 6.45  |
|                                                     | Q 0    | 0    | 0    | 0    | 0    | 0    | 0                                                         | .04  | 0     | 0    | 0    | 0    | .04   |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS Safford, Arizona Watershed W-IV

| YEAR | MAXIMUM DISCHARGE |      | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |      |         |      |         |      |          |      |       |      |        |      |        |      |
|------|-------------------|------|-------------------------------------------|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
|      |                   |      | 1 hour                                    |      | 2 hours |      | 6 hours |      | 12 hours |      | 1 day |      | 2 days |      | 8 days |      |
|      | Date              | Rate | Date                                      | Vol. | Date    | Vol. | Date    | Vol. | Date     | Vol. | Date  | Vol. | Date   | Vol. | Date   | Vol. |
| 1956 | 7-1               | 0.04 | 7-27                                      | 0.02 | 7-27    | 0.02 | 7-27    | 0.02 | 7-27     | 0.02 | 7-27  | 0.02 | 7-27   | 0.02 | 7-27   | 0.02 |
| 1957 | 8-22              | .05  | 8-22                                      | .03  | 8-22    | .04  | 8-22    | .05  | 8-22     | .05  | 8-22  | .05  | 8-22   | .05  | 8-22   | .05  |
| 1958 | 8-16              | .66  | 8-16                                      | .33  | 8-16    | .37  | 8-16    | .37  | 8-16     | .37  | 8-16  | .37  | 8-16   | .37  | 8-16   | .37  |
| 1959 | 8-2               | .03  | 8-2                                       | .02  | 8-2     | .02  | 8-2     | .02  | 8-2      | .02  | 8-2   | .02  | 8-2    | .02  | 8-2    | .02  |

Notes: Quality of Records: Monthly P and Q, excellent; Annual Maximum Discharges and Volumes, excellent. Watershed Conditions: 80% of area is bare. Sparse vegetation is composed entirely of shrubs (creosotebush, snakeweed, cactus, and mesquite) except for trace of short grasses. 1/ All monthly P values weighted by Thiessen method using 3 raingages.

SELECTED RUNOFF EVENTS Safford, Arizona Watershed W-IV

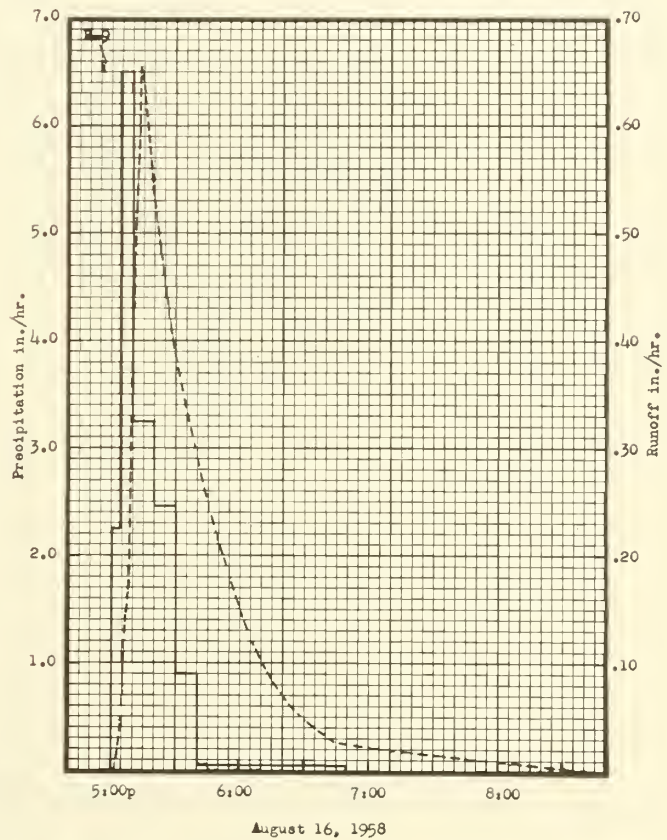
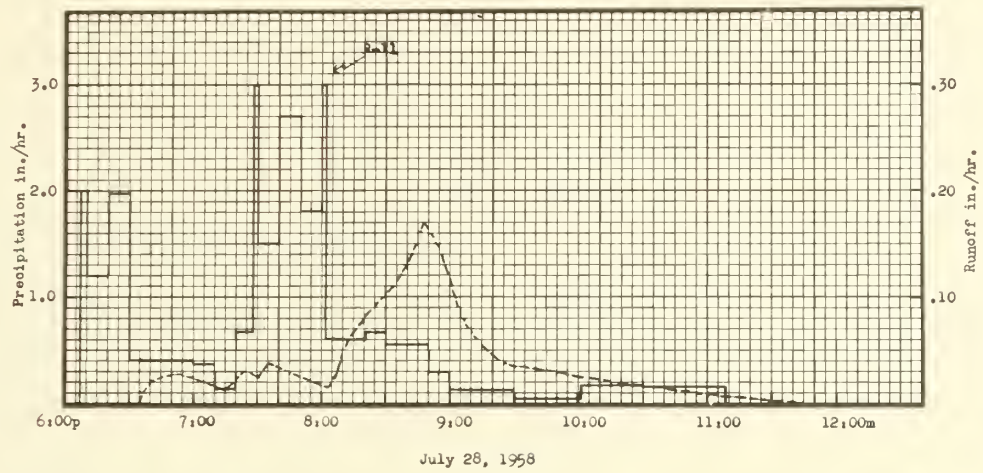
| Antecedent conditions  |                       |                 | Rainfall         |                   |               | Runoff           |              |               |
|------------------------|-----------------------|-----------------|------------------|-------------------|---------------|------------------|--------------|---------------|
| Date                   | Rainfall (inches)     | Runoff (inches) | Date and time    | Intensity (in/hr) | Acc. (inches) | Date and time    | Rate (in/hr) | Acc. (inches) |
| Event of July 28, 1958 |                       |                 |                  |                   |               |                  |              |               |
| 6-30-58                | Raingage R-11<br>0.72 | T               | 7-28-58<br>6:07p | Raingage<br>0     | R-11<br>0     | 7-28-58<br>6:35p | 0            | 0             |
| 7-5                    | .24                   | 0               | :10              | 2.00              | .10           | :37              | .0116        | .0002         |
| 7-14                   | .36                   | .02             | :20              | 1.20              | .30           | :42              | .0221        | .0018         |
| 7-18                   | .46                   | 0               | :30              | 1.98              | .63           | :53              | .0270        | .0060         |
| 6-30-58                | Raingage R-9<br>.40   | T               | 7:00             | .40               | .83           | 7:15             | .0112        | .0127         |
| 7-5                    | .09                   | 0               | :10              | .36               | .89           | :25              | .0312        | .0165         |
| 7-14                   | .85                   | .02             | :20              | .12               | .91           | :31              | .0211        | .0193         |
| 7-18                   | .58                   | 0               | :28              | .68               | 1.00          | :33              | .0312        | .0203         |
|                        |                       |                 | :30              | 3.00              | 1.10          | :35              | .0380        | .0214         |
| 6-30-58                | Raingage R-10<br>.53  | T               | :40              | 1.50              | 1.35          | :55              | .0207        | .0305         |
| 7-5                    | .41                   | 0               | :50              | 2.70              | 1.80          | 8:03             | .0111        | .0327         |
| 7-14                   | .50                   | .02             | 8:00             | 1.80              | 2.10          | :06              | .0207        | .0335         |
| 7-18                   | .60                   | 0               | :02              | 3.00              | 2.20          | :08              | .0359        | .0345         |
|                        |                       |                 | :21              | .60               | 2.40          | :10              | .0467        | .0359         |
|                        |                       |                 | :30              | .67               | 2.50          | :15              | .0689        | .0407         |
|                        |                       |                 | :50              | .56               | 2.64          | :23              | .0897        | .0513         |
|                        |                       |                 | 9:00             | .30               | 2.69          | :34              | .1102        | .0696         |
|                        |                       |                 | :30              | .12               | 2.75          | :41              | .1339        | .0838         |
|                        |                       |                 | 10:02            | .04               | 2.77          | :48              | .1716        | .0991         |
|                        |                       |                 | :30              | .17               | 2.85          | :56              | .1443        | .1201         |
|                        |                       |                 | 11:08            | .16               | 2.93          | 9:05             | .0847        | .1378         |
|                        |                       |                 |                  |                   |               | :15              | .0551        | .1491         |
|                        |                       |                 |                  |                   |               | :25              | .0389        | .1560         |
|                        |                       |                 |                  |                   |               | :46              | .0307        | .1681         |
|                        |                       |                 |                  |                   |               | 11:46            | 0            | .1722         |

Notes: To convert runoff in in/hr. to cfs, multiply by 770.36.

| SELECTED RUNOFF EVENTS                                                                                                                                                                       |                      |                 |                  |                   |               | Safford, Arizona Watershed W-IV |              |               |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-----------------|------------------|-------------------|---------------|---------------------------------|--------------|---------------|
| Antecedent conditions                                                                                                                                                                        |                      |                 | Rainfall         |                   |               | Runoff                          |              |               |
| Date                                                                                                                                                                                         | Rainfall (inches)    | Runoff (inches) | Date and time    | Intensity (in/hr) | Acc. (inches) | Date and time                   | Rate (in/hr) | Acc. (inches) |
| Event of August 16, 1958                                                                                                                                                                     |                      |                 |                  |                   |               |                                 |              |               |
| 7-18-58                                                                                                                                                                                      | Raingage R-9<br>.58  | 0               | 8-16-58<br>5:00p | Raingage<br>0     | R-9<br>0      | 8-16-58<br>5:02p                | 0            | 0             |
| 7-28                                                                                                                                                                                         | 2.30                 | .17             | :04              | 2.25              | .15           | :04                             | .0467        | .0002         |
| 8-3                                                                                                                                                                                          | .15                  | 0               | :10              | 6.50              | .80           | :05                             | .0776        | .0012         |
| 8-10                                                                                                                                                                                         | .07                  | 0               | :20              | 3.24              | 1.34          | :07                             | .1443        | .0049         |
| 7-18-58                                                                                                                                                                                      | Raingage R-10<br>.60 | 0               | :30              | 2.46              | 1.75          | :08                             | .1794        | .0077         |
| 7-28                                                                                                                                                                                         | 0                    | .17             | :40              | .90               | 1.90          | :09                             | .2886        | .0115         |
| 8-3                                                                                                                                                                                          | .17                  | 0               | 6:50             | .05               | 1.96          | :10                             | .4082        | .0173         |
| 8-10                                                                                                                                                                                         | .08                  | 0               |                  |                   |               | :11                             | .4342        | .0243         |
|                                                                                                                                                                                              |                      |                 |                  |                   |               | :12                             | .5148        | .0321         |
| 7-18-58                                                                                                                                                                                      | Raingage R-11<br>.46 | 0               |                  |                   |               | :13                             | .5980        | .0414         |
| 7-28                                                                                                                                                                                         | 3.03                 | .17             |                  |                   |               | :14                             | e.6565       | .0518         |
| 8-3                                                                                                                                                                                          | .06                  | 0               |                  |                   |               | :15                             | .6383        | .0625         |
| 8-10                                                                                                                                                                                         | .14                  | 0               |                  |                   |               | :20                             | .5317        | .1113         |
|                                                                                                                                                                                              |                      |                 |                  |                   |               | :25                             | .4524        | .1524         |
|                                                                                                                                                                                              |                      |                 |                  |                   |               | :29                             | .3991        | .1804         |
|                                                                                                                                                                                              |                      |                 |                  |                   |               | :40                             | .2886        | .2438         |
|                                                                                                                                                                                              |                      |                 |                  |                   |               | :50                             | .2132        | .2856         |
|                                                                                                                                                                                              |                      |                 |                  |                   |               | 6:00                            | .1508        | .3159         |
|                                                                                                                                                                                              |                      |                 |                  |                   |               | :04                             | .1313        | .3253         |
|                                                                                                                                                                                              |                      |                 |                  |                   |               | :07                             | .1170        | .3315         |
|                                                                                                                                                                                              |                      |                 |                  |                   |               | :15                             | .0872        | .3451         |
|                                                                                                                                                                                              |                      |                 |                  |                   |               | :25                             | .0589        | .3573         |
|                                                                                                                                                                                              |                      |                 |                  |                   |               | :32                             | .0467        | .3635         |
|                                                                                                                                                                                              |                      |                 |                  |                   |               | :44                             | .0259        | .3707         |
|                                                                                                                                                                                              |                      |                 |                  |                   |               | 8:44                            | 0            | .3745         |
| <p>Watershed Conditions: 80% of area is bare. Sparse vegetation is composed almost entirely of shrubs (creosotebush, snakeweed, cactus, and mesquite) except for trace of short grasses.</p> |                      |                 |                  |                   |               |                                 |              |               |

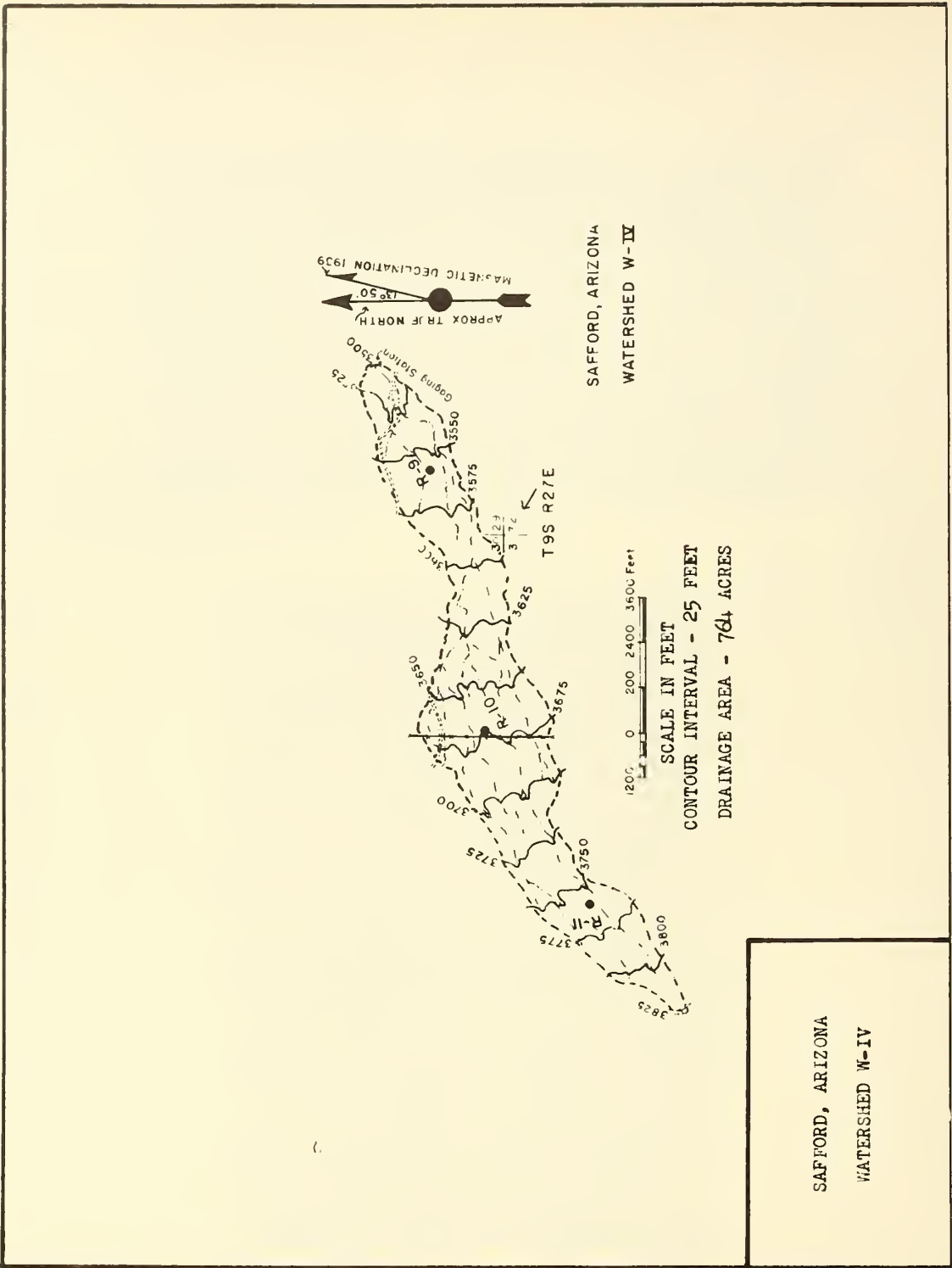
Notes: To convert runoff in in/hr. to cfs, multiply by 770.36.

e Partially estimated from this point on.



SAFFORD, ARIZONA WATERSHED W-IV

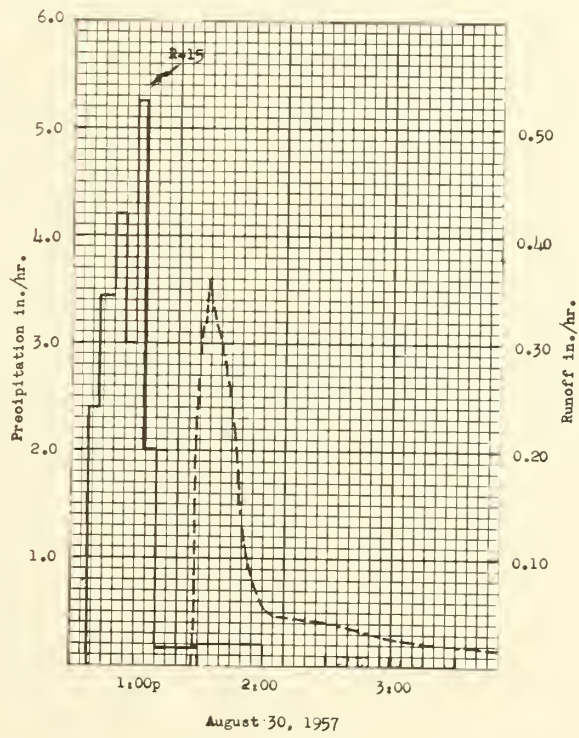
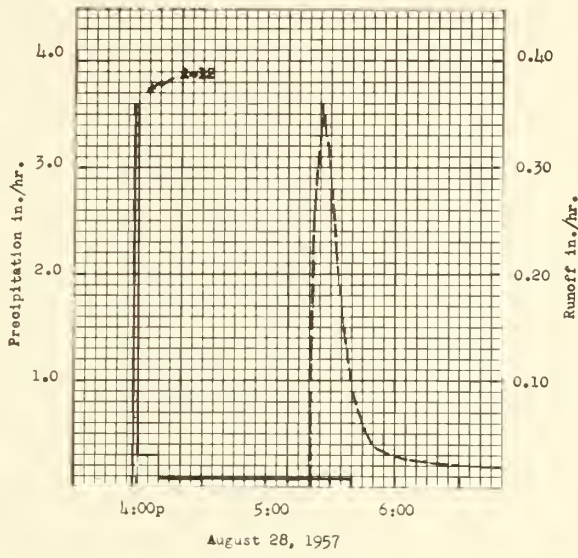




| MONTHLY PRECIPITATION AND RUNOFF (Inches) $\frac{1}{2}$                                                                                                                                                                                                                                                                                                      |                       |                 |                                           |                   |                         |                  |                                |              |          |      |       |      | Safford, Arizona Watershed W-V<br>Area - 723 acres |      |        |      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------|-------------------------------------------|-------------------|-------------------------|------------------|--------------------------------|--------------|----------|------|-------|------|----------------------------------------------------|------|--------|------|
| Month<br>Year                                                                                                                                                                                                                                                                                                                                                | Jan.                  | Feb.            | Mar.                                      | Apr.              | May                     | June             | July                           | Aug.         | Sept.    | Oct. | Nov.  | Dec. | Year                                               |      |        |      |
| 1956                                                                                                                                                                                                                                                                                                                                                         | P 0.30                | 0.18            | 0                                         | 0.18              | 0.24                    | 0.64             | 3.20                           | 1.00         | 0        | 0.24 | 0     | 0.14 | 6.12                                               |      |        |      |
|                                                                                                                                                                                                                                                                                                                                                              | Q 0                   | 0               | 0                                         | 0                 | 0                       | 0                | .01                            | .54          | 0        | 0    | 0     | 0    | .55                                                |      |        |      |
| 1957                                                                                                                                                                                                                                                                                                                                                         | P 1.87                | .53             | .70                                       | .17               | .42                     | .57              | 2.39                           | 3.30         | .07      | 1.04 | .30   | .34  | 11.70                                              |      |        |      |
|                                                                                                                                                                                                                                                                                                                                                              | Q 0                   | 0               | 0                                         | 0                 | 0                       | .02              | .14                            | .31          | 0        | 0    | 0     | 0    | .47                                                |      |        |      |
| 1958                                                                                                                                                                                                                                                                                                                                                         | P 0                   | 1.41            | 1.98                                      | .50               | .16                     | .58              | 1.41                           | 1.47         | 1.19     | .78  | .29   | 0    | 9.77                                               |      |        |      |
|                                                                                                                                                                                                                                                                                                                                                              | Q 0                   | 0               | 0                                         | 0                 | 0                       | 0                | .01                            | 0            | 0        | 0    | 0     | 0    | .01                                                |      |        |      |
| 1959                                                                                                                                                                                                                                                                                                                                                         | P .02                 | .77             | 0                                         | .06               | 0                       | .03              | 2.10                           | 2.74         | .15      | 1.11 | .91   | .85  | 8.74                                               |      |        |      |
|                                                                                                                                                                                                                                                                                                                                                              | Q 0                   | 0               | 0                                         | 0                 | 0                       | 0                | 0                              | .05          | 0        | T    | 0     | 0    | .05                                                |      |        |      |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS                                                                                                                                                                                                                                      |                       |                 |                                           |                   |                         |                  | Safford, Arizona Watershed W-V |              |          |      |       |      |                                                    |      |        |      |
| YEAR                                                                                                                                                                                                                                                                                                                                                         | MAXIMUM DISCHARGE     |                 | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |                   |                         |                  |                                |              |          |      |       |      |                                                    |      |        |      |
|                                                                                                                                                                                                                                                                                                                                                              |                       |                 | 1 hour                                    |                   | 2 hours                 |                  | 6 hours                        |              | 12 hours |      | 1 day |      | 2 days                                             |      | 8 days |      |
|                                                                                                                                                                                                                                                                                                                                                              | Date                  | Rate            | Date                                      | Vol.              | Date                    | Vol.             | Date                           | Vol.         | Date     | Vol. | Date  | Vol. | Date                                               | Vol. | Date   | Vol. |
| 1956                                                                                                                                                                                                                                                                                                                                                         | 8-15                  | 0.15            | 8-4                                       | 0.08              | 8-15                    | 0.13             | 8-15                           | 0.22         | 8-15     | 0.22 | 8-15  | 0.22 | 8-14                                               | 0.35 | 8-14   | 0.35 |
| 1957                                                                                                                                                                                                                                                                                                                                                         | 8-30                  | .36             | 8-30                                      | .14               | 8-30                    | .16              | 8-30                           | .16          | 8-30     | .16  | 8-30  | .16  | 8-28                                               | .26  | 8-28   | .26  |
| 1958                                                                                                                                                                                                                                                                                                                                                         | 7-30                  | .01             | 7-30                                      | T                 | 7-30                    | .01              | 7-30                           | .01          | 7-30     | .01  | 7-30  | .01  | 7-30                                               | .01  | 7-30   | .01  |
| 1959                                                                                                                                                                                                                                                                                                                                                         | 8-1                   | .03             | 8-1                                       | .01               | 8-1                     | .02              | 8-1                            | .04          | 8-1      | .04  | 8-1   | .04  | 8-1                                                | .04  | 8-1    | .04  |
| Notes: Quality of records: monthly P and Q, excellent; Annual Max. discharges and volume, excellent. Watershed conditions: About 80% of area is bare. Vegetation consists mostly of short grasses (black grama, side-oats grama, and tabosa), with some shrubs and forbs. $\frac{1}{2}$ All monthly P values weighted by Thiessen method, using 4 raingages. |                       |                 |                                           |                   |                         |                  |                                |              |          |      |       |      |                                                    |      |        |      |
| SELECTED RUNOFF EVENTS                                                                                                                                                                                                                                                                                                                                       |                       |                 |                                           |                   |                         |                  | Safford, Arizona Watershed W-V |              |          |      |       |      |                                                    |      |        |      |
| Antecedent conditions                                                                                                                                                                                                                                                                                                                                        |                       |                 | Rainfall                                  |                   |                         |                  | Runoff                         |              |          |      |       |      |                                                    |      |        |      |
| Date                                                                                                                                                                                                                                                                                                                                                         | Rainfall (inches)     | Runoff (inches) | Date and time                             | Intensity (in/hr) | Acc. (inches)           | Date and time    | Rate (in/hr)                   | Acc (inches) |          |      |       |      |                                                    |      |        |      |
| Event of August 28, 1957                                                                                                                                                                                                                                                                                                                                     |                       |                 |                                           |                   |                         |                  |                                |              |          |      |       |      |                                                    |      |        |      |
| 8-4-57                                                                                                                                                                                                                                                                                                                                                       | Raingage R-12<br>0.25 | 0               | 8-28-57<br>3:58p                          | Raingage<br>0     | R-12 $\frac{1}{2}$<br>0 | 8-28-57<br>5:21p | 0                              | 0            |          |      |       |      |                                                    |      |        |      |
| 8-5                                                                                                                                                                                                                                                                                                                                                          | .40                   | 0               | 4:00                                      | 3.60              | .12                     | :22              | .2041                          | .0020        |          |      |       |      |                                                    |      |        |      |
| 8-13                                                                                                                                                                                                                                                                                                                                                         | .25                   | .05             | :10                                       | .30               | .17                     | :24              | .3069                          | .0105        |          |      |       |      |                                                    |      |        |      |
| 8-19                                                                                                                                                                                                                                                                                                                                                         | .24                   | 0               | 5:40                                      | .09               | .20                     | :25              | .3288                          | .0158        |          |      |       |      |                                                    |      |        |      |
| 8-4-57                                                                                                                                                                                                                                                                                                                                                       | Raingage R-13<br>.09  | 0               |                                           |                   |                         | :26              | .3603                          | .0215        |          |      |       |      |                                                    |      |        |      |
| 8-5                                                                                                                                                                                                                                                                                                                                                          | .44                   | 0               |                                           |                   |                         | :30              | .2959                          | .0434        |          |      |       |      |                                                    |      |        |      |
| 8-10                                                                                                                                                                                                                                                                                                                                                         | .15                   | 0               |                                           |                   |                         | :32              | .2356                          | .0522        |          |      |       |      |                                                    |      |        |      |
| 8-13                                                                                                                                                                                                                                                                                                                                                         | .60                   | .05             |                                           |                   |                         | :35              | .1754                          | .0622        |          |      |       |      |                                                    |      |        |      |
| 8-19                                                                                                                                                                                                                                                                                                                                                         | .15                   | 0               |                                           |                   |                         | :40              | .0972                          | .0736        |          |      |       |      |                                                    |      |        |      |
| 8-22                                                                                                                                                                                                                                                                                                                                                         | .12                   | 0               |                                           |                   |                         | :50              | .0403                          | .0838        |          |      |       |      |                                                    |      |        |      |
| 8-25                                                                                                                                                                                                                                                                                                                                                         | .10                   | 0               |                                           |                   |                         | :55              | .0323                          | .0868        |          |      |       |      |                                                    |      |        |      |
|                                                                                                                                                                                                                                                                                                                                                              |                       |                 |                                           |                   |                         | 6:05             | .0282                          | .0918        |          |      |       |      |                                                    |      |        |      |
|                                                                                                                                                                                                                                                                                                                                                              |                       |                 |                                           |                   |                         | 8:38             | 0                              | .0962        |          |      |       |      |                                                    |      |        |      |
| 8-4                                                                                                                                                                                                                                                                                                                                                          | Raingage R-14<br>.10  | 0               |                                           |                   |                         |                  |                                |              |          |      |       |      |                                                    |      |        |      |
| 8-5                                                                                                                                                                                                                                                                                                                                                          | .55                   | 0               |                                           |                   |                         |                  |                                |              |          |      |       |      |                                                    |      |        |      |
| 8-10                                                                                                                                                                                                                                                                                                                                                         | .15                   | 0               |                                           |                   |                         |                  |                                |              |          |      |       |      |                                                    |      |        |      |
| 8-13                                                                                                                                                                                                                                                                                                                                                         | .80                   | .05             |                                           |                   |                         |                  |                                |              |          |      |       |      |                                                    |      |        |      |
| 8-15                                                                                                                                                                                                                                                                                                                                                         | .31                   | 0               |                                           |                   |                         |                  |                                |              |          |      |       |      |                                                    |      |        |      |
| 8-17                                                                                                                                                                                                                                                                                                                                                         | .29                   | 0               |                                           |                   |                         |                  |                                |              |          |      |       |      |                                                    |      |        |      |
| 8-19                                                                                                                                                                                                                                                                                                                                                         | .14                   | 0               |                                           |                   |                         |                  |                                |              |          |      |       |      |                                                    |      |        |      |
| 8-22                                                                                                                                                                                                                                                                                                                                                         | .14                   | 0               |                                           |                   |                         |                  |                                |              |          |      |       |      |                                                    |      |        |      |
| 8-25                                                                                                                                                                                                                                                                                                                                                         | .09                   | 0               |                                           |                   |                         |                  |                                |              |          |      |       |      |                                                    |      |        |      |
| Watershed Conditions:<br>(See Notes above)                                                                                                                                                                                                                                                                                                                   |                       |                 |                                           |                   |                         |                  |                                |              |          |      |       |      |                                                    |      |        |      |
| Notes: To convert runoff in in/hr. to cfs, multiply by 729.02.<br>$\frac{1}{2}$ Weekly Raingage R-13 recorded 0.80 rainfall.                                                                                                                                                                                                                                 |                       |                 |                                           |                   |                         |                  |                                |              |          |      |       |      |                                                    |      |        |      |

Cooperative Research Project of USDA and Arizona Agricultural Experiment Station

| SELECTED RUNOFF EVENTS                                                                                                                                                             |                       |                 |                   |                   |               | Safford, Arizona Watershed W-V |              |               |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------|-------------------|-------------------|---------------|--------------------------------|--------------|---------------|
| Antecedent conditions                                                                                                                                                              |                       |                 | Rainfall          |                   |               | Runoff                         |              |               |
| Date                                                                                                                                                                               | Rainfall (inches)     | Runoff (inches) | Date and time     | Intensity (in/hr) | Acc. (inches) | Date and time                  | Rate (in/hr) | Acc. (inches) |
| <u>Event of August 30, 1957</u>                                                                                                                                                    |                       |                 |                   |                   |               |                                |              |               |
| 8-4-57                                                                                                                                                                             | Raingage R-15<br>0.56 | 0               | 8-30-57<br>12:38p | Raingage<br>0     | R-15<br>0     | 8-30-57<br>1:27p               | 0            | 0             |
| 8-5                                                                                                                                                                                | .57                   | 0               | :43               | 2.40              | .20           | :28                            | .2041        | .0024         |
| 8-13                                                                                                                                                                               | 1.20                  | .05             | :50               | 3.43              | .60           | :30                            | .2836        | .0106         |
| 8-19                                                                                                                                                                               | .45                   | 0               | :55               | 4.20              | .95           | :32                            | .3178        | .0207         |
| 8-22                                                                                                                                                                               | .18                   | 0               | 1:00              | 3.00              | 1.20          | :33                            | .3233        | .0261         |
| 8-25                                                                                                                                                                               | .14                   | 0               | :04               | 5.25              | 1.55          | :34                            | .3603        | .0318         |
| 8-28                                                                                                                                                                               | .18                   | .10             | :10               | 2.00              | 1.75          | :35                            | .3452        | .0377         |
|                                                                                                                                                                                    |                       |                 | :30               | .15               | 1.80          | :37                            | .3233        | .0489         |
|                                                                                                                                                                                    |                       |                 | 2:00              | .20               | 1.90          | :40                            | .3044        | .0645         |
| 8-4                                                                                                                                                                                | Raingage R-14<br>.10  | 0               |                   |                   |               | :46                            | .2260        | .0924         |
| 8-5                                                                                                                                                                                | .55                   | 0               |                   |                   |               | :49                            | .1644        | .1022         |
| 8-10                                                                                                                                                                               | .15                   | 0               |                   |                   |               | :54                            | .0918        | .1129         |
| 8-13                                                                                                                                                                               | .80                   | .05             |                   |                   |               | 2:00                           | .0592        | .1204         |
| 8-15                                                                                                                                                                               | .31                   | 0               |                   |                   |               | :05                            | .0493        | .1249         |
| 8-17                                                                                                                                                                               | .29                   | 0               |                   |                   |               | :28                            | .0411        | .1419         |
| 8-19                                                                                                                                                                               | .14                   | 0               |                   |                   |               | :49                            | .0310        | .1549         |
| 8-22                                                                                                                                                                               | .14                   | 0               |                   |                   |               | 3:00                           | .0268        | .1602         |
| 8-25                                                                                                                                                                               | .09                   | 0               |                   |                   |               | 5:32                           | 0            | .1643         |
| 8-28                                                                                                                                                                               | .21                   | .10             |                   |                   |               |                                |              |               |
| 8-4                                                                                                                                                                                | Raingage R-13<br>.09  | 0               |                   |                   |               |                                |              |               |
| 8-5                                                                                                                                                                                | .44                   | 0               |                   |                   |               |                                |              |               |
| 8-10                                                                                                                                                                               | .15                   | 0               |                   |                   |               |                                |              |               |
| 8-13                                                                                                                                                                               | .60                   | .05             |                   |                   |               |                                |              |               |
| 8-19                                                                                                                                                                               | .15                   | 0               |                   |                   |               |                                |              |               |
| 8-22                                                                                                                                                                               | .12                   | 0               |                   |                   |               |                                |              |               |
| 8-25                                                                                                                                                                               | .10                   | 0               |                   |                   |               |                                |              |               |
| 8-28                                                                                                                                                                               | .80                   | .10             |                   |                   |               |                                |              |               |
| 8-4                                                                                                                                                                                | Raingage R-12<br>.25  | 0               |                   |                   |               |                                |              |               |
| 8-5                                                                                                                                                                                | .40                   | 0               |                   |                   |               |                                |              |               |
| 8-13                                                                                                                                                                               | .25                   | .05             |                   |                   |               |                                |              |               |
| 8-19                                                                                                                                                                               | .24                   | 0               |                   |                   |               |                                |              |               |
| 8-28                                                                                                                                                                               | .20                   | .10             |                   |                   |               |                                |              |               |
| <p><u>Watershed Conditions:</u> About 80% of area is bare. Vegetation consists mostly of short grasses (black grama, side-oats grama, and tabosa), with some shrubs and forbs.</p> |                       |                 |                   |                   |               |                                |              |               |
| <p>Notes: To convert runoff in in/hr. to cfs, multiply by 729.02</p>                                                                                                               |                       |                 |                   |                   |               |                                |              |               |



SAFFORD, ARIZONA WATERSHED W-V



SCALE - FEET  
 CONTOUR INTERVAL - 50 FEET  
 DRAINAGE AREA - 723 ACRES

SAFFORD, ARIZONA  
 WATERSHED W-V



| MONTHLY PRECIPITATION AND RUNOFF (Inches) |       |      |      |      |      |     |      | Albuquerque, New Mexico Watershed W-I<br>Area - 97.2 acres |      |       |      |      |      |      |
|-------------------------------------------|-------|------|------|------|------|-----|------|------------------------------------------------------------|------|-------|------|------|------|------|
| Year                                      | Month | Jan. | Feb. | Mar. | Apr. | May | June | July                                                       | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
|                                           | 1956  | P    | 0.17 | 0.26 | 0    | 0   | 0    | 0.47                                                       | 1.09 | 1.11  | 0    | 0.23 | 0    | 0    |
| Q                                         |       | 0    | 0    | 0    | 0    | 0   | 0    | T                                                          | .17  | 0     | 0    | 0    | 0    | .17  |
| 1957                                      | P     | .23  | .84  | .87  | .18  | .39 | .37  | 1.34                                                       | 3.24 | 0     | 1.49 | .52  | 0    | 9.47 |
|                                           | Q     | 0    | 0    | 0    | 0    | 0   | 0    | 0                                                          | .72  | 0     | .27  | 0    | 0    | .99  |
| 1958                                      | P     | .70  | .08  | .94  | .81  | .02 | .27  | 0                                                          | 1.97 | 1.06  | .99  | 0    | .35  | 7.19 |
|                                           | Q     | 0    | 0    | 0    | 0    | 0   | 0    | 0                                                          | .45  | .14   | 0    | 0    | 0    | .59  |
| 1959                                      | P     | .12  | 0    | .06  | .59  | .35 | .63  | 1.13                                                       | 1.70 | 0     | 1.34 | 0    | .72  | 6.64 |
|                                           | Q     | 0    | 0    | 0    | 0    | 0   | .05  | .17                                                        | .13  | 0     | .08  | 0    | 0    | .43  |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS |                   |      |                                           |      |         |      |         | Albuquerque, New Mexico Watershed W-I |          |      |       |      |        |      |        |      |
|-------------------------------------------------------------------------------------------------------------------------|-------------------|------|-------------------------------------------|------|---------|------|---------|---------------------------------------|----------|------|-------|------|--------|------|--------|------|
| YEAR                                                                                                                    | MAXIMUM DISCHARGE |      | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |      |         |      |         |                                       |          |      |       |      |        |      |        |      |
|                                                                                                                         |                   |      | 1 hour                                    |      | 2 hours |      | 6 hours |                                       | 12 hours |      | 1 day |      | 2 days |      | 8 days |      |
|                                                                                                                         | Date              | Rate | Date                                      | Vol. | Date    | Vol. | Date    | Vol.                                  | Date     | Vol. | Date  | Vol. | Date   | Vol. | Date   | Vol. |
| 1956                                                                                                                    | 8-19              | 0.87 | 8-19                                      | 0.14 | 8-19    | 0.17 | 8-19    | 0.17                                  | 8-19     | 0.17 | 8-19  | 0.17 | 8-19   | 0.17 | 8-19   | 0.17 |
| 1957                                                                                                                    | 8-24              | 2.33 | 8-24                                      | .57  | 8-24    | .62  | 8-24    | .62                                   | 8-24     | .62  | 8-24  | .62  | 8-24   | .62  | 8-16   | .66  |
| 1958                                                                                                                    | 8-21              | .70  | 8-21                                      | .19  | 8-21    | .34  | 8-21    | .36                                   | 8-21     | .36  | 8-21  | .36  | 8-21   | .36  | 8-21   | .36  |
| 1959                                                                                                                    | 8-14              | .32  | 8-14                                      | .11  | 8-14    | .13  | 8-14    | .13                                   | 8-14     | .13  | 8-14  | .13  | 8-14   | .13  | 8-14   | .13  |

Notes: Quality of records: monthly P and Q, excellent; Annual Max. discharges and volume, excellent. Watershed conditions: Rough broken Rangeland. About 85% of area is bare. Sparse vegetation consists of short grasses (blue and black grama), shrubs, and a few small juniper and pinion trees.

| SELECTED RUNOFF EVENTS                           |                      |                 |                  |                   |               | Albuquerque, New Mexico Watershed W-I |              |               |  |  |  |
|--------------------------------------------------|----------------------|-----------------|------------------|-------------------|---------------|---------------------------------------|--------------|---------------|--|--|--|
| Antecedent conditions                            |                      |                 | Rainfall         |                   |               | Runoff                                |              |               |  |  |  |
| Date                                             | Rainfall (Inches)    | Runoff (inches) | Date and time    | Intensity (in/hr) | Acc. (inches) | Date and time                         | Rate (in/hr) | Acc. (inches) |  |  |  |
| <u>Event of August 19, 1956</u>                  |                      |                 |                  |                   |               |                                       |              |               |  |  |  |
| 7-18-56                                          | Raingage R-1<br>0.32 | 0.001           | 8-19-56<br>3:25p | Raingage<br>0     | R-1<br>0      | 8-19-56<br>3:33p                      | 0            | 0             |  |  |  |
| 7-19                                             | .23                  | 0               | :30              | .60               | .05           | :36                                   | .238         | .002          |  |  |  |
| 7-28                                             | .20                  | 0               | :35              | 3.60              | .35           | :38                                   | .871         | .021          |  |  |  |
| 7-29                                             | .02                  | 0               | :40              | 1.80              | .50           | :40                                   | .732         | .048          |  |  |  |
| 7-31                                             | .21                  | 0               | :50              | .60               | .60           | :41                                   | .594         | .070          |  |  |  |
| 8-1                                              | .42                  | 0               | 4:00             | .30               | .65           | 4:4                                   | .381         | .094          |  |  |  |
| 8-16                                             | .10                  | 0               | :10              | .30               | .70           | 4:9                                   | e .264       | .121          |  |  |  |
| <u>Watershed Conditions:</u><br>See Notes above. |                      |                 | :20              | .30               | .75           | 5:13                                  | 0            | .174          |  |  |  |
|                                                  |                      |                 | :25              | .24               | .77           |                                       |              |               |  |  |  |
| <u>Event of August 9, 1957</u>                   |                      |                 |                  |                   |               |                                       |              |               |  |  |  |
| 7-12-57                                          | Raingage R-1<br>0.20 | 0               | 8-9-57<br>7:30p  | Raingage<br>0     | R-1<br>0      | 8-9-57<br>7:32p                       | 0            | 0             |  |  |  |
| 7-13                                             | .01                  | 0               | :32              | 4.50              | .15           | :36                                   | .048         | .002          |  |  |  |
| 7-15                                             | .08                  | 0               | :40              | .75               | .25           | :37                                   | .199         | .005          |  |  |  |
| 7-17                                             | .20                  | 0               | :48              | .75               | .35           | :38                                   | .238         | .010          |  |  |  |
| 7-21                                             | .11                  | 0               | 8:27             | .11               | .42           | 4:0                                   | .320         | .019          |  |  |  |
| 7-25                                             | .20                  | 0               | 9:20             | .12               | .53           | 4:1                                   | .380         | .025          |  |  |  |
| 7-26                                             | .18                  | 0               | 10:00            | .14               | .62           | 4:2                                   | .462         | .032          |  |  |  |
| 8-1                                              | .18                  | 0               | :55              | .11               | .72           | 4:5                                   | .525         | .040          |  |  |  |
| 8-6                                              | .05                  | 0               | 11:00            | .36               | .75           | 4:8                                   | .551         | .049          |  |  |  |
| <u>Watershed Conditions:</u><br>See Notes above. |                      |                 | 4:5              | .09               | .82           | 5:2                                   | .392         | .057          |  |  |  |
|                                                  |                      |                 |                  |                   |               | 5:7                                   | .238         | .068          |  |  |  |
|                                                  |                      |                 |                  |                   |               | 8:02                                  | .196         | .072          |  |  |  |
|                                                  |                      |                 |                  |                   |               | :12                                   | .134         | .077          |  |  |  |
|                                                  |                      |                 |                  |                   |               | :17                                   | .123         | .079          |  |  |  |
|                                                  |                      |                 |                  |                   |               | 9:35                                  | 0            | .106          |  |  |  |

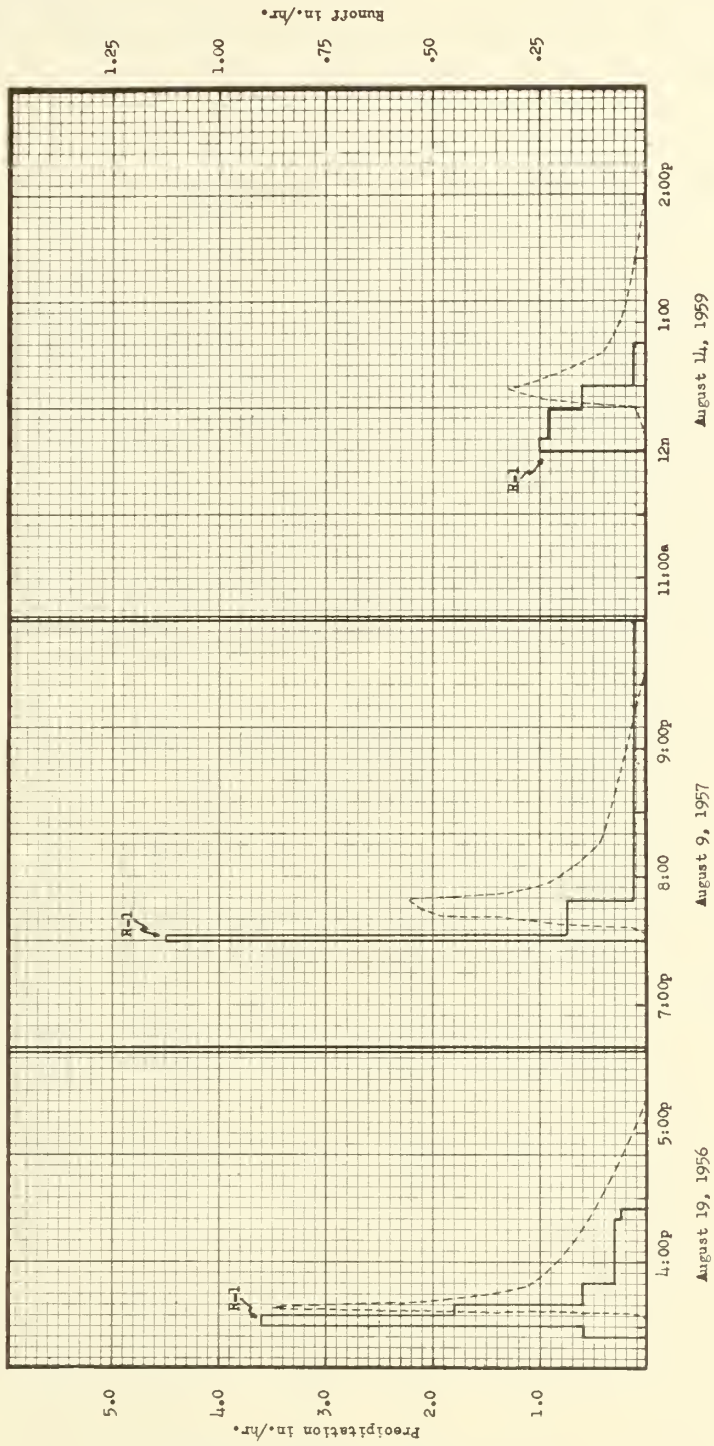
Notes: To convert runoff in in/hr. to cfs multiply by 98.009. e Partially estimated. For watershed map see Selected Runoff Events for Small Agricultural Watersheds in the United States, ARS-SWC, January 1960, page 47.1-4.

Cooperative Research Project of USDA and New Mexico Agricultural Experiment Station.

| SELECTED RUNOFF EVENTS                                                                                                                                                                                 |                   |                 | Albuquerque, New Mexico Watershed W-I |                   |               |               |              |               |      |   |      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------------|---------------------------------------|-------------------|---------------|---------------|--------------|---------------|------|---|------|
| Antecedent conditions                                                                                                                                                                                  |                   |                 | Rainfall                              |                   |               | Runoff        |              |               |      |   |      |
| Date                                                                                                                                                                                                   | Rainfall (inches) | Runoff (inches) | Date and time                         | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |      |   |      |
| Event of August 14, 1959                                                                                                                                                                               |                   |                 |                                       |                   |               |               |              |               |      |   |      |
|                                                                                                                                                                                                        | Raingage R-1      |                 | 8-14-59                               | Raingage          | R-1           | 8-14-59       |              |               |      |   |      |
| 7-22-59                                                                                                                                                                                                | 0.25              | 0               | 11:59a                                | 0                 | 0             | 12:01p        | 0            | 0             |      |   |      |
| 7-30                                                                                                                                                                                                   | .35               | .075            | 12:05p                                | 1.00              | .10           | :17           | .014         | .0009         |      |   |      |
| 8-5                                                                                                                                                                                                    | .25               | 0               | :18                                   | .92               | .30           | :20           | .032         | .002          |      |   |      |
| 8-9                                                                                                                                                                                                    | .57               | 0               | :30                                   | .60               | .41           | :21           | .112         | .003          |      |   |      |
| <p>Watershed Conditions: Rough, broken rangeland. About 85% of area is bare. Sparse vegetation consists of short grasses (blue and black grama), shrubs, and a few small juniper and pinion trees.</p> |                   |                 | :50                                   | .12               | .45           | :23           | .238         | .009          |      |   |      |
|                                                                                                                                                                                                        |                   |                 | 1:15                                  | .12               | .50           | :29           | .324         | .037          |      |   |      |
|                                                                                                                                                                                                        |                   |                 | :40                                   | .12               | .55           | :34           | .238         | .060          |      |   |      |
|                                                                                                                                                                                                        |                   |                 |                                       |                   |               | :45           | .114         | .093          |      |   |      |
|                                                                                                                                                                                                        |                   |                 |                                       |                   |               | 1:00          | .061         | .115          |      |   |      |
|                                                                                                                                                                                                        |                   |                 |                                       |                   |               |               |              |               | 2:12 | 0 | .127 |
|                                                                                                                                                                                                        |                   |                 |                                       |                   |               |               |              |               |      |   |      |

Notes: To convert runoff in in/hr. to cfs, multiply by 98.009.

ALBUQUERQUE, NEW MEXICO WATERSHED W-1



| MONTHLY PRECIPITATION AND RUNOFF (Inches) |       |      |      |      |      |     |      | Albuquerque, New Mexico Watershed II<br>Area - 40.5 acres |      |       |      |      |      |              |
|-------------------------------------------|-------|------|------|------|------|-----|------|-----------------------------------------------------------|------|-------|------|------|------|--------------|
| Year                                      | Month | Jan. | Feb. | Mar. | Apr. | May | June | July                                                      | Aug. | Sept. | Oct. | Nov. | Dec. | Year         |
| 1956                                      | P     | 0.23 | 0.15 | 0    | 0    | 0   | 0.30 | 0.83                                                      | 0.94 | 0     | 0.32 | 0    | 0    | 2.77<br>.08  |
|                                           | Q     | 0    | 0    | 0    | 0    | 0   | 0    | 0                                                         | .08  | 0     | 0    | 0    | 0    |              |
| 1957                                      | P     | .24  | .72  | 1.03 | .17  | .56 | .46  | 1.22                                                      | 2.67 | .04   | 1.80 | .34  | 0    | 9.25<br>1.22 |
|                                           | Q     | 0    | 0    | 0    | 0    | 0   | .01  | .15                                                       | .91  | 0     | .15  | 0    | 0    |              |
| 1958                                      | P     | .77  | .08  | .82  | .83  | 0   | .36  | .05                                                       | 2.14 | 1.35  | 1.04 | 0    | .14  | 7.58<br>.61  |
|                                           | Q     | 0    | 0    | 0    | 0    | 0   | 0    | 0                                                         | .59  | .02   | 0    | 0    | 0    |              |
| 1959                                      | P     | 0    | 0    | 0    | .77  | .71 | 1.01 | .91                                                       | 1.71 | 0     | 1.33 | 0    | .61  | 7.05<br>.68  |
|                                           | Q     | 0    | 0    | 0    | 0    | .13 | .01  | .19                                                       | .35  | 0     | T    | 0    | 0    |              |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS |                   |      |                                           |      |         |      |         | Albuquerque, New Mexico Watershed II |          |      |       |      |        |      |        |      |
|-------------------------------------------------------------------------------------------------------------------------|-------------------|------|-------------------------------------------|------|---------|------|---------|--------------------------------------|----------|------|-------|------|--------|------|--------|------|
| YEAR                                                                                                                    | MAXIMUM DISCHARGE |      | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |      |         |      |         |                                      |          |      |       |      |        |      |        |      |
|                                                                                                                         |                   |      | 1 hour                                    |      | 2 hours |      | 6 hours |                                      | 12 hours |      | 1 day |      | 2 days |      | 8 days |      |
|                                                                                                                         | Date              | Rate | Date                                      | Vol. | Date    | Vol. | Date    | Vol.                                 | Date     | Vol. | Date  | Vol. | Date   | Vol. | Date   | Vol. |
| 1956                                                                                                                    | 8-1               | 0.18 | 8-1                                       | 0.07 | 8-1     | 0.08 | 8-1     | 0.08                                 | 8-1      | 0.08 | 8-1   | 0.08 | 8-1    | 0.08 | 8-1    | 0.08 |
| 1957                                                                                                                    | 8-24              | 2.79 | 8-24                                      | .73  | 8-24    | .77  | 8-24    | .79                                  | 8-24     | .79  | 8-24  | .79  | 8-24   | .79  | 8-24   | .79  |
| 1958                                                                                                                    | 8-21              | 1.19 | 8-21                                      | .35  | 8-22    | .54  | 8-22    | .59                                  | 8-22     | .59  | 8-22  | .59  | 8-22   | .59  | 8-22   | .59  |
| 1959                                                                                                                    | 8-14              | .54  | 8-14                                      | .24  | 8-14    | .28  | 8-14    | .28                                  | 8-14     | .28  | 8-14  | .28  | 8-14   | .28  | 8-14   | .28  |

Notes: Quality of records: monthly P and Q, excellent; Annual Max. discharges and volume, excellent. Watershed conditions: Sparsely vegetated rangeland. 80% of area is bare. Vegetation consists of short grasses (blue and black grama, and galleta) and shrubs (sagebrush, saltbush, and rabbit brush). Vegetation is densest along lower two thirds of principal waterway.

| SELECTED RUNOFF EVENTS          |                   |                 |               |                   |               | Albuquerque, New Mexico Watershed II |              |               |
|---------------------------------|-------------------|-----------------|---------------|-------------------|---------------|--------------------------------------|--------------|---------------|
| Antecedent conditions           |                   |                 | Rainfall      |                   |               | Runoff                               |              |               |
| Date                            | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time                        | Rate (in/hr) | Acc. (inches) |
| <u>Event of August 24, 1957</u> |                   |                 |               |                   |               |                                      |              |               |
| 7-25-57                         | Raingage R-3      | 0.12            | 8-24-57       | Raingage          | R-3           | 8-24-57                              |              |               |
| 7-26                            | .34               | 0               | 11:59a        | 0                 | 0             | 12:02p                               | 0            | 0             |
| 8-1                             | .22               | 0               | 12:04p        | 2.40              | .20           | :05                                  | .196         | .003          |
| 8-6                             | .07               | 0               | :09           | 5.40              | .65           | :06                                  | .314         | .007          |
|                                 |                   |                 | :14           | 2.40              | .85           | :07                                  | .519         | .014          |
| 8-9                             | .75               | .12             | :24           | .90               | 1.00          | :08                                  | .811         | .025          |
|                                 |                   |                 | :34           | .72               | 1.12          | :09                                  | 1.156        | .041          |
|                                 |                   |                 | :59           | .31               | 1.25          | :10                                  | 2.053        | .068          |
|                                 |                   |                 | 1:44p         | .07               | 1.30          | :11                                  | 2.524        | .106          |
|                                 |                   |                 |               |                   |               | :12                                  | 2.793        | .151          |
|                                 |                   |                 |               |                   |               | :15                                  | 2.279        | .277          |
|                                 |                   |                 |               |                   |               | :16                                  | 1.847        | .312          |
|                                 |                   |                 |               |                   |               | :17                                  | 1.654        | .341          |
|                                 |                   |                 |               |                   |               | :18                                  | 1.411        | .367          |
|                                 |                   |                 |               |                   |               | :20                                  | 1.242        | .408          |
|                                 |                   |                 |               |                   |               | :23                                  | .938         | .458          |
|                                 |                   |                 |               |                   |               | :25                                  | .718         | .486          |
|                                 |                   |                 |               |                   |               | :30                                  | .554         | .543          |
|                                 |                   |                 |               |                   |               | :33                                  | .483         | .569          |
|                                 |                   |                 |               |                   |               | :36                                  | .510         | .594          |
|                                 |                   |                 |               |                   |               | :45                                  | .377         | .662          |
|                                 |                   |                 |               |                   |               | :50                                  | .309         | .691          |
|                                 |                   |                 |               |                   |               | :56                                  | .213         | .717          |
|                                 |                   |                 |               |                   |               | 1:00                                 | .174         | .730          |
|                                 |                   |                 |               |                   |               | :05                                  | .135         | .743          |
|                                 |                   |                 |               |                   |               | :14                                  | .111         | .761          |
|                                 |                   |                 |               |                   |               | 2:26p                                | 0            | .786          |

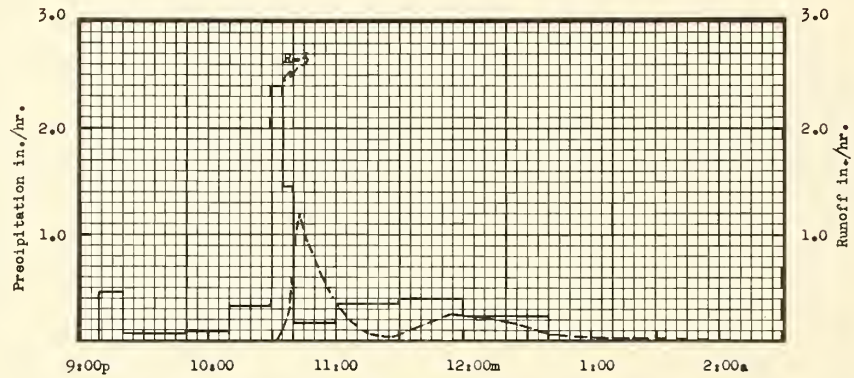
Notes: To convert runoff in in/hr. to cfs, multiply by 40.837.

Cooperative Research Project of USDA and New Mexico Agricultural Experiment Station.

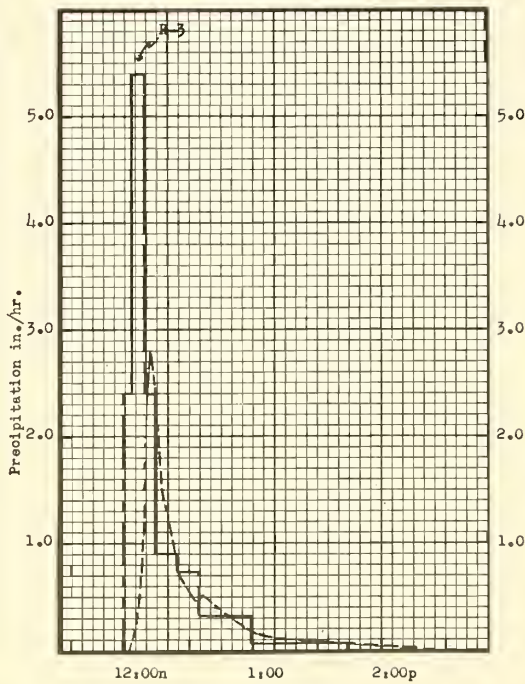
| SELECTED RUNOFF EVENTS                                                                                                                                                                                                                                                                 |                      |                 | Albuquerque, New Mexico Watershed W-II |                   |               |                   |              |               |       |      |      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-----------------|----------------------------------------|-------------------|---------------|-------------------|--------------|---------------|-------|------|------|
| Antecedent conditions                                                                                                                                                                                                                                                                  |                      |                 | Rainfall                               |                   |               | Runoff            |              |               |       |      |      |
| Date                                                                                                                                                                                                                                                                                   | Rainfall (inches)    | Runoff (inches) | Date and time                          | Intensity (in/hr) | Acc. (inches) | Date and time     | Rate (in/hr) | Acc. (inches) |       |      |      |
| <u>Event of August 21, 1958</u>                                                                                                                                                                                                                                                        |                      |                 |                                        |                   |               |                   |              |               |       |      |      |
| 8-4-58                                                                                                                                                                                                                                                                                 | Raingage R-3<br>0.70 | 0               | 8-21-58<br>9:09p                       | Raingage<br>0     | R-3<br>0      | 8-21-58<br>10:32p | 0            | 0             |       |      |      |
| 8-12                                                                                                                                                                                                                                                                                   | .10                  | 0               | :20                                    | .44               | .08           | :36               | .127         | .006          |       |      |      |
| 8-16                                                                                                                                                                                                                                                                                   | .20                  | 0               | :50                                    | .06               | .11           | :38               | .314         | .012          |       |      |      |
| 8-20                                                                                                                                                                                                                                                                                   | .07                  | 0               | 10:10                                  | .09               | .14           | :40               | .835         | .028          |       |      |      |
| <u>Watershed Conditions:</u> Sparsely vegetated rangeland, with 80% of the area bare. Vegetation consists of short grasses (blue and black grama and gallets) and shrubs (Sagebrush, salt-bush, and rabbit brush). Vegetation is densest along lower two-thirds of principal waterway. |                      |                 | :30                                    | .33               | .25           | :42               | 1.103        | .061          |       |      |      |
|                                                                                                                                                                                                                                                                                        |                      |                 | :35                                    | 2.40              | .45           | :43               | 1.186        | .080          |       |      |      |
|                                                                                                                                                                                                                                                                                        |                      |                 | :40                                    | 1.44              | .57           | :45               | 1.073        | .117          |       |      |      |
|                                                                                                                                                                                                                                                                                        |                      |                 | 11:00                                  | .18               | .63           | :47               | .938         | .150          |       |      |      |
|                                                                                                                                                                                                                                                                                        |                      |                 | :30                                    | .34               | .80           | :55               | .554         | .245          |       |      |      |
|                                                                                                                                                                                                                                                                                        |                      |                 | 8-22-58                                |                   |               | 12:00m            | .40          | 1.00          | 11:05 | .224 | .308 |
|                                                                                                                                                                                                                                                                                        |                      |                 | :40a                                   | .22               | 1.15          | :10               |              |               | :10   | .331 | .323 |
|                                                                                                                                                                                                                                                                                        |                      |                 |                                        |                   |               | :15               |              |               | :15   | .077 | .332 |
|                                                                                                                                                                                                                                                                                        |                      |                 |                                        |                   |               | :27               |              |               | :27   | .037 | .342 |
|                                                                                                                                                                                                                                                                                        |                      |                 |                                        |                   |               | :35               |              |               | :35   | .080 | .349 |
|                                                                                                                                                                                                                                                                                        |                      |                 |                                        |                   |               |                   |              |               | :40   | .143 | .359 |
|                                                                                                                                                                                                                                                                                        |                      |                 |                                        |                   |               |                   |              |               | :50   | .218 | .389 |
|                                                                                                                                                                                                                                                                                        |                      |                 |                                        |                   |               |                   |              |               | :54   | .250 | .405 |
|                                                                                                                                                                                                                                                                                        |                      |                 |                                        |                   |               | 12:00m            | .240         | .429          |       |      |      |
|                                                                                                                                                                                                                                                                                        |                      |                 |                                        |                   |               | 8-22-58           |              |               |       |      |      |
|                                                                                                                                                                                                                                                                                        |                      |                 |                                        |                   |               | 12:06a            | .245         | .453          |       |      |      |
|                                                                                                                                                                                                                                                                                        |                      |                 |                                        |                   |               | :11               | .229         | .473          |       |      |      |
|                                                                                                                                                                                                                                                                                        |                      |                 |                                        |                   |               | :25               | .178         | .521          |       |      |      |
|                                                                                                                                                                                                                                                                                        |                      |                 |                                        |                   |               | :30               | .135         | .534          |       |      |      |
|                                                                                                                                                                                                                                                                                        |                      |                 |                                        |                   |               | :40               | .067         | .551          |       |      |      |
|                                                                                                                                                                                                                                                                                        |                      |                 |                                        |                   |               | 1:20              | .034         | .578          |       |      |      |
|                                                                                                                                                                                                                                                                                        |                      |                 |                                        |                   |               | 2:20a             | 0            | .589          |       |      |      |
| <u>Event of May 23, 1959</u>                                                                                                                                                                                                                                                           |                      |                 |                                        |                   |               |                   |              |               |       |      |      |
|                                                                                                                                                                                                                                                                                        | None                 | None            | 5-23-59<br>3:22p                       | Raingage<br>0     | R-3<br>0      | 5-23-59<br>3:47p  | 0            | 0             |       |      |      |
|                                                                                                                                                                                                                                                                                        |                      |                 | :31                                    | .33               | .17           | :50               | .037         | .0015         |       |      |      |
|                                                                                                                                                                                                                                                                                        |                      |                 | :42                                    | .44               | .25           | :52               | .045         | .003          |       |      |      |
|                                                                                                                                                                                                                                                                                        |                      |                 | :47                                    | .60               | .30           | :54               | .150         | .006          |       |      |      |
|                                                                                                                                                                                                                                                                                        |                      |                 | :52                                    | 3.00              | .55           | :55               | .519         | .012          |       |      |      |
|                                                                                                                                                                                                                                                                                        |                      |                 | 4:27p                                  | .05               | .58           | 4:00              | .434         | .052          |       |      |      |
| <u>Watershed Conditions:</u> Same as above.                                                                                                                                                                                                                                            |                      |                 |                                        |                   |               | :05               | .274         | .081          |       |      |      |
|                                                                                                                                                                                                                                                                                        |                      |                 |                                        |                   |               | :10               | .143         | .098          |       |      |      |
|                                                                                                                                                                                                                                                                                        |                      |                 |                                        |                   |               | :15               | .078         | .108          |       |      |      |
|                                                                                                                                                                                                                                                                                        |                      |                 |                                        |                   |               | :20               |              | .113          |       |      |      |
|                                                                                                                                                                                                                                                                                        |                      |                 |                                        |                   |               | :31               |              | .116          |       |      |      |
|                                                                                                                                                                                                                                                                                        |                      |                 |                                        |                   |               | 5:29p             |              | .129          |       |      |      |
|                                                                                                                                                                                                                                                                                        |                      |                 |                                        |                   |               |                   |              |               |       |      |      |
|                                                                                                                                                                                                                                                                                        |                      |                 |                                        |                   |               |                   |              |               |       |      |      |
|                                                                                                                                                                                                                                                                                        |                      |                 |                                        |                   |               |                   |              |               |       |      |      |
|                                                                                                                                                                                                                                                                                        |                      |                 |                                        |                   |               |                   |              |               |       |      |      |

Notes: To convert runoff in in/hr. to cfs, multiply by 40.837.

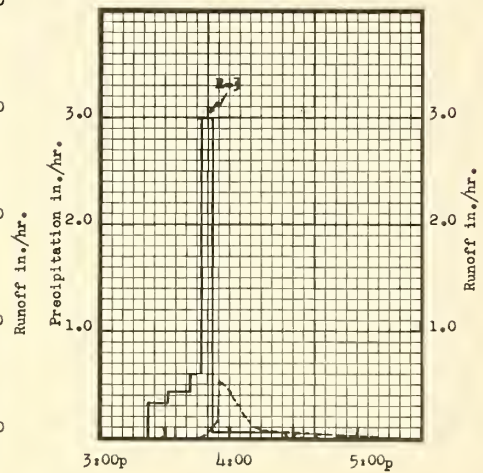




August 21-22, 1958

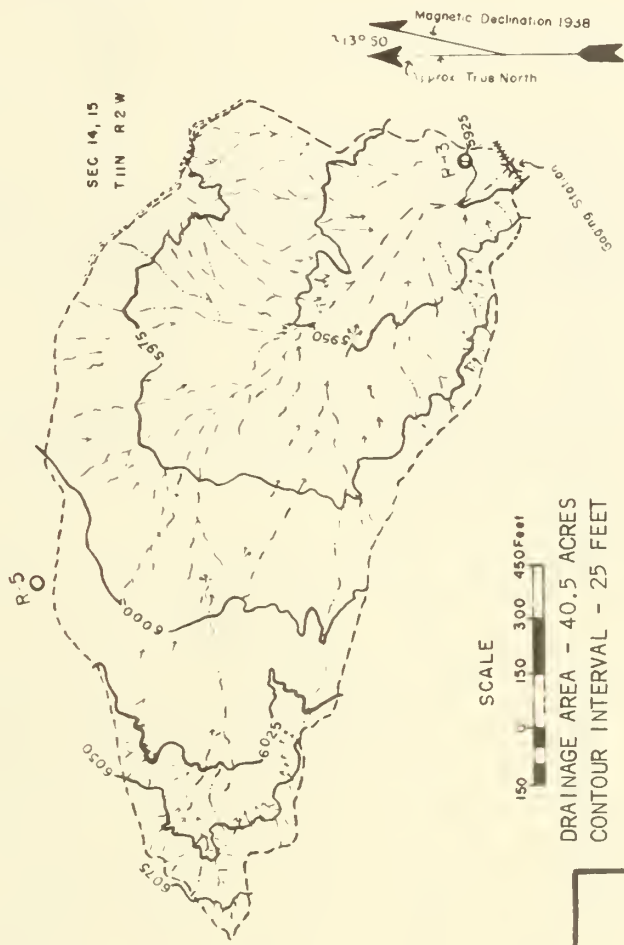


August 24, 1957



May 23, 1959

ALBUQUERQUE, NEW MEXICO WATERSHED W-II



DRAINAGE AREA - 40.5 ACRES  
 CONTOUR INTERVAL - 25 FEET

ALBUQUERQUE, NEW MEXICO  
 WATERSHED W-II

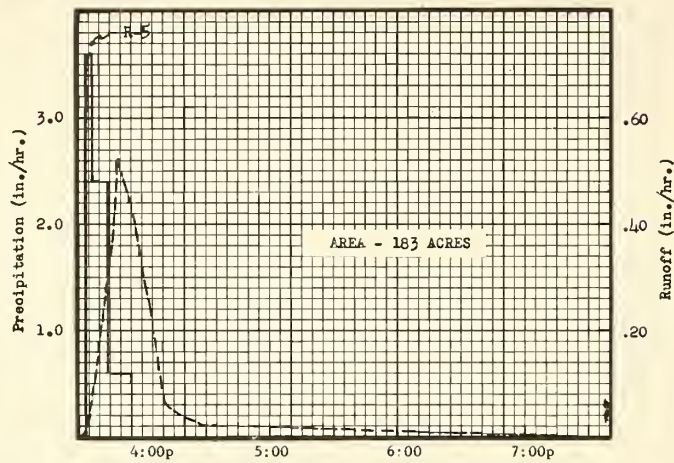
| MONTHLY PRECIPITATION AND RUNOFF (Inches)                                                                                                                                                                                                                                                                                                                                                                                                                  |                   |                 |                                           |                   |                   |               | Albuquerque, New Mexico Watershed W-III<br>Area - 183 or 168 acres <sup>1/</sup> |               |          |      |       |      |        |      |        |      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------------|-------------------------------------------|-------------------|-------------------|---------------|----------------------------------------------------------------------------------|---------------|----------|------|-------|------|--------|------|--------|------|
| Month<br>Year                                                                                                                                                                                                                                                                                                                                                                                                                                              | Jan.              | Feb.            | Mar.                                      | Apr.              | May               | June          | July                                                                             | Aug.          | Sept.    | Oct. | Nov.  | Dec. | Year   |      |        |      |
| 1956                                                                                                                                                                                                                                                                                                                                                                                                                                                       | P 0.22            | 0.14            | 0                                         | 0                 | 0                 | 0.38          | 0.86                                                                             | 0.81          | 0        | 0.30 | 0     | 0    | 2.71   |      |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Q 0               | 0               | 0                                         | 0                 | 0                 | 0             | 0                                                                                | .19           | 0        | 0    | 0     | 0    | .19    |      |        |      |
| 1957                                                                                                                                                                                                                                                                                                                                                                                                                                                       | P .24             | .76             | 1.06                                      | .16               | .64               | .48           | 1.23                                                                             | 2.68          | .08      | 1.80 | .39   | 0    | 9.52   |      |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Q <sup>1/</sup>   | 0               | 0                                         | 0                 | 0                 | .02           | .10                                                                              | .09           | 0        | .34  | 0     | 0    | .55    |      |        |      |
| 1958                                                                                                                                                                                                                                                                                                                                                                                                                                                       | P .86             | .09             | .84                                       | .84               | .37               | .07           | 2.06                                                                             | 1.34          | 1.23     | 0    | .05   | 0    | 7.75   |      |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Q 0               | 0               | 0                                         | 0                 | 0                 | 0             | 0                                                                                | .15           | 0        | 0    | 0     | 0    | .15    |      |        |      |
| 1959                                                                                                                                                                                                                                                                                                                                                                                                                                                       | P 0               | 0               | 0                                         | .80               | .75               | 1.02          | .92                                                                              | 1.66          | 0        | 1.30 | 0     | .53  | 6.98   |      |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Q 0               | 0               | 0                                         | 0                 | .12               | 0             | .05                                                                              | .09           | 0        | T    | 0     | 0    | .26    |      |        |      |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS                                                                                                                                                                                                                                                                                                                                    |                   |                 |                                           |                   |                   |               | Albuquerque, New Mexico Watershed W-III                                          |               |          |      |       |      |        |      |        |      |
| YEAR                                                                                                                                                                                                                                                                                                                                                                                                                                                       | MAXIMUM DISCHARGE |                 | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |                   |                   |               |                                                                                  |               |          |      |       |      |        |      |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |                 | 1 hour                                    |                   | 2 hours           |               | 6 hours                                                                          |               | 12 hours |      | 1 day |      | 2 days |      | 8 days |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Date              | Rate            | Date                                      | Vol.              | Date              | Vol.          | Date                                                                             | Vol.          | Date     | Vol. | Date  | Vol. | Date   | Vol. | Date   | Vol. |
| 1956                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 8-19              | 0.52            | 8-19                                      | 0.19              | 8-19              | 0.19          | 8-19                                                                             | 0.19          | 8-19     | 0.19 | 8-19  | 0.19 | 8-19   | 0.19 | 8-19   | 0.19 |
| 1957 <sup>1/</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                         | 10-19             | .20             | 10-19                                     | .13               | 10-19             | .17           | 10-19                                                                            | .25           | 10-19    | .25  | 10-19 | .25  | 10-19  | .25  | 10-19  | .32  |
| 1958                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 8-21              | .14             | 8-21                                      | .09               | 8-21              | .14           | 8-21                                                                             | .15           | 8-21     | .15  | 8-21  | .15  | 8-21   | .15  | 8-21   | .15  |
| 1959                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 5-23              | .09             | 5-23                                      | .07               | 5-23              | .11           | 5-23                                                                             | .12           | 5-23     | .12  | 5-23  | .12  | 5-23   | .12  | 5-23   | .12  |
| Notes: Quality of records: monthly P and Q, excellent; Annual Max. discharges and volume, excellent. Watershed conditions: Sparsely vegetated range land; about 75% of area is bare. Vegetation consists of short grasses (blue and black grama and galleta), and shrubs (sagebrush, saltbush, and snakeweed). Vegetation is comparatively heavy in a narrow strip along the principal waterway. <sup>1/</sup> Area changed from 183 to 168 acres in 1957. |                   |                 |                                           |                   |                   |               |                                                                                  |               |          |      |       |      |        |      |        |      |
| SELECTED RUNOFF EVENTS                                                                                                                                                                                                                                                                                                                                                                                                                                     |                   |                 |                                           |                   |                   |               | Albuquerque, New Mexico Watershed W-III<br>Area - 183 acres                      |               |          |      |       |      |        |      |        |      |
| Antecedent conditions                                                                                                                                                                                                                                                                                                                                                                                                                                      |                   |                 | Rainfall                                  |                   |                   | Runoff        |                                                                                  |               |          |      |       |      |        |      |        |      |
| Date                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Rainfall (inches) | Runoff (inches) | Date and time                             | Intensity (in/hr) | Acc. (inches)     | Date and time | Rate (in/hr)                                                                     | Acc. (inches) |          |      |       |      |        |      |        |      |
| Event of August 19, 1956                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |                 |                                           |                   |                   |               |                                                                                  |               |          |      |       |      |        |      |        |      |
| 7-19-56                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Raingage R-5      | 0               | 8-19-56                                   | Raingage          | R-5 <sup>1/</sup> | 8-19-56       |                                                                                  |               |          |      |       |      |        |      |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 0.23              | 0               |                                           | 0                 | 0                 |               | 0                                                                                | 0             |          |      |       |      |        |      |        |      |
| 7-20                                                                                                                                                                                                                                                                                                                                                                                                                                                       | .03               | 0               | 3:33p                                     | 3.60              | .18               | 3:32p         | .0395                                                                            | .0009         |          |      |       |      |        |      |        |      |
| 7-28                                                                                                                                                                                                                                                                                                                                                                                                                                                       | .06               | 0               | :36                                       | 2.40              | .50               | :35           | .0652                                                                            | .0025         |          |      |       |      |        |      |        |      |
| 7-30                                                                                                                                                                                                                                                                                                                                                                                                                                                       | .04               | 0               | :44                                       | .60               | .60               | :37           | .1610                                                                            | .0061         |          |      |       |      |        |      |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |                 | :55                                       |                   |                   | :39           |                                                                                  |               |          |      |       |      |        |      |        |      |
| 7-31                                                                                                                                                                                                                                                                                                                                                                                                                                                       | .14               | 0               |                                           |                   |                   | :43           | .2831                                                                            | .0213         |          |      |       |      |        |      |        |      |
| 8-1                                                                                                                                                                                                                                                                                                                                                                                                                                                        | .28               | 0               |                                           |                   |                   | :45           | .3220                                                                            | .0313         |          |      |       |      |        |      |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |                 |                                           |                   |                   | :49           | .5259                                                                            | .0593         |          |      |       |      |        |      |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |                 |                                           |                   |                   | :55           | .4415                                                                            | .1073         |          |      |       |      |        |      |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |                 |                                           |                   |                   | 4:00          | .3221                                                                            | .1383         |          |      |       |      |        |      |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |                 |                                           |                   |                   | :05           | .2272                                                                            | .1603         |          |      |       |      |        |      |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |                 |                                           |                   |                   | :12           | .0626                                                                            | .1763         |          |      |       |      |        |      |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |                 |                                           |                   |                   | :20           | .0372                                                                            | .1823         |          |      |       |      |        |      |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |                 |                                           |                   |                   | :30           | .0179                                                                            | .1873         |          |      |       |      |        |      |        |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |                 |                                           |                   |                   | 7:25          | 0                                                                                | .1907         |          |      |       |      |        |      |        |      |
| Notes: To convert runoff in in/hr. to cfs, multiply by 184.52.                                                                                                                                                                                                                                                                                                                                                                                             |                   |                 |                                           |                   |                   |               |                                                                                  |               |          |      |       |      |        |      |        |      |
| <sup>1/</sup> Runoff started earlier than R-5 precipitation, due to earlier rainfall on raingage R-4.                                                                                                                                                                                                                                                                                                                                                      |                   |                 |                                           |                   |                   |               |                                                                                  |               |          |      |       |      |        |      |        |      |

Cooperative Research Project of USDA and New Mexico Agricultural Experiment Station.

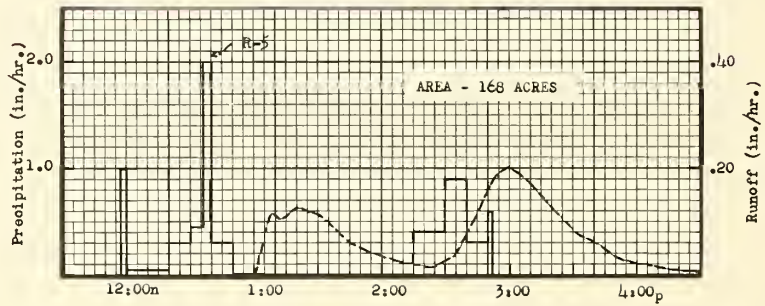
| SELECTED RUNOFF EVENTS                                                                                                                                                                                                                                                                              |                      |                    | Albuquerque, New Mexico Watershed W-III<br>Area - 168 acres |                      |                  |                  |                 |                  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------------|-------------------------------------------------------------|----------------------|------------------|------------------|-----------------|------------------|
| Antecedent conditions                                                                                                                                                                                                                                                                               |                      |                    | Rainfall                                                    |                      |                  | Runoff           |                 |                  |
| Date                                                                                                                                                                                                                                                                                                | Rainfall<br>(inches) | Runoff<br>(inches) | Date and<br>time                                            | Intensity<br>(in/hr) | Acc.<br>(inches) | Date and<br>time | Rate<br>(in/hr) | Acc.<br>(inches) |
| <u>Event of October 19, 1957</u>                                                                                                                                                                                                                                                                    |                      |                    |                                                             |                      |                  |                  |                 |                  |
|                                                                                                                                                                                                                                                                                                     | Raingage R-5         |                    | 10-19-57                                                    | Raingage             | R-5              | 10-19-57         |                 |                  |
| 10-11-57                                                                                                                                                                                                                                                                                            | 0.27                 | 0.008              | 11:57a                                                      | 0                    | 0                | 1:01p            | 0               | 0                |
| 10-12                                                                                                                                                                                                                                                                                               | .63                  | .013               | 12:00m                                                      | 1.00                 | .05              | :02              | .0192           | .0002            |
|                                                                                                                                                                                                                                                                                                     |                      |                    | :20p                                                        | .03                  | .06              | :03              | .0384           | .0007            |
|                                                                                                                                                                                                                                                                                                     |                      |                    | :30                                                         | .30                  | .11              | :05              | .0791           | .0026            |
|                                                                                                                                                                                                                                                                                                     |                      |                    | :37                                                         | .43                  | .16              | :08              | .1080           | .0075            |
|                                                                                                                                                                                                                                                                                                     |                      |                    | :40                                                         | 2.00                 | .26              | :12              | .1003           | .0115            |
|                                                                                                                                                                                                                                                                                                     |                      |                    | :50                                                         | .30                  | .31              | :16              | .1062           | .0212            |
|                                                                                                                                                                                                                                                                                                     |                      |                    | 2:15                                                        | 0.                   | .31              | :20              | .1227           | .0289            |
|                                                                                                                                                                                                                                                                                                     |                      |                    | :30                                                         | .40                  | .41              | :30              | .1062           | .0485            |
|                                                                                                                                                                                                                                                                                                     |                      |                    | :40                                                         | .90                  | .56              | :40              | .0743           | .0634            |
|                                                                                                                                                                                                                                                                                                     |                      |                    | :50                                                         | .30                  | .61              | :50              | .0473           | .0734            |
|                                                                                                                                                                                                                                                                                                     |                      |                    | :52                                                         | .60                  | .63              | 2:00             | .0315           | .0800            |
|                                                                                                                                                                                                                                                                                                     |                      |                    |                                                             |                      |                  | :25              | .0118           | .0882            |
|                                                                                                                                                                                                                                                                                                     |                      |                    |                                                             |                      |                  | :35              | .0334           | .0915            |
|                                                                                                                                                                                                                                                                                                     |                      |                    |                                                             |                      |                  | :40              | .0679           | .0956            |
|                                                                                                                                                                                                                                                                                                     |                      |                    |                                                             |                      |                  | :45              | .1162           | .1033            |
|                                                                                                                                                                                                                                                                                                     |                      |                    |                                                             |                      |                  | :50              | .1564           | .1146            |
|                                                                                                                                                                                                                                                                                                     |                      |                    |                                                             |                      |                  | :53              | .1835           | .1231            |
|                                                                                                                                                                                                                                                                                                     |                      |                    |                                                             |                      |                  | :59              | .2006           | .1423            |
|                                                                                                                                                                                                                                                                                                     |                      |                    |                                                             |                      |                  | 3:10             | .1723           | .1772            |
|                                                                                                                                                                                                                                                                                                     |                      |                    |                                                             |                      |                  | :18              | .1339           | .1977            |
|                                                                                                                                                                                                                                                                                                     |                      |                    |                                                             |                      |                  | :25              | .1044           | .2116            |
|                                                                                                                                                                                                                                                                                                     |                      |                    |                                                             |                      |                  | :35              | .0679           | .2257            |
|                                                                                                                                                                                                                                                                                                     |                      |                    |                                                             |                      |                  | :45              | .0441           | .2350            |
|                                                                                                                                                                                                                                                                                                     |                      |                    |                                                             |                      |                  | :50              | .0315           | .2381            |
|                                                                                                                                                                                                                                                                                                     |                      |                    |                                                             |                      |                  | 4:00             | .0199           | .2424            |
|                                                                                                                                                                                                                                                                                                     |                      |                    |                                                             |                      |                  | 7:15             | 0               | .2501            |
| <u>Event of August 21, 1958</u>                                                                                                                                                                                                                                                                     |                      |                    |                                                             |                      |                  |                  |                 |                  |
|                                                                                                                                                                                                                                                                                                     | Raingage R-5         |                    | 8-21-58                                                     | Raingage             | R-5              | 8-21-58          |                 |                  |
| 7-28-58                                                                                                                                                                                                                                                                                             | 0.08                 | 0                  | 8:40a                                                       | 0                    | 0                | 10:35a           | 0               | 0                |
| 8-4                                                                                                                                                                                                                                                                                                 | .65                  | 0                  | 9:05                                                        | .07                  | .03              | :46              | .0237           | .0018            |
| 8-12                                                                                                                                                                                                                                                                                                | .10                  | 0                  | :30                                                         | .24                  | .13              | :51              | .0601           | .0054            |
| 8-16                                                                                                                                                                                                                                                                                                | .15                  | 0                  | 10:05                                                       | .08                  | .18              | 11:00            | .0407           | .0130            |
| 8-20                                                                                                                                                                                                                                                                                                | .25                  | 0                  | :24                                                         | .16                  | .23              | :06              | .0324           | .0167            |
|                                                                                                                                                                                                                                                                                                     |                      |                    | :30                                                         | 1.00                 | .33              | :10              | .0333           | .0189            |
|                                                                                                                                                                                                                                                                                                     |                      |                    | :35                                                         | 2.40                 | .53              | :13              | .0324           | .0206            |
|                                                                                                                                                                                                                                                                                                     |                      |                    | :40                                                         | 1.20                 | .63              | :14              | .0384           | .0211            |
|                                                                                                                                                                                                                                                                                                     |                      |                    | 11:00                                                       | .30                  | .73              | :15              | .0755           | .0220            |
|                                                                                                                                                                                                                                                                                                     |                      |                    | :15                                                         | .20                  | .78              | :24              | .1386           | .0407            |
|                                                                                                                                                                                                                                                                                                     |                      |                    | :30                                                         | .40                  | .88              | :27              | .1339           | .0475            |
|                                                                                                                                                                                                                                                                                                     |                      |                    | :45                                                         | .40                  | .98              | :38              | .0967           | .0685            |
|                                                                                                                                                                                                                                                                                                     |                      |                    | 12:20                                                       | .34                  | 1.18             | 12:00m           | .0620           | .0971            |
|                                                                                                                                                                                                                                                                                                     |                      |                    |                                                             |                      |                  | :25p             | .0384           | .1181            |
|                                                                                                                                                                                                                                                                                                     |                      |                    |                                                             |                      |                  | :45              | .0343           | .1301            |
|                                                                                                                                                                                                                                                                                                     |                      |                    |                                                             |                      |                  | 1:43             | .0080           | .1512            |
|                                                                                                                                                                                                                                                                                                     |                      |                    |                                                             |                      |                  | 2:05             | 0               | .1528            |
|                                                                                                                                                                                                                                                                                                     |                      |                    |                                                             |                      |                  |                  |                 |                  |
| <u>Watershed Conditions:</u> Sparsely vegetated range land; about 75% of area is bare. Vegetation consists of short grasses (blue and black grama and galleta), and shrubs (sagebrush, saltbush, and snake-wood). Vegetation is comparatively heavy in a narrow strip along the principal waterway. |                      |                    |                                                             |                      |                  |                  |                 |                  |
| <u>Watershed Conditions:</u> Same as above.                                                                                                                                                                                                                                                         |                      |                    |                                                             |                      |                  |                  |                 |                  |

Notes: To convert runoff in in/hr. to cfs, multiply by 169,40

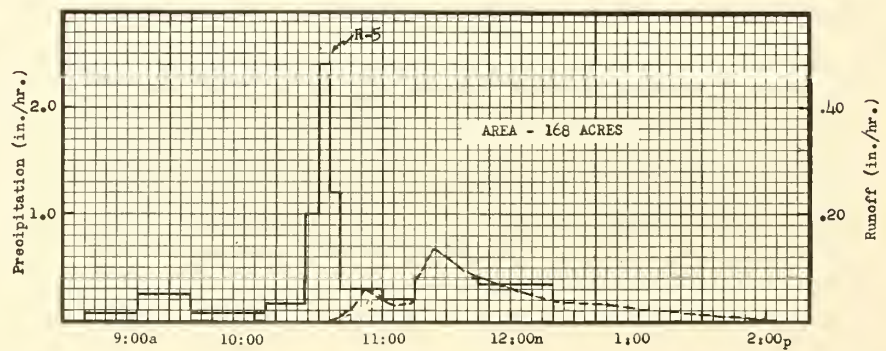




August 19, 1956



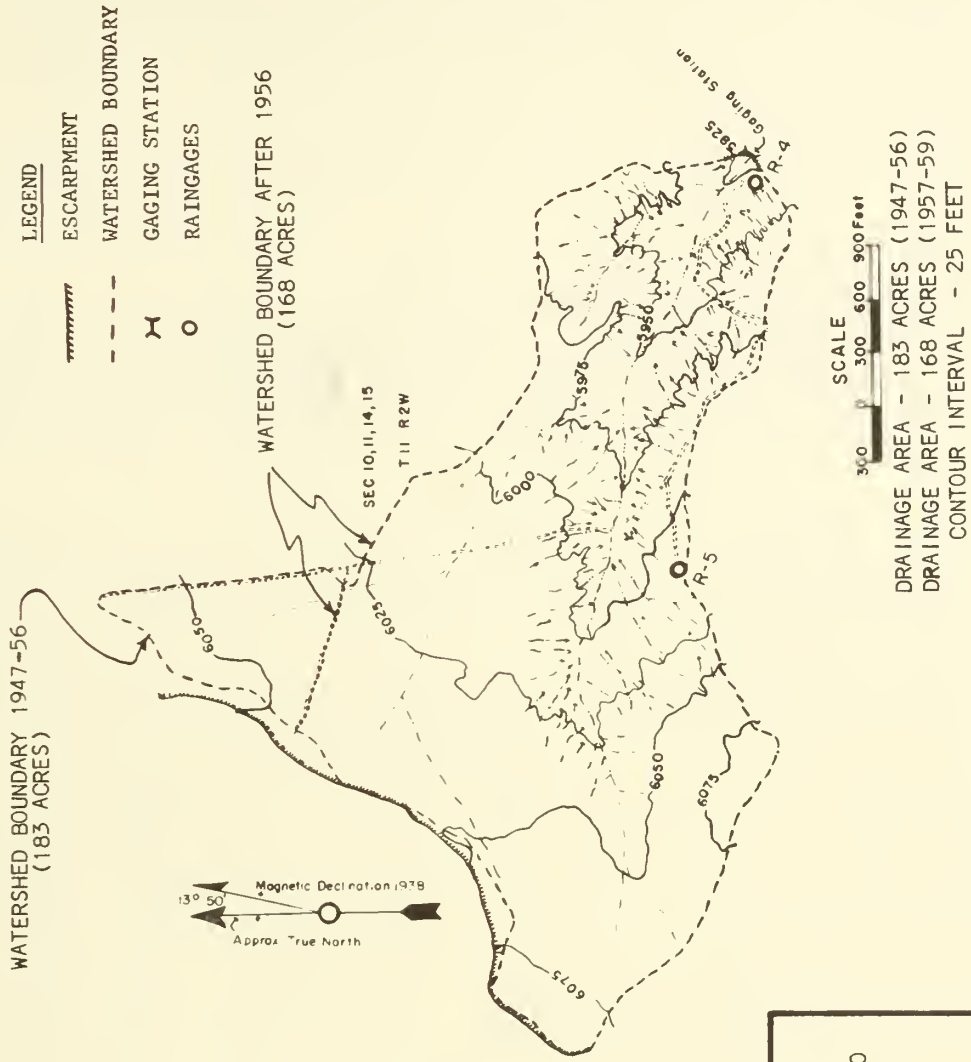
October 19, 1957



August 21, 1958

ALBUQUERQUE, NEW MEXICO WATERSHED W-III





ALBUQUERQUE, NEW MEXICO  
WATERSHED W-III

| MONTHLY PRECIPITATION AND RUNOFF (Inches) |       |      |       |      |       |      |      |      |      | Monticello, Illinois Watershed IA<br>(Area - 82.0 acres) |      |      |      |       |
|-------------------------------------------|-------|------|-------|------|-------|------|------|------|------|----------------------------------------------------------|------|------|------|-------|
| Year                                      | Month | Jan. | Feb.  | Mar. | Apr.  | May  | June | July | Aug. | Sept.                                                    | Oct. | Nov. | Dec. | Year  |
| 1956                                      | P     | 0.42 | 1.76  | 0.63 | 3.35  | 2.97 | 2.30 | 4.96 | 3.87 | 0.32                                                     | 0.60 | 2.24 | 2.21 | 25.63 |
|                                           | Q     | 0    | 0     | 0    | T     | T    | T    | T    | 0    | 0                                                        | 0    | 0    | 0    | T     |
| 1957                                      | P     | 1.49 | 1.90  | 1.40 | 6.73  | 4.40 | 7.44 | 1.92 | 1.17 | 1.67                                                     | 3.07 | 2.62 | 3.79 | 37.60 |
|                                           | Q     | 0    | 0     | 0    | e .57 | T    | .32  | 0    | 0    | 0                                                        | 0    | 0    | 0    | .89   |
| 1958                                      | P     | 1.30 | e .40 | .98  | 1.91  | 5.11 | 6.47 | 7.27 | .89  | 4.01                                                     | .47  | 4.30 | .50  | 33.61 |
|                                           | Q     | 0    | 0     | 0    | 0     | 0    | .56  | .37  | 0    | 0                                                        | 0    | 0    | 0    | .93   |
| 1959                                      | P     | 2.29 | 2.37  | 3.13 | 2.77  | 3.59 | .90  | 1.27 | 1.35 | 3.47                                                     | 3.56 | 2.44 | 2.02 | 29.16 |
|                                           | Q     | T    | 1.04  | T    | 0     | T    | 0    | 0    | 0    | 0                                                        | 0    | 0    | 0    | 1.04  |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS |                   |      |                                           |      |         |      |         |      |          | Monticello, Illinois Watershed IA |       |      |        |      |        |      |
|-------------------------------------------------------------------------------------------------------------------------|-------------------|------|-------------------------------------------|------|---------|------|---------|------|----------|-----------------------------------|-------|------|--------|------|--------|------|
| YEAR                                                                                                                    | MAXIMUM DISCHARGE |      | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |      |         |      |         |      |          |                                   |       |      |        |      |        |      |
|                                                                                                                         |                   |      | 1 hour                                    |      | 2 hours |      | 6 hours |      | 12 hours |                                   | 1 day |      | 2 days |      | 8 days |      |
|                                                                                                                         | Date              | Rate | Date                                      | Vol. | Date    | Vol. | Date    | Vol. | Date     | Vol.                              | Date  | Vol. | Date   | Vol. | Date   | Vol. |
| 1959                                                                                                                    | 2-10              | 0.29 | 2-10                                      | 0.24 | 2-10    | 0.36 | 2-10    | 0.51 | 2-10     | 0.96                              | 2-10  | 1.04 | 2-10   | 1.04 | 2-10   | 1.04 |

Notes: Monthly precipitation from one recording gage, R-1, located 300 ft. west of gaging station IB. Quality of records: Good.  
Watershed Conditions (1956-59): Corn 12 to 38%; soybeans 10 to 52%; oats 13% (1957); clover or alfalfa-brome 7 to 52%;  
gras 14%; roads 3%.

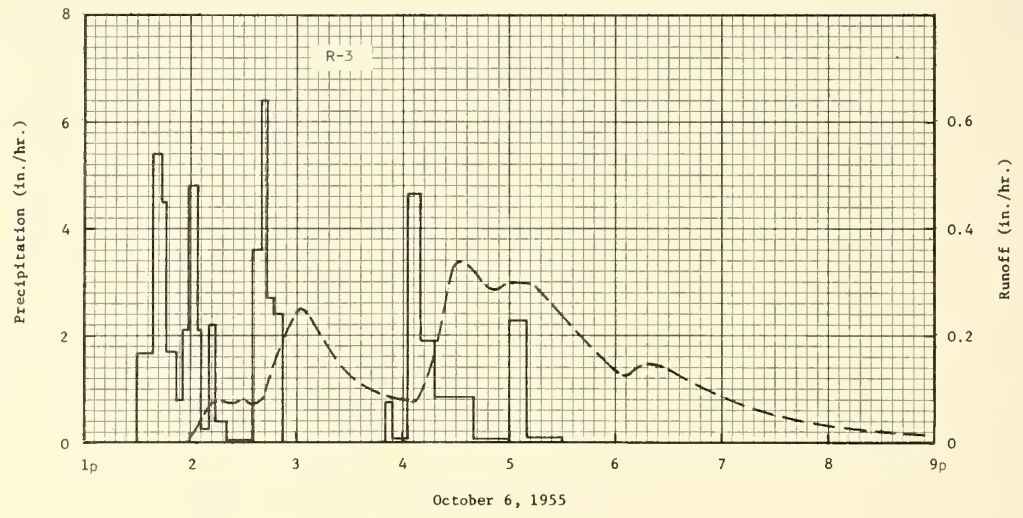
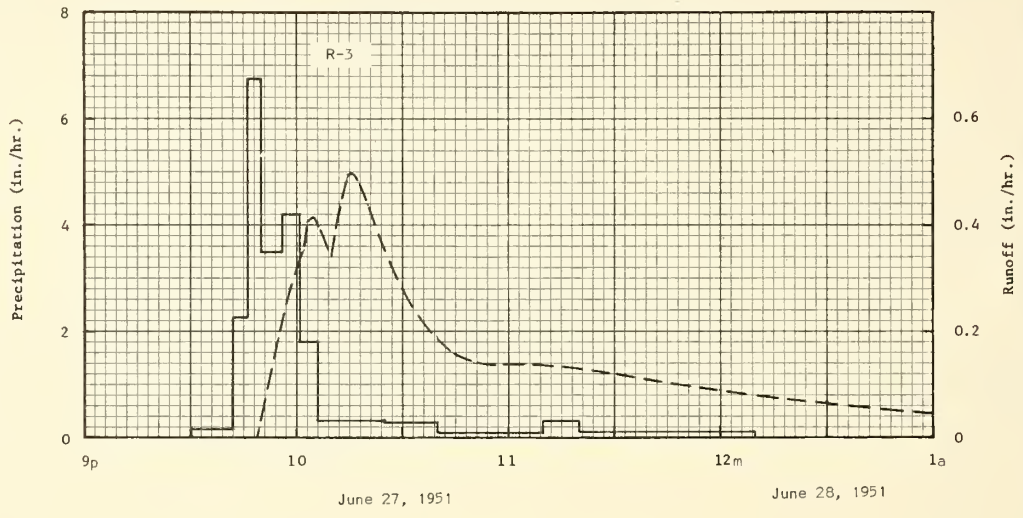
| SELECTED RUNOFF EVENTS                                                                                   |                   |                 |               |                   |               | Monticello, Illinois Watershed IA |              |               |
|----------------------------------------------------------------------------------------------------------|-------------------|-----------------|---------------|-------------------|---------------|-----------------------------------|--------------|---------------|
| Antecedent conditions                                                                                    |                   |                 | Rainfall      |                   |               | Runoff                            |              |               |
| Date                                                                                                     | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time                     | Rate (in/hr) | Acc. (inches) |
| <u>Event of June 27, 1951</u>                                                                            |                   |                 |               |                   |               |                                   |              |               |
| 6-3-51                                                                                                   | 0.31              | 0               | 6-27-51       | Raingage          | R-3           | 6-27-51                           |              |               |
| 6-7                                                                                                      | .28               | 0               | 9:30p         | 0                 | 0             | 9:49p                             | 0            | 0             |
| 6-12                                                                                                     | .25               | 0               | :42           | .15               | .03           | :53                               | .0041        | T             |
| 6-16                                                                                                     | .34               | 0               | :46           | 2.25              | .18           | :55                               | .185         | .004          |
| 6-19                                                                                                     | .21               | 0               | :50           | 6.75              | .63           | :58                               | .280         | .016          |
| 6-23                                                                                                     | .11               | 0               | :56           | 3.50              | .98           | 10:02                             | .355         | .037          |
| 6-24                                                                                                     | .60               | 0               | 10:01         | 4.20              | 1.33          | :03                               | .408         | .043          |
| 6-25                                                                                                     | .07               | 0               | :06           | 1.80              | 1.48          | :05                               | .415         | .057          |
| 6-26                                                                                                     | .12               | 0               | :25           | .32               | 1.58          | :10                               | .340         | .089          |
| 6-27 <u>1/</u>                                                                                           | 1.20              | T               | :40           | .28               | 1.65          | :12                               | .424         | .101          |
| <u>Watershed Conditions</u>                                                                              |                   |                 | 11:10         | .08               | 1.69          | :14                               | .488         | .117          |
| 38.4% of area was in corn, 19.3% in oats, 14.4% in gras, 13.6% in wheat, 11.1% in meadow, 3.2% in roads. |                   |                 | :20           | .30               | 1.74          | :16                               | .496         | .133          |
|                                                                                                          |                   |                 | 6-28-51       |                   |               | :20                               | .439         | .164          |
|                                                                                                          |                   |                 | 12:10a        | .11               | 1.83          | :30                               | .286         | .224          |
|                                                                                                          |                   |                 |               |                   |               | :40                               | .190         | .263          |
|                                                                                                          |                   |                 |               |                   |               | :50                               | .139         | .289          |
|                                                                                                          |                   |                 |               |                   |               | 11:05                             | .139         | .324          |
|                                                                                                          |                   |                 |               |                   |               | :20                               | .127         | .357          |
|                                                                                                          |                   |                 |               |                   |               | :40                               | .109         | .397          |
|                                                                                                          |                   |                 |               |                   |               | 12:00m                            | .0895        | .430          |
|                                                                                                          |                   |                 |               |                   |               | 6-28-51                           |              |               |
|                                                                                                          |                   |                 |               |                   |               | 1:00a                             | .0473        | .498          |
|                                                                                                          |                   |                 |               |                   |               | 3:00                              | .0092        | .545          |
|                                                                                                          |                   |                 |               |                   |               | 8:45                              | 0            | .558          |
| <u>Event of October 6, 1955</u>                                                                          |                   |                 |               |                   |               |                                   |              |               |
| 9-10-55                                                                                                  | 0.28              | 0               | 10-6-55       | Raingage          | R-3           | 10-6-55                           |              |               |
| 9-14                                                                                                     | .17               | 0               | 1:30p         | 0                 | 0             | 1:50p                             | 0            | 0             |
| 9-22                                                                                                     | .34               | 0               | :39           | 1.67              | .25           | :58                               | .0029        | T             |
| 9-23                                                                                                     | .36               | 0               | :44           | 5.40              | .70           | 2:06                              | .0454        | .003          |
| 9-26                                                                                                     | .07               | 0               | :46           | 4.50              | .85           | :12                               | .0754        | .009          |

Notes: To convert runoff in in/hr to cfs, multiply by 82.69. 1/ Prior to 10:40a.  
For map of watershed, see page 61.1-3 of Selected Runoff Events for Small Agricultural Watersheds in the United States, ARS-SWC, January 1960.

Research Project 10-312, Agricultural Engineering Department, University of Illinois, in cooperation with USDA.

| SELECTED RUNOFF EVENTS                                                                      |                   |                 | Monticello, Illinois Watershed IA |                   |               |               |              |               |
|---------------------------------------------------------------------------------------------|-------------------|-----------------|-----------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions                                                                       |                   |                 | Rainfall                          |                   |               | Runoff        |              |               |
| Date                                                                                        | Rainfall (inches) | Runoff (inches) | Date and time                     | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of October 6, 1955 - Continued                                                        |                   |                 |                                   |                   |               |               |              |               |
| 9-27                                                                                        | 0.62              | 0               | 1:52p                             | 1.70              | 1.02          | 2:25p         | 0.0782       | 0.026         |
| 9-29                                                                                        | 1.13              | 0               | :55                               | .80               | 1.06          | :38           | .0782        | .043          |
| 10-4                                                                                        | .35               | 0               | :59                               | 2.10              | 1.20          | :45           | .123         | .054          |
| 10-5                                                                                        | 1.78              | 0               | 2:04                              | 4.80              | 1.60          | :55           | .214         | .083          |
| 10-6 <u>1/</u>                                                                              | .35               | 0               | :06                               | 2.10              | 1.67          | 3:02          | .249         | .110          |
| <u>Watershed Conditions</u>                                                                 |                   |                 | :11                               | .24               | 1.69          | :05           | .243         | .123          |
| 57.7% of area was in corn, 13.6% in clover, 11.1% in meadow, 14.4% in grass, 3.2% in roads. |                   |                 | :14                               | 2.20              | 1.80          | :20           | .166         | .174          |
|                                                                                             |                   |                 | :20                               | .40               | 1.84          | :30           | .123         | .198          |
|                                                                                             |                   |                 | :35                               | .04               | 1.85          | :45           | .0991        | .235          |
|                                                                                             |                   |                 | :40                               | 3.60              | 2.15          | 4:05          | .0754        | .264          |
|                                                                                             |                   |                 | :43                               | 6.40              | 2.47          | :10           | .0927        | .271          |
|                                                                                             |                   |                 | :47                               | 2.70              | 2.65          | :25           | .286         | .315          |
|                                                                                             |                   |                 | :52                               | 2.40              | 2.85          | :28           | .327         | .330          |
|                                                                                             |                   |                 | 3:50                              | 0                 | 2.85          | :33           | .340         | .358          |
|                                                                                             |                   |                 | :54                               | .75               | 2.90          | :50           | .286         | .446          |
|                                                                                             |                   |                 | 4:03                              | .07               | 2.91          | 5:00          | .298         | .495          |
|                                                                                             |                   |                 | :10                               | 4.63              | 3.45          | :12           | .298         | .554          |
|                                                                                             |                   |                 | :18                               | 1.88              | 3.70          | :30           | .237         | .635          |
|                                                                                             |                   |                 | e :40                             | .84               | 4.15          | 6:03          | .127         | .733          |
|                                                                                             |                   |                 | e 5:00                            | .06               | 4.17          | :15           | .144         | .760          |
|                                                                                             |                   |                 | e :10                             | 2.28              | 4.55          | :30           | .135         | .795          |
|                                                                                             |                   |                 | e :30p                            | .09               | 4.58          | :45           | .109         | .826          |
|                                                                                             |                   |                 |                                   |                   |               | 7:30          | .0514        | .885          |
|                                                                                             |                   |                 |                                   |                   |               | 8:30          | .0236        | .919          |
|                                                                                             |                   |                 |                                   |                   |               | 10:00         | .0085        | .942          |
|                                                                                             |                   |                 |                                   |                   |               | 10-7-55       |              |               |
|                                                                                             |                   |                 |                                   |                   |               | 1:00a         | .0017        | .957          |
|                                                                                             |                   |                 |                                   |                   |               | 2:30          | 0            | .958          |

Notes: To convert runoff in in/hr to cfs, multiply by 82.69. 1/ Prior to event beginning 1:30p



MONTICELLO, ILLINOIS WATERSHED IA

| MONTHLY PRECIPITATION AND RUNOFF (Inches) |      |        |      |      |      |       |      | Monticello, Illinois Watershed IB<br>(Area - 45.5 acres) |       |      |      |      |        |
|-------------------------------------------|------|--------|------|------|------|-------|------|----------------------------------------------------------|-------|------|------|------|--------|
| Year \ Month                              | Jan. | Feb.   | Mar. | Apr. | May  | June  | July | Aug.                                                     | Sept. | Oct. | Nov. | Dec. | Year   |
| 1956 P                                    | 0.42 | 1.76   | 0.63 | 3.35 | 2.97 | 2.30  | 4.96 | 3.87                                                     | 0.32  | 0.60 | 2.24 | 2.21 | 25.63  |
| Q                                         | 0    | T      | 0    | .01  | T    | T     | .01  | 0                                                        | 0     | 0    | 0    | 0    | .02    |
| 1957 P                                    | 1.49 | 1.90   | 1.40 | 6.73 | 4.40 | 7.44  | 1.92 | 1.17                                                     | 1.67  | 3.07 | 2.62 | 3.79 | 37.60  |
| Q                                         | 0    | 0      | 0    | .57  | 0    | e .37 | 0    | 0                                                        | 0     | 0    | 0    | T    | .94    |
| 1958 P                                    | 1.30 | e .40  | .98  | 1.91 | 5.11 | 6.47  | 7.27 | .89                                                      | 4.01  | .47  | 4.30 | .50  | 33.61  |
| Q                                         | 0    | 0      | 0    | 0    | .02  | .22   | .40  | 0                                                        | T     | 0    | 0    | 0    | .64    |
| 1959 P                                    | 2.29 | 2.37   | 3.13 | 2.77 | 3.59 | .90   | 1.27 | 1.35                                                     | 3.47  | 3.56 | 2.44 | 2.02 | 29.16  |
| Q                                         | 0    | e 1.04 | .01  | T    | T    | 0     | 0    | 0                                                        | 0     | 0    | 0    | 0    | e 1.05 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS  
Monticello, Illinois Watershed IB

| YEAR | MAXIMUM DISCHARGE |      | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |      |         |      |         |      |          |      |       |      |        |      |        |      |  |  |
|------|-------------------|------|-------------------------------------------|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|--|--|
|      |                   |      | 1 hour                                    |      | 2 hours |      | 6 hours |      | 12 hours |      | 1 day |      | 2 days |      | 8 days |      |  |  |
|      | Date              | Rate | Date                                      | Vol. | Date    | Vol. | Date    | Vol. | Date     | Vol. | Date  | Vol. | Date   | Vol. | Date   | Vol. |  |  |
| 1959 | 1/                |      |                                           |      |         |      |         |      |          |      |       |      |        |      |        |      |  |  |

Notes: Monthly precipitation from one recording gage, R-1, located 300 ft. west of gaging station IB.  
 1/ Maximum discharge and volumes occurred 2-10-59 while recorder was being repaired. Quality of records: Good.  
 Watershed Conditions (1956-59): Corn 6 to 68%; soybeans 6 to 21% (none 1956 & 1958); oats 28% (1958); clover or alfalfa-brome 28 to 65%; grass 17.

SELECTED RUNOFF EVENTS  
Monticello, Illinois Watershed IB

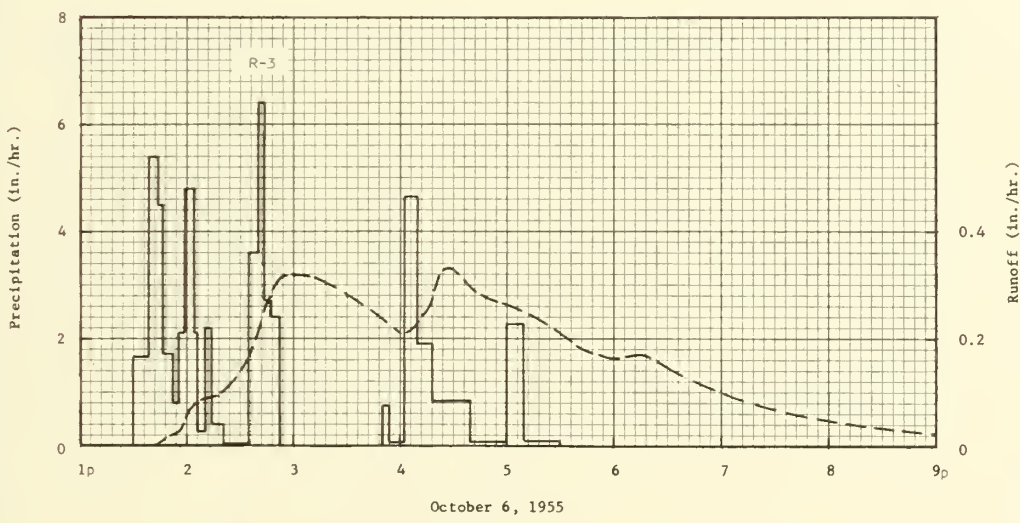
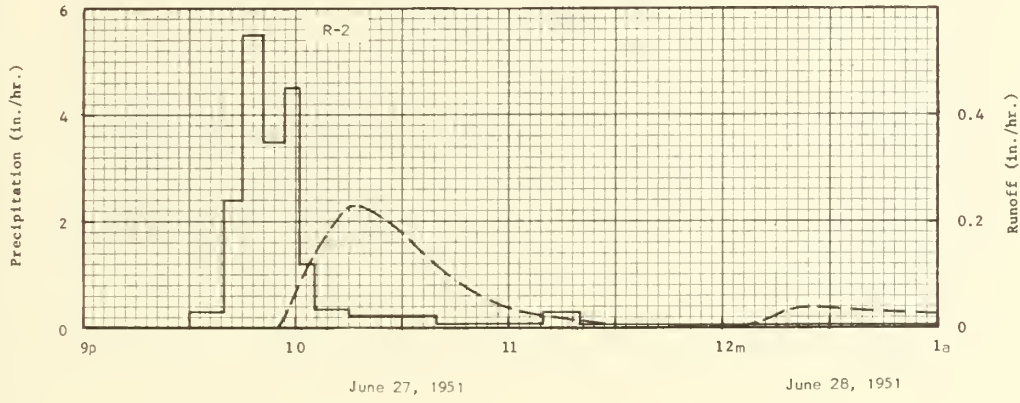
| Antecedent conditions                                          |                   |                 | Rainfall      |                   |               | Runoff        |              |               |
|----------------------------------------------------------------|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date                                                           | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of June 27, 1951                                         |                   |                 |               |                   |               |               |              |               |
| 6-3-51                                                         | 0.30              | 0               | 6-27-51       | Raingage          | R-2           | 6-27-51       |              |               |
| 6-7                                                            | .34               | 0               | 9:30p         | 0                 | 0             | 9:50p         | 0            | 0             |
| 6-12                                                           | .22               | 0               | :40           | .30               | .05           | :55           | .0022        | 0             |
| 6-16                                                           | .28               | 0               | :45           | 2.40              | .25           | 10:00         | .0621        | .002          |
| 6-19                                                           | .25               | 0               | :51           | 5.50              | .80           | :06           | .146         | .014          |
| 6-23                                                           | .10               | 0               | :57           | 3.50              | 1.15          | :15           | .222         | .042          |
| 6-24                                                           | .56               | 0               | 10:01         | 4.50              | 1.45          | :18           | .229         | .053          |
| 6-25                                                           | .08               | 0               | :05           | 1.20              | 1.53          | :25           | .203         | .078          |
| 6-26                                                           | .12               | 0               | :15           | .36               | 1.59          | :35           | .141         | .107          |
| 6-27 1/                                                        | 1.16              | 0               | :40           | .22               | 1.68          | :45           | .0890        | .126          |
| Watershed Conditions                                           |                   |                 | 11:10         | .06               | 1.71          | 11:05         | .0286        | .144          |
| 72.8% of area was in meadow, 21.4% in wheat, and 5.8% in corn. |                   |                 | :20           | .30               | 1.76          | :30           | .0083        | .151          |
|                                                                |                   |                 | 6-28-51       |                   |               | 6-28-51       |              |               |
|                                                                |                   |                 | 12:10a        | .07               | 1.82          | 12:09a        | .0019        | .154          |
|                                                                |                   |                 | 1:00          | .05               | 1.86          | :12           | .0153        | .154          |
|                                                                |                   |                 |               |                   |               | :17           | .0320        | .156          |
|                                                                |                   |                 |               |                   |               | :20           | .0360        | .158          |
|                                                                |                   |                 |               |                   |               | :28           | .0381        | .163          |
|                                                                |                   |                 |               |                   |               | 1:00          | .0268        | .180          |
|                                                                |                   |                 |               |                   |               | :30           | .0153        | .191          |
|                                                                |                   |                 |               |                   |               | 3:00          | .0036        | .204          |
|                                                                |                   |                 |               |                   |               | 7:00a         | 0            | .207          |
| Event of October 6, 1955                                       |                   |                 |               |                   |               |               |              |               |
| 9-10-55                                                        | 0.28              | 0               | 10-6-55       | Raingage          | R-3           | 10-6-55       |              |               |
| 9-14                                                           | .17               | 0               | 1:30p         | 0                 | 0             | 1:42p         | 0            | 0             |
| 9-22                                                           | .34               | 0               | :39           | 1.67              | .25           | :48           | .0166        | .001          |
| 9-23                                                           | .36               | 0               | :44           | 5.40              | .70           | :57           | .0338        | .004          |
| 9-26                                                           | .07               | 0               | :46           | 4.50              | .85           | 2:03          | .0752        | .010          |

Notes: To convert runoff in in/hr to cfa, multiply by 45.88. 1/ Prior to 11:00a.  
 For map of watershed, see 61.1-3 of Selected Runoff Events for Small Agricultural Watersheds in the United States, ARS-SWC, January 1960.



| SELECTED RUNOFF EVENTS                                          |                   |                 | Monticello, Illinois Watershed IB           |                   |               |               |              |               |
|-----------------------------------------------------------------|-------------------|-----------------|---------------------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions                                           |                   |                 | Rainfall                                    |                   |               | Runoff        |              |               |
| Date                                                            | Rainfall (inches) | Runoff (inches) | Date and time                               | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
|                                                                 |                   |                 | <u>Event of October 6, 1955 - Continued</u> |                   |               |               |              |               |
| 9-27                                                            | .62               | 0               | 1:52p                                       | 1.70              | 1.02          | 2:06p         | 0.0818       | 0.014         |
| 9-29                                                            | 1.13              | 0               | :55                                         | .80               | 1.06          | :18           | .0926        | .031          |
| 10-4                                                            | .35               | 0               | :59                                         | 2.10              | 1.20          | :30           | .141         | .054          |
| 10-5                                                            | 1.78              | 0               | 2:04                                        | 4.80              | 1.60          | :36           | .173         | .070          |
| 10-6 $\frac{1}{2}$                                              | .35               | 0               | :06                                         | 2.10              | 1.67          | :48           | .286         | .116          |
| <u>Watershed Conditions</u>                                     |                   |                 | :11                                         | .24               | 1.69          | :51           | .305         | .131          |
| 72.8% of area was in meadow, 21.4% in clover, and 5.8% in corn. |                   |                 | :14                                         | 2.20              | 1.80          | :54           | .319         | .147          |
|                                                                 |                   |                 | :20                                         | .40               | 1.84          | 3:00          | .319         | .179          |
|                                                                 |                   |                 | :35                                         | .04               | 1.85          | :30           | .279         | .331          |
|                                                                 |                   |                 | :40                                         | 3.60              | 2.15          | :45           | .249         | .397          |
|                                                                 |                   |                 | :43                                         | 6.40              | 2.47          | 4:03          | .209         | .465          |
|                                                                 |                   |                 | :47                                         | 2.70              | 2.65          | :18           | .271         | .523          |
|                                                                 |                   |                 | :52                                         | 2.40              | 2.85          | :24           | .327         | .554          |
|                                                                 |                   |                 | 3:50                                        | 0                 | 2.85          | :30           | .327         | .586          |
|                                                                 |                   |                 | :54                                         | .75               | 2.90          | :40           | .294         | .638          |
|                                                                 |                   |                 | 4:03                                        | .07               | 2.91          | 5:00          | .264         | .731          |
|                                                                 |                   |                 | :10                                         | 4.63              | 3.45          | :30           | .209         | .851          |
|                                                                 |                   |                 | :18                                         | 1.88              | 3.70          | 6:00          | .162         | .942          |
| e :40                                                           | .84               | 4.15            | :10                                         | .168              | .970          |               |              |               |
| e 5:00                                                          | .06               | 4.17            | 7:00                                        | .100              | 1.082         |               |              |               |
| e :10                                                           | 2.28              | 4.55            | 8:00                                        | .0490             | 1.155         |               |              |               |
| e :30p                                                          | .09               | 4.58            | 9:00                                        | .0218             | 1.189         |               |              |               |
|                                                                 |                   |                 |                                             |                   |               | 10-7-55       |              |               |
|                                                                 |                   |                 |                                             |                   |               | 1:00a         | 0            | 1.211         |

Notes: To convert runoff in in/hr to cfs, multiply by 45.88.  $\frac{1}{2}$  Prior to event beginning 1:30p.



MONTICELLO, ILLINOIS WATERSHED 1B

OXFORD, MISSISSIPPI Watershed W-4

**LOCATION:** Marshall Co., Miss.; 4.8 mi. SW of Holly Springs, on State Highway No. 4; Chews Creek, Pigeon Roost Creek Watershed, Yazoo River Basin.

**AREA:** 2,000 ac. (3.13 sq. mi.)

**SHAPE:** Rectangular; 2.4 mi. long, 1.3 mi. wide.

**SLOPES:** 13% is in 0-2% class; 18% in 2-5%; 11% in 5-8%; 5% in 8-12%; 12% in 12-17%; 41% in 17% and above. Aspect N.

**SOILS:** Loessial and Coastal Plains; topsoil - 5% silt loam in texture, 0 to 7 ins. in depth, weak fine granular structure; 8% silt loam in texture, 0 to 10 ins. in depth, weak coarse granular structure; 15% silt loam in texture, 0 to 8 ins. in depth, weak fine granular structure; 59% fine sandy loam in texture, 0 to 12 ins. in depth, weak fine crumb structure; 13% loam in texture, 0 to 21 ins. in depth, weak fine granular structure. Subsoil - 5% moderate to moderately slow permeability, **impeding** layer at approximately 30 ins.; 8% slow permeability, **impeding** layer at 15 to 20 ins.; 15% moderate to slow permeability, **impeding** layer at 15 to 20 ins.; 59% moderate to rapid permeability, no **impeding** layer; 13% moderate to moderately rapid permeability, no **impeding** layer. Internal drainage - medium to slow. Loring silt loam - 5%; Grenada silt loam - 8%; Providence silt loam and silty clay loam - 13%; Ruston fine sandy loam - 59%; Hymon loam - 13%.

**EROSION:** + - 13%; 2 - 22%; 3 - 65%.

**LAND CAPABILITY:** II - 14%, III - 6%; IV - 6%; VI - 15%; VII - 59%.

**SURFACE DRAINAGE:** Good; length of principal channel - 2.25 mi.; sand bed channel. Approximately 26% non-contributing area due to small desilting and retarding dams, increased to about 28% in 1960.

**CHARACTER OF FLOW:** Ephemeral, continuous.

**INSTRUMENTATION:** Runoff - current meter rated section of natural sand-bottom channel; continuous water-stage recorder. Precipitation - two recording gages, increased to three recording gages, July, 1959.

**WATERSHED CONDITIONS:** Normally about 22% is in cultivation - cotton and corn, 32% idle - good to poor cover of broom sedge and common grasses, 10% pasture - fair to poor cover; 3% planted to pine seedlings - fair to poor cover; 31% forest - good to fair cover; 2% bare gullies of which 1% is above gully plugs.

**GENERALLY REPRESENTS:** Moderately to severely eroded uplands in the transitional zone between the Southern Coastal Plain (P-133), and the Southern Mississippi Valley Silty Uplands (P-134), in the states of Arkansas, Louisiana, Mississippi, Kentucky, Tennessee, and southern Missouri.

| MONTHLY PRECIPITATION AND RUNOFF (Inches)                                                                                                                                   |                   |      |                                           |      |         |      | Oxford, Mississippi Watershed W-4<br>(Area - 2,000 acres) |      |          |      |       |      |        |      |        |      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------|-------------------------------------------|------|---------|------|-----------------------------------------------------------|------|----------|------|-------|------|--------|------|--------|------|
| Month<br>Year                                                                                                                                                               | Jan.              | Feb. | Mar.                                      | Apr. | May     | June | July                                                      | Aug. | Sept.    | Oct. | Nov.  | Dec. | Year   |      |        |      |
| 1957 P                                                                                                                                                                      | 8.10              | 6.72 | 2.47                                      | 6.56 | 5.33    | 5.26 | 3.84                                                      | 1.47 | 5.76     | 3.68 | 9.40  | 4.46 | 63.05  |      |        |      |
| 1957 Q                                                                                                                                                                      | 3.26              | 1.49 | .08                                       | 1.44 | .71     | .23  | .20                                                       | .02  | .29      | .04  | 2.45  | .58  | 10.79  |      |        |      |
| 1958 P                                                                                                                                                                      | 2.59              | 1.54 | 3.65                                      | 7.02 | 3.46    | 5.52 | 7.86                                                      | .95  | 9.89     | 1.01 | 3.47  | 1.62 | 48.58  |      |        |      |
| 1958 Q                                                                                                                                                                      | .07               | .01  | .06                                       | .74  | .46     | .03  | .63                                                       | 0    | .98      | 0    | .10   | T    | 3.08   |      |        |      |
| 1959 P                                                                                                                                                                      | 3.75              | 3.89 | 3.11                                      | 3.50 | 4.80    | 4.72 | 3.68                                                      | 4.63 | 3.96     | 2.29 | 3.59  | 6.88 | 48.80  |      |        |      |
| 1959 Q                                                                                                                                                                      | .30               | .82  | .07                                       | .09  | .25     | .41  |                                                           | .29  | .38      | .02  | .04   | 1.06 | 3.77   |      |        |      |
| Normal P                                                                                                                                                                    | 6.30              | 4.90 | 6.28                                      | 4.82 | 4.26    | 4.15 | 4.17                                                      | 3.13 | 3.48     | 3.19 | 4.78  | 5.25 | 54.71  |      |        |      |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS                                                     |                   |      |                                           |      |         |      | Oxford, Mississippi Watershed W-4                         |      |          |      |       |      |        |      |        |      |
| YEAR                                                                                                                                                                        | MAXIMUM DISCHARGE |      | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |      |         |      |                                                           |      |          |      |       |      |        |      |        |      |
|                                                                                                                                                                             |                   |      | 1 hour                                    |      | 2 hours |      | 6 hours                                                   |      | 12 hours |      | 1 day |      | 2 days |      | 8 days |      |
|                                                                                                                                                                             | Date              | Rate | Date                                      | Vol. | Date    | Vol. | Date                                                      | Vol. | Date     | Vol. | Date  | Vol. | Date   | Vol. | Date   | Vol. |
| 1957                                                                                                                                                                        | 11-13             | 0.56 | 11-13                                     | 0.53 | 11-13   | 0.89 | 11-13                                                     | 1.40 | 11-13    | 1.58 | 1-31  | 2.38 | 1-30   | 3.34 | 1-27   | 3.90 |
| 1958                                                                                                                                                                        | 7-22              | .37  | 7-22                                      | .24  | 7-22    | .33  | 7-22                                                      | .37  | 9-20     | .48  | 9-19  | .76  | 9-19   | .87  | 9-17   | .89  |
| 1959                                                                                                                                                                        | 9-9               | .29  | 9-9                                       | .24  | 9-9     | .31  | 12-18                                                     | .45  | 12-18    | .49  | 12-18 | .50  | 12-17  | .70  | 12-11  | 1.00 |
| Notes: Quality of records: Q - fair in 1957, good in 1958, fair in 1959; P - good. Normal P based on 33-yr. record (1920-1952) at USWB Sta., Holly Springs 2N, Mississippi. |                   |      |                                           |      |         |      |                                                           |      |          |      |       |      |        |      |        |      |

Cooperative Research Project of USDA, University of Mississippi, and Mississippi State Agricultural Experiment Station.

SELECTED RUNOFF EVENTS

Oxford, Mississippi Watershed W-4

| Antecedent conditions  |                                    |                     | Rainfall         |                      |                  | Runoff           |                 |                  |
|------------------------|------------------------------------|---------------------|------------------|----------------------|------------------|------------------|-----------------|------------------|
| Date                   | Rainfall <sup>1/</sup><br>(inches) | Runoff<br>(inches)  | Date and<br>time | Intensity<br>(in/hr) | Acc.<br>(inches) | Date and<br>time | Rate<br>(in/hr) | Acc.<br>(inches) |
| Event of April 3, 1958 |                                    |                     |                  |                      |                  |                  |                 |                  |
| 3-4-58                 | 0                                  | 0                   | 4-3-58           | Rain Gage 7          |                  | 4-3-58           |                 |                  |
| 3-5                    | 0                                  | 0                   | 4:45p            | 0                    | 0                | 4:55p            | .0036           | 0                |
| 3-6                    | .04                                | 0                   | :55              | .12                  | .02              | 5:20             | .0114           | .0031            |
| 3-7                    | .64                                | .0036               | 5:00             | 1.56                 | .15              | :30              | .0332           | .0068            |
| 3-8                    | .42                                | .0048               | :10              | .60                  | .25              | :45              | .0570           | .0181            |
| 3-9                    | 0                                  | .0036               | :15              | 1.80                 | .40              | 6:00             | .1314           | .0417            |
| 3-10-11                | 0                                  | 0                   | :30              | .08                  | .42              | :10              | .1453           | .0648            |
| 3-12                   | .08                                | 0                   | :35              | 1.56                 | .55              | :30              | .1116           | .1088            |
| 3-13                   | .07                                | 0                   |                  |                      |                  | 7:00             | .0719           | .1538            |
| 3-14-16                | 0                                  | 0                   |                  |                      |                  | 8:00             | .0372           | .2068            |
| 3-17                   | .61                                | .0048               | 4-3-58           | Rain Gage 8          |                  | 9:00             | .0193           | .2343            |
| 3-18-21                | 0                                  | 0                   | 4:40p            | 0                    | 0                | 12:00m           | .0050           | .2643            |
| 3-22                   | .03                                | 0                   | :50              | 1.36                 | .04              | 4-4-59           |                 |                  |
| 3-23                   | .98                                | .0167               | 5:00             | 1.44                 | .28              | 12:00m           | .0007           | .2991            |
| 3-24                   | .04                                | .0119               | :10              | 1.80                 | .58              | 12:00m           | .0004           | .3051            |
| 3-25                   | .25                                | 0                   | :25              | .08                  | .60              |                  |                 |                  |
| 3-26                   | .27                                | .0167               | :30              | .96                  | .68              |                  |                 |                  |
| 3-27                   | 0                                  | .0024               |                  |                      |                  |                  |                 |                  |
| 3-28                   | 0                                  | 0                   |                  |                      |                  |                  |                 |                  |
| 3-29                   | .05                                | 0                   |                  |                      |                  |                  |                 |                  |
| 3-30                   | .08                                | 0                   |                  |                      |                  |                  |                 |                  |
| 3-31                   | 0                                  | 0                   |                  |                      |                  |                  |                 |                  |
| 4-1-58                 | 0                                  | 0                   |                  |                      |                  |                  |                 |                  |
| 4-2                    | .06                                | 0                   |                  |                      |                  |                  |                 |                  |
| 4-3                    | .98                                | .0977 <sup>2/</sup> |                  |                      |                  |                  |                 |                  |

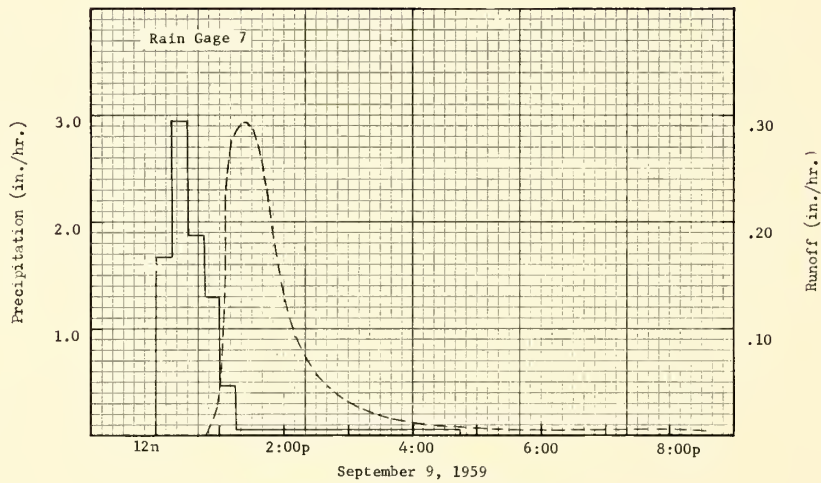
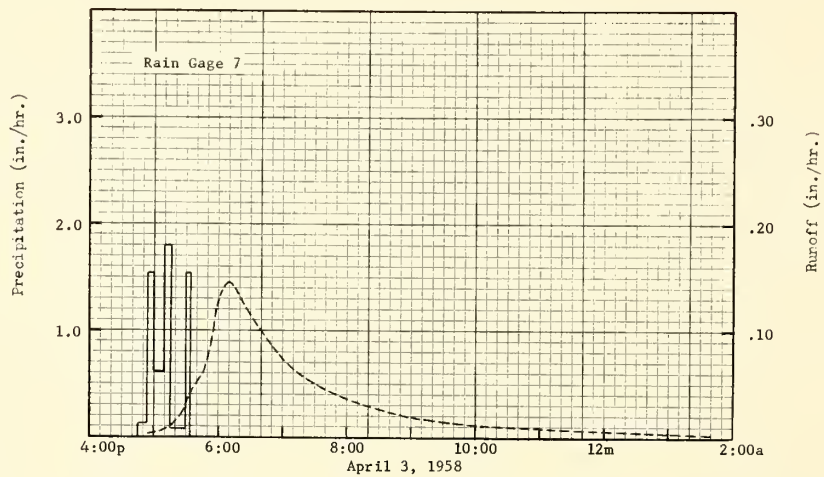
Watershed Conditions: 21% of area tilled for planting of row crops; 11% pasture, 2% hay, 33% idle, 31% woods - fair to good cover; 2% bare gullies.

Event of September 9, 1959

|         |      |        |        |                                       |      |         |       |       |
|---------|------|--------|--------|---------------------------------------|------|---------|-------|-------|
| 8-7-59  | 0    | 0      | 9-9-59 | Rain Gage 7                           |      | 9-9-59  |       |       |
| 8-8-12  | 0    | 0      | 12:00n | 0                                     | 0    | 12:45p  | 0     | 0     |
| 8-13    | 0.05 | 0      | :08p   | 1.35                                  | .18  | :55     | .0250 | .0029 |
| 8-14    | 0    | 0      | :13    | 4.44                                  | .55  | 1:00    | .0850 | .0075 |
| 8-15    | 0    | 0      | :15    | .90                                   | .58  | :05     | .2350 | .0208 |
| 8-16    | 0.10 | 0      | :27    | 3.85                                  | 1.35 | :15     | .2860 | .0642 |
| 8-17    | 0    | 0      | :40    | 2.76                                  | 1.95 | :28     | .2910 | .1267 |
| 8-18    | .84  | 0      | 1:00   | 1.35                                  | 2.40 | :45     | .2342 | .2018 |
| 8-19    | .01  | 0      | :07    | 3.43                                  | 2.80 | 2:00    | .1392 | .2484 |
| 8-20    | 0    | 0      | :13    | .60                                   | 2.85 | :15     | .0771 | .2749 |
| 8-21    | .28  | 0      | :17    | 1.20                                  | 2.95 | :30     | .0542 | .2913 |
| 8-22    | .03  | 0      | 2:50   | .04                                   | 3.01 | 3:00    | .0337 | .3128 |
| 8-23    | 0    | 0      | 4:45   | .02                                   | 3.06 | 4:00    | .0128 | .3340 |
| 8-24    | .61  | 0.0012 |        |                                       |      | 6:00    | .0048 | .3482 |
| 8-25    | 1.04 | .2851  |        |                                       |      | 9:00    | .0021 | .3606 |
| 8-26-29 | 0    | 0      | 9-9-59 | Rain Gages 7, 8, and 18 <sup>3/</sup> |      | 12:00m  | .0007 | .3648 |
| 8-30    | .49  | 0      | 12:00n | 0                                     | 0    | 9-10-59 |       |       |
| 8-31    | 0    | 0      | :15 p  | 1.68                                  | .42  | 3:00a   | .0004 | .3664 |
| 9-1     | .10  | 0      | :30    | 2.96                                  | 1.16 | 6:00    | .0002 | .3673 |
| 9-2-3   | 0    | 0      | :45    | 1.88                                  | 1.63 | 7:00    | 0     | .3674 |
| 9-4     | .07  | 0      | 1:00   | 1.28                                  | 1.95 |         |       |       |
| 9-5     | 1.10 | .0202  | :15    | .44                                   | 2.06 |         |       |       |
| 9-6-8   | 0    | 0      | 4:45   | .03                                   | 2.15 |         |       |       |

Watershed Conditions: 21% of area in matured cotton and corn - good to fair cover; 11% pasture, 2% hay, 33% idle, 31% woods - good cover; 2% bare gullies.

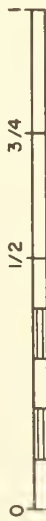
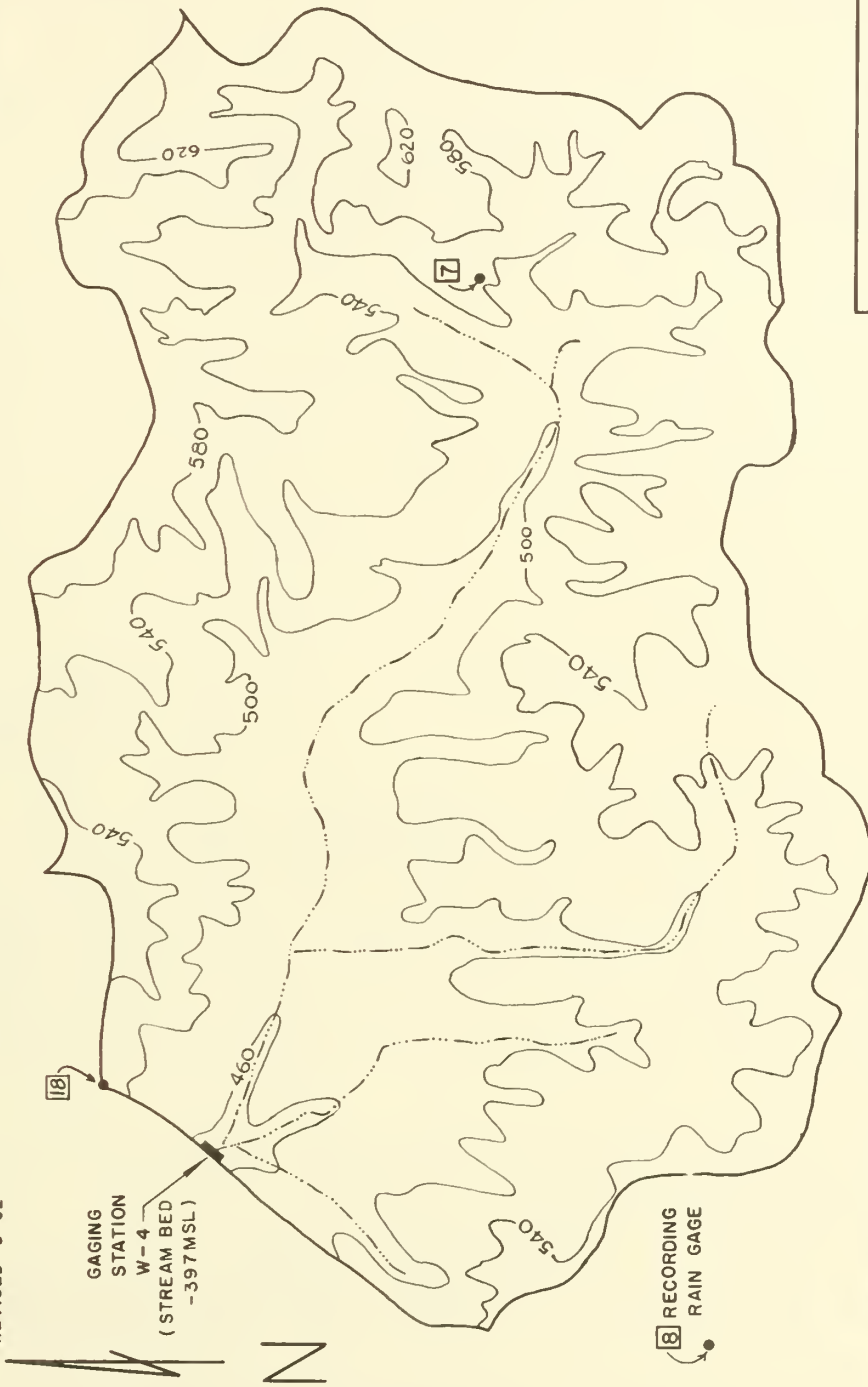
Notes: To convert runoff in in/hr to cfs, multiply by 2016.7. For an additional selected event see "Selected Runoff Events for Small Agricultural Watersheds," ARS-SWC, January 1960, page 62.1-1.  
<sup>1/</sup> Rain gages 7 and 8 for event of April 3, 1958, and rain gages 7, 8, and 18 for event of September 9, 1959, Thiessen weighted.  
<sup>2/</sup> Runoff 9:30a to 4:55p.  
<sup>3/</sup> Thiessen weighted.



OXFORD, MISSISSIPPI WATERSHED W-4



REVISED 5-62



SCALE IN MILES

CONTOUR INTERVAL - 40 FEET

NOTE: FOR WATERSHED LOCATION SEE FIGURE 1, PAGE 62.11-5

OXFORD, MISSISSIPPI

WATERSHED W-4

AREA: 2000 ACRES

OXFORD, MISSISSIPPI Watershed W-5

LOCATION: Marshall Co., Miss.; 6.1 mi. SW of Holly Springs, on State Highway No. 4; Willie Wilkins Creek, Pigeon Roost Creek Watershed, Yazoo River Basin.

AREA: 1,130 ac. (1.76 sq. mi.)

SHAPE: Square; 1.5 mi. wide, 1.2 mi. long.

SLOPES: 7% is in 0-2% class; 43% in 2-5%; 17% in 5-8%; 6% in 8-12%; 6% in 12-17%; 21% in 17% and above.  
Aspect NW.

SOILS: Loessial and Coastal Plains; topsoil - 8% silt loam in texture, 0 to 7 ins. in depth, weak fine granular structure; 12% silt loam in texture, 0 to 10 ins. in depth, weak coarse granular structure; 15% silt loam in texture, 0 to 8 ins. in depth, weak fine granular structure; 58% fine sandy loam in texture, 0 to 12 ins. in depth, weak fine crumb structure; 7% loam in texture, 0 to 21 ins. in depth, weak fine granular structure. Subsoil - 8% moderate to moderately slow permeability, impeding layer at approximately 30 ins.; 12% slow permeability, impeding layer at 15 to 20 ins.; 15% moderate to slow permeability, impeding layer at 15 to 20 ins.; 58% moderate to rapid permeability, no impeding layer; 7% moderate to moderately rapid permeability, no impeding layer. Internal drainage - medium to slow. Loring silt loam - 8%; Grenada silt loam - 12%; Providence silt loam and silty clay loam - 15%; Ruston fine sandy loam - 58%; Hymon loam - 7%.

EROSION: + - 7%; 1 - 8%; 2 - 48%; 3 - 37%.

LAND CAPABILITY: II - 12%, III - 6%; IV - 6%; VI - 16%; VII - 60%.

SURFACE DRAINAGE: Good; length of principal waterway - 1.5 mi.; sand bed channel. About 10% non-contributing area due to small desilting and retention dams, increased to 19% in August, 1961.

CHARACTER OF FLOW: Spring-fed intermittent, continuous.

INSTRUMENTATION: Runoff - current meter rated section of natural sand-bottom channel; continuous water-stage recorder. Precipitation - one recording gage in watershed.

WATERSHED CONDITIONS: Normally about 26% is in cultivation - cotton and corn, 21% idle - good to poor cover of broom sedge and common grasses, 30% pasture - fair to poor cover; 21% woods - good to fair cover; 2% bare gullies.

GENERALLY REPRESENTS: Moderately to severely eroded uplands in the transitional zone between the Southern Coastal Plain (P-133), and the Southern Mississippi Valley Silty Uplands (P-134), in the states of Arkansas, Louisiana, Mississippi, Kentucky, Tennessee, and southern Missouri.

| MONTHLY PRECIPITATION AND RUNOFF (Inches)                                                                                                                            |                   |      |                                           |      |         |      |         |      |          |       |       | Oxford, Mississippi Watershed W-5<br>(Area - 1,130 Acres) |        |       |        |       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------|-------------------------------------------|------|---------|------|---------|------|----------|-------|-------|-----------------------------------------------------------|--------|-------|--------|-------|
| Year                                                                                                                                                                 | Month             | Jan. | Feb.                                      | Mar. | Apr.    | May  | June    | July | Aug.     | Sept. | Oct.  | Nov.                                                      | Dec.   | Year  |        |       |
|                                                                                                                                                                      |                   | 1957 | P                                         | 8.70 | 6.02    | 2.47 | 7.05    | 5.81 | 6.18     | 3.47  | 1.66  | 6.00                                                      | 3.54   | 9.39  | 4.38   | 64.67 |
|                                                                                                                                                                      | Q                 | 5.01 | 1.96                                      | .20  | 2.28    | 1.08 | .81     | .24  | .02      | .36   | .07   | 4.25                                                      | 1.06   | 17.34 |        |       |
| 1958                                                                                                                                                                 | P                 | 2.61 | 1.54                                      | 3.44 | 7.10    | 3.46 | 4.83    | 6.16 | .99      | 9.61  | 1.02  | 3.47                                                      | 1.77   | 46.00 |        |       |
|                                                                                                                                                                      | Q                 | .30  | .05                                       | .52  | 2.15    | 1.06 | .06     | .43  | 0        | 1.53  | 0     | .30                                                       | .08    | 6.48  |        |       |
| 1959                                                                                                                                                                 | P                 | 3.89 | 3.70                                      | 3.21 | 3.85    | 4.97 | 5.79    | 3.89 | 3.91     | 2.72  | 2.18  | 3.55                                                      | 6.87   | 48.53 |        |       |
|                                                                                                                                                                      | Q                 | 1.22 | 1.40                                      | .54  | .51     | .68  | 1.82    | .14  | .04      | .10   | .02   | .10                                                       | 2.18   | 8.75  |        |       |
| Normal P                                                                                                                                                             |                   | 6.30 | 4.90                                      | 6.28 | 4.82    | 4.26 | 4.15    | 4.17 | 3.13     | 3.48  | 3.19  | 4.78                                                      | 5.25   | 54.71 |        |       |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS                                              |                   |      |                                           |      |         |      |         |      |          |       |       | Oxford, Mississippi Watershed W-5                         |        |       |        |       |
| YEAR                                                                                                                                                                 | MAXIMUM DISCHARGE |      | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |      |         |      |         |      |          |       |       |                                                           |        |       |        |       |
|                                                                                                                                                                      |                   |      | 1 hour                                    |      | 2 hours |      | 6 hours |      | 12 hours |       | 1 day |                                                           | 2 days |       | 8 days |       |
|                                                                                                                                                                      | Date              | Rate | Date                                      | Vol. | Date    | Vol. | Date    | Vol. | Date     | Vol.  | Date  | Vol.                                                      | Date   | Vol.  | Date   | Vol.  |
| 1957                                                                                                                                                                 | 11-13             | 0.56 | 11-13                                     | 0.54 | 11-13   | 0.95 | 11-13   | 1.76 | 11-13    | 2.26  | 1-31  | 2.48                                                      | 1-30   | 3.72  | 1-27   | 5.25  |
| 1958                                                                                                                                                                 | 4-3               | .32  | 4-3                                       | .26  | 4-3     | .39  | 4-3     | .52  | 4-3      | .76   | 9-19  | .99                                                       | 9-19   | 1.16  | 4-25   | 1.61  |
| 1959                                                                                                                                                                 | 6-10              | .61  | 6-10                                      | .48  | 6-10    | .63  | 6-11    | .84  | 6-11     | .89   | 6-10  | 1.58                                                      | 6-10   | 1.67  | 12-11  | 2.00  |
| Notes: Quality of records: Q - poor in 1957, good in 1958, good in 1959; P - good. Normal P based on 33-yr. record (1920-1952) at USWB Sta., Holly Springs 2N, Miss. |                   |      |                                           |      |         |      |         |      |          |       |       |                                                           |        |       |        |       |

Cooperative Research Project of USDA, University of Mississippi, and Mississippi State Agricultural Experiment Station.

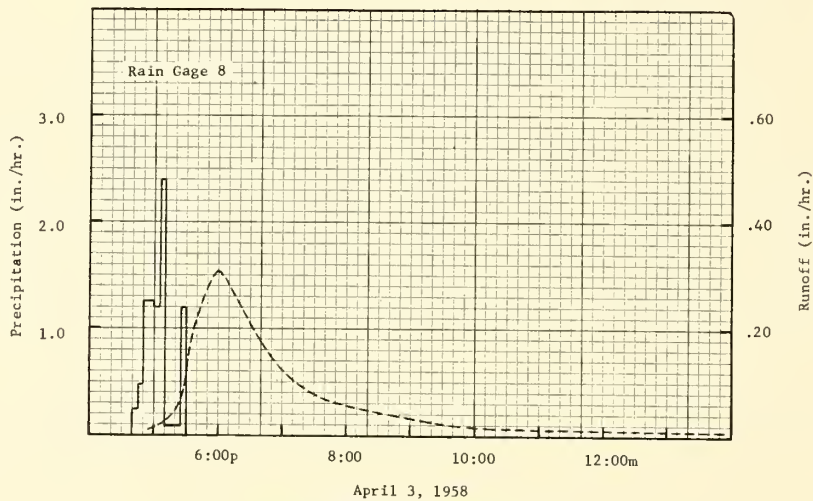
| SELECTED RUNOFF EVENTS                                                                                                                                                                                                                                                                                                                          |                   |                     |               | Oxford, Mississippi Watershed W-5 |               |               |              |               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------------|---------------|-----------------------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions                                                                                                                                                                                                                                                                                                                           |                   |                     | Rainfall      |                                   |               | Runoff        |              |               |
| Date                                                                                                                                                                                                                                                                                                                                            | Rainfall (inches) | Runoff (inches)     | Date and time | Intensity (in/hr)                 | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of April 3, 1958</u>                                                                                                                                                                                                                                                                                                                   |                   |                     |               |                                   |               |               |              |               |
| 3-4-5-58                                                                                                                                                                                                                                                                                                                                        | 0                 | 0                   | 4-3-58        | Rain Gage 8                       |               | 4-3-58        |              |               |
| 3-6                                                                                                                                                                                                                                                                                                                                             | .04               | 0                   | 4:40p         | 0                                 | 0             | 4:55p         | .0123        | 0             |
| 3-7                                                                                                                                                                                                                                                                                                                                             | .61               | .0758               | :45           | .24                               | .02           | 5:15          | .0351        | .0076         |
| 3-8                                                                                                                                                                                                                                                                                                                                             | .48               | .0779               | :50           | .48                               | .06           | :25           | .0772        | .0163         |
| 3-9                                                                                                                                                                                                                                                                                                                                             | 0                 | .0358               | 5:00          | 1.26                              | .27           | :30           | .1343        | .0251         |
| 3-10                                                                                                                                                                                                                                                                                                                                            | 0                 | .0021               | :05           | 1.20                              | .37           | :45           | .2545        | .0737         |
| 3-11                                                                                                                                                                                                                                                                                                                                            | 0                 | 0                   | :10           | 2.40                              | .57           | 6:00          | .3072        | .1451         |
| 3-12                                                                                                                                                                                                                                                                                                                                            | .08               | 0                   | :25           | .08                               | .59           | :15           | .2677        | .2179         |
| 3-13                                                                                                                                                                                                                                                                                                                                            | .06               | 0                   | :30           | 1.20                              | .69           | :30           | .2018        | .2767         |
| 3-14-16                                                                                                                                                                                                                                                                                                                                         | 0                 | 0                   |               |                                   |               | :45           | .1571        | .3206         |
| 3-17                                                                                                                                                                                                                                                                                                                                            | .60               | .0548               |               |                                   |               | 7:00          | .1220        | .3554         |
| 3-18                                                                                                                                                                                                                                                                                                                                            | 0                 | .0063               |               |                                   |               | :30           | .0755        | .4040         |
| 3-19                                                                                                                                                                                                                                                                                                                                            | 0                 | .0021               |               |                                   |               | 8:15          | .0465        | .4480         |
| 3-20-21                                                                                                                                                                                                                                                                                                                                         | 0                 | 0                   |               |                                   |               | 9:00          | .0333        | .4767         |
| 3-22                                                                                                                                                                                                                                                                                                                                            | .04               | 0                   |               |                                   |               | 10:00         | .0202        | .5029         |
| 3-23                                                                                                                                                                                                                                                                                                                                            | .87               | .0779               |               |                                   |               | 12:00m        | .0114        | .5343         |
| 3-24                                                                                                                                                                                                                                                                                                                                            | .02               | .0611               |               |                                   |               | 4-4-58        |              |               |
| 3-25                                                                                                                                                                                                                                                                                                                                            | .23               | .0105               |               |                                   |               | 5:00a         | .0051        | .5758         |
| 3-26                                                                                                                                                                                                                                                                                                                                            | .26               | .0927               |               |                                   |               | 12:00n        | .0025        | .6024         |
| 3-27                                                                                                                                                                                                                                                                                                                                            | 0                 | .0105               |               |                                   |               | 12:00m        | .0009        | .6228         |
| 3-28                                                                                                                                                                                                                                                                                                                                            | 0                 | .0042               |               |                                   |               |               |              |               |
| 3-29                                                                                                                                                                                                                                                                                                                                            | .05               | .0021               |               |                                   |               |               |              |               |
| 3-30                                                                                                                                                                                                                                                                                                                                            | .09               | .0021               |               |                                   |               |               |              |               |
| 3-31                                                                                                                                                                                                                                                                                                                                            | 0                 | .0021               |               |                                   |               |               |              |               |
| 4-1                                                                                                                                                                                                                                                                                                                                             | 0                 | 0                   |               |                                   |               |               |              |               |
| 4-2                                                                                                                                                                                                                                                                                                                                             | .04               | 0                   |               |                                   |               |               |              |               |
| 4-3                                                                                                                                                                                                                                                                                                                                             | .99               | .244 <sup>1/2</sup> |               |                                   |               |               |              |               |
| Watershed Conditions: 27% of area tilled for planting of row crops; 30% pasture, 20% idle, 21% woods - good to fair cover; 2% bare gullies.                                                                                                                                                                                                     |                   |                     |               |                                   |               |               |              |               |
| <u>Event of June 10, 1959</u>                                                                                                                                                                                                                                                                                                                   |                   |                     |               |                                   |               |               |              |               |
| 5-12-59                                                                                                                                                                                                                                                                                                                                         | 0                 | 0                   | 6-10-59       | Rain Gage 8                       |               | 6-10-59       |              |               |
| 5-13-21                                                                                                                                                                                                                                                                                                                                         | 0                 | 0                   | 12:20p        | 0                                 | 0             | 12:45p        | 0            | 0             |
| 5-22                                                                                                                                                                                                                                                                                                                                            | 1.52              | 0.1188              | :30           | 0.48                              | 0.08          | 1:00          | .0150        | .0018         |
| 5-23-25                                                                                                                                                                                                                                                                                                                                         | 0                 | .0012               | :45           | 1.00                              | .33           | :15           | .2960        | .0405         |
| 5-26                                                                                                                                                                                                                                                                                                                                            | 1.42              | .1663               | 1:00          | 2.52                              | .96           | :30           | .5850        | .1506         |
| 5-27                                                                                                                                                                                                                                                                                                                                            | .13               | .0950               | :10           | 2.04                              | 1.30          | :35           | .6073        | .2003         |
| 5-28                                                                                                                                                                                                                                                                                                                                            | 0                 | 0                   |               |                                   |               | :45           | .5550        | .2972         |
| 5-29                                                                                                                                                                                                                                                                                                                                            | .05               | 0                   |               |                                   |               | 2:00          | .4200        | .4191         |
| 5-30                                                                                                                                                                                                                                                                                                                                            | 1.11              | .0843               |               |                                   |               | :15           | .2790        | .5065         |
| 5-31                                                                                                                                                                                                                                                                                                                                            | 0                 | .0012               |               |                                   |               | :30           | .1877        | .5648         |
| 6-1-4                                                                                                                                                                                                                                                                                                                                           | 0                 | 0                   |               |                                   |               | 3:00          | .0819        | .6267         |
| 6-5                                                                                                                                                                                                                                                                                                                                             | .10               | 0                   |               |                                   |               | :45           | .0370        | .6691         |
| 6-6                                                                                                                                                                                                                                                                                                                                             | 0                 | 0                   |               |                                   |               | 6:00          | .0086        | .7130         |
| 6-7                                                                                                                                                                                                                                                                                                                                             | .38               | 0                   |               |                                   |               | 9:00          | .0039        | .7316         |
| 6-8                                                                                                                                                                                                                                                                                                                                             | .34               | 0                   |               |                                   |               | 12:00m        | .0024        | .7409         |
| 6-9                                                                                                                                                                                                                                                                                                                                             | .73               | .0594               |               |                                   |               | 6-11-59       |              |               |
|                                                                                                                                                                                                                                                                                                                                                 |                   |                     |               |                                   |               | 4:00a         | .0009        | .7473         |
| Watershed Conditions: 26% of area under cultivation in cotton and corn - poor to fair cover; 30% in pasture, 21% idle, 21% woods - good cover; 2% bare gullies.                                                                                                                                                                                 |                   |                     |               |                                   |               |               |              |               |
| Notes: To convert runoff in in/hr to cfs, multiply by 1,139.4.<br>For additional events and map of watershed see "Selected Runoff Events for Small Agricultural Watersheds in the United States," ARS-SWC, January 1960, pages 62.2-1 and 62.2-3.<br>For watershed location see Figure 1, page 62.11-5.<br><sup>1/2</sup> Runoff 9:00a - 4:55p. |                   |                     |               |                                   |               |               |              |               |

SELECTED RUNOFF EVENTS

Oxford, Mississippi Watershed W-5

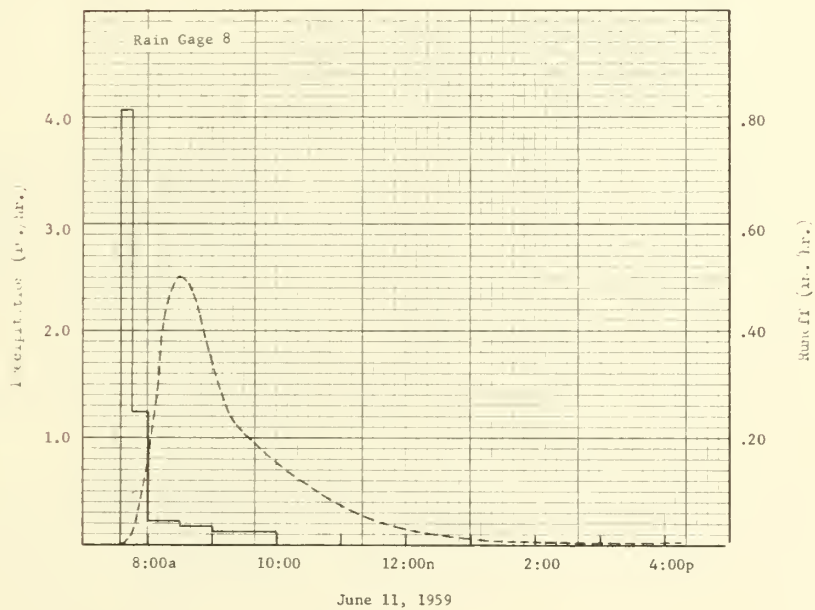
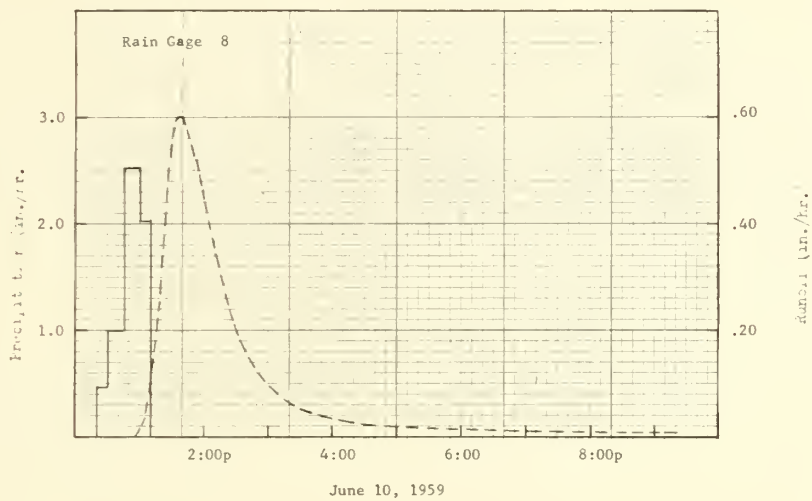
| Antecedent conditions  |                   |                     | Rainfall      |                   |               | Runoff        |              |               |
|------------------------|-------------------|---------------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date                   | Rainfall (inches) | Runoff (inches)     | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of June 11, 1959 |                   |                     |               |                   |               |               |              |               |
| 5-12-59                | 0                 | 0                   | 6-11-59       | Rain Gage 8       |               | 6-11-59       |              |               |
| 5-13-21                | 0                 | 0                   | 7:35a         | 0                 | 0             | 7:37a         | .0004        | 0             |
| 5-22                   | 1.52              | .1188               | :45           | 4.08              | .68           | :45           | .0132        | .0011         |
| 5-23-25                | 0                 | .0012               | 8:00          | 1.24              | .99           | :50           | .0500        | .0037         |
| 5-26                   | 1.42              | .1663               | :30           | .22               | 1.10          | :55           | .1184        | .0107         |
| 5-27                   | .13               | .0950               | 9:00          | .18               | 1.19          | 8:05          | .2413        | .0400         |
| 5-28                   | 0                 | 0                   | 10:00         | .12               | 1.31          | :15           | .4256        | .0956         |
| 5-29                   | .05               | 0                   |               |                   |               | :30           | .4994        | .2112         |
| 5-30                   | 1.11              | .0843               |               |                   |               | :45           | .4520        | .3301         |
| 5-31                   | 0                 | .0012               |               |                   |               | 9:00          | .3230        | .4270         |
| 6-1-4                  | 0                 | 0                   |               |                   |               | :30           | .2326        | .5713         |
| 6-5                    | .10               | 0                   |               |                   |               | 10:00         | .1588        | .6686         |
| 6-6                    | 0                 | 0                   |               |                   |               | 11:00         | .0720        | .7808         |
| 6-7                    | .38               | 0                   |               |                   |               | 12:30p        | .0228        | .8456         |
| 6-8                    | .34               | 0                   |               |                   |               | 3:00          | .0053        | .8738         |
| 6-9                    | .73               | .0594               |               |                   |               | 6:00          | .0016        | .8840         |
| 6-10                   | 1.30              | .7457               |               |                   |               | 9:00          | .0008        | .8876         |
| 6-11                   | 0                 | .0066 <sup>1/</sup> |               |                   |               | 12:00m        | .0006        | .8897         |

Watershed Conditions: 26% of area under cultivation in cotton and corn - poor to fair cover; 30% in pasture, 21% idle, 21% woods - good cover; 2% bare gullies.



OXFORD, MISSISSIPPI WATERSHED W-5

Notes: To convert runoff in in/hr to cfs, multiply by 1139.4.  
 For additional events and map of watershed see "Selected Runoff Events for Small Agricultural Watersheds in the United States," ARS-SWC, January 1960, pages 62.2-1 and 62.2-3.  
<sup>1/</sup> Runoff prior to 7:37a.



OXFORD, MISSISSIPPI WATERSHEO W-5



OXFORD, MISSISSIPPI Watershed W-10

LOCATION: Marshall Co., Miss.; 3.3 mi. NW. of Chulahoma, on county road; Dry Fork Creek, Pigeon Roost Creek Watershed, Yazoon River Basin.

AREA: 5,530 ac. (8.64 sq. mi.)      SHAPE: Almost square; 3 mi. wide, 2.9 mi. long.

SLOPES: 14% is in 0-2% class; 24% in 2-5%; 6% in 5-8%; 5% in 8-12%; 16% in 12-17%; 35% in 17% and above. Aspect NW.

SOILS: Loessial and Coastal Plains; topsoil - 12% silt loam in texture, 0 to 7 ins. in depth, weak fine granular structure; 8% silt loam in texture, 0 to 10 ins. in depth, weak coarse granular structure; 14% silt loam in texture, 0 to 8 ins. in depth, weak fine granular structure; 50% fine sandy loam in texture, 0 to 12 ins. in depth, weak fine crumb structure; 16% loam in texture, 0 to 21 ins. in depth, weak fine granular structure. Subsoil - 12% moderate to moderately slow permeability impeding layer at approximately 30 ins.; 8% slow permeability, impeding layer at 15 to 20 ins.; 14% moderate to slow permeability, impeding layer at 15 to 20 ins.; 50% moderate to rapid permeability, no impeding layer; 16% moderate to moderately rapid permeability, no impeding layer. Internal drainage - medium to slow. Loring silt loam - 12%; Crenada silt loam - 8%; Providence silt loam and silty clay loam - 14%; Ruston fine sandy loam - 50%; Hymon loam - 16%.

EROSION: + - 16%; 2 - 18%; 3 - 66%.

LAND CAPABILITY: II - 20%; III - 16%; IV - 10%; VI - 12%; VII - 42%.

SURFACE DRAINAGE: Good, length of principal waterway - 4 mi.; sand bed channels. About 12% non-contributing area due to small desilting and retention dams.

CHARACTER OF FLOW: Spring-fed intermittent, continuous.

INSTRUMENTATION: Runoff - current meter rated section of natural sand-bottom channel; continuous water-stage recorder; cableway at site. Precipitation - five recording gages.

WATERSHED CONDITIONS: Normally about 20% is in cultivation - cotton and corn, 53% idle - fair to poor cover condition in common grasses and broom sedge, 9% in pasture - fair to poor cover; 15% woods - fair to poor cover; 3% bare gullies.

GENERALLY REPRESENTS: Moderately to severely eroded uplands in the transitional zone between the Southern Coastal Plain (P-133), and the Southern Mississippi Valley Silty Uplands (P-134), in the states of Arkansas, Louisiana, Mississippi, Kentucky, Tennessee, and southern Missouri.

| MONTHLY PRECIPITATION AND RUNOFF (Inches)                                                                               |                   |      |                                           |      |         |      | Oxford, Mississippi Watershed W-10<br>(Area - 5,530 Acres) |      |          |       |       |      |        |       |        |      |
|-------------------------------------------------------------------------------------------------------------------------|-------------------|------|-------------------------------------------|------|---------|------|------------------------------------------------------------|------|----------|-------|-------|------|--------|-------|--------|------|
| Year                                                                                                                    | Month             | Jan. | Feb.                                      | Mar. | Apr.    | May  | June                                                       | July | Aug.     | Sept. | Oct.  | Nov. | Dec.   | Year  |        |      |
| 1957                                                                                                                    | P                 | 8.06 | 6.68                                      | 2.49 | 7.02    | 6.22 | 7.25                                                       | 2.67 | 2.27     | 6.78  | 3.46  | 9.93 | 4.96   | 67.79 |        |      |
|                                                                                                                         | Q                 | 3.57 | 2.01                                      | .08  | 2.22    | 2.10 | .69                                                        | .25  | .15      | .88   | .06   | 3.65 | 1.38   | 17.04 |        |      |
| 1958                                                                                                                    | P                 | 2.94 | 1.92                                      | 3.85 | 7.46    | 4.84 | 4.35                                                       | 6.46 | .72      | 10.05 | 1.04  | 3.48 | 1.70   | 48.81 |        |      |
|                                                                                                                         | Q                 | .55  | .21                                       | .65  | 2.13    | 1.29 | .14                                                        | .52  | 0        | 1.66  | .01   | .42  | 0      | 7.58  |        |      |
| 1959                                                                                                                    | P                 | 4.21 | 4.22                                      | 3.51 | 4.37    | 5.46 | 3.88                                                       | 5.32 | 4.29     | 3.57  | 2.04  | 3.02 | 6.81   | 50.70 |        |      |
|                                                                                                                         | Q                 | .87  | 1.13                                      | .43  | .64     | .38  | .58                                                        | .36  | .29      | .28   | .04   | .03  | 1.36   | 6.39  |        |      |
| Normal                                                                                                                  | P                 | 6.30 | 4.90                                      | 6.28 | 4.82    | 4.26 | 4.15                                                       | 4.17 | 3.13     | 3.48  | 3.19  | 4.78 | 5.25   | 54.71 |        |      |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS |                   |      |                                           |      |         |      | Oxford, Mississippi Watershed W-10                         |      |          |       |       |      |        |       |        |      |
| YEAR                                                                                                                    | MAXIMUM DISCHARGE |      | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |      |         |      |                                                            |      |          |       |       |      |        |       |        |      |
|                                                                                                                         |                   |      | 1 hour                                    |      | 2 hours |      | 6 hours                                                    |      | 12 hours |       | 1 day |      | 2 days |       | 8 days |      |
|                                                                                                                         | Date              | Rate | Date                                      | Vol. | Date    | Vol. | Date                                                       | Vol. | Date     | Vol.  | Date  | Vol. | Date   | Vol.  | Date   | Vol. |
| 1957                                                                                                                    | 11-18             | 0.36 | 5-22                                      | 0.34 | 5-22    | 0.61 | 5-22                                                       | 0.94 | 1-31     | 1.22  | 1-31  | 2.04 | 1-30   | 2.98  | 1-27   | 4.08 |
| 1958                                                                                                                    | 4-3               | .49  | 4-3                                       | .41  | 4-3     | .62  | 4-3                                                        | .89  | 4-3      | .95   | 9-19  | 1.11 | 9-19   | 1.26  | 4-25   | 1.46 |
| 1959                                                                                                                    | 6-11              | .20  | 6-11                                      | .18  | 6-11    | .28  | 2-13                                                       | .43  | 2-13     | .47   | 2-13  | .69  | 2-12   | .81   | 12-11  | 1.24 |

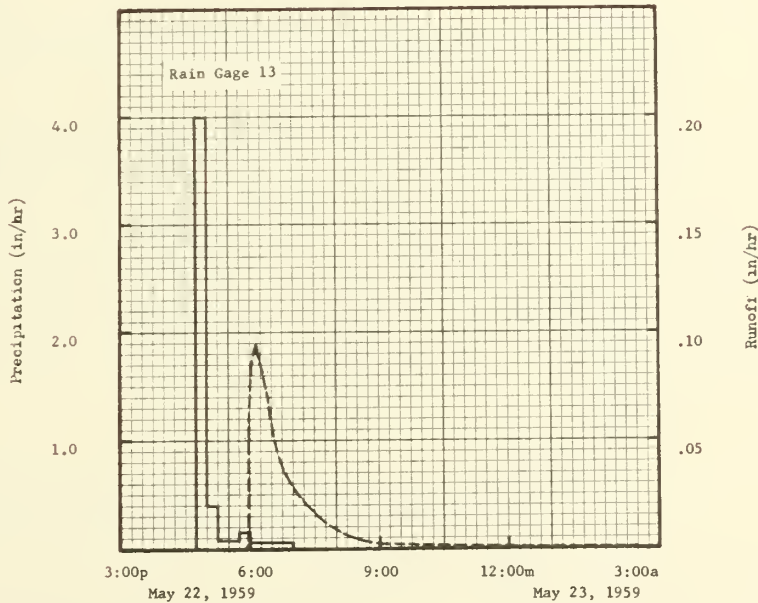
Notes: Quality of records: Q - fair for 1957 and 1958, good for 1959; P - good. Normal P based on 33-yr. record (1920-1952) at USWB Sta., Holly Springs 2N, Miss.

SELECTED RUNOFF EVENTS

Oxford, Mississippi Watershed W-10

| Antecedent conditions |                                    |                    | Rainfall         |                            |                  | Runoff           |                 |                  |
|-----------------------|------------------------------------|--------------------|------------------|----------------------------|------------------|------------------|-----------------|------------------|
| Date                  | Rainfall <sup>1/</sup><br>(inches) | Runoff<br>(inches) | Date and<br>time | Intensity<br>(in/hr)       | Acc.<br>(inches) | Date and<br>time | Rate<br>(in/hr) | Acc.<br>(inches) |
| Event of May 22, 1959 |                                    |                    |                  |                            |                  |                  |                 |                  |
| 4-22-59               | 0                                  | .0034              | 5-22-59          | Rain Gage 13 <sup>2/</sup> |                  | 5-22-59          |                 |                  |
| 4-23                  | 0                                  | .0026              | 4:45p            | 0                          | 0                | 4:55a            | 0               | 0                |
| 4-24                  | 0                                  | .0022              | 5:00             | 1.01                       | 4.04             | 5:55             | .0006           | .0003            |
| 4-25                  | 0                                  | .0013              | :15              | 1.11                       | .40              | 6:00             | .0516           | .0025            |
| 4-26                  | 0                                  | .0009              | :45              | 1.16                       | .08              | :05              | .0834           | .0081            |
| 4-27                  | T                                  | .0004              | 6:00             | 1.20                       | .16              | 6:10             | .0941           | .0156            |
| 4-28-30               | 0                                  | 0                  | 7:00             | 1.25                       | .05              | :20              | .0789           | .0300            |
| 5-1-9                 | 0                                  | 0                  |                  |                            |                  | :45              | .0373           | .0544            |
| 5-10                  | .26                                | .0009              | 5-22-59          | Rain Gages <sup>1/</sup>   |                  | 7:30             | .0165           | .0736            |
| 5-11                  | .45                                | .0004              | 4:30 p           | 0                          | 0                | 8:30             | .0047           | .0876            |
| 5-12                  | .72                                | .0006              | :45              | .16                        | .04              | 10:00            | .0016           | .0876            |
| 5-13                  | 0                                  | .0020              | 5:00             | 3.44                       | .90              | 12:00m           | .0004           | .0896            |
| 5-14-21               | 0                                  | 0                  | :15              | .44                        | 1.01             | 5-23-59          |                 |                  |
| 5-22                  | .17 <sup>3/</sup>                  | 0                  | 6:00             | .11                        | 1.09             | 3:00p            | .0001           | .0905            |
|                       |                                    |                    | 7:00             | .06                        | 1.15             |                  |                 |                  |

Watershed Conditions: 20% of area under cultivation in cotton and corn - poor to fair cover; 9% pasture, 53% idle, 15% woods - good cover; 3% bare gullies.



OXFORD, MISSISSIPPI WATERSHED W-10

Notes: To convert runoff in in/hr to cfs, multiply by 5,576.  
 For additional events see "Selected Runoff Events for Small Agricultural Watersheds in the United States," ARS-SWC, January 1960, pages 62.3-1, 2.  
<sup>1/</sup> Rain gages 3, 9, 10, 13, and 14 Thiessen weighted.  
<sup>2/</sup> Rainfall for gage 10 listed on page 62.12-3 and for gages 3, 9, 13, and 14 listed on pages 62.10 - 3.  
<sup>3/</sup> Rainfall between 4:30a and 7:00a.

Cooperative Research Project of USDA, University of Mississippi and Mississippi State University

REVISED 5-62

14



GAGING STATION W-10  
(STREAM BED-454 MSL)

RECORDING RAIN GAGE



3.0 MILES TO RAIN GAGE NO. 9

4.0 MILES TO RAIN GAGE NO. 3



SCALE IN MILES

CONTOUR INTERVAL - 40 FEET

NOTE: FOR WATERSHED LOCATION  
SEE FIGURE 1, PAGE 62.11-5

10

OXFORD, MISSISSIPPI  
WATERSHED W-10  
AREA: 5530 ACRES

OXFORD, MISSISSIPPI Watershed W-12

**LOCATION:** Marshall Co., Miss.; 5.6 mi. SW. of Holly Springs, on county road; Pigeon Roost Creek Watershed, Yazoo River Basin.

**AREA:** 22,800 ac. (35.6 sq. mi.)

**SHAPE:** Fan; 4 mi. wide, 9 mi. long.

**SLOPES:** 20% is in 0-2% class; 21% in 2-5%; 7% in 5-8%; 7% in 8-12%; 12% in 12-17%; 33% in 17% and above. Aspect W.

**SOILS:** Loessial and Coastal Plains; topsoil - 6% silt loam in texture, 0 to 7 ins. in depth, weak fine granular structure; 9% silt loam in texture, 0 to 10 ins. in depth, weak coarse granular structure; 13% silt loam in texture, 0 to 8 ins. in depth, weak fine granular structure; 52% fine sandy loam in texture, 0 to 12 ins. in depth, weak fine crumb structure; 20% loam in texture, 0 to 21 ins. in depth, weak fine granular structure. Subsoil - 6% moderate to moderately slow permeability, **impeding** layer at approximately 30 ins.; 9% slow permeability, **impeding** layer at 15 to 20 ins.; 13% moderate to slow permeability, **impeding** layer at 15 to 20 ins.; 52% moderate to rapid permeability, no **impeding** layer; 20% moderate to moderately rapid permeability, no **impeding** layer. Internal drainage - medium to slow. Loring silt loam - 6%; Grenada silt loam - 9%; Providence silt loam and silty clay loam - 13%; Ruston fine sandy loam - 52%; Hymon loam - 20%.

**EROSION:** + - 20%; 2 - 21%; 3 - 59%.

**LAND CAPABILITY:** II - 14%, III - 17%; IV - 6%; VI - 12%; VII - 51%.

**SURFACE DRAINAGE:** Good; two principal channels: Pigeon Roost Creek - 6.5 mi. long, Jones Creek - 5.5 mi. long; sand bed channels. About 15% non-contributing area due to small desilting and retention dams.

**CHARACTER OF FLOW:** Perennial, continuous.

**INSTRUMENTATION:** Runoff - current meter rated section of dredged sand-bottom channel; continuous water-stage recorder; cableway at site. Precipitation - eight recording gages, increased to 15 recording gages, July, 1959.

**WATERSHED CONDITIONS:** Normally about 20% is in cultivation - cotton and corn, 39% idle - good to poor cover in common grasses and broom sedge, 13% pasture - good to poor cover; 23% woods - good to fair cover; 3% urban, town of Holly Springs; 2% bare gullies.

**GENERALLY REPRESENTS:** Moderately to severely eroded uplands in the transitional zone between the Southern Coastal Plain (P-133), and the Southern Mississippi Valley Silty Uplands (P-134), in the states of Arkansas, Louisiana, Mississippi, Kentucky, Tennessee, and southern Missouri.

| MONTHLY PRECIPITATION AND RUNOFF (Inches)                                                                                                                       |                   |      |                                           |      |         |      |         |      |          |       |       |      | Oxford, Mississippi Watershed W-12<br>(Area - 22,800 Acres) |       |        |      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------|-------------------------------------------|------|---------|------|---------|------|----------|-------|-------|------|-------------------------------------------------------------|-------|--------|------|
| Year                                                                                                                                                            | Month             | Jan. | Feb.                                      | Mar. | Apr.    | May  | June    | July | Aug.     | Sept. | Oct.  | Nov. | Dec.                                                        | Year  |        |      |
| 1957                                                                                                                                                            | P                 | 7.99 | 6.77                                      | 2.46 | 6.42    | 5.52 | 5.89    | 3.68 | 1.34     | 6.28  | 3.64  | 9.16 | 4.65                                                        | 63.80 |        |      |
|                                                                                                                                                                 | Q                 | 2.66 | 1.48                                      | .08  | 1.25    | .89  | .49     | .29  | .01      | .41   | .06   | 2.13 | 1.14                                                        | 10.89 |        |      |
| 1958                                                                                                                                                            | P                 | 2.78 | 1.58                                      | 3.53 | 6.66    | 4.17 | 5.31    | 6.83 | 1.12     | 8.95  | .98   | 3.50 | 1.65                                                        | 47.06 |        |      |
|                                                                                                                                                                 | Q                 | .27  | .06                                       | .18  | .97     | .82  | .10     | .41  | .02      | .72   | .01   | .11  | .02                                                         | 3.69  |        |      |
| 1959                                                                                                                                                            | P                 | 3.89 | 3.85                                      | 3.23 | 4.02    | 4.90 | 4.49    | 4.10 | 5.16     | 3.05  | 2.20  | 3.37 | 6.78                                                        | 49.04 |        |      |
|                                                                                                                                                                 | Q                 | .57  | .62                                       | .23  | .33     | .27  | .67     | .06  | .20      | .21   | .01   | .02  | 1.09                                                        | 4.28  |        |      |
| <b>Normal P</b>                                                                                                                                                 |                   | 6.30 | 4.90                                      | 6.28 | 4.82    | 4.26 | 4.15    | 4.17 | 3.13     | 3.48  | 3.19  | 4.78 | 5.25                                                        | 54.71 |        |      |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS                                         |                   |      |                                           |      |         |      |         |      |          |       |       |      | Oxford, Mississippi Watershed W-12                          |       |        |      |
| YEAR                                                                                                                                                            | MAXIMUM DISCHARGE |      | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |      |         |      |         |      |          |       |       |      |                                                             |       |        |      |
|                                                                                                                                                                 |                   |      | 1 hour                                    |      | 2 hours |      | 6 hours |      | 12 hours |       | 1 day |      | 2 days                                                      |       | 8 days |      |
|                                                                                                                                                                 | Date              | Rate | Date                                      | Vol. | Date    | Vol. | Date    | Vol. | Date     | Vol.  | Date  | Vol. | Date                                                        | Vol.  | Date   | Vol. |
| 1957                                                                                                                                                            | 5-22              | 0.23 | 5-22                                      | 0.22 | 5-22    | 0.41 | 5-22    | 0.64 | 1-31     | 0.83  | 1-31  | 1.56 | 1-30                                                        | 2.28  | 1-27   | 3.07 |
| 1958                                                                                                                                                            | 7-22              | .10  | 7-22                                      | .10  | 7-22    | .16  | 5-1     | .33  | 9-20     | .39   | 9-19  | .60  | 9-19                                                        | .68   | 4-25   | .95  |
| 1959                                                                                                                                                            | 12-18             | .11  | 6-10                                      | .11  | 6-10    | .20  | 12-18   | .40  | 12-18    | .44   | 6-10  | .54  | 12-17                                                       | .65   | 12-11  | 1.01 |
| Notes: Quality of records: Q - fair in 1957 and 1958, good in 1959; P - good. Normal P based on 33 yr. record (1920-1952) at USWB Sta., Holly Springs 2N, Miss. |                   |      |                                           |      |         |      |         |      |          |       |       |      |                                                             |       |        |      |

Cooperative Research Project of USDA, University of Mississippi, and Mississippi State Agricultural Experiment Station.



| SELECTED RUNOFF EVENTS                                                                                                                                         |                                    |                     |                  |                          |                  | Oxford, Mississippi Watershed W-12 |                 |                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|---------------------|------------------|--------------------------|------------------|------------------------------------|-----------------|------------------|
| Antecedent conditions                                                                                                                                          |                                    |                     | Rainfall         |                          |                  | Runoff                             |                 |                  |
| Date                                                                                                                                                           | Rainfall <sup>1/</sup><br>(inches) | Runoff<br>(inches)  | Date and<br>time | Intensity<br>(in/hr)     | Acc.<br>(inches) | Date and<br>time                   | Rate<br>(in/hr) | Acc.<br>(inches) |
| Event of May 22, 1957                                                                                                                                          |                                    |                     |                  |                          |                  |                                    |                 |                  |
| 4-23-57                                                                                                                                                        | 0                                  | .0721               | 5-22-57          | Rain Gage 15             |                  | 5-22-57                            |                 |                  |
| 4-24                                                                                                                                                           | 0                                  | .0036               | 12:15a           | 0                        | 0                | 6:30a                              | 0               | 0                |
| 4-25                                                                                                                                                           | .60                                | .1097               | 5:15             | T                        | 0                | 7:00                               | .0004           | .0001            |
| 4-26                                                                                                                                                           | 0                                  | .0051               | 6:15             | .05                      | .05              | :15                                | .0025           | .0037            |
| 4-27                                                                                                                                                           | 0                                  | .0025               | :20              | .60                      | .10              | :30                                | .0710           | .0172            |
| 4-28                                                                                                                                                           | .03                                | .0025               | :35              | 2.68                     | .72              | :45                                | .1185           | .0396            |
| 4-29                                                                                                                                                           | .37                                | .0251               | :55              | 3.09                     | 1.75             | 8:00                               | .1900           | .0787            |
| 4-30                                                                                                                                                           | 0                                  | .0025               | 7:02             | .17                      | 1.77             | :15                                | .2310           | .1315            |
| 5-1                                                                                                                                                            | .22                                | .0115               | :25              | 1.33                     | 2.53             | :30                                | .2475           | .1923            |
| 5-2                                                                                                                                                            | .21                                | .0019               | 8:25             | .53                      | 2.81             | :45                                | .2450           | .2542            |
| 5-3-8                                                                                                                                                          | 0                                  | .0055               | 9:15             | .04                      | 2.84             | 9:00                               | .2275           | .3132            |
| 5-9-12                                                                                                                                                         | 0                                  | .0036               |                  |                          |                  | :30                                | .1860           | .4171            |
| 5-13                                                                                                                                                           | .20                                | .0009               | 5-22-57          | Rain Gages <sup>1/</sup> |                  | 10:00                              | .1350           | .4963            |
| 5-14                                                                                                                                                           | .10                                | .0008               | 4:00a            | 0                        | 0                | :30                                | .0818           | .5494            |
| 5-15                                                                                                                                                           | 0                                  | .0007               | 6:00             | T                        | .01              | 11:00                              | .0582           | .5834            |
| 5-16                                                                                                                                                           | .64                                | .0355               | :15              | 0                        | .01              | 12:00n                             | .0312           | .6242            |
| 5-17                                                                                                                                                           | T                                  | .0036               | :30              | .88                      | .23              | 1:30p                              | .0150           | .6579            |
| 5-18                                                                                                                                                           | 1.27                               | .0008               | :45              | 2.48                     | .85              | 3:00                               | .0060           | .6722            |
| 5-19                                                                                                                                                           | .06                                | .0449               | 7:00             | 1.20                     | 1.15             | 6:00                               | .0022           | .6839            |
| 5-20                                                                                                                                                           | 0                                  | .0010               | :30              | .98                      | 1.64             | 9:00                               | .0012           | .6887            |
| 5-21                                                                                                                                                           | 0                                  | .0007 <sup>2/</sup> | 8:00             | .46                      | 1.87             | 12:00m                             | .0004           | .6906            |
| 5-22                                                                                                                                                           | 0                                  | .0001 <sup>2/</sup> | :30              | .26                      | 2.00             | 5-23-57                            |                 |                  |
|                                                                                                                                                                |                                    |                     | 9:15             | .02                      | 2.01             | 3:00a                              | 0               | .6913            |
| Watershed Conditions: 20% of area under cultivation in cotton and corn - fair cover; 13% pasture, 39% idle, 23% woods - good cover; 3% urban; 2% bare gullies. |                                    |                     |                  |                          |                  |                                    |                 |                  |
|                                                                                                                                                                |                                    |                     | 5-22-57          | Rain Gages <sup>3/</sup> |                  |                                    |                 |                  |
| Event of November 13-14, 1957                                                                                                                                  |                                    |                     |                  |                          |                  |                                    |                 |                  |
| 10-12-57                                                                                                                                                       | 0                                  | .0002               | 11-13-57         | Rain Gage 15             |                  | 11-13-57                           |                 |                  |
| 10-13-14                                                                                                                                                       | 0                                  | .0004               | 12:30p           | 0                        | 0                | 12:30a                             | 0               | 0                |
| 10-15                                                                                                                                                          | .14                                | .0002               | 5:15             | .07                      | .35              | 3:45                               | .0001           | .0002            |
| 10-16                                                                                                                                                          | .38                                | .0005               | 8:00             | .29                      | 1.15             | 6:00                               | .0003           | .0006            |
| 10-17-21                                                                                                                                                       | 0                                  | .0025               | 9:00             | .50                      | 1.65             | 7:00                               | .0017           | .0014            |
| 10-22                                                                                                                                                          | .65                                | .0007               | 10:00            | .30                      | 1.95             | :30                                | .0087           | .0038            |
| 10-23                                                                                                                                                          | .94                                | .0021               | 11:30            | .11                      | 2.12             | 8:00                               | .0303           | .0132            |
| 10-24-27                                                                                                                                                       | 0                                  | .0012               | 11-14-57         |                          |                  | 9:00                               | .0892           | .0724            |
| 10-28                                                                                                                                                          | .02                                | .0003               | 1:45a            | .01                      | 2.15             | 10:00                              | .1618           | .1962            |
| 10-29                                                                                                                                                          | .09                                | .0003               | 2:30             | .08                      | 2.21             | :30                                | .1801           | .2822            |
| 10-30                                                                                                                                                          | .19                                | .0005               | 3:30             | .04                      | 2.25             | :40                                | .1818           | .3124            |
| 10-31                                                                                                                                                          | .01                                | .0003               | :45              | .20                      | 2.30             | 11:15                              | .1644           | .4135            |
| 11-1                                                                                                                                                           | 0                                  | .0003               | :55              | .90                      | 2.45             | 12:00m                             | .1314           | .5251            |
| 11-2                                                                                                                                                           | .05                                | .0005               |                  |                          |                  | 11-14-57                           |                 |                  |
| 11-3                                                                                                                                                           | .10                                | .0003               |                  |                          |                  | 1:00a                              | .0848           | .6328            |
| 11-4-6                                                                                                                                                         | 0                                  | .0009               | 11-13-57         | Rain Gages <sup>1/</sup> |                  | 2:00a                              | .0552           | .7027            |
| 11-7                                                                                                                                                           | 1.59                               | .0097               | 12:00n           | 0                        | 0                | 3:00                               | .0376           | .7489            |
| 11-8                                                                                                                                                           | .40                                | .1891               | 1:00p            | 0.02                     | .02              | 4:00                               | .0261           | .7800            |
| 11-9                                                                                                                                                           | 0                                  | .0009               | :30              | .14                      | .09              | 5:00                               | .0376           | .8115            |
| 11-10-11                                                                                                                                                       | 0                                  | .0010               | 2:30             | .09                      | .18              | :30                                | .0432           | .8317            |
| 11-12                                                                                                                                                          | .46                                | .0009 <sup>2/</sup> | 3:30             | .04                      | .22              | 6:00                               | .0479           | .8545            |
| 11-13                                                                                                                                                          | 0                                  | .0005 <sup>2/</sup> | 4:30             | .08                      | .30              | :30                                | .0411           | .8764            |
|                                                                                                                                                                |                                    |                     | 5:30             | .09                      | .39              | 7:00                               | .0338           | .8956            |
|                                                                                                                                                                |                                    |                     | 6:00             | .23                      | .51              | 9:00                               | .0150           | .9400            |
|                                                                                                                                                                |                                    |                     | 7:00             | .30                      | .81              | 12:00n                             | .0063           | .9712            |

Notes: To convert runoff in in/hr to cfs, multiply by 22,990.

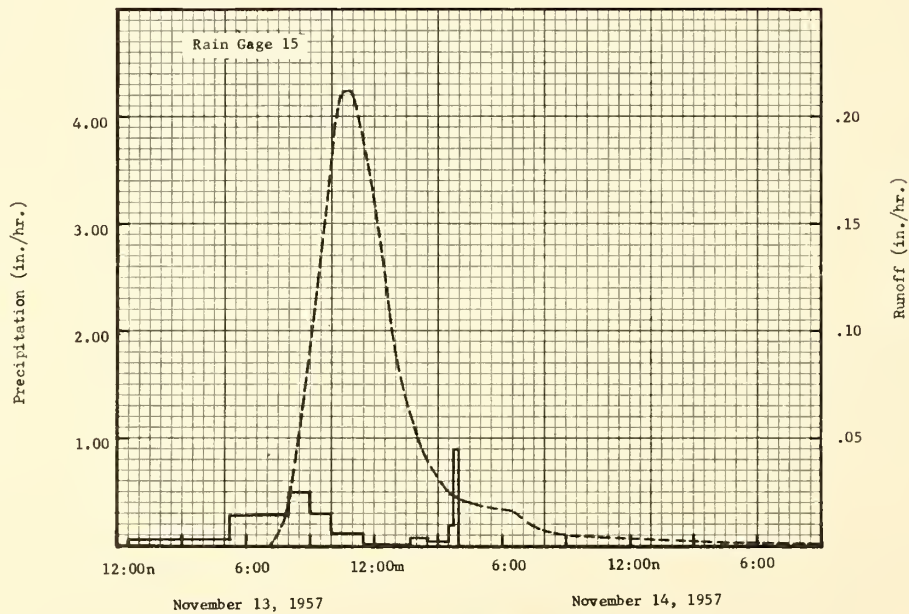
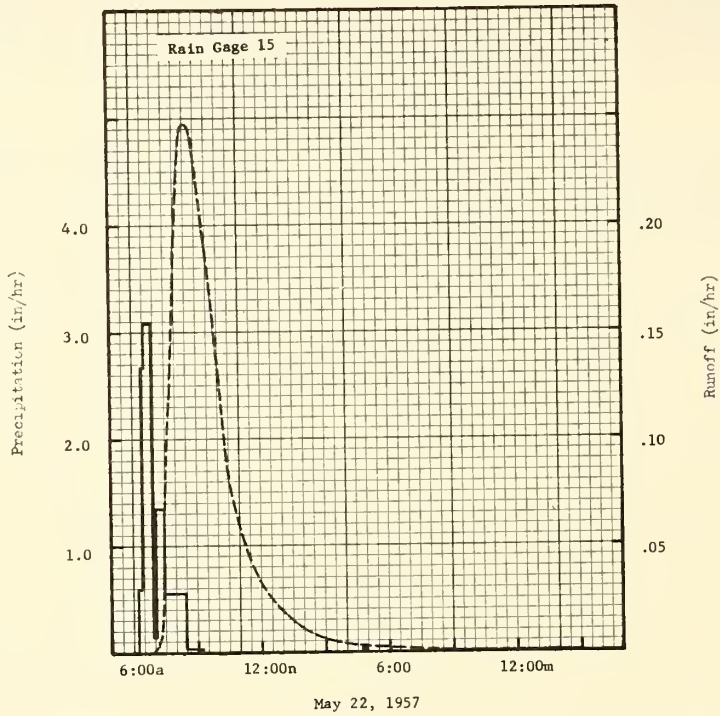
<sup>1/</sup> Rain gages 4, 5, 6, 7, 8, 9, 13, and 15 Thiessen weighted.

<sup>2/</sup> Base flow prior to runoff event.

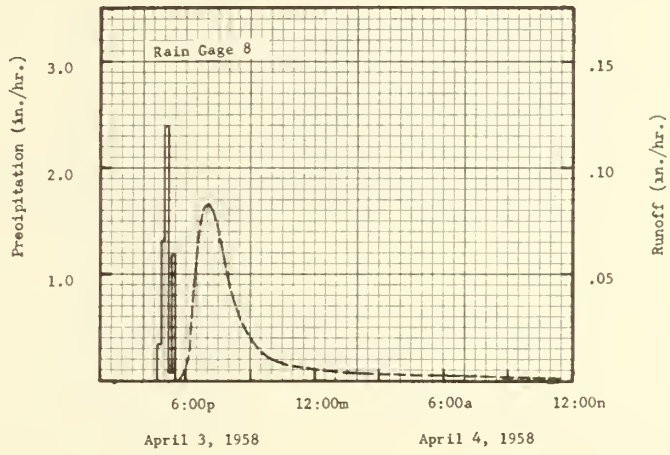
<sup>3/</sup> For storm rainfall for rain gages 4, 5, 8, and 13, see page 62.5-2.



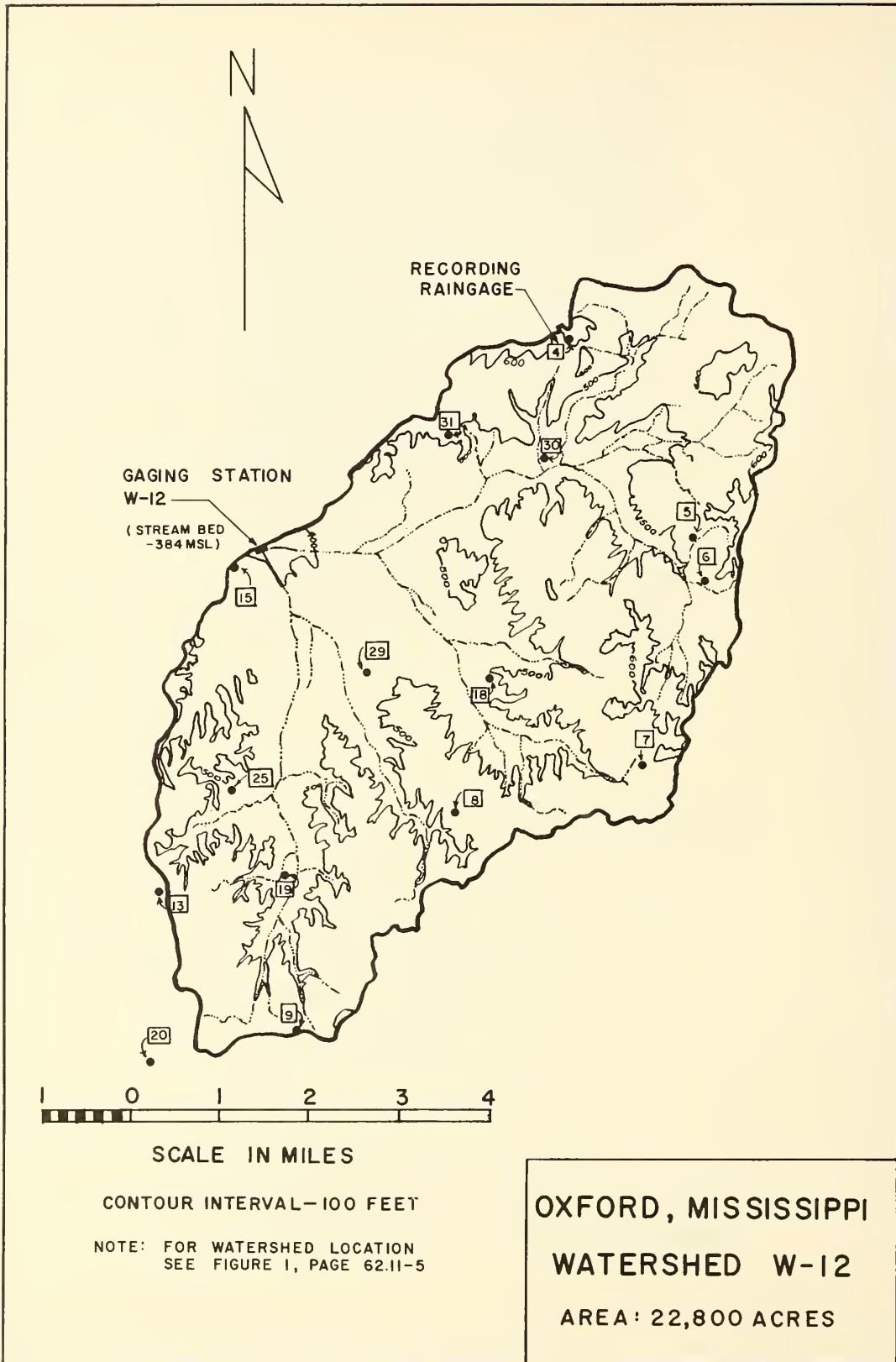
| SELECTED RUNOFF EVENTS                                                                                                                                                   |                                    |                     | Oxford, Mississippi Watershed W-12 |                          |                  |                  |                 |                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|---------------------|------------------------------------|--------------------------|------------------|------------------|-----------------|------------------|
| Antecedent conditions                                                                                                                                                    |                                    |                     | Rainfall                           |                          |                  | Runoff           |                 |                  |
| Date                                                                                                                                                                     | Rainfall <sup>1/</sup><br>(inches) | Runoff<br>(inches)  | Date and<br>time                   | Intensity<br>(in/hr)     | Acc.<br>(inches) | Date and<br>time | Rate<br>(in/hr) | Acc.<br>(inches) |
| Event of November 13-14, 1957 (Continued)                                                                                                                                |                                    |                     |                                    |                          |                  |                  |                 |                  |
| Watershed Conditions: 20% of area<br>in cotton and corn residue - fair<br>cover; 13% pasture, 39% idle,<br>23% woods - good to fair cover;<br>3% urban; 2% bare gullies. |                                    |                     | :30                                | .62                      | 1.48             | 3:00p            | .0030           | .9859            |
|                                                                                                                                                                          |                                    |                     | 9:00                               | .72                      | 1.84             | 6:00             | .0014           | .9922            |
|                                                                                                                                                                          |                                    |                     | :30                                | .55                      | 2.12             | 10:00            | .0007           | .9962            |
|                                                                                                                                                                          |                                    |                     | 10:00                              | .30                      | 2.27             |                  |                 |                  |
|                                                                                                                                                                          |                                    |                     | 11:30                              | .15                      | 2.49             |                  |                 |                  |
|                                                                                                                                                                          |                                    |                     | 12:00m                             | .02                      | 2.50             |                  |                 |                  |
|                                                                                                                                                                          |                                    |                     | 11-14-57                           |                          |                  |                  |                 |                  |
|                                                                                                                                                                          |                                    |                     | 2:00a                              | .03                      | 2.56             |                  |                 |                  |
|                                                                                                                                                                          |                                    |                     | 3:00                               | .14                      | 2.70             |                  |                 |                  |
|                                                                                                                                                                          |                                    |                     | 4:00                               | .18                      | 2.88             |                  |                 |                  |
|                                                                                                                                                                          |                                    |                     | 5:00                               | .01                      | 2.89             |                  |                 |                  |
|                                                                                                                                                                          |                                    |                     | 11-13-57                           | Rain Gages <sup>2/</sup> |                  |                  |                 |                  |
|                                                                                                                                                                          | Event of April 3, 1958             |                     |                                    |                          |                  |                  |                 |                  |
| 3-4-58                                                                                                                                                                   | 0                                  | .0011               | 4-3-58                             | Rain Gage 8              |                  | 4-3-58           |                 |                  |
| 3-5                                                                                                                                                                      | 0                                  | .0011               | 4:40p                              | 0                        | 0                | 5:50p            | .0044           | 0                |
| 3-6                                                                                                                                                                      | .12                                | .0011               | :50                                | .34                      | .06              | 6:05             | .0086           | .0016            |
| 3-7                                                                                                                                                                      | .62                                | .0188               | 5:05                               | 1.23                     | .37              | :15              | .0270           | .0046            |
| 3-8                                                                                                                                                                      | .44                                | .0081               | :10                                | 2.40                     | .57              | :30              | .0574           | .0152            |
| 3-9                                                                                                                                                                      | 0                                  | .0136               | :25                                | .08                      | .59              | :45              | .0770           | .0320            |
| 3-10                                                                                                                                                                     | 0                                  | .0021               | :30                                | 1.20                     | .69              | 7:00             | .0835           | .0522            |
| 3-11                                                                                                                                                                     | 0                                  | .0017               |                                    |                          |                  | :15              | .0800           | .0728            |
| 3-12                                                                                                                                                                     | .07                                | .0017               | 4-3-58                             | Rain Gage 15             |                  | :45              | .0574           | .1072            |
| 3-13                                                                                                                                                                     | .06                                | .0015               | 4:30p                              | 0                        | 0                | 8:30             | .0291           | .1397            |
| 3-14-16                                                                                                                                                                  | 0                                  | .0033               | :45                                | .20                      | .05              | 10:00            | .0104           | .1660            |
| 3-17                                                                                                                                                                     | .62                                | .0104               | 5:00                               | .64                      | .21              | 12:00m           | .0057           | .1810            |
| 3-18-21                                                                                                                                                                  | 0                                  | .0099               | 5:15                               | .16                      | .25              | 4-4-58           |                 |                  |
| 3-22                                                                                                                                                                     | .08                                | .0015               |                                    |                          |                  | 4:00a            | .0027           | .1978            |
| 3-23                                                                                                                                                                     | .80                                | .0041               |                                    |                          |                  | 12:00n           | .0010           | .2130            |
| 3-24                                                                                                                                                                     | .03                                | .0397               | 4-3-58                             | Rain Gages <sup>1/</sup> |                  |                  |                 | 0                |
| 3-25                                                                                                                                                                     | .19                                | .0019               | 4:30p                              | 0                        | 0                |                  |                 |                  |
| 3-26                                                                                                                                                                     | .24                                | .0334               | :45                                | .04                      | .01              |                  |                 |                  |
| 3-27-28                                                                                                                                                                  | 0                                  | .0109               | 5:15                               | .80                      | .41              |                  |                 |                  |
| 3-29                                                                                                                                                                     | .05                                | .0021               | :30                                | .20                      | .46              |                  |                 |                  |
| 3-30                                                                                                                                                                     | .09                                | .0024               | :45                                | .12                      | .49              |                  |                 |                  |
| 3-31                                                                                                                                                                     | 0                                  | .0019               |                                    |                          |                  |                  |                 |                  |
| 4-1                                                                                                                                                                      | 0                                  | .0017               | 4-3-58                             | Rain Gage 7              |                  |                  |                 |                  |
| 4-2                                                                                                                                                                      | .03                                | .0014 <sup>3/</sup> | (See page 62.9-2)                  |                          |                  |                  |                 |                  |
| 4-3                                                                                                                                                                      | .82                                | .0440 <sup>3/</sup> |                                    |                          |                  |                  |                 |                  |
| Watershed Conditions: 20% of area<br>tilled for planting of cotton and<br>corn; 13% pasture, 39% idle,<br>23% woods - good cover; 3% urban;<br>2% bare gullies.          |                                    |                     |                                    |                          |                  |                  |                 |                  |
| Notes: To convert runoff in in/hr to cfs, multiply by 22,990.                                                                                                            |                                    |                     |                                    |                          |                  |                  |                 |                  |
| 1/ Rain gages 4, 5, 6, 7, 8, 9, 13, and 15 Thiessen Weighted.                                                                                                            |                                    |                     |                                    |                          |                  |                  |                 |                  |
| 2/ For storm rainfall for rain gages 4, 5, 8, and 13 see page 62.5-3.                                                                                                    |                                    |                     |                                    |                          |                  |                  |                 |                  |
| 3/ Runoff peaked at 2:15p at rate of .0184 in/hr with recessional flow to event.                                                                                         |                                    |                     |                                    |                          |                  |                  |                 |                  |



OXFORD, MISSISSIPPI WATERSHED W-12



OXFORD, MISSISSIPPI WATERSHED W-12



CONTOUR INTERVAL—100 FEET

NOTE: FOR WATERSHED LOCATION  
SEE FIGURE 1, PAGE 62.11-5

OXFORD, MISSISSIPPI Watershed W-17<sup>1/</sup>

LOCATION: Marshall Co., Miss.; 7.8 mi. SW of Holly Springs on County road; Pigeon Roost Creek Watershed, Yazoo River Basin.

AREA: 32,100 ac. (50.2 sq. mi.)

SHAPE: Leaf; 8.5 mi. wide, 6.5 mi. long.

SLOPES: 21% is in 0-2% class; 22% in 2-5%; 7% in 5-8%; 8% in 8-12%; 18% in 12-17%; 24% in 17% and above. Aspect W.

SOILS: Loessial and Coastal Plains; topsoil - 8% silt loam in texture, 0 to 7 ins. in depth, weak fine granular structure; 10% silt loam in texture, 0 to 10 ins. in depth, weak coarse granular structure; 12% silt loam in texture, 0 to 8 ins. in depth, weak fine granular structure; 49% fine sandy loam in texture, 0 to 12 ins. in depth, weak fine crumb structure; 21% loam in texture, 0 to 21 ins. in depth, weak fine granular structure. Subsoil - 8% moderate to moderately slow permeability, impeding layer at approximately 30 ins.; 10% slow permeability, impeding layer at 15 to 20 ins.; 12% moderate to slow permeability, impeding layer at 15 to 20 ins.; 49% moderate to rapid permeability, no impeding layer; 21% moderate to moderately rapid permeability, no impeding layer. Internal drainage - medium to slow. Loring silt loam - 8%; Grenada silt loam - 10%; Providence silt loam and silty clay loam - 12%; Ruston fine sandy loam - 49%; Hymon loam - 21%.

EROSION: + - 21%; 2 - 16%; 3 - 63%.

LAND CAPABILITY: II - 22%; III - 8%; IV - 10%; VI - 11%; VII - 49%.

SURFACE DRAINAGE: Good; length of principal waterway - 8 mi.; main tributary (Jones Creek) - 5.5 mi. long; sand bed channels. Approximately 14% non-contributing area due to small desilting and retarding structures, increased to about 18% in 1960.

CHARACTER OF FLOW: Perennial, continuous.

INSTRUMENTATION: Runoff - current meter rated section of dredged sand-bottom channel; continuous water-stage recorder. Precipitation - 10 recording gages, increased to twenty recording gages, July, 1959.

WATERSHED CONDITIONS: Normally about 20% is in cultivation - cotton and corn, 42% idle - good to poor cover of broom sedge and common grasses, 13% pasture - good to fair cover; 21% woods - good to fair cover; 2% urban (town of Holly Springs); 2% bare gullies.

GENERALLY REPRESENTS: Moderately to severely eroded uplands in the transitional zone between the Southern Coastal Plain (P-133), and the Southern Mississippi Valley Silty Uplands (P-134), in the states of Arkansas, Louisiana, Mississippi, Kentucky, Tennessee, and southern Missouri.

| MONTHLY PRECIPITATION AND RUNOFF (Inches)                                                                                                                                                           |                   |                                           |       |         |       |         | Oxford, Mississippi Watershed W-17<br>(Area - 32,100 Acres) |          |       |       |      |        |       |        |       |      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------------------------------|-------|---------|-------|---------|-------------------------------------------------------------|----------|-------|-------|------|--------|-------|--------|-------|------|
| Year                                                                                                                                                                                                | Month             | Jan.                                      | Feb.  | Mar.    | Apr.  | May     | June                                                        | July     | Aug.  | Sept. | Oct. | Nov.   | Dec.  | Year   |       |      |
| 1957                                                                                                                                                                                                | P                 | 8.04                                      | 6.92  | 2.40    | 6.55  | 5.64    | 6.34                                                        | 3.49     | 1.39  | 6.51  | 3.54 | 9.29   | 4.93  | 65.04  |       |      |
|                                                                                                                                                                                                     | Q                 | 2.78                                      | 1.54  | .29     | 1.25  | 1.31    | .65                                                         | .34      | .19   | .39   | .20  | 2.81   | 1.32  | 13.07  |       |      |
| 1958                                                                                                                                                                                                | P                 | 2.70                                      | 1.57  | 3.44    | 6.61  | 4.35    | 5.51                                                        | 6.52     | 1.21  | 9.41  | 0.95 | 3.38   | 1.63  | 47.28  |       |      |
|                                                                                                                                                                                                     | Q                 | 0.47                                      | .27   | .44     | 1.23  | 1.21    | .37                                                         | .57      | .21   | 1.12  | .23  | .32    | .22   | 6.66   |       |      |
| 1959                                                                                                                                                                                                | P                 | 4.07                                      | 3.87  | 3.33    | 4.24  | 4.45    | 4.02                                                        | 4.71     | 5.50  | 2.71  | 2.21 | 3.23   | 6.77  | 49.11  |       |      |
|                                                                                                                                                                                                     | Q                 | .94                                       | .95   | .53     | .72   | .46     | .73                                                         | .42      | .57   | .41   | .21  | .21    | 1.28  | 7.43   |       |      |
| Normal                                                                                                                                                                                              | P                 | 6.30                                      | 4.90  | 6.28    | 4.82  | 4.26    | 4.15                                                        | 4.17     | 3.13  | 3.48  | 3.19 | 4.78   | 5.25  | 54.71  |       |      |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS                                                                             |                   |                                           |       |         |       |         | Oxford, Mississippi Watershed W-17                          |          |       |       |      |        |       |        |       |      |
| YEAR                                                                                                                                                                                                | MAXIMUM DISCHARGE | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |       |         |       |         |                                                             |          |       |       |      |        |       |        |       |      |
|                                                                                                                                                                                                     |                   | 1 hour                                    |       | 2 hours |       | 6 hours |                                                             | 12 hours |       | 1 day |      | 2 days |       | 8 days |       |      |
|                                                                                                                                                                                                     |                   | Date                                      | Rate  | Date    | Vol.  | Date    | Vol.                                                        | Date     | Vol.  | Date  | Vol. | Date   | Vol.  | Date   | Vol.  |      |
| 1957                                                                                                                                                                                                | 5-22              | 0.20                                      | 5-22  | 0.20    | 5-22  | 0.38    | 11-13                                                       | 0.82     | 11-13 | 0.98  | 1-31 | 1.39   | 1-31  | 1.96   | 1-28  | 2.99 |
| 1958                                                                                                                                                                                                | 9-19              | .09                                       | 9-19  | .08     | 9-19  | .16     | 5-1                                                         | .34      | 5-1   | .42   | 9-19 | .76    | 9-19  | .87    | 4-25  | 1.05 |
| 1959                                                                                                                                                                                                | 12-18             | .10                                       | 12-18 | .10     | 12-18 | .17     | 12-18                                                       | .34      | 12-18 | .39   | 6-10 | .46    | 12-16 | .62    | 12-11 | 1.00 |
| Notes: Quality of records: Q - good for 1957 and 1958, fair for 1959; P - good. Normal P based on 33-yr. record (1920-1952) at USWB Sta., Holly Springs 2N, Miss.<br>1/ Watershed 17A not included. |                   |                                           |       |         |       |         |                                                             |          |       |       |      |        |       |        |       |      |

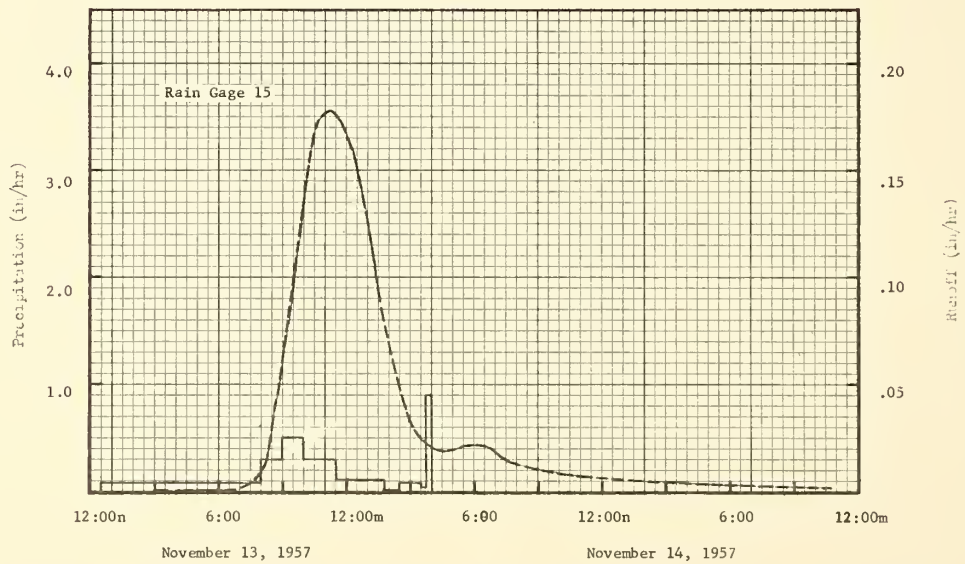
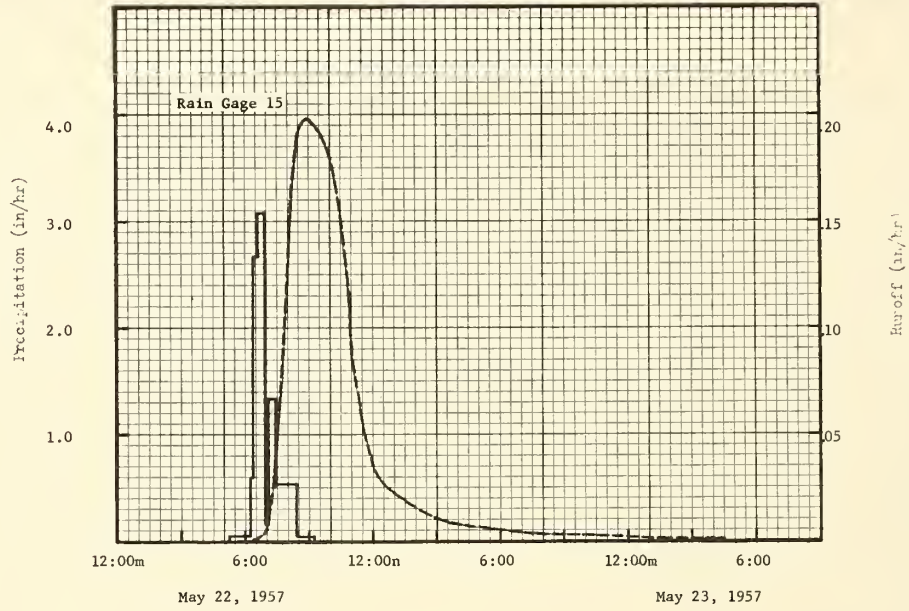
Cooperative Research Project of USDA, University of Mississippi, and Mississippi State Agricultural Experiment Station.



| SELECTED RUNOFF EVENTS                                                                                                                                                                                                   |                                    |                     |                  | Oxford, Mississippi Watershed W-17 |                  |                  |                 |                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|---------------------|------------------|------------------------------------|------------------|------------------|-----------------|------------------|
| Antecedent conditions                                                                                                                                                                                                    |                                    |                     | Rainfall         |                                    |                  | Runoff           |                 |                  |
| Date                                                                                                                                                                                                                     | Rainfall <sup>1/</sup><br>(inches) | Runoff<br>(inches)  | Date and<br>time | Intensity<br>(in/hr)               | Acc.<br>(inches) | Date and<br>time | Rate<br>(in/hr) | Acc.<br>(inches) |
| Event of May 22, 1957                                                                                                                                                                                                    |                                    |                     |                  |                                    |                  |                  |                 |                  |
| 4-23-57                                                                                                                                                                                                                  | 0                                  | 0.0437              | 5-22-57          |                                    |                  |                  |                 |                  |
| 4-24                                                                                                                                                                                                                     | 0                                  | .0089               | 12:15a           | Rain Gage 15                       | 0                | 5-22-57          |                 |                  |
| 4-25                                                                                                                                                                                                                     | .76                                | .1393               | 5:15             | 0                                  | 0                | 5:15a            | .0003           | 0                |
| 4-26                                                                                                                                                                                                                     | 0                                  | .0133               | 6:15             | T                                  | 0                | 6:45             | .0020           | .0008            |
| 4-27                                                                                                                                                                                                                     | 0                                  | .0070               | :20              | .05                                | .05              | 7:15             | .0195           | .0048            |
|                                                                                                                                                                                                                          |                                    |                     |                  | .60                                | .10              | :45              | .0550           | .0309            |
| 4-28                                                                                                                                                                                                                     | .04                                | .0055               | :35              | 2.68                               | .72              | 8:15             | .1600           | .0953            |
| 4-29                                                                                                                                                                                                                     | .36                                | .0207               | :55              | 3.09                               | 1.75             | :30              | .1900           | .1406            |
| 4-30                                                                                                                                                                                                                     | 0                                  | .0096               | 7:02             | .17                                | 1.77             | :45              | .1965           | .1893            |
| 5-1                                                                                                                                                                                                                      | .20                                | .0170               | :25              | 1.33                               | 2.53             | 9:00             | .1990           | .2388            |
| 5-2                                                                                                                                                                                                                      | .17                                | .0096               | 8:25             | .53                                | 2.81             | :15              | .1950           | .2878            |
| 5-3                                                                                                                                                                                                                      | 0                                  | .0089               | 9:15             | .04                                | 2.84             | :45              | .1850           | .3837            |
| 5-4-8                                                                                                                                                                                                                    | 0                                  | .0410               |                  |                                    |                  | 10:15            | .1650           | .4726            |
| 5-9-10                                                                                                                                                                                                                   | 0                                  | .0148               | 5-22-57          | Rain Gages <sup>1/</sup>           |                  | :45              | .1255           | .5462            |
| 5-11-12                                                                                                                                                                                                                  | 0                                  | .0140               | 4:00a            | 0                                  | 0                | 11:15            | .0730           | .5940            |
| 5-13                                                                                                                                                                                                                     | .16                                | .0070               | 5:00             | .01                                | .01              | 12:00n           | .0370           | .6321            |
| 5-14                                                                                                                                                                                                                     | .22                                | .0111               | 6:15             | .03                                | .05              | 1:00p            | .0220           | .6596            |
| 5-15                                                                                                                                                                                                                     | 0                                  | .0089               | :30              | 1.27                               | .37              | 3:00             | .0100           | .6911            |
| 5-16                                                                                                                                                                                                                     | .54                                | .0408               | :45              | 2.47                               | .99              | 5:00             | .0060           | .7069            |
| 5-17                                                                                                                                                                                                                     | T                                  | .0215               | 7:00             | 1.30                               | 1.31             | 6:00             | .0055           | .7124            |
| 5-18                                                                                                                                                                                                                     | .67                                | .0133               | :30              | 1.00                               | 1.81             | 9:00             | .0022           | .7231            |
| 5-19                                                                                                                                                                                                                     | .59                                | .0556               | 8:00             | .40                                | 2.01             | 12:00m           | .0018           | .7297            |
| 5-20                                                                                                                                                                                                                     | 0                                  | .0104               | 8:30             | .26                                | 2.14             | 5-23-57          |                 |                  |
| 5-21                                                                                                                                                                                                                     | 0                                  | .0082 <sup>2/</sup> | 9:00             | .01                                | 2.15             | 3:00a            | .0013           | .7342            |
| 5-22                                                                                                                                                                                                                     | 0                                  | .0015 <sup>2/</sup> |                  |                                    |                  | 6:00             | .0011           | .7378            |
|                                                                                                                                                                                                                          |                                    |                     | 5-22-57          | Rain Gage 4                        |                  |                  |                 |                  |
|                                                                                                                                                                                                                          |                                    |                     | 7:15a            | 0                                  | 0                |                  |                 |                  |
|                                                                                                                                                                                                                          |                                    |                     | 9:30             |                                    | 2.27             |                  |                 |                  |
|                                                                                                                                                                                                                          |                                    |                     | 5-22-57          | Rain Gage 5                        |                  |                  |                 |                  |
|                                                                                                                                                                                                                          |                                    |                     | 6:20a            | 0                                  | 0                |                  |                 |                  |
|                                                                                                                                                                                                                          |                                    |                     | 8:35             |                                    | 2.14             |                  |                 |                  |
|                                                                                                                                                                                                                          |                                    |                     | 5-22-57          | Rain Gage 8                        |                  |                  |                 |                  |
|                                                                                                                                                                                                                          |                                    |                     | 6:30a            | 0                                  | 0                |                  |                 |                  |
|                                                                                                                                                                                                                          |                                    |                     | 8:30             |                                    | 1.36             |                  |                 |                  |
|                                                                                                                                                                                                                          |                                    |                     | 5-22-57          | Rain Gage 13                       |                  |                  |                 |                  |
|                                                                                                                                                                                                                          |                                    |                     | 6:25a            | 0                                  | 0                |                  |                 |                  |
|                                                                                                                                                                                                                          |                                    |                     | 8:25             |                                    | 1.85             |                  |                 |                  |
|                                                                                                                                                                                                                          |                                    |                     | 5-22-57          | Rain Gage 2                        |                  |                  |                 |                  |
|                                                                                                                                                                                                                          |                                    |                     | 4:55a            | 0                                  | 0                |                  |                 |                  |
|                                                                                                                                                                                                                          |                                    |                     | 8:20             |                                    | 1.40             |                  |                 |                  |
| <p><b>Notes:</b> To convert runoff in in/hr to cfs, multiply by 32,367.</p> <p><sup>1/</sup> Rain gages 2, 4, 5, 6, 7, 8, 9, 13, 14, and 15 Thiessen weighted.</p> <p><sup>2/</sup> Base flow prior to runoff event.</p> |                                    |                     |                  |                                    |                  |                  |                 |                  |

| SELECTED RUNOFF EVENTS                                                                                                                                                   |                                    |                     | Oxford, Mississippi Watershed W-17 |                          |                  |                  |                 |                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|---------------------|------------------------------------|--------------------------|------------------|------------------|-----------------|------------------|
| Antecedent conditions                                                                                                                                                    |                                    |                     | Rainfall                           |                          |                  | Runoff           |                 |                  |
| Date                                                                                                                                                                     | Rainfall <sup>1/</sup><br>(inches) | Runoff<br>(inches)  | Date and<br>time                   | Intensity<br>(in/hr)     | Acc.<br>(inches) | Date and<br>time | Rate<br>(in/hr) | Acc.<br>(inches) |
| Event of November 13-14, 1957                                                                                                                                            |                                    |                     |                                    |                          |                  |                  |                 |                  |
| 10-9-57                                                                                                                                                                  | 0                                  | 0.0050              | 11-13-57                           | Rain Gage 15             |                  | 11-13-57         |                 |                  |
| 10-10-11                                                                                                                                                                 | 0                                  | .0047               | 12:30p                             | 0                        | 0                | 3:00p            | .0003           | 0                |
| 10-12-14                                                                                                                                                                 | 0                                  | .0135               | 5:15                               | .07                      | .35              | 6:00             | .0009           | .0015            |
| 10-15                                                                                                                                                                    | .19                                | .0047               | 8:00                               | .29                      | 1.15             | 7:00             | .0021           | .0026            |
| 10-16                                                                                                                                                                    | .42                                | .0059               | 9:00                               | .50                      | 1.65             | :30              | .0045           | .0040            |
| 10-17-21                                                                                                                                                                 | 0                                  | .0265               | 10:00                              | .30                      | 1.95             | 8:15             | .0174           | .0104            |
| 10-22                                                                                                                                                                    | .64                                | .0059               | 11:30                              | .11                      | 2.12             | 9:00             | .0615           | .0391            |
| 10-23                                                                                                                                                                    | .85                                | .0082               | 11-14-57                           |                          |                  | 10:00            | .1358           | .1354            |
| 10-24                                                                                                                                                                    | 0                                  | .0059               | 1:45a                              | .01                      | 2.15             | :30              | .1664           | .2125            |
| 10-25-27                                                                                                                                                                 | 0                                  | .0159               | 2:30                               | .08                      | 2.21             | 11:00            | .1765           | .2992            |
| 10-28                                                                                                                                                                    | .01                                | .0053               | 3:30                               | .04                      | 2.25             | :15              | .1778           | .3436            |
| 10-29                                                                                                                                                                    | .17                                | .0056               | :45                                | .20                      | 2.30             | :30              | .1755           | .3875            |
| 10-30                                                                                                                                                                    | .24                                | .0059               | :55                                | .90                      | 2.45             | 12:00m           | .1671           | .4747            |
| 10-31                                                                                                                                                                    | .01                                | .0056               |                                    |                          |                  | 11-14-57         |                 |                  |
| 11-1-2                                                                                                                                                                   | 0                                  | .0112               | 11-13-57                           | Rain Gages <sup>1/</sup> |                  | 1:00a            | .1241           | .6243            |
| 11-3                                                                                                                                                                     | .17                                | .0056               | 12:00n                             | 0                        | 0                | 2:00             | .0686           | .7192            |
| 11-4-5                                                                                                                                                                   | 0                                  | .0112               | 1:00p                              | .02                      | .02              | 3:00             | .0310           | .7674            |
| 11-6                                                                                                                                                                     | 0                                  | .0059               | :30                                | .14                      | .09              | 4:00             | .0195           | .7918            |
| 11-7                                                                                                                                                                     | 1.64                               | .0370               | 2:30                               | .09                      | .18              | 5:00             | .0195           | .8104            |
| 11-8                                                                                                                                                                     | .41                                | .2260               | 3:30                               | .05                      | .23              | 6:00             | .0220           | .8322            |
| 11-9                                                                                                                                                                     | 0                                  | .0119               | 4:30                               | .08                      | .31              | 7:00             | .0178           | .8535            |
| 11-10                                                                                                                                                                    | 0                                  | .0096               | 5:30                               | .11                      | .42              | 8:00             | .0120           | .8684            |
| 11-11                                                                                                                                                                    | 0                                  | .0089               | 6:00                               | .20                      | .52              | 10:00            | .0085           | .8888            |
| 11-12                                                                                                                                                                    | .42                                | .0082               | :30                                | .29                      | .66              | 12:00n           | .0064           | .9030            |
| 11-13                                                                                                                                                                    | 0                                  | .0045 <sup>2/</sup> | 8:00                               | .36                      | 1.20             | 3:00p            | .0045           | .9192            |
| Watershed Conditions: 20% of area<br>in cotton and corn residue - fair<br>cover; 13% pasture, 42% idle,<br>21% woods - good to fair cover;<br>2% urban; 2% bare gullies. |                                    |                     | :30                                | .56                      | 1.48             | 6:00             | .0030           | .9303            |
|                                                                                                                                                                          |                                    |                     | 9:00                               | .65                      | 1.80             | 9:00             | .0020           | .9378            |
|                                                                                                                                                                          |                                    |                     | :30                                | .47                      | 2.04             | 12:00m           | .0016           | .9432            |
|                                                                                                                                                                          |                                    |                     | 10:00                              | .28                      | 2.18             |                  |                 |                  |
|                                                                                                                                                                          |                                    |                     | :30                                | .18                      | 2.27             |                  |                 |                  |
|                                                                                                                                                                          |                                    |                     | 11:30                              | .12                      | 2.39             |                  |                 |                  |
|                                                                                                                                                                          |                                    |                     | 11-14-57                           |                          |                  |                  |                 |                  |
|                                                                                                                                                                          |                                    |                     | 2:00a                              | .05                      | 2.45             |                  |                 |                  |
|                                                                                                                                                                          |                                    |                     | 3:00                               | .12                      | 2.57             |                  |                 |                  |
|                                                                                                                                                                          |                                    |                     | 4:00                               | .18                      | 2.75             |                  |                 |                  |
| 5:00                                                                                                                                                                     | T                                  | 2.75                |                                    |                          |                  |                  |                 |                  |
| 11-13-57                                                                                                                                                                 |                                    |                     |                                    |                          |                  |                  |                 |                  |
| 1:00p                                                                                                                                                                    | 0                                  | 0                   | Rain Gage 4                        |                          |                  |                  |                 |                  |
| 11-14-57                                                                                                                                                                 |                                    |                     | 4:00a                              |                          | 2.59             |                  |                 |                  |
| 11-13-57                                                                                                                                                                 |                                    |                     |                                    |                          |                  |                  |                 |                  |
| 12:45p                                                                                                                                                                   | 0                                  | 0                   | Rain Gage 5                        |                          |                  |                  |                 |                  |
| 11-14-57                                                                                                                                                                 |                                    |                     | 4:05a                              |                          | 2.66             |                  |                 |                  |
| 11-13-57                                                                                                                                                                 |                                    |                     |                                    |                          |                  |                  |                 |                  |
| 12:30p                                                                                                                                                                   | 0                                  | 0                   | Rain Gage 8                        |                          |                  |                  |                 |                  |
| 11-14-57                                                                                                                                                                 |                                    |                     | 4:05a                              |                          | 2.96             |                  |                 |                  |
| 11-13-57                                                                                                                                                                 |                                    |                     |                                    |                          |                  |                  |                 |                  |
| 12:45p                                                                                                                                                                   | 0                                  | 0                   | Rain Gage 13                       |                          |                  |                  |                 |                  |
| 11-14-57                                                                                                                                                                 |                                    |                     | 4:00a                              |                          | 2.80             |                  |                 |                  |
| 11-13-57                                                                                                                                                                 |                                    |                     |                                    |                          |                  |                  |                 |                  |
| 12:55p                                                                                                                                                                   | 0                                  | 0                   | Rain Gage 2                        |                          |                  |                  |                 |                  |
| 11-14-57                                                                                                                                                                 |                                    |                     | 4:00a                              |                          | 2.40             |                  |                 |                  |

Notes: To convert runoff in in/hr to cfs, multiply by 32,367.  
<sup>1/</sup> Rain gages 2, 4, 5, 6, 7, 8, 9, 13, 14, and 15 Thiessen weighted.  
<sup>2/</sup> Base flow prior to runoff event.



OXFORD, MISSISSIPPI WATERSHED W-17



OXFORD, MISSISSIPPI Watershed W-19

LOCATION: Marshall Co., Miss.; 7.6 mi. SW. of Holly Springs on county road; Slayden Creek, Pigeon Roost Creek Watershed, Yazoo River Basin.

AREA: 243 ac. SHAPE: Rectangular; 2,600 ft. wide, 4,000 ft. long.

SLOPES: 9% is in 0-2% class; 3% in 2-5%; 4% in 5-8%; 5% in 8-12%; 65% in 12-17%; 14% in 17% and above. Aspect E.

SOILS: Loessial and Coastal Plains; topsoil - 4% silt loam in texture, 0 to 7 ins. in depth, weak fine granular structure; 8% silt loam in texture, 0 to 10 ins. in depth, weak coarse granular structure; 12% silt loam in texture, 0 to 8 ins. in depth, weak fine granular structure; 67% fine sandy loam in texture, 0 to 12 ins. in depth, weak fine crumb structure; 9% loam in texture, 0 to 21 ins. in depth, weak fine granular structure. Subsoil - 4% moderate to moderately slow permeability, impeding layer at approximately 30 ins.; 8% slow permeability, impeding layer at 15 to 20 ins.; 12% moderate to slow permeability, impeding layer at 15 to 20 ins.; 67% moderate to rapid permeability, no impeding layer; 9% moderate to moderately rapid permeability, no impeding layer. Internal drainage - medium to slow. Loring silt loam - 4%; Crenada silt loam - 8%; Providence silt loam and silty clay loam - 12%; Ruston fine sandy loam - 67%; Hymon loam - 9%.

EROSION: + - 9%; 2 - 20%; 3 - 71%.

LAND CAPABILITY: II - 9%; III - 5%; IV - 7%; VI - 21%; VII - 58%.

SURFACE DRAINAGE: Good; length of principal waterway - .75 mi.; sand bed channel.

CHARACTER OF FLOW: Ephemeral, continuous.

INSTRUMENTATION: Runoff - current meter rated section of natural sand-bottom channel; continuous water-stage recorder. Precipitation - one recording gage.

WATERSHED CONDITIONS: Normally about 2% is in cultivation - cotton and corn, 64% idle - fair to poor cover of broom sedge and common grasses, 4% pasture - fair cover; 29% woods - good to fair cover; 1% bare gullies.

GENERALLY REPRESENTS: Moderately to severely eroded uplands in the transitional zone between the Southern Coastal Plain (P-133), and the Southern Mississippi Valley Silty Uplands (P-134), in the states of Arkansas, Louisiana, Mississippi, Kentucky, Tennessee, and southern Missouri.

| MONTHLY PRECIPITATION AND RUNOFF (Inches)                                                                               |                   |                                           |      |         |      |         | Oxford, Mississippi Watershed W-19<br>(Area - 243 Acres) |          |      |       |      |        |      |        |      |       |      |
|-------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------------------------------|------|---------|------|---------|----------------------------------------------------------|----------|------|-------|------|--------|------|--------|------|-------|------|
| Year                                                                                                                    | Month             | Jan.                                      | Feb. | Mar.    | Apr. | May     | June                                                     | July     | Aug. | Sept. | Oct. | Nov.   | Dec. | Year   |      |       |      |
|                                                                                                                         |                   | 1957                                      | P    | 7.70    | 7.53 | 1.98    | 6.02                                                     | 5.50     | 7.20 | 2.57  | 1.56 | 8.24   | 3.23 | 9.36   | 5.55 | 66.44 |      |
|                                                                                                                         | Q                 | 2.16                                      | 2.10 | .03     | .69  | .79     | .90                                                      | .19      | 0    | .70   | .02  | 2.16   | 1.19 | 10.93  |      |       |      |
| 1958                                                                                                                    | P                 | 2.42                                      | 1.64 | 3.11    | 6.98 | 4.31    | 6.81                                                     | 7.07     | 1.41 | 12.92 | 0.83 | 3.21   | 1.79 | 52.50  |      |       |      |
|                                                                                                                         | Q                 | 0.07                                      | .02  | .02     | 1.20 | .77     | .26                                                      | .27      | .01  | 2.47  | 0    | 0      | 0    | 5.09   |      |       |      |
| 1959                                                                                                                    | P                 | 4.44                                      | 4.13 | 3.34    | 3.60 | 2.70    | 2.61                                                     | 4.64     | 4.61 | 1.01  | 2.02 | 2.64   | 6.49 | 42.23  |      |       |      |
|                                                                                                                         | Q                 | .74                                       | .57  | .16     | .06  | 0       | .01                                                      | .06      | .17  | 0     | 0    | .01    | .17  | 1.95   |      |       |      |
| Normal                                                                                                                  | P                 | 6.30                                      | 4.90 | 6.28    | 4.82 | 4.26    | 4.15                                                     | 4.17     | 3.13 | 3.48  | 3.19 | 4.78   | 5.25 | 54.71  |      |       |      |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS |                   |                                           |      |         |      |         | Oxford, Mississippi Watershed W-19                       |          |      |       |      |        |      |        |      |       |      |
| YEAR                                                                                                                    | MAXIMUM DISCHARGE | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |      |         |      |         |                                                          |          |      |       |      |        |      |        |      |       |      |
|                                                                                                                         |                   | 1 hour                                    |      | 2 hours |      | 6 hours |                                                          | 12 hours |      | 1 day |      | 2 days |      | 8 days |      |       |      |
|                                                                                                                         |                   | Date                                      | Rate | Date    | Vol. | Date    | Vol.                                                     | Date     | Vol. | Date  | Vol. | Date   | Vol. | Date   | Vol. |       |      |
| 1957                                                                                                                    |                   | 11-18                                     | 0.31 | 11-18   | 0.25 | 11-18   | 0.38                                                     | 11-13    | 0.61 | 11-13 | 0.71 | 1-31   | 1.16 | 1-30   | 1.83 | 1-28  | 3.23 |
| 1958                                                                                                                    |                   | 9-19                                      | 1.05 | 9-19    | .66  | 9-19    | .88                                                      | 9-19     | 1.10 | 9-19  | 1.18 | 9-19   | 1.79 | 9-19   | 2.14 | 9-19  | 2.19 |
| 1959                                                                                                                    |                   | 1-21                                      | .15  | 1-21    | .13  | 1-21    | .20                                                      | 1-21     | .27  | 1-21  | .31  | 1-21   | .33  | 2-13   | .37  | 1-15  | .65  |

Notes: Quality of records: Q - fair for 1957 and 1958, fair for 1959; P - good. Normal P based on 33-yr. record (1920-1952) at USWB Sta., Holly Springs 2N, Misa.



SELECTED RUNOFF EVENTS

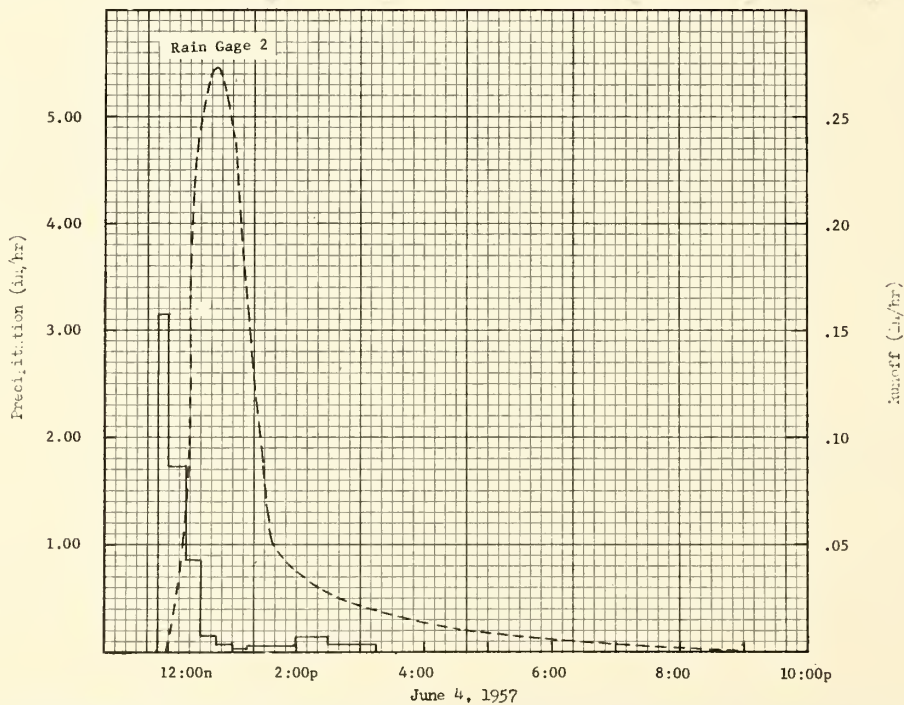
Oxford, Mississippi Watershed W-19

| Antecedent conditions                                                                                                                                      |                   |                     | Rainfall      |                   |               | Runoff        |              |               |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date                                                                                                                                                       | Rainfall (inches) | Runoff (inches)     | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of June 4, 1957                                                                                                                                      |                   |                     |               |                   |               |               |              |               |
| 5-4-57                                                                                                                                                     | 0                 | 0                   | 6-4-57        | Rain Gage 2       |               | 6-4-57        |              |               |
| 5-5-12                                                                                                                                                     | 0                 | 0                   | 11:50a        | 0                 | 0             | 12:00n        | 0            | 0             |
| 5-13                                                                                                                                                       | .15               | 0                   | 12:00n        | 3.12              | .52           | :05P          | .0286        | .0012         |
| 5-14                                                                                                                                                       | 1.30              | .2449               | :15P          | 1.72              | .95           | :10           | .0400        | .0041         |
| 5-15                                                                                                                                                       | 0                 | 0                   | :30           | .84               | 1.16          | :15           | .0571        | .0082         |
| 5-16                                                                                                                                                       | .15               | 0                   | :45           | .16               | 1.20          | :20           | .1306        | .0160         |
| 5-17                                                                                                                                                       | 0                 | 0                   | 1:00          | .08               | 1.22          | :25           | .2285        | .0310         |
| 5-18                                                                                                                                                       | .35               | 0                   | :15           | .04               | 1.23          | :35           | .2612        | .0718         |
| 5-19                                                                                                                                                       | .54               | .0490               | 2:00          | .08               | 1.29          | :45           | .2734        | .1165         |
| 5-20-21                                                                                                                                                    | 0                 | 0                   | :30           | .12               | 1.35          | :55           | .2612        | .1612         |
| 5-22                                                                                                                                                       | 1.40              | .2938               | 3:15          | .08               | 1.41          | 1:05          | .2285        | .2019         |
| 5-23                                                                                                                                                       | .65               | .0882               |               |                   |               | :15           | .1632        | .2342         |
| 5-24                                                                                                                                                       | .27               | .1175               |               |                   |               | :30           | .0816        | .2659         |
| 5-25                                                                                                                                                       | .04               | 0                   |               |                   |               | :45           | .0449        | .2803         |
| 5-26                                                                                                                                                       | .21               | 0                   |               |                   |               | 2:30          | .0286        | .3035         |
| 5-27-31                                                                                                                                                    | 0                 | 0                   |               |                   |               | 3:30          | .0171        | .3256         |
| 6-1                                                                                                                                                        | 0                 | 0                   |               |                   |               | 6:15          | .0053        | .3564         |
| 6-2                                                                                                                                                        | .35               | 0                   |               |                   |               | 8:30          | .0012        | .3638         |
| 6-3                                                                                                                                                        | .57               | 0                   |               |                   |               | 12:00m        | .0008        | .3673         |
|                                                                                                                                                            |                   |                     |               |                   |               | 6-5-57        |              |               |
|                                                                                                                                                            |                   |                     |               |                   |               | 2:15a         | .0004        | .3687         |
| Watershed Conditions: 2% of area under cultivation in cotton and corn - poor to fair cover; 4% pasture; 64% idle, 29% woods - good cover; 1% bare gullies. |                   |                     |               |                   |               |               |              |               |
| Event of July 12, 1958                                                                                                                                     |                   |                     |               |                   |               |               |              |               |
| 6-12-58                                                                                                                                                    | 0                 | 0                   | 7-12-58       | Rain Gage 2       |               | 7-12-58       |              |               |
| 6-13-14                                                                                                                                                    | 0                 | 0                   | 11:05a        | 0                 | 0             | 11:07a        | 0            | 0             |
| 6-15                                                                                                                                                       | .80               | 0                   | :10           | 3.00              | .25           | :12           | .0001        | .0000         |
| 6-16                                                                                                                                                       | .07               | 0                   | :20           | .30               | .30           | :20           | .0122        | .0008         |
| 6-17-18                                                                                                                                                    | 0                 | 0                   | :25           | 2.40              | .50           | :30           | .0106        | .0027         |
| 6-19                                                                                                                                                       | .18               | 0                   | :40           | .36               | .59           | :45           | .0216        | .0067         |
| 6-20                                                                                                                                                       | 1.05              | .0098               | :45           | 2.52              | .80           | :50           | .0490        | .0096         |
| 6-21-24                                                                                                                                                    | 0                 | 0                   | :50           | .24               | .82           | :55           | .0653        | .0144         |
| 6-25                                                                                                                                                       | 1.73              | .0882               | 12:00n        | 1.08              | 1.00          | 12:00n        | .0673        | .0199         |
| 6-26                                                                                                                                                       | .70               | .1567               |               |                   |               | :15p          | .0898        | .0396         |
| 6-27-30                                                                                                                                                    | 0                 | 0                   |               |                   |               | :25           | .0857        | .0542         |
| 7-1-5                                                                                                                                                      | 0                 | 0                   |               |                   |               | :35           | .1061        | .0703         |
| 7-6                                                                                                                                                        | .53               | 0                   |               |                   |               | :50           | .1020        | .0963         |
| 7-7                                                                                                                                                        | .33               | 0                   |               |                   |               | :55           | .0898        | .1043         |
| 7-8                                                                                                                                                        | .84               | 0                   |               |                   |               | 1:15          | .0531        | .1273         |
| 7-9-11                                                                                                                                                     | 0                 | 0                   |               |                   |               | :45           | .0245        | .1466         |
| 7-12                                                                                                                                                       | .75 <sup>1/</sup> | .0348 <sup>2/</sup> |               |                   |               | 2:45          | .0090        | .1621         |
|                                                                                                                                                            |                   |                     |               |                   |               | 5:00          | .0008        | .1731         |
|                                                                                                                                                            |                   |                     |               |                   |               | 9:30          | 0            | .1749         |
| Watershed Conditions: 2% of area under cultivation in cotton and corn - fair to good cover; 4% pasture, 64% idle, 29% woods - good cover; 1% idle.         |                   |                     |               |                   |               |               |              |               |

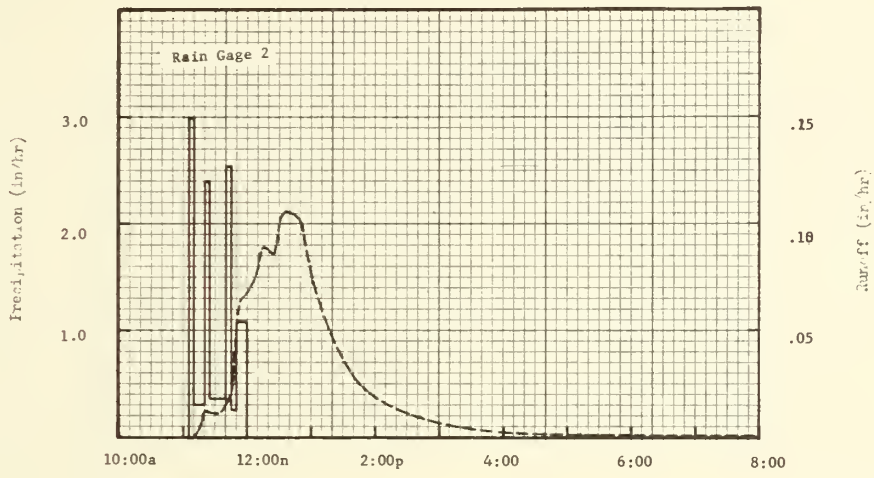
Notes: To convert runoff in in/hr to cfs, multiply by 245.0.  
 1/ Rainfall 3:20a to 7:15a.  
 2/ Runoff 4:00 to 11:07a.

| SELECTED RUNOFF EVENTS      |                   |                 |               |                   | Oxford, Mississippi Watershed W-19 |               |              |               |
|-----------------------------|-------------------|-----------------|---------------|-------------------|------------------------------------|---------------|--------------|---------------|
| Antecedent conditions       |                   |                 | Rainfall      |                   |                                    | Runoff        |              |               |
| Date                        | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches)                      | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of August 24-25, 1959 |                   |                 |               |                   |                                    |               |              |               |
| 7-20-59                     | 0.65              | 0               | 8-24-59       |                   |                                    | 8-24-59       |              |               |
| 7-21                        | .20               | 0               | 10:22p        | 0                 | 0                                  | 10:30p        | 0            | 0             |
| 7-22                        | .10               | 0               | :29           | 3.86              | .45                                | :40           | .0159        | .0013         |
| 7-23                        | .20               | 0               | :32           | 2.00              | .55                                | :45           | .0171        | .0027         |
| 7-24                        | 1.10              | 0.0587          | :38           | 4.00              | .95                                | :55           | .1020        | .0126         |
| 7-25                        | .37               | 0               | :46           | 1.28              | 1.12                               | 11:00         | .1347        | .0225         |
| 7-26                        | 0                 | 0               |               |                   |                                    | :05           | .1469        | .0344         |
| 7-27                        | .13               | 0               |               |                   |                                    | :15           | .1143        | .0567         |
| 7-28-30                     | 0                 | 0               |               |                   |                                    | :20           | .0857        | .0650         |
| 7-31                        | .11               | 0               |               |                   |                                    | :25           | .0735        | .0716         |
| 8-1-5                       | 0                 | 0               |               |                   |                                    | :35           | .0732        | .0838         |
| 8-6                         | .39               | 0               |               |                   |                                    | :45           | .0571        | .0948         |
| 8-7-12                      | 0                 | 0               |               |                   |                                    | 12:00m        | .0278        | .1038         |
| 8-13                        | .02               | 0               |               |                   |                                    | 8-25-59       |              |               |
| 8-14-17                     | 0                 | 0               |               |                   |                                    | :30a          | .0082        | .1113         |
| 8-18                        | .74 <sup>1/</sup> | .0018           |               |                   |                                    | 1:45          | .0008        | .1158         |
| 8-19                        | .06               | .0095           |               |                   |                                    | 4:30          | .0001        | .1169         |
| 8-20                        | 0                 | 0               |               |                   |                                    | 8:30          | .0000        | .1171         |
| 8-21                        | .56               | 0               |               |                   |                                    | 12:00n        | 0            | .1172         |
| 8-22                        | .13               | 0               |               |                   |                                    |               |              |               |
| 8-23                        | 0                 | 0               |               |                   |                                    |               |              |               |
| 8-24                        | .39               | 0               |               |                   |                                    |               |              |               |

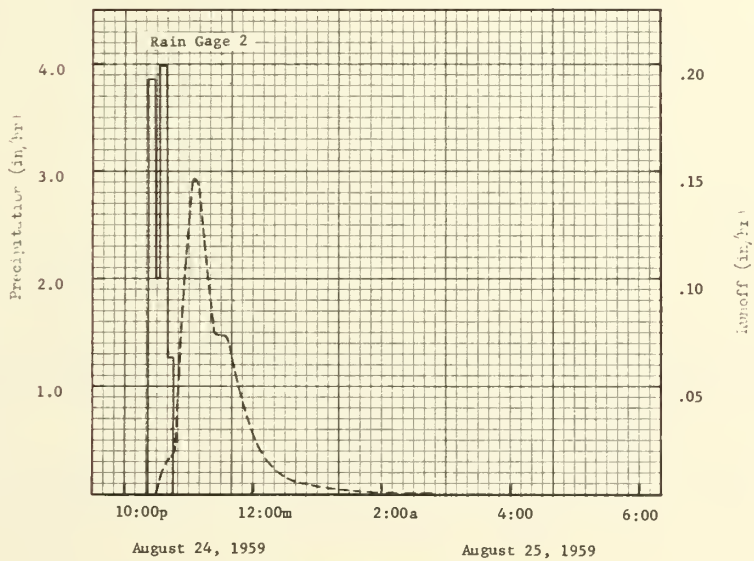
Watershed Conditions: 2% of area under cultivation in cotton and corn - good to fair cover; 4% pasture, 64% idle, 29% woods - good cover; 1% bare gullies.



Notes: To convert runoff in in/hr to cfs, multiply by 245.0.  
 1/ Rainfall of 0.5 in. 11:30-11:55p.



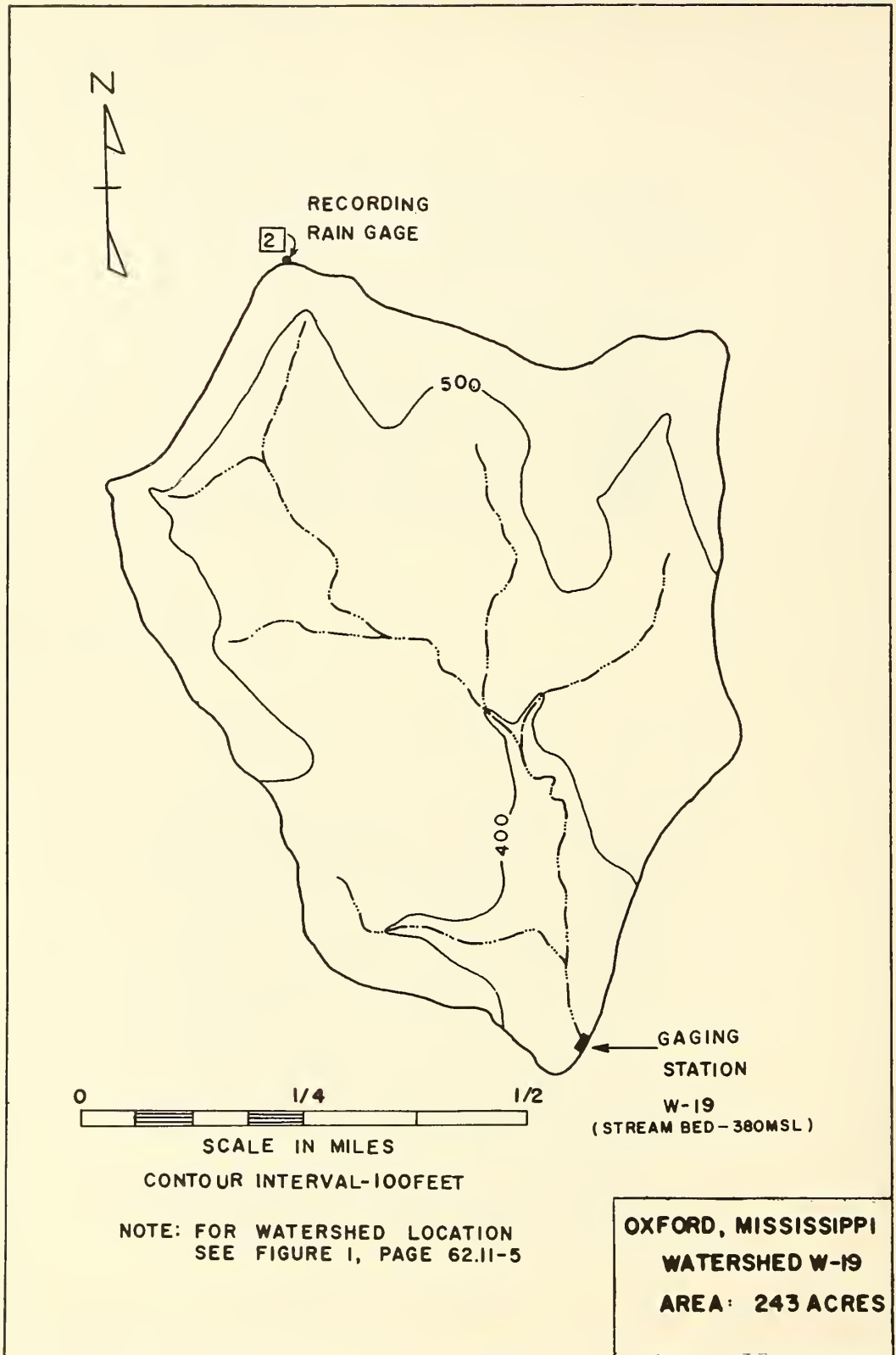
July 12, 1958



August 24, 1959

August 25, 1959

OXFORD, MISSISSIPPI WATERSHED W-19



OXFORD, MISSISSIPPI Watershed W-24

LOCATION: Marshall Co., Miss.; 2.2 mi. SW. of Holly Springs on county road; Little Sand Ditch, Pigeon Roost Creek Watershed, Yazoo River Basin.

AREA: 511 ac. SHAPE: Triangular; base 6,900 ft., altitude 6,300 ft.

SLOPES: 10% is in 0-2% class; 7% in 2-5%; 12% in 5-8%; 8% in 8-12%; 11% in 12-17%; 52% in 17% and above. Aspect S.

SOILS: Loessial and Coastal Plains; topsoil - 6% silt loam in texture, 0 to 7 ins. in depth, weak fine granular structure; 7% silt loam in texture, 0 to 10 ins. in depth, weak coarse granular structure; 13% silt loam in texture, 0 to 8 ins. in depth, weak fine granular structure; 64% fine sandy loam in texture, 0 to 12 ins. in depth, weak fine crumb structure; 10% loam in texture, 0 to 21 ins. in depth, weak fine granular structure. Subsoil - 6% moderate to moderately slow permeability, impeding layer at approximately 30 ins.; 7% slow permeability, impeding layer at 15 to 20 ins.; 64% moderate to rapid permeability, no impeding layer; 10% moderate to moderately rapid permeability, no impeding layer. Internal drainage - medium to slow. Loring silt loam - 6%; Grenada silt loam - 7%; Providence silt loam and silty clay loam - 13%; Ruston fine sandy loam - 64%; Hymon loam - 10%.

EROSION: + - 10%; 1 - 10%; 2 - 14%; 3 - 66%.

LAND CAPABILITY: II - 12%; III - 9%; IV - 8%; VI - 7%; VII - 64%.

SURFACE DRAINAGE: Good, length of principal waterway - 1.25 mi; sand bed channel. About 6% non-contributing area due to small desilting and retention dams.

CHARACTER OF FLOW: Ephemeral, continuous.

INSTRUMENTATION: Runoff - current meter rated section of natural sand-bottom channel; continuous water-stage recorder. Precipitation - one recording gage, increased to three recording gages, July, 1959.

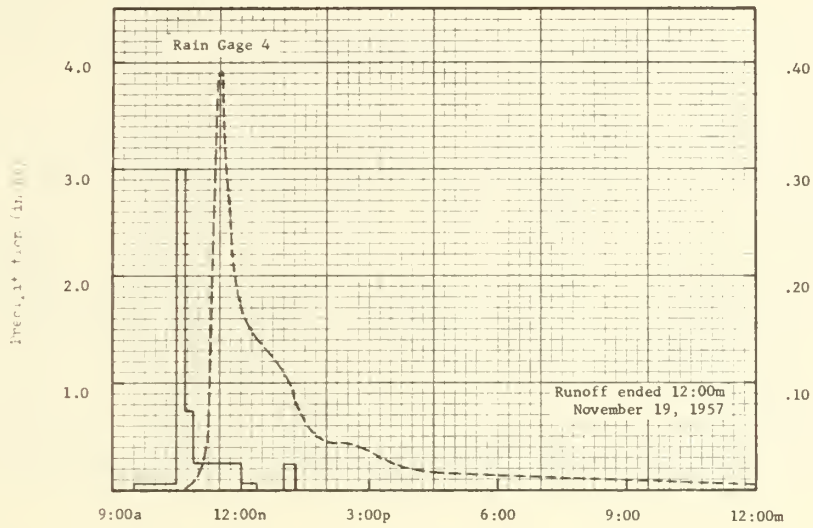
WATERSHED CONDITIONS: Normally about 3% is in cultivation - cotton and corn, 32% idle - good to fair cover of broom sedge and common grasses, 3% pasture - good cover; 59% woods - good to fair cover; 3% bare gullies.

GENERAL REPRESENTS: Moderately to severely eroded uplands in the transitional zone between the Southern Coastal Plain (P-133), and the Southern Mississippi Valley Silty Uplands (P-134), in the states of Arkansas, Louisiana, Mississippi, Kentucky, Tennessee, and southern Missouri.

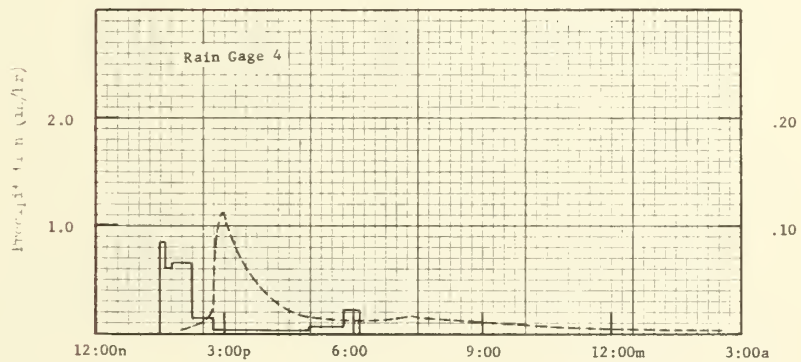
| MONTHLY PRECIPITATION AND RUNOFF (Inches)                                                                                                                            |                   |      |                                           |      |         |      | Oxford, Mississippi Watershed W-24<br>(Area - 511 Acres) |      |          |       |       |      |        |       |        |      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------|-------------------------------------------|------|---------|------|----------------------------------------------------------|------|----------|-------|-------|------|--------|-------|--------|------|
| Year                                                                                                                                                                 | Month             | Jan. | Feb.                                      | Mar. | Apr.    | May  | June                                                     | July | Aug.     | Sept. | Oct.  | Nov. | Dec.   | Year  |        |      |
| 1957                                                                                                                                                                 | P                 | 7.79 | 7.56                                      | 2.67 | 6.11    | 5.38 | 5.00                                                     | 3.59 | 0.82     | 6.70  | 3.82  | 8.97 | 4.88   | 63.29 |        |      |
|                                                                                                                                                                      | Q                 | 2.90 | 2.78                                      | .21  | 1.50    | 1.06 | .07                                                      | .09  | 0        | .30   | .09   | 2.68 | 1.45   | 13.13 |        |      |
| 1958                                                                                                                                                                 | P                 | 2.91 | 1.64                                      | 3.31 | 6.54    | 4.71 | 5.53                                                     | 6.55 | 2.00     | 8.60  | 0.94  | 3.68 | 1.72   | 48.13 |        |      |
|                                                                                                                                                                      | Q                 | 0.54 | .05                                       | .29  | 1.44    | 1.33 | .20                                                      | .27  | .09      | .79   | 0     | .28  | .05    | 5.33  |        |      |
| 1959                                                                                                                                                                 | P                 | 3.88 | 3.76                                      | 3.12 | 3.82    | 5.09 | 4.05                                                     | 4.67 | 5.54     | 2.99  | 2.17  | 3.14 | 6.89   | 49.12 |        |      |
|                                                                                                                                                                      | Q                 | .88  | .86                                       | .41  | .57     | .19  | .54                                                      | .11  | .20      | .13   | .02   | .02  | 1.13   | 5.06  |        |      |
| Normal                                                                                                                                                               | P                 | 6.30 | 4.90                                      | 6.28 | 4.82    | 4.26 | 4.15                                                     | 4.17 | 3.13     | 3.48  | 3.19  | 4.78 | 5.25   | 54.71 |        |      |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS                                              |                   |      |                                           |      |         |      | Oxford, Mississippi Watershed W-24                       |      |          |       |       |      |        |       |        |      |
| YEAR                                                                                                                                                                 | MAXIMUM DISCHARGE |      | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |      |         |      |                                                          |      |          |       |       |      |        |       |        |      |
|                                                                                                                                                                      |                   |      | 1 hour                                    |      | 2 hours |      | 6 hours                                                  |      | 12 hours |       | 1 day |      | 2 days |       | 8 days |      |
|                                                                                                                                                                      | Date              | Rate | Date                                      | Vol. | Date    | Vol. | Date                                                     | Vol. | Date     | Vol.  | Date  | Vol. | Date   | Vol.  | Date   | Vol. |
| 1957                                                                                                                                                                 | 5-22              | 0.79 | 5-22                                      | 0.60 | 5-22    | 0.82 | 5-22                                                     | 0.92 | 1-31     | 1.19  | 1-31  | 2.08 | 1-30   | 3.16  | 1-28   | 4.37 |
| 1958                                                                                                                                                                 | 8-23              | .12  | 9-19                                      | .08  | 9-19    | .14  | 9-19                                                     | .21  | 9-19     | .33   | 9-19  | .59  | 9-19   | .68   | 4-25   | 1.50 |
| 1959                                                                                                                                                                 | 12-18             | .15  | 12-18                                     | .13  | 12-18   | .21  | 12-18                                                    | .38  | 12-18    | .44   | 12-18 | .46  | 12-17  | .62   | 12-11  | .98  |
| Notes: Quality of records: Q - fair in 1957, good in 1958, good in 1959; P - good. Normal P based on 33-yr. record (1920-1952) at USWB Sta., Holly Springs 2N, Miss. |                   |      |                                           |      |         |      |                                                          |      |          |       |       |      |        |       |        |      |



| SELECTED RUNOFF EVENTS                                                                                                                             |                   |                    |               |                   |               | Oxford, Mississippi Watershed W-24 |              |               |
|----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------------|---------------|-------------------|---------------|------------------------------------|--------------|---------------|
| Antecedent conditions                                                                                                                              |                   |                    | Rainfall      |                   |               | Runoff                             |              |               |
| Date                                                                                                                                               | Rainfall (inches) | Runoff (inches)    | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time                      | Rate (in/hr) | Acc. (inches) |
| <u>Event of November 18, 1957</u>                                                                                                                  |                   |                    |               |                   |               |                                    |              |               |
| 10-16-57                                                                                                                                           | 0.49              | 0                  | 11-18-57      | Rain Cage 4       |               | 11-18-57                           |              |               |
| 10-17-22                                                                                                                                           | 0                 | 0                  | 9:30a         | 0                 | 0             | 10:45a                             | 0            | 0             |
| 10-23                                                                                                                                              | 1.24              | 0                  | 10:30         | .05               | .05           | 11:00                              | .0107        | .0027         |
| 10-24-29                                                                                                                                           | 0                 | 0                  | :40           | 3.00              | .55           | :15                                | .0660        | .0192         |
| 10-30                                                                                                                                              | .33               | 0                  | :55           | .72               | .73           | :30                                | .3919        | .1172         |
| 10-31                                                                                                                                              | 0                 | 0                  | 12:00n        | .25               | 1.00          | :45                                | .2580        | .1817         |
| 11-1-2                                                                                                                                             | 0                 | 0                  | :25p          | .07               | 1.03          | 12:00n                             | .1765        | .2258         |
| 11-3                                                                                                                                               | .12               | 0                  | 1:00          | 0                 | 1.03          | :30 p                              | .1397        | .2957         |
| 11-4-6                                                                                                                                             | 0                 | 0                  | :20           | .21               | 1.10          | 1:00                               | .1106        | .3510         |
| 11-7-8                                                                                                                                             | 2.06              | .2976              |               |                   |               | :30                                | .0689        | .3854         |
| 11-9-11                                                                                                                                            | 0                 | 0                  |               |                   |               | 2:05                               | .0415        | .4176         |
| 11-12                                                                                                                                              | .37               | 0                  |               |                   |               | :30                                | .0452        | .4357         |
| 11-13-14                                                                                                                                           | 2.59              | .9951              |               |                   |               | 3:00                               | .0361        | .4560         |
| 11-15                                                                                                                                              | 0                 | .0418              |               |                   |               | 4:00                               | .0199        | .4840         |
| 11-16                                                                                                                                              | .07               | .0046              |               |                   |               | 6:00                               | .0117        | .5156         |
| 11-17                                                                                                                                              | .24               | .1674              |               |                   |               | 12:00m                             | .0036        | .5618         |
| 11-18                                                                                                                                              | 0                 | .0367 <sub>1</sub> |               |                   |               | 11-19-57<br>6:00a                  | .0029        | .5816         |
| Watershed Conditions: 3% of area in cotton and corn residue - fair cover; 3% pasture, 32% idle, 59% woods - fair cover; 3% bare gullies.           |                   |                    |               |                   |               |                                    |              |               |
| <u>Event of May 9, 1958</u>                                                                                                                        |                   |                    |               |                   |               |                                    |              |               |
| 4-9-58                                                                                                                                             | .11               | 0                  | 5-9-58        | Rain Cage 4       |               | 5-9-58                             |              |               |
| 4-10-13                                                                                                                                            | 0                 | 0                  | 1:30p         | 0                 | 0             | 1:55p                              | .0025        | 0             |
| 4-14                                                                                                                                               | 1.29              | .0140              | :40           | .84               | .14           | 2:40                               | .0173        | .0053         |
| 4-15                                                                                                                                               | .39               | .1165              | :50           | .60               | .60           | :45                                | .0524        | .0082         |
| 4-16-19                                                                                                                                            | 0                 | 0                  | 2:15          | .67               | .52           | :50                                | .0849        | .0139         |
| 4-20                                                                                                                                               | .27               | 0                  | :45           | .14               | .59           | 3:00                               | .1102        | .0308         |
| 4-21                                                                                                                                               | 0                 | 0                  | 5:00          | .02               | .64           | :10                                | .0957        | .0480         |
| 4-22                                                                                                                                               | .23               | 0                  | 6:10          | .10               | .76           | :30                                | .0614        | .0742         |
| 4-23                                                                                                                                               | 0                 | 0                  |               |                   |               | 4:30                               | .0217        | .1126         |
| 4-24                                                                                                                                               | .13               | 0                  |               |                   |               | 6:00                               | .0123        | .1357         |
| 4-25                                                                                                                                               | 1.11              | .0326              |               |                   |               | :30                                | .0128        | .1420         |
| 4-26                                                                                                                                               | .64               | .0326              |               |                   |               | 7:00                               | .0128        | .1484         |
| 4-27                                                                                                                                               | .37               | 0                  |               |                   |               | :10                                | .0166        | .1509         |
| 4-28                                                                                                                                               | .35               | 0                  |               |                   |               | :40                                | .0059        | .1590         |
| 4-29                                                                                                                                               | .65               | .0699              |               |                   |               | 10:00                              | .0079        | .1847         |
| 4-30                                                                                                                                               | .26               | .0140              |               |                   |               | 12:00m                             | .0058        | .1983         |
| 5-1                                                                                                                                                | 1.14              | .2981              |               |                   |               | 5-10-58<br>2:00a                   | .0047        | .2089         |
| 5-2                                                                                                                                                | 0                 | .0140              |               |                   |               |                                    |              |               |
| 5-3                                                                                                                                                | 0                 | .0046              |               |                   |               |                                    |              |               |
| 5-4                                                                                                                                                | .25               | .0046              |               |                   |               |                                    |              |               |
| 5-5                                                                                                                                                | .02               | 0                  |               |                   |               |                                    |              |               |
| 5-6-7                                                                                                                                              | 0                 | 0                  |               |                   |               |                                    |              |               |
| 5-8                                                                                                                                                | .65               | 0                  |               |                   |               |                                    |              |               |
| 5-9                                                                                                                                                | .31 <sub>2</sub>  | .1063 <sub>3</sub> |               |                   |               |                                    |              |               |
| Watershed Conditions: 3% of area under cultivation in cotton and corn - poor cover; 3% pasture, 32% idle, 59% woods - good cover; 3% bare gullies. |                   |                    |               |                   |               |                                    |              |               |
| Notes: To convert runoff in in/hr to cfs, multiply by 515.3.                                                                                       |                   |                    |               |                   |               |                                    |              |               |
| 1/ Recessional flow prior to storm event.                                                                                                          |                   |                    |               |                   |               |                                    |              |               |
| 2/ Rainfall prior to 6:15a.                                                                                                                        |                   |                    |               |                   |               |                                    |              |               |
| 3/ Recessional flow extending from peak at 12:50a to storm event.                                                                                  |                   |                    |               |                   |               |                                    |              |               |

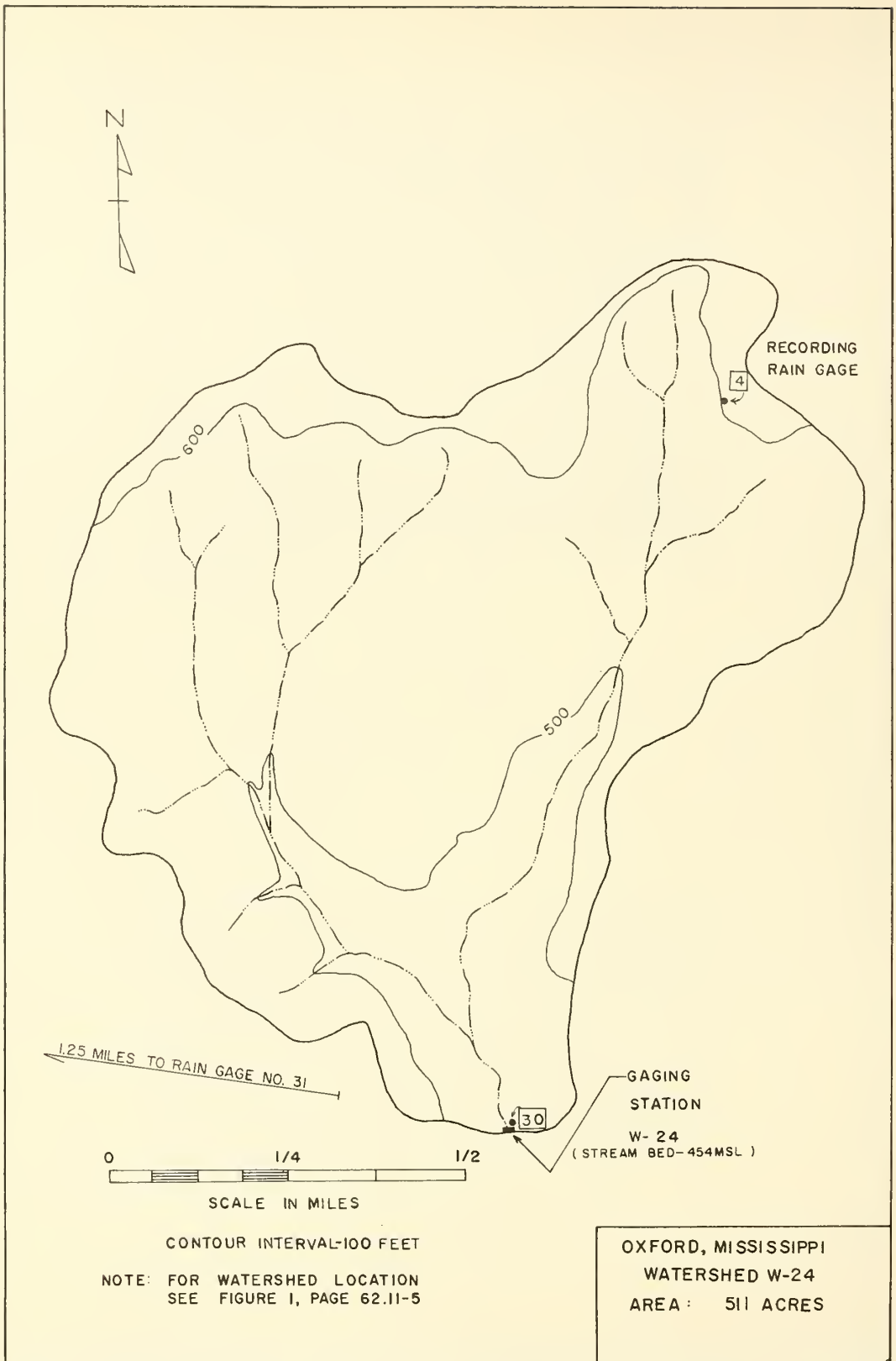


November 18, 1957



May 9, 1958

OXFORD, MISSISSIPPI WATERSHED W-24



RECORDING  
RAIN GAGE

4

600

500

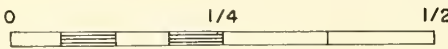
1.25 MILES TO RAIN GAGE NO. 31

GAGING  
STATION

W- 24

( STREAM BED-454MSL )

30



SCALE IN MILES

CONTOUR INTERVAL-100 FEET

NOTE: FOR WATERSHED LOCATION  
SEE FIGURE 1, PAGE 62.11-5

OXFORD, MISSISSIPPI

WATERSHED W-24

AREA : 511 ACRES

OXFORD, MISSISSIPPI Watershed W-28

LOCATION: Marshall Co., Miss.; 2.3 mi. SW. of Holly Springs on State Highway No. 7; Walkers Bottom Creek, Pigeon Roost Creek Watershed, Yazoo River Basin.

AREA: 1,080 ac. (1.69 sq. mi.)      SHAPE: Rectangular; 2.1 mi. long, 0.8 mi. wide.

SLOPES: 13% is in 0-2% class; 17% in 2-5%; 10% in 5-8%; 7% in 8-12%; 10% in 12-17%; 43% in 17% and above.  
Aspect NW.

SOILS: Loessial and Coastal Plains: Topsoil - 17% silt loam in texture, D to 10 ins. in depth, weak coarse granular structure; 45% silt loam in texture, 0 to 8 ins. in depth, weak fine granular structure; 38% fine sandy loam, 0 to 12 ins. in depth, weak fine crumb structure. Subsoil - 17% slow permeability, impeding layer at 15 to 20 ins.; 45% moderate to slow permeability, impeding layer at 15 to 20 ins.; 38% moderate to rapid permeability, no impeding layer. Internal drainage - medium to rapid. Grenada silt loam - 17%; Providence silt loam - 45%; Ruston fine sandy loam - 38%.

EROSION: + - 13%; 2 - 16%; 3 - 71%.

LAND CAPABILITY: II - 14%; III - 9%; IV - 6%; VI - 16%; VII - 55%.

SURFACE DRAINAGE: Good; length of principal waterway - 1.75 mi.; sand bed channel. Approximately 60% non-contributing area due to small desilting and retention dams.

CHARACTER OF FLOW: Ephemeral, continuous.

INSTRUMENTATION: Runoff - current meter rated section of natural sand-bottom channel; continuous water-stage recorder. Precipitation - three recording gages.

WATERSHED CONDITIONS: Normally about 12% is in cultivation - cotton and corn, 48% idle - good to poor cover of broom sedge and common grasses, 10% pasture - fair to poor cover; 26% woods - good to fair cover; 4% bare gullies.

GENERALLY REPRESENTS: Moderately to severely eroded uplands in the transitional zone between the Southern Coastal Plain (P-133), and the Southern Mississippi Valley Silty Uplands (P-134), in the states of Arkansas, Louisiana, Mississippi, Kentucky, Tennessee, and southern Missouri.

| MONTHLY PRECIPITATION AND RUNOFF (Inches)                                                                                                                               |                   |                                           |      |         |      |         | Oxford, Mississippi Watershed W-28<br>(Area - 1,080 Acres) |          |      |       |      |        |      |        |      |       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------------------------------|------|---------|------|---------|------------------------------------------------------------|----------|------|-------|------|--------|------|--------|------|-------|
| Year                                                                                                                                                                    | Month             | Jan.                                      | Feb. | Mar.    | Apr. | May     | June                                                       | July     | Aug. | Sept. | Oct. | Nov.   | Dec. | Year   |      |       |
|                                                                                                                                                                         |                   | 1957                                      | P    | 8.15    | 7.02 | 2.42    | 5.60                                                       | 5.16     | 5.28 | 3.80  | 0.88 | 5.05   | 4.52 | 9.46   | 4.45 | 61.79 |
|                                                                                                                                                                         | Q                 | 2.53                                      | 1.06 | .11     | 1.05 | 0.60    | .14                                                        | .09      | 0    | .07   | .09  | .88    | .32  | 6.94   |      |       |
| 1958                                                                                                                                                                    | P                 | 2.43                                      | 1.48 | 3.68    | 6.49 | 3.60    | 5.45                                                       | 7.00     | 1.14 | 8.70  | 1.00 | 3.42   | 1.62 | 46.01  |      |       |
|                                                                                                                                                                         | Q                 | 0.02                                      | 0    | T       | .26  | .27     | .01                                                        | .30      | 0    | .21   | 0    | .07    | 0    | 1.14   |      |       |
| 1959                                                                                                                                                                    | P                 | 3.75                                      | 4.02 | 3.12    | 3.53 | 4.95    | 4.34                                                       | 3.50     | 3.68 | 4.67  | 2.26 | 3.87   | 7.03 | 48.72  |      |       |
|                                                                                                                                                                         | Q                 | .14                                       | .16  | .02     | .05  | .08     | .11                                                        | .02      | 0    | .63   | 0    | .06    | .54  | 1.81   |      |       |
| Normal                                                                                                                                                                  | P                 | 6.30                                      | 4.90 | 6.28    | 4.82 | 4.26    | 4.15                                                       | 4.17     | 3.13 | 3.48  | 3.19 | 4.78   | 5.25 | 54.71  |      |       |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS                                                 |                   |                                           |      |         |      |         | Oxford, Mississippi Watershed W-28                         |          |      |       |      |        |      |        |      |       |
| YEAR                                                                                                                                                                    | MAXIMUM DISCHARGE | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |      |         |      |         |                                                            |          |      |       |      |        |      |        |      |       |
|                                                                                                                                                                         |                   | 1 hour                                    |      | 2 hours |      | 6 hours |                                                            | 12 hours |      | 1 day |      | 2 days |      | 8 days |      |       |
|                                                                                                                                                                         |                   | Date                                      | Rate | Date    | Vol. | Date    | Vol.                                                       | Date     | Vol. | Date  | Vol. | Date   | Vol. | Date   | Vol. |       |
| 1957                                                                                                                                                                    | 4-4               | 0.36                                      | 4-4  | 0.31    | 4-4  | 0.50    | 4-3                                                        | 0.70     | 1-31 | 0.92  | 1-31 | 1.45   | 1-30 | 2.02   | 1-27 | 2.68  |
| 1958                                                                                                                                                                    | 7-22              | .24                                       | 7-22 | .17     | 7-22 | .21     | 7-22                                                       | .22      | 7-22 | .22   | 7-22 | .26    | 7-22 | .26    | 7-22 | .28   |
| 1959                                                                                                                                                                    | 9-9               | .58                                       | 9-9  | .42     | 9-9  | .54     | 9-9                                                        | .60      | 9-9  | .60   | 9-9  | .60    | 9-9  | .60    | 9-5  | .63   |
| Notes: Quality of records: Q - poor for 1957, fair for 1958, fair for 1959; P - good. Normal P based on 33-yr. record (1920-1952) at USWB Sta., Holly Springs 2N, Miss. |                   |                                           |      |         |      |         |                                                            |          |      |       |      |        |      |        |      |       |

Cooperative Research Project of USDA, University of Mississippi, and Mississippi State Agricultural Experiment Station.

| SELECTED RUNOFF EVENTS                                                                                                                                               |                                    |                     | Oxford, Mississippi Watershed W-28 |                      |                  |                      |                 |                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|---------------------|------------------------------------|----------------------|------------------|----------------------|-----------------|------------------|
| Antecedent conditions                                                                                                                                                |                                    |                     | Rainfall                           |                      |                  | Runoff <sup>1/</sup> |                 |                  |
| Date                                                                                                                                                                 | Rainfall <sup>2/</sup><br>(inches) | Runoff<br>(inches)  | Date and<br>time                   | Intensity<br>(in/hr) | Acc.<br>(inches) | Date and<br>time     | Rate<br>(in/hr) | Acc.<br>(inches) |
| Event of June 30, 1957                                                                                                                                               |                                    |                     |                                    |                      |                  |                      |                 |                  |
| 5-31-57                                                                                                                                                              | 0                                  | 0                   | 6-30-57                            | Rain Gage 6          |                  | 6-30-57              |                 |                  |
| 6-1                                                                                                                                                                  | .01                                | 0                   | 9:25a                              | 0                    | 0                | 10:20a               | 0               | 0                |
| 6-2                                                                                                                                                                  | .13                                | 0                   | :35                                | .30                  | .05              | :30                  | .0024           | .0002            |
| 6-3                                                                                                                                                                  | .74                                | 0                   | 10:10                              | 0                    | .05              | :40                  | .0542           | .0049            |
| 6-4                                                                                                                                                                  | .15                                | 0                   | :25                                | 3.04                 | .81              | :45                  | .0487           | .0092            |
| 6-5                                                                                                                                                                  | .49                                | .0287               | :40                                | .08                  | .83              | :50                  | .1084           | .0158            |
| 6-6-7                                                                                                                                                                | 0                                  | 0                   |                                    |                      |                  | :55                  | .1331           | .0259            |
| 6-8                                                                                                                                                                  | .10                                | 0                   | 6-30-57                            | Rain Gage 5          |                  | 11:05                | .1084           | .0460            |
| 6-9                                                                                                                                                                  | .08                                | 0                   | 9:20a                              | 0                    | 0                | :20                  | .0725           | .0685            |
| 6-10                                                                                                                                                                 | .31                                | 0                   | :30                                | .30                  | .05              | :45                  | .0376           | .0904            |
| 6-11-18                                                                                                                                                              | 0                                  | 0                   | :45                                | .08                  | .07              | 12:15p               | .0129           | .1010            |
| 6-19                                                                                                                                                                 | .02                                | 0                   | 10:05                              | 0                    | .07              | 1:00                 | .0007           | .1044            |
| 6-20                                                                                                                                                                 | 0                                  | 0                   | :20                                | 2.76                 | .76              | 2:15                 | .0001           | .1049            |
| 6-21                                                                                                                                                                 | .02                                | 0                   | :35                                | .60                  | .91              | 3:00                 | 0               | .1050            |
| 6-22                                                                                                                                                                 | .37                                | 0                   | :50                                | .12                  | .94              |                      |                 |                  |
| 6-23                                                                                                                                                                 | .43                                | 0                   | 6-30-57                            | Rain Gage 7          |                  |                      |                 |                  |
| 6-24                                                                                                                                                                 | .08                                | 0                   |                                    | See Page 62.9-2      |                  |                      |                 |                  |
| 6-25-26                                                                                                                                                              | 0                                  | 0                   |                                    |                      |                  |                      |                 |                  |
| 6-27                                                                                                                                                                 | 1.05                               | .0012               |                                    |                      |                  |                      |                 |                  |
| 6-28-29                                                                                                                                                              |                                    | 0                   |                                    |                      |                  |                      |                 |                  |
| Watershed Conditions: 12% of area under cultivation in cotton and corn - fair to good cover; 10% pasture, 48% idle, 26% woods - good cover; 4% bare gullies.         |                                    |                     |                                    |                      |                  |                      |                 |                  |
| Event of July 22, 1958                                                                                                                                               |                                    |                     |                                    |                      |                  |                      |                 |                  |
| 6-22-58                                                                                                                                                              | 0                                  | 0                   | 7-22-58                            | Rain Gage 6          |                  | 7-22-58              |                 |                  |
| 6-23-24                                                                                                                                                              | 0                                  | 0                   | 4:40p                              | 0                    | 0                | 5:00p                | 0               | 0                |
| 6-25                                                                                                                                                                 | .77                                | 0                   | :50                                | 1.26                 | .21              | :15                  | .0006           | .0001            |
| 6-26                                                                                                                                                                 | .57                                | .0022               | 5:05                               | .08                  | .23              | :30                  | .0184           | .0025            |
| 6-27-30                                                                                                                                                              | 0                                  | 0                   | :15                                | 2.10                 | .58              | :40                  | .0716           | .0095            |
| 7-1-4                                                                                                                                                                | 0                                  | 0                   | :25                                | .06                  | .59              | :45                  | .1377           | .0182            |
| 7-5                                                                                                                                                                  | .10                                | 0                   | :40                                | 2.00                 | 1.09             | :50                  | .2002           | .0323            |
| 7-6                                                                                                                                                                  | .07                                | 0                   | 6:05                               | .72                  | 1.39             | 6:00                 | .2415           | .0691            |
| 7-7                                                                                                                                                                  | .53                                | 0                   |                                    |                      |                  | :15                  | .2121           | .1261            |
| 7-8                                                                                                                                                                  | .10                                | 0                   |                                    |                      |                  | :30                  | .1331           | .1693            |
| 7-9-11                                                                                                                                                               | 0                                  | 0                   | 7-22-58                            | Rain Gage 5          |                  | :45                  | .0753           | .1951            |
| 7-12                                                                                                                                                                 | 1.57                               | .0198               | 3:30p                              | 0                    | 0                | 7:00                 | .0422           | .2097            |
| 7-13-20                                                                                                                                                              | 0                                  | 0                   | :32                                | 3.00                 | .10              | :30                  | .0129           | .2237            |
| 7-21                                                                                                                                                                 | .69                                | 0                   | :36                                | .15                  | .11              | 8:00                 | .0006           | .2292            |
| 7-22                                                                                                                                                                 | 1.41                               | .0687 <sup>3/</sup> | :50                                | 1.88                 | .55              | 9:00                 | 0               | .2295            |
|                                                                                                                                                                      |                                    |                     | 4:00                               | .90                  | .70              |                      |                 |                  |
|                                                                                                                                                                      |                                    |                     | 5:15                               | .12                  | .85              |                      |                 |                  |
| Watershed Conditions: 12% of area under cultivation in cotton and corn - good to fair cover; 10% pasture, 48% idle, 26% woods - good to fair cover; 4% bare gullies. |                                    |                     |                                    |                      |                  |                      |                 |                  |
|                                                                                                                                                                      |                                    |                     | 7-22-58                            | Rain Gage 7          |                  |                      |                 |                  |
|                                                                                                                                                                      |                                    |                     | 3:30p                              | 0                    | 0                |                      |                 |                  |
|                                                                                                                                                                      |                                    |                     | :36                                | 1.00                 | .10              |                      |                 |                  |
|                                                                                                                                                                      |                                    |                     | :53                                | 3.53                 | .90              |                      |                 |                  |
|                                                                                                                                                                      |                                    |                     | 4:00                               | 1.29                 | 1.05             |                      |                 |                  |
|                                                                                                                                                                      |                                    |                     | :06                                | .90                  | 1.14             |                      |                 |                  |
|                                                                                                                                                                      |                                    |                     | :30                                | .15                  | 1.20             |                      |                 |                  |
|                                                                                                                                                                      |                                    |                     | 5.00                               | .10                  | 1.25             |                      |                 |                  |
| Notes: To convert runoff in in/hr to cfs, multiply by 1089.0.                                                                                                        |                                    |                     |                                    |                      |                  |                      |                 |                  |
| 1/ 58% of watershed area is noncontributing due to small desilting and retention dams; no overflow occurred.                                                         |                                    |                     |                                    |                      |                  |                      |                 |                  |
| 2/ Rain gages 5, 6, and 7 Thiessen weighted; 5-19.2%, 6-68.3%, and 7-12.5%.                                                                                          |                                    |                     |                                    |                      |                  |                      |                 |                  |
| 3/ Runoff 4:10-6:40a, .0638 in. and runoff 9:10a-12:40p, .0049 in.                                                                                                   |                                    |                     |                                    |                      |                  |                      |                 |                  |

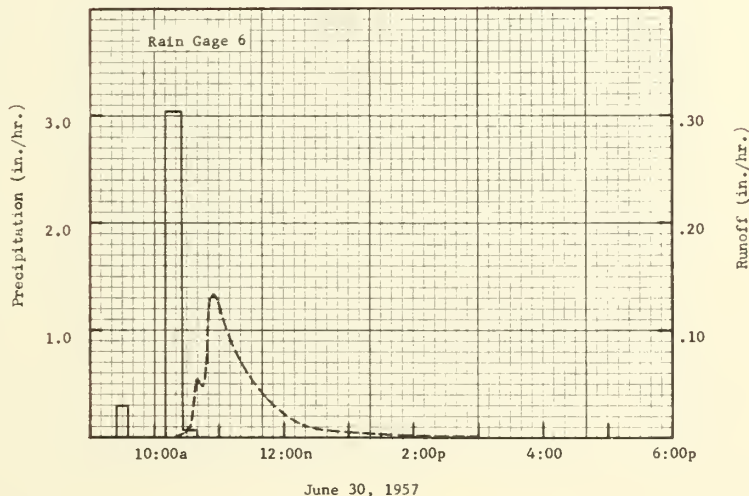


SELECTED RUNOFF EVENTS

Oxford, Mississippi Watershed W-28

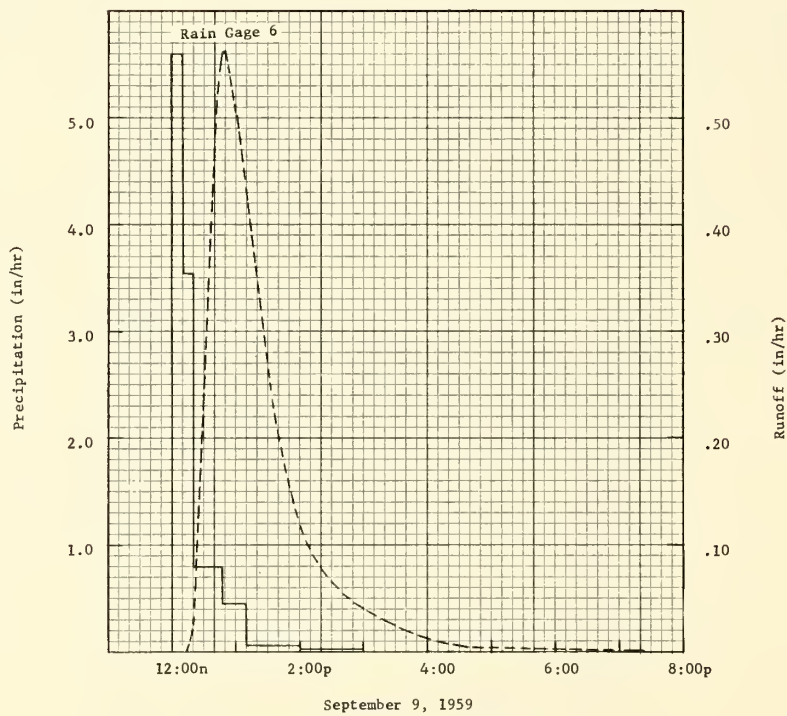
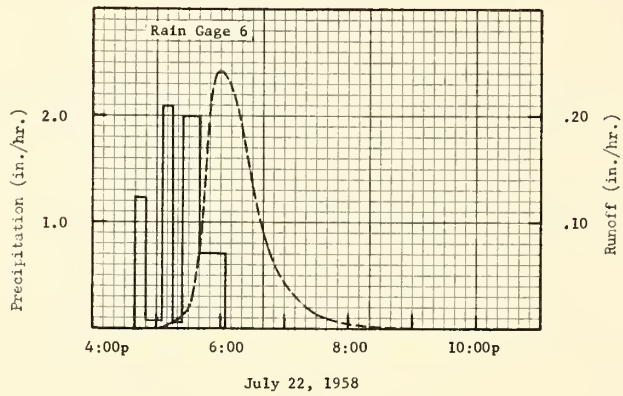
| Antecedent conditions              |                                    |                    | Rainfall         |                      |                  | Runoff <sup>1/</sup> |                 |                  |
|------------------------------------|------------------------------------|--------------------|------------------|----------------------|------------------|----------------------|-----------------|------------------|
| Date                               | Rainfall <sup>2/</sup><br>(inches) | Runoff<br>(inches) | Date and<br>time | Intensity<br>(in/hr) | Acc.<br>(inches) | Date and<br>time     | Rate<br>(in/hr) | Acc.<br>(inches) |
| Event of September 9, 1959         |                                    |                    |                  |                      |                  |                      |                 |                  |
| Rain Gage 6                        |                                    |                    |                  |                      |                  |                      |                 |                  |
| 8-7-59                             | 0                                  | 0                  | 9-9-59           |                      |                  | 9-9-59               |                 |                  |
| 8-8-15                             | 0                                  | 0                  | 12:00n           | 0                    | 0                | 12:15p               | 0               | 0                |
| 8-16                               | 0.04                               | 0                  | :15p             | 5.60                 | 1.40             | :20                  | .0251           | .0010            |
| 8-17                               | 0                                  | 0                  | :30              | 3.56                 | 2.29             | :30                  | .2360           | .0228            |
| 8-18                               | .89                                | 0                  | :45              | .80                  | 2.49             | :40                  | .4770           | .0822            |
| 8-19                               | .19                                | 0                  | 1:15             | .34                  | 2.66             | :50                  | .5610           | .1702            |
| 8-20                               | .04                                | 0                  | 2:00             | .04                  | 2.69             | 1:00                 | .5032           | .2589            |
| 8-21                               | .29                                | 0                  | 3:00             | .02                  | 2.71             | :10                  | .4210           | .3359            |
| 8-22                               | .35                                | 0                  | :30              | 0                    | 2.71             | :20                  | .3420           | .3359            |
| 8-23                               | 0                                  | 0                  | 4:00             | .02                  | 2.72             | :30                  | .2540           | .4486            |
| 8-24                               | .14                                | 0                  | :45              | .05                  | 2.76             | :50                  | .1550           | .5168            |
| 8-25                               | .49                                | 0                  |                  |                      |                  | 2:20                 | .0810           | .5741            |
| 8-26-29                            | 0                                  | 0                  |                  |                      |                  | 3:10                 | .0350           | .6190            |
| 8-30                               | .74                                | 0                  |                  |                      |                  | 4:30                 | .0085           | .6470            |
| 8-31                               | 0                                  | 0                  |                  |                      |                  | 6:00                 | .0015           | .6545            |
| Rain Gages 5, 6, & 7 <sup>2/</sup> |                                    |                    |                  |                      |                  |                      |                 |                  |
| 9-1                                | .16                                | 0                  | 9-9-59           |                      |                  | 7:15                 | 0               | .6555            |
| 9-2-4                              | 0                                  | 0                  | 11:55a           | 0                    | 0                |                      |                 |                  |
| 9-5                                | 1.00                               | .0374              | 12:00n           | 1.09                 | .09              |                      |                 |                  |
| 9-6-8                              | 0                                  | 0                  | :15p             | 4.59                 | 1.23             |                      |                 |                  |
|                                    |                                    |                    | :30              | 4.14                 | 2.27             |                      |                 |                  |
|                                    |                                    |                    | :45              | .98                  | 2.52             |                      |                 |                  |
|                                    |                                    |                    | 1:00             | .57                  | 2.66             |                      |                 |                  |
|                                    |                                    |                    | :15              | .34                  | 2.76             |                      |                 |                  |

Watershed Conditions: 12% of area in matured cotton and cover - good to fair cover; 10% pasture, 48% idle, 26% woods - good cover; 4% bare gullies.

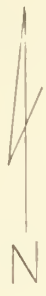


OXFORD, MISSISSIPPI WATERSHED W-28

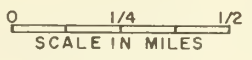
Notes: To convert runoff in in/hr to cfs, multiply by 1089.0  
<sup>1/</sup> 59 percent of watershed area is noncontributing due to small desilting and retention dams; no overflow occurred.  
<sup>2/</sup> Rain gages 5, 6, and 7 Thiessen weighted.



OXFORD, MISSISSIPPI WATERSHED W-28



NOTE: FOR WATERSHED LOCATION  
SEE FIGURE 1, PAGE 62.11-5



CONTOUR INTERVAL - 100 FEET

-  RECORDING RAIN GAGE (ACTUAL)
-  DETENTION STRUCTURE

OXFORD, MISSISSIPPI  
WATERSHED W-28  
AREA: 1080 ACRES

OXFORD, MISSISSIPPI Watershed W-30

LOCATION: Marshall Co., Miss.; 4.6 mi. S. of Holly Springs on State Highway No. 7; Chews Creek, Pigeon Root Creek Watershed, Yazoo River Basin.

AREA: 113 ac.

SHAPE: Triangular; base 3,100 ft., altitude 3,200 ft.

SLOPES: 7% is in 0-2% class; 32% in 2-5%; 8% in 5-8%; 14% in 8-12%; 7% in 12-17%; 32% in 17% and above. Aspect W.

SOILS: Loessial and Coastal Plains; 11% silt loam in texture, 0 to 7 ins. in depth, weak fine granular structure; 12% silt loam in texture, 0 to 10 ins. in depth, weak coarse granular structure; 18% silt loam in texture, 0 to 8 ins. in depth, weak fine granular structure; 51% fine sandy loam in texture, 0 to 12 ins. in depth, weak fine crumb structure; 8% loam in texture, 0 to 21 ins. in depth, weak fine granular structure. Subsoil - 11% moderate to moderately slow permeability, impeding layer at approximately 30 ins.; 12% slow permeability, impeding layer at 15 to 20 ins.; 18% moderate to slow permeability, impeding layer at 15 to 20 ins.; 51% moderate to rapid permeability, no impeding layer; 8% moderate to moderately rapid permeability, no impeding layer. Internal drainage - medium to slow. Loring silt loam - 11%; Grenada silt loam - 12%; Providence silt loam and silty clay loam - 18%; Ruston fine sandy loam - 51%; Hymon loam - 8%.

EROSION: + - 8%; 2 - 20%; 3 - 72%.

LAND CAPABILITY: II - 10%; III - 4%; IV - 5%; VI - 28%; VII - 53%.

SURFACE DRAINAGE: Good; length of principal waterway - .5 mi.; sand bed channel. Approximately 10% non-contributing area due to small desilting and retention dams in 1957, increased to 89% in December, 1960.

CHARACTER OF FLOW: Ephemeral, continuous.

INSTRUMENTATION: Runoff-current meter rated section of natural sand-bottom channel; continuous water-stage recorder at 8 x 4 ft. box culvert with 60° wing walls. Precipitation - one recording gage.

WATERSHED CONDITIONS: Normally about 14% is in cultivation - cotton and corn, 17% idle - fair to good cover, 62% pasture - good to poor cover of Bermuda grass; 6% woods - good to fair cover; 1% bare gullies.

GENERALLY REPRESENTS: Moderately to severely eroded uplands in the transitional zone between the Southern Coastal Plain (P-133), and the Southern Mississippi Valley Silty Uplands (P-134), in the states of Arkansas, Louisiana, Mississippi, Kentucky, Tennessee, and Southern Missouri.

| MONTHLY PRECIPITATION AND RUNOFF (Inches)                                                                                                                 |                   |      |                                           |      |       |      | Oxford, Mississippi Watershed W-30<br>(Area - 113 Acres) |      |       |       |       |      |      |       |       |      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------|-------------------------------------------|------|-------|------|----------------------------------------------------------|------|-------|-------|-------|------|------|-------|-------|------|
| Year                                                                                                                                                      | Jan.              | Feb. | Mar.                                      | Apr. | May   | June | July                                                     | Aug. | Sept. | Oct.  | Nov.  | Dec. | Year |       |       |      |
| 1957                                                                                                                                                      | P                 | 7.66 | 7.04                                      | 2.41 | 6.12  | 5.07 | 4.72                                                     | 3.81 | 1.22  | 5.47  | 3.84  | 9.50 | 4.26 | 61.12 |       |      |
|                                                                                                                                                           | Q                 | 3.06 | 2.29                                      | .23  | 1.53  | .56  | .23                                                      | .23  | 0     | .25   | .19   | 2.56 | .52  | 11.65 |       |      |
| 1958                                                                                                                                                      | P                 | 2.39 | 1.48                                      | 3.63 | 6.75  | 3.25 | 5.63                                                     | 8.55 | 0.98  | 10.62 | 1.01  | 3.49 | 1.57 | 49.35 |       |      |
|                                                                                                                                                           | Q                 | 0.17 | .02                                       | .12  | .93   | .54  | .17                                                      | 1.51 | 0     | 1.45  | 0     | .35  | 0    | 5.26  |       |      |
| 1959                                                                                                                                                      | P                 | 3.64 | 3.85                                      | 2.90 | 2.94  | 4.52 | 4.09                                                     | 3.69 | 3.88  | 5.12  | 2.44  | 3.68 | 6.90 | 47.65 |       |      |
|                                                                                                                                                           | Q                 | .60  | .87                                       | .10  | .02   | .14  | .29                                                      | 0    | 0     | 1.04  | .04   | .12  | 1.22 | 4.44  |       |      |
| Normal                                                                                                                                                    | P                 | 6.30 | 4.90                                      | 6.28 | 4.82  | 4.26 | 4.15                                                     | 4.17 | 3.13  | 3.48  | 3.19  | 4.78 | 5.25 | 54.71 |       |      |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS                                   |                   |      |                                           |      |       |      | Oxford, Mississippi Watershed W-30                       |      |       |       |       |      |      |       |       |      |
| YEAR                                                                                                                                                      | MAXIMUM DISCHARGE |      | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |      |       |      |                                                          |      |       |       |       |      |      |       |       |      |
|                                                                                                                                                           | Date              | Rate | Date                                      | Vol. | Date  | Vol. | Date                                                     | Vol. | Date  | Vol.  | Date  | Vol. | Date | Vol.  |       |      |
| 1957                                                                                                                                                      | 11-13             | 0.66 | 11-13                                     | 0.60 | 11-13 | 0.88 | 11-13                                                    | 1.19 | 11-13 | 1.52  | 11-13 | 1.60 | 1-31 | 2.30  | 1-28  | 3.76 |
| 1958                                                                                                                                                      | 7-22              | .86  | 7-22                                      | .48  | 7-22  | .55  | 7-22                                                     | .63  | 7-22  | .78   | 7-22  | 1.10 | 7-21 | 1.12  | 7-21  | 1.51 |
| 1959                                                                                                                                                      | 9-9               | 1.15 | 9-9                                       | .76  | 9-9   | .92  | 9-9                                                      | .95  | 9-9   | .95   | 9-9   | .95  | 9-9  | .95   | 12-11 | 1.18 |
| Notes: Quality of records: Q - good for 1957, 1958, and 1959; P - good. Normal P based on 33-yr. record (1920-1952) at USWB Sta., Holly Springs 2N, Miss. |                   |      |                                           |      |       |      |                                                          |      |       |       |       |      |      |       |       |      |

Cooperative Research Project of USDA, University of Mississippi, and Mississippi State Agricultural Experiment Station.

SELECTED RUNOFF EVENTS

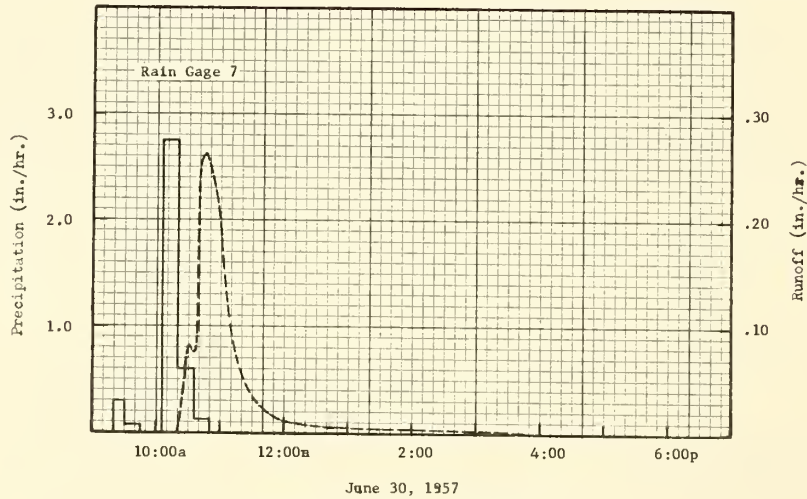
Oxford, Mississippi Watershed W-30

| Antecedent conditions                                                                                                                      |                   |                     | Rainfall      |                   |               | Runoff        |              |               |
|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date                                                                                                                                       | Rainfall (inches) | Runoff (inches)     | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of June 30, 1957                                                                                                                     |                   |                     |               |                   |               |               |              |               |
| Rain Gage 7                                                                                                                                |                   |                     |               |                   |               |               |              |               |
| 5-31-57                                                                                                                                    | 0                 | 0                   | 6-30-57       |                   |               | 6-30-57       |              |               |
| 6-1                                                                                                                                        | .07               | 0                   | 9:30a         | 0                 | 0             | 10:20a        | 0            | 0             |
| 6-2                                                                                                                                        | .70               | 0                   | :35           | .60               | .05           | :25           | .0413        | .0017         |
| 6-3                                                                                                                                        | .18               | 0                   | 10:10         | 0                 | .05           | :30           | .0834        | .0069         |
| 6-4-7                                                                                                                                      | 0                 | 0                   | :25           | 3.20              | .85           | :35           | .0755        | .0135         |
| 6-8                                                                                                                                        | .03               | 0                   | :40           | .08               | .87           | :40           | .2458        | .0269         |
| 6-9                                                                                                                                        | 0                 | 0                   |               |                   |               | :45           | .2633        | .0481         |
| 6-10                                                                                                                                       | .35               | 0                   |               |                   |               | :55           | .2283        | .0891         |
| 6-11-17                                                                                                                                    | 0                 | 0                   |               |                   |               | 11:10         | .0965        | .1297         |
| 6-18                                                                                                                                       | .26               | 0                   |               |                   |               | :35           | .0263        | .1526         |
| 6-21                                                                                                                                       | 0                 | 0                   |               |                   |               | 1:00p         | .0053        | .1710         |
| 6-22                                                                                                                                       | .35               | 0                   |               |                   |               | 3:45          | 0            | .1754         |
| 6-23                                                                                                                                       | .26               | 0                   |               |                   |               |               |              |               |
| 6-24                                                                                                                                       | .10               | 0                   |               |                   |               |               |              |               |
| 6-25-26                                                                                                                                    | 0                 | 0                   |               |                   |               |               |              |               |
| 6-27                                                                                                                                       | 1.12              | 0                   |               |                   |               |               |              |               |
| 6-28                                                                                                                                       | 0                 | .0211               |               |                   |               |               |              |               |
| 6-29                                                                                                                                       | 0                 | 0                   |               |                   |               |               |              |               |
| Watershed Conditions: 14% of area in cotton and corn - fair to good cover; 62% pasture, 17% idle, 6% woods - good cover; 1% bare gullies.  |                   |                     |               |                   |               |               |              |               |
| Event of April 3, 1958                                                                                                                     |                   |                     |               |                   |               |               |              |               |
| Rain Gage 7                                                                                                                                |                   |                     |               |                   |               |               |              |               |
| 3-4-58                                                                                                                                     | 0                 | 0                   | 4-3-58        |                   |               | 4-3-58        |              |               |
| 3-5                                                                                                                                        | 0                 | 0                   | 4:45p         | 0                 | 0             | 4:55p         | 0            | 0             |
| 3-6                                                                                                                                        | .05               | 0                   | :55           | .12               | .02           | 5:05          | .0061        | .0007         |
| 3-7                                                                                                                                        | .66               | 0                   | 5:00          | 1.56              | .15           | :15           | .0281        | .0035         |
| 3-8                                                                                                                                        | .38               | 0                   | :10           | .60               | .25           | :20           | .0263        | .0058         |
| 3-9-11                                                                                                                                     | 0                 | 0                   | :15           | 1.80              | .40           | :25           | .0386        | .0085         |
| 3-12                                                                                                                                       | .08               | 0                   | :30           | .08               | .42           | :35           | .1053        | .0205         |
| 3-13                                                                                                                                       | .07               | 0                   | :35           | 1.56              | .55           | :40           | .1317        | .0304         |
| 3-14-16                                                                                                                                    | 0                 | 0                   |               |                   |               | :45           | .1580        | .0425         |
| 3-17                                                                                                                                       | .62               | 0                   |               |                   |               | :55           | .1492        | .0681         |
| 3-18-21                                                                                                                                    | 0                 | 0                   |               |                   |               | 6:00          | .1404        | .0802         |
| 3-22                                                                                                                                       | .03               | 0                   |               |                   |               | :15           | .0965        | .1098         |
| 3-23                                                                                                                                       | 1.04              | .0632               |               |                   |               | :30           | .0544        | .1286         |
| 3-24                                                                                                                                       | .05               | .0211               |               |                   |               | :45           | .0334        | .1394         |
| 3-25                                                                                                                                       | .26               | 0                   |               |                   |               | 7:00          | .0281        | .1471         |
| 3-26                                                                                                                                       | .27               | .0421               |               |                   |               | 8:00          | .0114        | .1661         |
| 3-27-28                                                                                                                                    | 0                 | 0                   |               |                   |               | 10:00         | .0053        | .1821         |
| 3-29                                                                                                                                       | .05               | 0                   |               |                   |               | 12:00m        | .0035        | .1909         |
| 3-30                                                                                                                                       | .07               | 0                   |               |                   |               | 4-4-58        |              |               |
| 3-31                                                                                                                                       | 0                 | 0                   |               |                   |               | 5:00a         | 0            | .1999         |
| 4-1-58                                                                                                                                     | 0                 | 0                   |               |                   |               |               |              |               |
| 4-2                                                                                                                                        | .08               | 0                   |               |                   |               |               |              |               |
| 4-3                                                                                                                                        | .97               | .1577 <sup>1/</sup> |               |                   |               |               |              |               |
| Watershed Conditions: 14% of area tilled for planting of row crops; 62% pasture, 17% idle, 6% woods - good to fair cover; 1% bare gullies. |                   |                     |               |                   |               |               |              |               |

Notes: To convert runoff in in/hr to cfs, multiply by 113.94  
<sup>1/</sup> Runoff for period 9:35a to 4:55p.

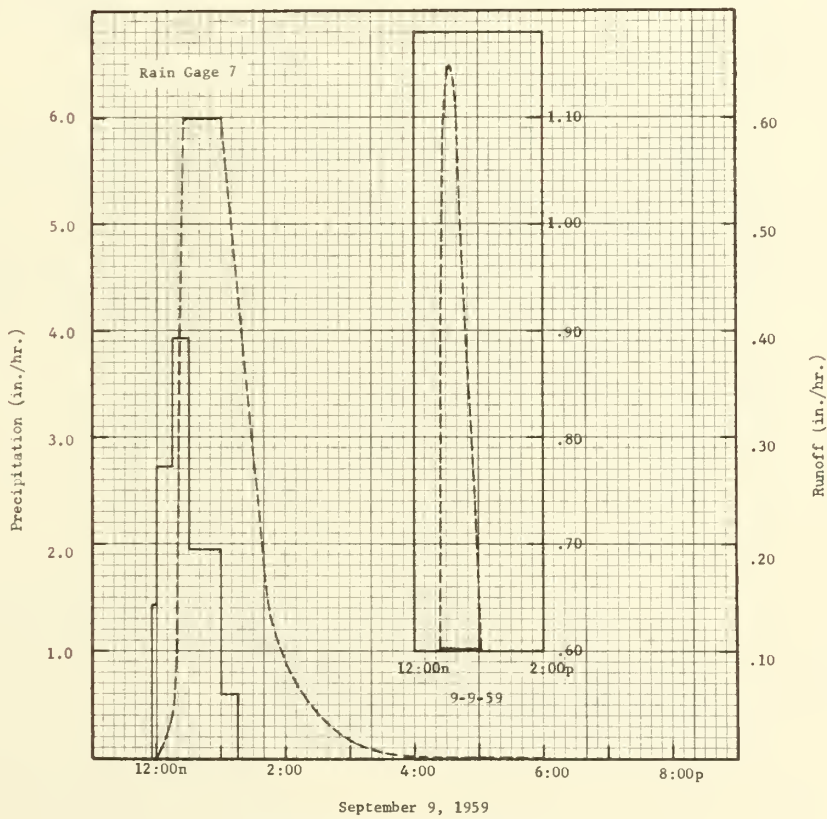
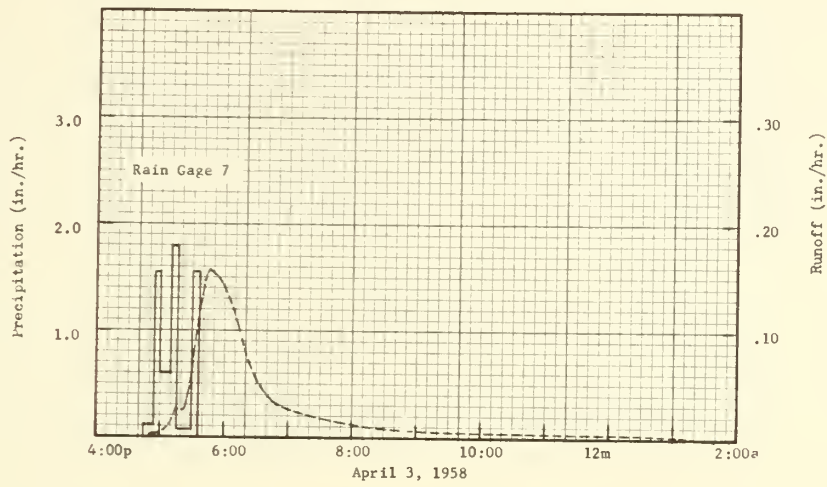


| SELECTED RUNOFF EVENTS                                                                                                                                   |                   |                 |               | Oxford, Mississippi Watershed W-30 |               |               |              |               |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------------|---------------|------------------------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions                                                                                                                                    |                   |                 | Rainfall      |                                    |               | Runoff        |              |               |
| Date                                                                                                                                                     | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr)                  | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of September 9, 1959                                                                                                                               |                   |                 |               |                                    |               |               |              |               |
| 8-7-59                                                                                                                                                   | 0                 | 0               | 9-9-59        | Rain Gage 7                        |               | 9-9-59        |              |               |
| 8-8-12                                                                                                                                                   | 0                 | 0               | 11:55a        | 0                                  | 0             | 12:00n        | 0            | 0             |
| 8-13                                                                                                                                                     | 0.05              | 0               | 12:00n        | 1.44                               | 0.12          | :15p          | .0439        | .0055         |
| 8-14-15                                                                                                                                                  | 0                 | 0               | :15p          | 2.72                               | .80           | :20           | .2633        | .0183         |
| 8-16                                                                                                                                                     | .10               | 0               | :30           | 3.92                               | 1.78          | :25           | .7022        | .0585         |
| 8-17                                                                                                                                                     | 0                 | 0               | 1:00          | 1.94                               | 2.75          | :28           | 1.0971       | .1035         |
| 8-18                                                                                                                                                     | .84               | 0               | :15           | .60                                | 2.90          | :31           | 1.1498       | .1597         |
| 8-19                                                                                                                                                     | .01               | 0               | :30           | 0                                  | 2.90          | :40           | 1.0971       | .3282         |
| 8-20                                                                                                                                                     | 0                 | 0               |               |                                    |               | :54           | .7899        | .5484         |
| 8-21                                                                                                                                                     | .28               | 0               |               |                                    |               | 1:20          | .3950        | .8052         |
| 8-22                                                                                                                                                     | .03               | 0               |               |                                    |               | :45           | .1317        | .9108         |
| 8-23                                                                                                                                                     | 0                 | 0               |               |                                    |               | 3:00          | .0176        | .9921         |
| 8-24                                                                                                                                                     | .61               | 0               |               |                                    |               | 6:00          | 0            | 1.0041        |
| 8-25                                                                                                                                                     | 1.04              | 0               |               |                                    |               |               |              |               |
| 8-26-29                                                                                                                                                  | 0                 | 0               |               |                                    |               |               |              |               |
| 8-30                                                                                                                                                     | .49               | 0               |               |                                    |               |               |              |               |
| 8-31                                                                                                                                                     | 0                 | 0               |               |                                    |               |               |              |               |
| 9-1                                                                                                                                                      | .10               | 0               |               |                                    |               |               |              |               |
| 9-2-3                                                                                                                                                    | 0                 | 0               |               |                                    |               |               |              |               |
| 9-4                                                                                                                                                      | .07               | 0               |               |                                    |               |               |              |               |
| 9-5                                                                                                                                                      | 1.10              | 0.0828          |               |                                    |               |               |              |               |
| 9-6-8                                                                                                                                                    | 0                 | 0               |               |                                    |               |               |              |               |
| <p>Watershed Conditions: 14% of area in matured cotton and corn - good to fair cover; 62% pasture, 17% idle, 6% woods - good cover; 1% bare gullies.</p> |                   |                 |               |                                    |               |               |              |               |

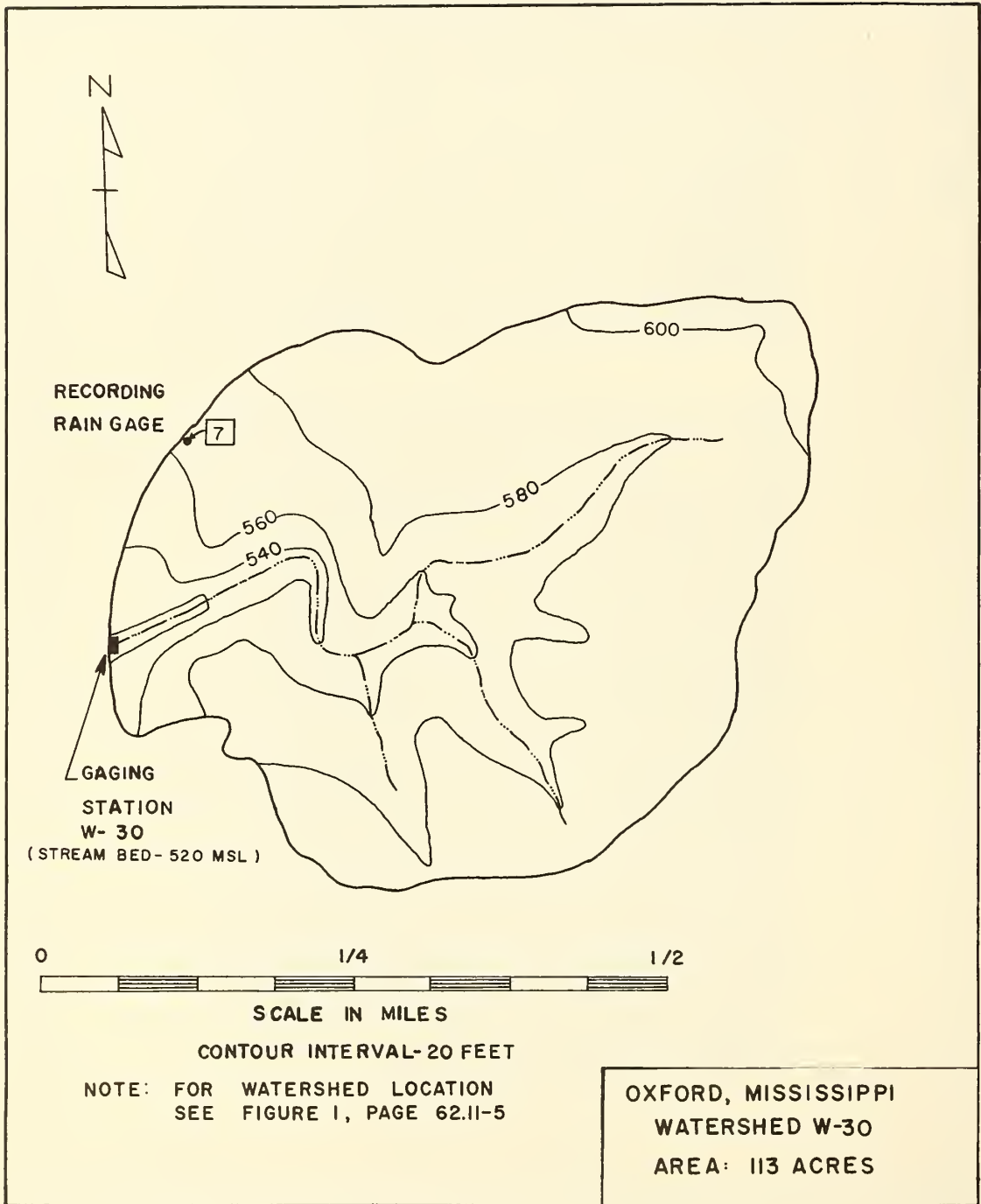


OXFORD, MISSISSIPPI WATERSHED W-30

Notes: To convert runoff in in/hr to cfs, multiply by 113.94.



OXFORD, MISSISSIPPI WATERSHED W-30



OXFORD, MISSISSIPPI Watershed W-32

LOCATION: Marshall Co., Miss.; 4.6 mi. E. of Walhill on county road; Cuffawa Creek, Pigeon Roost Creek Watershed, Yazoo River Basin.

AREA: 20,000 ac. (31.3 sq. mi.)

SHAPE: Circular; diameter 6.4 mi.

SLOPES: 20% is in 0-2% class; 27% in 2-5%; 6% in 5-8%; 12% in 8-12%; 17% in 12-17%; 18% in 17% and above. Aspect N.

SOILS: Loessial and Coastal Plains; topsoil - 8% silt loam in texture, 0 to 7 ins. in depth, weak fine granular structure; 12% silt loam in texture, 0 to 10 ins. in depth, weak coarse granular structure; 14% silt loam in texture, 0 to 8 ins. in depth, weak fine granular structure; 46% fine sandy loam in texture, 0 to 12 ins. in depth, weak fine crumb structure; 20% loam in texture, 0 to 21 ins. in depth, weak fine granular structure. Subsoil - 8% moderate to moderately slow permeability, impeding layer at approximately 30 ins.; 12% slow permeability, impeding layer at 15 to 20 ins.; 14% moderate to slow permeability, impeding layer at 15 to 20 ins.; 46% moderate to rapid permeability, no impeding layer; 20% moderate to moderately rapid permeability, no impeding layer. Internal drainage - medium to slow. Loring silt loam - 8%; Grenada silt loam - 12%; Providence silt loam and silty clay loam - 14%; Ruston fine sandy loam - 46%; Hymon loam - 20%.

EROSION: + - 20%; 2 - 22%; 3 - 58%.

LAND CAPABILITY: II - 28%; III - 10%; IV - 8%; VI - 10%; VII - 44%.

SURFACE DRAINAGE: Good; length of principal waterway - 9.5 mi.; main tributary (Dry Fork Creek) - 5.75 mi. long; sand bed channels; dredged channel to gaging station 35. About 12% non-contributing area due to small desilting and retention dams.

CHARACTER OF FLOW: Spring-fed intermittent, continuous.

INSTRUMENTATION: Runoff - current meter rated section of dredged sand-bottom channel; continuous water-stage recorder. Precipitation - seven recording gages, increased to ten recording gages, July, 1959.

WATERSHED CONDITIONS: Normally about 23% is in cultivation - cotton and corn, 49% idle - good to poor cover of broom sedge and common grasses, 14% pasture - good to poor cover; 12% woods - good to fair cover; 2% bare gullies.

GENERALLY REPRESENTS: Moderately to severely eroded uplands in the transitional zone between the Southern Coastal Plain (P-133), and the Southern Mississippi Valley Silty Uplands (P-134), in the states of Arkansas, Louisiana, Mississippi, Kentucky, Tennessee, and southern Missouri.

MONTHLY PRECIPITATION AND RUNOFF (Inches)

Oxford, Mississippi Watershed W-32  
(Area - 20,000 Acres)

| Year   | Month | Jan. | Feb. | Mar. | Apr. | May  | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year  |
|--------|-------|------|------|------|------|------|------|------|------|-------|------|------|------|-------|
|        |       | 1957 | P    | 8.00 | 6.64 | 2.46 | 7.32 | 6.00 | 7.02 | 2.43  | 2.03 | 6.95 | 3.47 | 9.87  |
|        | Q     | 3.22 | 1.72 | .06  | 1.97 | 1.88 | .40  | .19  | .03  | .86   | .03  | 3.63 | 1.48 | 15.47 |
| 1958   | P     | 2.80 | 1.93 | 3.91 | 7.70 | 4.92 | 4.28 | 6.10 | 0.79 | 9.97  | 1.02 | 3.48 | 1.68 | 48.58 |
|        | Q     | 0.52 | .24  | .59  | 2.93 | 1.76 | .11  | .43  | 0    | 1.55  | 0    | .26  | 0    | 8.39  |
| 1959   | P     | 4.24 | 4.25 | 3.44 | 4.21 | 5.45 | 3.59 | 5.38 | 3.76 | 4.03  | 1.99 | 2.99 | 6.88 | 50.21 |
|        | Q     | 1.31 | 1.47 | .52  | .58  | .51  | .63  | .22  | .13  | .52   | .03  | .03  | 1.93 | 7.88  |
| Normal | P     | 6.30 | 4.90 | 6.28 | 4.82 | 4.26 | 4.15 | 4.17 | 3.13 | 3.48  | 3.19 | 4.78 | 5.25 | 54.71 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS

Oxford, Mississippi Watershed W-32

| YEAR | MAXIMUM DISCHARGE |      | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |      |         |      |         |      |          |      |       |      |        |      |        |      |
|------|-------------------|------|-------------------------------------------|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
|      |                   |      | 1 hour                                    |      | 2 hours |      | 6 hours |      | 12 hours |      | 1 day |      | 2 days |      | 8 days |      |
|      | Date              | Rate | Date                                      | Vol. | Date    | Vol. | Date    | Vol. | Date     | Vol. | Date  | Vol. | Date   | Vol. | Date   | Vol. |
| 1957 | 11-13             | 0.33 | 11-13                                     | 0.32 | 11-13   | 0.60 | 11-13   | 1.20 | 11-13    | 1.38 | 1-31  | 1.75 | 1-31   | 2.53 | 1-27   | 3.58 |
| 1958 | 4-3               | .47  | 4-3                                       | .43  | 4-3     | .73  | 4-3     | 1.04 | 4-3      | 1.14 | 4-3   | 1.18 | 9-19   | 1.26 | 4-25   | 2.22 |
| 1959 | 12-18             | .18  | 12-18                                     | .17  | 12-18   | .31  | 12-18   | .54  | 12-18    | .60  | 2-13  | .87  | 12-16  | 1.09 | 12-11  | 1.80 |

Notes: Quality of records: Q - fair for 1957 and 1958, fair for 1959; P - good. Normal P based on 33-yr. record (1920-1952) at USWB, Holly Springs 2N, Miss.

| SELECTED RUNOFF EVENTS     |                                    |                     |                  |                          |                  | Oxford, Mississippi Watershed W-32 |                 |                  |
|----------------------------|------------------------------------|---------------------|------------------|--------------------------|------------------|------------------------------------|-----------------|------------------|
| Antecedent conditions      |                                    |                     | Rainfall         |                          |                  | Runoff                             |                 |                  |
| Date                       | Rainfall <sup>1/</sup><br>(inches) | Runoff<br>(inches)  | Date and<br>time | Intensity<br>(in/hr)     | Acc.<br>(inches) | Date and<br>time                   | Rate<br>(in/hr) | Acc.<br>(inches) |
| Event of November 18, 1957 |                                    |                     |                  |                          |                  |                                    |                 |                  |
| 10-19-57                   | 0                                  | .0001               | 11-18-57         | Rain Gage <sup>2/</sup>  |                  | 11-18-57                           |                 |                  |
| 10-20-21                   | 0                                  | .0002               | 9:30a            | 0                        | 0                | 10:15a                             | .0040           | 0                |
| 10-22                      | .74                                | .0002               | 10:15            | .08                      | .05              | :45                                | .0056           | .0024            |
| 10-23                      | .84                                | .0226               | :30              | 2.40                     | .65              | 11:05                              | .0248           | .0074            |
| 10-24                      | 0                                  | .0045               | :45              | .68                      | .82              | :15                                | .0620           | .0143            |
| 10-25-28                   | 0                                  | .0008               | 11:45            | .23                      | 1.05             | :30                                | .1363           | .0394            |
| 10-29                      | .05                                | .0002               | 2:30p            | .03                      | 1.12             | :45                                | .2093           | .0826            |
| 10-30                      | .25                                | .0002               |                  |                          |                  | 12:00n                             | .2727           | .1429            |
| 10-31                      | T                                  | .0002               | 11-18-57         | Rain Gages <sup>1/</sup> |                  | :15p                               | .2826           | .2124            |
| 11-1                       | 0                                  | .0002               | 7:45             | 0                        | 0                | :30                                | .2777           | .2824            |
| 11-2                       | .04                                | .0002               | 8:30a            | .05                      | .04              | :45                                | .2702           | .3509            |
| 11-3                       | .20                                | .0002               | 9:15             | T                        | .04              | 1:15                               | .2207           | .4754            |
| 11-4-6                     | 0                                  | .0006               | 10:15            | .04                      | .08              | :30                                | .1884           | .5266            |
| 11-7                       | 1.59                               | .0881               | :45              | 1.44                     | .81              | 2:00                               | .1388           | .6075            |
| 11-8                       | .46                                | .3618               | 11:45            | .29                      | 1.10             | 3:00                               | .0818           | .7097            |
| 11-9                       | 0                                  | .0006               | 1:30p            | .10                      | 1.27             | 4:00                               | .0496           | .7743            |
| 11-10-11                   | 0                                  | .0002               |                  |                          |                  | 5:00                               | .0300           | .8145            |
| 11-12                      | .41                                | .0001               | 11-18-57         | Rain Gage 9              |                  | 6:00                               | .0196           | .8390            |
| 11-13                      | 2.89                               | .9890               | 10:15a           | 0                        | 0                | :30                                | .0144           | .8473            |
| 11-14                      | .33                                | .4570               | 1:30p            |                          | 1.22             | 7:00                               | .0112           | .8537            |
| 11-15                      | .18                                | .0179               | 11-18-57         | Rain Gage 11             |                  | :25                                | .0094           | .8580            |
| 11-16                      | .08                                | .0381               | 7:30a            | 0                        | 0                | 8:15                               | .0082           | .8652            |
| 11-17                      | .85                                | .2440 <sup>2/</sup> | 1:00p            |                          | 1.28             | :30                                | .0087           | .8673            |
| 11-18                      | 0                                  | .0536 <sup>2/</sup> | 11-18-57         | Rain Gage 12             |                  | 9:00                               | .0072           | .8712            |
|                            |                                    |                     |                  |                          |                  | 10:00                              | .0043           | .8768            |
|                            |                                    |                     | 9:15a            | 0                        | 0                | 12:00m                             | .0038           | .8848            |
|                            |                                    |                     | 1:00p            |                          | 1.11             | 11-19-57                           |                 |                  |
|                            |                                    |                     |                  |                          |                  | 4:00a                              | .0025           | .8972            |
|                            |                                    |                     | 11-18-57         | Rain Gage 13             |                  | 8:00                               | .0019           | .9060            |
|                            |                                    |                     | 8:00a            | 0                        | 0                | 12:00n                             | .0015           | .9128            |
|                            |                                    |                     | 1:15p            |                          | 1.15             | 12:00m                             | .0004           | .9236            |
|                            |                                    |                     | 11-18-57         | Rain Gage 14             |                  |                                    |                 |                  |
|                            |                                    |                     | 7:45a            | 0                        | 0                |                                    |                 |                  |
|                            |                                    |                     | 1:15p            |                          | 1.68             |                                    |                 |                  |
| Event of April 14-15, 1958 |                                    |                     |                  |                          |                  |                                    |                 |                  |
| 3-15-58                    | 0                                  | .0006               | 4-14-58          | Rain Gage <sup>2/</sup>  |                  | 4-14-58                            |                 |                  |
| 3-16                       | 0                                  | .0005               | 8:00p            | 0                        | 0                | 8-30p                              | .0001           | 0                |
| 3-17                       | .56                                | .0351               | :15              | .08                      | .02              | 10:00                              | .0002           | .0003            |
| 3-18                       | 0                                  | .0179               | 9:25             | .23                      | .19              | 11:00                              | .0006           | .0006            |
| 3-19                       | 0                                  | .0025               | :50              | .41                      | .36              | :30                                | .0020           | .0013            |
| 3-20-21                    | 0                                  | .0008               | 10:35            | .29                      | .58              | 12:00m                             | .0103           | .0042            |
| 3-22                       | .01                                | .0004               | :45              | .72                      | .70              | 4-15-58                            |                 |                  |
| 3-23                       | .93                                | .0417               | 11:15            | .44                      | .92              | 12:10a                             | .0426           | .0086            |
| 3-24                       | .04                                | .1047               | 12:00m           | .19                      | 1.04             | :20                                | .0438           | .0158            |
| 3-25                       | .20                                | .0143               | 4-15-58          |                          |                  | :35                                | .0516           | .0277            |
| 3-26                       | .47                                | .1654               | 1:15a            | .07                      | 1.13             | :50                                | .0501           | .0404            |
| 3-27                       | 0                                  | .0161               | :45              | .18                      | 1.18             | 1:00                               | .0575           | .0494            |
| 3-28                       | 0                                  | .0055               | 2:50             | .08                      | 1.26             | :15                                | .0808           | .0667            |
| 3-29                       | .08                                | .0021               |                  |                          |                  | :30                                | .0823           | .0871            |
| 3-30                       | .09                                | .0029               | 4-14-58          | Rain Gages <sup>1/</sup> |                  | 2:00                               | .0714           | .1256            |
| 3-31                       | 0                                  | .0015               | 8:00             | 0                        | 0                | :30                                | .0565           | .1576            |
| 4-2                        | .02                                | .0005               | :45              | .02                      | .01              | 3:30                               | .0379           | .2048            |
| 4-3                        | 1.93                               | 1.1270              | 9:45             | .30                      | .31              | 4:45                               | .0248           | .2426            |
| 4-4                        | 0                                  | .0904               | 10:45            | .45                      | .76              | 6:00                               | .0164           | .2676            |
| 4-5                        | 0                                  | .0179               | 11:30            | .31                      | .99              | 8:15                               | .0083           | .2937            |
| 4-6                        | 0                                  | .0050               | 12:00m           | .20                      | 1.09             | 12:00n                             | .0050           | .3188            |
| 4-7-8                      | 0                                  | .0026               | 4-15-58          |                          |                  | 6:00p                              | .0037           | .3452            |
| 4-9                        | .07                                | .0021               | 3:15a            | .08                      | 1.34             | 12:00m                             | .0017           | .3614            |
| 4-10                       | T                                  | .0021               |                  |                          |                  | 4-16-58                            |                 |                  |
| 4-11                       | 0                                  | .0011               | 4-14-58          | Rain Gage 9              |                  | 12:00n                             | .0007           | .3758            |

Notes: To convert runoff in in/hr to cfs, multiply by 20,166.6.  
<sup>1/</sup> Rain gages 3, 9, 10, 11, 12, 13, and 14 Thiessen weighted.  
<sup>2/</sup> Rainfall for rain gage 10 listed on page 62.12-2.  
<sup>3/</sup> Recessional flow prior to 10:15a.



SELECTED RUNOFF EVENTS

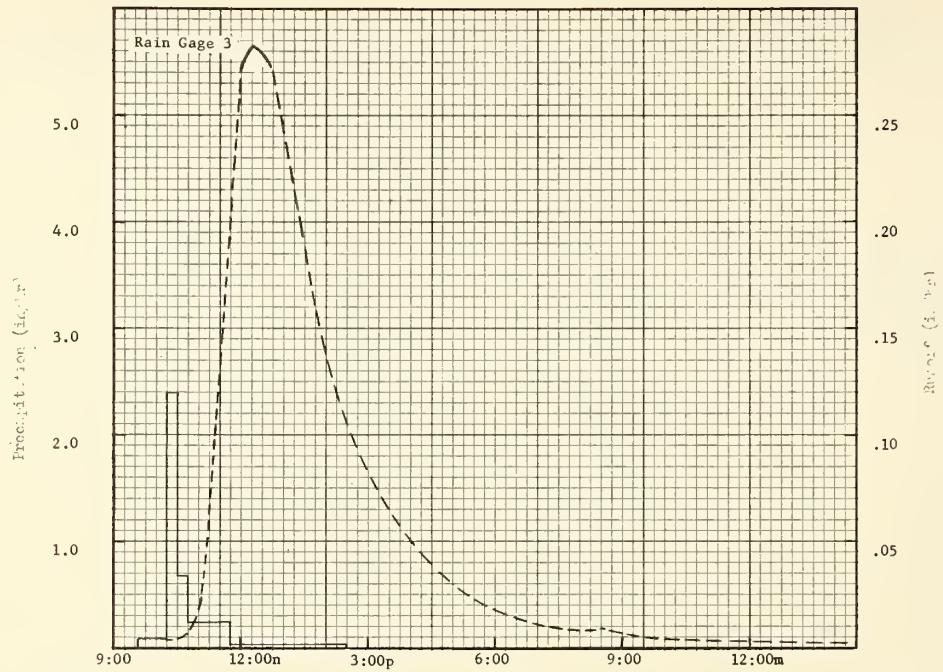
Oxford, Mississippi Watershed W-32

| Antecedent conditions                  |                                    |                    | Rainfall         |                          |                  | Runoff           |                 |                  |
|----------------------------------------|------------------------------------|--------------------|------------------|--------------------------|------------------|------------------|-----------------|------------------|
| Date                                   | Rainfall <sup>1/</sup><br>(inches) | Runoff<br>(inches) | Date and<br>time | Intensity<br>(in/hr)     | Acc.<br>(inches) | Date and<br>time | Rate<br>(in/hr) | Acc.<br>(inches) |
| Event of April 14-15, 1958 (Continued) |                                    |                    |                  |                          |                  |                  |                 |                  |
| 4-12-13                                | 0                                  | .0010              | 9:00p            | 0                        | 0                | 9:00p            | .0002           | .3803            |
| 4-14                                   | .20 <sup>2/</sup>                  | .0008              | 4-15-58<br>3:15a |                          | 1.31             |                  |                 |                  |
| Rain Gage 11                           |                                    |                    |                  |                          |                  |                  |                 |                  |
| 4-14-58                                |                                    |                    |                  |                          |                  |                  |                 |                  |
| 8:45p                                  |                                    |                    |                  |                          |                  |                  |                 |                  |
| 4-15-58                                |                                    |                    |                  |                          |                  |                  |                 |                  |
| 3:00a                                  |                                    |                    |                  |                          |                  |                  |                 |                  |
| 1.19                                   |                                    |                    |                  |                          |                  |                  |                 |                  |
| 4-14-58                                |                                    |                    |                  |                          |                  |                  |                 |                  |
| Rain Gage 12                           |                                    |                    |                  |                          |                  |                  |                 |                  |
| 8:15p                                  |                                    |                    |                  |                          |                  |                  |                 |                  |
| 4-15-58                                |                                    |                    |                  |                          |                  |                  |                 |                  |
| 2:45a                                  |                                    |                    |                  |                          |                  |                  |                 |                  |
| 1.36                                   |                                    |                    |                  |                          |                  |                  |                 |                  |
| 4-14-58                                |                                    |                    |                  |                          |                  |                  |                 |                  |
| Rain Gage 13                           |                                    |                    |                  |                          |                  |                  |                 |                  |
| 8:30p                                  |                                    |                    |                  |                          |                  |                  |                 |                  |
| 4-15-58                                |                                    |                    |                  |                          |                  |                  |                 |                  |
| 3:00a                                  |                                    |                    |                  |                          |                  |                  |                 |                  |
| 1.35                                   |                                    |                    |                  |                          |                  |                  |                 |                  |
| 4-14-58                                |                                    |                    |                  |                          |                  |                  |                 |                  |
| Rain Gage 14                           |                                    |                    |                  |                          |                  |                  |                 |                  |
| 8:30p                                  |                                    |                    |                  |                          |                  |                  |                 |                  |
| 4-15-58                                |                                    |                    |                  |                          |                  |                  |                 |                  |
| 3:00a                                  |                                    |                    |                  |                          |                  |                  |                 |                  |
| 1.52                                   |                                    |                    |                  |                          |                  |                  |                 |                  |
| Event of May 22, 1959                  |                                    |                    |                  |                          |                  |                  |                 |                  |
| 4-22-59                                | 0                                  | .0021              | 5-22-59          | Rain Gage 3              |                  | 5-22-59          |                 |                  |
| 4-23                                   | 0                                  | .0006              | 4:35p            | 0                        | 0                | 4:45p            | 0               | 0                |
| 4-24                                   | 0                                  | .0004              | :45              | 1.20                     | .20              | 6:25             | .0000           | .0000            |
| 4-25-26                                | 0                                  | .0004              | :50              | 3.00                     | .45              | :30              | .0065           | .0003            |
| 4-27                                   | T                                  | .0001              | :55              | 1.80                     | .60              | :35              | .0271           | .0017            |
| 4-28-30                                | 0                                  | .0003              | 5:05             | .30                      | .65              | :40              | .0590           | .0053            |
| 5-1-2                                  | 0                                  | .0002              | 7:00             | .07                      | .79              | :50              | .0833           | .0172            |
| 5-1-9                                  | 0                                  | 0                  |                  |                          |                  | 7:00             | .0892           | .0316            |
| 5-10                                   | .27                                | 0                  | 5-22-59          | Rain Gages <sup>1/</sup> |                  | :15              | .0873           | .0536            |
| 5-11                                   | .27                                | 0                  | 4:30P            | 0                        | 0                | :50              | .0585           | .0961            |
| 5-12                                   | .83                                | .0001              | :45              | .52                      | .13              | 8:25             | .0311           | .1222            |
| 5-13                                   | 0                                  | .0238              | 5:00             | 3.00                     | .88              | :55              | .0139           | .1328            |
| 5-14-15                                | 0                                  | .0002              | :15              | .40                      | .98              | 9:15             | .0107           | .1349            |
| 5-16-21                                | 0                                  | 0                  | :45              | .08                      | 1.02             | 10:30            | .0077           | .1464            |
| 5-22                                   | .20 <sup>4/</sup>                  | 0                  | 6:00             | .12                      | 1.05             | 11:00            | .0070           | .1501            |
| 7:30                                   |                                    |                    |                  |                          |                  |                  |                 |                  |
| .08                                    |                                    |                    |                  |                          |                  |                  |                 |                  |
| 1.09                                   |                                    |                    |                  |                          |                  |                  |                 |                  |
| 7:00                                   |                                    |                    |                  |                          |                  |                  |                 |                  |
| .04                                    |                                    |                    |                  |                          |                  |                  |                 |                  |
| 1.11                                   |                                    |                    |                  |                          |                  |                  |                 |                  |
| 5-22-59                                |                                    |                    |                  |                          |                  |                  |                 |                  |
| Rain Gage 9                            |                                    |                    |                  |                          |                  |                  |                 |                  |
| 4:50p                                  |                                    |                    |                  |                          |                  |                  |                 |                  |
| 7:15                                   |                                    |                    |                  |                          |                  |                  |                 |                  |
| 0                                      |                                    |                    |                  |                          |                  |                  |                 |                  |
| 0                                      |                                    |                    |                  |                          |                  |                  |                 |                  |
| 1.74                                   |                                    |                    |                  |                          |                  |                  |                 |                  |
| 5-22-59                                |                                    |                    |                  |                          |                  |                  |                 |                  |
| Rain Gage 11                           |                                    |                    |                  |                          |                  |                  |                 |                  |
| 4:40p                                  |                                    |                    |                  |                          |                  |                  |                 |                  |
| 6:35                                   |                                    |                    |                  |                          |                  |                  |                 |                  |
| 0                                      |                                    |                    |                  |                          |                  |                  |                 |                  |
| 0                                      |                                    |                    |                  |                          |                  |                  |                 |                  |
| 1.01                                   |                                    |                    |                  |                          |                  |                  |                 |                  |
| 5-22-59                                |                                    |                    |                  |                          |                  |                  |                 |                  |
| Rain Gage 12                           |                                    |                    |                  |                          |                  |                  |                 |                  |
| 4:35                                   |                                    |                    |                  |                          |                  |                  |                 |                  |
| 7:00                                   |                                    |                    |                  |                          |                  |                  |                 |                  |
| 0                                      |                                    |                    |                  |                          |                  |                  |                 |                  |
| 0                                      |                                    |                    |                  |                          |                  |                  |                 |                  |
| 1.25                                   |                                    |                    |                  |                          |                  |                  |                 |                  |
| 5-22-59                                |                                    |                    |                  |                          |                  |                  |                 |                  |
| Rain Gage 13                           |                                    |                    |                  |                          |                  |                  |                 |                  |
| 4:45p                                  |                                    |                    |                  |                          |                  |                  |                 |                  |
| 7:00                                   |                                    |                    |                  |                          |                  |                  |                 |                  |
| 0                                      |                                    |                    |                  |                          |                  |                  |                 |                  |
| 0                                      |                                    |                    |                  |                          |                  |                  |                 |                  |
| 1.25                                   |                                    |                    |                  |                          |                  |                  |                 |                  |
| 5-22-59                                |                                    |                    |                  |                          |                  |                  |                 |                  |
| Rain Gage 14                           |                                    |                    |                  |                          |                  |                  |                 |                  |
| 4:40p                                  |                                    |                    |                  |                          |                  |                  |                 |                  |
| 7:05                                   |                                    |                    |                  |                          |                  |                  |                 |                  |
| 0                                      |                                    |                    |                  |                          |                  |                  |                 |                  |
| 0                                      |                                    |                    |                  |                          |                  |                  |                 |                  |
| .41                                    |                                    |                    |                  |                          |                  |                  |                 |                  |

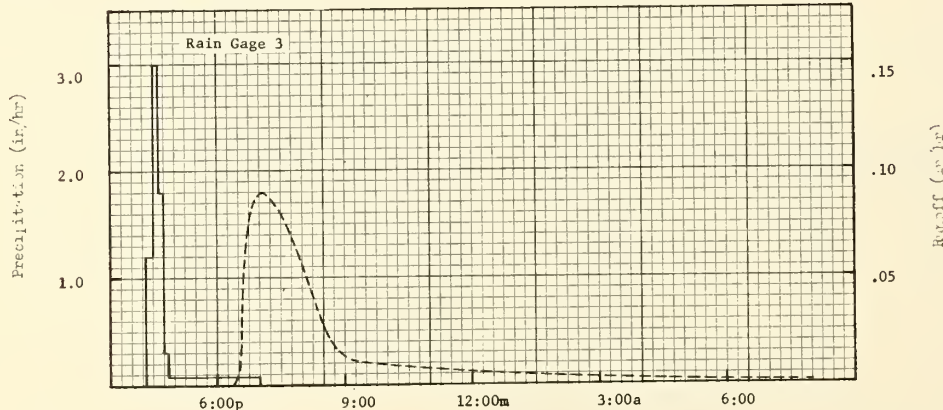
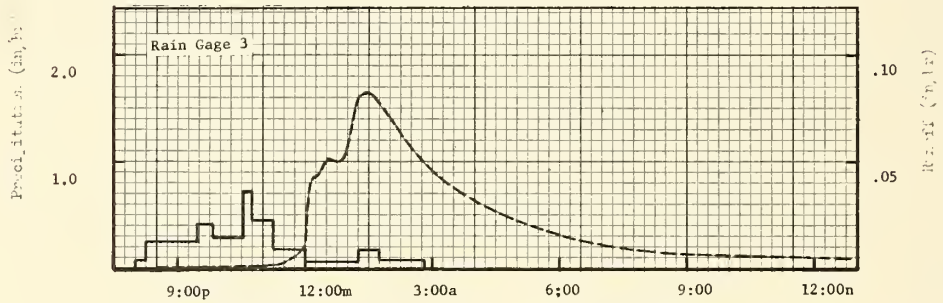
Watershed Conditions: 23% of area under cultivation in cotton and corn - poor cover; 14% pasture, 49% idle, 12% woods - good cover; 2% bare gullies.

Watershed Conditions: 23% of area under cultivation in cotton and corn - poor to fair cover; 14% pasture, 49% idle, 12% woods - good cover; 2% bare gullies.

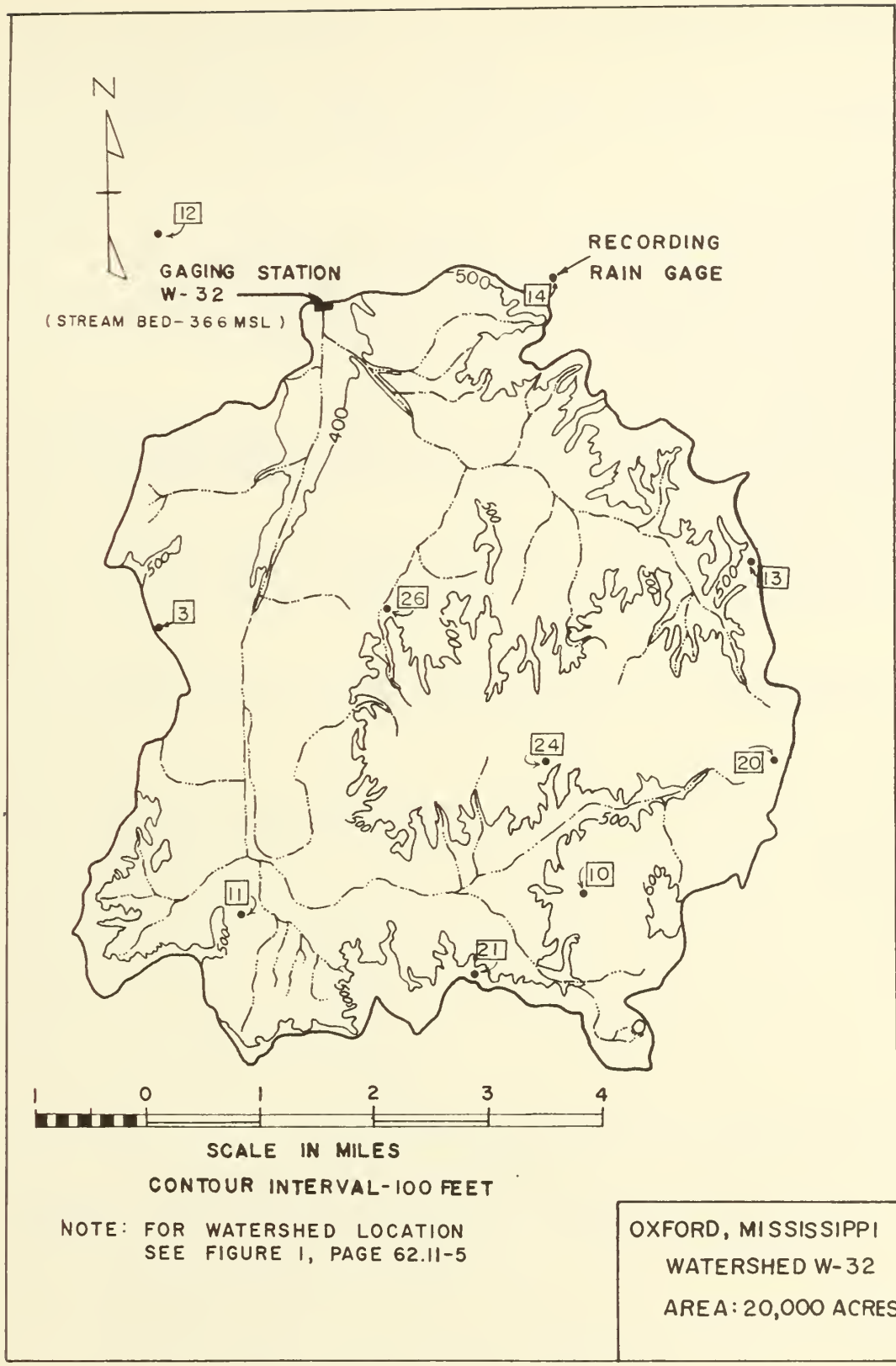
- Notes: To convert runoff in in/hr to cfs, multiply by 20,166.6.  
<sup>1/</sup> Rain gages 3, 9, 10, 11, 12, 13, and 14 Thiessen weighted.  
<sup>2/</sup> Rainfall between 7:20a and 9:45a.  
<sup>3/</sup> Rainfall for rain gage 10 listed on page 62.12-3.  
<sup>4/</sup> Rainfall between 3:45a and 7:00a.



November 18, 1957



OXFORD, MISSISSIPPI WATERSHED W-32



NOTE: FOR WATERSHED LOCATION  
SEE FIGURE 1, PAGE 62.11-5

OXFORD, MISSISSIPPI  
WATERSHED W-32  
AREA: 20,000 ACRES

OXFORD, MISSISSIPPI Watershed W-34

LOCATION: Marshall Co., Miss.; 8 mi. S. of Byhalia on county road; Pigeon Roost Creek, Yazoo River Basin.

AREA: 75,000 ac. (117.2 sq. mi.)      SHAPE: Similar to state of South Carolina. Major E-W axis 15 mi., average width about 8 mi.

SLOPES: 22% is in 0-2% class; 24% in 2-5%; 8% in 5-8%; 10% in 8-12%; 19% in 12-17%; 17% in 17% and above. Aspect W.

SOILS: Loessial and Coastal plains; topsoil - 9% silt loam in texture, 0 to 7 ins. in depth, weak fine granular structure; 8% silt loam in texture, 0 to 10 ins. in depth, weak coarse granular structure; 13% silt loam in texture, 0 to 8 ins. in depth, weak fine granular structure; 50% fine sandy loam in texture, 0 to 12 ins. in depth, weak fine crumb structure; 20% loam in texture, 0 to 21 ins. in depth, weak fine granular structure. Subsoil - 9% moderate to moderately slow permeability, impeding layer at approximately 30 ins.; 8% slow permeability, impeding layer at 15 to 20 ins.; 13% moderate to slow permeability impeding layer at 15 to 20 ins.; 58% moderate to rapid permeability, no impeding layer; 20% moderate to moderately rapid permeability, no impeding layer. Loring silt loam - 9%; Crenada silt loam - 8%; Providence silt loam and silty clay loam - 13%; Ruston fine sandy loam - 50%; Hymon loam 20%.

EROSION: + - 20%; 2 - 18%; 3 - 62%.

LAND CAPABILITY: II - 24%; III - 12%; IV - 6%; VI - 8%; VII - 50%.

SURFACE DRAINAGE: Good; length of principal waterway - 15 mi.; main tributary (Cuffawa Creek) - 13.5 mi. long. Sand bed channels; dredged channels below gaging stations 12 and 35. Approximately 12% non-contributing area due to small desilting and retention dams, increased to 15% in 1960, principally in upper reaches of watershed.

CHARACTER OF FLOW: Perennial, continuous.

INSTRUMENTATION: Runoff - current meter rated section of dredged sand-bottom channel; continuous water-stage recorder; cableway at site. Precipitation - 31 recording gages; 15 recording gages prior to July, 1959.

WATERSHED CONDITIONS: Normally about 22% is in cultivation - cotton and corn, 42% idle - good to poor cover of broom sedge and common grasses, 13% pasture - good to poor cover; 21% in woods - good to fair cover; 2% bare gullies.

GENERALLY REPRESENTS: Moderately to severely eroded uplands in the transitional zone between the Southern Coastal Plain (P-133), and the Southern Mississippi Valley Silty Uplands (P-134), in the states of Arkansas, Louisiana, Mississippi, Kentucky, Tennessee, and southern Missouri.

| MONTHLY PRECIPITATION AND RUNOFF (Inches)                                                                                                                         |                   |      |                                           |      |         |      | Oxford, Mississippi Watershed W-34<br>(Area 75,000 acres) |      |          |       |       |      |        |       |        |       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------|-------------------------------------------|------|---------|------|-----------------------------------------------------------|------|----------|-------|-------|------|--------|-------|--------|-------|
| Year                                                                                                                                                              | Month             | Jan. | Feb.                                      | Mar. | Apr.    | May  | June                                                      | July | Aug.     | Sept. | Oct.  | Nov. | Dec.   | Year  |        |       |
|                                                                                                                                                                   |                   | 1957 | P                                         | 7.92 | 6.77    | 2.34 | 6.83                                                      | 5.85 | 6.77     | 2.79  | 1.73  | 6.80 | 3.39   | 9.41  | 5.12   | 65.72 |
|                                                                                                                                                                   | Q                 | 2.86 | 2.64                                      | .49  | 2.11    | 1.62 | .92                                                       | .71  | .31      | 1.04  | .34   | 3.82 | 2.24   | 19.10 |        |       |
| 1958                                                                                                                                                              | P                 | 2.66 | 1.78                                      | 3.65 | 6.94    | 4.60 | 5.05                                                      | 6.43 | 1.18     | 10.20 | 0.95  | 3.39 | 1.67   | 48.50 |        |       |
|                                                                                                                                                                   | Q                 | 0.83 | .54                                       | .87  | 2.26    | 1.92 | .48                                                       | .87  | .36      | 2.24  | .33   | .55  | .49    | 11.74 |        |       |
| 1959                                                                                                                                                              | P                 | 4.18 | 4.06                                      | 3.48 | 4.15    | 4.59 | 3.64                                                      | 4.91 | 4.73     | 3.13  | 2.18  | 3.02 | 6.77   | 48.84 |        |       |
|                                                                                                                                                                   | Q                 | 1.53 | 1.47                                      | .95  | 1.02    | .64  | .71                                                       | .55  | .55      | .59   | .35   | .37  | 1.65   | 10.38 |        |       |
| Normal                                                                                                                                                            | P                 | 6.30 | 4.90                                      | 6.28 | 4.82    | 4.26 | 4.15                                                      | 4.17 | 3.13     | 3.48  | 3.19  | 4.78 | 5.25   | 54.71 |        |       |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS                                           |                   |      |                                           |      |         |      | Oxford, Mississippi Watershed W-34                        |      |          |       |       |      |        |       |        |       |
| YEAR                                                                                                                                                              | MAXIMUM DISCHARGE |      | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |      |         |      |                                                           |      |          |       |       |      |        |       |        |       |
|                                                                                                                                                                   |                   |      | 1 hour                                    |      | 2 hours |      | 6 hours                                                   |      | 12 hours |       | 1 day |      | 2 days |       | 8 days |       |
|                                                                                                                                                                   | Date              | Rate | Date                                      | Vol. | Date    | Vol. | Date                                                      | Vol. | Date     | Vol.  | Date  | Vol. | Date   | Vol.  | Date   | Vol.  |
| 1957                                                                                                                                                              | 11-14             | 0.07 | 11-14                                     | 0.07 | 11-14   | 0.14 | 11-14                                                     | 0.42 | 11-13    | 0.81  | 1-31  | 1-20 | 1-30   | 2.18  | 1-28   | 3.28  |
| 1958                                                                                                                                                              | 9-19              | .07  | 9-19                                      | .07  | 9-19    | .14  | 9-19                                                      | .38  | 9-19     | .64   | 9-19  | 1.17 | 9-19   | 1.50  | 4-25   | 1.77  |
| 1959                                                                                                                                                              | 12-18             | .05  | 12-18                                     | .05  | 12-18   | .10  | 12-18                                                     | .26  | 12-18    | .32   | 2-13  | .54  | 2-13   | .74   | 12-11  | 1.25  |
| Notes: Quality of records: Q - good for 1957 and 1958, good for 1959; P - good. Normal P based on 33-yr. record (1920-1952) at USWB Sta., Holly Springs 2N, Miss. |                   |      |                                           |      |         |      |                                                           |      |          |       |       |      |        |       |        |       |

Cooperative Research Project of USDA, University of Mississippi, and Mississippi State Agricultural Experiment Station.

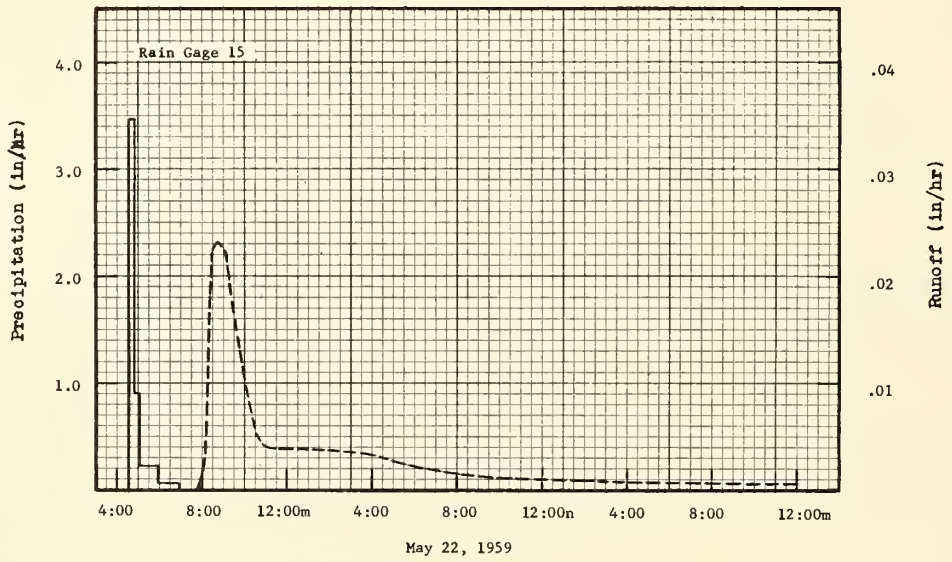
SELECTED RUNOFF EVENTS

Oxford, Mississippi Watershed W-34

| Antecedent conditions                                                                                                                                        |                                    |                     | Rainfall <sup>1/</sup> |                      |                  | Runoff           |                 |                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|---------------------|------------------------|----------------------|------------------|------------------|-----------------|------------------|
| Date                                                                                                                                                         | Rainfall <sup>2/</sup><br>(inches) | Runoff<br>(inches)  | Date and<br>time       | Intensity<br>(in/hr) | Acc.<br>(inches) | Date and<br>time | Rate<br>(in/hr) | Acc.<br>(inches) |
| Event of May 22, 1959                                                                                                                                        |                                    |                     |                        |                      |                  |                  |                 |                  |
| 4-22-59                                                                                                                                                      | 0                                  | .0212               | 5-22-59                | Rain Gage 15         |                  | 5-22-59          |                 |                  |
| 4-23-25                                                                                                                                                      | 0                                  | .0498               | 4:35p                  | 0                    | 0                | 8:05p            | .0006           | 0                |
| 4-26-30                                                                                                                                                      | 0                                  | .0706               | :55                    | 3.48                 | .58              | :10              | .0052           | .0002            |
| 5-1-9                                                                                                                                                        | 0                                  | .0552               | 5:05                   | .90                  | .73              | :15              | .0089           | .0008            |
| 5-10                                                                                                                                                         | .20                                | .0120               | 6:00                   | .21                  | .82              | 7:30             | .0212           | .0048            |
| 5-11                                                                                                                                                         | .32                                | .0120               | 7:00                   | .06                  | .88              | :40              | .0227           | .0085            |
| 5-12                                                                                                                                                         | .57                                | .0168               |                        |                      |                  | :50              | .0230           | .0123            |
| 5-13-20                                                                                                                                                      | 0                                  | .1147               | 5-22-59                | Rain Gage 1          |                  | 9:00             | .0225           | .0161            |
| 5-21                                                                                                                                                         | 0                                  | .0124 <sup>4/</sup> | 4:35p                  | 0                    | 0                | :30              | .0182           | .0265            |
| 5-22                                                                                                                                                         | .15 <sup>3/</sup>                  | .0102 <sup>4/</sup> | 5:30                   | .13                  | .12              | 10:00            | .0113           | .0339            |
|                                                                                                                                                              |                                    |                     | 6:15                   | .17                  | .25              | :15              | .0088           | .0364            |
|                                                                                                                                                              |                                    |                     | :30                    | .09                  | .30              | :55              | .0039           | .0401            |
|                                                                                                                                                              |                                    |                     |                        |                      |                  | 12:00m           | .0038           | .0443            |
| Watershed Conditions: 22% of area under cultivation in cotton and corn - poor to fair cover; 13% pasture, 42% idle, 21% woods - good cover; 2% bare gullies. |                                    |                     | 5-22-59                | Rain Gage 4          |                  | 1:45a            | .0036           | .0508            |
|                                                                                                                                                              |                                    |                     | 5:00p                  | 0                    | 0                | 3:15             | .0034           | .0561            |
|                                                                                                                                                              |                                    |                     | :10                    | 3.84                 | .64              | :45              | .0032           | .0578            |
|                                                                                                                                                              |                                    |                     | :20                    | 1.68                 | .92              | 4:30             | .0027           | .0601            |
|                                                                                                                                                              |                                    |                     | 6:00                   | .12                  | 1.00             | 6:00             | .0020           | .0637            |
|                                                                                                                                                              |                                    |                     | 7:00                   | .06                  | 1.06             | 9:00             | .0012           | .0685            |
|                                                                                                                                                              |                                    |                     |                        |                      |                  | 12:00n           | .0009           | .0718            |
|                                                                                                                                                              |                                    |                     | 5-22-59                | Rain Gage 5          |                  | 12:00m           | .0005           | .0802            |
|                                                                                                                                                              |                                    |                     | 5:00p                  | 0                    | 0                |                  |                 |                  |
|                                                                                                                                                              |                                    |                     | :15                    | 3.60                 | .90              |                  |                 |                  |
| :25                                                                                                                                                          | 1.02                               | 1.07                |                        |                      |                  |                  |                 |                  |
| :45                                                                                                                                                          | .15                                | 1.12                |                        |                      |                  |                  |                 |                  |
| 6:45                                                                                                                                                         | .08                                | 1.20                |                        |                      |                  |                  |                 |                  |
| 5-22-59                                                                                                                                                      | Rain Gage 8                        |                     | 4:50p                  | 0                    | 0                |                  |                 |                  |
| 5:00                                                                                                                                                         | 4.08                               | .68                 | :10                    | 2.88                 | 1.16             |                  |                 |                  |
| :30                                                                                                                                                          | .24                                | 1.24                |                        |                      |                  |                  |                 |                  |
| 6:45                                                                                                                                                         | .08                                | 1.34                |                        |                      |                  |                  |                 |                  |
| 5-22-59                                                                                                                                                      | Rain Gage 12                       |                     | 4:35p                  | 0                    | 0                |                  |                 |                  |
| 5:30                                                                                                                                                         | .15                                | .14                 | 6:15                   | .13                  | .24              |                  |                 |                  |
| 7:00                                                                                                                                                         | .04                                | .27                 |                        |                      |                  |                  |                 |                  |
| 5-22-59                                                                                                                                                      | Rain Gage 14 <sup>5/</sup>         |                     | 4:40p                  | 0                    | 0                |                  |                 |                  |
| :55                                                                                                                                                          | 1.38                               | .23                 | 5:15                   | .21                  | .30              |                  |                 |                  |
| 7:00                                                                                                                                                         | .08                                | .44                 |                        |                      |                  |                  |                 |                  |
| 5-22-59                                                                                                                                                      | Rain Gage 2 <sup>6/</sup>          |                     | 4:45p                  | 0                    | 0                |                  |                 |                  |
| 7:00                                                                                                                                                         |                                    | .22                 |                        |                      |                  |                  |                 |                  |
| 5-22-59                                                                                                                                                      | Rain Gage 3                        |                     | 4:35p                  | 0                    | 0                |                  |                 |                  |
| 7:01                                                                                                                                                         |                                    | .79                 |                        |                      |                  |                  |                 |                  |
| 5-22-59                                                                                                                                                      | Rain Gage 6                        |                     | 5:00p                  | 0                    | 0                |                  |                 |                  |
| 7:15                                                                                                                                                         |                                    | 1.09                |                        |                      |                  |                  |                 |                  |
| 5-22-59                                                                                                                                                      | Rain Gage 7                        |                     | 5:00p                  | 0                    | 0                |                  |                 |                  |
| 7:15                                                                                                                                                         |                                    | 1.47                |                        |                      |                  |                  |                 |                  |

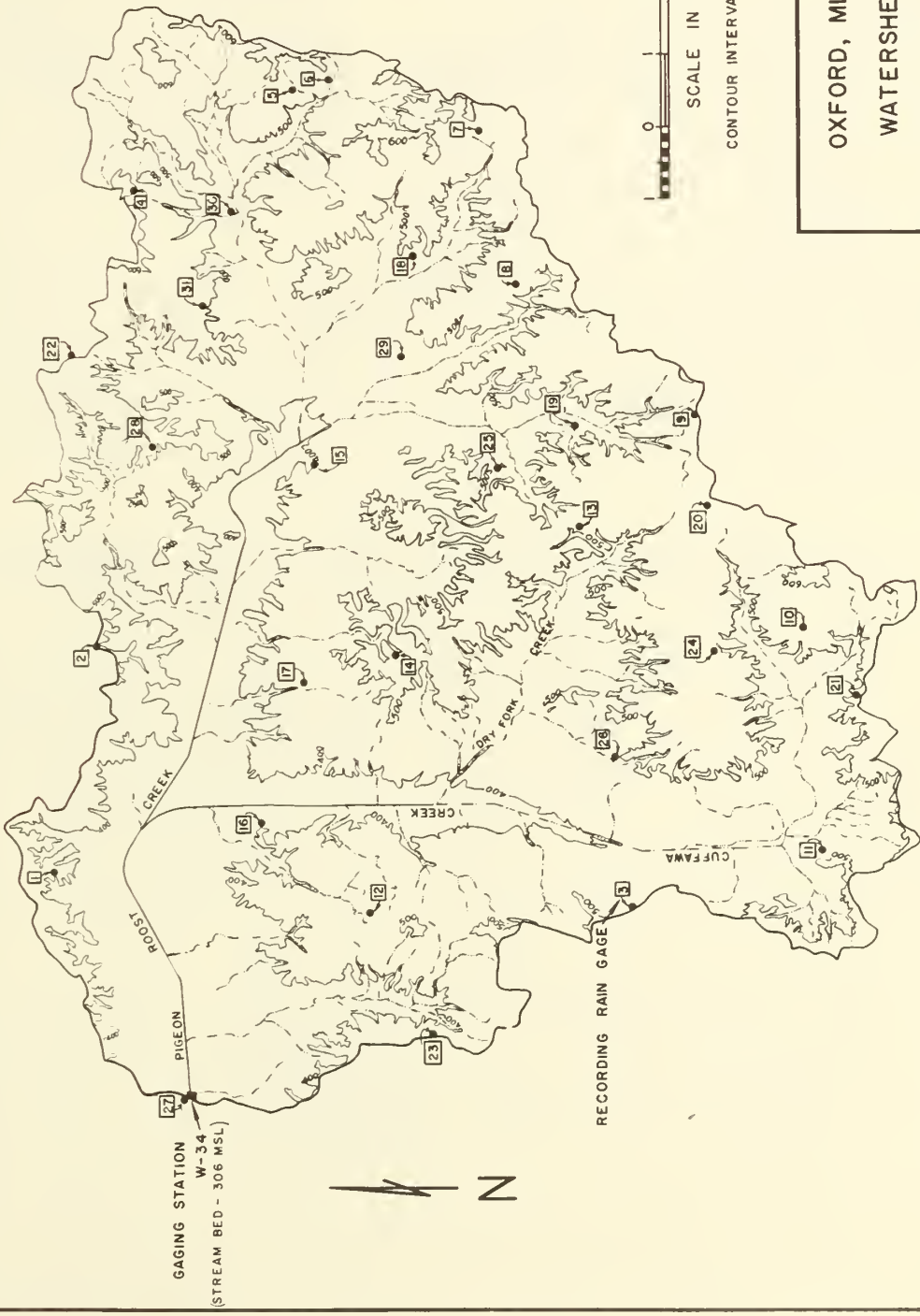
Notes: To convert runoff in in/hr to cfs, multiply by 75,625.  
 For additional selected events see "Selected Runoff Events for Small Agricultural Watersheds in the United States," ARS-SWC, January 1960, pages 62.11-1,2,3.  
<sup>1/</sup> Isohyetal map of storm rainfall on page 62.11-5.  
<sup>2/</sup> Rain gages 1 through 15, 25, 28, and 29 Thiessen weighted.  
<sup>3/</sup> Prior to 9:30a.  
<sup>4/</sup> Recessional flow prior to runoff event.  
<sup>5/</sup> Rainfall for rain gage 3 on page 62.10-3; rain gage 13 on page 62.3-2; rain gage 10 on page 62.12-3.  
<sup>6/</sup> Rainfall for rain gages 9, 11, 12, 13, and 14 on page 62.10-3.





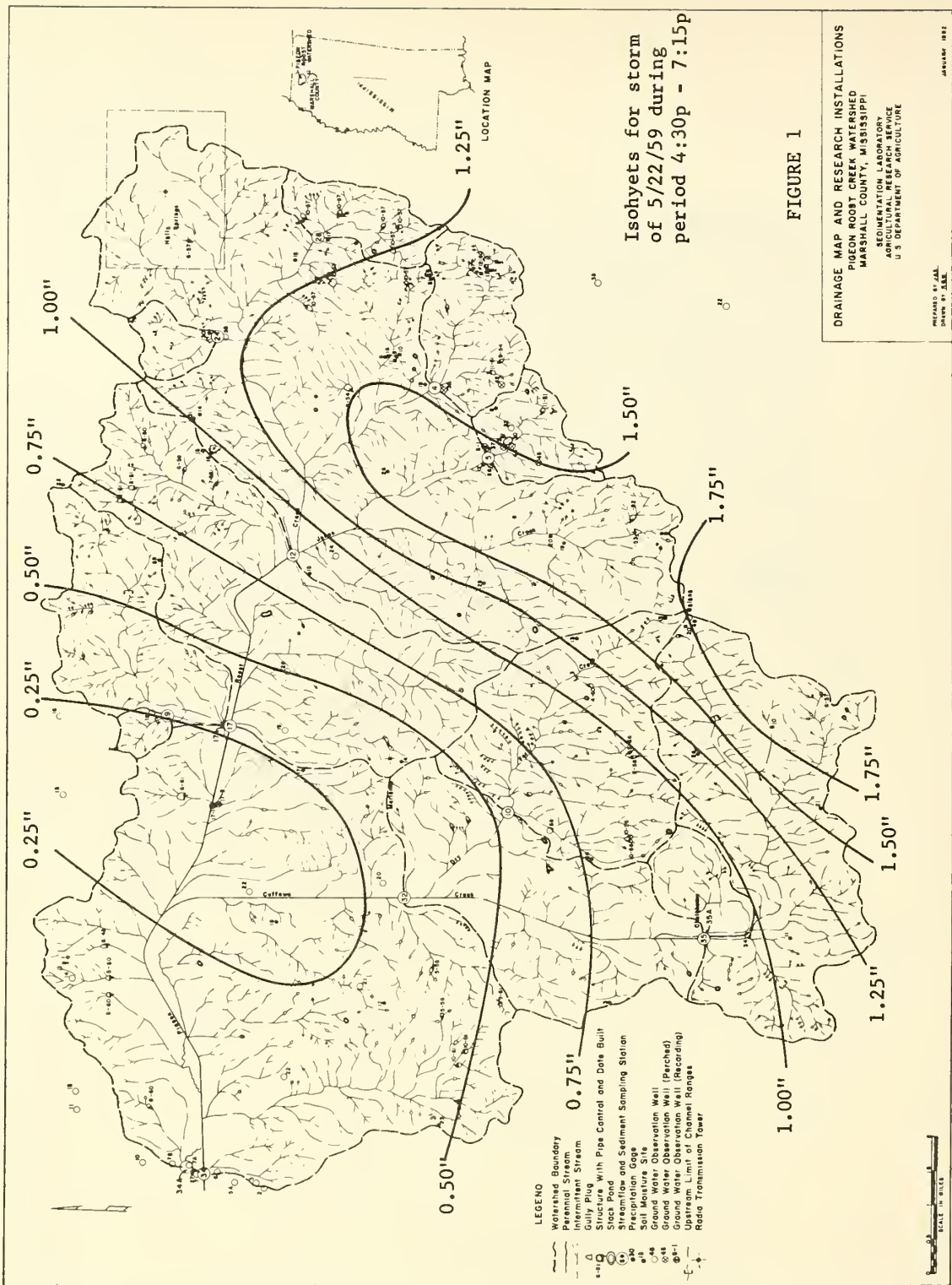
OXFORD, MISSISSIPPI WATERSHED W-34

REVISED 5-62



OXFORD, MISSISSIPPI  
WATERSHED W-34  
AREA: 75,000 ACRES

NOTE FOR WATERSHED LOCATION SEE FIGURE 1, PAGE 62 II-5



OXFORD, MISSISSIPPI Watershed W-35 1/

**LOCATION:** Marshall Co., Miss.; 0.3 mi. W. of Chulahoma on State Highway No. 4; Cuffawa Creek, Pigeon Roost Creek Watershed, Yazoo River Basin.

**AREA:** 7,550 ac. (11.8 sq. mi.)      **SHAPE:** Rectangular; 5.4 mi. wide, 2.5 mi. long.

**SLOPES:** 17% is in 0-2% class; 30% in 2-5%; 7% in 5-8%; 26% in 8-12%; 16% in 12-17%; 4% in 17% and above. Aspect NW.

**SOILS:** Loessial over Coastal Plains; topsoil - 9% silt loam in texture, 0 to 7 ins. in depth, weak fine granular structure; 15% silt loam in texture, 0 to 10 ins. in depth, weak coarse granular structure; 12% silt loam in texture, 0 to 8 ins. in depth, weak fine granular structure; 47% fine sandy loam in texture, 0 to 12 ins. in depth, weak fine crumb structure; 17% loam in texture, 0 to 21 ins. in depth, weak fine granular structure. Subsoil - 9% moderate to moderately slow permeability, impeding layer at approximately 30 ins.; 15% slow permeability, impeding layer at 15 to 20 ins.; 12% moderate to slow permeability, impeding layer at 15 to 20 ins.; 47% moderate to rapid permeability, no impeding layer; 17% moderate to moderately rapid permeability, no impeding layer; 17% moderate to moderately rapid permeability, no impeding layer. Internal drainage - medium to slow. Loring silt loam - 9%; Grenada silt loam - 15%; Providence silt loam and silty clay loam - 12%; Ruston fine sandy loam - 47%; Hymon loam - 17%.

**EROSION:** + - 17%; 2 - 32%; 3 - 51%.

**LAND CAPABILITY:** II - 28%; III - 12%; IV - 8%; VI - 4%; VII - 48%.

**SURFACE DRAINAGE:** Good; length of principal waterway - 5.5 mi.; sand bed channel. About 8% non-contributing area due to small desilting and retention dams.

**CHARACTER OF FLOW:** Ephemeral, continuous.

**INSTRUMENTATION:** Runoff - current meter rated section of dredged sand-bottom channel; continuous water-stage recorder. Precipitation - five recording gages, increased to six recording gages, July, 1959.

**WATERSHED CONDITIONS:** Normally about 20% is in cultivation - cotton and corn, 53% idle - good to poor cover of broom sedge and common grasses, 19% pasture - good to fair cover; 6% woods - fair to poor cover; 2% bare gullies.

**GENERALLY REPRESENTS:** Moderately to severely eroded uplands in the transitional zone between the Southern Coastal Plain (P-133), and the Southern Mississippi Valley Silty Uplands (P-134), in the states of Arkansas, Louisiana, Mississippi, Kentucky, Tennessee, and southern Missouri.

| MONTHLY PRECIPITATION AND RUNOFF (Inches) |      |      |      |      |      |      | Oxford, Mississippi Watershed W-35<br>(Area - 7,550 Acres) |      |       |      |      |      |       |
|-------------------------------------------|------|------|------|------|------|------|------------------------------------------------------------|------|-------|------|------|------|-------|
| Year \ Month                              | Jan. | Feb. | Mar. | Apr. | May  | June | July                                                       | Aug. | Sept. | Oct. | Nov. | Dec. | Year  |
| 1957 P                                    | 7.75 | 6.45 | 2.49 | 7.38 | 5.35 | 6.62 | 2.61                                                       | 2.28 | 6.84  | 3.42 | 9.80 | 4.66 | 65.65 |
| 1957 Q                                    | 3.78 | 1.98 | .07  | 2.37 | .64  | .31  | .14                                                        | .01  | .54   | .01  | 3.99 | 1.11 | 14.95 |
| 1958 P                                    | 2.75 | 1.91 | 3.87 | 8.23 | 4.86 | 4.24 | 6.01                                                       | 0.82 | 9.82  | 1.02 | 3.43 | 1.76 | 48.72 |
| 1958 Q                                    | 0.58 | .18  | .71  | 3.55 | 1.99 | .04  | .23                                                        | 0    | 1.22  | 0    | .09  | 0    | 8.59  |
| 1959 P                                    | 4.26 | 4.35 | 3.39 | 3.97 | 6.11 | 3.88 | 5.45                                                       | 3.34 | 4.65  | 1.95 | 3.03 | 6.90 | 51.28 |
| 1959 Q                                    | 1.11 | 1.76 | .42  | .43  | .75  | .68  | .11                                                        | .03  | .81   | .01  | .02  | 2.28 | 8.41  |
| Normal P                                  | 6.30 | 4.90 | 6.28 | 4.82 | 4.26 | 4.15 | 4.17                                                       | 3.13 | 3.48  | 3.19 | 4.78 | 5.25 | 54.71 |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS |                   |      |                                           |      |         |      | Oxford, Mississippi W-35 |      |          |      |       |      |        |      |        |      |
|-------------------------------------------------------------------------------------------------------------------------|-------------------|------|-------------------------------------------|------|---------|------|--------------------------|------|----------|------|-------|------|--------|------|--------|------|
| YEAR                                                                                                                    | MAXIMUM DISCHARGE |      | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |      |         |      |                          |      |          |      |       |      |        |      |        |      |
|                                                                                                                         | Date              | Rate | 1 hour                                    |      | 2 hours |      | 6 hours                  |      | 12 hours |      | 1 day |      | 2 days |      | 8 days |      |
|                                                                                                                         |                   |      | Date                                      | Vol. | Date    | Vol. | Date                     | Vol. | Date     | Vol. | Date  | Vol. | Date   | Vol. |        |      |
| 1957                                                                                                                    | 11-13             | 0.37 | 11-13                                     | 0.36 | 11-13   | 0.68 | 11-13                    | 1.14 | 11-13    | 1.76 | 1-31  | 2.28 | 1-30   | 3.46 | 1-27   | 4.46 |
| 1958                                                                                                                    | 4-3               | .49  | 4-3                                       | .45  | 4-3     | .82  | 4-3                      | 1.16 | 4-3      | 1.28 | 4-3   | 1.39 | 4-3    | 1.41 | 4-25   | 2.80 |
| 1959                                                                                                                    | 9-27              | .30  | 9-27                                      | .28  | 9-26    | .50  | 9-26                     | .76  | 9-26     | .78  | 2-13  | 1.00 | 12-17  | 1.29 | 12-11  | 2.08 |

Notes: Quality of records: Q - good for 1957 and 1958, good for 1959; P - good. Normal P based on 33 yr. record (1920-1952) at USWB Sta., Holly Springs 2N, Miss.

1/ Watershed W-35A not included.



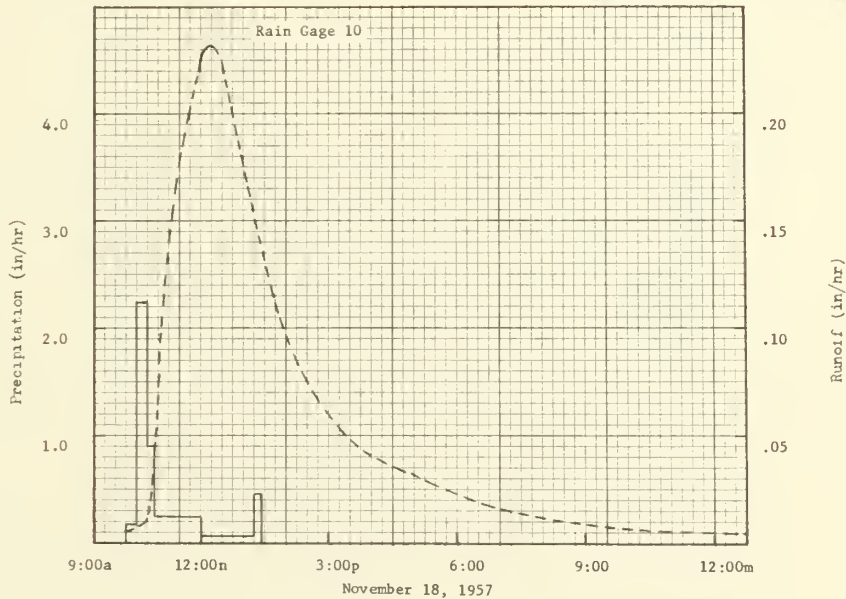
| SELECTED RUNOFF EVENTS                                                                                                                                                                                                                                                                                                                                              |                                    |                    |                  |                            | Oxford, Mississippi Watershed W-35 |                  |                 |                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|--------------------|------------------|----------------------------|------------------------------------|------------------|-----------------|------------------|
| Antecedent conditions                                                                                                                                                                                                                                                                                                                                               |                                    |                    | Rainfall         |                            |                                    | Runoff           |                 |                  |
| Date                                                                                                                                                                                                                                                                                                                                                                | Rainfall <sup>1/</sup><br>(inches) | Runoff<br>(inches) | Date and<br>time | Intensity<br>(in/hr)       | Acc.<br>(inches)                   | Date and<br>time | Rate<br>(in/hr) | Acc.<br>(inches) |
| Event of November 18, 1957                                                                                                                                                                                                                                                                                                                                          |                                    |                    |                  |                            |                                    |                  |                 |                  |
| 10-19-57                                                                                                                                                                                                                                                                                                                                                            | 0                                  | 0                  | 11-18-57         | Rain Gage 10 <sup>2/</sup> |                                    | 11-18-57         |                 |                  |
| 10-20-21                                                                                                                                                                                                                                                                                                                                                            | 0                                  | 0                  | 10:15a           | 0                          | 0                                  | 10:15a           | .0058           | 0                |
| 10-22                                                                                                                                                                                                                                                                                                                                                               | .88                                | 0                  | :30              | .16                        | .04                                | :45              | .0105           | .0020            |
| 10-23                                                                                                                                                                                                                                                                                                                                                               | .91                                | .0126              | :45              | 2.24                       | .60                                | :50              | .0152           | .0031            |
| 10-24-28                                                                                                                                                                                                                                                                                                                                                            | 0                                  | 0                  | :55              | .90                        | .75                                | :55              | .0633           | .0064            |
| 10-29                                                                                                                                                                                                                                                                                                                                                               | .08                                | 0                  | 12:00n           | .24                        | 1.01                               | 11:00            | .0969           | .0131            |
| 10-30                                                                                                                                                                                                                                                                                                                                                               | .26                                | 0                  | 1:15             | .07                        | 1.10                               | :15              | .1458           | .0435            |
| 10-31                                                                                                                                                                                                                                                                                                                                                               | T                                  | 0                  | :25              | .48                        | 1.18                               | :45              | .2023           | .1306            |
| 11-1-2                                                                                                                                                                                                                                                                                                                                                              | 0                                  | 0                  |                  |                            |                                    | 12:00a           | .2272           | .1842            |
| 11-3                                                                                                                                                                                                                                                                                                                                                                | .18                                | 0                  | 11-18-57         | Rain Gages <sup>1/</sup>   |                                    | :15p             | .2325           | .2416            |
| 11-4-6                                                                                                                                                                                                                                                                                                                                                              | 0                                  | 0                  | 7:45a            | 0                          | 0                                  | :30              | .2220           | .2984            |
| 11-7                                                                                                                                                                                                                                                                                                                                                                | .58                                | .0504              | 8:30             | .03                        | .02                                | :45              | .2010           | .3512            |
| 11-8                                                                                                                                                                                                                                                                                                                                                                | 1.16                               | .3531              | 9:15             | 0                          | .02                                | 1:00             | .1799           | .3988            |
| 11-9-11                                                                                                                                                                                                                                                                                                                                                             | 0                                  | 0                  | 10:15            | .03                        | .03                                | :45              | .1122           | .5083            |
| 11-12                                                                                                                                                                                                                                                                                                                                                               | .45                                | 0                  | :45              | 1.34                       | .67                                | 2:30             | .0755           | .5784            |
| 11-13                                                                                                                                                                                                                                                                                                                                                               | 2.66                               | 1.2420             | 12:00n           | .31                        | 1.09                               | 3:30             | .0478           | .6376            |
| 11-14                                                                                                                                                                                                                                                                                                                                                               | .38                                | .7093              | 1:30p            | .10                        | 1.24                               | 4:00             | .0405           | .6598            |
| 11-15                                                                                                                                                                                                                                                                                                                                                               | .23                                | .0180              |                  |                            |                                    | :30              | .0361           | .6788            |
| 11-16                                                                                                                                                                                                                                                                                                                                                               | .08                                | .0851              |                  |                            |                                    | 5:00             | .0318           | .6958            |
| 11-17                                                                                                                                                                                                                                                                                                                                                               | .72                                | .2396              |                  |                            |                                    | 6:30             | .0194           | .7342            |
| 11-18                                                                                                                                                                                                                                                                                                                                                               | 0                                  | .094 <sup>3/</sup> |                  |                            |                                    | 9:00             | .0092           | .7699            |
|                                                                                                                                                                                                                                                                                                                                                                     |                                    |                    |                  |                            |                                    | 12:00m           | .0050           | .7912            |
|                                                                                                                                                                                                                                                                                                                                                                     |                                    |                    |                  |                            |                                    | 11-19-58         |                 |                  |
|                                                                                                                                                                                                                                                                                                                                                                     |                                    |                    |                  |                            |                                    | 3:00a            | .0030           | .8032            |
| Event of April 14-15, 1958                                                                                                                                                                                                                                                                                                                                          |                                    |                    |                  |                            |                                    |                  |                 |                  |
| 3-15-58                                                                                                                                                                                                                                                                                                                                                             | 0                                  | 0                  | 4-14-58          | Rain Gage 10 <sup>4/</sup> |                                    | 4-14-58          |                 |                  |
| 3-16                                                                                                                                                                                                                                                                                                                                                                | 0                                  | 0                  | 8:40p            | 0                          | 0                                  | 11:15p           | 0               | 0                |
| 3-17                                                                                                                                                                                                                                                                                                                                                                | .50                                | .0277              | 9:40             | .23                        | .23                                | :20              | .0021           | .0001            |
| 3-18                                                                                                                                                                                                                                                                                                                                                                | 0                                  | .0047              | :55              | 1.08                       | .32                                | :30              | .0084           | .0010            |
| 3-19-21                                                                                                                                                                                                                                                                                                                                                             | 0                                  | 0                  | 10:05            | .78                        | .45                                | 12:00m           | .0447           | .0143            |
| 3-22                                                                                                                                                                                                                                                                                                                                                                | T                                  | 0                  | 11:25            | .38                        | .95                                | 4-15-58          |                 |                  |
| 3-23                                                                                                                                                                                                                                                                                                                                                                | .94                                | .0820              | 12:00m           | .15                        | 1.04                               | :15a             | .0628           | .0278            |
| 3-24                                                                                                                                                                                                                                                                                                                                                                | .05                                | .1040              | 4-15-58          |                            |                                    | :30              | .0875           | .0468            |
| 3-25                                                                                                                                                                                                                                                                                                                                                                | .18                                | .0205              | 2:25a            | .07                        | 1.22                               | :45              | .1106           | .0716            |
| 3-26                                                                                                                                                                                                                                                                                                                                                                | .47                                | .2081              | 3:00             | .14                        | 1.30                               | :55              | .1135           | .0909            |
| 3-27                                                                                                                                                                                                                                                                                                                                                                | 0                                  | .0284              | 4-14-58          | Rain Gages <sup>1/</sup>   |                                    | 1:15             | .1093           | .1282            |
| 3-28                                                                                                                                                                                                                                                                                                                                                                | 0                                  | .0132              | 8:30 p           | 0                          | 0                                  | 2:00             | .0891           | .1992            |
| 3-29                                                                                                                                                                                                                                                                                                                                                                | .07                                | .0028              | :45              | T                          | 0                                  | 3:00             | .0638           | .2757            |
| 3-30                                                                                                                                                                                                                                                                                                                                                                | .07                                | .0025              | 9:45             | .26                        | .26                                | 4:00             | .0402           | .3277            |
| 3-31                                                                                                                                                                                                                                                                                                                                                                | 0                                  | 0                  | 11:00            | .42                        | .78                                | 5:00             | .0288           | .3622            |
| 4-1                                                                                                                                                                                                                                                                                                                                                                 | 0                                  | 0                  | 12:00m           | .26                        | 1.04                               | 6:00             | .0194           | .3863            |
| 4-2                                                                                                                                                                                                                                                                                                                                                                 | T                                  | 0                  |                  |                            |                                    | 8:00             | .0095           | .4153            |
| 4-3                                                                                                                                                                                                                                                                                                                                                                 | 2.39                               | 1.3114             | 4-15-58          |                            |                                    | 11:00            | .0056           | .4381            |
| 4-4                                                                                                                                                                                                                                                                                                                                                                 | 0                                  | .0946              | :30a             | .12                        | 1.10                               | 2:00p            | .0046           | .4534            |
| 4-5                                                                                                                                                                                                                                                                                                                                                                 | 0                                  | .0019              | 2:15             | .06                        | 1.20                               | 6:00             | .0033           | .4694            |
|                                                                                                                                                                                                                                                                                                                                                                     |                                    |                    | 3:00             | .13                        | 1.30                               |                  |                 |                  |
| 4-6                                                                                                                                                                                                                                                                                                                                                                 | 0                                  | .0013              |                  |                            |                                    | 12:00m           | .0014           | .4838            |
| 4-7                                                                                                                                                                                                                                                                                                                                                                 | 0                                  | .0003              |                  |                            |                                    |                  |                 |                  |
| 4-8                                                                                                                                                                                                                                                                                                                                                                 | 0                                  | 0                  |                  |                            |                                    |                  |                 |                  |
| 4-9                                                                                                                                                                                                                                                                                                                                                                 | .08                                | 0                  |                  |                            |                                    |                  |                 |                  |
| 4-10-13                                                                                                                                                                                                                                                                                                                                                             | 0                                  | 0                  |                  |                            |                                    |                  |                 |                  |
| <b>Notes:</b> To convert runoff in in/hr to cfs, multiply by 7,612.9.<br><sup>1/</sup> Rain gages 3, 9, 10, 11, and 13 Thiessen weighted.<br><sup>2/</sup> Rainfall for rain gages 3, 9, 11, and 13 listed on page 62.10-2.<br><sup>3/</sup> Recessional flow prior to 10:15a.<br><sup>4/</sup> Rainfall for rain gages 3, 9, 11, and 13 listed on pages 62.10-2,3. |                                    |                    |                  |                            |                                    |                  |                 |                  |



SELECTED RUNOFF EVENTS

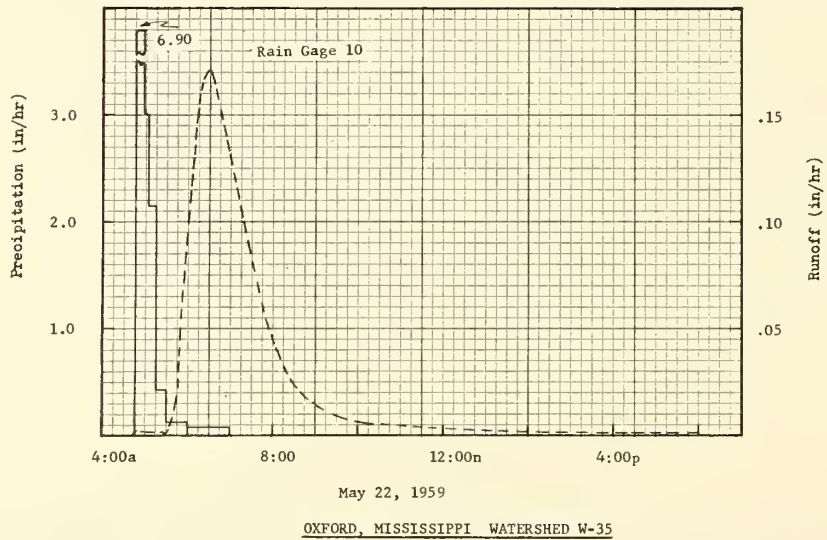
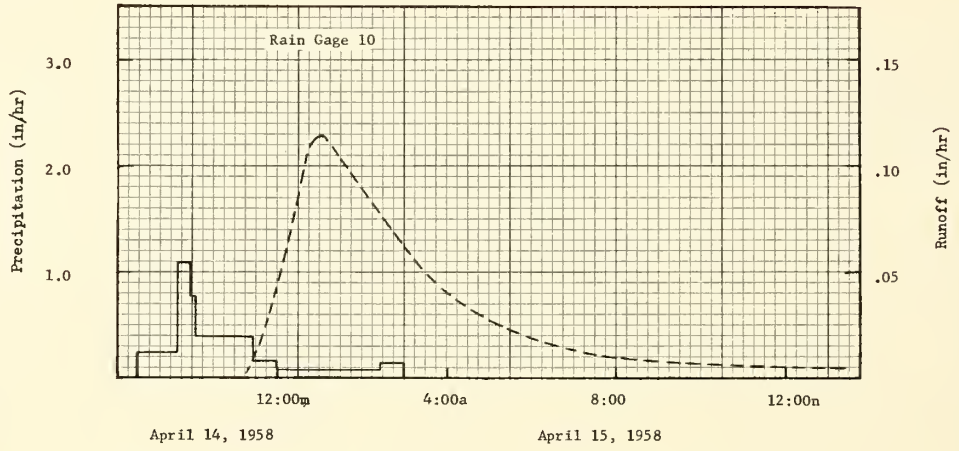
Oxford, Mississippi Watershed W-35

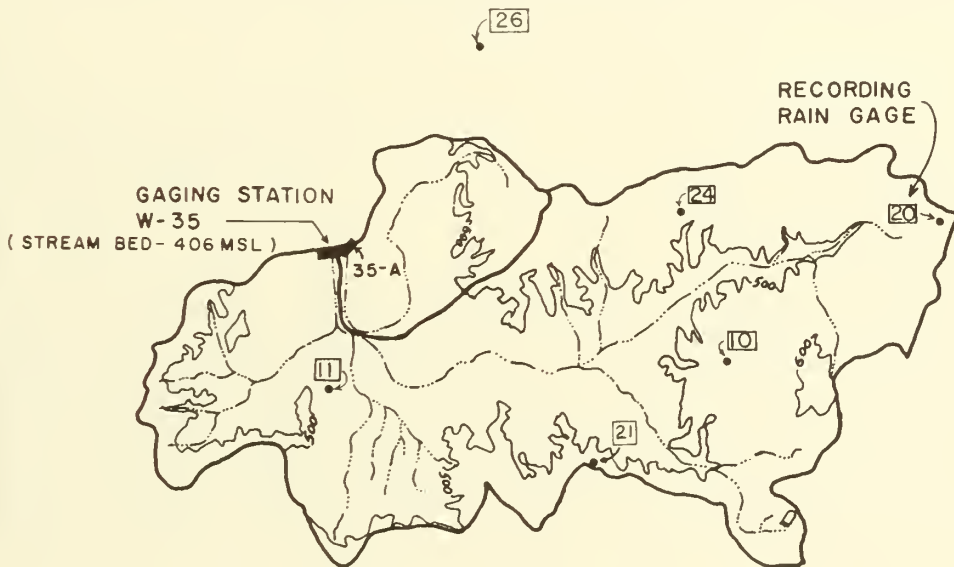
| Antecedent conditions                                                                                                                                               |                                    |                    | Rainfall         |                            |                  | Runoff           |                 |                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|--------------------|------------------|----------------------------|------------------|------------------|-----------------|------------------|
| Date                                                                                                                                                                | Rainfall <sup>1/</sup><br>(inches) | Runoff<br>(inches) | Date and<br>time | Intensity<br>(in/hr)       | Acc.<br>(inches) | Date and<br>time | Rate<br>(in/hr) | Acc.<br>(inches) |
| Event of April 14-15, 1958 (Continued)                                                                                                                              |                                    |                    |                  |                            |                  |                  |                 |                  |
| 4-14                                                                                                                                                                | .18 <sup>2/</sup>                  | 0                  |                  |                            |                  |                  |                 |                  |
| <p>Watershed Conditions: 23% of area under cultivation in cotton and corn - poor cover; 14% pasture, 49% idle, 12% woods - good cover; 2% bare gullies.</p>         |                                    |                    |                  |                            |                  |                  |                 |                  |
| Event of May 22-23, 1959                                                                                                                                            |                                    |                    |                  |                            |                  |                  |                 |                  |
| 4-22-59                                                                                                                                                             | 0                                  | .0005              | 5-22-59          | Rain Gage 10 <sup>3/</sup> |                  | 5-22-59          |                 |                  |
| 4-23                                                                                                                                                                | 0                                  | .0002              | 4:45p            | 0                          | 0                | 4:40p            | 0               | 0                |
| 4-24-30                                                                                                                                                             | 0                                  | 0                  | :55              | 6.90                       | 1.15             | :45              | .0011           | .0001            |
| 5-1-9                                                                                                                                                               | 0                                  | 0                  | 5:00             | 3.00                       | 1.40             | 5:30             | .0005           | .0007            |
| 5-10                                                                                                                                                                | .32                                | 0                  | :05              | 2.16                       | 1.58             | :45              | .0194           | .0032            |
| 5-11                                                                                                                                                                | .16                                | 0                  | :15              | .42                        | 1.65             | 6:00             | .0998           | .0181            |
| 5-12                                                                                                                                                                | 1.16                               | .0221              | 6:00             | .12                        | 1.74             | :15              | .1602           | .0506            |
| 5-13                                                                                                                                                                | 0                                  | .0158              | :50p             | .08                        | 1.81             | :30              | .1708           | .0921            |
| 5-14-21                                                                                                                                                             | 0                                  | 0                  |                  |                            |                  | :45              | .1524           | .1324            |
| 5-22                                                                                                                                                                | .30 <sup>4/</sup>                  | 0                  | 5-22-59          | Rain Gages <sup>1/</sup>   |                  | 7:00             | .1300           | .1677            |
| <p>Watershed Conditions: 23% of area under cultivation in cotton and corn - poor to fair cover; 14% pasture, 49% idle, 12% woods - good cover; 2% bare gullies.</p> |                                    |                    |                  |                            |                  |                  |                 |                  |
|                                                                                                                                                                     |                                    |                    | 4:30p            | 0                          | 0                | :30              | .0821           | .2207            |
|                                                                                                                                                                     |                                    |                    | :45              | .52                        | .13              | 8:00             | .0428           | .2519            |
|                                                                                                                                                                     |                                    |                    | 5:00             | 4.04                       | 1.14             | :45              | .0167           | .2734            |
|                                                                                                                                                                     |                                    |                    | :15              | .72                        | 1.32             | 10:00            | .0077           | .2864            |
|                                                                                                                                                                     |                                    |                    | 6:15             | .10                        | 1.42             | :30              | .0050           | .2896            |
|                                                                                                                                                                     |                                    |                    | 7:00             | .08                        | 1.46             | 12:00m           | .0026           | .2953            |
|                                                                                                                                                                     |                                    |                    |                  |                            |                  | 5-23-59          |                 |                  |
|                                                                                                                                                                     |                                    |                    |                  |                            |                  | 6:00a            | .0002           | .3037            |



OXFORD, MISSISSIPPI WATERSHED W-35

- Notes: To convert runoff in in/hr to cfs, multiply by 7,612.9.
- 1/ Rain gages 3, 9, 10, 11, and 13 Thiessen weighted.
  - 2/ Rainfall between 7:20a and 9:45a.
  - 3/ Rainfall for rain gages 3, 9, 11, and 13 listed on pages 62.10-3.
  - 4/ Rainfall between 3:45a and 7:00a.





SCALE IN MILES

CONTOUR INTERVAL-100 FEET

NOTE: FOR WATERSHED LOCATION  
SEE FIGURE 1, PAGE 62.11-5

OXFORD, MISSISSIPPI  
WATERSHED W-35  
AREA: 7,550 ACRES

OXFORD, MISSISSIPPI Watershed WC-1

LOCATION: North Mississippi Branch Experiment Station, Holly Springs, Miss.

AREA: 3.88 ac.

SHAPE: Roughly fan shape, 328 ft. radius.

SLOPES: 8% is in 2-5% class; 49% in 5-8%; 43% in 8-12%. Aspect NE.

SOILS: Loessial and Coastal Plains; topsoil - silt loam in texture, 0 to 8 ins. in depth, weak to moderate fine granular structure. Subsoil - slow to moderately permeable, impeding layer at 15 to 20 ins. Internal drainage - medium to slow. Providence silt loam to silty clay loam - 100%.

EROSION: 1-20%; 2-50%; 3-30%.

LAND CAPABILITY: III-50%; IV-40%; V-10%.

SURFACE DRAINAGE: Good; Small earth dam at measuring station to funnel all surface runoff into flume. Length of principal waterway - 490 ft.

CHARACTER OF FLOW: Ephemeral - continuous.

INSTRUMENTATION: Runoff - two ft. Parshall flume and water stage recorder; Precipitation - recording gage.

WATERSHED CONDITIONS: Cultivated in corn continuously since 1957. Poor management - row slope from approximate contour to up and down hill, no terraces, 4000 to 6000 plants per acre, low fertilization. Winter cover consists of shredded corn stalks, dead grass and weeds.

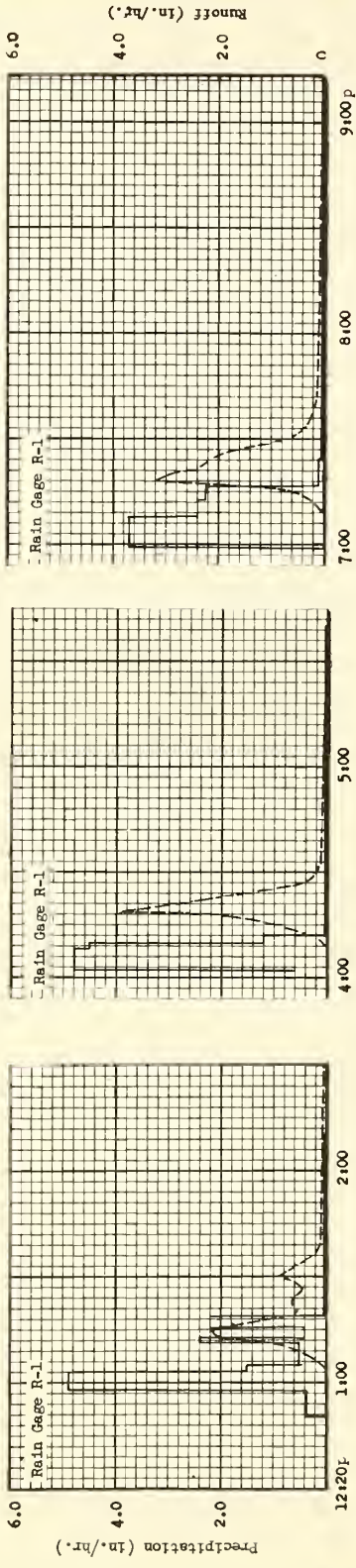
GENERALLY REPRESENTS: Cultivated areas with moderate to steep slopes in the transitional zone between the Southern Coastal Plain (P-133), and the Southern Mississippi Valley Silty Uplands (P-134), in the states of Arkansas, Louisiana, Mississippi, Kentucky, Tennessee, and southern Missouri.

| MONTHLY PRECIPITATION AND RUNOFF (Inches)                                                                                                 |                   |      |                                           |      |         |      |         |      |          |       |       |      | Oxford, Mississippi Watershed WC-1 |       |        |       |
|-------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------|-------------------------------------------|------|---------|------|---------|------|----------|-------|-------|------|------------------------------------|-------|--------|-------|
| Year                                                                                                                                      | Month             | Jan. | Feb.                                      | Mar. | Apr.    | May  | June    | July | Aug.     | Sept. | Oct.  | Nov. | Dec.                               | Year  |        |       |
|                                                                                                                                           |                   | 1958 | P                                         | 2.43 | 1.27    | 3.48 | 6.65    | 4.89 | 3.89     | 5.54  | 2.60  | 8.12 | 0.96                               | 3.40  | 1.65   | 44.88 |
|                                                                                                                                           | Q                 | 0.57 | 0.10                                      | 0.73 | 1.09    | 1.96 | 0.09    | 0.79 | 0.48     | 2.20  | 0.01  | 0.76 | 0.04                               | 8.82  |        |       |
| 1959                                                                                                                                      | P                 | 3.79 | 3.87                                      | 3.07 | 3.46    | 6.05 | 5.92    | 3.13 | 4.94     | 2.08  | 2.51  | 3.13 | 6.54                               | 48.49 |        |       |
|                                                                                                                                           | Q                 | 1.22 | 0.83                                      | 0.49 | 0.22    | 2.81 | 2.82    | 0.20 | 1.25     | 0.57  | 0.32  | 0.45 | 2.65                               | 13.83 |        |       |
|                                                                                                                                           | Normal P          | 6.30 | 4.90                                      | 6.28 | 4.82    | 4.26 | 4.15    | 4.17 | 3.13     | 3.48  | 3.19  | 4.78 | 5.25                               | 54.71 |        |       |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS                   |                   |      |                                           |      |         |      |         |      |          |       |       |      | Oxford, Mississippi Watershed WC-1 |       |        |       |
| YEAR                                                                                                                                      | MAXIMUM DISCHARGE |      | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |      |         |      |         |      |          |       |       |      |                                    |       |        |       |
|                                                                                                                                           |                   |      | 1 hour                                    |      | 2 hours |      | 6 hours |      | 12 hours |       | 1 day |      | 2 days                             |       | 8 days |       |
|                                                                                                                                           | Date              | Rate | Date                                      | Vol. | Date    | Vol. | Date    | Vol. | Date     | Vol.  | Date  | Vol. | Date                               | Vol.  | Date   | Vol.  |
| 1958                                                                                                                                      | 9-19              | 1.02 | 9-19                                      | 0.50 | 9-19    | 0.55 | 9-19    | 1.12 | 9-19     | 1.41  | 9-19  | 1.99 | 9-19                               | 2.12  | 9-16   | 2.16  |
| 1959                                                                                                                                      | 6-11              | 4.96 | 6-11                                      | 1.43 | 6-11    | 1.51 | 6-11    | 1.57 | 6-11     | 2.00  | 6-11  | 2.00 | 6-10                               | 2.76  | 6-9    | 2.82  |
| Notes: Quality of records: Q-good, P-good. Normal P based on 33-yr. record (1920 - 1952) at USWB station, Holly Springs 2 N, Mississippi. |                   |      |                                           |      |         |      |         |      |          |       |       |      |                                    |       |        |       |

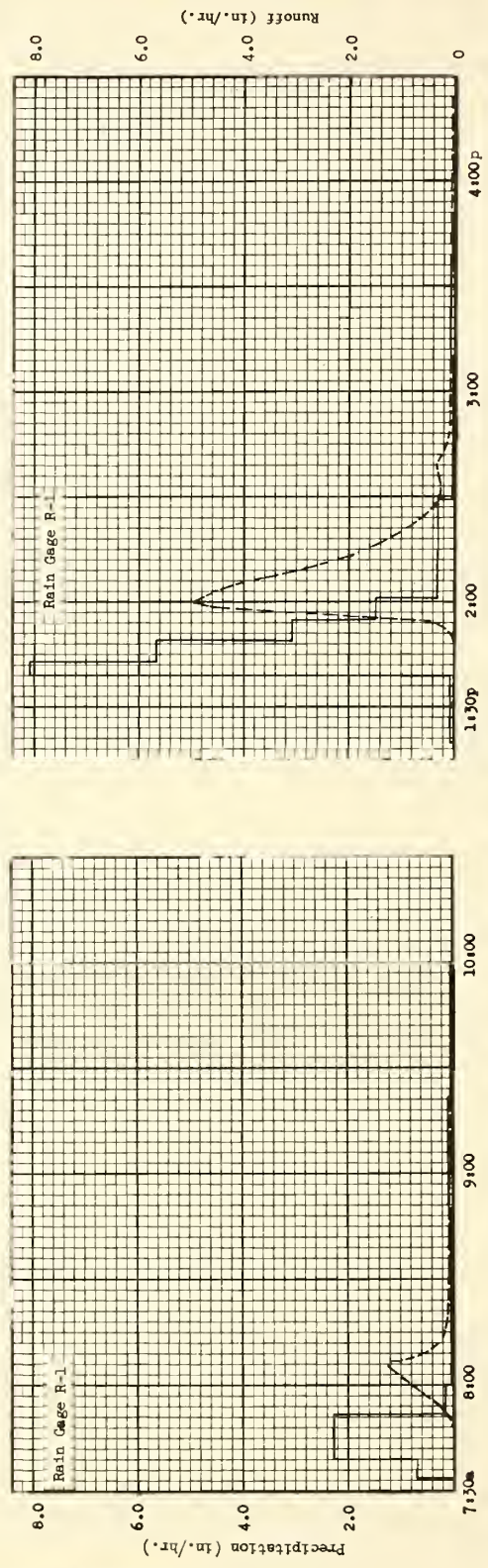
Cooperative Research Project of USDA, University of Mississippi, and Mississippi State Agricultural Experiment Station.







MAY 26, 1959



JUNE 11, 1959

OXFORD, MISSISSIPPI WATERSHED WC-1

OXFORD, MISSISSIPPI Watershed WC-2

LOCATION: North Mississippi Branch Experiment Station, Holly Springs, Miss.

AREA: 1.45 ac.

SHAPE: Roughly round, 140 ft. radius.

SLOPES: 3% is in 0 to 2% class; 40% in 2-5%; 57% in 8-12%. Aspect E.

SOILS: Loessial and Coastal Plains; topsoil - 15% silt loam in texture, 0 to 7 ins. in depth, weak fine granular structure; 44% silt loam in texture, 0 to 8 ins. in depth, weak fine granular structure; 41% fine sandy loam, 0 to 12 ins. in depth, weak fine crumb structure. Subsoil - 15% moderate to moderately slow permeability, impeding layer at approximately 30 ins.; 44% moderate to slow permeability, impeding layer at 15 to 20 ins., 41% moderate to rapid permeability, no impeding layer. Internal drainage - medium to rapid. Loring silt loam - 15%; Providence silt loam to silty clay loam - 44%; Ruston fine sandy loam - 41%.

EROSION: 1-30%; 2-40%; 3-30%.

LAND CAPABILITY: II-30%; III-30%; IV-30%; V-10%.

SURFACE DRAINAGE: Good; Small earth dam at measuring station to funnel all surface runoff into flume. Length of principal waterway - 300 ft.

CHARACTER OF FLOW: Ephemeral - continuous.

INSTRUMENTATION: Runoff - two ft. Parshall flume and water stage recorder; Precipitation - recording gage.

WATERSHED CONDITIONS: Cultivated in corn continuously since 1957. Improved management - 0.2 to 0.4% row slope, no terraces, 10,000 to 12,000 plants per acre, high fertilization, no winter crop. Winter cover consists of shredded corn stalks, dead grass, and weeds.

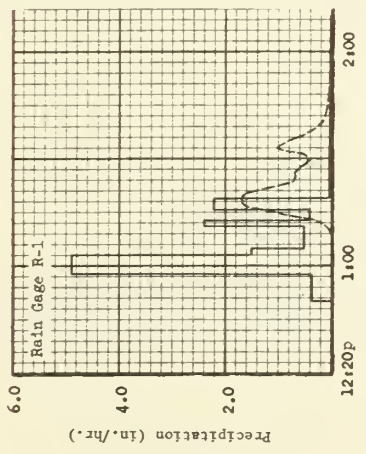
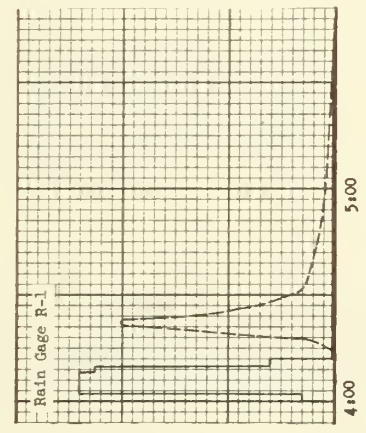
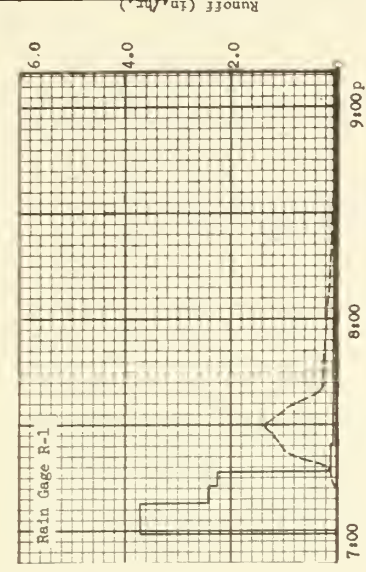
GENERALLY REPRESENTS: Cultivated areas with moderate to steep slopes in the transitional zone between the Southern Coastal Plain (P-133), and the Southern Mississippi Valley Silty Uplands (P-134), in the states of Arkansas, Louisiana, Mississippi, Kentucky, Tennessee, and southern Missouri.

| MONTHLY PRECIPITATION AND RUNOFF (Inches)                                                                                                                                                             |                   |      |                                           |      |         |      |         |      |          |                    |       |      | Oxford, Mississippi Watershed WC-2 |       |        |       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------|-------------------------------------------|------|---------|------|---------|------|----------|--------------------|-------|------|------------------------------------|-------|--------|-------|
| Year                                                                                                                                                                                                  | Month             | Jan. | Feb.                                      | Mar. | Apr.    | May  | June    | July | Aug.     | Sept.              | Oct.  | Nov. | Dec.                               | Year  |        |       |
|                                                                                                                                                                                                       |                   | 1958 | P                                         | 2.43 | 1.27    | 3.48 | 6.65    | 4.89 | 3.89     | 5.54 <sup>1/</sup> | 2.60  | 8.12 | 0.96                               | 3.40  | 1.65   | 44.88 |
|                                                                                                                                                                                                       | Q                 |      |                                           |      |         |      |         | 1.30 | 0.45     | 1.96               | 0.01  | 0.46 | 0.03                               | 4.21  |        |       |
| 1959                                                                                                                                                                                                  | P                 | 3.79 | 3.87                                      | 3.07 | 3.46    | 6.05 | 5.92    | 3.13 | 4.94     | 2.08               | 2.51  | 3.13 | 6.54                               | 48.49 |        |       |
|                                                                                                                                                                                                       | Q                 | 0.97 | 0.57                                      | 0.46 | 0.23    | 2.68 | 2.33    | 0.03 | 0.60     | 0.26               | 0.20  | 0.55 | 2.30                               | 11.18 |        |       |
|                                                                                                                                                                                                       | Normal P          | 6.30 | 4.90                                      | 6.28 | 4.82    | 4.26 | 4.15    | 4.17 | 3.13     | 3.48               | 3.19  | 4.78 | 5.25                               | 54.71 |        |       |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS                                                                               |                   |      |                                           |      |         |      |         |      |          |                    |       |      | Oxford, Mississippi Watershed WC-2 |       |        |       |
| YEAR                                                                                                                                                                                                  | MAXIMUM DISCHARGE |      | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |      |         |      |         |      |          |                    |       |      |                                    |       |        |       |
|                                                                                                                                                                                                       |                   |      | 1 hour                                    |      | 2 hours |      | 6 hours |      | 12 hours |                    | 1 day |      | 2 days                             |       | 8 days |       |
|                                                                                                                                                                                                       | Date              | Rate | Date                                      | Vol. | Date    | Vol. | Date    | Vol. | Date     | Vol.               | Date  | Vol. | Date                               | Vol.  | Date   | Vol.  |
| 1958                                                                                                                                                                                                  | 9-19              | 0.76 | 9-19                                      | 0.41 | 9-19    | 0.48 | 9-19    | 0.97 | 9-19     | 1.22               | 9-19  | 1.70 | 9-19                               | 1.84  | 9-16   | 1.90  |
| 1959                                                                                                                                                                                                  | 6-11              | 4.02 | 6-11                                      | 0.92 | 6-11    | 1.04 | 5-26    | 1.19 | 5-26     | 1.74               | 5-26  | 1.74 | 6-10                               | 2.29  | 5-22   | 2.67  |
| Notes: Quality of records: Q-good, P-good. Normal P based on 33-yr. record (1920 - 1952) at USWB station, Holly Springs 2 N, Mississippi.<br><sup>1/</sup> Runoff measurements initiated July 1, 1958 |                   |      |                                           |      |         |      |         |      |          |                    |       |      |                                    |       |        |       |

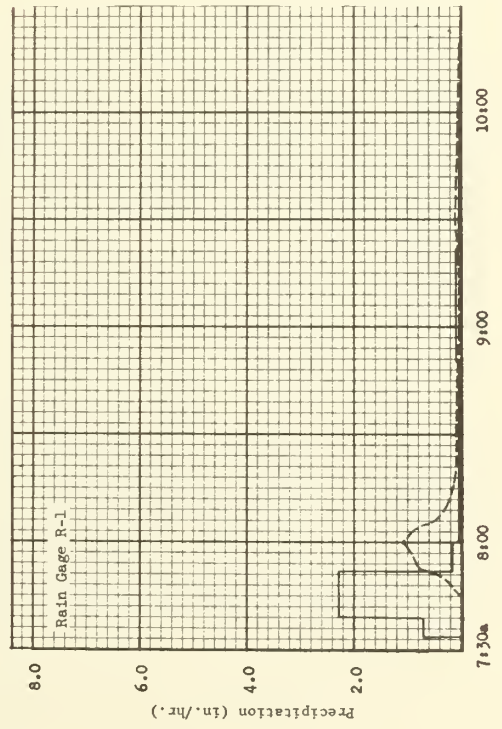
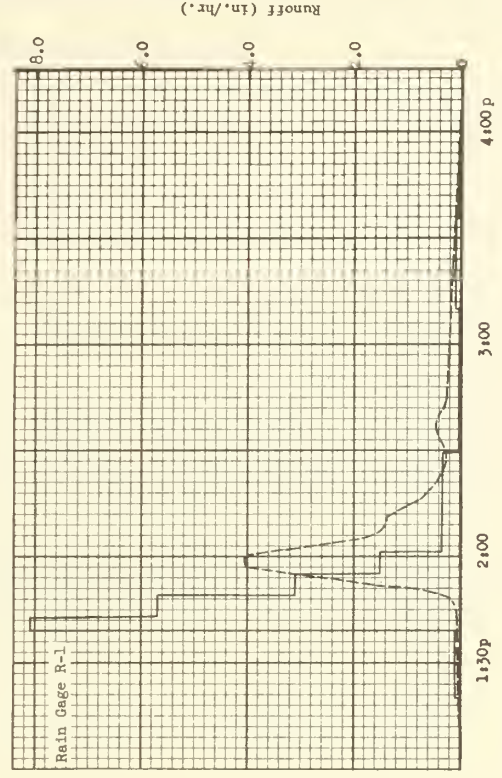
Cooperative Research Project of USDA, University of Mississippi, and Mississippi State Agricultural Experiment Station.







May 26, 1959



June 11, 1959

OXFORD, MISSISSIPPI WATERSHED WC-2

OXFORD, MISSISSIPPI Watershed WC-3

LOCATION: North Mississippi Branch Experiment Station, Holly Springs, Miss.

AREA: 1.61 ac.

SHAPE: Roughly rectangular, width - 200 ft., length - 350 ft.

SLOPES: 19% is in 2-5% class; 81% in 5-8%. Aspect E.

SOILS: Loessial and Coastal Plains: Topsoil - silt loam in texture, 0 to 8 ins. in depth, weak to moderate fine granular structure. Subsoil - slow to moderately permeable, impeding layer at 15 to 20 ins. Internal drainage - medium to slow. Providence silt loam to silty clay loam - 100%.

EROSION: 1-10%; 2-75%; 3-15%.

LAND CAPABILITY: II-20%; III-50%; IV-30%.

SURFACE DRAINAGE: Good; Small earth dam at measuring station to funnel all surface runoff into flume. Length of principal waterway - 350 ft.

CHARACTER OF FLOW: Ephemeral - continuous.

INSTRUMENTATION: Runoff - two ft. Parshall flume and water stage recorder; Precipitation - recording gage.

WATERSHED CONDITIONS: Cultivated in corn continuously since 1957. Poor management - row slope from approximate contour to up and down hill, no terraces, 4000 to 6000 plants per acre, low fertilization. Winter cover consists of shredded corn stalks, dead grass, and weeds.

GENERALLY REPRESENTS: Cultivated areas with moderate to steep slopes in the transitional zone between the Southern Coastal Plain (P-133), and the Southern Mississippi Valley Silty Uplands (P-134), in the states of Arkansas, Louisiana, Mississippi, Kentucky, Tennessee, and southern Missouri.

| MONTHLY PRECIPITATION AND RUNOFF (Inches)                                                                               |                   |      |                                           |      |         |      |         |                    |          |       |       |      | Oxford, Mississippi Watershed WC-3 |       |        |       |
|-------------------------------------------------------------------------------------------------------------------------|-------------------|------|-------------------------------------------|------|---------|------|---------|--------------------|----------|-------|-------|------|------------------------------------|-------|--------|-------|
| Year                                                                                                                    | Month             | Jan. | Feb.                                      | Mar. | Apr.    | May  | June    | July               | Aug.     | Sept. | Oct.  | Nov. | Dec.                               | Year  |        |       |
|                                                                                                                         |                   | 1958 | P                                         | 2.43 | 1.27    | 3.48 | 6.65    | 4.89               | 3.89     | 5.54  | 2.60  | 8.12 | 0.96                               | 3.40  | 1.65   | 44.88 |
|                                                                                                                         | Q                 |      |                                           |      |         |      |         | 1.08 <sup>1/</sup> | 0.60     | 1.81  | T     | 0.57 | 0.04                               | 4.10  |        |       |
| 1959                                                                                                                    | P                 | 3.79 | 3.87                                      | 3.07 | 3.46    | 6.05 | 5.92    | 3.13               | 4.94     | 2.08  | 2.51  | 3.13 | 6.54                               | 48.49 |        |       |
|                                                                                                                         | Q                 | 0.92 | 0.64                                      | 0.53 | 0.24    | 2.78 | 2.57    | 0.20               | 1.17     | 0.48  | 0.40  | 0.58 | 2.47                               | 12.98 |        |       |
|                                                                                                                         | Normal P          | 6.30 | 4.90                                      | 6.28 | 4.82    | 4.26 | 4.15    | 4.17               | 3.13     | 3.48  | 3.19  | 4.78 | 5.25                               | 54.71 |        |       |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS |                   |      |                                           |      |         |      |         |                    |          |       |       |      | Oxford, Mississippi Watershed WC-3 |       |        |       |
| YEAR                                                                                                                    | MAXIMUM DISCHARGE |      | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |      |         |      |         |                    |          |       |       |      |                                    |       |        |       |
|                                                                                                                         |                   |      | 1 hour                                    |      | 2 hours |      | 6 hours |                    | 12 hours |       | 1 day |      | 2 days                             |       | 8 days |       |
|                                                                                                                         | Date              | Rate | Date                                      | Vol. | Date    | Vol. | Date    | Vol.               | Date     | Vol.  | Date  | Vol. | Date                               | Vol.  | Date   | Vol.  |
| 1958                                                                                                                    | 9-19              | 0.84 | 9-19                                      | 0.45 | 9-19    | 0.47 | 9-19    | 0.94               | 9-19     | 1.14  | 9-19  | 1.61 | 9-19                               | 1.70  | 9-16   | 1.79  |
| 1959                                                                                                                    | 6-11              | 5.08 | 6-11                                      | 1.45 | 6-11    | 1.49 | 6-11    | 1.53               | 5-26     | 1.95  | 5-26  | 1.95 | 6-10                               | 2.53  | 5-22   | 2.77  |

Notes: Quality of records: Q-good, P-good. Normal P based on 33-yr. record (1920 - 1952) at USWB station Holly Springs 2 N, Mississippi.

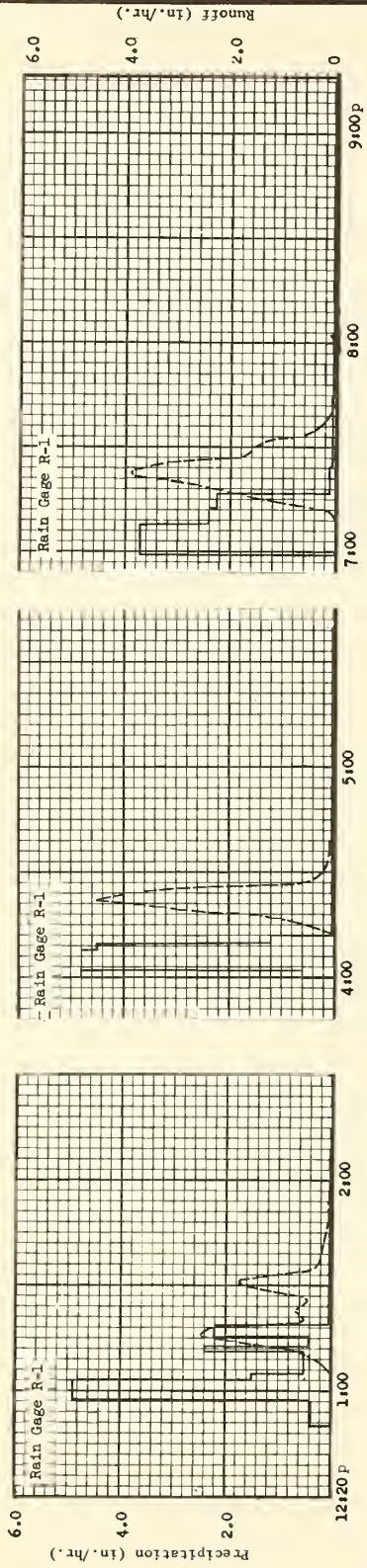
<sup>1/</sup> Runoff measurements initiated July 1, 1958



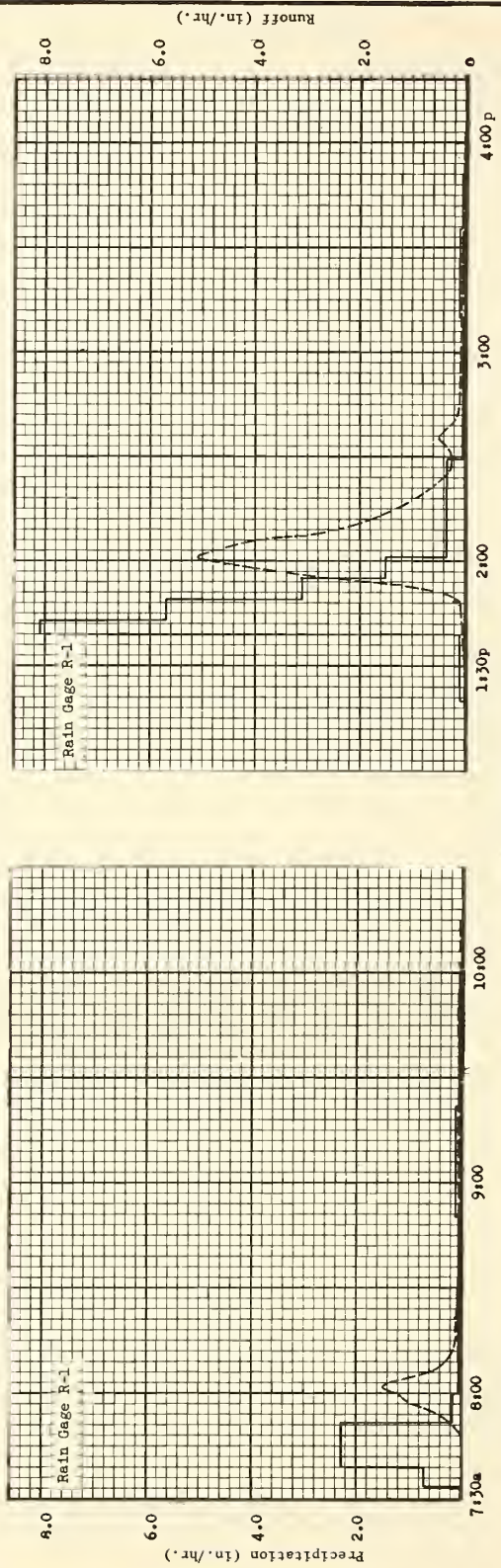
| SELECTED RUNOFF EVENTS                                                                                                                                                                                                 |                      |                    | Oxford, Mississippi Watershed WC-3<br>Area - 1.61 acres |                      |                  |                  |                 |                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------------|---------------------------------------------------------|----------------------|------------------|------------------|-----------------|------------------|
| Antecedent conditions                                                                                                                                                                                                  |                      |                    | Rainfall                                                |                      |                  | Runoff           |                 |                  |
| Date                                                                                                                                                                                                                   | Rainfall<br>(inches) | Runoff<br>(inches) | Date and<br>time                                        | Intensity<br>(in/hr) | Acc.<br>(inches) | Date and<br>time | Rate<br>(in/hr) | Acc.<br>(inches) |
| Rain Gage R-1                                                                                                                                                                                                          |                      |                    | Event of May 26, 1959                                   |                      |                  |                  |                 |                  |
| 5-10-59                                                                                                                                                                                                                | .24                  | 0                  | 5-26-59                                                 | Raingage R-1         |                  | 5-26-59          |                 |                  |
| 5-11                                                                                                                                                                                                                   | .29                  | 0                  | 12:50p                                                  | 0                    | 0                | 1:05p            | 0               | 0                |
| 5-12,13                                                                                                                                                                                                                | .05                  | 0                  | :58                                                     | 0.38                 | 0.05             | :10              | .407            | .01              |
| 5-22                                                                                                                                                                                                                   | 1.83                 | .58                | 1:03                                                    | 4.92                 | .46              | :14              | 1.897           | .08              |
| 5-25                                                                                                                                                                                                                   | .63                  | .24                | :05                                                     | 1.50                 | .51              | :16              | 2.470           | .15              |
|                                                                                                                                                                                                                        |                      |                    | :11                                                     | .50                  | .56              | :18              | 2.230           | .23              |
|                                                                                                                                                                                                                        |                      |                    | :13                                                     | 2.40                 | .64              | :23              | .684            | .31              |
|                                                                                                                                                                                                                        |                      |                    | :16                                                     | .40                  | .66              | :26              | .474            | .36              |
|                                                                                                                                                                                                                        |                      |                    | :19                                                     | 2.20                 | .77              | :31              | 1.786           | .43              |
|                                                                                                                                                                                                                        |                      |                    | 2:10                                                    | .01                  | .78              | :34              | .542            | .49              |
|                                                                                                                                                                                                                        |                      |                    | 4:00                                                    | 0                    | .78              | :38              | .209            | .52              |
|                                                                                                                                                                                                                        |                      |                    | :02                                                     | .60                  | .80              | :48              | .062            | .54              |
|                                                                                                                                                                                                                        |                      |                    | :08                                                     | 4.80                 | 1.28             | 2:00             | .012            | .54              |
|                                                                                                                                                                                                                        |                      |                    | :10                                                     | 4.50                 | 1.43             | :20              | 0               | .54              |
|                                                                                                                                                                                                                        |                      |                    | :12                                                     | 1.20                 | 1.47             | 4:12             | 0               | .54              |
|                                                                                                                                                                                                                        |                      |                    | 5:40                                                    | .02                  | 1.49             | :14              | .290            | .55              |
|                                                                                                                                                                                                                        |                      |                    | 6:59                                                    | 0                    | 1.49             | :20              | 3.222           | .71              |
|                                                                                                                                                                                                                        |                      |                    | 7:08                                                    | 3.73                 | 2.05             | :22              | 4.552           | .83              |
|                                                                                                                                                                                                                        |                      |                    | :13                                                     | 2.40                 | 2.25             | :25              | 3.487           | 1.03             |
|                                                                                                                                                                                                                        |                      |                    | :17                                                     | 2.25                 | 2.40             | :26              | 1.189           | 1.07             |
|                                                                                                                                                                                                                        |                      |                    | :25                                                     | .08                  | 2.41             | :32              | .142            | 1.12             |
|                                                                                                                                                                                                                        |                      |                    | 9:15                                                    | .03                  | 2.47             | :40              | .062            | 1.13             |
|                                                                                                                                                                                                                        |                      |                    |                                                         |                      |                  | 5:10             | .012            | 1.14             |
|                                                                                                                                                                                                                        |                      |                    |                                                         |                      |                  | 6:20             | 0               | 1.14             |
|                                                                                                                                                                                                                        |                      |                    |                                                         |                      |                  | 7:09             | 0               | 1.14             |
|                                                                                                                                                                                                                        |                      |                    |                                                         |                      |                  | :12              | .142            | 1.14             |
|                                                                                                                                                                                                                        |                      |                    |                                                         |                      |                  | :16              | 1.682           | 1.21             |
|                                                                                                                                                                                                                        |                      |                    |                                                         |                      |                  | :20              | 2.963           | 1.36             |
|                                                                                                                                                                                                                        |                      |                    |                                                         |                      |                  | :22              | 3.899           | 1.48             |
|                                                                                                                                                                                                                        |                      |                    |                                                         |                      |                  | :23              | 3.899           | 1.54             |
|                                                                                                                                                                                                                        |                      |                    |                                                         |                      |                  | :27              | 1.786           | 1.74             |
|                                                                                                                                                                                                                        |                      |                    |                                                         |                      |                  | :32              | 1.189           | 1.87             |
|                                                                                                                                                                                                                        |                      |                    |                                                         |                      |                  | :38              | .185            | 1.92             |
|                                                                                                                                                                                                                        |                      |                    |                                                         |                      |                  | :48              | .049            | 1.96             |
|                                                                                                                                                                                                                        |                      |                    |                                                         |                      |                  | 10:00            | 0               | 1.95             |
|                                                                                                                                                                                                                        |                      |                    |                                                         |                      |                  |                  |                 |                  |
| Rain Gage R-1                                                                                                                                                                                                          |                      |                    | Event of June 11, 1959                                  |                      |                  |                  |                 |                  |
| 5-11-59                                                                                                                                                                                                                | 0.29                 | 0                  | 6-11-59                                                 | Raingage R-1         |                  | 6-11-59          |                 |                  |
| 5-12,13                                                                                                                                                                                                                | .05                  | 0                  | 7:34a                                                   | 0                    | 0                | 7:48a            | 0               | 0                |
| 5-22                                                                                                                                                                                                                   | 1.83                 | 0.58               | :39                                                     | 0.72                 | 0.06             | :53              | .314            | 0.01             |
| 5-25                                                                                                                                                                                                                   | .63                  | .24                | :52                                                     | 2.31                 | .56              | :59              | 1.146           | .08              |
| 5-26                                                                                                                                                                                                                   | 2.47                 | 1.95               | 8:00                                                    | .15                  | .58              | 8:02             | 1.478           | .15              |
| 5-30                                                                                                                                                                                                                   | .54                  | .01                | :50                                                     | .01                  | .59              | :04              | 1.189           | .19              |
| 6-7                                                                                                                                                                                                                    | .09                  | 0                  | 9:22                                                    | .09                  | .64              | :07              | .437            | .22              |
| 6-8                                                                                                                                                                                                                    | .50                  | 0                  | 10:00                                                   | .02                  | .65              | :30              | .062            | .27              |
| 6-9                                                                                                                                                                                                                    | 1.01                 | .04                | 1:20p                                                   | 0                    | .65              | 1:00p            | 0               | .34              |
| 6-10                                                                                                                                                                                                                   | 1.49                 | .67                | :39                                                     | .09                  | .68              | 1:29             | 0               | .34              |
|                                                                                                                                                                                                                        |                      |                    | :43                                                     | 8.10                 | 1.22             | :51              | .407            | .35              |
|                                                                                                                                                                                                                        |                      |                    | :49                                                     | 5.70                 | 1.79             | :54              | 1.786           | .40              |
|                                                                                                                                                                                                                        |                      |                    | :55                                                     | 3.10                 | 2.10             | :58              | 4.189           | .60              |
|                                                                                                                                                                                                                        |                      |                    | 2:01                                                    | 1.50                 | 2.25             | 2:01             | 5.082           | .83              |
|                                                                                                                                                                                                                        |                      |                    | :29                                                     | .36                  | 2.42             | :02              | 5.082           | .92              |
|                                                                                                                                                                                                                        |                      |                    | 3:10                                                    | .01                  | 2.43             | :05              | 4.189           | 1.15             |
|                                                                                                                                                                                                                        |                      |                    | :35                                                     | .10                  | 2.47             | :09              | 2.409           | 1.38             |
|                                                                                                                                                                                                                        |                      |                    | :50                                                     | .08                  | 2.49             | :13              | 1.632           | 1.51             |
|                                                                                                                                                                                                                        |                      |                    |                                                         |                      |                  | :20              | .764            | 1.65             |
|                                                                                                                                                                                                                        |                      |                    |                                                         |                      |                  | :31              | .259            | 1.72             |
|                                                                                                                                                                                                                        |                      |                    |                                                         |                      |                  | :36              | .505            | 1.75             |
|                                                                                                                                                                                                                        |                      |                    |                                                         |                      |                  | 3:00             | .062            | 1.79             |
|                                                                                                                                                                                                                        |                      |                    |                                                         |                      |                  | :35              | .031            | 1.83             |
|                                                                                                                                                                                                                        |                      |                    |                                                         |                      |                  | :44              | .062            | 1.83             |
|                                                                                                                                                                                                                        |                      |                    |                                                         |                      |                  | :54              | .062            | 1.83             |
|                                                                                                                                                                                                                        |                      |                    |                                                         |                      |                  | 4:13             | .031            | 1.85             |
|                                                                                                                                                                                                                        |                      |                    |                                                         |                      |                  | 6:00             | 0               | 1.86             |
|                                                                                                                                                                                                                        |                      |                    |                                                         |                      |                  |                  |                 |                  |
| <p>Watershed Conditions: 100% of area was in corn, 6 to 10 inches high. About 8000 plants per acre with sparse weeds and grasses. No tillage operation since planting on April 29. Planted on approximate contour.</p> |                      |                    |                                                         |                      |                  |                  |                 |                  |
| <p>Watershed Conditions: 100% of area was in corn, 10 to 15 inches high. About 8000 plants per acre with considerable weeds and grasses. Last tillage operation was on June 3. Cultivated on approximate contour.</p>  |                      |                    |                                                         |                      |                  |                  |                 |                  |

Notes: To convert runoff in in./hr. to cfs, multiply by 1.623.

For map of watershed, see page 62.16-4.



May 26, 1959



June 11, 1959

OXFORD, MISSISSIPPI WATERSHED WC-3

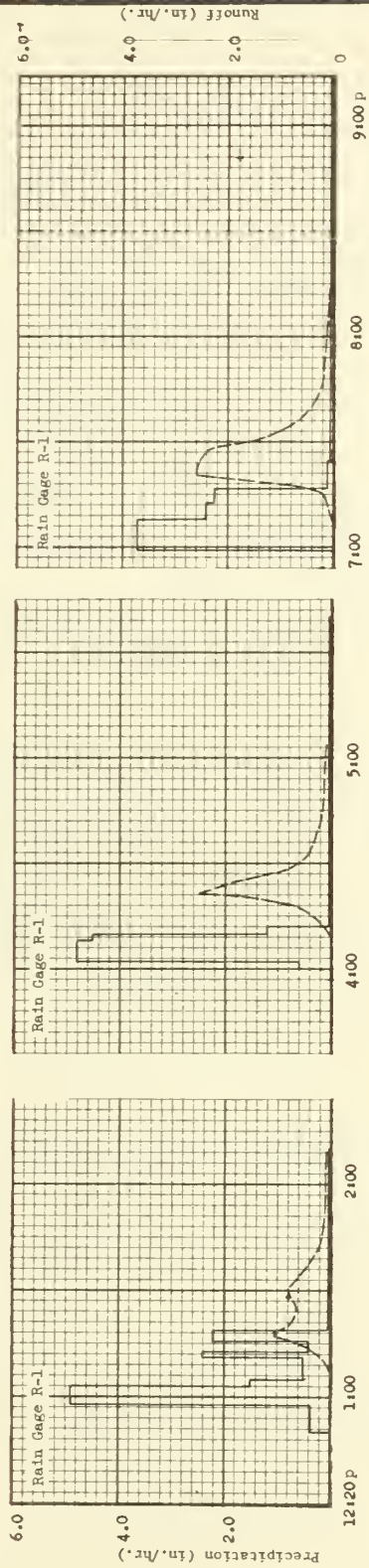
OXFORD, MISSISSIPPI Watershed WP-4LOCATION: North Mississippi Branch Experiment Station, Holly Springs, Miss.AREA: 3.01 ac.SHAPE: Roughly rectangular, width - 250 ft., length - 525 ft.SLOPES: 4% is in 2-5% class; 29% in 5-8%; 54% in 8-12%; 13% in 12-17%. Aspect S.SOILS: Loessial and Coastal Plains: Topsoil - 17% silt loam in texture, 0 to 10 ins. in depth, weak coarse granular structure; 45% silt loam in texture, 0 to 8 ins. in depth, weak fine granular structure; 38% fine sandy loam, 0 to 12 ins. in depth, weak fine crumb structure. Subsoil - 17% slow permeability, impeding layer at 15 to 20 ins.; 45% moderate to slow permeability, impeding layer at 15 to 20 ins.; 38% moderate to rapid permeability, no impeding layer. Internal drainage - medium to rapid. Grenada silt loam - 17%; Providence silt loam - 45%; Ruston fine sandy loam - 38%.EROSION: 1-20%; 2-50%; 3-30%.LAND CAPABILITY: III-25%; IV-25%; V-35%; VI-15%.SURFACE DRAINAGE: Good; Small earth dam at measuring station to funnel all surface runoff into flume. Length of principal waterway 440 ft.CHARACTER OF FLOW: Ephemeral - continuous.INSTRUMENTATION: Runoff - two ft. Parshall flume and water stage recorder; Precipitation - recording gage.WATERSHED CONDITIONS: Permanent Pasture (common lespedeza and native grasses) since 1956. Poor cover on the steeper slopes. Poor management - overgrazed, no fertilization.GENERALLY REPRESENTS: Areas in permanent pasture with moderate to steep slopes in the transitional zone between the Southern Coastal Plain (P-133), and the Southern Mississippi Valley Silty Uplands (P-134), in the states of Arkansas, Louisiana, Mississippi, Kentucky, Tennessee, and southern Missouri.

| MONTHLY PRECIPITATION AND RUNOFF (Inches)                                                                                                 |                   |      |                                           |      |         |      |         |      |          |       |       |      | Oxford, Mississippi Watershed WP-4 |       |        |      |
|-------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------|-------------------------------------------|------|---------|------|---------|------|----------|-------|-------|------|------------------------------------|-------|--------|------|
| Year                                                                                                                                      | Month             | Jan. | Feb.                                      | Mar. | Apr.    | May  | June    | July | Aug.     | Sept. | Oct.  | Nov. | Dec.                               | Year  |        |      |
| 1958                                                                                                                                      | P                 | 2.43 | 1.27                                      | 3.48 | 6.65    | 4.89 | 3.89    | 5.54 | 2.60     | 8.12  | 0.96  | 3.40 | 1.65                               | 44.88 |        |      |
|                                                                                                                                           | Q                 |      |                                           |      |         |      |         | 0.93 | 0.48     | 1.48  | T     | 0.51 | 0.06                               | 3.46  |        |      |
| 1959                                                                                                                                      | P                 | 3.79 | 3.87                                      | 3.07 | 3.46    | 6.05 | 5.92    | 3.13 | 4.94     | 2.08  | 2.51  | 3.13 | 6.54                               | 48.49 |        |      |
|                                                                                                                                           | Q                 | 0.98 | 0.98                                      | 0.78 | 0.56    | 2.44 | 3.02    | 0.19 | 0.92     | 0.47  | 0.44  | 0.52 | 2.04                               | 13.34 |        |      |
| Normal                                                                                                                                    | P                 | 6.30 | 4.90                                      | 6.28 | 4.82    | 4.26 | 4.15    | 4.17 | 3.13     | 3.48  | 3.19  | 4.78 | 5.25                               | 54.71 |        |      |
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS                   |                   |      |                                           |      |         |      |         |      |          |       |       |      | Oxford, Mississippi Watershed WP-4 |       |        |      |
| YEAR                                                                                                                                      | MAXIMUM DISCHARGE |      | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |      |         |      |         |      |          |       |       |      |                                    |       |        |      |
|                                                                                                                                           |                   |      | 1 hour                                    |      | 2 hours |      | 6 hours |      | 12 hours |       | 1 day |      | 2 days                             |       | 8 days |      |
|                                                                                                                                           | Date              | Rate | Date                                      | Vol. | Date    | Vol. | Date    | Vol. | Date     | Vol.  | Date  | Vol. | Date                               | Vol.  | Date   | Vol. |
| 1958                                                                                                                                      | 9-19              | 1.32 | 9-19                                      | 0.46 | 9-19    | 0.47 | 9-19    | 0.98 | 9-19     | 1.15  | 9-19  | 1.44 | 9-19                               | 1.46  | 9-16   | 1.49 |
| 1959                                                                                                                                      | 6-11              | 4.65 | 6-11                                      | 1.42 | 6-11    | 1.48 | 6-11    | 1.51 | 6-11     | 1.80  | 6-11  | 2.00 | 6-10                               | 2.70  | 6-8    | 3.02 |
| Notes: Quality of records: Q-good, P-good. Normal P based on 33-yr. record (1920 - 1952) at USWB station, Holly Springs 2 N, Mississippi. |                   |      |                                           |      |         |      |         |      |          |       |       |      |                                    |       |        |      |
| 1/ Runoff measurements initiated July 1, 1958                                                                                             |                   |      |                                           |      |         |      |         |      |          |       |       |      |                                    |       |        |      |

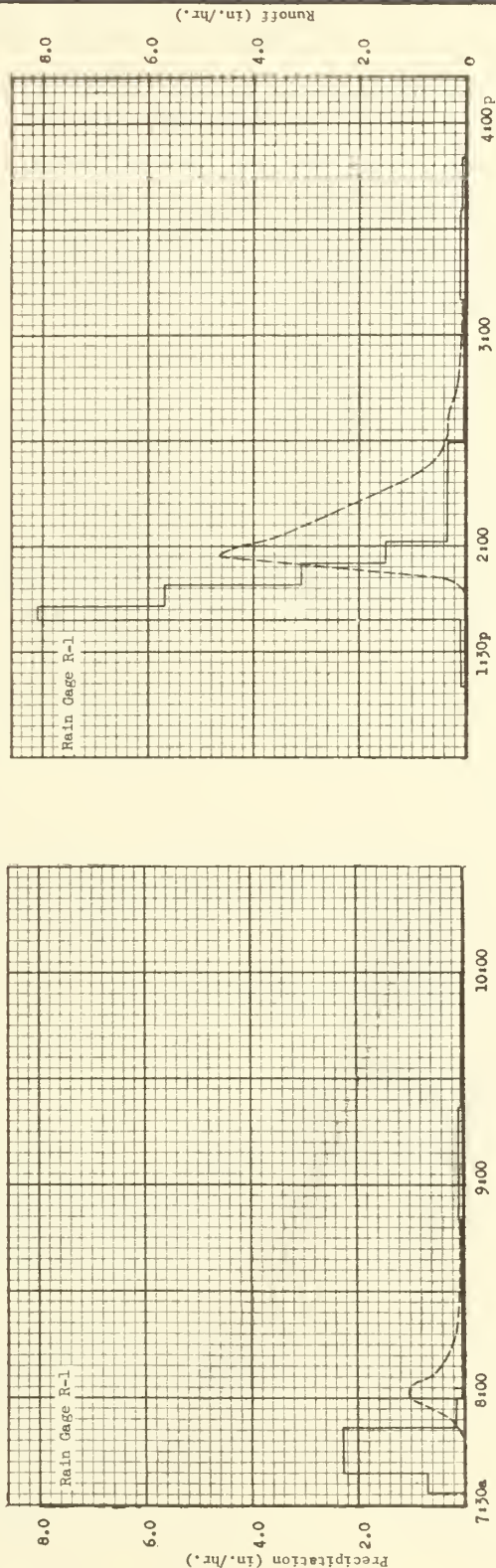
Cooperative Research Project of USDA, University of Mississippi, and Mississippi State Agricultural Experiment Station.







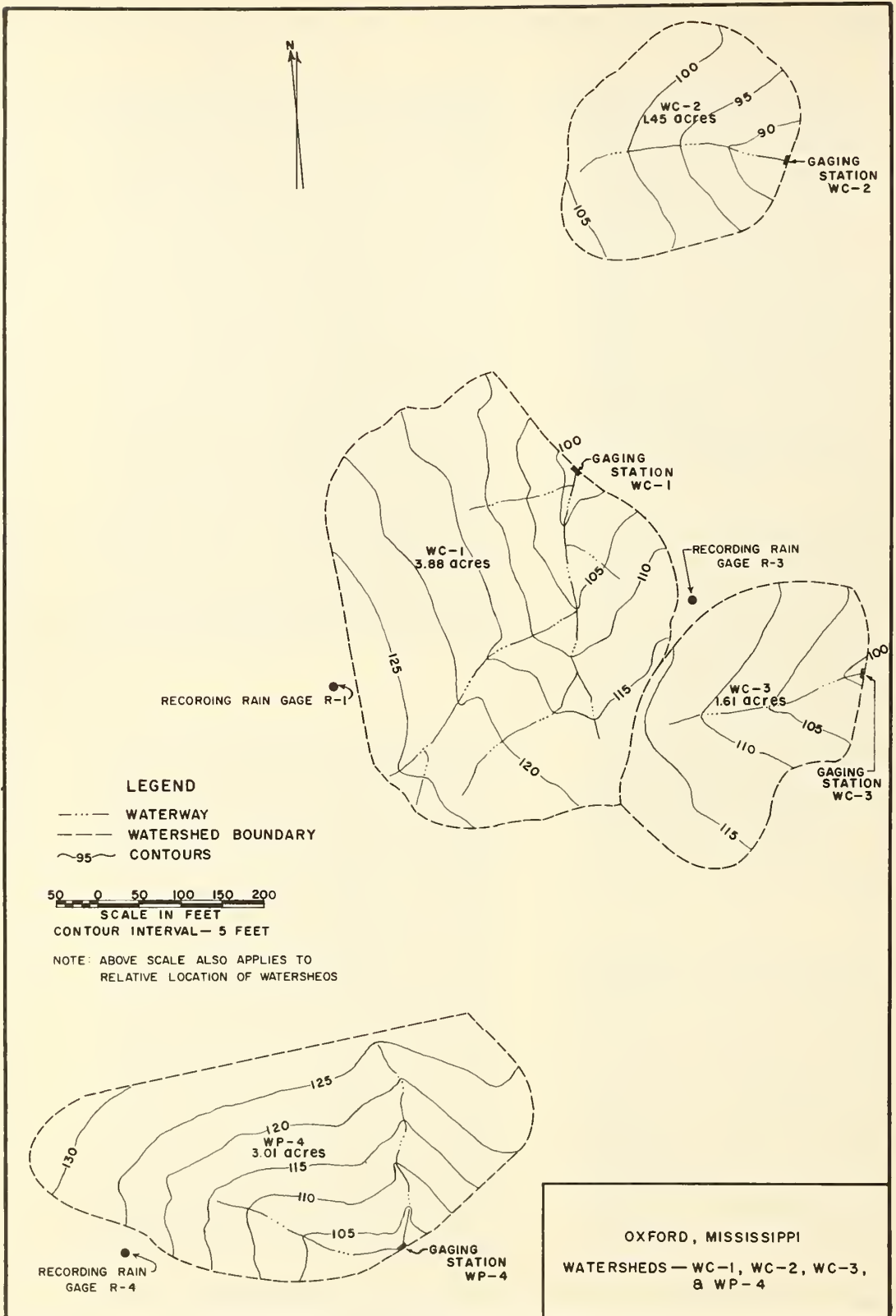
May 26, 1959



June 11, 1959

OXFORD, MISSISSIPPI WATERSHED WP-1





TOMBSTONE, ARIZONA Watershed W-1

LOCATION: Cochise County; at Tombstone; Walnut Gulch, tributary of San Pedro River.

AREA: 57.7 sq. mi. (36,900 ac.) SHAPE: Butterfly, approximately 16 miles long by 6 miles wide.

SLOPES: Not available Aspect W

SOILS: Tombstone, a gravelly loam, calcareous throughout, moderately permeable surface and subsoil--40%. Earp, residual on old fan material consolidated to a lime conglomerate, rhyolite the chief constituent; noncalcareous surface, moderately calcareous subsoil; moderately permeable--20%. Tortugas, from limestone; calcareous surface underlain by consolidated caliche--10%. Schiefelin, from limestone conglomerate; calcareous surface underlain by consolidated caliche--7%. Remaining 23% made up of 10 other soils varying from slowly permeable to moderately permeable.

EROSION: 1 - 40%; 2 - 55%; 3 - 5%.

LAND CAPABILITY: V - 40%; VI - 60%.

SURFACE DRAINAGE: Good, length of principal drainage way, 21 miles.

CHARACTER OF FLOW: Ephemeral, continuous.

INSTRUMENTATION: Runoff - cutoff wall in natural channel, recorder with 8 hr. chart; Precipitation - 66 recording gages, 24 hr. chart, 6 standard gages.

WATERSHED CONDITIONS: Includes watersheds 2, 3, 4, & 5. 65 percent of area supports desert shrubs (Whitethorn, creosotebush, tarbush) with 23% cover and 2% grass cover; 35% is grassland with approximately 20% grass cover (crown spread) and 5% shrub cover.

GENERALLY REPRESENTS: Desert grassland ranges in the Southeastern Arizona Basin and Range resource area (D-41).

| MONTHLY PRECIPITATION AND RUNOFF (Inches) |       |      |      |      |      |      | Tombstone, Arizona Watershed W-1 |      |      |       |      |      |      |       |
|-------------------------------------------|-------|------|------|------|------|------|----------------------------------|------|------|-------|------|------|------|-------|
| Year                                      | Month | Jan. | Feb. | Mar. | Apr. | May  | June                             | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year  |
| 1954                                      | P     | 0.55 | 0.22 | 0.34 | 0    | 0.58 | 1.37                             | 2.11 | 4.86 | 0.61  | 0.87 | 0    | 0.02 | 11.53 |
|                                           | Q     | NR   | NR   | NR   | NR   | 0    | 0                                | 0    | NR   | NR    | NR   | NR   | NR   | Inc.  |
| 1955                                      | P     | 1.34 | .23  | .31  | 0    | .02  | .43                              | 8.43 | 3.66 | .21   | .17  | .05  | .22  | 15.07 |
|                                           | Q     | NR   | NR   | NR   | NR   | NR   | NR                               | NR   | NR   | NR    | NR   | NR   | NR   | NR    |
| 1956                                      | P     | .66  | .27  | 0    | .14  | .01  | .56                              | 4.18 | 1.10 | .01   | .23  | .06  | .14  | 7.36  |
|                                           | Q     | NR   | NR   | NR   | NR   | NR   | NR                               | NR   | NR   | NR    | NR   | NR   | NR   | NR    |
| 1957                                      | P     | 1.42 | .09  | 1.34 | .04  | .22  | .42                              | 2.40 | 4.57 | .02   | 1.29 | .07  | .28  | 12.16 |
|                                           | Q     | NR   | NR   | NR   | NR   | NR   | NR                               | NR   | .53  | 0     | 0    | 0    | 0    | Inc.  |
| 1958                                      | P     | 0    | 1.11 | 1.88 | .61  | .02  | .23                              | 1.32 | 4.91 | 1.92  | .94  | .39  | 0    | 13.33 |
|                                           | Q     | 0    | 0    | 0    | 0    | 0    | .01                              | 0    | .35  | .01   | 0    | 0    | 0    | .37   |
| 1959                                      | P     | 0    | .42  | 0    | .07  | 0    | .88                              | 4.38 | 3.71 | .58   | 1.24 | .84  | .88  | 13.00 |
|                                           | Q     | 0    | 0    | 0    | 0    | 0    | 0                                | .24  | .03  | 0     | 0    | 0    | 0    | .27   |
| Normal                                    | P     | .86  | .82  | .61  | .29  | .20  | .51                              | 3.68 | 3.50 | 1.53  | .64  | .63  | .87  | 14.14 |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS |                   |        |                                           |        |         |        | Tombstone, Arizona Watershed W-1 |        |          |        |       |        |        |        |        |        |
|-------------------------------------------------------------------------------------------------------------------------|-------------------|--------|-------------------------------------------|--------|---------|--------|----------------------------------|--------|----------|--------|-------|--------|--------|--------|--------|--------|
| YEAR                                                                                                                    | MAXIMUM DISCHARGE |        | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |        |         |        |                                  |        |          |        |       |        |        |        |        |        |
|                                                                                                                         |                   |        | 1 hour                                    |        | 2 hours |        | 6 hours                          |        | 12 hours |        | 1 day |        | 2 days |        | 8 days |        |
|                                                                                                                         | Date              | Rate   | Date                                      | Vol.   | Date    | Vol.   | Date                             | Vol.   | Date     | Vol.   | Date  | Vol.   | Date   | Vol.   | Date   | Vol.   |
| 1954                                                                                                                    | Inc.              |        |                                           |        |         |        |                                  |        |          |        |       |        |        |        |        |        |
| 1955                                                                                                                    | NR                |        |                                           |        |         |        |                                  |        |          |        |       |        |        |        |        |        |
| 1956                                                                                                                    | NR                |        |                                           |        |         |        |                                  |        |          |        |       |        |        |        |        |        |
| 1957                                                                                                                    | 8-17              | 0.5360 | 8-17                                      | 0.3186 | 8-17    | 0.3729 | 8-17                             | 0.4039 | 8-17     | 0.4039 | 8-17  | 0.4039 | 8-17   | 0.4039 | 8-17   | 0.4158 |
| 1958                                                                                                                    | 8-16              | .1635  | 8-16                                      | .0896  | 8-16    | .1335  | 8-16                             | .1678  | 8-16     | .1678  | 8-16  | .1678  | 8-16   | .1678  | 8-14   | .2780  |
| 1959                                                                                                                    | 7-26              | .1328  | 7-26                                      | .0865  | 7-26    | .1330  | 7-26                             | .1730  | 7-26     | .1752  | 7-26  | .1752  | 7-26   | .1752  | 7-26   | .2034  |

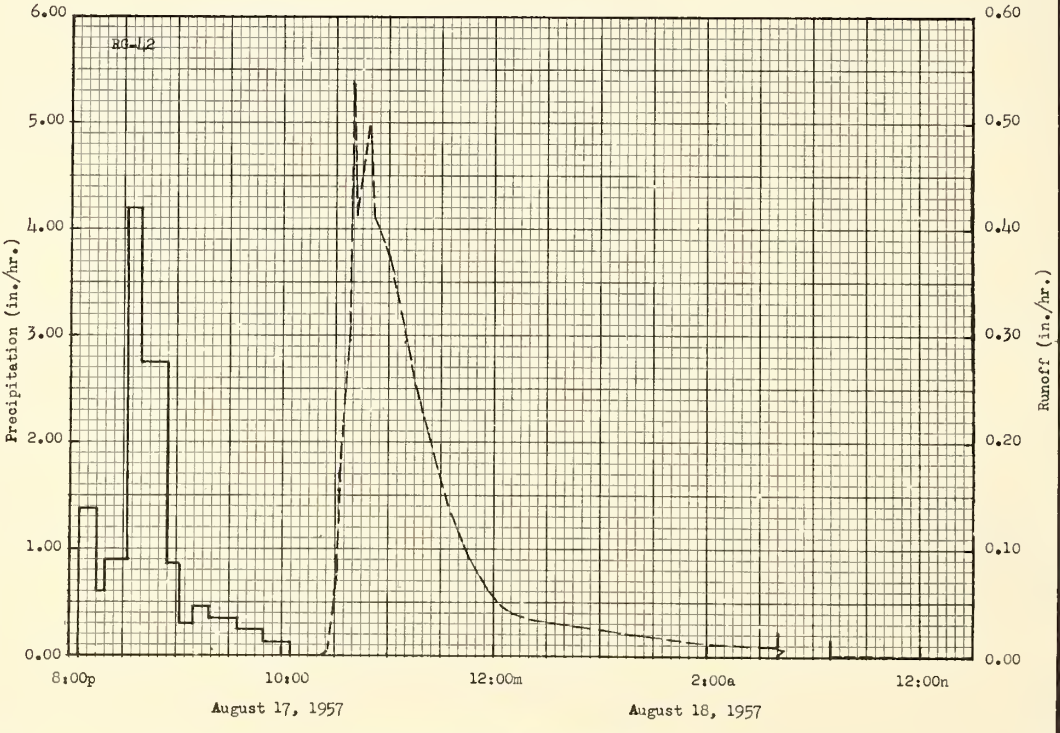
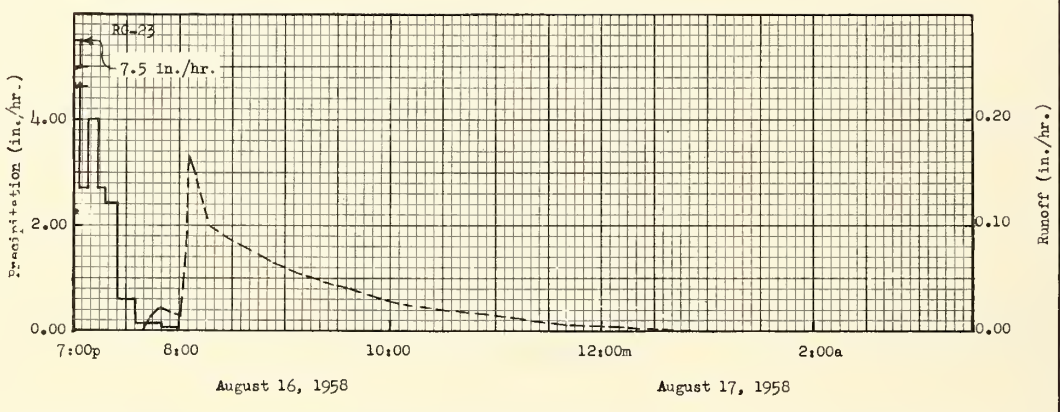
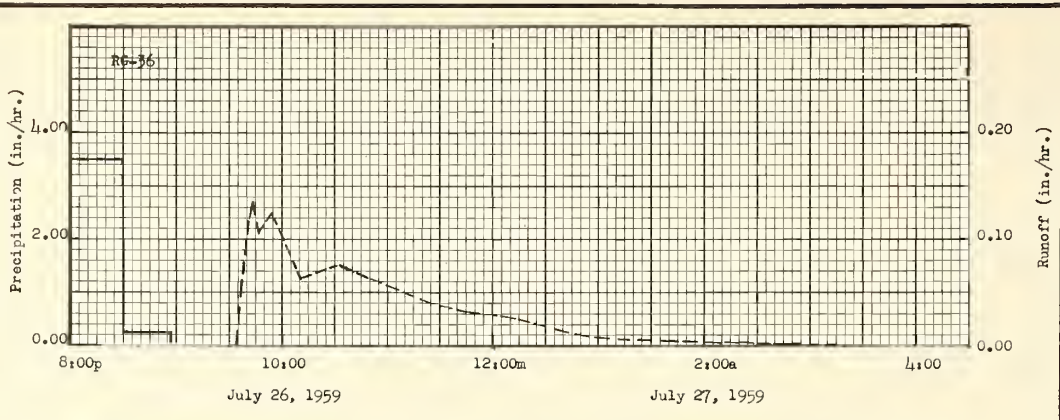
Notes: Quality of record: P, poor in 1954; fair in 1955; good, 1956 through 1959. Q, incomplete in 1954 and 1957; no record in 1955 and 1956; poor in 1958 and 1959. Monthly P is arithmetic average of gages. Normal P based on 60 years record (1897-1957), USWB Station, Tombstone, Arizona.

| SELECTED RUNOFF EVENTS                                                                                                                                                                                                                                            |                   |                 |               |                   |               | Tombstone, Arizona Watershed W-1 |              |               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------------|---------------|-------------------|---------------|----------------------------------|--------------|---------------|
| Antecedent conditions                                                                                                                                                                                                                                             |                   |                 | Rainfall      |                   |               | Runoff                           |              |               |
| Date                                                                                                                                                                                                                                                              | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time                    | Rate (in/hr) | Acc. (inches) |
| <u>Event of August 17, 1957</u>                                                                                                                                                                                                                                   |                   |                 |               |                   |               |                                  |              |               |
| <u>Raingage 29</u>                                                                                                                                                                                                                                                |                   |                 |               |                   |               |                                  |              |               |
| 7-19-57                                                                                                                                                                                                                                                           | 0.42              | NR              | 8-17-57       | Raingage          | 29            | 8-17-57                          |              |               |
| 7-24                                                                                                                                                                                                                                                              | .13               | NR              | 8:48p         | 0                 | 0             | 10:23p                           | 0            | 0             |
| 7-25                                                                                                                                                                                                                                                              | .02               | NR              | 9:05          | 4.66              | 1.32          | :24                              | .0005        | 0             |
| 7-26                                                                                                                                                                                                                                                              | .23               | NR              | :22           | .46               | 1.45          | :26                              | .0021        | 0             |
| 7-29                                                                                                                                                                                                                                                              | 1.01              | NR              | :25           | 2.00              | 1.55          | :27                              | .0157        | .0002         |
| 7-31                                                                                                                                                                                                                                                              | .04               | NR              | :30           | .60               | 1.60          | :28                              | .0358        | .0005         |
| 8-2                                                                                                                                                                                                                                                               | 1.25              | NR              | :35           | 1.44              | 1.72          | :30                              | .0506        | .0019         |
| 8-5                                                                                                                                                                                                                                                               | 1.00              | NR              | :48           | .18               | 1.76          | :32                              | .0753        | .0040         |
| 8-8                                                                                                                                                                                                                                                               | .72               | 0.08            | :50           | .90               | 1.79          | :33                              | .1547        | .0059         |
| 8-9                                                                                                                                                                                                                                                               | .28               | 0               | 10:05         | .08               | 1.81          | :35                              | .2152        | .0121         |
| 8-12                                                                                                                                                                                                                                                              | .05               | 0               | :20           | .04               | 1.82          | :37                              | .2354        | .0196         |
| 8-14                                                                                                                                                                                                                                                              | .17               | 0               |               |                   |               | :38                              | .2959        | .0240         |
| 8-16                                                                                                                                                                                                                                                              | .34               | 0               |               |                   |               | :39                              | .4035        | .0298         |
|                                                                                                                                                                                                                                                                   |                   |                 |               |                   |               | :40                              | .5380        | .0376         |
|                                                                                                                                                                                                                                                                   |                   |                 |               |                   |               | :42                              | .4116        | .0534         |
| <u>Raingage 42</u>                                                                                                                                                                                                                                                |                   |                 |               |                   |               |                                  |              |               |
| 7-19-57                                                                                                                                                                                                                                                           | 0.13              |                 | 8-17-57       | Raingage          | 42            | :48                              | .4976        | .0989         |
| 7-24                                                                                                                                                                                                                                                              | .59               |                 | 8:05p         | 0                 | 0             | :52                              | .4116        | .1292         |
| 7-25                                                                                                                                                                                                                                                              | .10               |                 | :15           | 1.38              | .23           | 11:00                            | .3766        | .1817         |
| 7-26                                                                                                                                                                                                                                                              | .17               |                 | :21           | .60               | .34           | :15                              | .2556        | .2607         |
| 7-29                                                                                                                                                                                                                                                              | .58               |                 | :33           | .90               | .52           | :30                              | .1695        | .3139         |
| 7-31                                                                                                                                                                                                                                                              | .35               |                 | :40           | 4.20              | 1.01          | :40                              | .1130        | .3374         |
| 8-2                                                                                                                                                                                                                                                               | 1.18              |                 | :55           | 2.76              | 1.70          | :50                              | .0780        | .3533         |
| 8-5                                                                                                                                                                                                                                                               | .95               |                 | 9:02          | .86               | 1.80          | 8-18-57                          |              |               |
| 8-7                                                                                                                                                                                                                                                               | .05               |                 | :10           | .30               | 1.84          | 12:16a                           | .0358        | .3780         |
| 8-8                                                                                                                                                                                                                                                               | .98               |                 | :19           | .47               | 1.91          | :26                              | .0280        | .3833         |
| 8-9                                                                                                                                                                                                                                                               | .33               |                 | :35           | .34               | 2.00          | 1:08                             | .0213        | .4006         |
| 8-11                                                                                                                                                                                                                                                              | .10               |                 | :50           | .24               | 2.06          | :50                              | .0121        | .4123         |
| 8-14                                                                                                                                                                                                                                                              | .18               |                 | 10:05         | .12               | 2.09          | 2:40                             | .0073        | .4204         |
| 8-16                                                                                                                                                                                                                                                              | .08               |                 |               |                   |               | 2:55                             | .0078        | .4223         |
|                                                                                                                                                                                                                                                                   |                   |                 |               |                   |               | 3:50                             | .0055        | .4284         |
|                                                                                                                                                                                                                                                                   |                   |                 |               |                   |               |                                  |              |               |
|                                                                                                                                                                                                                                                                   |                   |                 |               |                   |               | 5:20                             | .0051        | .4364         |
|                                                                                                                                                                                                                                                                   |                   |                 |               |                   |               | 7:00                             | .0027        | .4429         |
|                                                                                                                                                                                                                                                                   |                   |                 |               |                   |               | 10:00                            | .0005        | .4477         |
|                                                                                                                                                                                                                                                                   |                   |                 |               |                   |               | 12:00n                           | 0            | .4481         |
|                                                                                                                                                                                                                                                                   |                   |                 |               |                   |               |                                  |              |               |
| <p><b>WATERSHED CONDITIONS:</b> Includes watersheds 2,3,4,65. 65% of area supports desert shrubs (Whitehorn, creosotebush, tarbush) with 23% cover and 2% grass cover; 35% is grassland with approximately 20% grass cover (crown spread) and 5% shrub cover.</p> |                   |                 |               |                   |               |                                  |              |               |

Notes: To convert runoff in in/hr to cfs, multiply by 37,210.

| SELECTED RUNOFF EVENTS                                                                                                                                                                                                                                                |                   |                 |               |                   |               | Tombstone, Arizona Watershed W-1 |              |               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------------|---------------|-------------------|---------------|----------------------------------|--------------|---------------|
| Antecedent conditions                                                                                                                                                                                                                                                 |                   |                 | Rainfall      |                   |               | Runoff                           |              |               |
| Date                                                                                                                                                                                                                                                                  | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time                    | Rate (in/hr) | Acc. (inches) |
| <u>Event of August 16, 1958</u>                                                                                                                                                                                                                                       |                   |                 |               |                   |               |                                  |              |               |
| <u>Raingage 23</u>                                                                                                                                                                                                                                                    |                   |                 |               |                   |               |                                  |              |               |
| 7-14-58                                                                                                                                                                                                                                                               | 0.32              | 0               | 8-16-58       | Raingage          | 23            | 8-16-58                          |              |               |
| 7-16                                                                                                                                                                                                                                                                  | .03               | 0               | 7:00p         | 0                 | 0             | 7:40p                            | 0            | 0             |
| 7-23                                                                                                                                                                                                                                                                  | .07               | 0               | :04           | 7.50              | .50           | :44                              | .0132        | .0004         |
| 7-24                                                                                                                                                                                                                                                                  | .15               | 0               | :08           | 2.70              | .68           | :50                              | .0229        | .0022         |
| 7-29                                                                                                                                                                                                                                                                  | .68               | 0               | :14           | 4.00              | 1.08          | 8:02                             | .0147        | .0080         |
| 8-1                                                                                                                                                                                                                                                                   | .08               | 0               | :20           | 2.70              | 1.35          | :07                              | .1641        | .0155         |
| 8-2                                                                                                                                                                                                                                                                   | .35               | 0               | :26           | 2.40              | 1.59          | :17                              | .0995        | .0375         |
| 8-4                                                                                                                                                                                                                                                                   | .02               | 0               | :36           | .60               | 1.69          | :35                              | .0807        | .0645         |
| 8-5                                                                                                                                                                                                                                                                   | .20               | 0               | :49           | .18               | 1.73          | :50                              | .0672        | .0830         |
| 8-6                                                                                                                                                                                                                                                                   | .38               | 0               | 8:33          | .02               | 1.75          | 9:05                             | .0573        | .0986         |
| 8-8                                                                                                                                                                                                                                                                   | .38               | 0               | :48           | .24               | 1.81          | :20                              | .0487        | .1118         |
| 8-10                                                                                                                                                                                                                                                                  | .28               | 0               | 9:22          | .04               | 1.83          | :35                              | .0404        | .1230         |
| 8-14                                                                                                                                                                                                                                                                  | 1.25              | .08             |               |                   |               | :50                              | .0339        | .1323         |
|                                                                                                                                                                                                                                                                       |                   |                 |               |                   |               | 10:05                            | .0264        | .1399         |
|                                                                                                                                                                                                                                                                       |                   |                 |               |                   |               | :20                              | .0231        | .1461         |
| <u>Raingage 27</u>                                                                                                                                                                                                                                                    |                   |                 |               |                   |               |                                  |              |               |
| 7-24-58                                                                                                                                                                                                                                                               | 0.10              |                 | 8-16-58       | Raingage          | 27            | :35                              | .0195        | .1514         |
| 7-29                                                                                                                                                                                                                                                                  | .61               |                 | 6:50p         | 0                 | 0             | 11:05                            | .0132        | .1596         |
| 8-1                                                                                                                                                                                                                                                                   | .47               |                 | 7:00          | 1.92              | .32           | :35                              | .0075        | .1648         |
| 8-2                                                                                                                                                                                                                                                                   | .35               |                 | :10           | 4.56              | 1.08          | 8-17-58                          |              |               |
| 8-5                                                                                                                                                                                                                                                                   | .20               |                 | :20           | 1.02              | 1.25          | 12:17a                           | .0031        | .1685         |
| 8-6                                                                                                                                                                                                                                                                   | .08               |                 | :30           | .12               | 1.27          | 1:00                             | .0011        | .1700         |
| 8-8                                                                                                                                                                                                                                                                   | .30               |                 | 8:20          | 0                 | 1.27          | 2:00                             | .0001        | .1706         |
| 8-10                                                                                                                                                                                                                                                                  | .38               |                 | :38           | .17               | 1.32          | 3:00                             | 0            | .1707         |
| 8-11                                                                                                                                                                                                                                                                  | .06               |                 | 9:10          | .04               | 1.34          |                                  |              |               |
| 8-14                                                                                                                                                                                                                                                                  | 1.53              |                 | :20           | .36               | 1.40          |                                  |              |               |
| <b>WATERSHED CONDITIONS:</b> Includes watersheds 2, 3, 4, & 5, 65 percent of area supports desert shrubs (Whitehorn, creosotebush, tarbush) with 23% cover and 2% grass cover; 35% is grassland with approximately 20% grass cover (crown spread) and 5% shrub cover. |                   |                 |               |                   |               |                                  |              |               |
| <u>Event of July 26, 1959</u>                                                                                                                                                                                                                                         |                   |                 |               |                   |               |                                  |              |               |
| <u>Raingage 36</u>                                                                                                                                                                                                                                                    |                   |                 |               |                   |               |                                  |              |               |
| 7-1-59                                                                                                                                                                                                                                                                | 0.10              | 0               | 7-26-59       | Raingage          | 36            | 7-26-59                          |              |               |
| 7-4                                                                                                                                                                                                                                                                   | .18               | 0               | 8:00p         | 0                 | 0             | 9:34p                            | 0            | C             |
| 7-8                                                                                                                                                                                                                                                                   | .68               | 0               | :30           | 3.52              | 1.76          | :40                              | .0942        | .0047         |
| 7-9                                                                                                                                                                                                                                                                   | .04               | 0               | :53           | .24               | 1.85          | :44                              | .1332        | .0123         |
| 7-13                                                                                                                                                                                                                                                                  | .44               | 0               | 9:59          | .02               | 1.87          | :47                              | .1022        | .0181         |
| 7-15                                                                                                                                                                                                                                                                  | .21               | 0               | 10:40         | .03               | 1.89          | :54                              | .1251        | .0313         |
| 7-16                                                                                                                                                                                                                                                                  | .33               | 0               |               |                   |               | :57                              | .1103        | .0372         |
| 7-17                                                                                                                                                                                                                                                                  | .02               | 0               |               |                   |               | 10:10                            | .0632        | .0593         |
| 7-18                                                                                                                                                                                                                                                                  | .03               | 0               |               |                   |               | :19                              | .0699        | .0693         |
| 7-20                                                                                                                                                                                                                                                                  | 1.94              | 0               |               |                   |               | :33                              | .0753        | .0862         |
| 7-21                                                                                                                                                                                                                                                                  | 0                 | .05             |               |                   |               | 11:18                            | .0404        | .1296         |
| 7-23                                                                                                                                                                                                                                                                  | .15               | 0               |               |                   |               | :43                              | .0320        | .1447         |
|                                                                                                                                                                                                                                                                       |                   |                 |               |                   |               | :56                              | .0301        | .1514         |
|                                                                                                                                                                                                                                                                       |                   |                 |               |                   |               | 7-27-59                          |              |               |
|                                                                                                                                                                                                                                                                       |                   |                 |               |                   |               | 12:11a                           | .0285        | .1587         |
| <u>Raingage 45</u>                                                                                                                                                                                                                                                    |                   |                 |               |                   |               |                                  |              |               |
| 7-1-59                                                                                                                                                                                                                                                                | 0.18              |                 | 7-26-59       | Raingage          | 45            | :17                              | .0217        | .1612         |
| 7-4                                                                                                                                                                                                                                                                   | .03               |                 | 7:51p         | 0                 | 0             | :37                              | .0164        | .1675         |
| 7-13                                                                                                                                                                                                                                                                  | .30               |                 | 8:04          | 5.54              | 1.20          | 2:36                             | .0019        | .1859         |
| 7-15                                                                                                                                                                                                                                                                  | .52               |                 | :34           | .18               | 1.29          | 3:41                             | .0004        | .1872         |
| 7-17                                                                                                                                                                                                                                                                  | .13               |                 |               |                   |               | 5:11                             | 0            | .1875         |
| 7-18                                                                                                                                                                                                                                                                  | .08               |                 |               |                   |               |                                  |              |               |
| 7-20                                                                                                                                                                                                                                                                  | .25               |                 |               |                   |               |                                  |              |               |
| 7-21                                                                                                                                                                                                                                                                  | 1.28              |                 |               |                   |               |                                  |              |               |
| 7-23                                                                                                                                                                                                                                                                  | 0                 |                 |               |                   |               |                                  |              |               |
| <b>WATERSHED CONDITIONS:</b> Includes watersheds 2,3,4,6,5. 65% of area supports desert shrubs (Whitehorn, creosotebush, tarbush) with 23% cover and 2% grass cover; 35% is grassland with approximately 20% grass cover (crown spread) and 5% shrub cover.           |                   |                 |               |                   |               |                                  |              |               |
| <b>Notes:</b> To convert runoff in in/hr to cfs, multiply by 37,210.                                                                                                                                                                                                  |                   |                 |               |                   |               |                                  |              |               |

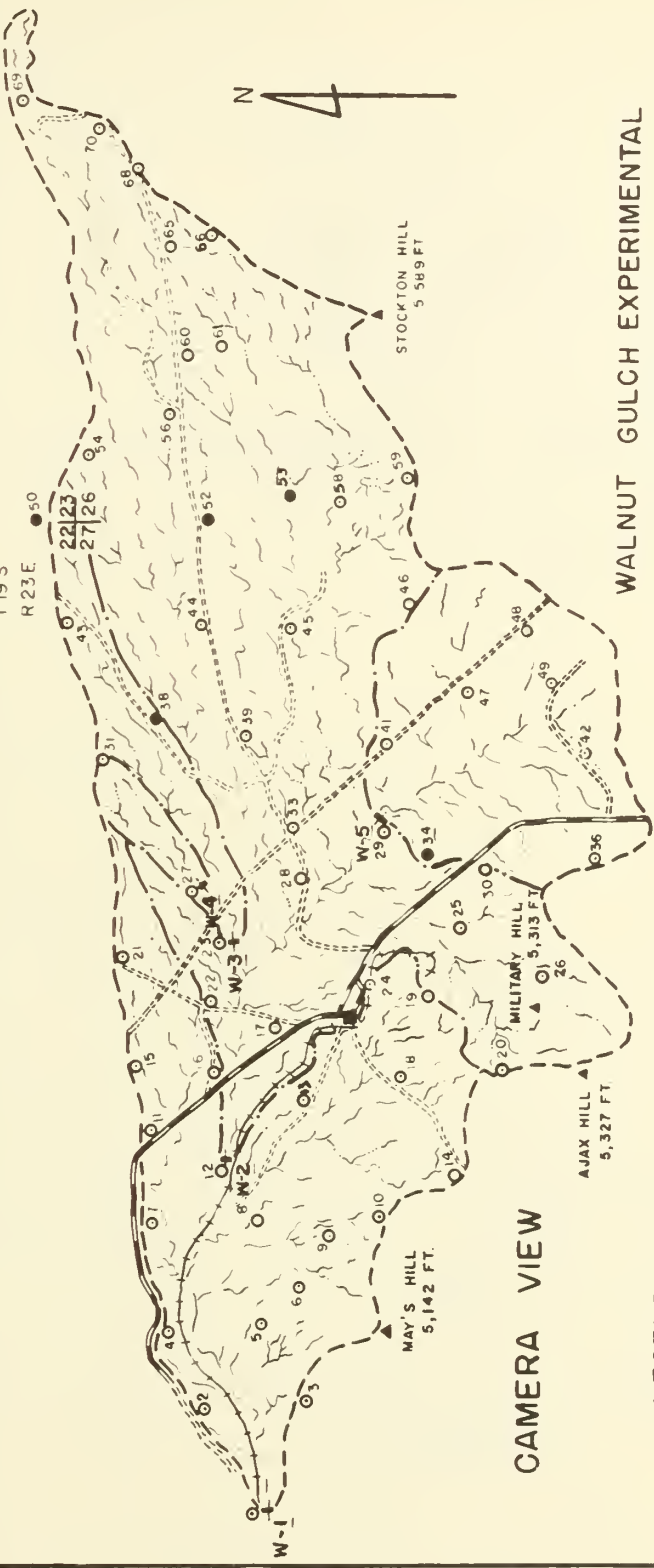




TOMBSTONE, ARIZONA Watershed W-1



T 19 S  
R 23 E



CAMERA VIEW

WALNUT GULCH EXPERIMENTAL  
WATERSHED

LEGEND

- WATERSHED BOUNDARY
- - - SUBWATERSHED BOUNDARY
- ✕ RUNOFF MEASURING STATION
- RECORDING RAINGAGES
- STANDARD RAINGAGES
- SECONDARY ROADS
- RAILROAD
- == HIGHWAY



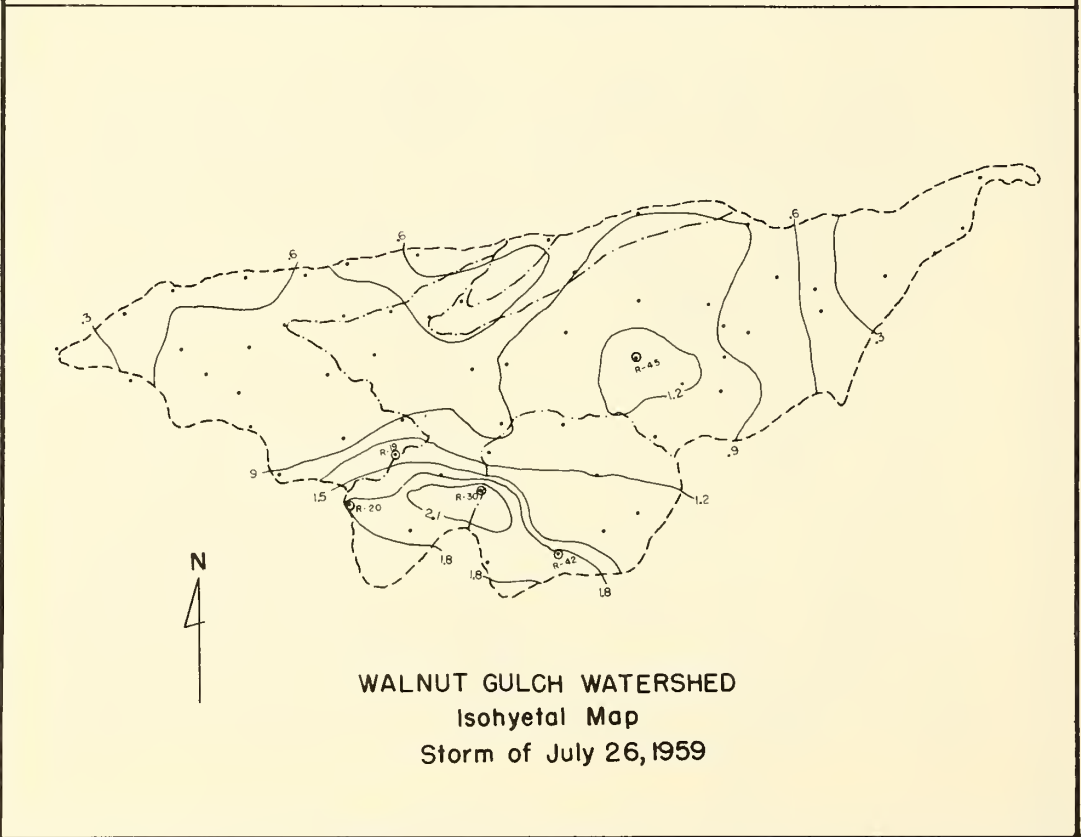
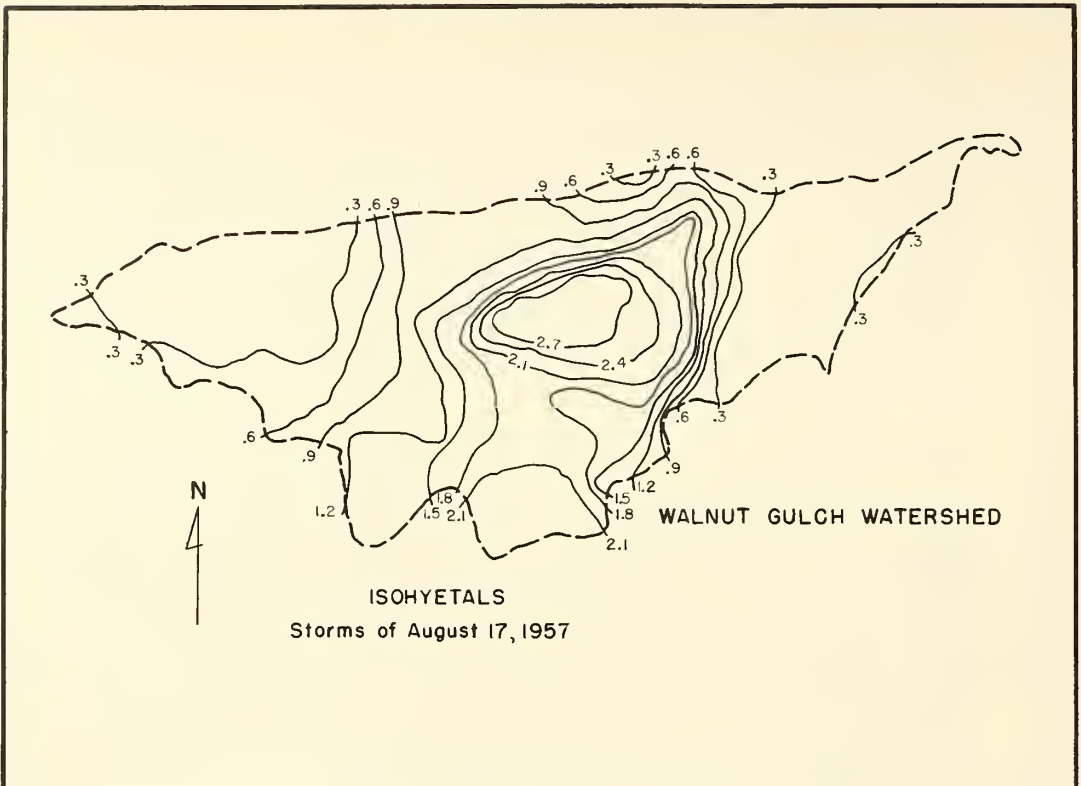
Scale in Miles

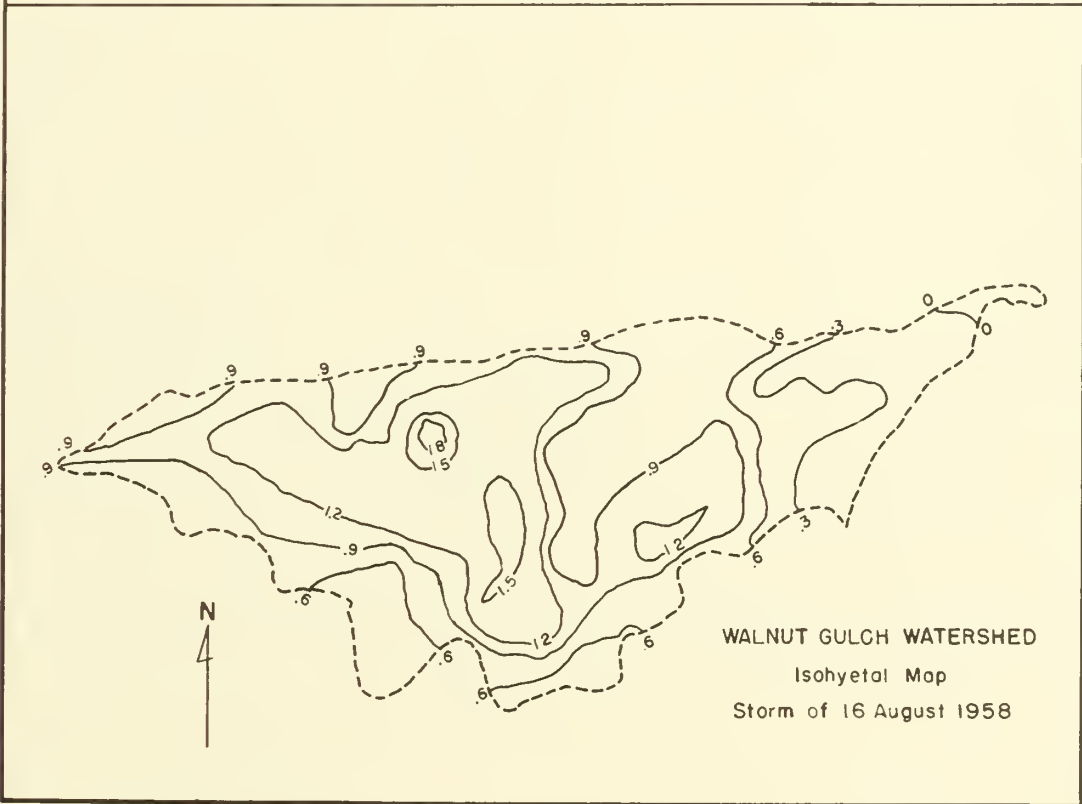
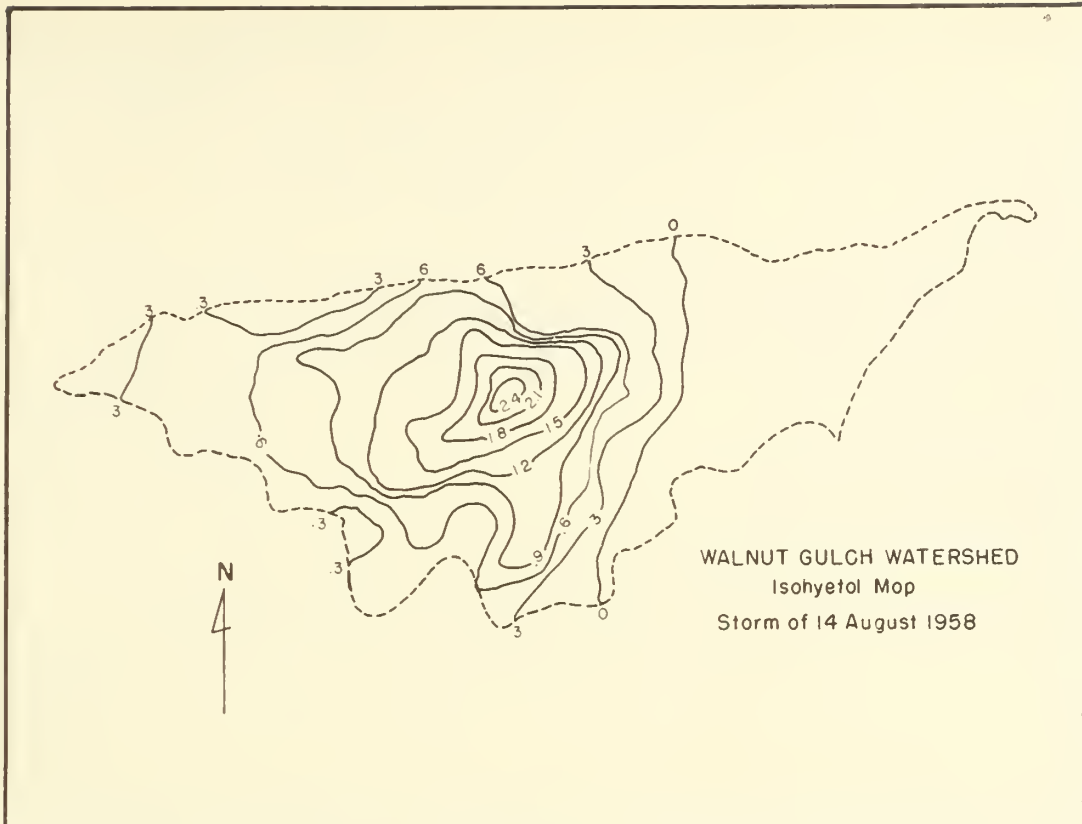
TOMBSTONE, ARIZONA

WATERSHEDS W-1, 2, 3, 4 AND 5

(WALNUT GULCH EXPERIMENTAL WATERSHED)

Note: Slope of principal channel approximately 1%





## TOMBSTONE, ARIZONA Watershed W-2

**LOCATION:** Cochise County; at Tombstone; Walnut Gulch, tributary of the San Pedro River.

**AREA:** 43.9 sq. mi. (28,100 ac.) **SHAPE:** Butterfly, approximately 13 miles long by 6 miles wide.

**SLOPES:** Not available

Aspect W

**SOILS:** Tombstone, a gravelly loam, calcareous throughout, moderately permeable surface and subsoil -- 35%. Earp, residual on old fan material that has been consolidated to a lime conglomerate, with rhyolite the chief constituent; noncalcareous surface, moderately calcareous subsoil; moderately permeable -- 30%. Boothill, a stony clay loam developed on andesite extrusions; calcareous throughout the profile; moderately permeable -- 8%. Schiefelin, developed on limestone conglomerate; calcareous surface horizon underlain by consolidated caliche -- 8%. Tortugas, developed on limestone; calcareous surface horizon underlain by consolidated caliche -- 6%. Remaining 13% accounted for by eight moderately permeable soils.

**EROSION:** 1 - 45; 2 - 50%; 3 - 5%.

**LAND CAPABILITY:** V 50%; VI 50%.

**SURFACE DRAINAGE:** Good; length of principal drainage way 17 miles.

**CHARACTER OF FLOW:** Ephemeral, continuous.

**INSTRUMENTATION:** Runoff - critical depth flume, recorder with 8 hr. chart; Precipitation - 51 recording raingages, 24 hr. charts, 6 standard gages.

**WATERSHED CONDITIONS:** Includes watersheds 3, 4, 5. 55% of area supports desert shrubs (whitethorn, tarbush, creosotebush) with 23% cover and 2% grass cover; 45% is grassland, with 20% cover (crown spread) of grasses and 5% cover of shrubs.

**GENERALLY REPRESENTS:** Desert grassland ranges in the Southeastern Arizona Basin and Range resource area (D-41).

| MONTHLY PRECIPITATION AND RUNOFF (Inches) |        |        |        |      |      |      |      | Tombstone, Arizona Watershed W-2 |       |      |      |      |       |
|-------------------------------------------|--------|--------|--------|------|------|------|------|----------------------------------|-------|------|------|------|-------|
| Month                                     | Jan.   | Feb.   | Mar.   | Apr. | May  | June | July | Aug.                             | Sept. | Oct. | Nov. | Dec. | Year  |
| 1954                                      | P 0.55 | Q 0.22 | Q 0.34 | 0    | 0.58 | 1.37 | 2.11 | 5.29                             | 0.57  | 0.87 | 0    | 0.02 | 11.92 |
|                                           | Q 0    | 0      | 0      | 0    | 0    | .01  | .04  | .22                              | 0     | .05  | 0    | 0    | .32   |
| 1955                                      | P 1.38 | .25    | .35    | 0    | .03  | .41  | 8.40 | 3.71                             | .22   | .16  | .06  | .24  | 15.21 |
|                                           | Q 0    | 0      | 0      | 0    | 0    | 0    | .89  | .10                              | 0     | 0    | 0    | 0    | .99   |
| 1956                                      | P .65  | .30    | 0      | .17  | .01  | .59  | 4.49 | .91                              | .01   | .24  | .05  | .15  | 7.57  |
|                                           | Q 0    | 0      | 0      | 0    | 0    | 0    | .05  | 0                                | 0     | 0    | 0    | 0    | .05   |
| 1957                                      | P 1.53 | .09    | 1.34   | .05  | .23  | .45  | 2.27 | 4.92                             | .02   | 1.40 | .07  | .29  | 12.66 |
|                                           | Q 0    | 0      | 0      | 0    | 0    | 0    | 0    | .79                              | 0     | 0    | 0    | 0    | .79   |
| 1958                                      | P 0    | 1.16   | 1.95   | .63  | .01  | .14  | 1.43 | 4.92                             | 2.05  | .96  | .38  | 0    | 13.63 |
|                                           | Q NR   | NR     | NR     | NR   | NR   | NR   | NR   | NR                               | NR    | NR   | NR   | NR   | NR    |
| 1959                                      | P 0    | .40    | 0      | .07  | 0    | .95  | 4.73 | 3.71                             | .59   | 1.18 | .86  | .88  | 13.37 |
|                                           | Q 0    | 0      | 0      | 0    | 0    | 0    | .28  | .12                              | .01   | 0    | 0    | 0    | .41   |
| Normal                                    | P .86  | .82    | .61    | .29  | .20  | .51  | 3.68 | 3.50                             | 1.53  | .64  | .63  | .87  | 14.14 |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS |                   |        |                                           |        |         |        |         | Tombstone, Arizona Watershed W-2 |          |        |       |        |        |        |        |        |
|-------------------------------------------------------------------------------------------------------------------------|-------------------|--------|-------------------------------------------|--------|---------|--------|---------|----------------------------------|----------|--------|-------|--------|--------|--------|--------|--------|
| YEAR                                                                                                                    | MAXIMUM DISCHARGE |        | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |        |         |        |         |                                  |          |        |       |        |        |        |        |        |
|                                                                                                                         |                   |        | 1 hour                                    |        | 2 hours |        | 6 hours |                                  | 12 hours |        | 1 day |        | 2 days |        | 8 days |        |
|                                                                                                                         | Date              | Rate   | Date                                      | Vol.   | Date    | Vol.   | Date    | Vol.                             | Date     | Vol.   | Date  | Vol.   | Date   | Vol.   | Date   | Vol.   |
| 1954                                                                                                                    | 10-4              | 0.1024 | 10-4                                      | 0.0285 | 10-4    | 0.0470 | 10-4    | 0.0534                           | 10-4     | 0.0534 | 8-3   | 0.0713 | 8-3    | 0.0713 | 8-3    | 0.1202 |
| 1955                                                                                                                    | 7-25              | .4448  | 7-25                                      | .2462  | 7-25    | .3565  | 7-25    | .4343                            | 7-25     | .4343  | 7-25  | .4774  | 7-25   | .5227  | 7-19   | .8394  |
| 1956                                                                                                                    | 7-19              | .0149  | 7-19                                      | .0084  | 7-19    | .0133  | 7-19    | .0181                            | 7-19     | .0182  | 7-19  | .0182  | 7-19   | .0255  | 7-19   | .0298  |
| 1957                                                                                                                    | 8-17              | .6707  | 8-17                                      | .4315  | 8-17    | .5845  | 8-17    | .6682                            | 8-17     | .6682  | 8-17  | .6682  | 8-17   | .6682  | 8-10   | .6703  |
| 1958                                                                                                                    | NR                |        |                                           |        |         |        |         |                                  |          |        |       |        |        |        |        |        |
| 1959                                                                                                                    | 7-26              | .1298  | 7-26                                      | .1009  | 7-26    | .1397  | 7-26    | .1692                            | 7-26     | .1692  | 7-26  | .1692  | 7-26   | .1692  | 7-20   | .2260  |

Notes: Quality of record: P, poor in 1954; fair in 1955; good, 1956 through 1959. Q, fair in 1954; poor, 1955 through 1957; no record 1958; good in 1959. Monthly P is arithmetic average of raingages. Normal P based on 60 years record (1897-1957), USWB Station, Tombstone, Arizona.

| SELECTED RUNOFF EVENTS                                                                                                                                                                                                                                          |                   |                 | Tombstone, Arizona Watershed W-2 |                   |               |               |              |               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------------|----------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions                                                                                                                                                                                                                                           |                   |                 | Rainfall                         |                   |               | Runoff        |              |               |
| Date                                                                                                                                                                                                                                                            | Rainfall (inches) | Runoff (inches) | Date and time                    | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of October 4, 1954</u>                                                                                                                                                                                                                                 |                   |                 |                                  |                   |               |               |              |               |
| Raingage 36<br>9-11-54                                                                                                                                                                                                                                          | 0.07              | 0               | 10-4-54                          | Raingage          | 36            | 10-4-54       |              |               |
|                                                                                                                                                                                                                                                                 |                   |                 | 5:55p                            | 0                 | 0             | 7:48p         | 0            | 0             |
|                                                                                                                                                                                                                                                                 |                   |                 | 6:15                             | .06               | .02           | :50           | .0102        | .0002         |
|                                                                                                                                                                                                                                                                 |                   |                 | :22                              | 6.26              | .75           | :55           | .0379        | .0022         |
|                                                                                                                                                                                                                                                                 |                   |                 | :36                              | 3.21              | 1.50          | 8:00          | .0688        | .0067         |
|                                                                                                                                                                                                                                                                 |                   |                 | 6:45                             | 7.12              | 2.47          | :05           | .0918        | .0134         |
|                                                                                                                                                                                                                                                                 |                   |                 | 10:18                            | .01               | 2.60          | :10           | .0579        | .0196         |
|                                                                                                                                                                                                                                                                 |                   |                 |                                  |                   |               | :15           | .0330        | .0234         |
|                                                                                                                                                                                                                                                                 |                   |                 |                                  |                   |               | :20           | .0254        | .0258         |
|                                                                                                                                                                                                                                                                 |                   |                 |                                  |                   |               | :30           | .0196        | .0296         |
|                                                                                                                                                                                                                                                                 |                   |                 |                                  |                   |               | 9:00          | .0201        | .0370         |
|                                                                                                                                                                                                                                                                 |                   |                 |                                  |                   |               | 10:00         | .0056        | .0499         |
|                                                                                                                                                                                                                                                                 |                   |                 |                                  |                   |               | 11:00         | .0028        | .0541         |
|                                                                                                                                                                                                                                                                 |                   |                 |                                  |                   |               | 12:00m        | .0011        | .0561         |
|                                                                                                                                                                                                                                                                 |                   |                 |                                  |                   |               | 10-5-54       |              |               |
|                                                                                                                                                                                                                                                                 |                   |                 |                                  |                   |               | 2:00a         | .0002        | .0575         |
|                                                                                                                                                                                                                                                                 |                   |                 |                                  |                   |               | 6:00          | 0            | .0579         |
| <u>Event of July 19, 1955</u>                                                                                                                                                                                                                                   |                   |                 |                                  |                   |               |               |              |               |
| Raingage 23<br>7-12-55                                                                                                                                                                                                                                          | 0.93              | 0               | 7-19-55                          | Raingage          | 23            | 7-19-55       |              |               |
| 7-14                                                                                                                                                                                                                                                            | 0                 | 0               | 9:05p                            | 0                 | 0             | 10:18p        | 0            | 0             |
| 7-15                                                                                                                                                                                                                                                            | 0                 | 0               | :10                              | .84               | .07           | :23           | .0935        | .0039         |
| 7-17                                                                                                                                                                                                                                                            | 0                 | 0               | :38                              | .60               | .35           | :27           | .1853        | .0132         |
| 7-18                                                                                                                                                                                                                                                            | 0                 | 0               | :54                              | 2.11              | .90           | :32           | .1511        | .0272         |
|                                                                                                                                                                                                                                                                 |                   |                 | 10:07                            | 3.64              | 1.75          | :36           | .1836        | .0384         |
|                                                                                                                                                                                                                                                                 |                   |                 | :20                              | 1.38              | 2.05          | :52           | .0766        | .0731         |
|                                                                                                                                                                                                                                                                 |                   |                 | 11:00                            | .01               | 2.06          | :58           | .0935        | .0816         |
|                                                                                                                                                                                                                                                                 |                   |                 |                                  |                   |               | 11:07         | .0565        | .0928         |
|                                                                                                                                                                                                                                                                 |                   |                 |                                  |                   |               | :15           | .0215        | .0980         |
| Raingage 27<br>7-12-55                                                                                                                                                                                                                                          | 0.66              |                 | 7-19-55                          | Raingage          | 27            | :36           | .0083        | .1032         |
| 7-14                                                                                                                                                                                                                                                            | .21               |                 | 9:08p                            | 0                 | 0             | 7-20-55       |              |               |
| 7-15                                                                                                                                                                                                                                                            | .26               |                 | :20                              | 1.30              | .26           | 12:04a        | .0033        | .1059         |
| 7-16                                                                                                                                                                                                                                                            | .06               |                 | :25                              | 2.64              | .48           | :20           | .0019        | .1066         |
| 7-17                                                                                                                                                                                                                                                            | .05               |                 | :33                              | 1.05              | .62           | 1:10          | .0007        | .1077         |
| 7-18                                                                                                                                                                                                                                                            | .04               |                 | :50                              | .56               | .78           | 2:07          | .0003        | .1082         |
|                                                                                                                                                                                                                                                                 |                   |                 | :55                              | 6.37              | 1.31          | :45           | .0001        | .1083         |
|                                                                                                                                                                                                                                                                 |                   |                 | :58                              | 2.40              | 1.43          | 3:48          | .0000        | .1084         |
|                                                                                                                                                                                                                                                                 |                   |                 | 10:00                            | 1.50              | 1.48          | 5:15          | 0            | .1084         |
|                                                                                                                                                                                                                                                                 |                   |                 | :05                              | 4.20              | 1.83          |               |              |               |
|                                                                                                                                                                                                                                                                 |                   |                 | :08                              | 2.60              | 1.96          |               |              |               |
|                                                                                                                                                                                                                                                                 |                   |                 | :17                              | 3.87              | 2.54          |               |              |               |
|                                                                                                                                                                                                                                                                 |                   |                 | :30                              | .41               | 2.61          |               |              |               |
|                                                                                                                                                                                                                                                                 |                   |                 | :45                              | .04               | 2.62          |               |              |               |
| <p><b>WATERSHED CONDITIONS:</b> Includes watersheds 3,4,&amp;5. 55% of area supports desert shrubs (Whitehorn, tarbush, creosotebush) with 23% cover and 2% grass cover; 45% is grassland, with 20% cover (crown spread) of grasses and 5% cover of shrubs.</p> |                   |                 |                                  |                   |               |               |              |               |

Notes: To convert runoff in in/hr to cfs, multiply by 28330.



| SELECTED RUNOFF EVENTS        |                   |                 |               |                   | Tombstone, Arizona Watershed W-2 |               |              |               |
|-------------------------------|-------------------|-----------------|---------------|-------------------|----------------------------------|---------------|--------------|---------------|
| Antecedent conditions         |                   |                 | Rainfall      |                   |                                  | Runoff        |              |               |
| Date                          | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches)                    | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of July 20, 1959</u> |                   |                 |               |                   |                                  |               |              |               |
| <u>Raingage 36</u>            |                   |                 |               |                   |                                  |               |              |               |
| 6-29-59                       | 1.12              | 0               | 7-20-59       | Raingage          | 36                               | 7-20-59       |              |               |
| 7-1                           | .10               | 0               | 9:41p         | 0                 | 0                                | 10:53p        | 0            | 0             |
| 7-5                           | .18               | 0               | 10:00         | 3.48              | 1.10                             | :55           | .0004        | 0             |
| 7-8                           | .68               | 0               | :10           | 3.24              | 1.64                             | 11:00         | .0229        | .0010         |
| 7-9                           | .04               | 0               | :30           | 1.32              | 1.97                             | :05           | .0376        | .0035         |
| 7-13                          | .44               | 0               | 11:03         | .05               | 2.00                             | :10           | .0335        | .0065         |
| 7-15                          | .21               | 0               | 12:00m        | .09               | 2.09                             | :20           | .0291        | .0117         |
| 7-16                          | .33               | 0               | 7-21-59       |                   |                                  | :40           | .0220        | .0202         |
| 7-17                          | .02               | 0               | 12:50a        | .05               | 2.13                             | 12:00m        | .0179        | .0269         |
| 7-18                          | .03               | 0               |               |                   |                                  | 7-21-59       |              |               |
| <u>Raingage 45</u>            |                   |                 |               |                   |                                  | 12:20a        | .0153        | .0324         |
| 6-25-59                       | 1.75              |                 | 7-20-59       | Raingage          | 36                               | :40           | .0115        | .0369         |
| 7-1                           | .05               |                 | 9:32p         | 0                 | 0                                | 1:00          | .0083        | .0402         |
| 7-3                           | .53               |                 | :38           | 1.80              | .18                              | :30           | .0047        | .0435         |
| 7-13                          | .32               |                 | :45           | .09               | .19                              | 2:00          | .0028        | .0454         |
| 7-15                          | .25               |                 | :52           | 2.06              | .43                              | 3:00          | .0011        | .0474         |
| 7-16                          | .10               |                 | 10:10         | .30               | .52                              | 4:00          | .0004        | .0482         |
| 7-17                          | .06               |                 | :50           | .02               | .53                              | 6:00          | .0001        | .0488         |
| 7-18                          | .06               |                 | 12:00m        | .08               | .62                              | 8:00          | .0000        | .0490         |
|                               |                   |                 |               |                   |                                  | 12:00n        | 0            | .0490         |
| <u>Raingage 60</u>            |                   |                 |               |                   |                                  |               |              |               |
| 6-29-59                       | 0.55              |                 | 7-20-59       | Raingage          | 60                               |               |              |               |
| 6-30                          | .04               |                 | 9:20p         | 0                 | 0                                |               |              |               |
| 7-1                           | .18               |                 | :32           | .75               | .15                              |               |              |               |
| 7-4                           | .03               |                 | 10:00         | .11               | .20                              |               |              |               |
| 7-13                          | .30               |                 | 12:00m        | .02               | .23                              |               |              |               |
| 7-15                          | .52               |                 | 7-21-59       |                   |                                  |               |              |               |
| 7-17                          | .13               |                 | 12:15a        | .08               | .25                              |               |              |               |
| 7-18                          | .08               |                 |               |                   |                                  |               |              |               |
| <u>Event of July 21, 1959</u> |                   |                 |               |                   |                                  |               |              |               |
| <u>Same as above</u>          |                   |                 | 7-21-59       | Raingage          | 36                               | 7-21-59       |              |               |
|                               |                   |                 |               | 0                 | 0                                | 4:17p         | 0            | 0             |
|                               |                   |                 |               |                   |                                  | :18           | .0026        | 0             |
|                               |                   |                 |               |                   |                                  | :20           | .0217        | .0003         |
|                               |                   |                 |               |                   |                                  | :22           | .0348        | .0012         |
|                               |                   |                 | 7-21-59       | Raingage          | 45                               | :27           | .0446        | .0032         |
|                               |                   |                 | 2:45p         | 0                 | 0                                | :37           | .0516        | .0112         |
|                               |                   |                 | 3:10          | 1.30              | .65                              | :47           | .0412        | .0189         |
|                               |                   |                 | 3:30          | .27               | .74                              | :55           | .0301        | .0237         |
|                               |                   |                 |               |                   |                                  | 5:11          | .0205        | .0304         |
|                               |                   |                 | 7-21-59       | Raingage          | 60                               | :21           | .0173        | .0336         |
|                               |                   |                 | 2:04          | 0                 | 0                                | :35           | .0122        | .0370         |
|                               |                   |                 | :33           | 1.97              | .79                              | :48           | .0066        | .0390         |
|                               |                   |                 | :48           | .84               | 1.00                             | 6:03          | .0082        | .0408         |
|                               |                   |                 | 3:12          | .05               | 1.02                             | :40           | .0033        | .0444         |
|                               |                   |                 |               |                   |                                  |               |              |               |
|                               |                   |                 | :18           | .60               | 1.08                             | 7:10          | .0020        | .0458         |
|                               |                   |                 |               |                   |                                  | :40           | .0015        | .0467         |
|                               |                   |                 |               |                   |                                  | 8:18          | .0009        | .0475         |
|                               |                   |                 |               |                   |                                  | 9:00          | .0005        | .0480         |
|                               |                   |                 |               |                   |                                  | :36           | .0002        | .0482         |
|                               |                   |                 |               |                   |                                  |               |              |               |
|                               |                   |                 |               |                   |                                  | 10:48         | .0001        | .0485         |
|                               |                   |                 |               |                   |                                  | 11:15         | .0001        | .0486         |
|                               |                   |                 |               |                   |                                  | 7-22-59       |              |               |
|                               |                   |                 |               |                   |                                  | 10:40a        | .0000        | .0487         |
|                               |                   |                 |               |                   |                                  | 1:05          | 0            | .0487         |

**WATERSHED CONDITIONS:** Includes watersheds 3,4,&5. 55% of area supports desert shrubs (Whitehorn, tarbush, creosotebush) with 23% cover and 2% grass cover; 45% is grassland, with 20% cover (crown spread) of grasses and 5% cover of shrubs.

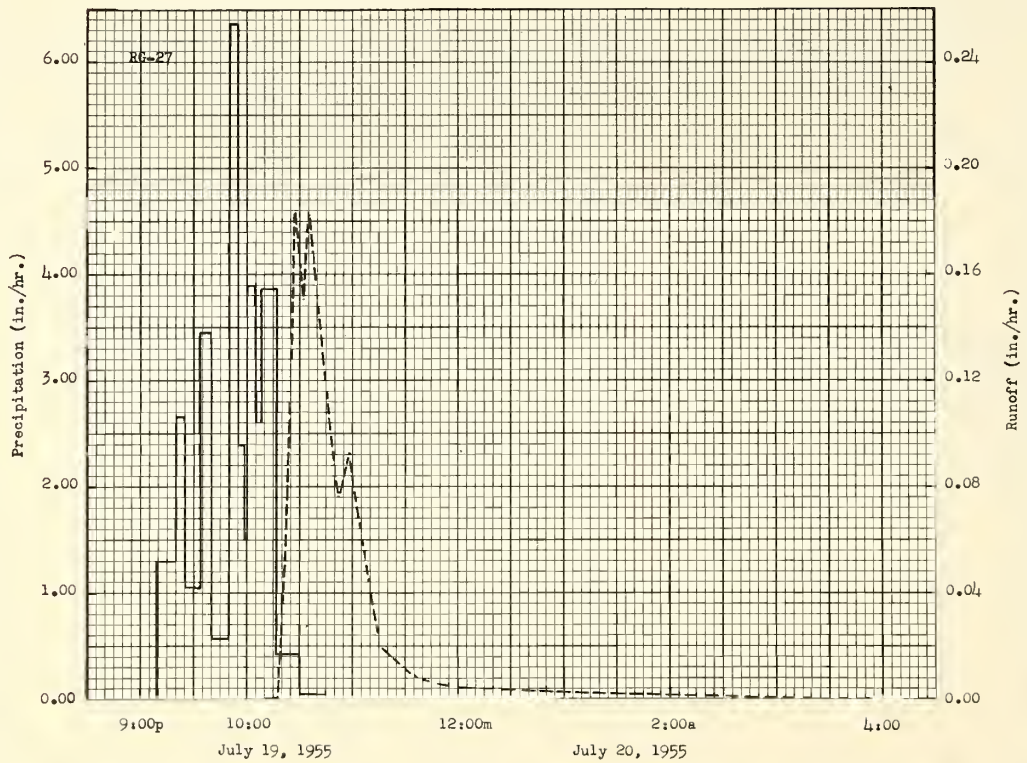
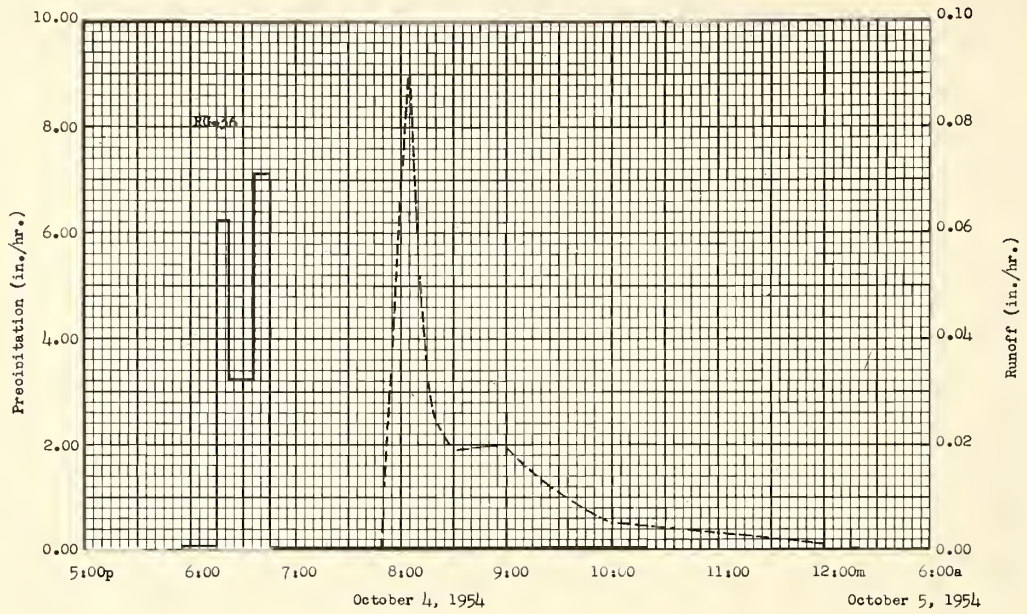
**WATERSHED CONDITIONS:** Includes watersheds 3,4,&5. 55% of area supports desert shrubs (Whitehorn, tarbush, creosotebush) with 23% cover and 2% grass cover; 45% is grassland, with 20% cover (crown spread) of grasses and 5% cover of shrubs.

**Notes:** To convert runoff in in/hr to cfs, multiply by 28,330.

| SELECTED RUNOFF EVENTS                                                                                                                                                                                                                                      |                   |                 |               | Tombstone, Arizona Watershed W-2 |               |               |              |               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------------|---------------|----------------------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions                                                                                                                                                                                                                                       |                   |                 | Rainfall      |                                  |               | Runoff        |              |               |
| Date                                                                                                                                                                                                                                                        | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr)                | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of July 26, 1959                                                                                                                                                                                                                                      |                   |                 |               |                                  |               |               |              |               |
| Raingage                                                                                                                                                                                                                                                    | 36                |                 |               |                                  |               |               |              |               |
| 7-1-59                                                                                                                                                                                                                                                      | 0.10              | 0               | 7-26-59       | Raingage                         | 36            | 7-26-59       |              |               |
| 7-4                                                                                                                                                                                                                                                         | .18               | 0               | 8:00p         | 0                                | 0             | 8:09p         | 0            | 0             |
| 7-8                                                                                                                                                                                                                                                         | .68               | 0               | :30           | 3.52                             | 1.76          | :15           | .0001        | 0             |
| 7-9                                                                                                                                                                                                                                                         | .04               | 0               | :53           | .24                              | 1.85          | :20           | .0001        | 0             |
| 7-13                                                                                                                                                                                                                                                        | .44               | 0               | 9:59          | .02                              | 1.87          | :25           | .0017        | .0001         |
| 7-15                                                                                                                                                                                                                                                        | .21               | 0               | 10:40         | .03                              | 1.89          | :27           | .0021        | .0002         |
| 7-16                                                                                                                                                                                                                                                        | .33               | 0               |               |                                  |               | :29           | .0019        | .0003         |
| 7-17                                                                                                                                                                                                                                                        | .02               | 0               |               |                                  |               | :32           | .0021        | .0004         |
| 7-18                                                                                                                                                                                                                                                        | .03               | 0               |               |                                  |               | :34           | .0024        | .0005         |
| 7-20                                                                                                                                                                                                                                                        | 1.94              | .05             |               |                                  |               | :475          | .0017        | .0010         |
| 7-21                                                                                                                                                                                                                                                        | 0                 | .05             |               |                                  |               | :48           | .0173        | .0011         |
| 7-23                                                                                                                                                                                                                                                        | .15               | 0               |               |                                  |               | :50           | .0524        | .0023         |
|                                                                                                                                                                                                                                                             |                   |                 |               |                                  |               | :51           | .0642        | .0033         |
|                                                                                                                                                                                                                                                             |                   |                 |               |                                  |               | :55           | .0983        | .0087         |
|                                                                                                                                                                                                                                                             |                   |                 |               |                                  |               | :58           | .1084        | .0139         |
| Raingage                                                                                                                                                                                                                                                    | 45                |                 |               |                                  |               |               |              |               |
| 7-1-59                                                                                                                                                                                                                                                      | 0.05              |                 | 7-26-59       | Raingage                         | 45            | 9:02          | .1160        | .0214         |
| 7-3                                                                                                                                                                                                                                                         | .53               |                 | 7:51p         | 0                                | 0             | :09           | .1246        | .0354         |
| 7-13                                                                                                                                                                                                                                                        | .32               |                 | 8:04          | 5.54                             | 1.20          | :16           | .1298        | .0502         |
| 7-15                                                                                                                                                                                                                                                        | .25               |                 | :34           | .18                              | 1.29          | :25           | .1138        | .0685         |
| 7-16                                                                                                                                                                                                                                                        | .10               |                 |               |                                  |               | :32           | .0983        | .0809         |
| 7-17                                                                                                                                                                                                                                                        | .06               |                 |               |                                  |               | :38           | .0780        | .0897         |
| 7-18                                                                                                                                                                                                                                                        | .06               |                 |               |                                  |               | :44           | .0670        | .0969         |
| 7-20                                                                                                                                                                                                                                                        | .66               |                 |               |                                  |               | :51           | .0591        | .1043         |
| 7-21                                                                                                                                                                                                                                                        | .86               |                 |               |                                  |               | 10:01         | .0497        | .1134         |
|                                                                                                                                                                                                                                                             |                   |                 |               |                                  |               | :03           | .0442        | .1150         |
| Raingage                                                                                                                                                                                                                                                    | 60                |                 |               |                                  |               |               |              |               |
| 7-1-59                                                                                                                                                                                                                                                      | 0.18              |                 | 7-26-59       | Raingage                         | 60            | :11           | .0372        | .1204         |
| 7-4                                                                                                                                                                                                                                                         | .03               |                 | 7:54p         | 0                                | 0             | :20           | .0331        | .1257         |
| 7-13                                                                                                                                                                                                                                                        | .30               |                 | 8:03          | 1.80                             | .27           | :25           | .0282        | .1283         |
| 7-15                                                                                                                                                                                                                                                        | .52               |                 | :42           | .14                              | .36           | :425          | .0227        | .1357         |
| 7-17                                                                                                                                                                                                                                                        | .13               |                 |               |                                  |               | 11:22         | .0153        | .1450         |
| 7-18                                                                                                                                                                                                                                                        | .08               |                 |               |                                  |               | :58           | .0123        | .1461         |
| 7-20                                                                                                                                                                                                                                                        | .25               |                 |               |                                  |               | 7-27-59       |              |               |
| 7-21                                                                                                                                                                                                                                                        | 1.28              |                 |               |                                  |               | 12:10a        | .0113        | .1467         |
|                                                                                                                                                                                                                                                             |                   |                 |               |                                  |               | :10           | .0098        | .1483         |
|                                                                                                                                                                                                                                                             |                   |                 |               |                                  |               | :29           | .0080        | .1511         |
|                                                                                                                                                                                                                                                             |                   |                 |               |                                  |               | :33           | .0069        | .1516         |
|                                                                                                                                                                                                                                                             |                   |                 |               |                                  |               | 1:14          | .0028        | .1549         |
|                                                                                                                                                                                                                                                             |                   |                 |               |                                  |               | :30           | .0023        | .1556         |
|                                                                                                                                                                                                                                                             |                   |                 |               |                                  |               | :47           | .0019        | .1562         |
|                                                                                                                                                                                                                                                             |                   |                 |               |                                  |               | 2:25          | .0015        | .1573         |
|                                                                                                                                                                                                                                                             |                   |                 |               |                                  |               | 3:00          | .0008        | .1580         |
|                                                                                                                                                                                                                                                             |                   |                 |               |                                  |               | 4:00          | .0003        | .1586         |
|                                                                                                                                                                                                                                                             |                   |                 |               |                                  |               | 6:45          | 0            | .1591         |
| <p>WATERSHED CONDITIONS: Includes watersheds 3,4, &amp; 5. 55% of area supports desert shrubs (White-horn, tarbush, creosotebush) with 23% cover and 2% grass cover; 45% is grassland, with 20% cover (crown spread) of grasses and 5% cover of shrubs.</p> |                   |                 |               |                                  |               |               |              |               |

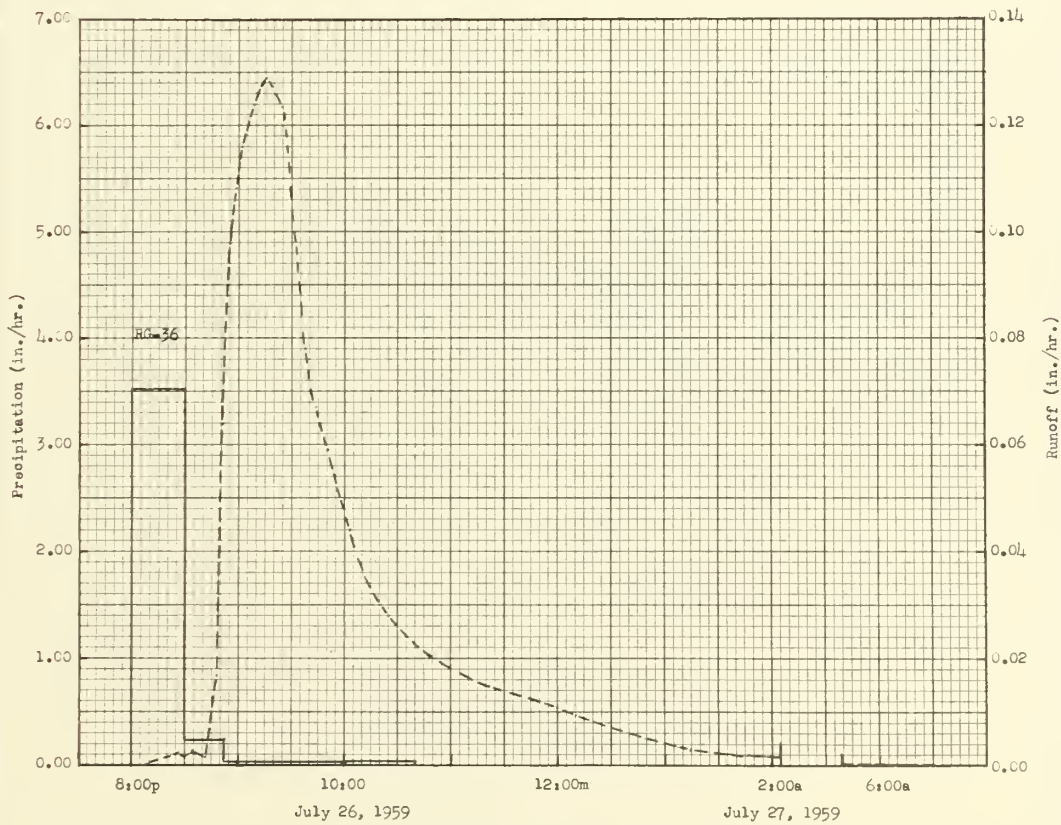
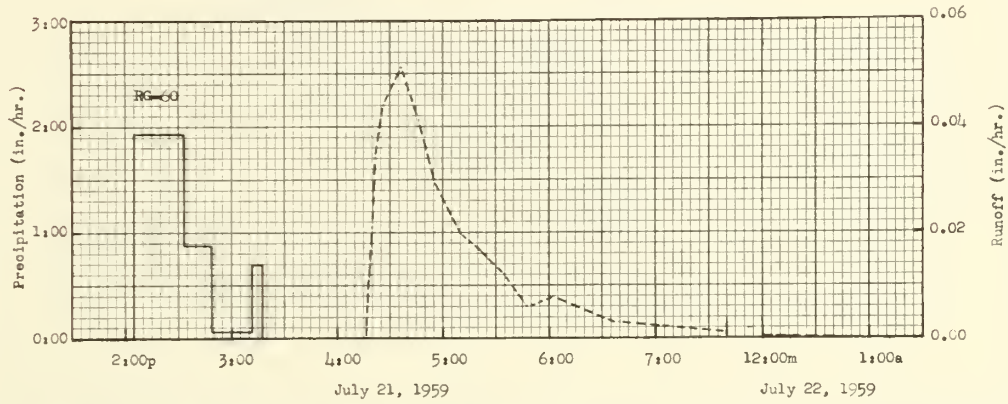
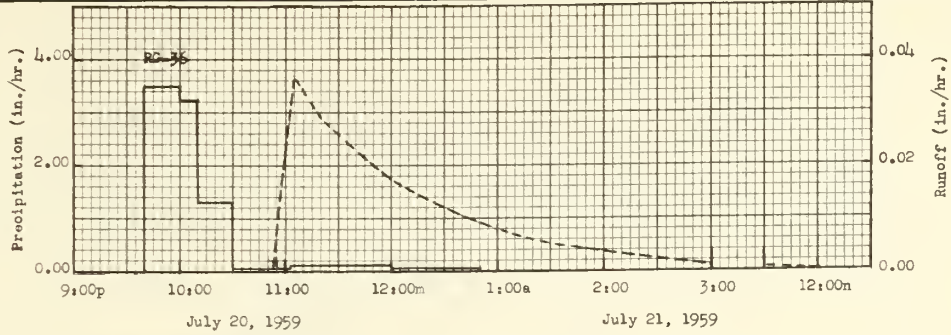
Notes: To convert runoff in in/hr to cfs, multiply by 28,330.

See 63.1-6 for isohyetal map of this event.

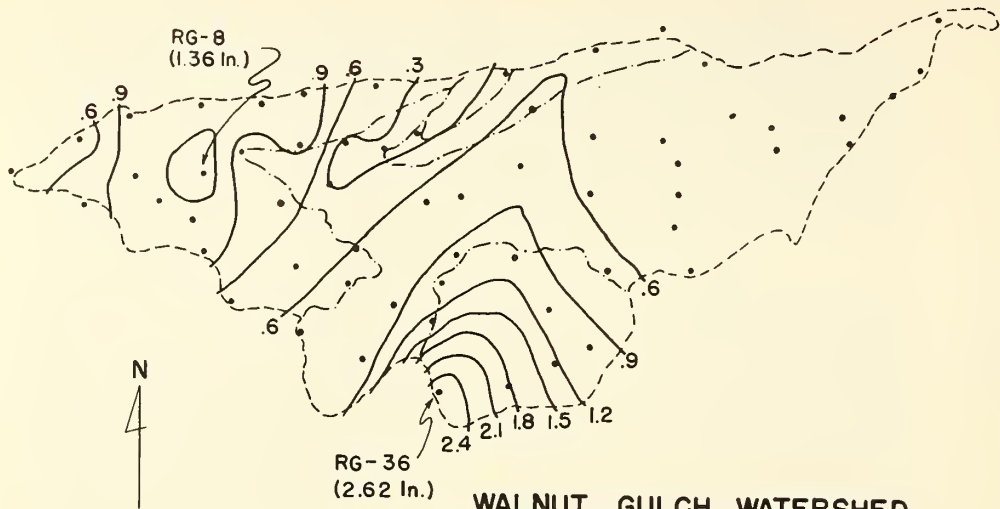


TOMBSTONE, ARIZONA Watershed W-2



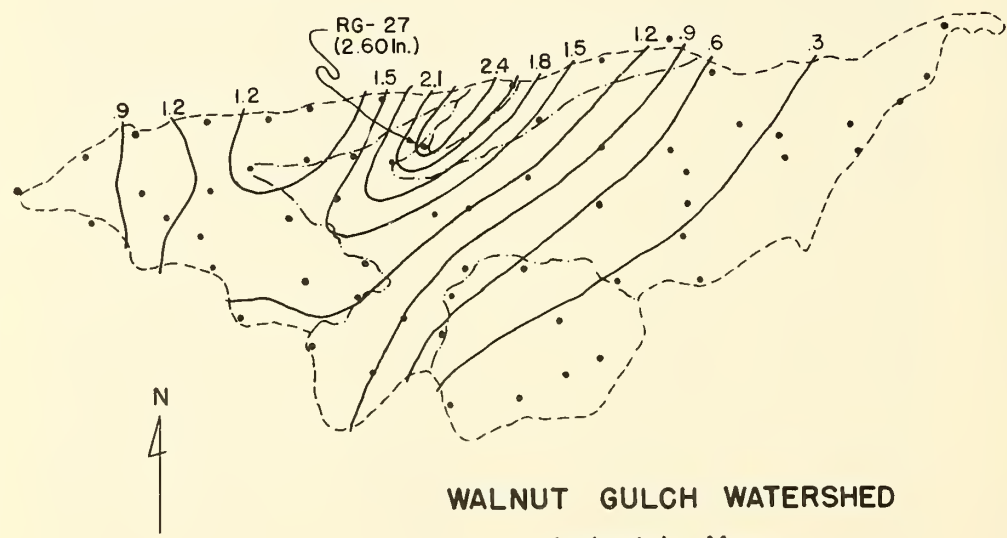


TOMBSTONE, ARIZONA Watershed W-2



**WALNUT GULCH WATERSHED**  
**Isohyetal Map**

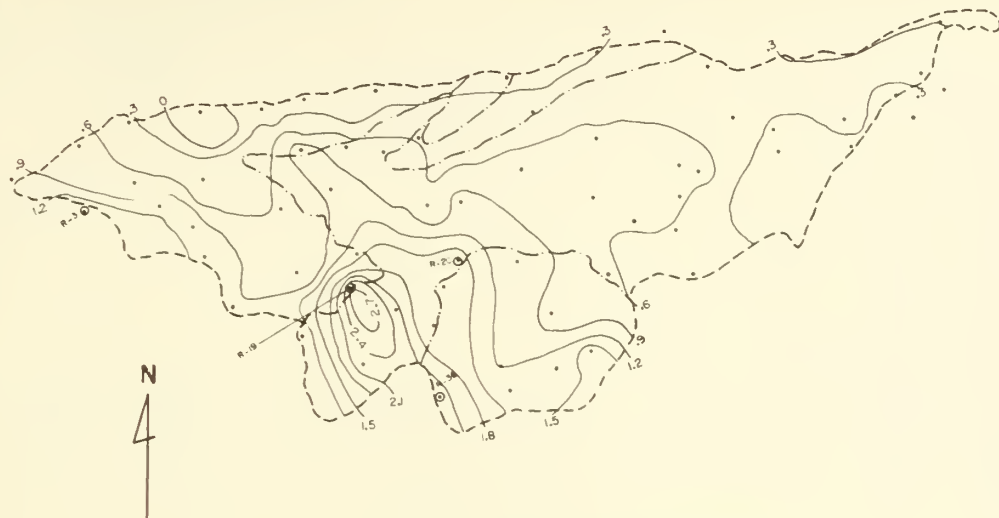
STORM OF OCTOBER 4, 1954



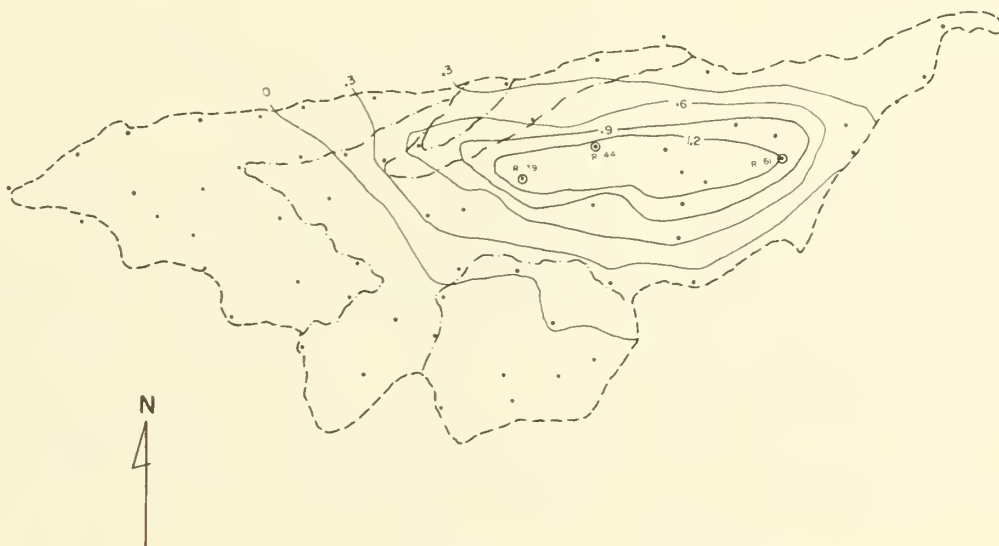
**WALNUT GULCH WATERSHED**  
**Isohyetal Map**

STORM OF JULY 19, 1955





WALNUT GULCH WATERSHED  
 Isohyetal Map  
 Storm of July 20, 1959



## TOMBSTONE, ARIZONA Watershed W-3

**LOCATION:** Cochise County; 2 miles north of Tombstone; tributary of Walnut Gulch; tributary of San Pedro River.

**AREA:** 3.47 sq. mi (2220 ac.) **SHAPE:** Long and narrow, approximately 5 miles long by 1 mile wide.

**SLOPES:** Not available.

Aspect WSW

**SOILS:** Tombstone 55%, Earp 45% (see W-1 and 2 for descriptions).

**EROSION:** 1 - 45%; 2 - 55%.

**LAND CAPABILITY:** V 45%; VI 55%.

**SURFACE DRAINAGE:** Good; length of principal drainage 5½ miles.

**CHARACTER OF FLOW:** Ephemeral, continuous.

**INSTRUMENTATION:** Runoff - critical depth flume, recorder with 8 hr. chart; Precipitation - 6 recording raingages.

**WATERSHED CONDITIONS:** 55% supports desert shrubs with a cover of 23% with a grass understory of 2%. 45% grassland with a grass canopy of 20%.

**GENERALLY REPRESENTS:** Desert grassland ranges in the Southeastern Arizona Basin and Range resource area (D-41).

| MONTHLY PRECIPITATION AND RUNOFF (Inches) |       |      |      |      |      |     | Tombstone, Arizona Watershed W-3 |      |      |       |      |      |      |       |
|-------------------------------------------|-------|------|------|------|------|-----|----------------------------------|------|------|-------|------|------|------|-------|
| Year                                      | Month | Jan. | Feb. | Mar. | Apr. | May | June                             | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year  |
| 1954                                      | P     |      |      |      |      | NR  | NR                               | NR   | 6.71 | 0.42  | 0.39 | 0    | 0.14 | Inc.  |
|                                           | Q     |      |      |      |      | 0   | 0                                | 0    | .33  | 0     | 0    | 0    | 0    | .33   |
| 1955                                      | P     | 1.22 | 0.23 | 0.25 | 0    | 0   | 0.42                             | 9.80 | 3.52 | .36   | .11  | .04  | .26  | 16.21 |
|                                           | Q     | 0    | 0    | 0    | 0    | 0   | 0                                | 3.16 | .06  | 0     | 0    | 0    | 0    | 3.22  |
| 1956                                      | P     | .69  | .34  | 0    | .22  | 0   | .42                              | 5.00 | .86  | 0     | .35  | .10  | .13  | 8.11  |
|                                           | Q     | NR   | NR   | NR   | NR   | NR  | NR                               | NR   | NR   | NR    | NR   | NR   | NR   | NR    |
| 1957                                      | P     | 1.42 | .15  | 1.22 | .05  | .43 | .45                              | 1.73 | 3.68 | .02   | 1.34 | .12  | .34  | 10.95 |
|                                           | Q     | NR   | NR   | NR   | NR   | NR  | NR                               | NR   | NR   | NR    | NR   | NR   | NR   | NR    |
| 1958                                      | P     | 0    | 1.32 | 1.75 | .86  | .01 | .18                              | 1.23 | 5.91 | 1.67  | .92  | .32  | 0    | 14.17 |
|                                           | Q     | 0    | 0    | 0    | 0    | 0   | 0                                | 0    | .53  | 0     | 0    | 0    | 0    | .53   |
| 1959                                      | P     | 0    | .45  | 0    | .24  | 0   | .70                              | 3.79 | 4.00 | .68   | .85  | .96  | .87  | 12.54 |
|                                           | Q     | 0    | 0    | 0    | 0    | 0   | 0                                | .03  | .04  | 0     | 0    | 0    | 0    | .07   |
| Normal                                    | P     | .86  | .82  | .61  | .29  | .20 | .51                              | 3.68 | 3.50 | 1.53  | .64  | .63  | .87  | 14.14 |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS |                   |        |                                           |        |         |        | Tombstone, Arizona Watershed W-3 |        |          |        |       |        |        |        |        |        |
|-------------------------------------------------------------------------------------------------------------------------|-------------------|--------|-------------------------------------------|--------|---------|--------|----------------------------------|--------|----------|--------|-------|--------|--------|--------|--------|--------|
| YEAR                                                                                                                    | MAXIMUM DISCHARGE |        | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |        |         |        |                                  |        |          |        |       |        |        |        |        |        |
|                                                                                                                         |                   |        | 1 hour                                    |        | 2 hours |        | 6 hours                          |        | 12 hours |        | 1 day |        | 2 days |        | 8 days |        |
|                                                                                                                         | Date              | Rate   | Date                                      | Vol.   | Date    | Vol.   | Date                             | Vol.   | Date     | Vol.   | Date  | Vol.   | Date   | Vol.   | Date   | Vol.   |
| 1954                                                                                                                    | 8-19              | 0.2300 | 8-19                                      | 0.1507 | 8-19    | 0.1815 | 8-19                             | 0.2070 | 8-19     | 0.2072 | 8-19  | 0.2072 | 8-19   | 0.2072 | 8-11   | 0.2834 |
| 1955                                                                                                                    | 7-19              | 1.2750 | 7-19                                      | .5750  | 7-22    | .7565  | 7-22                             | .8450  | 7-22     | .8456  | 7-19  | 1.2520 | 7-19   | 1.2520 | 7-19   | 2.9288 |
| 1956                                                                                                                    | 7-29              | .0260  | Incomplete Record                         |        |         |        |                                  |        |          |        |       |        |        |        |        |        |
| 1957                                                                                                                    | 8-17              | .0699  | Incomplete Record                         |        |         |        |                                  |        |          |        |       |        |        |        |        |        |
| 1958                                                                                                                    | 8-16              | .5638  | 8-16                                      | .1532  | 8-16    | .1681  | 8-16                             | .1906  | 8-16     | .1906  | 8-16  | .1906  | 8-16   | .1906  | 8-14   | .3485  |
| 1959                                                                                                                    | 8-17              | .0767  | 8-17                                      | .0267  | 8-17    | .0269  | 8-17                             | .0269  | 8-17     | .0269  | 8-17  | .0269  | 8-17   | .0277  | 8-13   | .0436  |

**Notes:** Quality of record: P, fair in 1954 and 1955; good 1956 through 1959. Q, fair in 1954; poor, 1955 through 1957; good, in 1958 and 1959. Monthly P is arithmetic average of raingages.

Normal P based on 60 years record (1897-1957), USWB Station, Tombstone, Arizona.

SELECTED RUNOFF EVENTS

Tombstone, Arizona Watershed W-3

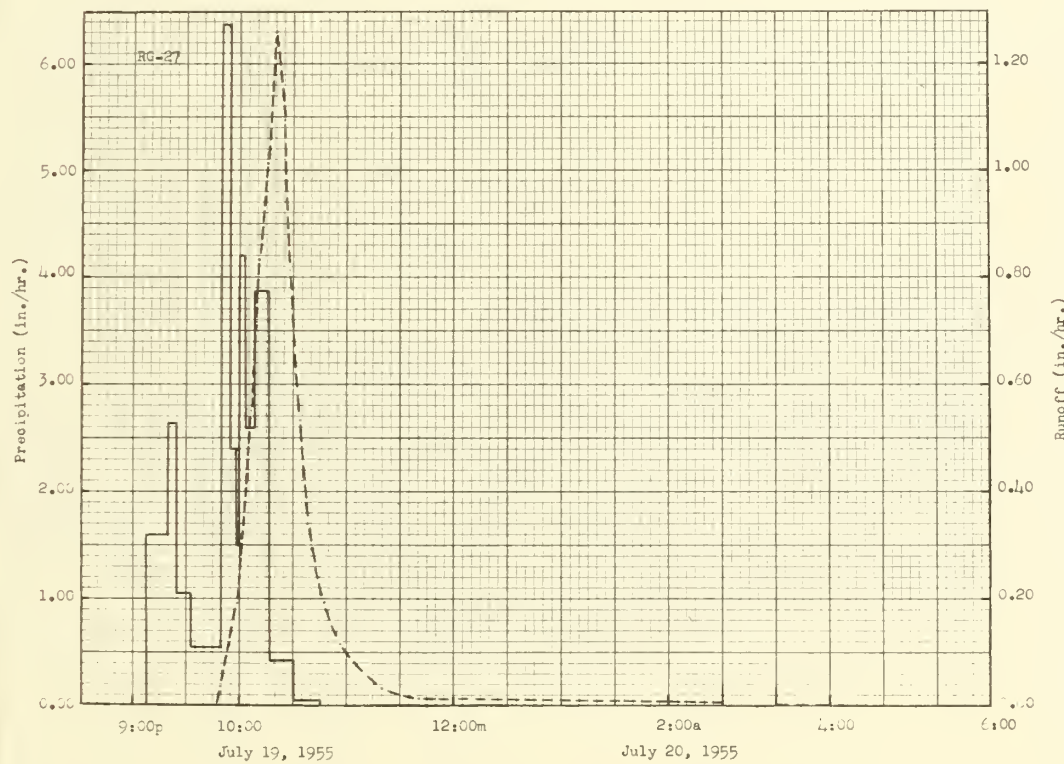
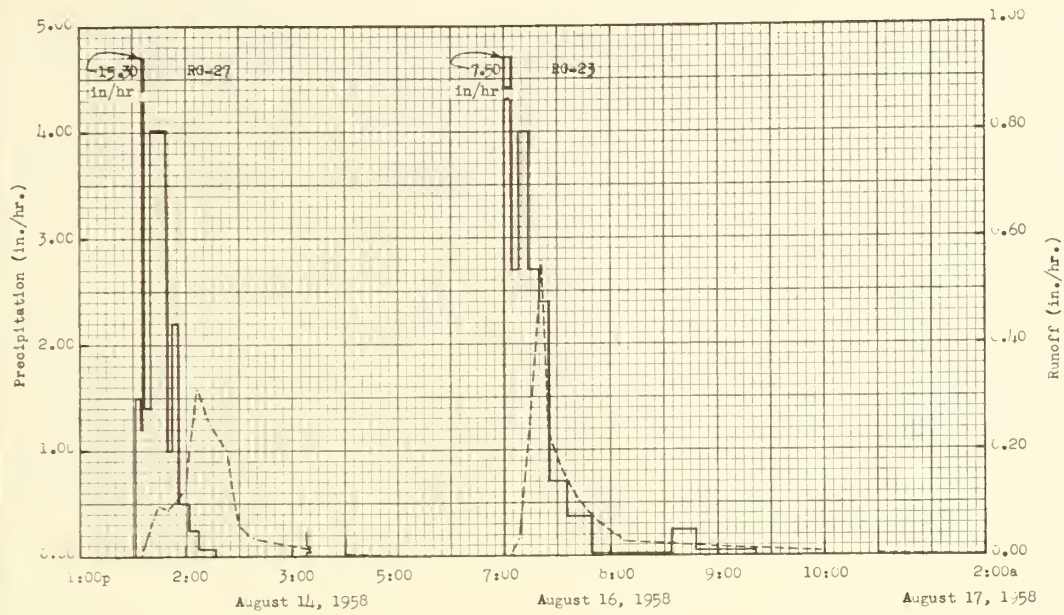
| Antecedent conditions  |                   |                 | Rainfall      |                   |               | Runoff        |              |               |
|------------------------|-------------------|-----------------|---------------|-------------------|---------------|---------------|--------------|---------------|
| Date                   | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of July 19, 1955 |                   |                 |               |                   |               |               |              |               |
| Raingage 23            |                   |                 |               |                   |               |               |              |               |
| 7-12-55                | 0.93              | 0               | 7-19-55       | Raingage          | 23            | 7-19-55       |              |               |
| 7-14                   | .05               | 0               | 9:05p         | 0                 | 0             | 9:48p         | 0            | 0             |
| 7-15                   | .27               | 0               | :10           | .84               | .07           | :49           | .0350        | .0003         |
| 7-17                   | .02               | 0               | :38           | .60               | .35           | :58           | .1971        | .0177         |
| 7-18                   | .02               | 0               | :54           | 2.11              | .90           | 10:06         | .5440        | .0604         |
|                        |                   |                 | 10:07         | 3.64              | 1.75          | :09           | .7152        | .0919         |
|                        |                   |                 | 10:20         | 1.38              | 2.05          | :11           | .8274        | .1176         |
|                        |                   |                 | 11:00         | .01               | 2.06          | :16           | 1.0093       | .1941         |
|                        |                   |                 |               |                   |               | :19           | 1.2637       | .2509         |
|                        |                   |                 |               |                   |               | :25           | 1.0978       | .3690         |
| Raingage 27            |                   |                 |               |                   |               |               |              |               |
| 7-12-55                | 0.66              |                 | 7-19-55       | Raingage          | 27            | :28           | .8113        | .4167         |
| 7-14                   | .21               |                 | 9:08p         | 0                 | 0             | :34           | .5386        | .4842         |
| 7-15                   | .26               |                 | :20           | 1.30              | .26           | :38           | .3428        | .5136         |
| 7-16                   | .06               |                 | :25           | 2.64              | .48           | :47           | .1971        | .5541         |
| 7-17                   | .05               |                 | :33           | 1.05              | .62           | :56           | .1070        | .5769         |
| 7-18                   | .04               |                 | :50           | .56               | .78           | 11:20         | .0354        | .6054         |
|                        |                   |                 | :55           | 6.37              | 1.31          | :41           | .0178        | .6147         |
|                        |                   |                 | :58           | 2.40              | 1.43          | 7-20-55       |              |               |
|                        |                   |                 | 10:00         | 1.50              | 1.48          | 12:06a        | .0100        | .6205         |
|                        |                   |                 | :05           | 4.20              | 1.83          | 1:11          | .0051        | .6211         |
|                        |                   |                 | :08           | 2.60              | 1.96          | 1:41          | .0046        | .6236         |
|                        |                   |                 | :17           | 3.87              | 2.54          | 2:36          | .0034        | .5273         |
|                        |                   |                 | :30           | .41               | 2.61          | :56           | .0028        | .3283         |
|                        |                   |                 | :45           | .04               | 2.62          | 5:06          | .0001        | .6316         |
|                        |                   |                 |               |                   |               | 6:00          | 0            | .6316         |

WATERSHED CONDITIONS: 55% supports desert shrubs with a cover of 23% with a grass understory of 2%. 45% grassland with a grass canopy of 20%.

Notes: To convert runoff in in/hr to cfs, multiply by 2238.  
See 63.2-7 for isohyetal map of this event.

| SELECTED RUNOFF EVENTS                                                                                                                                      |                   |                 |               |                   |               | Tombstone, Arizona Watershed W-3 |              |               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------------|---------------|-------------------|---------------|----------------------------------|--------------|---------------|
| Antecedent conditions                                                                                                                                       |                   |                 | Rainfall      |                   |               | Runoff                           |              |               |
| Date                                                                                                                                                        | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time                    | Rate (in/hr) | Acc. (inches) |
| <u>Event of August 14, 1958</u>                                                                                                                             |                   |                 |               |                   |               |                                  |              |               |
| <u>Raingage</u> 23                                                                                                                                          |                   |                 |               |                   |               |                                  |              |               |
| 7-14-58                                                                                                                                                     | 0.32              | 0               | 8-14-58       | <u>Raingage</u>   | 23            | 8-14-58                          |              |               |
| 7-16                                                                                                                                                        | .03               | 0               | 1:35p         | 0                 | 0             | 1:35p                            | 0            | 0             |
| 7-23                                                                                                                                                        | .07               | 0               | :42           | 4.25              | .50           | :42                              | .0693        | .0040         |
| 7-24                                                                                                                                                        | .15               | 0               | :51           | 1.00              | .65           | :45                              | .0974        | .0082         |
| 7-29                                                                                                                                                        | .68               | 0               | 2:02          | 2.70              | 1.15          | :50                              | .0872        | .0159         |
| 8-1                                                                                                                                                         | .08               | 0               | :12           | .42               | 1.22          | :53                              | .1028        | .0207         |
| 8-2                                                                                                                                                         | .35               | 0               | :24           | .15               | 1.25          | :59                              | .1252        | .0321         |
| 8-4                                                                                                                                                         | .02               | 0               |               |                   |               | 2:02                             | .2311        | .0415         |
| 8-5                                                                                                                                                         | .20               | 0               |               |                   |               | :06                              | .3174        | .0598         |
| 8-6                                                                                                                                                         | .38               | 0               |               |                   |               | :14                              | .2458        | .0973         |
| 8-8                                                                                                                                                         | .38               | 0               | 8-14-58       | <u>Raingage</u>   | 27            | :23                              | .1028        | .1234         |
| 8-10                                                                                                                                                        | .28               | 0               | 1:32p         | 0                 | 0             | :30                              | .0603        | .1329         |
|                                                                                                                                                             |                   |                 | :34           | 1.50              | .05           | :38                              | .0380        | .1395         |
|                                                                                                                                                             |                   |                 | :35           | 1.20              | .07           | 3:08                             | .0168        | .1532         |
|                                                                                                                                                             |                   |                 | :37           | 15.30             | .58           | :23                              | .0083        | .1564         |
| <u>Raingage</u> 27                                                                                                                                          |                   |                 |               |                   |               |                                  |              |               |
| 7-24-58                                                                                                                                                     | 0.10              |                 | :40           | 1.40              | .65           | :53                              | .0031        | .1592         |
| 7-29                                                                                                                                                        | .61               |                 | :49           | 4.01              | 1.26          | 5:01                             | 0            | .1610         |
| 8-1                                                                                                                                                         | .47               |                 | :52           | 1.00              | 1.31          |                                  |              |               |
| 8-2                                                                                                                                                         | .35               |                 | :55           | 1.60              | 1.39          |                                  |              |               |
| 8-5                                                                                                                                                         | .20               |                 | :56           | 3.60              | 1.45          |                                  |              |               |
| 8-6                                                                                                                                                         | .08               |                 | 2:02          | .50               | 1.50          |                                  |              |               |
| 8-8                                                                                                                                                         | .30               |                 | :07           | .24               | 1.52          |                                  |              |               |
| 8-10                                                                                                                                                        | .38               |                 | :16           | .07               | 1.53          |                                  |              |               |
| 8-11                                                                                                                                                        | .06               |                 |               |                   |               |                                  |              |               |
| <u>Event of August 16, 1958</u>                                                                                                                             |                   |                 |               |                   |               |                                  |              |               |
| <u>Same as above</u>                                                                                                                                        |                   |                 | 8-16-58       | <u>Raingage</u>   | 23            | 8-16-58                          |              |               |
|                                                                                                                                                             |                   |                 | 7:00p         | 0                 | 0             | 7:03p                            | 0            | 0             |
|                                                                                                                                                             |                   |                 | :04           | 7.50              | .50           | :05                              | .0047        | .0001         |
|                                                                                                                                                             |                   |                 | :08           | 2.70              | .68           | :08                              | .0259        | .0008         |
|                                                                                                                                                             |                   |                 | :14           | 4.00              | 1.08          | :21                              | .5588        | .0642         |
|                                                                                                                                                             |                   |                 | :20           | 2.70              | 1.35          | :23                              | .3978        | .0801         |
|                                                                                                                                                             |                   |                 | :26           | 2.40              | 1.59          | :25                              | .2458        | .0908         |
|                                                                                                                                                             |                   |                 | :36           | .60               | 1.69          | 8:07                             | .0259        | .1859         |
|                                                                                                                                                             |                   |                 | :49           | .18               | 1.73          | 9:00                             | .0170        | .2049         |
|                                                                                                                                                             |                   |                 | 8:33          | .02               | 1.75          | 10:00                            | .0076        | .2172         |
|                                                                                                                                                             |                   |                 | :48           | .24               | 1.81          | 11:00                            | .0045        | .2233         |
|                                                                                                                                                             |                   |                 | 9:22          | .04               | 1.83          | 12:00m                           | .0022        | .2267         |
|                                                                                                                                                             |                   |                 |               |                   |               | 8-17-58                          |              |               |
|                                                                                                                                                             |                   |                 |               |                   |               | 1:30a                            | 0            | .2283         |
|                                                                                                                                                             |                   |                 | 8-16-58       | <u>Raingage</u>   | 27            |                                  |              |               |
|                                                                                                                                                             |                   |                 | 6:50p         | 0                 | 0             |                                  |              |               |
|                                                                                                                                                             |                   |                 | 7:00          | 1.92              | .32           |                                  |              |               |
|                                                                                                                                                             |                   |                 | :10           | 4.56              | 1.08          |                                  |              |               |
|                                                                                                                                                             |                   |                 | :20           | 1.02              | 1.25          |                                  |              |               |
|                                                                                                                                                             |                   |                 | :30           | .12               | 1.27          |                                  |              |               |
|                                                                                                                                                             |                   |                 | 8:20          | 0                 | 1.27          |                                  |              |               |
|                                                                                                                                                             |                   |                 | :38           | .17               | 1.32          |                                  |              |               |
|                                                                                                                                                             |                   |                 | 9:10          | .04               | 1.34          |                                  |              |               |
|                                                                                                                                                             |                   |                 | :20           | .36               | 1.40          |                                  |              |               |
| <p><b>WATERSHED CONDITIONS:</b> 55% supports desert shrubs with a cover of 23% with a grass understory of 2%. 45% grassland with a grass canopy of 20%.</p> |                   |                 |               |                   |               |                                  |              |               |

Notes: To convert runoff in in/hr to cfs, multiply by 2238.  
See 63.1-7 for isohyetal maps of these events.



TOMBSTONE, ARIZONA Watershed W-3



## TOMBSTONE, ARIZONA Watershed W-4

LOCATION: Cochise County; 3 miles north of Tombstone; tributary of Walnut Culch; tributary of San Pedro River.

AREA: 0.88 sq. mi. ( 560 ac.) SHAPE: Oval, 1½ miles long by ½ mile wide.

SLOPES: Not available

Aspect SW

SOILS: Tombstone 100%, a gravelly loam, calcareous throughout, with a moderately permeable surface and subsoil.

EROSION: 2 - 100%.

LAND CAPABILITY: VI - 100%.

SURFACE DRAINAGE: Good; length of principal drainage 2 miles.

CHARACTER OF FLOW: Ephemeral, continuous.

INSTRUMENTATION: Runoff - critical depth flume, recorder with 8 hr. chart; Precipitation - 3 recording raingages.

WATERSHED CONDITIONS: Shrub cover of 25%.

GENERALLY REPRESENTS: Desert grassland ranges in the Southeastern Arizona Basin and Range resource area (D-41).

| MONTHLY PRECIPITATION AND RUNOFF (Inches) |       |      |      |      |      |     |      |       |      |       |      |      | Tombstone, Arizona Watershed W-4 |       |
|-------------------------------------------|-------|------|------|------|------|-----|------|-------|------|-------|------|------|----------------------------------|-------|
| Year                                      | Month | Jan. | Feb. | Mar. | Apr. | May | June | July  | Aug. | Sept. | Oct. | Nov. | Dec.                             | Year  |
| 1954                                      | P     |      |      |      |      |     | NR   | NR    | 4.29 | 0.63  | 0.15 | 0    | 0                                | Inc.  |
|                                           | Q     |      |      |      |      |     | 0    | .05   | 1.38 | 0     | 0    | 0    | 0                                | 1.43  |
| 1955                                      | P     | 0.79 | 0.10 | 0.41 | 0    | 0   | 0.43 | 11.30 | 3.78 | .46   | .12  | 0    | .20                              | 17.59 |
|                                           | Q     | 0    | 0    | 0    | 0    | 0   | 0    | 5.60  | .43  | 0     | 0    | 0    | 0                                | 6.03  |
| 1956                                      | P     | .56  | .18  | 0    | .23  | 0   | .40  | 4.66  | 1.34 | 0     | .28  | .06  | .10                              | 7.81  |
|                                           | Q     | 0    | 0    | 0    | 0    | 0   | 0    | .08   | .05  | 0     | 0    | 0    | 0                                | .13   |
| 1957                                      | P     | 1.24 | .10  | 1.14 | .03  | .34 | .42  | 1.82  | 4.16 | 0     | 1.14 | .15  | .29                              | 10.83 |
|                                           | Q     | 0    | 0    | 0    | 0    | 0   | 0    | 0     | .15  | 0     | 0    | 0    | 0                                | .15   |
| 1958                                      | P     | 0    | 1.13 | 1.71 | .90  | .02 | .26  | 1.01  | 6.24 | 1.60  | .82  | .30  | 0                                | 13.99 |
|                                           | Q     | 0    | 0    | 0    | 0    | 0   | 0    | 0     | .36  | 0     | 0    | 0    | 0                                | .36   |
| 1959                                      | P     | 0    | .48  | 0    | .04  | 0   | .83  | 3.68  | 3.35 | .53   | .80  | 1.08 | .84                              | 11.63 |
|                                           | Q     | 0    | 0    | 0    | 0    | 0   | 0    | .01   | .03  | 0     | 0    | 0    | 0                                | .04   |
| Normal                                    | P     | .86  | .82  | .61  | .29  | .20 | .51  | 3.68  | 3.50 | 1.53  | .64  | .63  | .87                              | 14.14 |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS |                   |        |                                           |        |         |        |         |        |          |        |       |        | Tombstone, Arizona Watershed W-4 |        |        |        |
|-------------------------------------------------------------------------------------------------------------------------|-------------------|--------|-------------------------------------------|--------|---------|--------|---------|--------|----------|--------|-------|--------|----------------------------------|--------|--------|--------|
| YEAR                                                                                                                    | MAXIMUM DISCHARGE |        | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |        |         |        |         |        |          |        |       |        |                                  |        |        |        |
|                                                                                                                         |                   |        | 1 hour                                    |        | 2 hours |        | 6 hours |        | 12 hours |        | 1 day |        | 2 days                           |        | 8 days |        |
|                                                                                                                         | Date              | Rate   | Date                                      | Vol.   | Date    | Vol.   | Date    | Vol.   | Date     | Vol.   | Date  | Vol.   | Date                             | Vol.   | Date   | Vol.   |
| 1954                                                                                                                    | 8-19              | 0.9317 | 8-14                                      | 0.4849 | 8-14    | 0.5705 | 8-14    | 0.6476 | 8-14     | 0.6476 | 8-14  | 0.6476 | 8-14                             | 0.6476 | 8-14   | 1.1942 |
| 1955                                                                                                                    | 7-19              | 2.5194 | 7-19                                      | 1.0655 | 7-19    | 1.2328 | 7-19    | 1.2911 | 7-19     | 1.2911 | 7-19  | 1.9365 | 7-19                             | 1.9371 | 7-19   | 4.7818 |
| 1956                                                                                                                    | 7-19              | .1321  | 7-19                                      | .0352  | 8-17    | .0507  | 8-17    | .0507  | 8-17     | .0507  | 8-17  | .0507  | 8-17                             | .0507  | 8-14   | .0510  |
| 1957                                                                                                                    | 8-17              | .1962  | 8-17                                      | .1322  | 8-17    | .1439  | 8-17    | .1439  | 8-17     | .1439  | 8-17  | .1439  | 8-17                             | .1439  | 8-17   | .1493  |
| 1958                                                                                                                    | 8-16              | .3147  | 8-16                                      | .1484  | 8-16    | .1558  | 8-16    | .1561  | 8-16     | .1561  | 8-16  | .1561  | 8-16                             | .1561  | 8-16   | .2386  |
| 1959                                                                                                                    | 8-17              | .0548  | 8-17                                      | .0142  | 8-17    | .0160  | 8-17    | .0160  | 8-17     | .0160  | 8-17  | .0160  | 8-17                             | .0160  | 8-13   | .0300  |

Notes: Quality of record: P, poor in 1954 and 1955; fair, 1956 through 1959. Q, good, 1954 through 1958; poor in 1959  
 Monthly P is arithmetic average of raingages  
 Normal P based on 60 years record (1897-1957), USWB Station, Tombstone, Arizona.

| SELECTED RUNOFF EVENTS                           |                   |                 | Tombstone, Arizona Watershed W-4 |                   |               |               |              |               |       |       |        |
|--------------------------------------------------|-------------------|-----------------|----------------------------------|-------------------|---------------|---------------|--------------|---------------|-------|-------|--------|
| Antecedent conditions                            |                   |                 | Rainfall                         |                   |               | Runoff        |              |               |       |       |        |
| Date                                             | Rainfall (inches) | Runoff (inches) | Date and time                    | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |       |       |        |
| Event of August 14, 1954                         |                   |                 |                                  |                   |               |               |              |               |       |       |        |
| Raingage                                         | 27                |                 |                                  |                   |               |               |              |               |       |       |        |
| 7-22-54                                          | 0.95              | 0.05            | 8-14-54                          | Raingage          | 27            | 8-14-54       |              |               |       |       |        |
| 7-31                                             | .73               | 0               | 5:05p                            | 0                 | 0             | 5:14p         | 0            | 0             |       |       |        |
| 8-2                                              | .32               | 0               | :15                              | 3.00              | 0.50          | :18           | 0.0001       | 0             |       |       |        |
| 8-3                                              | .40               | 0               | :37                              | .33               | .62           | :23           | .0006        | 0             |       |       |        |
| 8-4                                              | .99               | 0               | 6:12                             | .07               | .65           | :25           | .0039        | 0.0001        |       |       |        |
| 8-5                                              | .02               | .03             | :45                              | .04               | .67           | :30           | .3310        | .0141         |       |       |        |
| 8-6                                              | .11               | 0               | :49                              | .15               | .68           | :35           | .4124        | .0451         |       |       |        |
| 8-8                                              | .05               | .13             | 7:00                             | .07               | .69           | :37           | .3912        | .0585         |       |       |        |
| 8-9                                              | .18               | .02             | 8:08                             | .11               | .82           | :40           | .4283        | .0790         |       |       |        |
| 8-11                                             | .16               | 0               |                                  |                   |               | :45           | .5770        | .1209         |       |       |        |
| 8-12                                             | .27               | .01             |                                  |                   |               | :50           | .6655        | .1727         |       |       |        |
| <b>WATERSHED CONDITIONS:</b> Shrub cover of 25%. |                   |                 |                                  |                   |               | :54           | .8443        | .2230         |       |       |        |
|                                                  |                   |                 |                                  |                   |               | 6:00          | .6496        | .2977         |       |       |        |
|                                                  |                   |                 |                                  |                   |               | :05           | .6213        | .3507         |       |       |        |
|                                                  |                   |                 |                                  |                   |               | :10           | .4496        | .3953         |       |       |        |
|                                                  |                   |                 |                                  |                   |               | :15           | .3416        | .4283         |       |       |        |
|                                                  |                   |                 |                                  |                   |               | :20           | .2496        | .4529         |       |       |        |
|                                                  |                   |                 |                                  |                   |               | :25           | .1621        | .4700         |       |       |        |
|                                                  |                   |                 |                                  |                   |               | :30           | .1322        | .4822         |       |       |        |
|                                                  |                   |                 |                                  |                   |               | :40           | .1025        | .5018         |       |       |        |
|                                                  |                   |                 |                                  |                   |               | :50           | .0913        | .5180         |       |       |        |
|                                                  |                   |                 |                                  |                   |               | 7:00          | .0731        | .5317         |       |       |        |
|                                                  |                   |                 |                                  |                   |               | :15           | .0512        | .5473         |       |       |        |
|                                                  |                   |                 |                                  |                   |               | :45           | .0319        | .5681         |       |       |        |
|                                                  |                   |                 |                                  |                   |               | 8:15          | .0264        | .5827         |       |       |        |
|                                                  |                   |                 |                                  |                   |               | :45           | .0216        | .5947         |       |       |        |
|                                                  |                   |                 | 9:15                             | .0189             | .6048         |               |              |               |       |       |        |
|                                                  |                   |                 | 10:15                            | .0142             | .6214         |               |              |               |       |       |        |
|                                                  |                   |                 | 11:45                            | .0088             | .6391         |               |              |               |       |       |        |
|                                                  |                   |                 | 8-15-54                          |                   |               | 12:45a        | .0027        | .6445         |       |       |        |
|                                                  |                   |                 |                                  |                   |               | 1:45          | 0            | .6459         |       |       |        |
| Event of July 19, 1955                           |                   |                 |                                  |                   |               |               |              |               |       |       |        |
| Raingage                                         | 27                |                 |                                  |                   |               |               |              |               |       |       |        |
| 7-11-55                                          | 0.65              | 0               | 7-19-55                          | Raingage          | 27            | 7-19-55       |              |               |       |       |        |
| 7-12                                             | .01               | 0               | 9:08p                            | 0                 | 0             | 9:22p         | 0            | 0             |       |       |        |
| 7-14                                             | .21               | 0               | :20                              | 1.30              | 0.26          | :28           | 0.0009       | 0             |       |       |        |
| 7-15                                             | .26               | 0               | :25                              | 2.64              | .48           | :35           | .2044        | 0.0120        |       |       |        |
| 7-16                                             | .06               | 0               | :33                              | 1.05              | .62           | :45           | .2384        | .0485         |       |       |        |
| 7-17                                             | .05               | 0               | :50                              | .56               | .78           | :55           | .3915        | .1014         |       |       |        |
| 7-18                                             | .04               | 0               | :55                              | 6.37              | 1.31          | 10:00         | .5742        | .1416         |       |       |        |
|                                                  |                   |                 | :58                              | 2.40              | 1.43          | :05           | 1.5051       | .2282         |       |       |        |
|                                                  |                   |                 | 10:00                            | 1.50              | 1.48          | :10           | 1.4581       | .3511         |       |       |        |
|                                                  |                   |                 | :05                              | 4.20              | 1.83          | :15           | 2.4795       | .5158         |       |       |        |
|                                                  |                   |                 | :08                              | 2.60              | 1.96          | :20           | 2.1263       | .7077         |       |       |        |
|                                                  |                   |                 | :17                              | 3.87              | 2.54          | :25           | 1.4581       | .8570         |       |       |        |
|                                                  |                   |                 | :30                              | .41               | 2.61          | :30           | .9361        | .9568         |       |       |        |
|                                                  |                   |                 | :45                              | .04               | 2.62          | :40           | .4420        | 1.0716        |       |       |        |
| <b>WATERSHED CONDITIONS:</b> Shrub cover of 25%. |                   |                 |                                  |                   |               | :50           | .2854        | 1.1322        |       |       |        |
|                                                  |                   |                 |                                  |                   |               | 11:00         | .1823        | 1.1712        |       |       |        |
|                                                  |                   |                 |                                  |                   |               | :20           | .0885        | 1.2163        |       |       |        |
|                                                  |                   |                 |                                  |                   |               | 12:00m        | .0513        | 1.2629        |       |       |        |
|                                                  |                   |                 |                                  |                   |               | 7-20-55       |              |               | 1:00a | .0248 | 1.3010 |
|                                                  |                   |                 |                                  |                   |               | 2:00          | .0053        | 1.3161        |       |       |        |
|                                                  |                   |                 |                                  |                   |               | 3:00          | 0            | 1.3187        |       |       |        |
|                                                  |                   |                 |                                  |                   |               |               |              |               |       |       |        |
|                                                  |                   |                 |                                  |                   |               |               |              |               |       |       |        |
|                                                  |                   |                 |                                  |                   |               |               |              |               |       |       |        |

Notes: To convert runoff in in/hr to cfs, multiply by 565.  
 See 63.2-7 for isohyetal map of event for July 19, 1955.

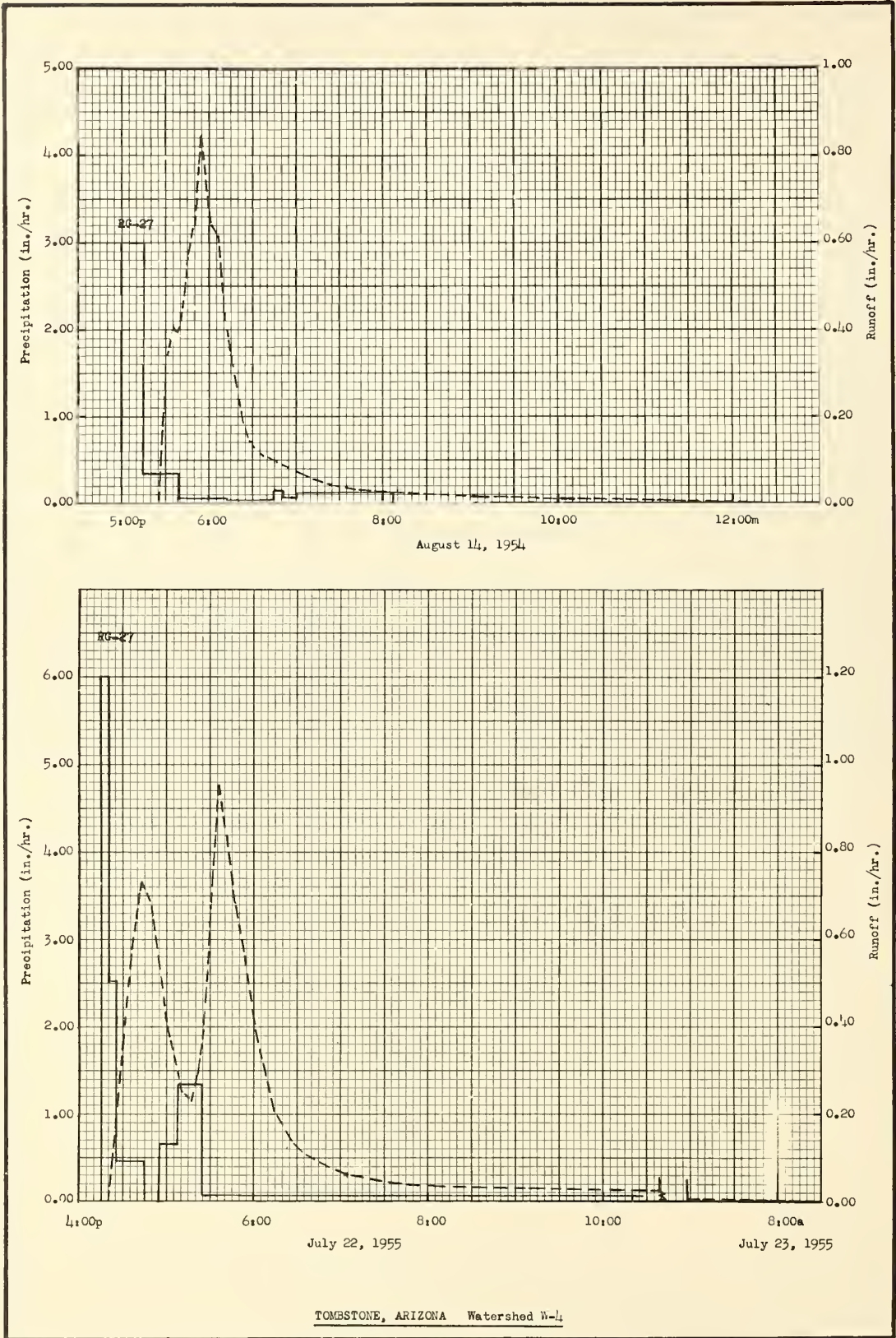
| SELECTED RUNOFF EVENTS        |                   |                 |               |                   |               | Tombstone, Arizona Watershed W-4 |              |               |
|-------------------------------|-------------------|-----------------|---------------|-------------------|---------------|----------------------------------|--------------|---------------|
| Antecedent conditions         |                   |                 | Rainfall      |                   |               | Runoff                           |              |               |
| Date                          | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time                    | Rate (in/hr) | Acc. (inches) |
| <u>Event of July 22, 1955</u> |                   |                 |               |                   |               |                                  |              |               |
| Raingage                      | 27                |                 |               |                   |               |                                  |              |               |
| 7-11-55                       | 0.65              | 0               | 7-22-55       | Raingage          | 27            | 7-22-55                          |              |               |
| 7-12                          | .01               | 0               | 4:15p         | 0                 | 0             | 4:10p                            | 0            | 0             |
| 7-14                          | .21               | 0               | :20           | 6.00              | 0.50          | :20                              | 0.0033       | 0.0003        |
| 7-15                          | .26               | 0               | :25           | 2.52              | .71           | :25                              | .2053        | .0090         |
| 7-16                          | .06               | 0               | :45           | .48               | .87           | :30                              | .3522        | .0322         |
| 7-17                          | .05               | 0               | :55           | .06               | .88           | :35                              | .5275        | .0688         |
| 7-18                          | .04               | 0               | 5:06          | .65               | 1.00          | :40                              | .6726        | .1188         |
| 7-19                          | 2.62              | 1.29            | :23           | 1.31              | 1.37          | :43                              | .7328        | .1539         |
| 7-20                          | 1.29              | .65             | 10:20         | .09               | 1.83          | :48                              | .6867        | .2130         |
|                               |                   |                 |               |                   |               | :55                              | .5398        | .2846         |
|                               |                   |                 |               |                   |               | 5:00                             | .3982        | .3237         |
|                               |                   |                 |               |                   |               | :05                              | .3487        | .3548         |
|                               |                   |                 |               |                   |               | :10                              | .2496        | .3797         |
|                               |                   |                 |               |                   |               | :16                              | .2301        | .4037         |
|                               |                   |                 |               |                   |               | :20                              | .2655        | .4202         |
|                               |                   |                 |               |                   |               | :25                              | .3823        | .4472         |
|                               |                   |                 |               |                   |               | :30                              | .6337        | .4895         |
|                               |                   |                 |               |                   |               | :36                              | .9523        | .5688         |
|                               |                   |                 |               |                   |               | :40                              | .8531        | .6290         |
|                               |                   |                 |               |                   |               | :45                              | .7151        | .6943         |
|                               |                   |                 |               |                   |               | :50                              | .6337        | .7505         |
|                               |                   |                 |               |                   |               | 6:00                             | .3947        | .8362         |
|                               |                   |                 |               |                   |               | :15                              | .1947        | .9099         |
|                               |                   |                 |               |                   |               | :25                              | .1322        | .9371         |
|                               |                   |                 |               |                   |               | :35                              | .1035        | .9567         |
|                               |                   |                 |               |                   |               | 7:00                             | .0637        | .9915         |
|                               |                   |                 |               |                   |               | :30                              | .0451        | 1.0187        |
|                               |                   |                 |               |                   |               | 8:00                             | .0356        | 1.0389        |
|                               |                   |                 |               |                   |               | 9:00                             | .0246        | 1.0690        |
|                               |                   |                 |               |                   |               | 12:00m                           | .0193        | 1.1350        |
|                               |                   |                 |               |                   |               | 7-23-55                          |              |               |
|                               |                   |                 |               |                   |               | 3:00a                            | .0089        | 1.1773        |
|                               |                   |                 |               |                   |               | 8:00                             | 0            | 1.1993        |

Notes: To convert runoff in in/hr to cfs, multiply by 565.

| SELECTED RUNOFF EVENTS                           |                   |                 | Tombstone, Arizona Watershed W-4 |                   |               |               |              |               |
|--------------------------------------------------|-------------------|-----------------|----------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions                            |                   |                 | Rainfall                         |                   |               | Runoff        |              |               |
| Date                                             | Rainfall (inches) | Runoff (inches) | Date and time                    | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| <u>Event of August 14, 1958</u>                  |                   |                 |                                  |                   |               |               |              |               |
| Raingage 27                                      |                   |                 |                                  | Raingage          | 27            | 8-14-58       |              |               |
| 7-4-58                                           | 0.18              | 0               | 8-14-58                          |                   |               | 1:44p         | 0            | 0             |
| 7-24                                             | .10               | 0               | 1:32p                            | 0                 | 0             | 1:48p         | .0100        | .0003         |
| 7-29                                             | .61               | 0               | :34                              | 1.50              | .05           | :48           | .0802        | .0056         |
| 8-1                                              | .47               | 0               | :35                              | 1.20              | .07           | :55           | .2301        | .0159         |
| 8-2                                              | .35               | 0               | :37                              | 15.30             | .58           | :59           |              |               |
| 8-5                                              | .20               | 0               | 1:40                             | 1.40              | .65           | 2:33          | .0216        | .0851         |
| 8-6                                              | .08               | 0               | :49                              | 4.01              | 1.26          | :52           | .0062        | .0895         |
| 8-8                                              | .30               | 0               | :52                              | 1.00              | 1.31          | 3:05          | .0033        | .0905         |
| 8-10                                             | .38               | 0               | :55                              | 1.60              | 1.39          | :31           | .0011        | .0915         |
| 8-11                                             | .06               | 0               | :56                              | 3.60              | 1.45          | 4:01          | .0002        | .0918         |
| Raingage 31                                      |                   |                 | 2:02                             | .50               | 1.50          | 4:46          | 0            | .0919         |
| 7-5-58                                           | 0.06              | 0               | :07                              | .24               | 1.52          |               |              |               |
| 7-19                                             | .13               | 0               | :16                              | .07               | 1.53          |               |              |               |
| 7-24                                             | .15               | 0               |                                  |                   |               |               |              |               |
| 7-29                                             | .79               | 0               | 8-14-58                          | Raingage          | 31            |               |              |               |
| 8-1                                              | .13               | 0               | 1:07p                            | 0                 | 0             |               |              |               |
| 8-2                                              | .27               | 0               | :17                              | 1.32              | .22           |               |              |               |
| 8-5                                              | .47               | 0               | :37                              | .66               | .44           |               |              |               |
| 8-6                                              | .06               | 0               | 2:02                             | .02               | .45           |               |              |               |
| 8-8                                              | .41               | 0               |                                  |                   |               |               |              |               |
| 8-10                                             | .70               | 0               |                                  |                   |               |               |              |               |
| <u>WATERSHED CONDITIONS: Shrub cover of 25%.</u> |                   |                 |                                  |                   |               |               |              |               |
| <u>Event of August 16, 1958</u>                  |                   |                 |                                  |                   |               |               |              |               |
| Same as above                                    |                   |                 | 8-16-58                          | Raingage          | 27            | 8-16-58       |              |               |
|                                                  |                   |                 | 6:50p                            | 0                 | 0             | 7:18p         | 0            | 0             |
|                                                  |                   |                 | 7:00                             | 1.92              | .32           | :21           | .2212        | .0055         |
|                                                  |                   |                 | :10                              | 4.56              | 1.08          | :26           | .3151        | .0279         |
|                                                  |                   |                 | :20                              | 1.02              | 1.25          | :33           | .2744        | .0624         |
|                                                  |                   |                 | 7:30                             | .12               | 1.27          | :38           | .3080        | .0867         |
|                                                  |                   |                 | 8:20                             | 0                 | 1.27          | :53           | .0943        | .1370         |
|                                                  |                   |                 | :38                              | .17               | 1.32          | 8:00          | .0326        | .1444         |
|                                                  |                   |                 | 9:10                             | .04               | 1.34          | :07           | .0258        | .1478         |
|                                                  |                   |                 | :20                              | .36               | 1.40          | :17           | .0165        | .1513         |
|                                                  |                   |                 | 8-16-58                          | Raingage          | 31            | :20           | .0169        | .1521         |
|                                                  |                   |                 | 7:02                             | 0                 | 0             | :47           | .0069        | .1575         |
|                                                  |                   |                 | :10                              | 1.58              | .21           | 9:00          | .0046        | .1588         |
|                                                  |                   |                 | :15                              | 9.48              | 1.00          | :14           | .0025        | .1596         |
|                                                  |                   |                 | :25                              | .30               | 1.05          | :45           | .0008        | .1608         |
|                                                  |                   |                 |                                  |                   |               | 10:30         | .0002        | .1612         |
|                                                  |                   |                 |                                  |                   |               | 11:00         | 0            | .1612         |
| <u>WATERSHED CONDITIONS: Shrub cover of 25%.</u> |                   |                 |                                  |                   |               |               |              |               |

Notes: To convert runoff in in/hr to cfs, multiply by 565.  
See 63.1-7 for isohyetal maps of events.





TOMBSTONE, ARIZONA Watershed W-4

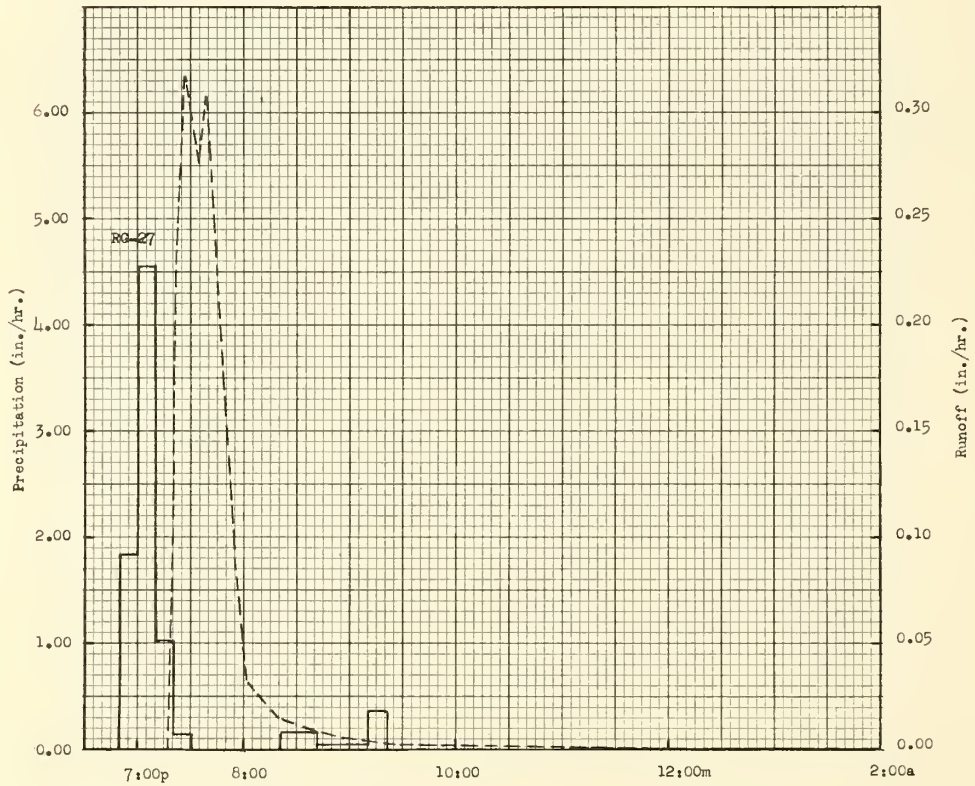




TOMBSTONE, ARIZONA Watershed W-1



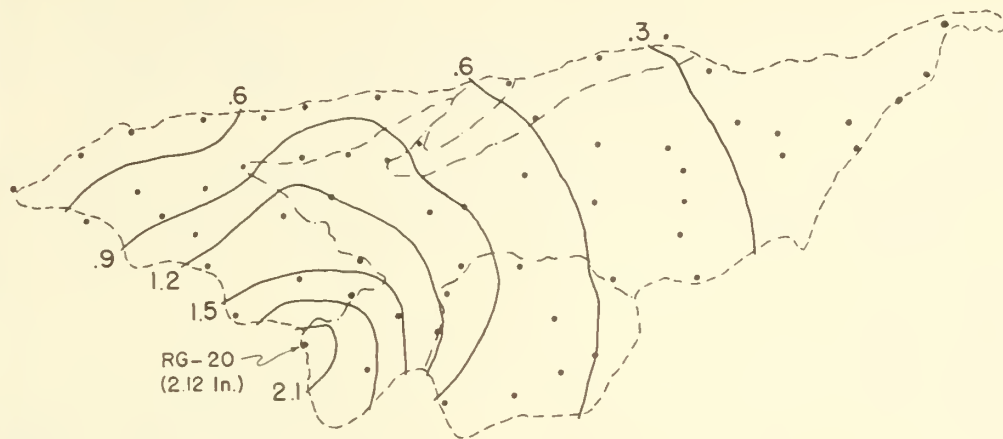
August 14, 1958



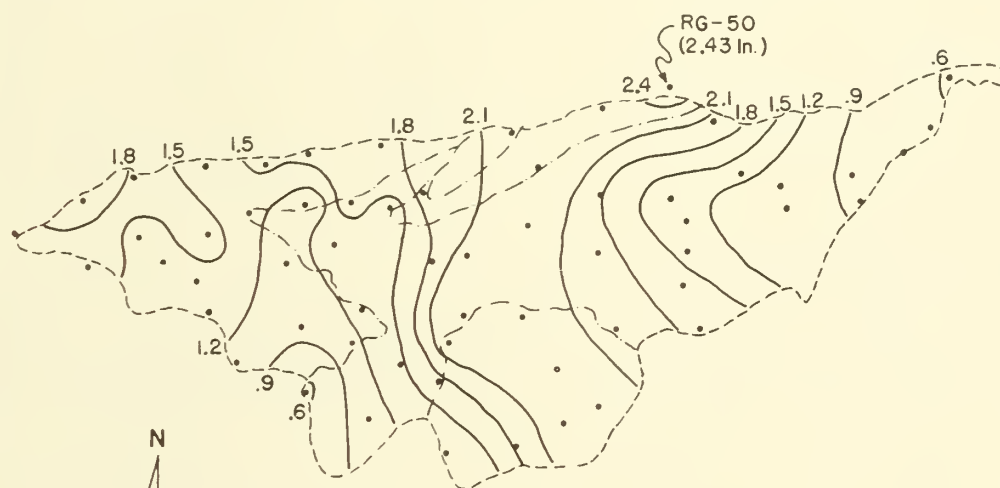
August 16, 1958

August 17, 1958

TOMBSTONE, ARIZONA Watershed W-1



**WALNUT GULCH WATERSHED**  
**Isohyetal Map**  
 STORM OF AUGUST 14, 1954



**WALNUT GULCH WATERSHED**  
**Isohyetal Map**  
 STORM OF JULY 22, 1955



## TOMBSTONE, ARIZONA Watershed W-5

**LOCATION:** Cochise County; 2 miles east of Tombstone; Walnut Gulch, tributary of San Pedro River.

**AREA:** 8.61 sq. mi. (5510 ac.) **SHAPE:** Roughly circular, diameter of 3½ miles.

**SLOPES:** Not available

Aspect NNW

**SOILS:** Boothill, a stony clay loam developed on andesite extrusions; calcareous throughout the profile; moderately permeable -- 15%. Cave, a gravelly sandy loam developed on outwash material from andesite extrusions; calcareous throughout the profile; moderately permeable -- 15%. Tombstone (see description under W-2) 43%. Tortugas (see W-2) 8%. The remaining 19% is made up of small bodies of five other moderately permeable soils.

**EROSION:** 1 - 20%; 2 - 80%.

**LAND CAPABILITY:** V 30%; VI 70%.

**SURFACE DRAINAGE:** Good; length of principal drainage - 3 miles.

**CHARACTER OF FLOW:** Ephemeral, continuous.

**INSTRUMENTATION:** Runoff - critical depth flume, recorder with 8 hr. chart; Precipitation - 10 recording raingages, 2 standard gages.

**WATERSHED CONDITIONS:** Desert shrubs (whitethorn, tarbush, creosotebush) cover 25%. Grassland, grass canopy 22%.

**GENERALLY REPRESENTS:** Desert grassland ranges in the Southeastern Arizona Basin and Range resource area (D-41).

| MONTHLY PRECIPITATION AND RUNOFF (Inches) |       |      |      |      |      |      |      |      |      |       |      |      | Tombstone, Arizona Watershed W-5 |       |
|-------------------------------------------|-------|------|------|------|------|------|------|------|------|-------|------|------|----------------------------------|-------|
| Year                                      | Month | Jan. | Feb. | Mar. | Apr. | May  | June | July | Aug. | Sept. | Oct. | Nov. | Dec.                             | Year  |
| 1954                                      | P     | 0.58 | 0.20 | 0.37 | 0    | 0.56 | 0.78 | 2.26 | 5.06 | 0.52  | 1.93 | 0    | 0                                | 12.26 |
|                                           | Q     | 0    | 0    | 0    | 0    | 0    | 0    | .01  | .24  | .01   | 1.05 | 0    | 0                                | 1.31  |
| 1955                                      | P     | 1.18 | .31  | .42  | 0    | .04  | .15  | 6.97 | 4.32 | .14   | .16  | .07  | .39                              | 14.15 |
|                                           | Q     | 0    | 0    | 0    | 0    | 0    | 0    | .33  | .32  | 0     | 0    | 0    | 0                                | .65   |
| 1956                                      | P     | .68  | .33  | 0    | .19  | 0    | .69  | 3.75 | .59  | .06   | .13  | .01  | .15                              | 6.58  |
|                                           | Q     | 0    | 0    | 0    | 0    | 0    | 0    | .13  | 0    | 0     | 0    | 0    | 0                                | .13   |
| 1957                                      | P     | 1.86 | .08  | 1.45 | .09  | .21  | .34  | 2.72 | 6.16 | 0     | 1.59 | .08  | .30                              | 14.88 |
|                                           | Q     | 0    | 0    | 0    | 0    | 0    | 0    | .02  | .52  | 0     | 0    | 0    | 0                                | .54   |
| 1958                                      | P     | 0    | 1.20 | 2.20 | .71  | .01  | .21  | 1.41 | 5.43 | 2.18  | .88  | .49  | 0                                | 14.72 |
|                                           | Q     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | .43  | 0     | 0    | 0    | 0                                | .43   |
| 1959                                      | P     | 0    | .40  | 0    | .03  | 0    | 1.03 | 6.10 | 3.66 | .38   | 1.35 | .92  | .92                              | 14.79 |
|                                           | Q     | 0    | 0    | 0    | 0    | 0    | 0    | .27  | .12  | 0     | 0    | 0    | 0                                | .39   |
| Normal                                    | P     | .86  | .82  | .61  | .29  | .20  | .51  | 3.68 | 3.50 | 1.53  | .64  | .63  | .87                              | 14.14 |

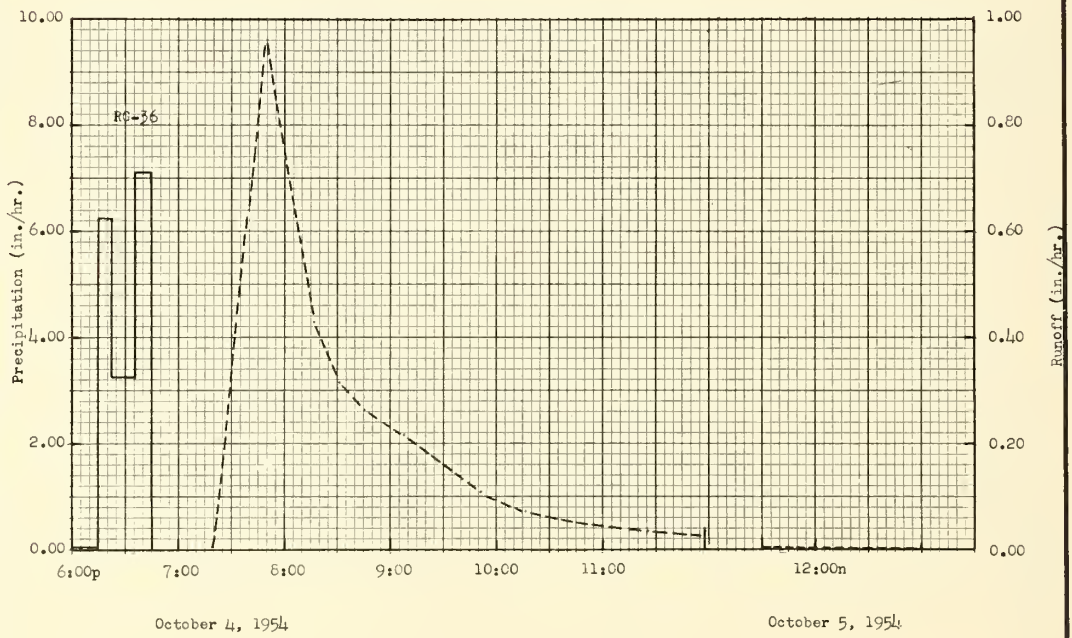
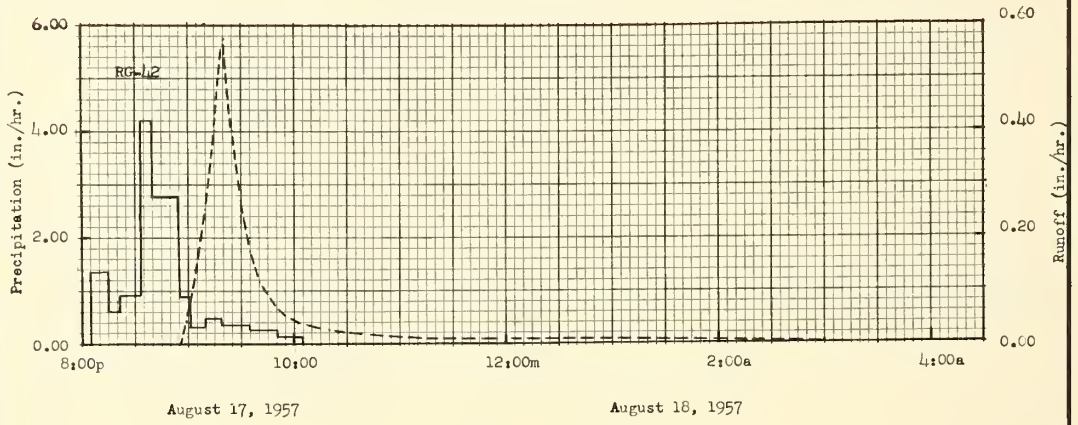
  

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS |                   |        |                                           |        |         |        |         |        |          |        |       |        | Tombstone, Arizona Watershed W-5 |        |        |        |
|-------------------------------------------------------------------------------------------------------------------------|-------------------|--------|-------------------------------------------|--------|---------|--------|---------|--------|----------|--------|-------|--------|----------------------------------|--------|--------|--------|
| YEAR                                                                                                                    | MAXIMUM DISCHARGE |        | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |        |         |        |         |        |          |        |       |        |                                  |        |        |        |
|                                                                                                                         |                   |        | 1 hour                                    |        | 2 hours |        | 6 hours |        | 12 hours |        | 1 day |        | 2 days                           |        | 8 days |        |
|                                                                                                                         | Date              | Rate   | Date                                      | Vol.   | Date    | Vol.   | Date    | Vol.   | Date     | Vol.   | Date  | Vol.   | Date                             | Vol.   | Date   | Vol.   |
| 1954                                                                                                                    | 10-4              | 0.9540 | 10-4                                      | 0.6245 | 10-4    | 0.8354 | 10-4    | 1.0512 | 10-4     | 1.0516 | 10-4  | 1.0516 | 10-4                             | 1.0516 | 10-4   | 1.0516 |
| 1955                                                                                                                    | 7-25              | .3960  | 7-25                                      | .1429  | 7-25    | .2022  | 7-25    | .2500  | 7-25     | .2500  | 7-25  | .2522  | 7-25                             | .2522  | 7-22   | .3281  |
| 1956                                                                                                                    | 7-18              | .1026  | 7-18                                      | .0720  | 7-18    | .0935  | 7-18    | .1011  | 7-18     | .1011  | 7-18  | .1011  | 7-17                             | .1017  | 7-15   | .1028  |
| 1957                                                                                                                    | 8-17              | .5652  | 8-17                                      | .2158  | 8-17    | .2300  | 8-17    | .2396  | 8-17     | .2396  | 8-17  | .2396  | 8-17                             | .2396  | 8-17   | .2466  |
| 1958                                                                                                                    | 8-16              | .1163  | 8-16                                      | .1725  | 8-16    | .1849  | 8-16    | .1921  | 8-16     | .1921  | 8-16  | .1921  | 8-16                             | .1921  | 8-14   | .3493  |
| 1959                                                                                                                    | 7-26              | .4032  | 7-26                                      | .1075  | 7-26    | .1420  | 7-26    | .1520  | 7-26     | .1521  | 7-26  | .1521  | 7-26                             | .1521  | 7-20   | .2327  |

**Notes:** Quality of record: P, poor in 1954 and 1955; good, 1956 through 1959. Q, poor, 1954 through 1959. Monthly P is arithmetic average of raingages. Normal P based on 60 year record (1897-1957), USWB Station, Tombstone, Arizona.







TOMBSTONE, ARIZONA Watershed W-5

SANTA ROSA, NEW MEXICO Watershed W-1

LOCATION: Guadalupe and Quay Counties; 30 miles east of Santa Rosa, Alamogordo Creek, tributary of Pecos River.

AREA: 67 sq. mi. (42,880 ac.) SHAPE: Fan, approximately 7 1/2 miles wide by 11 miles long.

SLOPES: Not available

SOILS: Not available

EROSION: 1 - 40%; 2 - 50%; 3 - 10%

LAND CAPABILITY: V - 65%; VII - 5%; VIII - 30%

SURFACE DRAINAGE: Fair, incised arroyo type channel extends from watershed outlet upstream for 2 miles, and up the two principal lower tributaries. Remainder of watershed has broad swale reaches, with poorly defined channels.

CHARACTER OF FLOW: Ephemeral, continuous.

INSTRUMENTATION: Runoff-critical depth flume, recorder with 12 hr. chart; Precipitation - 55 recording raingages, 24 hr. charts.

WATERSHED CONDITIONS: Grazing land. About 75% of the area is grassland, vegetation consisting of blue grama, galleta, buffalo and ring muhly. Remaining 25% of area is pinon, juniper, and various shrubs, with some grasses interspersed.

GENERALLY REPRESENTS: Grazing lands in the Pecos-Canadian Plains and Valleys resource area (G-70) in eastern New Mexico and southern Colorado.

| MONTHLY PRECIPITATION AND RUNOFF (Inches) |      |      |      |      |      |      | Santa Rosa, New Mexico Watershed W-1 |      |       |      |      |      |       |
|-------------------------------------------|------|------|------|------|------|------|--------------------------------------|------|-------|------|------|------|-------|
| Month<br>Year                             | Jan. | Feb. | Mar. | Apr. | May  | June | July                                 | Aug. | Sept. | Oct. | Nov. | Dec. | Year  |
| 1955 1/ P                                 | 0.03 | 0    | 0.01 | 0.14 | 0.32 | 0.25 | 4.10                                 | 2.41 | 2.12  | 0.30 | 0    | 0    | 9.68  |
| C                                         | 0    | 0    | 0    | .01  | 0    | 0    | nr                                   | nr   | nr    | nr   | 0    | 0    | .01   |
| 1956 P                                    | T    | 0    | 0    | .03  | .39  | .56  | 2.10                                 | .73  | T     | .45  | 0    | .01  | 4.27  |
| C                                         | 0    | 0    | 0    | 0    | 0    | T    | .21                                  | T    | 0     | 0    | 0    | 0    | .21   |
| 1957 P                                    | .08  | .24  | .00  | .45  | 1.12 | .05  | 1.25                                 | 1.84 | .52   | 1.97 | .25  | .05  | 8.42  |
| C                                         | 0    | 0    | 0    | T    | .01  | 0    | .04                                  | .11  | .03   | .01  | 0    | 0    | .20   |
| 1958 P                                    | .49  | .16  | 1.70 | .89  | .71  | .69  | 2.19                                 | 1.22 | 1.76  | .37  | .12  | .26  | 10.56 |
| C                                         | 0    | 0    | 0    | 0    | T    | 0    | 0                                    | .15  | .04   | 0    | 0    | 0    | .19   |
| 1959 P                                    | .13  | .09  | .07  | .38  | 1.72 | 2.24 | 1.28                                 | 3.10 | .09   | .48  | .06  | 2.10 | 12.18 |
| Q                                         | 0    | 0    | 0    | 0    | .02  | .01  | 0                                    | .02  | 0     | 0    | 0    | 0    | .05   |
| Normal P 2/                               | .45  | .43  | .51  | .72  | 1.70 | 1.33 | 2.33                                 | 2.24 | 1.72  | .97  | .36  | .41  | 13.30 |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS |                   |       |                                           |       |         |       | Santa Rosa, New Mexico Watershed W-1 |       |          |       |       |       |        |       |        |       |
|-------------------------------------------------------------------------------------------------------------------------|-------------------|-------|-------------------------------------------|-------|---------|-------|--------------------------------------|-------|----------|-------|-------|-------|--------|-------|--------|-------|
| YEAR                                                                                                                    | MAXIMUM DISCHARGE |       | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |       |         |       |                                      |       |          |       |       |       |        |       |        |       |
|                                                                                                                         |                   |       | 1 hour                                    |       | 2 hours |       | 6 hours                              |       | 12 hours |       | 1 day |       | 2 days |       | 8 days |       |
|                                                                                                                         | Date              | Rate  | Date                                      | Vol.  | Date    | Vol.  | Date                                 | Vol.  | Date     | Vol.  | Date  | Vol.  | Date   | Vol.  | Date   | Vol.  |
| 1955 1/                                                                                                                 | 7-19              | .0622 |                                           |       |         |       |                                      |       |          |       |       |       |        |       |        |       |
| 1956                                                                                                                    | 7-9               | .0433 | 7-9                                       | .0459 | 7-9     | .0888 | 7-9                                  | .1309 | 7-9      | .1454 | 7-9   | .1500 | 7-9    | .1622 | 7-9    | .1622 |
| 1957                                                                                                                    | 8-10              | .0253 | 8-16                                      | .0343 | 8-16    | .0547 | 8-16                                 | .0822 | 8-16     | .0901 | 8-16  | .0973 | 8-16   | .1037 | 8-16   | .1100 |
| 1958                                                                                                                    | 8-17              | .0380 | 8-17                                      | .0365 | 8-17    | .0646 | 8-17                                 | .1342 | 8-16     | .1475 | 8-16  | .1576 | 8-16   | .1576 | 8-16   | .1576 |
| 1959                                                                                                                    | 5-16              | .0087 | 5-16                                      | .0079 | 5-16    | .0113 | 5-16                                 | .0193 | 5-16     | .0210 | 5-16  | .0210 | 5-16   | .0210 | 5-16   | .0210 |

Notes: Quality of records: Monthly P and Q, Good; Annual Maximum discharges and volume, Good.  
 1/ Incomplete record for 1955.  
 2/ Normal precipitation based on 30 years record at Santa Rosa, New Mexico located 30 miles west of the watershed.

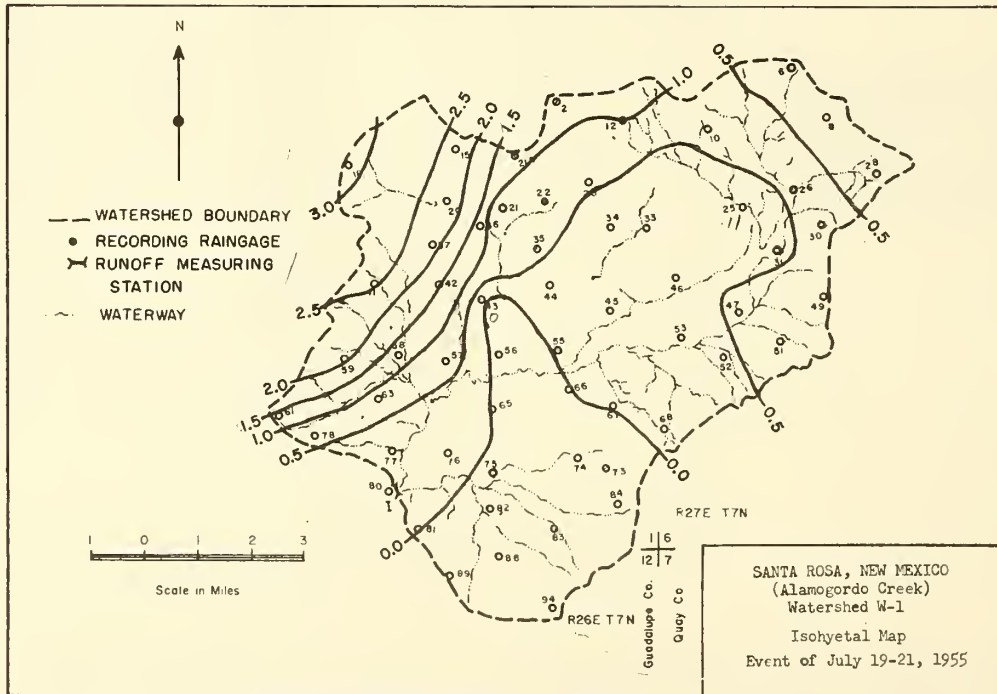
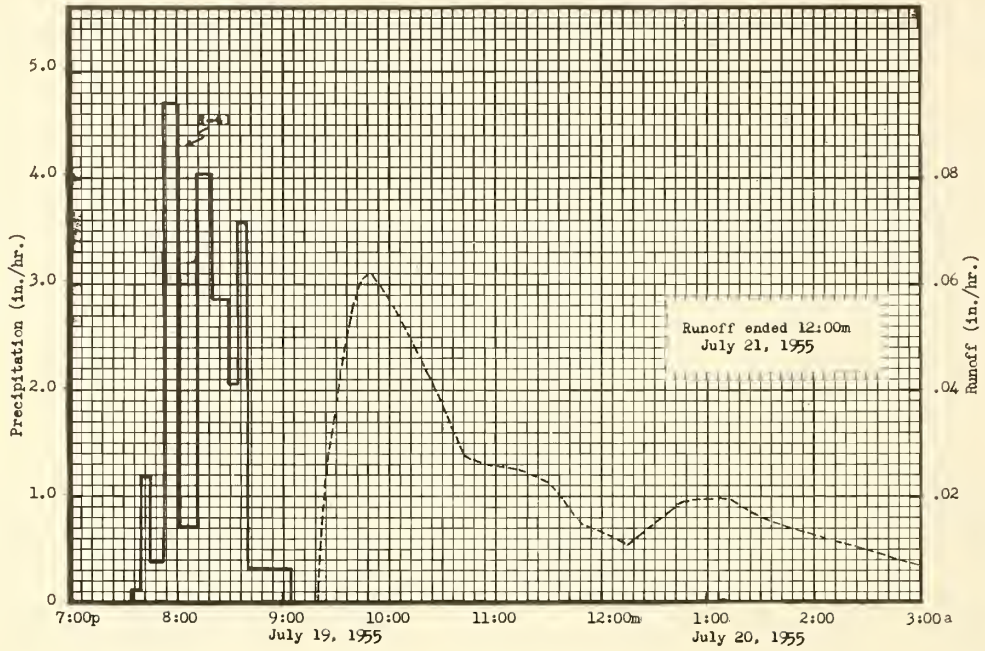
| SELECTED RUNOFF EVENTS    |                   |                 | Santa Rosa, New Mexico Watershed W-1 |                   |               |               |              |               |
|---------------------------|-------------------|-----------------|--------------------------------------|-------------------|---------------|---------------|--------------|---------------|
| Antecedent conditions     |                   |                 | Rainfall                             |                   |               | Runoff        |              |               |
| Date                      | Rainfall (inches) | Runoff (inches) | Date and time                        | Intensity (in/hr) | Acc. (inches) | Date and time | Rate (in/hr) | Acc. (inches) |
| Event of July 19-21, 1955 |                   |                 |                                      |                   |               |               |              |               |
| <u>Raingage # R-18</u>    |                   |                 |                                      |                   |               |               |              |               |
| 6-20-55                   | 0.08              | 0               | 7-19-55                              | Raingage          | R-18          | 7-19-55       |              |               |
| 7-4                       | 1.52              | .0006           | 7:40p                                | 0                 |               | 9:20p         | 0            | 0             |
| 7-15                      | .84               | 0               | :52                                  | .25               | .05           | :25           | .0262        | .0011         |
| 7-19                      | 1.00              | 0               | 8:01                                 | 5.13              | .82           | :30           | .0366        | .0037         |
|                           |                   |                 | :14                                  | 2.90              | 1.45          | :35           | .0491        | .0073         |
|                           |                   |                 | 8:30                                 | .11               | 1.48          | :40           | .0576        | .0118         |
|                           |                   |                 | :42                                  | .70               | 1.62          | :45           | .0611        | .0167         |
|                           |                   |                 | :55                                  | 1.52              | 1.95          | :50           | .0622        | .0219         |
|                           |                   |                 | 9:02                                 | 4.12              | 2.43          | 10:00         | .0575        | .0317         |
|                           |                   |                 | :14                                  | 2.65              | 2.96          | :15           | .0477        | .0448         |
|                           |                   |                 | :25                                  | .65               | 3.08          | :30           | .0378        | .0557         |
|                           |                   |                 | :33                                  | .08               | 3.09          | :45           | .0277        | .0639         |
|                           |                   |                 |                                      |                   |               | :55           | .0260        | .0686         |
|                           |                   |                 |                                      |                   |               | 11:15         | .0251        | .0772         |
|                           |                   |                 |                                      |                   |               | :30           | .0227        | .0833         |
| <u>Raingage # R-41</u>    |                   |                 |                                      |                   |               |               |              |               |
| 6-20-55                   | 0.20              | 0               | 7-19-55                              | Raingage          | R-41          | :45           | .0165        | .0881         |
| 7-4                       | .48               | .0006           | 7:35p                                | 0                 |               | :50           | .0154        | .0894         |
| 7-15                      | .28               | 0               | :40                                  | .12               | .01           | 12:00m        | .0135        | .0918         |
|                           |                   |                 | :45                                  | 1.20              | .11           | 7-20-55       |              |               |
|                           |                   |                 | :53                                  | .38               | .16           | 12:15a        | .0111        | .0949         |
|                           |                   |                 | 8:01                                 | 4.72              | .79           | :25           | .0141        | .0971         |
|                           |                   |                 | :12                                  | .71               | .92           | :45           | .0188        | .1027         |
|                           |                   |                 | :20                                  | 4.05              | 1.46          | :50           | .0194        | .1043         |
|                           |                   |                 | :30                                  | 2.88              | 1.94          | 1:00          | .0197        | .1075         |
|                           |                   |                 | :35                                  | 2.04              | 2.11          | :15           | .0188        | .1124         |
|                           |                   |                 | :40                                  | 3.60              | 2.41          | :35           | .0158        | .1182         |
|                           |                   |                 | 9:05                                 | .31               | 2.54          | 2:40          | .0088        | .1316         |
|                           |                   |                 |                                      |                   |               | 3:20          | .0058        | .1365         |
|                           |                   |                 |                                      |                   |               | 7-21-55       |              |               |
|                           |                   |                 |                                      |                   |               | 12:00m        | 0            | .1476         |
| Event of July 9-11, 1956  |                   |                 |                                      |                   |               |               |              |               |
| <u>Raingage # R-67</u>    |                   |                 |                                      |                   |               |               |              |               |
| 6-7-56                    | 0.17              | 0.002           | 7-9-56                               | Raingage          | R-67          | 7-9-56        |              |               |
| 6-8                       | .18               | .001            | 6:50p                                | 0                 | 0             | 8:00a         | 0            | 0             |
| 6-17                      | .05               | 0               | :55                                  | 12.72             | 1.06          | :05           | .0262        | T             |
|                           |                   |                 | 7:02                                 | 2.66              | 1.37          | :10           | .0366        | .0037         |
|                           |                   |                 | :07                                  | 7.80              | 2.02          | :15           | .0436        | .0071         |
|                           |                   |                 | :22                                  | 1.96              | 2.51          | :55           | .0437        | .0362         |
|                           |                   |                 | 9:05p                                | .04               | 2.57          | 9:00          | .0435        | .0398         |
|                           |                   |                 |                                      |                   |               | :05           | .0428        | .0434         |
|                           |                   |                 |                                      |                   |               | :50           | .0431        | .0756         |
|                           |                   |                 |                                      |                   |               | 10:05         | .0429        | .0864         |
| <u>Raingage # R-89</u>    |                   |                 |                                      |                   |               |               |              |               |
| 6-8-56                    | 0.12              | 0.001           | 7-9-56                               | Raingage          | R-89          | :15           | .0427        | .0935         |
| 6-17                      | .02               | 0               | 7:15p                                | 0                 | 0             | :20           | .0366        | .0968         |
| 6-20                      | .05               | 0               | :20                                  | 1.80              | .15           | :25           | .0335        | .0998         |
| 7-2                       | .07               | 0               | :30                                  | 5.22              | 1.02          | :30           | .0310        | .1025         |
| 7-4                       | .06               | 0               | :33                                  | 10.00             | 1.52          | :35           | .0276        | .1049         |
|                           |                   |                 | :35                                  | 8.40              | 1.80          | :40           | .0255        | .1071         |
|                           |                   |                 | :40                                  | 1.80              | 1.95          | :45           | .0225        | .1091         |
|                           |                   |                 | :56                                  | .56               | 2.10          | 11:00         | .0190        | .1146         |
|                           |                   |                 | 8:55                                 | 0                 | 2.10          | :20           | .0164        | .1204         |
|                           |                   |                 | 9:15p                                | .24               | 2.16          | :30           | .0143        | .1231         |

Continued on next page

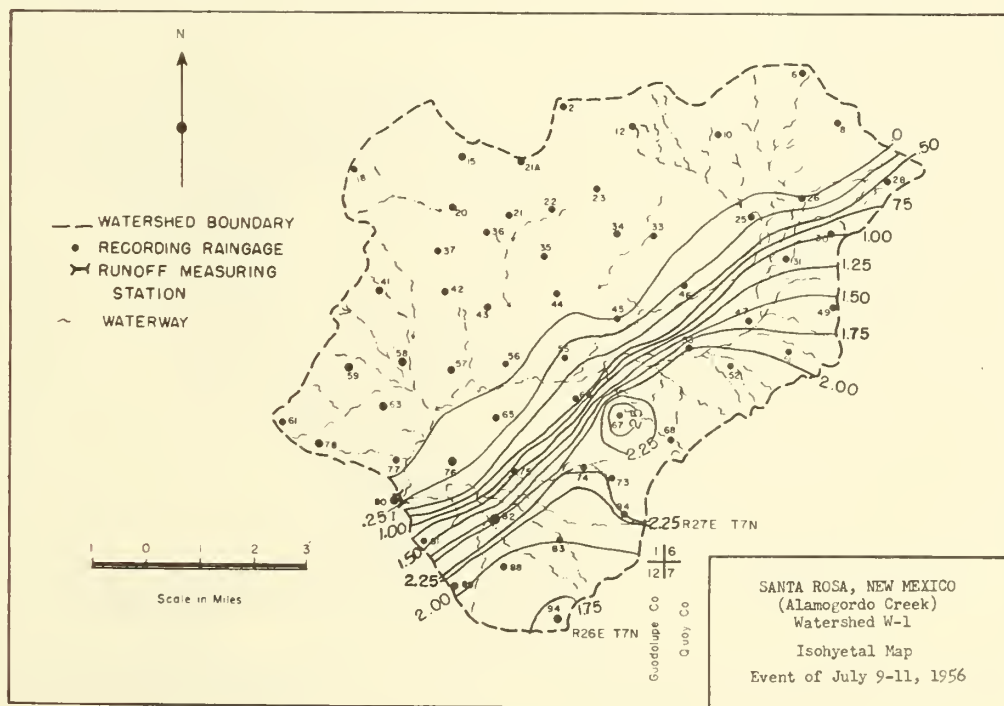
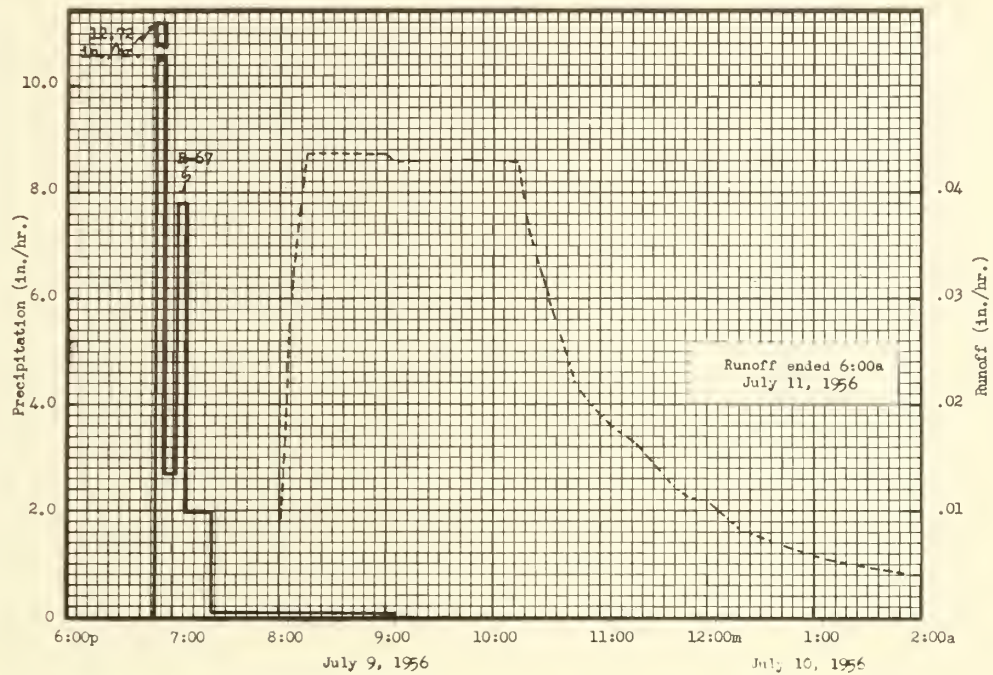
Notes: To convert runoff in in/hr to cfs, multiply by 43,240.

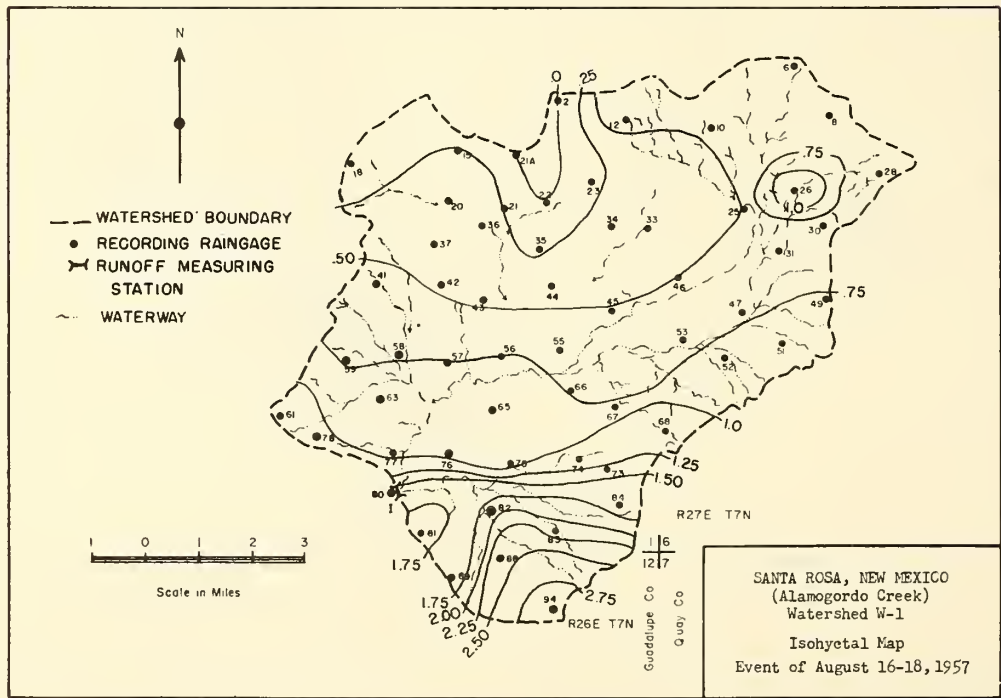
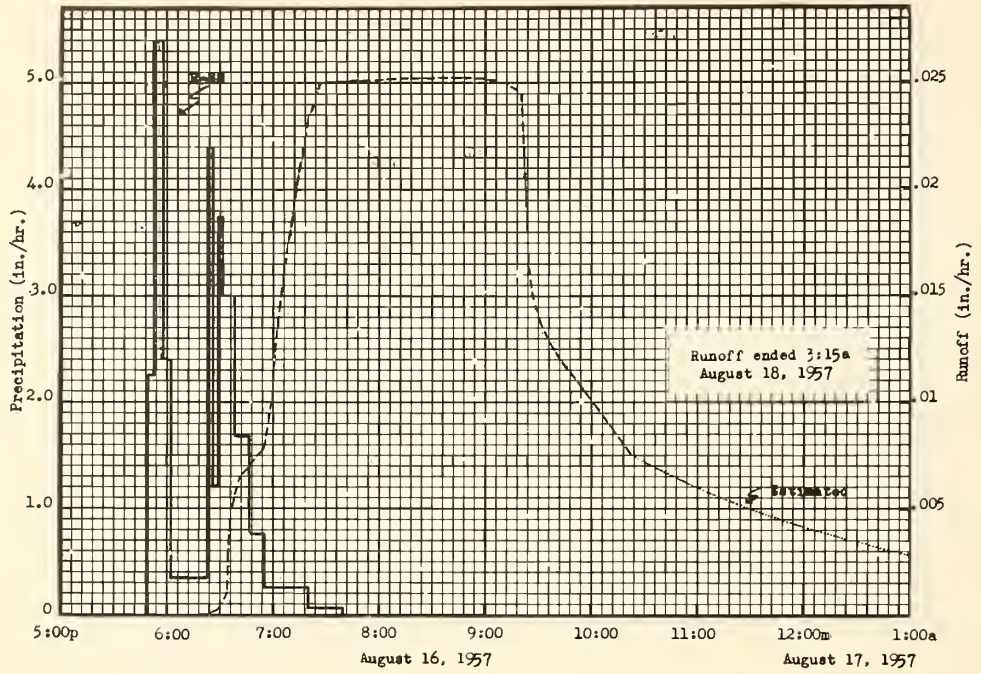












NEWELL, SOUTH DAKOTA Watershed W-2

**LOCATION:** Butte Co.; 33 mi. NE of Newell; Sand Creek; South Morau Rivar Watershad.

**AREA:** 115 Acres.

**SHAPE:** Rectangular, about 3200' long and 1600' wide

**SLOPES:** 3% is in 0-3% slope group; 58% in 3-9%; 19% in 9-18%; 20% in 18-35%.

**ASPECT:** NE

**SOILS:** Residual: 38% - shallowly developed medium textured soils; 44% - moderately deep medium textured, permeability moderate; 14% - solodized solonetz clay pan soils, slow to very slow permeability; 4% - deep, alluvials, soils undifferentiated; Traca - deep and moderately deep clay with slowly permeable subsoil; Cushman-Chama loams and clay loams 33%; Midway-Bainville rock outcrop - 17%; Voline loam - 12%; Fletcher fine sandy loam - 12%; Chama loam 7%; Bainville loam and stony loams - 5%; Midway-Lisnas clay loam - 5%; Lisnas clay - 2%; Broades loams - 1%; Hurley clay and silty clay loams - 2%; Armatard loam - 4%; Patent clay loam - trace. **Internal Drainage - medium.**

**EROSION:** 1 - 100%.

**LAND CAPABILITY:** IIIa = 33%; IVe = 7%; VIe = 16%; VIIe = 24%; VIIIe = 20%.

**SURFACE DRAINAGE:** Good, well-developed drainage way, length 3000', two other reaches 900' each.

**CHARACTER OF FLOW:** Ephemeral, continuous.

**INSTRUMENTATION:** Runoff: A-35 recorder on stock pond. Precipitation: One recording gage. Early precipitation records from 1 in. gage on George Johnson ranch 2 miles northwest of dam.

**WATERSHED CONDITIONS:** 100% Rangeland. Condition classes: Excellent - 19%; Good - 64%; Fair - 17%. Dominant species: Blue grama - 35%; thread leaf sedge - 23%; sand drop seed - 8%; Sandberg's blue grass - 2%; needle and thread grass - 7%; western wheat grass - 7%; buffalo grass - 3%; miscellaneous grasses and forbs - 15%.

Production of cover: 1700 lbs/acre.

Range sites: Silty - 44%; thin breaks - 15%; shallow - 23%; panspots - 14%; overflow - 4%.

USE: (Degree of grazing of rangeland) 1957 - close; 1958 - full; 1959 - close.

**GENERALLY REPRESENTS:** Rangelands in Powder-Yellowstone Residual Plains and Residual Plains, west Dakotas; especially typical of soils formed in materials weathered from Fox Hills and Hell Creek formations. Pierre Shale Plains and Badlands land resource area (G-60).

MONTHLY PRECIPITATION AND RUNOFF (Inches)

Newell, South Dakota Watershed W-2

| Month<br>Year | Jan.           | Feb.     | Mar.        | Apr.         | May          | June         | July         | Aug.         | Sept.        | Oct.      | Nov.      | Dec.         | Year         |
|---------------|----------------|----------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|-----------|-----------|--------------|--------------|
|               | 1958 1/ P<br>O | T<br>0   | 0.11<br>T   | 0.23<br>.008 | 0.75<br>T    | 0.18<br>T    | 2.64<br>.011 | 2.61<br>.030 | 0.87<br>0    | 0.15<br>0 | 0.22<br>0 | 0.45<br>.004 |              |
| 1959 P<br>O   | .31<br>0       | .42<br>0 | .06<br>.309 | .78<br>.08   | 2.40<br>.013 | 1.68<br>.004 | 1.98<br>.077 | .71<br>0     | 1.09<br>.010 | .60<br>0  | .66<br>T  | .13<br>.003  | 11.72<br>.43 |
| Normal P      | .44            | .37      | .79         | 1.67         | 2.65         | 2.95         | 2.11         | 1.34         | 1.29         | 1.02      | .55       | .39          | 15.57        |

**Notes:** 1/ Precipitation prior to 5-2-58 from Johnson's gage.

Normal P based on 52 year record (1908-1959) at Newell USWB station, Newell, South Dakota.

| DAILY PRECIPITATION AND RUNOFF (Inches) |                         |                  | Newell, South Dakota Watershed W-2 |               |                |      |               |        |
|-----------------------------------------|-------------------------|------------------|------------------------------------|---------------|----------------|------|---------------|--------|
| Date                                    | Precipitation <u>1/</u> | Runoff <u>2/</u> | Date                               | Precipitation | Runoff         | Date | Precipitation | Runoff |
| 1958                                    |                         |                  | 1959                               |               |                |      |               |        |
| 2-3 <u>2/</u>                           | e 0.05                  | 0                | 1-13                               | 0.13          | 0              |      |               |        |
| 2-18                                    | .05                     | 0                | 1-16                               | .03           | 0              |      |               |        |
| 2-26                                    | .04                     | 0                | 1-20                               | .04           | 0              |      |               |        |
| 3-4                                     | .15                     | .006 <u>4/</u>   | 1-24                               | .05           | 0              |      |               |        |
| 3-13                                    | .08                     | 0                | 1-25                               | .02           | 0              |      |               |        |
| 3-24                                    | 0                       | .002 <u>4/</u>   | 1-29                               | .04           | 0              |      |               |        |
| 4-10                                    | .25                     | T <u>4/</u>      | 2-3                                | .03           | 0              |      |               |        |
| 4-25                                    | nr                      | T <u>4/</u>      | 2-4                                | .03           | 0              |      |               |        |
| 5-2 <u>5/</u>                           | 0                       | T <u>4/</u>      | 2-5                                | .06           | 0              |      |               |        |
| 5-5 <u>5/</u>                           | 0                       | 0                | 2-9                                | .07           | 0              |      |               |        |
| 5-24                                    | .03                     | 0                | 2-13                               | .10           | 0              |      |               |        |
| 5-30                                    | .13                     | 0                | 2-16                               | .02           | 0              |      |               |        |
| 5-31                                    | .02                     | 0                | 2-17                               | .11           | 0              |      |               |        |
| 6-1                                     | .04                     | 0                | 3-13                               | .03           | 0              |      |               |        |
| 6-2                                     | .12                     | 0                | 3-16                               | T             | .196 <u>4/</u> |      |               |        |
| 6-3                                     | .89                     | .008             | 3-19                               | .03           | 0              |      |               |        |
| 6-7                                     | .22                     | 0                | 3-22                               | 0             | .109 <u>4/</u> |      |               |        |
| 6-8                                     | .17                     | 0                | 3-23                               | 0             | .004 <u>4/</u> |      |               |        |
| 6-9                                     | .21                     | T                | 4-8                                | .03           | 0              |      |               |        |
| 6-13                                    | .25                     | 0                | 4-15                               | .29           | 0              |      |               |        |
| 6-14                                    | .31                     | .003             | 4-16                               | .14           | .002           |      |               |        |
| 6-15                                    | .20                     | .002             | 4-17                               | .08           | 0              |      |               |        |
| 6-18                                    | .10                     | 0                | 4-18                               | .01           | 0              |      |               |        |
| 6-19                                    | .01                     | 0                | 4-19                               | .10           | .006           |      |               |        |
| 6-20                                    | .04                     | 0                | 4-20                               | .07           | 0              |      |               |        |
| 6-21                                    | .08                     | 0                | 4-23                               | .06           | 0              |      |               |        |
| 7-1                                     | .23                     | 0                | 5-4                                | .12           | 0              |      |               |        |
| 7-2                                     | 1.05                    | .027             | 5-5                                | .02           | 0              |      |               |        |
| 7-3                                     | .39                     | T                | 5-10                               | .18           | 0              |      |               |        |
| 7-13                                    | .05                     | 0                | 5-19                               | .42           | 0              |      |               |        |
| 7-14                                    | .13                     | 0                | 5-20                               | .30           | .004           |      |               |        |
| 7-19                                    | .11                     | 0                | 5-27                               | .05           | 0              |      |               |        |
| 7-23                                    | .10                     | 0                | 5-28                               | .20           | 0              |      |               |        |
| 7-24                                    | .01                     | 0                | 5-29                               | .45           | T              |      |               |        |
| 7-29                                    | .30                     | 0                | 5-30                               | .16           | .007           |      |               |        |
| 7-30                                    | .14                     | 0                | 5-31                               | .20           | 0              |      |               |        |
| 8-3                                     | .03                     | 0                | 6-7                                | .03           | 0              |      |               |        |
| 8-20                                    | .62                     | 0                | 6-17                               | .12           | 0              |      |               |        |
| 8-30                                    | .22                     | 0                | 6-21                               | .05           | 0              |      |               |        |
| 9-4                                     | .10                     | 0                | 6-24                               | .45           | 0              |      |               |        |
| 9-19                                    | .05                     | 0                | 6-25                               | .10           | 0              |      |               |        |
| 10-20                                   | .10                     | 0                | 6-26                               | .19           | 0              |      |               |        |
| 10-21                                   | .12                     | 0                | 6-29                               | .08           | 0              |      |               |        |
| 11-14                                   | .16                     | 0                | 6-30                               | .66           | .004           |      |               |        |
| 11-15                                   | .05                     | 0                | 7-1                                | 0             | .002           |      |               |        |
| 11-16                                   | .13                     | 0                | 7-3                                | .10           | 0              |      |               |        |
| 11-17                                   | .04                     | 0                | 7-6                                | .14           | 0              |      |               |        |
| 11-19                                   | T                       | .003             | 7-7                                | .70           | .051           |      |               |        |
| 11-22                                   | .02                     | 0                | 7-8                                | 0             | T              |      |               |        |
| 11-23                                   | .05                     | 0                | 7-15                               | .81           | .023           |      |               |        |
| 12-3                                    | 0                       | 0                | 7-17                               | .20           | 0              |      |               |        |
| 12-6                                    | .05                     | 0                | 7-21                               | .03           | 0              |      |               |        |
| 12-7                                    | .04                     | 0                | 7-25                               | 0             | 0              |      |               |        |
| 12-8                                    | .02                     | 0                | 8-8                                | .43           | 0              |      |               |        |
| 12-11                                   | .10                     | 0                | 8-12                               | .17           | 0              |      |               |        |
| 12-12                                   | .01                     | 0                | 8-31                               | .11           | 0              |      |               |        |
| 12-13                                   | .03                     | 0                | 9-16                               | .30           | 0              |      |               |        |
|                                         |                         |                  | 9-17                               | .71           | .004           |      |               |        |
|                                         |                         |                  | 9-18                               | 0             | T              |      |               |        |
|                                         |                         |                  | 9-20                               | .06           | 0              |      |               |        |
|                                         |                         |                  | 9-21                               | .02           | 0              |      |               |        |
|                                         |                         |                  | 9-24                               | .37           | 0              |      |               |        |
|                                         |                         |                  | 9-25                               | .41           | .005           |      |               |        |
|                                         |                         |                  | 9-27                               | .08           | 0              |      |               |        |
|                                         |                         |                  | 9-28                               | .03           | 0              |      |               |        |

Notes: Quality of records: Precipitation - good except for period before 5-2-5<sup>8</sup> which are poor; runoff - good, except for period of early snow melt which are fair. Months of Jan., Feb., Mar., Apr., Nov. and Dec. include snow and snow melt 1/ Precipitation prior to 5-2-5<sup>8</sup> from Johnson's gage. 2/ Runoff prior to 5-5-5<sup>8</sup> based on weekly observations. 3/ Beginning of observations. 4/ Runoff between observation dates. 5/ Recording rain gage installed. 6/ Stage recorder installed.



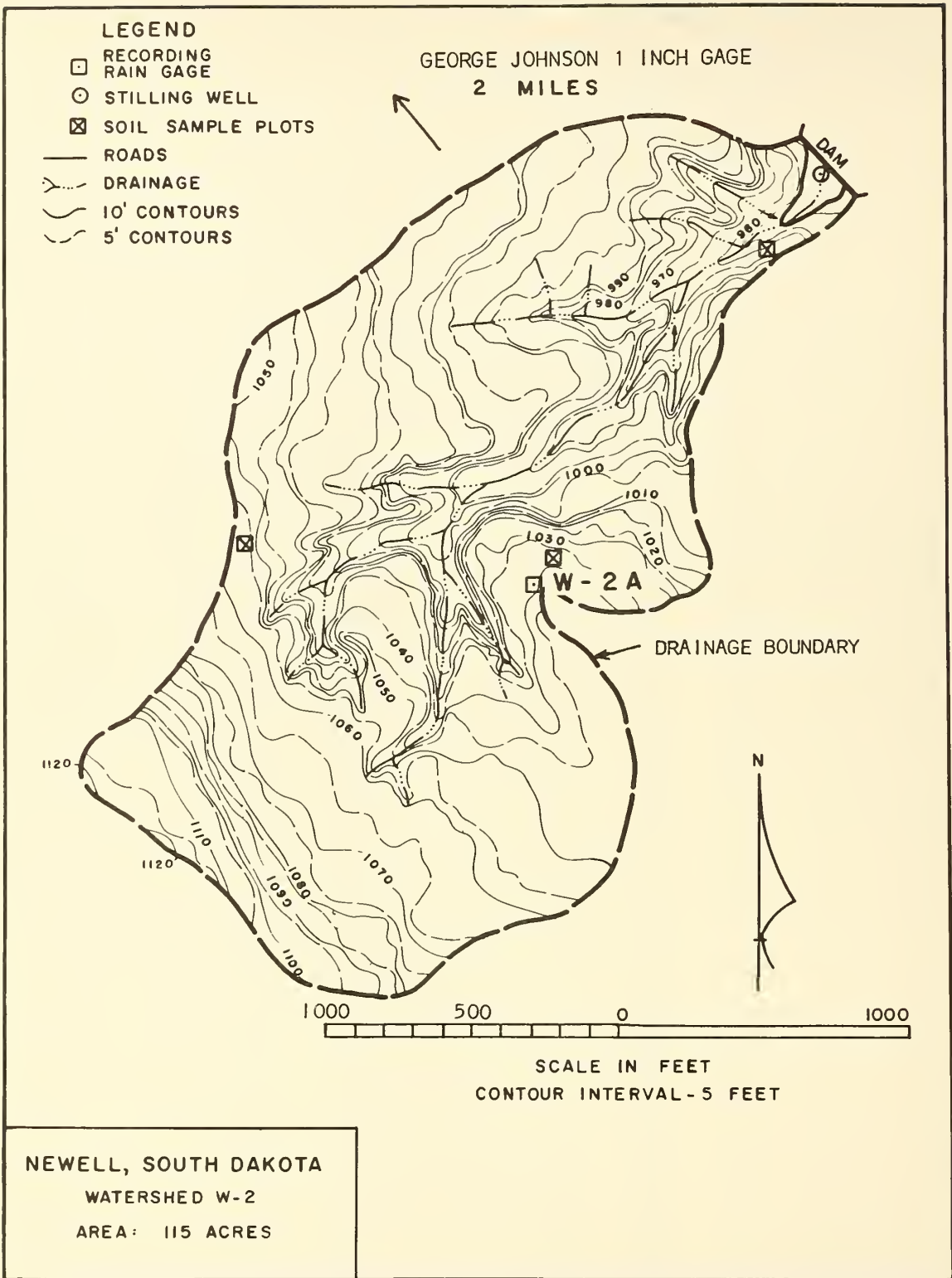
DAILY PRECIPITATION AND RUNOFF (Inches)

Newell, South Dakota Watershed W-2

| Date | Precipitation | Runoff | Date  | Precipitation | Runoff             | Date | Precipitation | Runoff |
|------|---------------|--------|-------|---------------|--------------------|------|---------------|--------|
|      |               |        | 1959  |               |                    |      |               |        |
|      |               |        | 9-29  | 0.01          | 0                  |      |               |        |
|      |               |        | 10-1  | .01           | 0                  |      |               |        |
|      |               |        | 10-7  | .20           | 0                  |      |               |        |
|      |               |        | 10-9  | .31           | 0                  |      |               |        |
|      |               |        | 10-12 | .08           | 0                  |      |               |        |
|      |               |        | 11-4  | .18           | 0                  |      |               |        |
|      |               |        | 11-11 | .03           | 0                  |      |               |        |
|      |               |        | 11-12 | .05           | 0                  |      |               |        |
|      |               |        | 11-13 | .02           | 0                  |      |               |        |
|      |               |        | 11-15 | .07           | 0                  |      |               |        |
|      |               |        | 11-21 | .01           | 0                  |      |               |        |
|      |               |        | 11-23 | .30           | 0                  |      |               |        |
|      |               |        | 12-2  | 0             | .003 <sup>1/</sup> |      |               |        |
|      |               |        | 12-3  | .02           | 0                  |      |               |        |
|      |               |        | 12-4  | .01           | 0                  |      |               |        |
|      |               |        | 12-20 | .01           | 0                  |      |               |        |
|      |               |        | 12-21 | .03           | 0                  |      |               |        |
|      |               |        | 12-26 | .01           | 0                  |      |               |        |
|      |               |        | 12-27 | .04           | 0                  |      |               |        |
|      |               |        | 12-31 | .01           | 0                  |      |               |        |

Notes: <sup>1/</sup> Runoff between observations.





## NEWELL, SOUTH DAKOTA Watershed W-3

LOCATION: Butte, Co.; 33 mi. NE of Newell; Sand Creek; South Moreau River Watershed.

AREA: 90 Acres.

SHAPE: Half fan, about 1400' wide and 3000' long.

SLOPES: 10% is in 0-3% slope group; 70% in 3-9%; 20% in 9-18%.

ASPECT: N

SOILS: 20% - shallowly developed medium textured soils, moderate permeability; 50% - moderately deep medium soils, moderate permeability; 15% - solcized solonetz clay pan soils, slow to very slow permeability; 6% - moderate deep moderately coarse textured alluvial soils, moderate permeability; 6% - shallow fine textured soils, slow permeability; 3% - moderately deep moderately coarse textured soils, moderately rapid permeability. Cushman-Chama loams and fine sandy loam - 33%; Bainville loam - 16%; Maurine loam - 12%; Rhoades loams - 10%; Chama-Patent clay loam - 10%; Lismas-Pierre clay - 7%; Moline loams - 5%; Arnegard loam - 4%; Midway clay loam - 3%. Internal Drainage - medium.

EROSION: 1 - 100%.

LAND CAPABILITY: IIIe = 34%; IVe = 3%; IVs = 12%; VIe = 23%; VIs = 22%; VIw = 6%.

SURFACE DRAINAGE: Good, well developed, lengths of reaches 2300' and 1000'.

CHARACTER OF FLOW: Ephemeral, continuous.

INSTRUMENTATION: Runoff: Staff gages only. (Refer to W-2 charts in case of runoff). Precipitation: One recording gage. Early precipitation records from 1 in. gage on George Johnson ranch 2 miles northwest of dam.

WATERSHED CONDITIONS: 100% Rangeland. Condition classes: Excellent - 43%; Good - 45%; Fair - 12%. Dominant species: Thread leaf sedge - 40%; blue grama - 20%; needle and thread - 10%; mixed grasses and forbs - 30%.  
Production of cover: 3000 lbs/acre.

Ranche sites: Silty - 50%; shallow - 26%; Panspots - 15%; overflow - 6%; sandy - 3%.

USE: (Degree of grazing of rangeland) 1957 - none; 1958 - slight; 1959 - light.

GENEALOGY REPRESENTS: Rangelands in Powder-Yellowstone Residual Plains, and Residual Plains, west Dakotas; especially where Fox Hills or Hell Creek are near contact of Pierre shale plains. Pierre Shale Plains and Badlands land resource area (G-60).

## MONTHLY PRECIPITATION AND RUNOFF (Inches)

Newell, South Dakota Watershed W-3

| Year   | Month        | Jan.      | Feb.      | Mar.        | Apr.      | May          | June         | July      | Aug.      | Sept.     | Oct.      | Nov.      | Dec.        | Year         |
|--------|--------------|-----------|-----------|-------------|-----------|--------------|--------------|-----------|-----------|-----------|-----------|-----------|-------------|--------------|
|        |              | P<br>Q    | P<br>Q    | P<br>Q      | P<br>Q    | P<br>Q       | P<br>Q       | P<br>Q    | P<br>Q    | P<br>Q    | P<br>Q    | P<br>Q    |             |              |
| 1958   | P 1/2<br>Q 0 | 0.24<br>0 | 0.23<br>0 | 0.75<br>0   | 0.28<br>0 | 2.38<br>0    | 2.81<br>.004 | 0.94<br>0 | 0.90<br>0 | 0.13<br>0 | 0.32<br>0 | 0.29<br>0 | 9.30<br>.01 |              |
| 1959   | P<br>Q       | .17<br>0  | .30<br>0  | .06<br>.103 | .81<br>0  | 2.66<br>.002 | 1.41<br>0    | 1.37<br>0 | .68<br>0  | 1.06<br>0 | .40<br>0  | .53<br>0  | .11<br>0    | 10.46<br>.11 |
| Normal | P            | .44       | .37       | .79         | 1.67      | 2.65         | 2.95         | 2.11      | 1.34      | 1.29      | 1.02      | .55       | .39         | 15.57        |

Notes: Normal P based on 52 year record (1908-1959) at Newell USWB station, Newell, South Dakota.  
1/ Precipitation prior to 5-2-58 from Johnson's gage.

| DAILY PRECIPITATION AND RUNOFF (Inches) |                             |                      |       | Newell, South Dakota Watershed W-3 |                      |      |               |        |
|-----------------------------------------|-----------------------------|----------------------|-------|------------------------------------|----------------------|------|---------------|--------|
| Date                                    | Precipitation <sup>1/</sup> | Runoff <sup>2/</sup> | Date  | Precipitation                      | Runoff <sup>2/</sup> | Date | Precipitation | Runoff |
| 1958                                    |                             |                      | 1959  |                                    |                      |      |               |        |
| 2-3 <sup>3/</sup>                       | 0.05                        | 0                    | 1-13  | 0.13                               | 0                    |      |               |        |
| 2-18                                    | .07                         | 0                    | 1-16  | .01                                | 0                    |      |               |        |
| 2-27                                    | .12                         | 0                    | 1-25  | .01                                | 0                    |      |               |        |
| 3-4                                     | .15                         | 0                    | 1-29  | .02                                | T <sup>1/</sup>      |      |               |        |
| 3-13                                    | .08                         | 0                    | 2-3   | .01                                | 0                    |      |               |        |
| 4-10                                    | .25                         | 0                    | 2-4   | .01                                | 0                    |      |               |        |
| 4-25                                    | .50                         | 0                    | 2-5   | .03                                | 0                    |      |               |        |
| 5-2 <sup>5/</sup>                       | 0                           | 0                    | 2-9   | .05                                | 0                    |      |               |        |
| 5-17                                    | .03                         | 0                    | 2-13  | .09                                | 0                    |      |               |        |
| 5-30                                    | .20                         | 0                    | 2-16  | .08                                | 0                    |      |               |        |
| 5-31                                    | .05                         | 0                    | 2-17  | .03                                | 0                    |      |               |        |
| 6-1                                     | .05                         | 0                    | 3-4   | 0                                  | 0                    |      |               |        |
| 6-2                                     | .05                         | 0                    | 3-5   | 0                                  | .005 <sup>1/</sup>   |      |               |        |
| 6-3                                     | .77                         | e .001               | 3-12  | .01                                | T <sup>1/</sup>      |      |               |        |
| 6-7                                     | .34                         | 0                    | 3-13  | .02                                | 0                    |      |               |        |
| 6-8                                     | .18                         | 0                    | 3-16  | 0                                  | .091 <sup>1/</sup>   |      |               |        |
| 6-9                                     | .16                         | 0                    | 3-23  | 0                                  | .004 <sup>1/</sup>   |      |               |        |
| 6-12                                    | .15                         | 0                    | 3-24  | .03                                | 0                    |      |               |        |
| 6-14                                    | .40                         | 0                    | 4-8   | .03                                | 0                    |      |               |        |
| 6-15                                    | .18                         | 0                    | 4-15  | .44                                | 0                    |      |               |        |
| 6-18                                    | .10                         | 0                    | 4-16  | .21                                | 0                    |      |               |        |
| 7-1                                     | .15                         | 0                    | 4-19  | .07                                | 0                    |      |               |        |
| 7-2                                     | 1.10                        | e .001               | 4-25  | .06                                | 0                    |      |               |        |
| 7-3                                     | .35                         | 0                    | 5-4   | .13                                | 0                    |      |               |        |
| 7-13                                    | .05                         | 0                    | 5-5   | .02                                | 0                    |      |               |        |
| 7-14                                    | .17                         | 0                    | 5-10  | .16                                | 0                    |      |               |        |
| 7-15                                    | .05                         | 0                    | 5-19  | .45                                | 0                    |      |               |        |
| 7-19                                    | .15                         | 0                    | 5-20  | .40                                | 0                    |      |               |        |
| 7-24                                    | .05                         | 0                    | 5-27  | .07                                | 0                    |      |               |        |
| 7-25                                    | .35                         | 0                    | 5-28  | .18                                | 0                    |      |               |        |
| 7-29                                    | .30                         | 0                    | 5-29  | .41                                | 0                    |      |               |        |
| 7-30                                    | .12                         | 0                    | 5-30  | .53                                | 0                    |      |               |        |
| 8-3                                     | .10                         | 0                    | 5-31  | .26                                | .002 <sup>1/</sup>   |      |               |        |
| 8-29                                    | .61                         | 0                    | 6-7   | .06                                | 0                    |      |               |        |
| 8-30                                    | .23                         | 0                    | 6-17  | .10                                | 0                    |      |               |        |
| 9-4                                     | .13                         | 0                    | 6-21  | .10                                | 0                    |      |               |        |
| 9-6                                     | .84                         | 0                    | 6-24  | .44                                | 0                    |      |               |        |
| 9-19                                    | .02                         | 0                    | 6-25  | .01                                | 0                    |      |               |        |
| 10-21                                   | .13                         | 0                    | 6-26  | .10                                | 0                    |      |               |        |
| 11-14                                   | .13                         | 0                    | 6-29  | .10                                | 0                    |      |               |        |
| 11-15                                   | .03                         | 0                    | 6-30  | .50                                | 0                    |      |               |        |
| 11-16                                   | .12                         | 0                    | 7-3   | .15                                | 0                    |      |               |        |
| 11-17                                   | .02                         | 0                    | 7-7   | .34                                | 0                    |      |               |        |
| 11-22                                   | .02                         | 0                    | 7-15  | .61                                | e .001               |      |               |        |
| 12-6                                    | .07                         | 0                    | 7-17  | .23                                | 0                    |      |               |        |
| 12-11                                   | .10                         | 0                    | 7-21  | .04                                | 0                    |      |               |        |
| 12-12                                   | .01                         | 0                    | 8-7   | .04                                | 0                    |      |               |        |
| 12-13                                   | .11                         | 0                    | 8-12  | .15                                | 0                    |      |               |        |
|                                         |                             |                      | 8-31  | .20                                | 0                    |      |               |        |
|                                         |                             |                      | 9-16  | .30                                | 0                    |      |               |        |
|                                         |                             |                      | 9-17  | .71                                | T <sup>1/</sup>      |      |               |        |
|                                         |                             |                      | 9-20  | .06                                | 0                    |      |               |        |
|                                         |                             |                      | 9-21  | .02                                | 0                    |      |               |        |
|                                         |                             |                      | 9-24  | .37                                | 0                    |      |               |        |
|                                         |                             |                      | 9-25  | .38                                | 0                    |      |               |        |
|                                         |                             |                      | 9-27  | .06                                | 0                    |      |               |        |
|                                         |                             |                      | 9-28  | .05                                | 0                    |      |               |        |
|                                         |                             |                      | 9-29  | .01                                | 0                    |      |               |        |
|                                         |                             |                      | 10-1  | .01                                | 0                    |      |               |        |
|                                         |                             |                      | 10-7  | .17                                | 0                    |      |               |        |
|                                         |                             |                      | 10-9  | .20                                | 0                    |      |               |        |
|                                         |                             |                      | 10-12 | .02                                | 0                    |      |               |        |
|                                         |                             |                      | 11-4  | .11                                | 0                    |      |               |        |
|                                         |                             |                      | 11-11 | .02                                | 0                    |      |               |        |
|                                         |                             |                      | 11-12 | .03                                | 0                    |      |               |        |

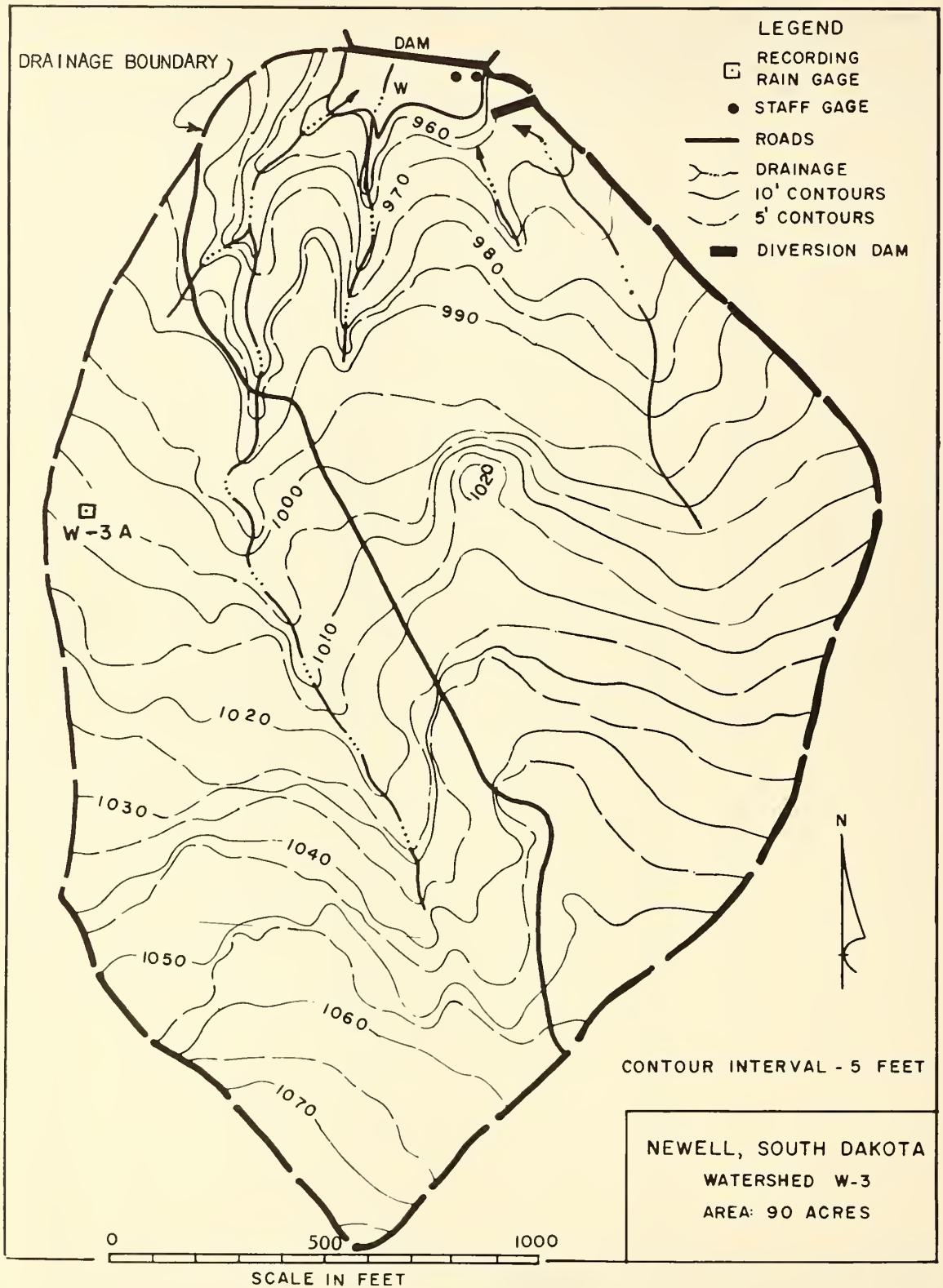
Notes: Quality of records: Precipitation - good except for period before 5-2-58 which are poor; runoff - fair. Months of Jan., Feb., Mar., Apr., Nov., and Dec. include snow and snow melt. <sup>1/</sup> Precipitation prior to 5-2-58 from Johnson's gage. <sup>2/</sup> Runoff based on weekly observations prior to 6-4-58 and during winter. <sup>3/</sup> Start of observations. <sup>4/</sup> Runoff between observation dates. <sup>5/</sup> Recording rain gage installed.

DAILY PRECIPITATION AND RUNOFF (Inches)

Newell, South Dakota Watershed V-3

| Date | Precipitation | Runoff | Date  | Precipitation | Runoff $\frac{1}{2}$ | Date | Precipitation | Runoff |
|------|---------------|--------|-------|---------------|----------------------|------|---------------|--------|
|      |               |        | 1959  |               |                      |      |               |        |
|      |               |        | 11-13 | .02           | 0                    |      |               |        |
|      |               |        | 11-15 | .02           | 0                    |      |               |        |
|      |               |        | 11-21 | .02           | 0                    |      |               |        |
|      |               |        | 11-22 | .03           | 0                    |      |               |        |
|      |               |        | 11-23 | .28           | 0                    |      |               |        |
|      |               |        | 12-3  | .02           | 0                    |      |               |        |
|      |               |        | 12-4  | .01           | 0                    |      |               |        |
|      |               |        | 12-20 | .01           | 0                    |      |               |        |
|      |               |        | 12-21 | .02           | 0                    |      |               |        |
|      |               |        | 12-26 | .01           | 0                    |      |               |        |
|      |               |        | 12-27 | .02           | 0                    |      |               |        |
|      |               |        | 12-31 | .02           | 0                    |      |               |        |

Notes:  $\frac{1}{2}$  Runoff based on weekly observations during winter.





## NEWELL, SOUTH DAKOTA Watershed W-4

LOCATION: Putte Co., South Dakota; 35 mi. NW of Newell; South Moreau River Watershed.

AREA: 105 Acres.

SHAPE: Elliptical, about 1400' wide by 3600' long.

SLOPES: 8% is in 0-3% group; 40% is 3-9%; 42% is 9-18%; 10% is 18-50%.

ASPECT: SE

SOILS: Residual, zonal: 36% - deep moderately coarse textured, moderately rapid permeability; 17% - moderately deep medium textured soils, moderate permeability; 21% - shallowly developed moderately coarse textured soils, moderately rapid permeability; 18% - solodized solonetz clay pan soils, slow to very slow permeability; 8% - deep moderately fine textured soils, moderately slow permeability; Lihen-Weber loamy fine sand and Weber loams - 27%; Rhoades loams and very fine sandy loams - 18%; Chama-Beinville loam - 11%; Arnerard loam - 8%; Alluvial soils - 8%; Plaster fine sandy loam - 6%; Maurine loam - 6%; Weber-Flesher fine sandy loam - 4%; Reserve loam - 5%; Petent loam - 3%; Reserve-Rhoades clay loams - 4%. Internal Drainage - medium.

EROSION: 1 - 100%.

LAND CAPABILITY: IIIe = 13%; IVe = 4%; IVs = 7%; VIe = 50%; VI s = 18%; VIw = 8%.

SURFACE DRAINAGE: Good, well developed drainageway, length 3000'; two other reaches, 900' each.

CHARACTER OF FLOW: Ephemeral, continuous.

INSTRUMENTATION: Runoff: A-35 recorder on stock pond. Precipitation: One recording gage. Early precipitation records from 1 in. gage on Riley Price ranch 3 miles southeast of dam.

WATERSHED CONDITIONS: 100% Rangeland. Condition classes: Excellent - 67%; Good - 33%. Dominant species: Blue grama grass - 25%; needle and thread - 25%; thread leaf sedge - 20%; buffalo grass - 10%; prairie sand reed - 10%; western wheat grass - 6%; mixed grasses and forbs - 4%.  
Production of cover: 4200 lbs.

USE: (Degree of grazing of rangeland) 1957 - moderate; 1958 - moderate; 1959 - moderate.

Range sites: Sandy - 22%; silty - 28%; panspots - 18%; shallow - 21%; overflow - 8%; cleyey - 3%.

GENERALLY REPRESENTS: Rangeland in Powder-Yellowstone Residual Plains and Residual Plains, west Dakotas, especially moderately coarse textured soils formed in materials weathered from Fox Hills sandstones and sandy shales. Pierre Shale Plains and Badlands land resource area.(G-60)

## MONTHLY PRECIPITATION AND RUNOFF (Inches)

Newell, South Dakota Watershed W-4

| Year   | Month       | Jan.      | Feb.         | Mar.        | Apr.         | May          | June         | July         | Aug.      | Sept.        | Oct.      | Nov.      | Dec.      | Year         |
|--------|-------------|-----------|--------------|-------------|--------------|--------------|--------------|--------------|-----------|--------------|-----------|-----------|-----------|--------------|
|        |             | P<br>Q    | P<br>Q       | P<br>Q      | P<br>Q       | P<br>Q       | P<br>Q       | P<br>Q       | P<br>Q    | P<br>Q       | P<br>Q    | P<br>Q    | P<br>Q    |              |
| 1958   | P 1/<br>Q T | 0.01<br>0 | 0.05<br>.002 | 0.05<br>0   | 0.41<br>.005 | 0.57<br>T    | 1.80<br>.003 | 4.56<br>.441 | 0.80<br>T | 0.17<br>0    | 0.30<br>T | 0.37<br>T | 0.24<br>0 | 9.42<br>.15  |
| 1959   | P<br>Q      | .27<br>0  | .41<br>T     | .27<br>.058 | .56<br>0     | 2.35<br>.004 | 2.11<br>.002 | 1.26<br>.002 | .57<br>0  | 1.52<br>.002 | .47<br>0  | .52<br>0  | .21<br>T  | 10.52<br>.07 |
| Normal | P           | .44       | .37          | .79         | 1.67         | 2.65         | 2.95         | 2.11         | 1.34      | 1.29         | 1.02      | .55       | .39       | 15.57        |

Notes: Normal P based on 52 year record (1908-1959) at Newell USWB station, Newell, South Dakota.  
1/ Precipitation from Riley Price's gage prior to 4-30-58.

| DAILY PRECIPITATION AND RUNOFF (Inches) |                  |            |      | Newell, South Dakota Watershed V-4 |           |      |               |        |
|-----------------------------------------|------------------|------------|------|------------------------------------|-----------|------|---------------|--------|
| Date                                    | Precipitation 1/ | Runoff 2/  | Date | Precipitation                      | Runoff    | Date | Precipitation | Runoff |
| 1958                                    |                  |            | 1959 |                                    |           |      |               |        |
| 1-29 3/                                 | 0.01             | 0.001 1/4/ | 1-1  | 0.02                               | 0.0       |      |               |        |
| 2-1                                     | .05              | 0          | 1-13 | .14                                | 0         |      |               |        |
| 2-24                                    | 0                | .002 1/4/  | 1-16 | .04                                | 0         |      |               |        |
| 3-13                                    | .05              | 0          | 1-19 | .02                                | 0         |      |               |        |
| 4-2                                     | .25              | .002 1/4/  | 1-24 | .05                                | 0         |      |               |        |
| 4-10                                    | .15              | 0          | 2-3  | .07                                | 0         |      |               |        |
| 4-29                                    | .01              | .003 1/4/  | 2-4  | .08                                | 0         |      |               |        |
| 4-31 5/                                 | 0                | 0          | 2-5  | .03                                | 0         |      |               |        |
| 5-21                                    | .08              | 0          | 2-9  | .02                                | 0         |      |               |        |
| 5-23                                    | .15              | nr         | 2-13 | .09                                | .001 1/4/ |      |               |        |
| 5-24                                    | 0                | .001 1/4/  | 2-17 | .03                                | 0         |      |               |        |
| 5-30                                    | .30              | nr         | 2-26 | .09                                | 0         |      |               |        |
| 6-31                                    | .04              | 0          | 3-9  | .07                                | 0         |      |               |        |
| 6-2                                     | .23              | nr         | 3-11 | 0                                  | .025 1/4/ |      |               |        |
| 6-3                                     | .37              | nr         | 3-13 | .11                                | 0         |      |               |        |
| 6-4 6/                                  | 0                | 0 1/4/     | 3-14 | .01                                | 0         |      |               |        |
| 6-7                                     | .27              | .002 1/4/  | 3-15 | .01                                | 0         |      |               |        |
| 6-8                                     | .10              | 0          | 3-18 | 0                                  | .032 1/4/ |      |               |        |
| 6-9                                     | .24              | T          | 3-19 | .05                                | 0         |      |               |        |
| 6-11                                    | .10              | 0          | 3-20 | .02                                | 0         |      |               |        |
| 6-12                                    | .13              | 0          | 4-15 | .24                                | 0         |      |               |        |
| 6-13                                    | .40              | 0          | 4-16 | .14                                | 0         |      |               |        |
| 6-15                                    | .05              | 0          | 4-18 | .07                                | 0         |      |               |        |
| 7-1                                     | .14              | 0          | 4-19 | .02                                | 0         |      |               |        |
| 7-2                                     | 2.50             | .137       | 4-20 | .03                                | 0         |      |               |        |
| 7-3                                     | .04              | 0          | 4-23 | .06                                | 0         |      |               |        |
| 7-10                                    | .79              | .004       | 5-4  | .19                                | 0         |      |               |        |
| 7-16                                    | .16              | 0          | 5-10 | .13                                | 0         |      |               |        |
| 7-19                                    | .44              | 0          | 5-18 | .04                                | 0         |      |               |        |
| 7-22                                    | .03              | 0          | 5-19 | .10                                | 0         |      |               |        |
| 7-23                                    | .05              | 0          | 5-20 | .45                                | T         |      |               |        |
| 7-29                                    | .23              | 0          | 5-21 | .04                                | 0         |      |               |        |
| 7-30                                    | .13              | 0          | 5-27 | .10                                | 0         |      |               |        |
| 7-31                                    | .05              | 0          | 5-28 | .12                                | 0         |      |               |        |
| 8-29                                    | .40              | 0          | 5-29 | .29                                | 0         |      |               |        |
| 8-30                                    | .40              | T          | 5-30 | .67                                | .003      |      |               |        |
| 9-4                                     | .15              | 0          | 5-31 | .17                                | 0         |      |               |        |
| 9-17                                    | .02              | 0          | 6-7  | .15                                | 0         |      |               |        |
| 10-8                                    | .07              | 0          | 6-15 | .12                                | 0         |      |               |        |
| 10-21                                   | .20              | 0          | 6-17 | .20                                | 0         |      |               |        |
| 10-22                                   | .02              | T          | 6-21 | .03                                | 0         |      |               |        |
| 10-23                                   | .01              | 0          | 6-24 | .36                                | T         |      |               |        |
| 11-14                                   | .16              | T          | 6-25 | .18                                | 0         |      |               |        |
| 11-15                                   | .04              | 0          | 6-26 | .22                                | 0         |      |               |        |
| 11-16                                   | .12              | 0          | 6-29 | .15                                | C         |      |               |        |
| 11-17                                   | .03              | 0          | 6-30 | .70                                | T         |      |               |        |
| 11-22                                   | 0                | T          | 7-1  | .01                                | 0         |      |               |        |
| 11-23                                   | .02 5/           | 0          | 7-3  | .07                                | 0         |      |               |        |
| 12-7                                    | .10 5/           | 0          | 7-7  | .23                                | 0         |      |               |        |
| 12-11                                   | .10              | 0          | 7-15 | .00                                | .002      |      |               |        |
| 12-13                                   | .04              | 0          | 7-17 | .03                                | 0         |      |               |        |
|                                         |                  |            | 7-21 | .02                                | 0         |      |               |        |
|                                         |                  |            | 8-5  | .28                                | 0         |      |               |        |
|                                         |                  |            | 8-8  | .05                                | 0         |      |               |        |
|                                         |                  |            | 8-12 | .12                                | 0         |      |               |        |
|                                         |                  |            | 8-22 | .02                                | 0         |      |               |        |
|                                         |                  |            | 8-31 | .10                                | 0         |      |               |        |
|                                         |                  |            | 9-16 | .28                                | 0         |      |               |        |
|                                         |                  |            | 9-17 | .49                                | 0         |      |               |        |
|                                         |                  |            | 9-18 | .03                                | 0         |      |               |        |
|                                         |                  |            | 9-21 | .14                                | 0         |      |               |        |
|                                         |                  |            | 9-24 | .25                                | 0         |      |               |        |
|                                         |                  |            | 9-25 | .33                                | 0         |      |               |        |
|                                         |                  |            | 9-26 | 0                                  | 0         |      |               |        |
|                                         |                  |            | 10-7 | .18                                | 0         |      |               |        |

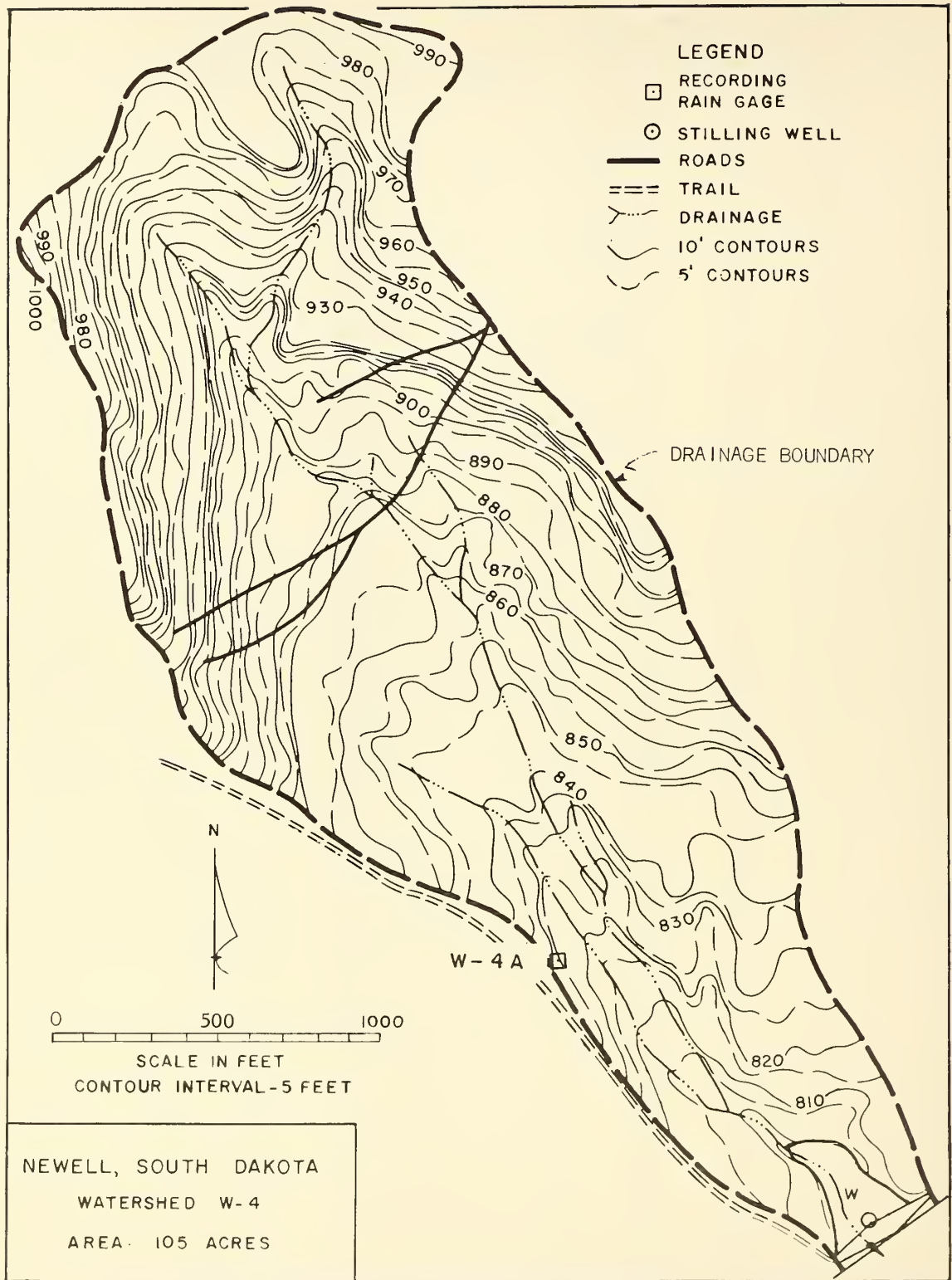
Notes: Quality of records: Precipitation - good except for period before 4-30-59 which is poor. Runoff - good except for period of snow melt which is fair. Months of Jan., Feb., Mar., Apr., Nov. and Dec. include snow and snow melt. 1/ Precipitation prior to 4-30-59, R. Price gauge. 2/ Runoff, weekly observations prior to 6-4-59. 3/ Start of Observations. 4/ Runoff between observations. 5/ Rain gauge installed. 6/ Stare recorder installed.

DAILY PRECIPITATION AND RUNOFF (Inches)

Newell, South Dakota Watershed W-1

| Date | Precipitation | Runoff | Date  | Precipitation | Runoff      | Date | Precipitation | Runoff |
|------|---------------|--------|-------|---------------|-------------|------|---------------|--------|
|      |               |        | 1959  |               |             |      |               |        |
|      |               |        | 10-0  | 0.20          | 0           |      |               |        |
|      |               |        | 10-12 | .00           | 0           |      |               |        |
|      |               |        | 11-4  | .13           | 0           |      |               |        |
|      |               |        | 11-11 | .02           | 0           |      |               |        |
|      |               |        | 11-12 | .05           | 0           |      |               |        |
|      |               |        | 11-17 | .02           | 0           |      |               |        |
|      |               |        | 11-15 | .06           | 0           |      |               |        |
|      |               |        | 11-23 | .23           | 0           |      |               |        |
|      |               |        | 11-25 | .01           | 0           |      |               |        |
|      |               |        | 12-1  | 0             | T <u>1/</u> |      |               |        |
|      |               |        | 12-3  | .01           | 0           |      |               |        |
|      |               |        | 12-4  | .01           | 0           |      |               |        |
|      |               |        | 12-16 | .02           | 0           |      |               |        |
|      |               |        | 12-19 | .01           | 0           |      |               |        |
|      |               |        | 12-20 | .01           | 0           |      |               |        |
|      |               |        | 12-21 | .01           | 0           |      |               |        |
|      |               |        | 12-26 | .01           | 0           |      |               |        |
|      |               |        | 12-27 | .05           | 0           |      |               |        |
|      |               |        | 12-31 | .00           | 0           |      |               |        |

Notes: 1/ Runoff between observations.



## NEWELL, SOUTH DAKOTA "Watershed W-5"

LOCATION: Butte Co., South Dakota; 3 1/4 mi. NE of Newell; South Moreau River Watershed.

AREA: 46 Acres.

SHAPE: Trapezoidal, about 2000' long, 1000' wide.

SLOPES: 89% is 3-9%; 11% is 9-18%.

ASPECT: N-NE

SOILS: Residual, zonal 67% - moderately deep and deep moderately coarse textured soils, moderately rapid permeability 19% - solodized solonetz clay pan soils, slow to very slow permeability; 3% - deep medium textured soils, moderate and moderately slow permeability; 11% - shallow moderately coarse textured soils, moderately rapid permeability. Vebar-Terry fine sandy loams - 55%; Rhoades loams - 19%; Timmer fine sandy loam - 12%; -----Flasher fine sandy loam - 8%; Maurice loam - 3%; Flasher fine sandy loam - 3%. Internal Drainage - medium.

EROSION: 1 - 100%.

LAND CAPABILITY: IIIe = 12%; IVa = 55%; IVs = 3%; VIa = 11%; VIc = 19%.

SURFACE DRAINAGE: Moderately well drained, channel meander in panspots area, principal drainage 1700'.

CHARACTER OF FLOW: Ephemeral, continuous.

INSTRUMENTATION: Runoff: A-25 waterstage recorder on stock pond. Precipitation: Recording gage.

WATERSHED CONDITIONS: 100% Rangeland. Condition classes: Excellent - 7%; Good - 93%. Dominant species: Needle and thread - 20%; blue grama - 26%; thread leaf sedge - 25%; little bluestem, prairie sand reed and forbs - 29%.

Range sites: Sandy - 67%; panspots - 19%; shallow - 11%; silty - 3%.

USE: (Degree of grazing of rangeland) 1957 - full; 1958 - full; 1959 - full.

Production cover: 1100 lbs/acre.

GENERALLY REPRESENTS: Rangelands in Powder-Yellowstone Residual Plains and Residual Plains, west Dakotas, especially where soils are formed in materials weathered from Fox Hills and Hell Creek formations. Pierre Shale Plains and Badlands Land resource area (G-60)

## MONTHLY PRECIPITATION AND RUNOFF (Inches)

Newell, South Dakota Watershed W-5

| Year   | Month | Jan. | Feb. | Mar. | Apr. | May  | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year  |
|--------|-------|------|------|------|------|------|------|------|------|-------|------|------|------|-------|
|        |       |      |      |      |      |      |      |      |      |       |      |      |      |       |
| 1958   | P     | 0.11 | 0.52 | 0.57 | 1.57 | 0.42 | 2.97 | 3.56 | 0.27 | 0.16  | 0.18 | 0.20 | 0.24 | 11.17 |
|        | Q     | 0    | T    | .023 | .029 | 0    | .034 | .201 | .007 | 0     | 0    | 0    | 0    |       |
| 1959   | P     | .27  | .22  | .21  | .42  | 2.31 | 2.18 | .31  | .54  | 1.44  | .39  | .43  | .28  | 9.00  |
|        | Q     | 0    | T    | .258 | .010 | .012 | .020 | 0    | 0    | T     | 0    | 0    | 0    |       |
| Normal | P     | .44  | .37  | .79  | 1.67 | 2.65 | 2.95 | 2.11 | 1.34 | 1.29  | 1.02 | .55  | .39  | 15.57 |

Notes: Normal P based on 52 year record (1908-1959) at Newell USWB station, Newell, South Dakota.



| DAILY PRECIPITATION AND RUNOFF (Inches) |               |                      |      | Newell, South Dakota Watershed W-5 |        |      |               |        |
|-----------------------------------------|---------------|----------------------|------|------------------------------------|--------|------|---------------|--------|
| Date                                    | Precipitation | Runoff <sup>1/</sup> | Date | Precipitation                      | Runoff | Date | Precipitation | Runoff |
| 1958                                    |               |                      | 1959 |                                    |        |      |               |        |
| 1-26 <sup>2/</sup>                      | 0.01          | 0                    | 1-13 | 0.06                               | 0      |      |               |        |
| 1-30                                    | .09           | 0                    | 1-15 | .10                                | 0      |      |               |        |
| 1-31                                    | .01           | 0                    | 1-19 | .05                                | 0      |      |               |        |
| 2-15                                    | .05           | 0                    | 1-24 | .03                                | 0      |      |               |        |
| 2-16                                    | .01           | 0                    | 1-29 | .03                                | 0      |      |               |        |
| 2-17                                    | .01           | 0                    | 2-3  | .01                                | 0      |      |               |        |
| 2-25                                    | .18           | 0                    | 2-4  | .01                                | 0      |      |               |        |
| 2-26                                    | .17           | 0                    | 2-5  | .01                                | 0      |      |               |        |
| 2-27                                    | .10           | 0                    | 2-9  | .01                                | 0      |      |               |        |
| 3-8                                     | .01           | 0                    | 2-13 | .06                                | 0      |      |               |        |
| 3-9                                     | .04           | 0                    | 2-17 | .03                                | 0      |      |               |        |
| 3-10                                    | .04           | 0                    | 2-26 | .09                                | 0      |      |               |        |
| 3-17                                    | 0             | .003                 | 3-9  | .09                                | 0      |      |               |        |
| 3-18                                    | 0             | .020                 | 3-11 | 0                                  | .108   |      |               |        |
| 3-25                                    | .04           | 0                    | 3-12 | 0                                  | .104   |      |               |        |
| 3-26                                    | .04           | 0                    | 3-13 | .06                                | 0      |      |               |        |
| 3-31                                    | .40           | 0                    | 3-14 | .01                                | 0      |      |               |        |
| 4-1                                     | .49           | 0                    | 3-15 | .01                                | 0      |      |               |        |
| 4-4                                     | .05           | 0                    | 3-16 | 0                                  | .001   |      |               |        |
| 4-5                                     | .09           | 0                    | 3-18 | 0                                  | .014   |      |               |        |
| 4-6                                     | .01           | 0                    | 3-19 | .04                                | 0      |      |               |        |
| 4-20                                    | .10           | 0                    | 4-2  | .02                                | 0      |      |               |        |
| 4-22                                    | .23           | 0                    | 4-7  | .02                                | 0      |      |               |        |
| 4-25                                    | .07           | 0                    | 4-15 | .10                                | 0      |      |               |        |
| 4-26                                    | .05           | 0                    | 4-16 | .12                                | 0      |      |               |        |
| 4-27                                    | .46           | .029                 | 4-18 | .03                                | 0      |      |               |        |
| 4-28                                    | .02           | 0                    | 4-19 | .04                                | 0      |      |               |        |
| 5-21                                    | .08           | 0                    | 4-22 | 0                                  | .010   |      |               |        |
| 5-23                                    | .15           | 0                    | 4-23 | .04                                | 0      |      |               |        |
| 5-29                                    | .05           | 0                    | 4-25 | .05                                | 0      |      |               |        |
| 5-30                                    | .04           | 0                    | 5-4  | .16                                | 0      |      |               |        |
| 5-31                                    | .10           | 0                    | 5-10 | .16                                | 0      |      |               |        |
| 6-1 <sup>3/</sup>                       | .06           | 0                    | 5-19 | .22                                | 0      |      |               |        |
| 6-2                                     | .46           | 0                    | 5-20 | .26                                | 0      |      |               |        |
| 6-3                                     | .29           | 0                    | 5-21 | .17                                | 0      |      |               |        |
| 6-7                                     | .58           | .003                 | 5-27 | .15                                | 0      |      |               |        |
| 6-8                                     | .12           | 0                    | 5-28 | .08                                | 0      |      |               |        |
| 6-9                                     | .26           | 0                    | 5-29 | .35                                | 0      |      |               |        |
| 6-11                                    | .23           | 0                    | 5-30 | .64                                | .009   |      |               |        |
| 6-12                                    | .39           | T                    | 5-31 | .12                                | .003   |      |               |        |
| 6-13                                    | .58           | .031                 | 6-1  | .02                                | 0      |      |               |        |
| 7-1                                     | .08           | 0                    | 6-9  | .02                                | 0      |      |               |        |
| 7-2                                     | 1.75          | .201                 | 6-15 | .18                                | 0      |      |               |        |
| 7-3                                     | .05           | 0                    | 6-17 | .10                                | 0      |      |               |        |
| 7-10                                    | .80           | T                    | 6-24 | .28                                | 0      |      |               |        |
| 7-14                                    | .18           | 0                    | 6-25 | .62                                | .007   |      |               |        |
| 7-19                                    | .25           | 0                    | 6-26 | .19                                | 0      |      |               |        |
| 7-29                                    | .31           | 0                    | 6-29 | .20                                | 0      |      |               |        |
| 7-30                                    | .14           | 0                    | 6-30 | .57                                | .013   |      |               |        |
| 8-2                                     | .01           | 0                    | 7-3  | .10                                | 0      |      |               |        |
| 8-3                                     | .03           | 0                    | 7-7  | .05                                | 0      |      |               |        |
| 8-5                                     | .01           | 0                    | 7-15 | .10                                | 0      |      |               |        |
| 8-29                                    | .90           | .007                 | 7-17 | .06                                | 0      |      |               |        |
| 8-30                                    | .02           | 0                    | 8-1  | .12                                | 0      |      |               |        |
| 9-4                                     | .15           | 0                    | 8-5  | .06                                | 0      |      |               |        |
| 9-24                                    | .01           | 0                    | 8-8  | .10                                | 0      |      |               |        |
| 10-8                                    | .02           | 0                    | 8-12 | .04                                | 0      |      |               |        |
| 10-20                                   | .08           | 0                    | 8-24 | .12                                | 0      |      |               |        |
| 10-21                                   | .05           | 0                    | 8-31 | .10                                | 0      |      |               |        |
| 10-28                                   | .03           | 0                    | 9-16 | .25                                | 0      |      |               |        |
| 11-14                                   | .05           | 0                    | 9-17 | .37                                | 0      |      |               |        |
| 11-15                                   | .03           | 0                    | 9-18 | .07                                | 0      |      |               |        |
| 11-16                                   | .10           | 0                    | 9-21 | .18                                | 0      |      |               |        |
| 11-23                                   | .02           | 0                    | 9-24 | .05                                | 0      |      |               |        |
| 12-6                                    | .06           | 0                    | 9-25 | .47                                | 0      |      |               |        |

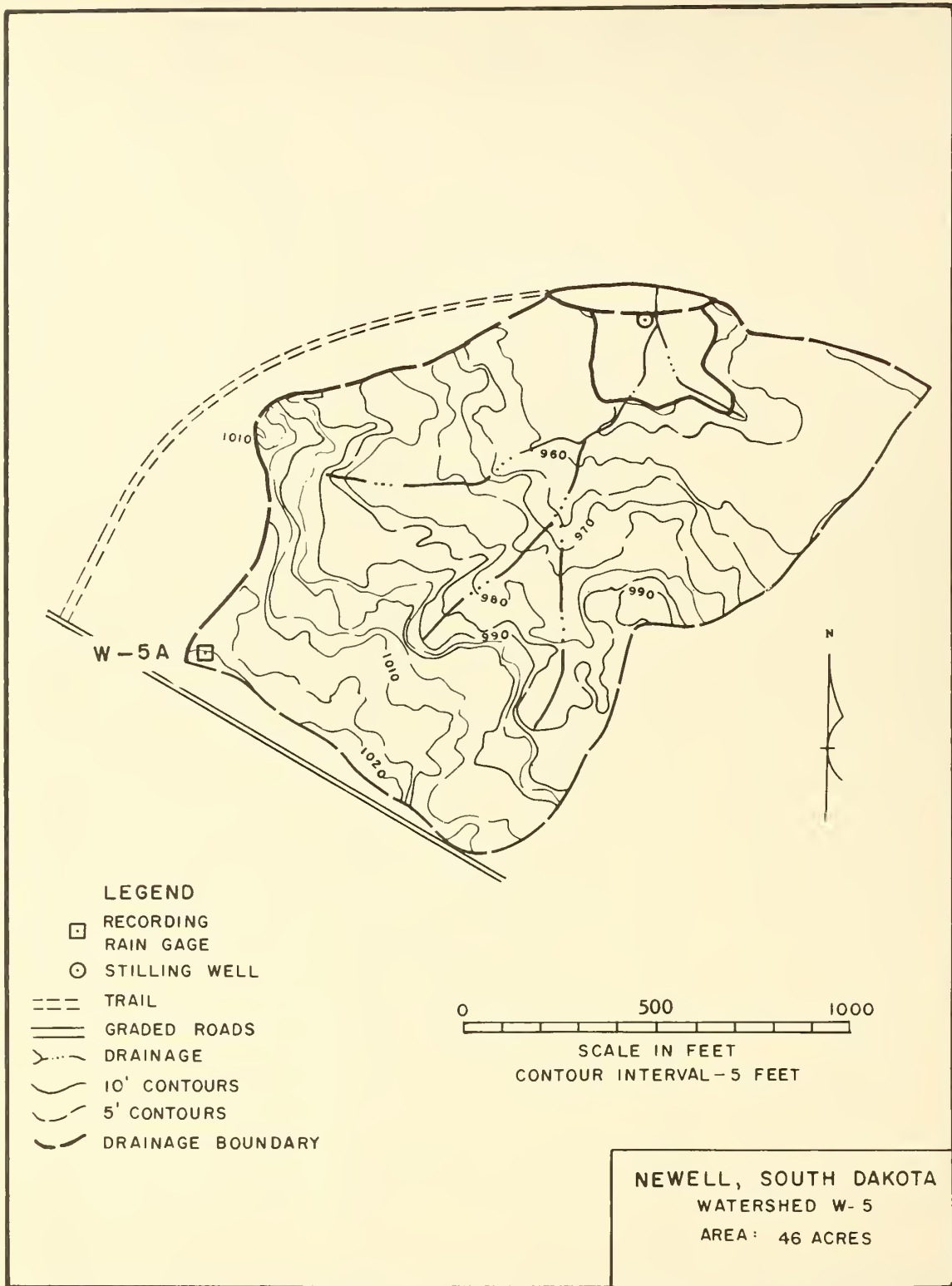
Notes: <sup>1/</sup> Runoff based on weekly observations prior to 6-1-58. <sup>2/</sup> Observations started. <sup>3/</sup> Stage recorder started. Months of Jan., Feb., Mar., Apr., Nov., and Dec. include snow and snow melt. Quality of records: Precip: Good; Runoff: Good, except for period before 6-1-58 and early snow melt, which are fair.

DAILY PRECIPITATION AND RUNOFF (Inches)

Newell, South Dakota Watershed W-5

| Date  | Precipitation | Runoff | Date  | Precipitation | Runoff | Date | Precipitation | Runoff |
|-------|---------------|--------|-------|---------------|--------|------|---------------|--------|
| 1958  |               |        | 1959  |               |        |      |               |        |
| 12-7  | 0.02          | 0      | 9-27  | 0.02          | 0      |      |               |        |
| 12-8  | .01           | 0      | 9-28  | .02           | 0      |      |               |        |
| 12-11 | .11           | 0      | 9-29  | .01           | 0      |      |               |        |
| 12-13 | .03           | 0      | 10-7  | .10           | 0      |      |               |        |
| 12-14 | .01           | 0      | 10-9  | .29           | 0      |      |               |        |
|       |               |        | 11-4  | .05           | 0      |      |               |        |
|       |               |        | 11-11 | .06           | 0      |      |               |        |
|       |               |        | 11-12 | .07           | 0      |      |               |        |
|       |               |        | 11-21 | .02           | 0      |      |               |        |
|       |               |        | 11-22 | .02           | 0      |      |               |        |
|       |               |        | 11-23 | .21           | 0      |      |               |        |
|       |               |        | 12-3  | .01           | 0      |      |               |        |
|       |               |        | 12-4  | .02           | 0      |      |               |        |
|       |               |        | 12-19 | .01           | 0      |      |               |        |
|       |               |        | 12-20 | .01           | 0      |      |               |        |
|       |               |        | 12-21 | .02           | 0      |      |               |        |
|       |               |        | 12-26 | .02           | 0      |      |               |        |
|       |               |        | 12-27 | .03           | 0      |      |               |        |
|       |               |        | 12-28 | .06           | 0      |      |               |        |
|       |               |        | 12-29 | .02           | 0      |      |               |        |
|       |               |        | 12-31 | .06           | 0      |      |               |        |

Notes:



## NEWELL, SOUTH DAKOTA Watershed W-6

**LOCATION:** Butte Co., South Dakota, 39 mi. NE of Newell; North Fork of Moreau River Watershed.

**AREA:** 30 Acres.

**SHAPE:** Crescent, about 900' wide, 2000' long.

**SLOPES:** 50' is 0-3%; 31' is 3-2%; 8' is 0-18%; 2' is 10-35%.

**ASPECT:** NE

**SOILS:** Residual, zonal: 29' - moderately deep and deep moderately coarse textured soils, moderately rapid permeability: 42% - solodized solonetz clay pan soils, slow to very slow permeability; 5' - deep medium textured soils, moderate to moderately slow permeability: 10' - shallow moderately coarse textured soils, rapid permeability; 9% - deep coarse textured soils, rapid permeability: 5% - very shallow, solonchalk to shale. Rhoades-oline loams - 14%; Liben loamy fine sand - Vebar fine sandy loam - 25%; Vebar fine sandy loam, colluvial phase - 13%; Terry-Flasher fine sandy loams - 8%; Rhoades loams non-panspots phase - 5%; Solonchalk shallow to shale - 5%. **Internal Drainage - slow.**

**EROSION:** 1 - 100%.

**LAND CAPABILITY:** IHe = 7%; IWe = 22%; VIe = 17%; VIIs = 47%; VIIe = 2%; VIIIs = 5%.

**SURFACE DRAINAGE:** Moderately well drained; drainage length 1700'; meander drainage pattern in panspot area.

**CHARACTER OF FLOW:** Ephemeral, continuous.

**INSTRUMENTATION:** Runoff: A-35 waterstage recorder on stock pond. Precipitation: One recording gage. Early precipitation records from 1 in. gage on Carl Ruby ranch 2 miles south of dam.

**WATERSHED CONDITIONS:** 100% rangeland. Condition classes: Excellent - 9%; Good - 26%; Fair - 5%. Leading species: Blue grama - 37%; thread leaf sedge - 2%; needle and thread grass - 10%; western beet grass - 14%; miscellaneous grasses and forbs - 15%.

Production of cover: 200 lbs/acre.

Panre sites: Panspots - 12%; sandy - 20%; shallow - 10%; silty - 5%; very shallow - 5%; sands - 9%.

USE: (Degree of grazing of rangeland) 1957 moderate; 1958 - moderate; 1959 - moderate.

**GENERALLY REPRESENTS:** Rangeland in Powder-Yellowstone Residual Plains and Residual Plains, west Dakotas; especially on soils formed in materials weathered from Fox Hills and Hell Creek formations. Pierre Shale Plains and Badlands land resource area (G-60).

## MONTHLY PRECIPITATION AND RUNOFF (Inches)

Newell, South Dakota Watershed W-6

| Year   | Month                 | Jan.      | Feb.         | Mar.         | Apr.         | May          | June         | July         | Aug.         | Sept.     | Oct.      | Nov.      | Dec.      | Year         |
|--------|-----------------------|-----------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-----------|-----------|-----------|-----------|--------------|
| 1958   | P <sub>1</sub> /<br>Q | 0.1h<br>0 | 0.32<br>.030 | 0.6h<br>.060 | 1.83<br>.282 | 1.20<br>0    | 2.08<br>.008 | 3.40<br>.318 | 0.93<br>.004 | 0.0h<br>0 | 0.27<br>0 | 0.43<br>0 | 0.33<br>0 | 11.79<br>.80 |
| 1959   | P<br>Q                | .4h<br>0  | .47<br>.003  | .18<br>.101  | .58<br>.027  | 2.59<br>.115 | 2.91<br>.177 | 1.41<br>.006 | .60<br>0     | 1.48<br>T | .56<br>0  | .4h<br>T  | .17<br>T  | 11.06<br>.73 |
| Normal | P                     | .44       | .37          | .79          | 1.67         | 2.65         | 2.95         | 2.11         | 1.34         | 1.29      | 1.02      | .55       | .39       | 15.57        |

**Notes:** Normal P based on 52 year record (1908-1959) at Newell USWB station, Newell, South Dakota.  
1/ Precipitation prior to 6-11-58 from Carl Ruby ranch gage.

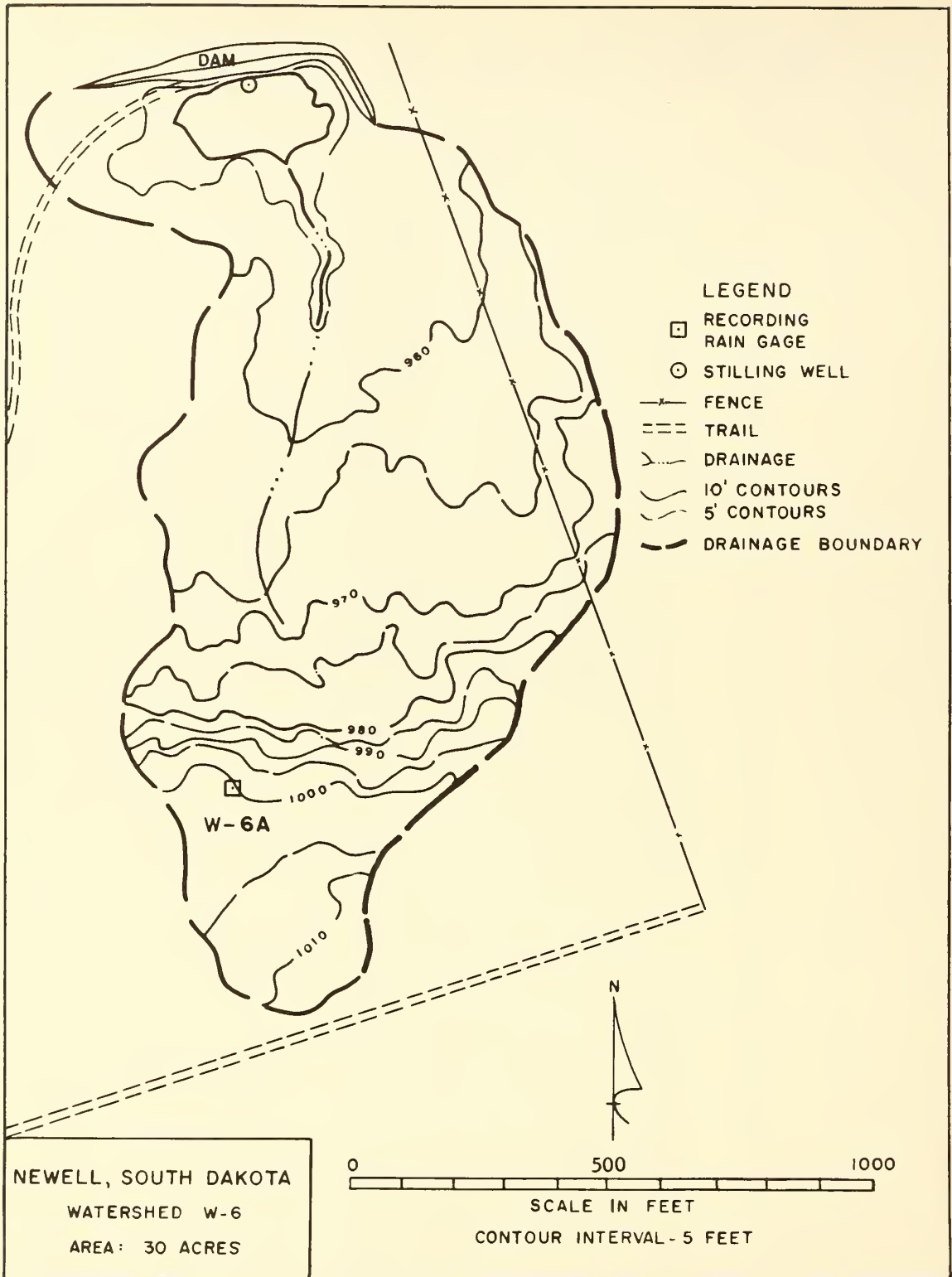
| DAILY PRECIPITATION AND RUNOFF (Inches) |                             |                      |      | Newell, South Dakota Watershed W-6 |        |      |               |        |
|-----------------------------------------|-----------------------------|----------------------|------|------------------------------------|--------|------|---------------|--------|
| Date                                    | Precipitation <sup>1/</sup> | Runoff <sup>2/</sup> | Date | Precipitation                      | Runoff | Date | Precipitation | Runoff |
| 1958                                    |                             |                      | 1959 |                                    |        |      |               |        |
| 1-26 <sup>3/</sup>                      | 0.01                        | 0                    | 1-6  | 0.06                               | 0      |      |               |        |
| 1-31                                    | .13                         | 0                    | 1-13 | .06                                | 0      |      |               |        |
| 2-14                                    | .02                         | 0                    | 1-15 | .06                                | 0      |      |               |        |
| 2-24                                    | 0                           | .030 <sup>4/</sup>   | 1-16 | .07                                | 0      |      |               |        |
| 2-25                                    | .22                         | 0                    | 1-19 | .07                                | 0      |      |               |        |
| 2-26                                    | .08                         | 0                    | 1-24 | .01                                | 0      |      |               |        |
| 3-8                                     | .07                         | 0                    | 1-25 | .01                                | 0      |      |               |        |
| 3-25                                    | .02                         | 0                    | 1-29 | .01                                | 0      |      |               |        |
| 3-26                                    | .08                         | 0                    | 1-30 | .10                                | 0      |      |               |        |
| 3-27                                    | .02                         | 0                    | 2-3  | .01                                | 0      |      |               |        |
| 3-31                                    | .45                         | .060 <sup>4/</sup>   | 2-4  | .02                                | 0      |      |               |        |
| 4-1                                     | .31                         | .060 <sup>4/</sup>   | 2-5  | .01                                | 0      |      |               |        |
| 4-5                                     | .18                         | 0                    | 2-9  | .01                                | 0      |      |               |        |
| 4-20                                    | .11                         | 0                    | 2-13 | .23                                | .003   |      |               |        |
| 4-22                                    | .39                         | 0                    | 2-16 | .05                                | 0      |      |               |        |
| 4-23                                    | .01                         | 0                    | 2-17 | .05                                | 0      |      |               |        |
| 4-25                                    | .10                         | 0                    | 2-26 | .09                                | 0      |      |               |        |
| 4-26                                    | .12                         | 0                    | 3-9  | .08                                | 0      |      |               |        |
| 4-27                                    | .61                         | 0                    | 3-11 | 0                                  | .263   |      |               |        |
| 4-29                                    | 0                           | .222                 | 3-12 | .01                                | 0      |      |               |        |
| 5-20                                    | .02                         | 0                    | 3-13 | .02                                | 0      |      |               |        |
| 5-21                                    | .18                         | 0                    | 3-14 | .01                                | 0      |      |               |        |
| 5-25                                    | .60                         | 0                    | 3-15 | .02                                | .121   |      |               |        |
| 5-27                                    | 0                           | 0                    | 3-16 | T                                  | .002   |      |               |        |
| 5-28                                    | .05                         | 0                    | 3-17 | 0                                  | .015   |      |               |        |
| 5-29                                    | .24                         | 0                    | 3-19 | .01                                | 0      |      |               |        |
| 5-30                                    | .14                         | 0                    | 3-20 | .02                                | 0      |      |               |        |
| 5-31                                    | .06                         | 0                    | 3-24 | .01                                | 0      |      |               |        |
| 6-2                                     | .15                         | 0                    | 4-2  | .03                                | 0      |      |               |        |
| 6-3                                     | .55                         | .084 <sup>4/</sup>   | 4-15 | .10                                | 0      |      |               |        |
| 6-7                                     | .20                         | 0                    | 4-16 | .11                                | 0      |      |               |        |
| 6-8                                     | .10                         | 0                    | 4-18 | .10                                | 0      |      |               |        |
| 6-9                                     | .10                         | 0                    | 4-19 | .07                                | .002   |      |               |        |
| 6-11                                    | .05                         | 0                    | 4-20 | .04                                | 0      |      |               |        |
| 6-12                                    | .37                         | 0                    | 4-22 | 0                                  | .025   |      |               |        |
| 6-13                                    | .08                         | 0                    | 4-23 | .10                                | 0      |      |               |        |
| 6-14                                    | .42                         | 0                    | 5-4  | .15                                | 0      |      |               |        |
| 6-15                                    | .06                         | 0                    | 5-5  | .03                                | 0      |      |               |        |
| 6-16                                    | 0                           | .014 <sup>4/</sup>   | 5-10 | .23                                | 0      |      |               |        |
| 6-17 <sup>5/</sup>                      | 0                           | 0                    | 5-19 | .08                                | 0      |      |               |        |
| 6-23                                    | 0                           | 0                    | 5-20 | .26                                | 0      |      |               |        |
| 7-1                                     | .20                         | 0                    | 5-21 | .08                                | 0      |      |               |        |
| 7-2                                     | 1.62                        | .218                 | 5-27 | .18                                | 0      |      |               |        |
| 7-3                                     | .04                         | 0                    | 5-28 | .08                                | 0      |      |               |        |
| 7-10                                    | .93                         | .099                 | 5-29 | .29                                | 0      |      |               |        |
| 7-14                                    | .12                         | 0                    | 5-30 | .71                                | .064   |      |               |        |
| 7-19                                    | .20                         | 0                    | 5-31 | .50                                | .051   |      |               |        |
| 7-29                                    | .21                         | 0                    | 6-1  | 0                                  | 0      |      |               |        |
| 7-30                                    | .17                         | T                    | 6-7  | .09                                | 0      |      |               |        |
| 8-2                                     | .02                         | 0                    | 6-15 | .22                                | 0      |      |               |        |
| 8-5                                     | 0                           | 0                    | 6-16 | 0                                  | .003   |      |               |        |
| 8-12                                    | 0                           | 0                    | 6-17 | .34                                | .003   |      |               |        |
| 8-18                                    | 0                           | 0                    | 6-24 | .57                                | .061   |      |               |        |
| 8-23                                    | 0                           | 0                    | 6-25 | .50                                | .034   |      |               |        |
| 8-29                                    | .61                         | 0                    | 6-26 | .28                                | 0      |      |               |        |
| 8-30                                    | .23                         | .009                 | 6-29 | .03                                | 0      |      |               |        |
| 8-31                                    | .01                         | 0                    | 6-30 | .88                                | .075   |      |               |        |
| 9-17                                    | .04                         | 0                    | 7-1  | .01                                | 0      |      |               |        |
| 10-8                                    | .07                         | 0                    | 7-3  | .10                                | 0      |      |               |        |
| 10-20                                   | .08                         | 0                    | 7-7  | .28                                | 0      |      |               |        |
| 10-21                                   | .12                         | 0                    | 7-13 | .37                                | 0      |      |               |        |
| 11-14                                   | .11                         | 0                    | 7-15 | .63                                | .006   |      |               |        |
| 11-15                                   | .06                         | 0                    | 7-21 | .02                                | 0      |      |               |        |
| 11-16                                   | .11                         | 0                    | 8-12 | .14                                | 0      |      |               |        |
| 11-17                                   | .13                         | 0                    | 8-24 | .09                                | 0      |      |               |        |

Notes: 1/ Precipitation prior to 6-11-58 from Carl Ruby page. 2/ Runoff based on weekly observations prior to 6-17-58. 3/ Start of observations. 4/ Runoff between observation dates. 5/ Stage recorder installed. Months of Jan., Feb., Mar., Apr., Nov., and Dec. include snow and snow melt. Quality of records: Precipitation and runoff - good, except for period before 6-17-58 and early snow melt, which are fair.



| DAILY PRECIPITATION AND RUNOFF (Inches) |               |        | Newell, South Dakota Watershed W-6 |               |        |      |               |        |
|-----------------------------------------|---------------|--------|------------------------------------|---------------|--------|------|---------------|--------|
| Date                                    | Precipitation | Runoff | Date                               | Precipitation | Runoff | Date | Precipitation | Runoff |
| 1958                                    |               |        | 1959                               |               |        |      |               |        |
| 11-23                                   | 0.02          | 0      | 8-31                               | 0.46          | 0      |      |               |        |
| 12-6                                    | .11           | 0      | 9-16                               | .45           | 0      |      |               |        |
| 12-7                                    | .03           | 0      | 9-17                               | .34           | T      |      |               |        |
| 12-11                                   | .10           | 0      | 9-18                               | .07           | 0      |      |               |        |
| 12-13                                   | .08           | 0      | 9-19                               | .02           | 0      |      |               |        |
| 12-14                                   | .01           | 0      | 9-21                               | .11           | 0      |      |               |        |
|                                         |               |        | 9-24                               | .13           | 0      |      |               |        |
|                                         |               |        | 9-25                               | .28           | 0      |      |               |        |
|                                         |               |        | 9-27                               | .05           | 0      |      |               |        |
|                                         |               |        | 9-28                               | .02           | 0      |      |               |        |
|                                         |               |        | 9-29                               | .01           | 0      |      |               |        |
|                                         |               |        | 10-1                               | .02           | 0      |      |               |        |
|                                         |               |        | 10-7                               | .18           | 0      |      |               |        |
|                                         |               |        | 10-9                               | .24           | 0      |      |               |        |
|                                         |               |        | 10-12                              | .09           | 0      |      |               |        |
|                                         |               |        | 10-22                              | .03           | 0      |      |               |        |
|                                         |               |        | 11-4                               | .11           | T      |      |               |        |
|                                         |               |        | 11-6                               | 0             | T      |      |               |        |
|                                         |               |        | 11-11                              | .03           | 0      |      |               |        |
|                                         |               |        | 11-12                              | .06           | 0      |      |               |        |
|                                         |               |        | 11-13                              | .01           | 0      |      |               |        |
|                                         |               |        | 11-15                              | .03           | 0      |      |               |        |
|                                         |               |        | 11-21                              | .01           | 0      |      |               |        |
|                                         |               |        | 11-22                              | .02           | 0      |      |               |        |
|                                         |               |        | 11-23                              | .16           | 0      |      |               |        |
|                                         |               |        | 11-25                              | .01           | 0      |      |               |        |
|                                         |               |        | 12-1                               | T             | T      |      |               |        |
|                                         |               |        | 12-3                               | .01           | 0      |      |               |        |
|                                         |               |        | 12-4                               | .01           | 0      |      |               |        |
|                                         |               |        | 12-20                              | .01           | 0      |      |               |        |
|                                         |               |        | 12-21                              | .01           | 0      |      |               |        |
|                                         |               |        | 12-27                              | .03           | 0      |      |               |        |
|                                         |               |        | 12-31                              | .10           | 0      |      |               |        |

Notes:



NEWELL, SOUTH DAKOTA Watershed W-7

LOCATION: Butte Co., South Dakota, 35 mi. NE of Newell, tributary to Little Sioux River, 1/2 mi. S. of Newell.

AREA: 160 Acres.

SHAPE: Trapezoidal, about 1/2 mi. long.

SLOPES: 90' is 3-0'; 20' is 2-11'.

SOILS: Residual, zonal: 10 - moderately deep and deep, moderately to strongly calcareous, 1 - 2, 2 - 3, 2 - 4, 2 - 5, 2 - 6, 2 - 7, 2 - 8, 2 - 9, 2 - 10, 2 - 11, 2 - 12, 2 - 13, 2 - 14, 2 - 15, 2 - 16, 2 - 17, 2 - 18, 2 - 19, 2 - 20, 2 - 21, 2 - 22, 2 - 23, 2 - 24, 2 - 25, 2 - 26, 2 - 27, 2 - 28, 2 - 29, 2 - 30, 2 - 31, 2 - 32, 2 - 33, 2 - 34, 2 - 35, 2 - 36, 2 - 37, 2 - 38, 2 - 39, 2 - 40, 2 - 41, 2 - 42, 2 - 43, 2 - 44, 2 - 45, 2 - 46, 2 - 47, 2 - 48, 2 - 49, 2 - 50, 2 - 51, 2 - 52, 2 - 53, 2 - 54, 2 - 55, 2 - 56, 2 - 57, 2 - 58, 2 - 59, 2 - 60, 2 - 61, 2 - 62, 2 - 63, 2 - 64, 2 - 65, 2 - 66, 2 - 67, 2 - 68, 2 - 69, 2 - 70, 2 - 71, 2 - 72, 2 - 73, 2 - 74, 2 - 75, 2 - 76, 2 - 77, 2 - 78, 2 - 79, 2 - 80, 2 - 81, 2 - 82, 2 - 83, 2 - 84, 2 - 85, 2 - 86, 2 - 87, 2 - 88, 2 - 89, 2 - 90, 2 - 91, 2 - 92, 2 - 93, 2 - 94, 2 - 95, 2 - 96, 2 - 97, 2 - 98, 2 - 99, 2 - 100.

USDA No: 1 - 100'.

LAND CAPABILITY: 1A = 30; 1B = 30; 1C = 29.

INFILTRATION: Good, well defined; main drainage, long.

CHARACTER OF FLOW: Spheral, continuous.

INSTRUMENTATION: Staff: 1-25 water table recorder by float on 1/2 in. diameter pipe.

WATERSHED CHARACTER: 100% rangeland. Range for 1957 - 1959. 1957 - 1958 - 100% rangeland; 1959 - 100% rangeland. Production of cover: 1957 - 1.5 acres. 1958 - 1.5 acres. 1959 - 1.5 acres. Three sites: Sandy - 29; silt - 27; pans etc - 27.

USE: (Degree of grazing of rangeland) 1957 - full; 1958 - moderate; 1959 - full.

GENERAL NOTES: Rangeland in Upper Yellowstone National Plains and local hills, east of Newell, especially soils formed in materials weathered from Lux Hills and local creek formations. Pierre Shale Plains and Badlands land resource area (G-60).

MONTHLY PRECIPITATION AND RUNOFF (Inches)

Newell, South Dakota Watershed W-7

| Month<br>Year  | Jan.           | Feb.      | Mar.        | Apr.      | May       | June         | July         | Aug.         | Sept.        | Oct.      | Nov.      | Dec.      | Year         |
|----------------|----------------|-----------|-------------|-----------|-----------|--------------|--------------|--------------|--------------|-----------|-----------|-----------|--------------|
|                | 1958<br>P<br>Q | 0.11<br>0 | 0.52<br>0   | 0.57<br>T | 1.57<br>0 | 0.46<br>0    | 3.36<br>.006 | 3.19<br>.213 | 1.07<br>T    | 0.21<br>0 | 0.25<br>0 | 0.36<br>0 |              |
| 1959<br>P<br>Q | .25<br>0       | .36<br>0  | .29<br>.206 | .56<br>0  | 2.30<br>T | 2.47<br>.002 | .40<br>0     | .83<br>0     | 1.60<br>.004 | .58<br>0  | .58<br>0  | .32<br>0  | 10.63<br>.21 |
| Normal<br>P    | .44            | .37       | .79         | 1.67      | 2.65      | 2.95         | 2.11         | 1.34         | 1.29         | 1.02      | .55       | .39       | 15.57        |

Notes: Normal P based on 52 year record (1908-1959) at Newell USWB station, Newell, South Dakota.

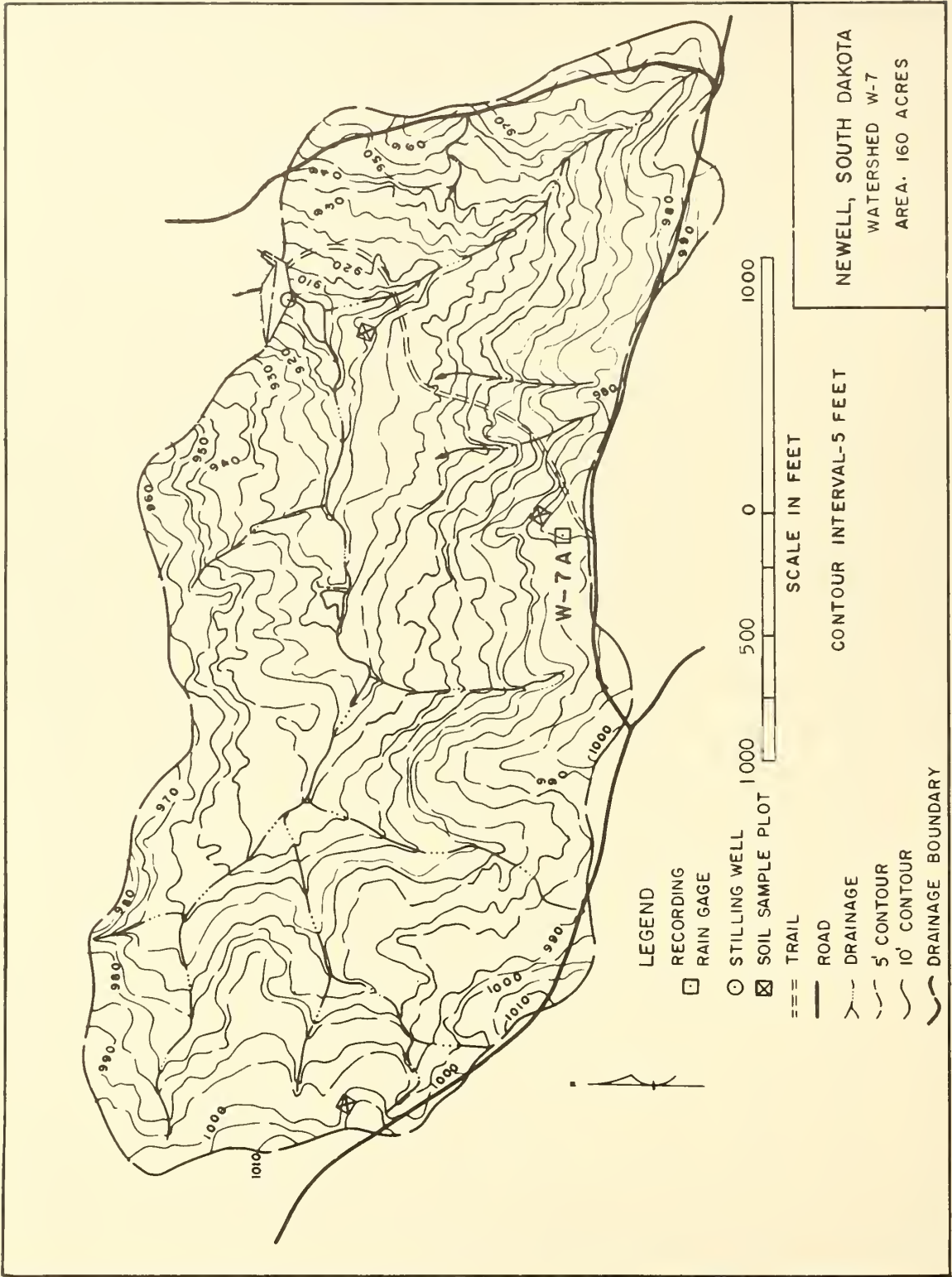
| DAILY PRECIPITATION AND RUNOFF (Inches) |               |        |      | Nevell, South Dakota Watershed W-7 |        |      |               |        |
|-----------------------------------------|---------------|--------|------|------------------------------------|--------|------|---------------|--------|
| Date                                    | Precipitation | Runoff | Date | Precipitation                      | Runoff | Date | Precipitation | Runoff |
| 1958                                    |               |        | 1959 |                                    |        |      |               |        |
| 1-26 <sup>1/</sup>                      | 0.01          | 0      | 1-1  | 0.03                               | 0      |      |               |        |
| 1-30                                    | .09           | 0      | 1-13 | .06                                | 0      |      |               |        |
| 1-31                                    | .01           | 0      | 1-15 | .03                                | 0      |      |               |        |
| 2-15                                    | .05           | 0      | 1-16 | .10                                | 0      |      |               |        |
| 2-16                                    | .01           | 0      | 1-21 | .01                                | 0      |      |               |        |
| 2-17                                    | .01           | 0      | 1-25 | .01                                | 0      |      |               |        |
| 2-25                                    | .18           | 0      | 1-30 | .01                                | 0      |      |               |        |
| 2-26                                    | .17           | 0      | 2-3  | .01                                | 0      |      |               |        |
| 2-27                                    | .10           | 0      | 2-4  | .01                                | 0      |      |               |        |
| 3-8 <sup>2/</sup>                       | .01           | 0      | 2-5  | .01                                | 0      |      |               |        |
| 3-9                                     | .04           | 0      | 2-9  | .03                                | 0      |      |               |        |
| 3-10                                    | .04           | 0      | 2-13 | .10                                | 0      |      |               |        |
| 3-25                                    | .04           | 0      | 2-16 | .08                                | 0      |      |               |        |
| 3-26                                    | .04           | 0      | 2-17 | .03                                | 0      |      |               |        |
| 3-31                                    | .40           | T      | 2-26 | .09                                | 0      |      |               |        |
| 4-1                                     | .49           | 0      | 3-9  | .08                                | 0      |      |               |        |
| 4-4                                     | .05           | 0      | 3-11 | 0                                  | .055   |      |               |        |
| 4-5                                     | .09           | 0      | 3-12 | T                                  | .091   |      |               |        |
| 4-6                                     | .01           | 0      | 3-13 | .05                                | .029   |      |               |        |
| 4-20                                    | .10           | 0      | 3-14 | .02                                | 0      |      |               |        |
| 4-22                                    | .23           | 0      | 3-15 | .06                                | 0      |      |               |        |
| 4-25                                    | .07           | 0      | 3-17 | T                                  | .031   |      |               |        |
| 4-26                                    | .05           | 0      | 3-19 | .07                                | 0      |      |               |        |
| 4-27                                    | .16           | 0      | 3-20 | .01                                | 0      |      |               |        |
| 4-28                                    | .02           | 0      | 4-2  | .02                                | 0      |      |               |        |
| 5-21                                    | .08           | 0      | 4-7  | .02                                | 0      |      |               |        |
| 5-23                                    | .15           | 0      | 4-15 | .10                                | 0      |      |               |        |
| 5-29                                    | .09           | 0      | 4-16 | .14                                | 0      |      |               |        |
| 5-30                                    | .04           | 0      | 4-18 | .12                                | 0      |      |               |        |
| 5-31                                    | .10           | 0      | 4-19 | .08                                | 0      |      |               |        |
| 6-1                                     | .01           | 0      | 4-23 | .08                                | 0      |      |               |        |
| 6-2                                     | .10           | 0      | 5-1  | .20                                | 0      |      |               |        |
| 6-3                                     | .12           | T      | 5-5  | .02                                | 0      |      |               |        |
| 6-7                                     | .66           | 0      | 5-10 | .20                                | 0      |      |               |        |
| 6-8                                     | .07           | 0      | 5-19 | .08                                | 0      |      |               |        |
| 6-9                                     | .41           | 0      | 5-20 | .30                                | 0      |      |               |        |
| 6-11                                    | .36           | 0      | 5-21 | .13                                | 0      |      |               |        |
| 6-12                                    | .49           | T      | 5-27 | .15                                | 0      |      |               |        |
| 6-13                                    | .54           | .005   | 5-28 | .11                                | 0      |      |               |        |
| 7-1                                     | .01           | 0      | 5-29 | .35                                | 0      |      |               |        |
| 7-2                                     | 1.67          | .211   | 5-30 | .51                                | T      |      |               |        |
| 7-3                                     | .02           | .002   | 5-31 | .16                                | 0      |      |               |        |
| 7-10                                    | .15           | 0      | 6-0  | .05                                | 0      |      |               |        |
| 7-14                                    | .15           | 0      | 6-15 | .20                                | 0      |      |               |        |
| 7-16                                    | .12           | 0      | 6-16 | .02                                | 0      |      |               |        |
| 7-17                                    | .02           | 0      | 6-17 | .12                                | 0      |      |               |        |
| 7-18                                    | .11           | 0      | 6-21 | .07                                | 0      |      |               |        |
| 7-19                                    | .19           | 0      | 6-24 | .26                                | 0      |      |               |        |
| 7-21                                    | .04           | 0      | 6-25 | .70                                | T      |      |               |        |
| 7-29                                    | .30           | 0      | 6-26 | .21                                | 0      |      |               |        |
| 7-30                                    | .10           | 0      | 6-29 | .07                                | 0      |      |               |        |
| 8-2                                     | .04           | 0      | 6-30 | .77                                | .002   |      |               |        |
| 8-3                                     | .03           | 0      | 7-1  | .13                                | 0      |      |               |        |
| 8-5                                     | .05           | 0      | 7-7  | .08                                | 0      |      |               |        |
| 8-29                                    | .51           | T      | 7-15 | .17                                | 0      |      |               |        |
| 8-30                                    | .44           | T      | 7-17 | .02                                | 0      |      |               |        |
| 9-1                                     | .20           | 0      | 8-1  | .21                                | 0      |      |               |        |
| 9-21                                    | .01           | 0      | 8-5  | .13                                | 0      |      |               |        |
| 10-8                                    | .07           | 0      | 8-8  | .15                                | 0      |      |               |        |
| 10-20                                   | .07           | 0      | 8-12 | .08                                | 0      |      |               |        |
| 10-21                                   | .11           | 0      | 8-22 | .04                                | 0      |      |               |        |
| 11-11                                   | .13           | 0      | 8-23 | .02                                | 0      |      |               |        |
| 11-15                                   | .05           | 0      | 8-24 | .18                                | 0      |      |               |        |
| 11-16                                   | .11           | 0      | 8-31 | .02                                | 0      |      |               |        |
| 11-23                                   | .07           | 0      | 9-16 | .36                                | 0      |      |               |        |

Notes: Quality of records: Precipitation - good. Runoff - good except for period during early snow melt which is fair. Months of Jan., Feb., Mar., Apr., Nov., and Dec. include snow and snow melt.  
<sup>1/</sup> Start of observations and rain gage installed. <sup>2/</sup> Stare recorder installed.

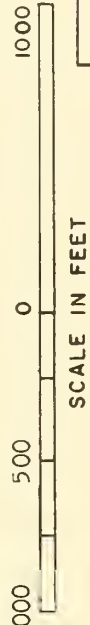
| DAILY PRECIPITATION AND RUNOFF (Inches) |               |        | Newell, South Dakota Watershed W-7 |               |        |      |               |        |
|-----------------------------------------|---------------|--------|------------------------------------|---------------|--------|------|---------------|--------|
| Date                                    | Precipitation | Runoff | Date                               | Precipitation | Runoff | Date | Precipitation | Runoff |
| 1958                                    |               |        | 1959                               |               |        |      |               |        |
| 12-6                                    | 0.10          | 0      | 9-17                               | 0.37          | 0.002  |      |               |        |
| 12-7                                    | .05           | 0      | 9-18                               | .07           | 0      |      |               |        |
| 12-11                                   | .10           | 0      | 9-19                               | .01           | 0      |      |               |        |
| 12-13                                   | .07           | 0      | 9-21                               | .19           | 0      |      |               |        |
| 12-14                                   | .01           | 0      | 9-24                               | .22           | T      |      |               |        |
|                                         |               |        | 9-25                               | .37           | .002   |      |               |        |
|                                         |               |        | 9-27                               | .01           | 0      |      |               |        |
|                                         |               |        | 9-28                               | .05           | 0      |      |               |        |
|                                         |               |        | 9-29                               | .01           | 0      |      |               |        |
|                                         |               |        | 10-1                               | .02           | 0      |      |               |        |
|                                         |               |        | 10-7                               | .18           | 0      |      |               |        |
|                                         |               |        | 10-9                               | .28           | 0      |      |               |        |
|                                         |               |        | 10-12                              | .07           | 0      |      |               |        |
|                                         |               |        | 10-25                              | .03           | 0      |      |               |        |
|                                         |               |        | 11-1                               | .08           | 0      |      |               |        |
|                                         |               |        | 11-2                               | .03           | 0      |      |               |        |
|                                         |               |        | 11-9                               | .09           | 0      |      |               |        |
|                                         |               |        | 11-11                              | .03           | 0      |      |               |        |
|                                         |               |        | 11-12                              | .03           | 0      |      |               |        |
|                                         |               |        | 11-13                              | .03           | 0      |      |               |        |
|                                         |               |        | 11-14                              | .01           | 0      |      |               |        |
|                                         |               |        | 11-21                              | .02           | 0      |      |               |        |
|                                         |               |        | 11-22                              | .02           | 0      |      |               |        |
|                                         |               |        | 11-23                              | .21           | 0      |      |               |        |
|                                         |               |        | 12-3                               | .01           | 0      |      |               |        |
|                                         |               |        | 12-4                               | .02           | 0      |      |               |        |
|                                         |               |        | 12-12                              | .02           | 0      |      |               |        |
|                                         |               |        | 12-19                              | .01           | 0      |      |               |        |
|                                         |               |        | 12-20                              | .06           | 0      |      |               |        |
|                                         |               |        | 12-21                              | .02           | 0      |      |               |        |
|                                         |               |        | 12-26                              | .02           | 0      |      |               |        |
|                                         |               |        | 12-27                              | .06           | 0      |      |               |        |
|                                         |               |        | 12-28                              | .02           | 0      |      |               |        |
|                                         |               |        | 12-30                              | .08           | 0      |      |               |        |

Notes:





NEWELL, SOUTH DAKOTA  
 WATERSHED W-7  
 AREA. 160 ACRES



CONTOUR INTERVAL-5 FEET

LEGEND

- RECORDING RAIN GAGE
- STILLING WELL
- ⊠ SOIL SAMPLE PLOT
- ≡≡≡ TRAIL
- ROAD
- DRAINAGE
- 5' CONTOUR
- 10' CONTOUR
- - - DRAINAGE BOUNDARY

## NEWELL, SOUTH DAKOTA Watershed No. 8

LOCATION: Butte Co., South Dakota, 24 mi. NE of Newell, Tributary Sulphur Creek; Cheyenne River Watershed.

AREA: 160 Acres.

SHAPE: Fan shaped, about 2300' wide, 1000' long.

SLOPES: 8' is 0-3%; 50' is 2-3%; 100' is 9-10%; 200' is 18-35%; 1' is 35-50%.

ASPECT: SE

SOILS: Residual, zonal: 11' - shallow and shallowly developed medium textured soils to rock outcrops moderate permeability; 24' - moderately deep medium textured soils, moderate permeability; 21' - colorized colorized clay pan soils, slow to very slow permeability; 11' - moderately deep, somewhat dispersed clay soils, very slow permeability; 1' - deep moderately coarse textured soils, moderate rapid permeability. Fairville loams and rock outcrops - 10%; Rhoades loams - 10%; Rhoades-Moline loams - 7%; Fairville loams, stony loams, and Reinville-Chana loams - 25%; Cushman-Chama loams - 19%; Grail clay loam - 6%; Maurice silt clay loam and Paout clay loam, sand substrate - 5%; Flasher-Terry fine sandy loam - 4%; Svalala fine sandy loam - 1'. Internal Drainage - medium.

EROSION: I - 96'; Geologic erosion - 2'.

LAND CAPACITY: IIIe = 19; IIIs = 34; IVe = 9; VIe = 22; VII = 21; VIIe = 21; VIII = 1.

SURFACE DRAINAGE: Good, well developed channels, length 500', 2000', 2000'.

CHARACTER OF FLOW: Ephemeral, continuous.

INSTRUMENTATION: Runoff: A-25 waterstage recorder on stock pond. Precipitation: Two recording gauges.

WATERSHED CONDITIONS: 170' Rangeland. Condition classes: Excellent - 22%; Good - 17%; Fair - 20%. Leading species: Blue grama - 35%; Three leaf sedge - 10%; buffalo grass - 20%; Sandberg's blue grass - 1%; mixed grasses, woody species - 25%.

Production of cover: 600 lbs/acre.

Soil sites: Shallow - 22%; silt - 26%; rangeland - 21%; clayey - 11%; thin grass - 10%; sandy - 1%; badlands - 1.

USE: (Degree of grazing of rangeland) 1957 - full; 1958 - full; 1959 - close.

GENERAL COMMENTS: Rangelands in Former Yellowstone National Park and the National Historic Landmark, especially soils weathered from Fox Hills and Hell Creek Formations. Pierre Shale Plains and Badlands land resource area. (G-60)

## MONTHLY PRECIPITATION AND RUNOFF (Inches)

Newell, South Dakota Watershed No. 8

| Month<br>Year | Jan.        | Feb.         | Mar.         | Apr.         | May          | June         | July         | Aug.         | Sept.        | Oct.        | Nov.        | Dec.         | Year         |
|---------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|-------------|--------------|--------------|
|               | 1958 P<br>Q | 0.15<br>.005 | 0.10<br>.009 | 0.65<br>.031 | 1.35<br>.019 | 0.52<br>0    | 4.45<br>.039 | 1.77<br>.002 | 0.90<br>0    | 0.04<br>0   | 0.26<br>0   | 0.18<br>.003 |              |
| 1959 1/<br>Q  | .32<br>0    | .24<br>.022  | .10<br>.176  | .86<br>.015  | 3.39<br>.019 | 1.85<br>.005 | .90<br>.003  | .44<br>T     | 2.22<br>.010 | .45<br>.004 | .84<br>.002 | .13<br>0     | 11.74<br>.29 |
| Normal P      | .44         | .37          | .79          | 1.67         | 2.65         | 2.95         | 2.11         | 1.34         | 1.29         | 1.02        | .55         | .39          | 15.57        |

Notes: Normal P based on 52 year record (1908-1959) at Newell USWB station, Newell, South Dakota.

1/ Precipitation Thiessen weighted from two rain gauges after 8-1-59.

| DAILY PRECIPITATION AND RUNOFF (Inches) |               |                      |                    |               |                      | Newell, South Dakota Watershed W-R |               |        |
|-----------------------------------------|---------------|----------------------|--------------------|---------------|----------------------|------------------------------------|---------------|--------|
| Date                                    | Precipitation | Runoff $\frac{1}{2}$ | Date               | Precipitation | Runoff $\frac{1}{2}$ | Date                               | Precipitation | Runoff |
| 1958                                    |               |                      | 1959               |               |                      |                                    |               |        |
| 1-13 <sup>2/</sup>                      | 0.0           | 0.005 $\frac{1}{2}$  | 1-1                | 0.04          | 0.0                  |                                    |               |        |
| 1-29                                    | .01           | 0                    | 1-6                | .06           | 0                    |                                    |               |        |
| 1-30 <sup>2/</sup>                      | .11           | 0                    | 1-13               | .06           | 0                    |                                    |               |        |
| 1-31                                    | .03           | 0                    | 1-15               | .02           | 0                    |                                    |               |        |
| 2-15                                    | .04           | 0                    | 1-29               | .07           | 0                    |                                    |               |        |
| 2-24                                    | 0             | .009 $\frac{1}{2}$   | 1-30               | .07           | 0                    |                                    |               |        |
| 2-25                                    | .26           | 0                    | 2-5                | .03           | 0                    |                                    |               |        |
| 2-26                                    | .10           | 0                    | 2-9                | .04           | 0                    |                                    |               |        |
| 3-4                                     | 0             | .005 $\frac{1}{2}$   | 2-13               | .04           | 0                    |                                    |               |        |
| 3-8                                     | .05           | 0                    | 2-17               | .05           | 0                    |                                    |               |        |
| 3-24                                    | 0             | .003 $\frac{1}{2}$   | 2-26               | .06           | 0                    |                                    |               |        |
| 3-26, 27                                | .60           | .023 $\frac{1}{2}$   | 2-28 <sup>5/</sup> | 0             | .022 $\frac{1}{2}$   |                                    |               |        |
| 4-5                                     | .35           | 0                    | 3-9                | .04           | 0                    |                                    |               |        |
| 4-20                                    | .04           | 0                    | 3-11               | 0             | .035 $\frac{1}{2}$   |                                    |               |        |
| 4-22                                    | .31           | 0                    | 3-12               | .01           | 0                    |                                    |               |        |
| 4-25                                    | .11           | 0                    | 3-13               | .02           | 0                    |                                    |               |        |
| 4-26                                    | .09           | 0                    | 3-18               | 0             | .124 $\frac{1}{2}$   |                                    |               |        |
| 4-27                                    | .45           | .019                 | 3-22               | .03           | 0                    |                                    |               |        |
| 5-21                                    | .18           | nr                   | 3-27               | 0             | .017 $\frac{1}{2}$   |                                    |               |        |
| 5-29                                    | .34           | nr                   | 4-8                | .02           | 0                    |                                    |               |        |
| 6-2                                     | .58           | nr                   | 4-9                | .01           | 0                    |                                    |               |        |
| 6-3                                     | .56           | nr                   | 4-15               | .22           | .007                 |                                    |               |        |
| 6-7                                     | .99           | nr                   | 4-16               | .28           | .009                 |                                    |               |        |
| 6-8                                     | .31           | nr                   | 4-18               | .10           | 0                    |                                    |               |        |
| 6-9                                     | .75           | nr                   | 4-19               | .14           | .020                 |                                    |               |        |
| 6-12                                    | .76           | nr                   | 4-20               | T             | .007                 |                                    |               |        |
| 6-13                                    | .16           | nr                   | 4-21               | 0             | .002                 |                                    |               |        |
| 6-14                                    | .26           | nr                   | 4-23               | .09           | 0                    |                                    |               |        |
| 6-16                                    | 0             | .030                 | 5-1                | .26           | 0                    |                                    |               |        |
| 6-24                                    | .08           | 0                    | 5-9                | .11           | T                    |                                    |               |        |
| 7-1                                     | 0             | 0                    | 5-19               | .20           | T                    |                                    |               |        |
| 7-2                                     | .03           | .002                 | 5-20               | .54           | 0                    |                                    |               |        |
| 7-12                                    | .19           | nr                   | 5-21               | 0             | 0                    |                                    |               |        |
| 7-14                                    | .50           | nr                   | 5-22               | .53           | .005                 |                                    |               |        |
| 7-31                                    | .15           | nr                   | 5-23               | 0             | 0                    |                                    |               |        |
| 8-2                                     | .12           | nr                   | 5-24               | .16           | 0                    |                                    |               |        |
| 8-3                                     | .06           | 0                    | 5-28               | .08           | 0                    |                                    |               |        |
| 8-29                                    | .72           | nr                   | 5-29               | .47           | 0                    |                                    |               |        |
| 9-13                                    | .04           | 0                    | 5-30               | .67           | .008                 |                                    |               |        |
| 10-20                                   | .21           | nr                   | 5-31               | .37           | 0                    |                                    |               |        |
| 10-21                                   | .05           | 0                    | 6-7                | .03           | 0                    |                                    |               |        |
| 11-14                                   | .46           | nr                   | 6-14               | .06           | 0                    |                                    |               |        |
| 11-23                                   | .02           | 0                    | 6-17               | .04           | 0                    |                                    |               |        |
| 11-26                                   | 0             | .003 $\frac{1}{2}$   | 6-21               | .04           | 0                    |                                    |               |        |
| 12-6                                    | .05           | 0                    | 6-22               | .02           | 0                    |                                    |               |        |
| 12-11                                   | .10           | nr                   | 6-24               | .33           | 0                    |                                    |               |        |
| 12-12                                   | .04           | 0                    | 6-25               | .30           | 0                    |                                    |               |        |
| 12-13                                   | .06           | 0                    | 6-26               | .21           | .002                 |                                    |               |        |
|                                         |               |                      | 6-28               | 0             | 0                    |                                    |               |        |
|                                         |               |                      | 6-29               | .12           | 0                    |                                    |               |        |
|                                         |               |                      | 6-30               | .70           | .003                 |                                    |               |        |
|                                         |               |                      | 7-3                | .43           | .003                 |                                    |               |        |
|                                         |               |                      | 7-7                | .05           | 0                    |                                    |               |        |
|                                         |               |                      | 7-15               | .17           | 0                    |                                    |               |        |
|                                         |               |                      | 7-16               | .05           | 0                    |                                    |               |        |
|                                         |               |                      | 7-17               | .20           | 0                    |                                    |               |        |
|                                         |               |                      | 8-6                | .29           | T                    |                                    |               |        |
|                                         |               |                      | 8-7                | .02           | 0                    |                                    |               |        |
|                                         |               |                      | 8-8                | .08           | 0                    |                                    |               |        |
|                                         |               |                      | 8-11               | .03           | 0                    |                                    |               |        |
|                                         |               |                      | 8-20               | .01           | 0                    |                                    |               |        |
|                                         |               |                      | 9-15               | .02           | 0                    |                                    |               |        |
|                                         |               |                      | 9-16               | .28           | 0                    |                                    |               |        |
|                                         |               |                      | 9-17               | .70           | .002                 |                                    |               |        |
|                                         |               |                      | 9-18               | .06           | 0                    |                                    |               |        |

Notes: Quality of records: Precipitation - good; runoff - good except for period before 2-29-59 which is fair. Months of Jan., Feb., Mar., Apr., Nov. and Dec. include snow and snow melt.  $\frac{1}{2}$  Runoff based on weekly observations prior to 4-4-59. <sup>2/</sup> Start of observations. <sup>3/</sup> Recording rain gage installed.  $\frac{1}{2}$  Runoff between observation dates. <sup>5/</sup> Stage recorder installed.

DAILY PRECIPITATION AND RUNOFF (Inches)

Newell, South Dakota Watershed V-R

| Date | Precipitation | Runoff | Date  | Precipitation | Runoff | Date | Precipitation | Runoff |
|------|---------------|--------|-------|---------------|--------|------|---------------|--------|
|      |               |        | 1959  |               |        |      |               |        |
|      |               |        | 9-21  | .31           | .004   |      |               |        |
|      |               |        | 9-24  | .29           | 0      |      |               |        |
|      |               |        | 9-25  | .51           | .004   |      |               |        |
|      |               |        | 9-26  | .01           | 0      |      |               |        |
|      |               |        | 9-27  | .01           | 0      |      |               |        |
|      |               |        | 9-28  | .01           | 0      |      |               |        |
|      |               |        | 9-29  | .01           | 0      |      |               |        |
|      |               |        | 9-30  | .01           | 0      |      |               |        |
|      |               |        | 10-4  | .01           | 0      |      |               |        |
|      |               |        | 10-5  | .01           | 0      |      |               |        |
|      |               |        | 10-7  | .13           | 0      |      |               |        |
|      |               |        | 10-8  | .22           | .002   |      |               |        |
|      |               |        | 10-12 | .02           | 0      |      |               |        |
|      |               |        | 10-22 | .01           | 0      |      |               |        |
|      |               |        | 10-25 | .02           | T      |      |               |        |
|      |               |        | 10-29 | .02           | 0      |      |               |        |
|      |               |        | 10-31 | 0             | .002   |      |               |        |
|      |               |        | 11-1  | .26           | T      |      |               |        |
|      |               |        | 11-11 | .02           | 0      |      |               |        |
|      |               |        | 11-12 | .06           | 0      |      |               |        |
|      |               |        | 11-13 | .06           | 0      |      |               |        |
|      |               |        | 11-15 | .04           | 0      |      |               |        |
|      |               |        | 11-16 | .01           | 0      |      |               |        |
|      |               |        | 11-21 | .02           | 0      |      |               |        |
|      |               |        | 11-22 | .01           | .002   |      |               |        |
|      |               |        | 11-23 | .32           | 0      |      |               |        |
|      |               |        | 11-24 | .01           | 0      |      |               |        |
|      |               |        | 12-3  | .03           | 0      |      |               |        |
|      |               |        | 12-4  | .02           | 0      |      |               |        |
|      |               |        | 12-20 | .03           | 0      |      |               |        |
|      |               |        | 12-21 | .01           | 0      |      |               |        |
|      |               |        | 12-27 | .01           | 0      |      |               |        |
|      |               |        | 12-29 | .01           | 0      |      |               |        |
|      |               |        | 12-30 | .01           | 0      |      |               |        |

Notes:





NEWELL, SOUTH DAKOTA "watershed W-9"

LOCATION: Butte Co., South Dakota, 23 mi. NE of Newell, Sulphur Creek; Cheyenne River Watershed.

AREA: 616 Acres.

SHAPE: Elongated club, about 17,500' long and 3500' wide.

SLOPES: 8" is 0-3%; 21" is 3-9%; 37" is 9-16%; 31" is 16-35%; 7" is 35-60%.

ASPECT: -

SOILS: Residual, zonal: 56% - shallow medium textured soils to rock outcrops, moderate permeability; 21% - moderately deep and deep medium text red soils, moderate permeability; 15% - solodized solonetz clay pan soils, slow to very slow permeability; 5% - deep moderately coarse textured soils, moderately rapid permeability; 3% - Barren Badlands; 3% - moderately deep somewhat dispersed clay soils, very slow permeability; 3% - sub-irrigated alluvial soils, undifferentiated; 1% - deep coarse textured soils, rapid permeability. Rainville loams and Rainville-flasher sand loam 20% out-crops - 28%; Rainville loam-flasher fine sandy loam and stone loam - 16%; Broades loam and fine sandy loam - 14%; Flasher fine sandy loam - 12%; Badlands complex - 8%; Reserve loam - 6%; Hebar fine sandy loam, colluvial phase - 3%; Chama-Rainville loams - 2%; Timmer fine sandy loam - 2%; Cushman-Chama loams - 1%; Potent clay loam - 1%; Trail clay loam - 1%; Lihen fine sandy loam - 1%; Voline loam - 1%; Pierre-Lismas clay - 1%; Alluvial soils, undifferentiated - 3%; Traces of Armatard, and Hale. Internal Drainage - medium.

EROSION: 9.1 - I; 6' - Geologic.

LAND CAPABILITY: IIC = trace; IIIc = 1; IIIc = 2; IVc = 3; Vc = 4; VIc = 5; VIIc = 16%; VIIIc = 30%; VIIIc = 21%.

SURFACE DRAINAGE: Good, well developed main channel 17,500', others 1400', 600', 5000', and 1900'.

CHARACTER OF FLOOD: Sporadic, continuous.

INSTRUMENTATION: Runoff: 4-35 waterstage recorder. Precipitation: four recording rain-gages. Early precipitation records from 1 in. gage on Stanley Smeek ranch 1 mile west of pond.

REPORTED CROPPINGS: 100% Rangeland. Condition classes: Excellent - 10%; Good - 20%; Fair - 25%; Poor - 17%. Leading species: Blue grama - 40%; western wheat grass - 10%; thread leaf sedge - 10%; needle and thread - 10%; little bluestem and other grasses - 10%; species and forbs - 20%.

Production of cover: 200 lbs/acre.

Pancre sites: Shallow - 20%; thin breaks - 20%; meadows - 15%; silt - 10%; br. loam - 10%; sandy - 10%; clayey - 20%; sub-irrigated - 20%; soils - 10%.

USE: (Degree of grazing of rangeland) Winter grazing only. 1957 - moderate; 1958 - none; 1959 - moderate.

GENERALIZED MAP: 60: Rangelands in Border-Yellowstone National Plains and Badland Plains, west Dakotas, especially soils near River, Cheyenne and Hell Creek formations. Pierre Shale Plains and Badlands land resource area (G-60).

MONTHLY PRECIPITATION AND RUNOFF (Inches)

Newell, South Dakota Watershed W-9

| Year    | Month | Jan. | Feb. | Mar. | Apr. | May  | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year  |
|---------|-------|------|------|------|------|------|------|------|------|-------|------|------|------|-------|
|         |       | P    | T    | P    | P    | P    | P    | P    | P    | P     | T    | P    |      |       |
| 1958    | P     | 0.01 |      | 0.35 | 1.50 | 0.41 | 4.56 | 1.60 | 0.87 | 0.11  | 0.36 | 0.44 | 0.24 | 10.84 |
|         | Q     | .005 | .010 | .002 | .074 | 0    | .30P | 0    | 0    | 0     | .000 | .005 | 0    |       |
| 1959 1/ | P     | .3P  | .29  | .10  | .83  | 2.90 | 1.09 | 1.04 | .41  | 2.04  | .40  | .62  | .13  | 11.20 |
|         | Q     | 0    | .035 | .20P | .01P | .033 | 0    | .007 | 0    | .004  | T    | .005 | .003 |       |
| Normal  | P     | .44  | .37  | .79  | 1.67 | 2.65 | 2.95 | 2.11 | 1.34 | 1.29  | 1.02 | .55  | .39  | 15.57 |

Notes: Normal P based on 52 year record (1908-1959) at USWB station, Newell, South Dakota.  
 1/ Thiessen weighted precipitation after 5-21-59. Prior records from Stanley Smeek's 1 inch gage.

| DAILY PRECIPITATION AND RUNOFF (Inches) |                         |                  |      |               |                  | Newell, South Dakota Watershed W-9 |               |        |
|-----------------------------------------|-------------------------|------------------|------|---------------|------------------|------------------------------------|---------------|--------|
| Date                                    | Precipitation <u>1/</u> | Runoff <u>2/</u> | Date | Precipitation | Runoff <u>2/</u> | Date                               | Precipitation | Runoff |
| 1958                                    |                         |                  | 1959 |               |                  |                                    |               |        |
| 1-20 <u>3/</u>                          | 0.0                     | 0.005            | 1-1  | 0.05          | 0.0              |                                    |               |        |
| 1-29                                    | .01                     | 0                | 1-6  | .05           | 0                |                                    |               |        |
| 2-4                                     | 0                       | .005             | 1-13 | .05           | 0                |                                    |               |        |
| 2-18                                    | 0                       | .014             | 1-15 | .03           | 0                |                                    |               |        |
| 3-4                                     | .30                     | .002             | 1-18 | .05           | 0                |                                    |               |        |
| 3-13                                    | .05                     | 0                | 1-20 | .01           | 0                |                                    |               |        |
| 4-2                                     | .60                     | .032             | 1-21 | .01           | 0                |                                    |               |        |
| 4-10                                    | .35                     | .002             | 1-24 | .01           | 0                |                                    |               |        |
| 4-29                                    | .85                     | .050             | 1-25 | .01           | 0                |                                    |               |        |
| 5-21 <u>5/</u>                          | .21                     | nr               | 1-29 | .05           | 0                |                                    |               |        |
| 5-29                                    | .20                     | 0                | 1-30 | .05           | 0                |                                    |               |        |
| 6-1                                     | .39                     | 0                | 2-5  | .02           | 0                |                                    |               |        |
| 6-2                                     | .59                     | 0                | 2-9  | .05           | 0                |                                    |               |        |
| 6-3                                     | .33                     | 0                | 2-13 | .05           | 0                |                                    |               |        |
| 6-7                                     | 1.10                    | nr               | 2-14 | .04           | 0                |                                    |               |        |
| 6-8                                     | .31                     | nr               | 2-16 | .04           | .035 <u>4/</u>   |                                    |               |        |
| 6-9                                     | .71                     | .248             | 2-17 | .03           | nr               |                                    |               |        |
| 6-12                                    | .59                     | nr               | 2-26 | .06           | nr               |                                    |               |        |
| 6-13                                    | .31                     | .060             | 3-9  | .04           | nr               |                                    |               |        |
| 6-14                                    | .16                     | 0                | 3-12 | .01           | nr               |                                    |               |        |
| 6-24                                    | .08                     | 0                | 3-13 | .02           | nr               |                                    |               |        |
| 7-2                                     | .86                     | nr               | 3-18 | 0             | .181 <u>4/</u>   |                                    |               |        |
| 7-12                                    | .21                     | nr               | 3-19 | .01           | 0                |                                    |               |        |
| 7-14                                    | .48                     | nr               | 3-20 | .03           | 0                |                                    |               |        |
| 7-30                                    | .13                     | nr               | 3-31 | 0             | .027 <u>4/</u>   |                                    |               |        |
| 8-2                                     | .09                     | 0                | 4-1  | 0             | .007             |                                    |               |        |
| 8-3                                     | .18                     | nr               | 4-3  | .02           | 0                |                                    |               |        |
| 8-29                                    | .40                     | 0                | 4-9  | .01           | 0                |                                    |               |        |
| 9-13                                    | .09                     | 0                | 4-15 | .21           | 0                |                                    |               |        |
| 9-25                                    | .02                     | 0                | 4-16 | .26           | 0                |                                    |               |        |
| 10-8                                    | .02                     | 0                | 4-17 | .01           | 0                |                                    |               |        |
| 10-20                                   | .28                     | 0                | 4-18 | .06           | .003             |                                    |               |        |
| 10-21                                   | .06                     | .009             | 4-19 | .15           | 0                |                                    |               |        |
| 11-8                                    | .02                     | 0                | 4-20 | .01           | 0                |                                    |               |        |
| 11-14                                   | .40                     | nr               | 4-21 | 0             | .002             |                                    |               |        |
| 11-20                                   | 0                       | .005 <u>4/</u>   | 4-22 | 0             | .005             |                                    |               |        |
| 11-23                                   | .02                     | 0                | 4-23 | .08           | 0                |                                    |               |        |
| 12-6                                    | .05                     | 0                | 5-1  | .24           | 0                |                                    |               |        |
| 12-10                                   | .06                     | 0                | 5-5  | .01           | 0                |                                    |               |        |
| 12-12                                   | .04                     | 0                | 5-9  | .07           | 0                |                                    |               |        |
| 12-13                                   | .06                     | 0                | 5-10 | .05           | 0                |                                    |               |        |
| 12-14                                   | .03                     | 0                | 5-19 | .16           | 0                |                                    |               |        |
|                                         |                         |                  | 5-20 | .50           | .009             |                                    |               |        |
|                                         |                         |                  | 5-22 | .37           | .003             |                                    |               |        |
|                                         |                         |                  | 5-27 | .14           | 0                |                                    |               |        |
|                                         |                         |                  | 5-28 | .08           | 0                |                                    |               |        |
|                                         |                         |                  | 5-29 | .44           | .002             |                                    |               |        |
|                                         |                         |                  | 5-30 | .60           | .016             |                                    |               |        |
|                                         |                         |                  | 5-31 | .25           | .003             |                                    |               |        |
|                                         |                         |                  | 6-7  | .04           | 0                |                                    |               |        |
|                                         |                         |                  | 6-14 | .06           | 0                |                                    |               |        |
|                                         |                         |                  | 6-17 | .03           | 0                |                                    |               |        |
|                                         |                         |                  | 6-21 | .05           | 0                |                                    |               |        |
|                                         |                         |                  | 6-22 | .01           | 0                |                                    |               |        |
|                                         |                         |                  | 6-24 | .37           | 0                |                                    |               |        |
|                                         |                         |                  | 6-25 | .29           | 0                |                                    |               |        |
|                                         |                         |                  | 6-26 | .19           | 0                |                                    |               |        |
|                                         |                         |                  | 6-29 | .12           | 0                |                                    |               |        |
|                                         |                         |                  | 6-30 | .65           | 0                |                                    |               |        |
|                                         |                         |                  | 7-3  | .42           | 0                |                                    |               |        |
|                                         |                         |                  | 7-7  | .05           | 0                |                                    |               |        |
|                                         |                         |                  | 7-15 | .29           | 0                |                                    |               |        |
|                                         |                         |                  | 7-16 | .08           | 0                |                                    |               |        |
|                                         |                         |                  | 7-17 | .20           | .007             |                                    |               |        |
|                                         |                         |                  | 7-5  | .05           | 0                |                                    |               |        |

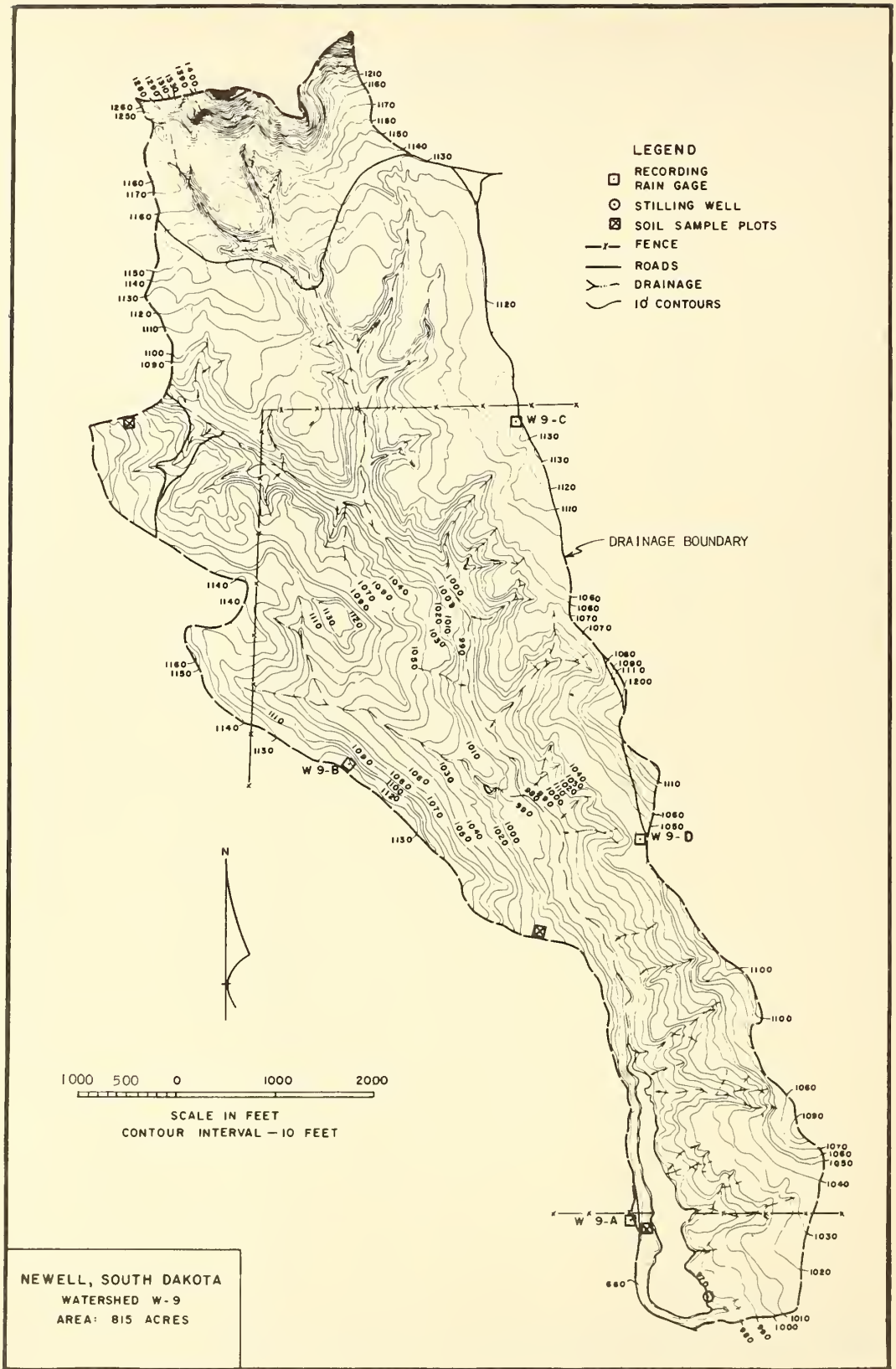
Notes: Quality of records: Precipitation - good except period before 5-21-58 which are fair. Runoff - good except for period before 6-21-58 which are fair. Months of Jan., Feb., Mar., Apr., Nov. and Dec. include snow and snow melt.  
1/ Precipitation prior to 5-21-58 from Smeenk's gage. 2/ Runoff prior to 6-13-58 based on weekly observations.  
3/ Start of observations. 4/ Runoff between observation dates. 5/ Recording raingages installed.

DAILY PRECIPITATION AND RUNOFF (Inches)

Newell, South Dakota Watershed W-0

| Date | Precipitation | Runoff | Date  | Precipitation | Runoff | Date | Precipitation | Runoff |
|------|---------------|--------|-------|---------------|--------|------|---------------|--------|
|      |               |        | 1959  |               |        |      |               |        |
|      |               |        | 8-6   | .17           | 0.0    |      |               |        |
|      |               |        | 8-7   | .01           | 0      |      |               |        |
|      |               |        | 8-8   | .11           | 0      |      |               |        |
|      |               |        | 8-11  | .03           | 0      |      |               |        |
|      |               |        | 8-25  | .02           | 0      |      |               |        |
|      |               |        | 8-30  | .03           | 0      |      |               |        |
|      |               |        | 9-15  | .01           | 0      |      |               |        |
|      |               |        | 9-16  | .35           | 0      |      |               |        |
|      |               |        | 9-17  | .59           | 0      |      |               |        |
|      |               |        | 9-18  | .05           | 0      |      |               |        |
|      |               |        | 9-21  | .30           | 0      |      |               |        |
|      |               |        | 9-24  | .25           | 0      |      |               |        |
|      |               |        | 9-25  | .45           | .001   |      |               |        |
|      |               |        | 9-27  | .01           | 0      |      |               |        |
|      |               |        | 9-28  | .02           | 0      |      |               |        |
|      |               |        | 9-29  | .01           | 0      |      |               |        |
|      |               |        | 9-30  | .01           | 0      |      |               |        |
|      |               |        | 10-1  | .01           | 0      |      |               |        |
|      |               |        | 10-4  | .01           | 0      |      |               |        |
|      |               |        | 10-5  | .01           | 0      |      |               |        |
|      |               |        | 10-7  | .11           | 0      |      |               |        |
|      |               |        | 10-9  | .24           | 0      |      |               |        |
|      |               |        | 10-12 | .04           | 0      |      |               |        |
|      |               |        | 10-23 | .01           | 0      |      |               |        |
|      |               |        | 10-24 | .04           | 0      |      |               |        |
|      |               |        | 10-29 | .02           | 0      |      |               |        |
|      |               |        | 11-4  | .19           | .005   |      |               |        |
|      |               |        | 11-11 | .03           | 0      |      |               |        |
|      |               |        | 11-12 | .04           | 0      |      |               |        |
|      |               |        | 11-13 | .03           | 0      |      |               |        |
|      |               |        | 11-15 | .03           | 0      |      |               |        |
|      |               |        | 11-16 | .01           | 0      |      |               |        |
|      |               |        | 11-21 | .01           | 0      |      |               |        |
|      |               |        | 11-22 | .01           | 0      |      |               |        |
|      |               |        | 11-23 | .33           | 0      |      |               |        |
|      |               |        | 11-24 | .02           | 0      |      |               |        |
|      |               |        | 11-25 | .01           | 0      |      |               |        |
|      |               |        | 12-1  | 0             | .003   |      |               |        |
|      |               |        | 12-7  | .03           | 0      |      |               |        |
|      |               |        | 12-4  | .02           | 0      |      |               |        |
|      |               |        | 12-20 | .02           | 0      |      |               |        |
|      |               |        | 12-21 | .02           | 0      |      |               |        |
|      |               |        | 12-26 | .01           | 0      |      |               |        |
|      |               |        | 12-27 | .01           | 0      |      |               |        |
|      |               |        | 12-29 | .02           | 0      |      |               |        |
|      |               |        | 12-30 | .01           | 0      |      |               |        |

Notes:



## NEWELL, SOUTH DAKOTA Watershed W-10

LOCATION: Fette Co., 23 mi. W of Belle Fourche; South Korean River Watershed.

AREA: 260 Acres.

SHAPE: Catcher's mitt, 3560' long, 6000' wide.

SLOPES: 1% is 0-3%; 27% is 3-7%; 20% is 9-18%; 52% is 18-35%.

ASPECT: N

SOILS: Residual, zonal. 55% - shallow stony clay soils over Pierre shale, slow permeability; 16% - moderately deep dispersed clay soils, very slow permeability, large cracks when dry or that seal when wet; 1% - solodized solonetz clay pan soils, slow to very slow permeability. Lismas-Pierre very stony clay - 52%; Lismas-Pierre clay, sloping (18-19%) - 1%; Pierre stony heavy clay, gently sloping - 27%; Pierre stony heavy clay, sloping 9% + - 19%; VIs - VIII ----- Clay, nearly level - 1. Internal Drainage - very slow.

EROSION: 1 - 100%.

LAND CAPABILITY: VIs = 10%; VIIe = 52%; VIII = trace.

SURFACE DRAINAGE: Good, five well developed channels, length 1200', 4000', 1600', 1300', 1500'.

CHARACTER OF FLOW: General, continuous.

INSTRUMENTATION: Runoff: A-35 waterstage recorder. Precipitation: Two recording gauges. Early precipitation records from 1 in. gage on Don Hoyer ranch 4 miles west of dam.

RANGELAND UTILIZATION: 100% Rangeland. Condition classes: Excellent - 9%; Good - 91%. Leading species: Western and spike wheat grass - 40%; blue grama - 15%; tree needle - 5%; mixed grasses, grasswood, sagebrush, salt bush, etc. 10%.

Production of cover: 250 lbs/acre.

Range sites: Shallow - 55%; dense clay - 16%; panspots - 1%; VIII - trace.

USE: (Degree of grazing of rangeland) 1957 - moderate; 1958 - full; 1959 - full.

GENERALLY REPRESENTS: Rangelands in Pierre Shale Plains, particularly the more dispersed soils in areas of less than 14 inches average annual precipitation. Pierre Shale Plains and Badlands land resource area (G-60).

## MONTHLY PRECIPITATION AND RUNOFF (Inches)

Newell, South Dakota Watershed W-10

| Year   | Month  | Jan.     | Feb.     | Mar.        | Apr.        | May          | June         | July         | Aug.         | Sept.        | Oct.        | Nov.        | Dec.        | Year         |
|--------|--------|----------|----------|-------------|-------------|--------------|--------------|--------------|--------------|--------------|-------------|-------------|-------------|--------------|
|        |        | 1958     | P<br>Q   | 0.02<br>0   | 0.04<br>0   | 0<br>0       | 0.04<br>.054 | 0.35<br>.235 | 1.20<br>.025 | 0.30<br>0    | 0.10<br>0   | 0.10<br>0   | 0.25<br>0   |              |
| 1959   | P<br>Q | .15<br>0 | .27<br>0 | .13<br>.318 | .57<br>.041 | 2.01<br>.137 | 2.50<br>.009 | 1.28<br>.001 | .28<br>.002  | 1.76<br>.004 | .55<br>.001 | .68<br>.003 | .16<br>.007 | 11.22<br>.52 |
| Normal | P      | .44      | .37      | .79         | 1.67        | 2.65         | 2.95         | 2.11         | 1.34         | 1.29         | 1.02        | .55         | .39         | 15.57        |

## Notes:

1/ Precipitation prior to 10-20-58, Don Hoyer ranch.

Normal P based on 52 year record (1908-1959) at Newell USWB station, Newell, South Dakota.



| DAILY PRECIPITATION AND RUNOFF (Inches) |                    |                      | Newell, South Dakota Watershed W-10 |               |                      |      |               |        |
|-----------------------------------------|--------------------|----------------------|-------------------------------------|---------------|----------------------|------|---------------|--------|
| Date                                    | Precipitation      | Runoff <sup>2/</sup> | Date                                | Precipitation | Runoff <sup>2/</sup> | Date | Precipitation | Runoff |
| 1958                                    |                    |                      | 1959                                |               |                      |      |               |        |
| 1-27 <sup>2/</sup>                      | .02 <sup>1/</sup>  | 0                    | 1-1                                 | .03           | 0                    |      |               |        |
| 2-26                                    | .04 <sup>1/</sup>  | 0                    | 1-13                                | .05           | 0                    |      |               |        |
| 4-2                                     | .04 <sup>1/</sup>  | .022                 | 1-16, 20                            | .03           | 0                    |      |               |        |
| 4-17                                    | 0                  | .032                 | 1-30                                | .04           | 0                    |      |               |        |
| 5-19                                    | .75                | .235                 | 2-7, 11, 5                          | .13           | 0                    |      |               |        |
| 6-4                                     | 1.20               | 0                    | 2-9                                 | .01           | 0                    |      |               |        |
| 6-18                                    | "                  | .025                 | 2-13                                | .07           | 0                    |      |               |        |
| 6-25                                    | 3.00 <sup>1/</sup> | 0                    | 2-17                                | .06           | 0                    |      |               |        |
| 7-15                                    | .10                | 0                    | 2-4                                 | .02           | 0                    |      |               |        |
| 7-24                                    | .20                | 0                    | 2-6                                 | 0             | 0                    |      |               |        |
| 8-12                                    | .10                | 0                    | 3-12, 13                            | .08           | 0                    |      |               |        |
| 9-8 <sup>5/</sup>                       | .10                | 0                    | 3-24                                | .03           | .203                 |      |               |        |
| 10-22                                   | .25                | 0                    | 4-31 <sup>1/</sup>                  | 0             | .025                 |      |               |        |
| 11-1 <sup>1</sup> , 1 <sup>5</sup>      | .20                | 0                    | 4-8                                 | .05           | 0                    |      |               |        |
| 11-19                                   |                    | .004                 | 4-15, 16                            | .30           | 0                    |      |               |        |
| 12-8                                    | .03                | 0                    | 4-19                                | .12           | 0                    |      |               |        |
| 12-23                                   | .12                | 0                    | 4-23                                | .05           | 0                    |      |               |        |
|                                         |                    |                      | 4-25, 27                            | .05           | .041                 |      |               |        |
|                                         |                    |                      | 5-1                                 | .28           | 0                    |      |               |        |
|                                         |                    |                      | 5-5                                 | .04           | 0                    |      |               |        |
|                                         |                    |                      | 5-10                                | .19           | 0                    |      |               |        |
|                                         |                    |                      | 5-16                                | .10           | 0                    |      |               |        |
|                                         |                    |                      | 5-19                                | .07           | 0                    |      |               |        |
|                                         |                    |                      | 5-20                                | .17           | 0                    |      |               |        |
|                                         |                    |                      | 5-21                                | .16           | 0                    |      |               |        |
|                                         |                    |                      | 5-27                                | .25           | 0                    |      |               |        |
|                                         |                    |                      | 5-28                                | .62           | 0                    |      |               |        |
|                                         |                    |                      | 5-29                                | .68           | .137                 |      |               |        |
|                                         |                    |                      | 5-30                                | .05           | 0                    |      |               |        |
|                                         |                    |                      | 6-7                                 | .15           | 0                    |      |               |        |
|                                         |                    |                      | 6-14                                | .01           | 0                    |      |               |        |
|                                         |                    |                      | 6-16                                | .01           | 0                    |      |               |        |
|                                         |                    |                      | 6-17                                | .05           | 0                    |      |               |        |
|                                         |                    |                      | 6-21                                | .10           | 0                    |      |               |        |
|                                         |                    |                      | 6-24                                | .54           | .002                 |      |               |        |
|                                         |                    |                      | 6-25                                | .25           | 0                    |      |               |        |
|                                         |                    |                      | 6-26                                | .50           | 0                    |      |               |        |
|                                         |                    |                      | 6-28                                | .17           | 0                    |      |               |        |
|                                         |                    |                      | 6-30                                | .72           | .007                 |      |               |        |
|                                         |                    |                      | 7-3                                 | .19           | 0                    |      |               |        |
|                                         |                    |                      | 7-6                                 | .22           | 0                    |      |               |        |
|                                         |                    |                      | 7-13                                | .10           | 0                    |      |               |        |
|                                         |                    |                      | 7-15 <sup>5/</sup>                  | .77           | T                    |      |               |        |
|                                         |                    |                      | 7-16                                | .01           | 0                    |      |               |        |
|                                         |                    |                      | 8-11                                | .02           | 0                    |      |               |        |
|                                         |                    |                      | 8-12                                | .16           | .002                 |      |               |        |
|                                         |                    |                      | 8-30                                | .05           | 0                    |      |               |        |
|                                         |                    |                      | 8-31                                | .06           | 0                    |      |               |        |
|                                         |                    |                      | 9-8                                 | .05           | 0                    |      |               |        |
|                                         |                    |                      | 9-15                                | .05           | 0                    |      |               |        |
|                                         |                    |                      | 9-16                                | .47           | .002                 |      |               |        |
|                                         |                    |                      | 9-17                                | .25           | T                    |      |               |        |
|                                         |                    |                      | 9-20                                | .04           | 0                    |      |               |        |
|                                         |                    |                      | 9-21                                | .03           | 0                    |      |               |        |
|                                         |                    |                      | 9-24                                | .37           | 0                    |      |               |        |
|                                         |                    |                      | 9-25                                | .44           | T                    |      |               |        |
|                                         |                    |                      | 9-26                                | .02           | 0                    |      |               |        |
|                                         |                    |                      | 9-28                                | .01           | 0                    |      |               |        |
|                                         |                    |                      | 9-29                                | .01           | 0                    |      |               |        |
|                                         |                    |                      | 10-4                                | .01           | 0                    |      |               |        |
|                                         |                    |                      | 10-5                                | .01           | 0                    |      |               |        |
|                                         |                    |                      | 10-7                                | .19           | 0                    |      |               |        |
|                                         |                    |                      | 10-9                                | .18           | T                    |      |               |        |
|                                         |                    |                      | 10-12                               | .06           | 0                    |      |               |        |
|                                         |                    |                      | 10-25                               | .10           | 0                    |      |               |        |

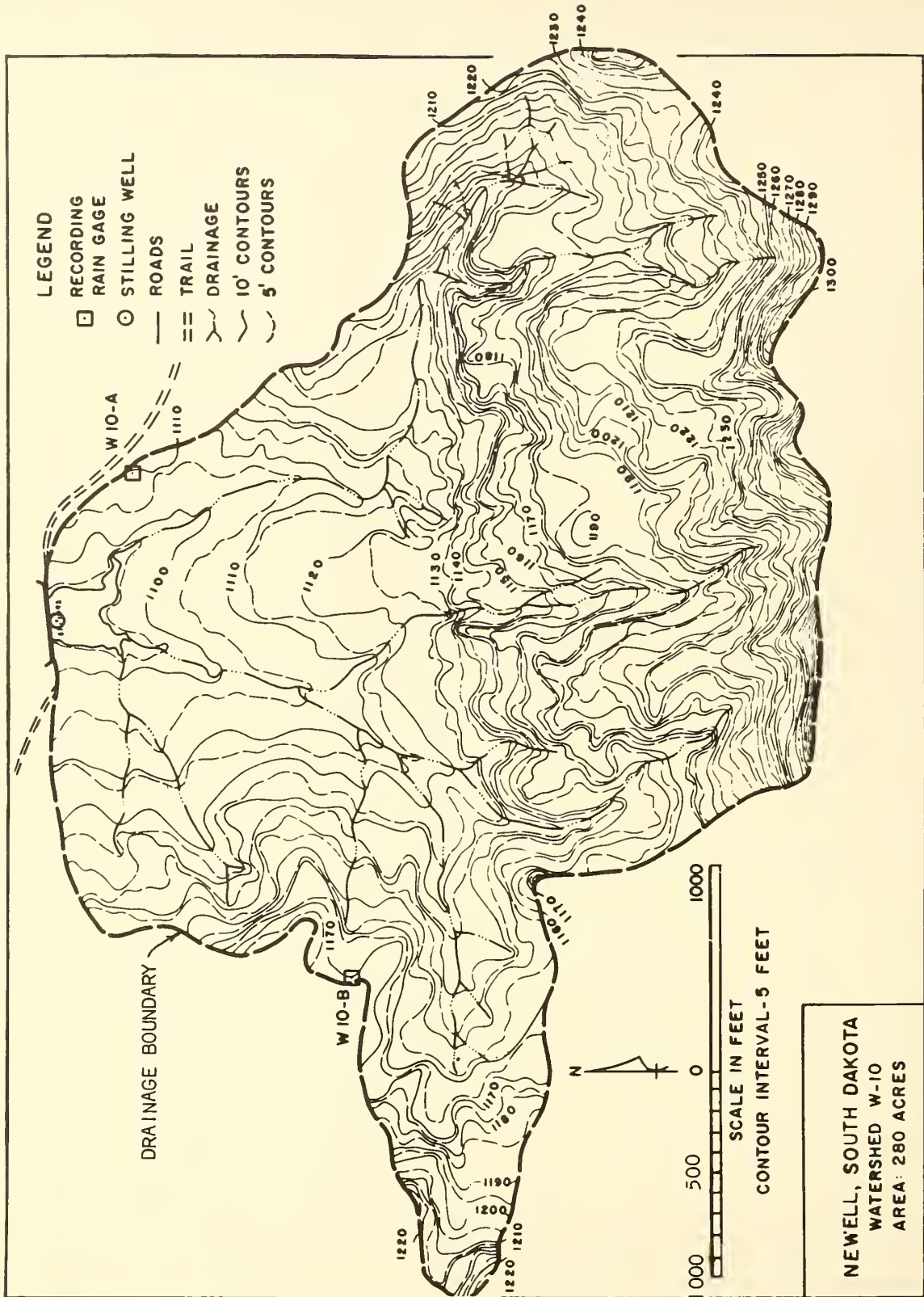
Notes: Quality of records: Precipitation - good. Runoff - good except for period before 3-31-59, which is fair. Months of Jan., Feb., Mar., Apr., Nov. and Dec. include snow and snow melt. <sup>1/</sup> Precipitation from Don Hoyer gage. <sup>2/</sup> Runoff based on weekly observations prior to 3-31-59. <sup>3/</sup> Start of observations. <sup>4/</sup> Stare recorder installed. <sup>5/</sup> Raingages installed.

DAILY PRECIPITATION AND RUNOFF (Inches)

Newell, South Dakota Watershed M-10

| Date | Precipitation | Runoff | Date  | Precipitation | Runoff | Date | Precipitation | Runoff |
|------|---------------|--------|-------|---------------|--------|------|---------------|--------|
|      |               |        | 1959  |               |        |      |               |        |
|      |               |        | 11-4  | 0.17          | 0.003  |      |               |        |
|      |               |        | 11-11 | .03           | 0      |      |               |        |
|      |               |        | 11-12 | .05           | 0      |      |               |        |
|      |               |        | 11-13 | .03           | 0      |      |               |        |
|      |               |        | 11-15 | .06           | 0      |      |               |        |
|      |               |        | 11-21 | .06           | 0      |      |               |        |
|      |               |        | 11-22 | .03           | 0      |      |               |        |
|      |               |        | 11-23 | .24           | 0      |      |               |        |
|      |               |        | 11-25 | .01           | 0      |      |               |        |
|      |               |        | 12-2  | .02           | T      |      |               |        |
|      |               |        | 12-3  | .02           | 0      |      |               |        |
|      |               |        | 12-20 | .02           | .006   |      |               |        |
|      |               |        | 12-21 | .02           | 0      |      |               |        |
|      |               |        | 12-26 | .02           | 0      |      |               |        |
|      |               |        | 12-27 | .03           | 0      |      |               |        |
|      |               |        | 12-30 | .01           | 0      |      |               |        |
|      |               |        | 12-31 | .02           | 0      |      |               |        |

Notes:



## NEWELL, SOUTH DAKOTA Watershed W-11

LOCATION: Butte Co., South Dakota, 23 mi. N-W of Belle Fourche; Belle Fourche River Watershed.

AREA: 160 Acres.

SHAPE: Triangular 2000' by 4000'.

SLOPES: 61° is 3-0'; 27° is 0-18'; 12° is 18-35'.

ASPECT: SE

SOILS: Residual, zonal: 16% - deep somewhat dispersed clays, very slow permeability; 30% - shallow saline somewhat stony clay soils, very slow permeability; 24% - shallow stony heavy clay soils, very slow permeability; Lismas-Pierre gravelly clay - 12%; Lismas-Pierre very stony clay - 12%; Lismas clay, saline - 30%; Pierre heavy clay, sloping 9° - 15%; Pierre heavy clay, gently sloping - 31%. Internal Drainage - very slow.

EROSION: 1 - 100'.

LAND CAPABILITY: V1s = 58%; V1e = 12%; V1f = 30%.

SURFACE DRAINAGE: Good, one well developed channel, length 4500'.

CHARACTER OF FLOW: Ephemeral, continuous.

INSTRUMENTATION: Runoff: 7-35 waterstage recorder. Precipitation: Two recording gages. Early precipitation records from 1 in. gage on Don Hoyer ranch 4 miles west of dam.

WATERSHED CONDITIONS: 100% Rangeland. Condition classes: Excellent - 76%; Good - 24%. Leading species: Western and thickspike wheat grass - 21%; reed needle grass; creosote, sage brush, cacti, etc - 54%. Production of cover: 1700 lbs/acre.

Range sites: Dense clay - 46%; saline upland - 30%; shallow - 24%.

USE: (Degree of grazing of rangeland) 1957 - moderate; 1958 - full; 1959 - full.

GENERALLY REPEATED: Rangelands in Pierre Shale Plains in areas of less than 14 inch precipitation. Pierre Shale Plains and Badlands land resource area (G-60).

## MONTHLY PRECIPITATION AND RUNOFF (Inches)

Newell, South Dakota Watershed W-11

| Month<br>Year     |          | Jan.              | Feb.        | Mar.         | Apr.      | May          | June         | July         | Aug.         | Sept.     | Oct.        | Nov.      | Dec.         | Year  |
|-------------------|----------|-------------------|-------------|--------------|-----------|--------------|--------------|--------------|--------------|-----------|-------------|-----------|--------------|-------|
|                   |          | 1958 1/<br>P<br>Q | 0.02<br>0   | 0.04<br>.006 | 0<br>0    | 0.04<br>T    | 0.35<br>.132 | 4.20<br>.098 | 0.30<br>0    | 0.10<br>0 | 0.10<br>0   | 0.25<br>0 | 0.37<br>.006 |       |
| 1959 2/<br>P<br>Q | .22<br>0 | .27<br>0          | .13<br>.355 | .45<br>.108  | 2.73<br>0 | 2.37<br>.004 | 1.15<br>.012 | .28<br>0     | 1.45<br>.009 | .55<br>0  | .50<br>.009 | .17<br>0  | 10.46<br>.50 |       |
| Normal            | P        | .44               | .37         | .79          | 1.67      | 2.65         | 2.95         | 2.11         | 1.34         | 1.29      | 1.02        | .55       | .39          | 15.57 |

Notes: 1/ Precipitation prior to 10-28-58 from Don Hoyer gage.  
2/ Thiessen weighted precipitation after 6-24-59 (? pages)  
Normal P based on 52 year record (1908-1959) at Newell USWB station, Newell, South Dakota.

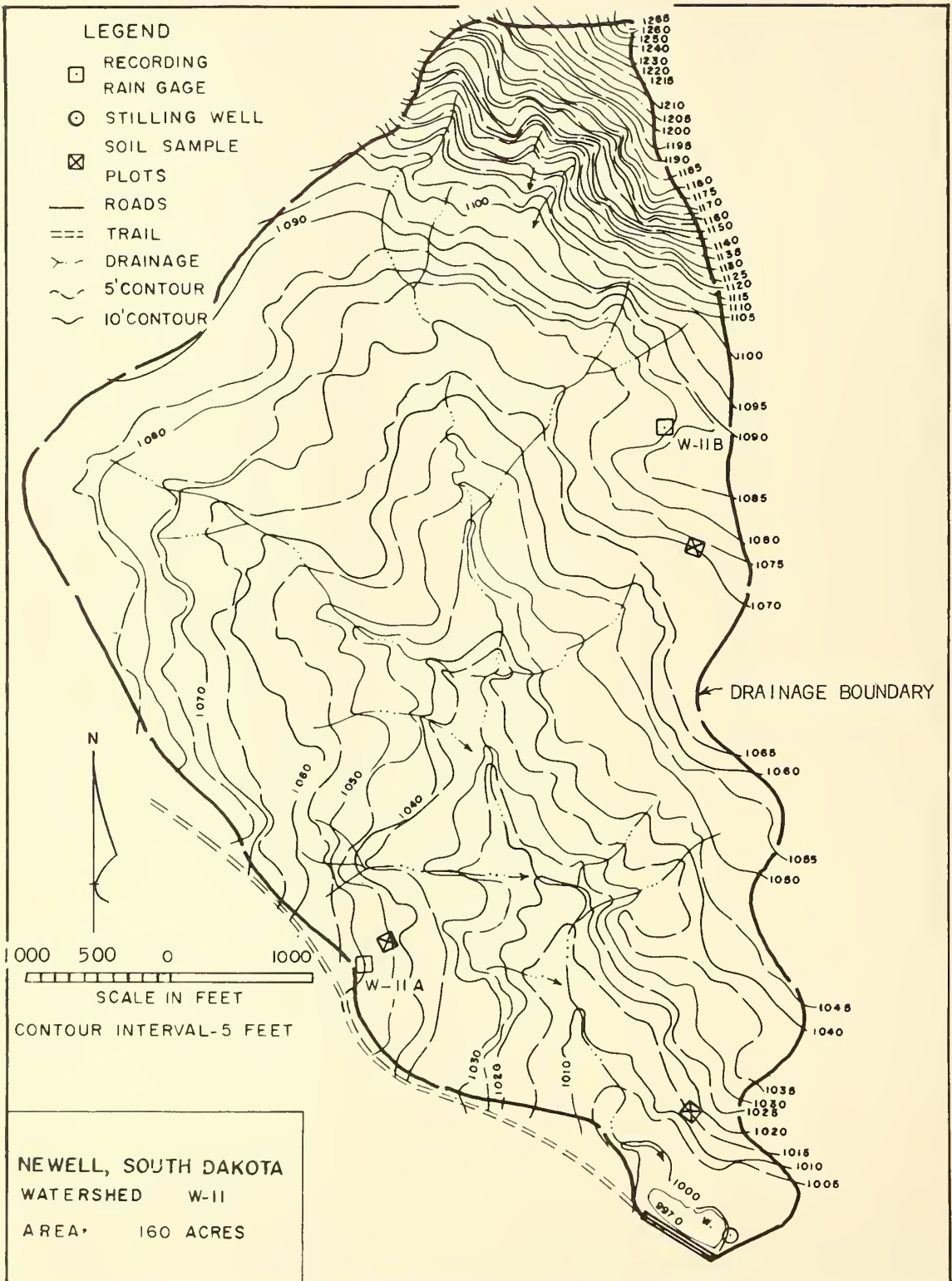
Cooperative Research Project of USDA and South Dakota Agricultural Experiment Station

| DAILY PRECIPITATION AND RUNOFF (Inches) |                             |                      | Newell, South Dakota Watershed W-11 |               |                      |      |               |        |
|-----------------------------------------|-----------------------------|----------------------|-------------------------------------|---------------|----------------------|------|---------------|--------|
| Date                                    | Precipitation <sup>1/</sup> | Runoff <sup>2/</sup> | Date                                | Precipitation | Runoff <sup>2/</sup> | Date | Precipitation | Runoff |
| 1958                                    |                             |                      | 1959                                |               |                      |      |               |        |
| 1-27 <sup>3/</sup>                      | .02                         | 0                    | 1-1                                 | .03           | 0                    |      |               |        |
| 2-26                                    | .04                         | .006                 | 1-13                                | .05           | 0                    |      |               |        |
| 4-3                                     | .04                         | 0                    | 1-19                                | .05           | 0                    |      |               |        |
| 4-17                                    | 0                           | .001                 | 1-20                                | .04           | 0                    |      |               |        |
| 5-19                                    | .35                         | .132                 | 1-24                                | .01           | 0                    |      |               |        |
| 6-4                                     | 1.20                        | 0                    | 1-29                                | .04           | 0                    |      |               |        |
| 6-25                                    | 3.00                        | .098                 | 2-3                                 | .05           | 0                    |      |               |        |
| 7-15                                    | .10                         | 0                    | 2-4                                 | .05           | 0                    |      |               |        |
| 7-24                                    | .20                         | 0                    | 2-5                                 | .03           | 0                    |      |               |        |
| 8-12                                    | .10                         | 0                    | 2-9                                 | .01           | 0                    |      |               |        |
| 9-5                                     | .10                         | 0                    | 2-13                                | .07           | 0                    |      |               |        |
| 10-22 <sup>4/</sup>                     | .25                         | 0                    | 2-17                                | .06           | 0                    |      |               |        |
| 11-5                                    | .08                         | 0                    | 3-4                                 | .02           | 0                    |      |               |        |
| 11-15                                   | .13                         | 0                    | 3-12                                | .03           | 0                    |      |               |        |
| 11-17                                   | .16                         | .006                 | 3-13                                | .05           | 0                    |      |               |        |
| 12-6                                    | .03                         | 0                    | 3-24                                | .03           | 0                    |      |               |        |
| 12-10                                   | .12                         | 0                    | 3-29                                | T             | .355                 |      |               |        |
|                                         |                             |                      | 4-15                                | .17           | 0                    |      |               |        |
|                                         |                             |                      | 4-16                                | .20           | 0                    |      |               |        |
|                                         |                             |                      | 4-19                                | .03           | 0                    |      |               |        |
|                                         |                             |                      | 4-23                                | .05           | 0                    |      |               |        |
|                                         |                             |                      | 4-27                                | T             | .012                 |      |               |        |
|                                         |                             |                      | 5-4                                 | .15           | 0                    |      |               |        |
|                                         |                             |                      | 5-5                                 | .05           | 0                    |      |               |        |
|                                         |                             |                      | 5-10                                | .15           | 0                    |      |               |        |
|                                         |                             |                      | 5-16                                | .10           | 0                    |      |               |        |
|                                         |                             |                      | 5-18                                | .03           | 0                    |      |               |        |
|                                         |                             |                      | 5-19                                | .03           | 0                    |      |               |        |
|                                         |                             |                      | 5-20                                | .47           | 0                    |      |               |        |
|                                         |                             |                      | 5-21                                | .06           | 0                    |      |               |        |
|                                         |                             |                      | 5-25                                | .06           | 0                    |      |               |        |
|                                         |                             |                      | 5-27                                | .27           | 0                    |      |               |        |
|                                         |                             |                      | 5-28                                | .17           | 0                    |      |               |        |
|                                         |                             |                      | 5-29                                | .47           | 0                    |      |               |        |
|                                         |                             |                      | 5-30                                | .72           | .096                 |      |               |        |
|                                         |                             |                      | 6-7                                 | .22           | 0                    |      |               |        |
|                                         |                             |                      | 6-21 <sup>5/</sup>                  | .10           | 0                    |      |               |        |
|                                         |                             |                      | 6-21 <sup>5/</sup>                  | .56           | 0                    |      |               |        |
|                                         |                             |                      | 6-25                                | .24           | 0                    |      |               |        |
|                                         |                             |                      | 6-26                                | .52           | 0                    |      |               |        |
|                                         |                             |                      | 6-29                                | .11           | 0                    |      |               |        |
|                                         |                             |                      | 6-30                                | .62           | .004                 |      |               |        |
|                                         |                             |                      | 7-1                                 | .07           | 0                    |      |               |        |
|                                         |                             |                      | 7-3                                 | .10           | .003                 |      |               |        |
|                                         |                             |                      | 7-6                                 | .27           | 0                    |      |               |        |
|                                         |                             |                      | 7-12                                | .03           | 0                    |      |               |        |
|                                         |                             |                      | 7-15                                | .66           | .009                 |      |               |        |
|                                         |                             |                      | 7-17                                | .02           | 0                    |      |               |        |
|                                         |                             |                      | 8-11                                | .05           | 0                    |      |               |        |
|                                         |                             |                      | 8-12                                | .13           | 0                    |      |               |        |
|                                         |                             |                      | 8-30                                | .06           | 0                    |      |               |        |
|                                         |                             |                      | 8-31                                | .04           | 0                    |      |               |        |
|                                         |                             |                      | 8-1                                 | .04           | 0                    |      |               |        |
|                                         |                             |                      | 8-8                                 | .06           | 0                    |      |               |        |
|                                         |                             |                      | 8-15                                | .10           | 0                    |      |               |        |
|                                         |                             |                      | 8-16                                | .31           | 0                    |      |               |        |
|                                         |                             |                      | 8-17                                | .20           | .004                 |      |               |        |
|                                         |                             |                      | 8-21                                | .04           | 0                    |      |               |        |
|                                         |                             |                      | 8-24                                | .35           | 0                    |      |               |        |
|                                         |                             |                      | 8-25                                | .40           | .005                 |      |               |        |
|                                         |                             |                      | 8-28                                | .03           | 0                    |      |               |        |
|                                         |                             |                      | 8-29                                | .02           | 0                    |      |               |        |
|                                         |                             |                      | 10-4                                | .01           | 0                    |      |               |        |
|                                         |                             |                      | 10-5                                | .01           | 0                    |      |               |        |
|                                         |                             |                      | 10-7                                | .20           | 0                    |      |               |        |

Notes: Quality of records: Precipitation - good except for period before 10-22-58 which is fair; runoff - good except for period before 6-21-57 which is fair. Months of Jan., Feb., Mar., Apr., Nov. and Dec. include snow and snow melt. <sup>1/</sup> Precipitation prior to 10-22-58 from Don Hoye gage. <sup>2/</sup> Runoff based on weekly observations prior to 5-20-59. <sup>3/</sup> Start of observations. <sup>4/</sup> Raingages installed. <sup>5/</sup> Stage recorder installed. <sup>6/</sup> Thiessen weighted precipitation after 6-24-59 (according raingages A, B and C).



| DAILY PRECIPITATION AND RUNOFF (Inches) |               |        |       | Newell, South Dakota Watershed W-11 |        |      |               |        |
|-----------------------------------------|---------------|--------|-------|-------------------------------------|--------|------|---------------|--------|
| Date                                    | Precipitation | Runoff | Date  | Precipitation                       | Runoff | Date | Precipitation | Runoff |
|                                         |               |        | 1959  |                                     |        |      |               |        |
|                                         |               |        | 10-9  | .15                                 | 0      |      |               |        |
|                                         |               |        | 10-12 | .06                                 | 0      |      |               |        |
|                                         |               |        | 10-25 | .05                                 | 0      |      |               |        |
|                                         |               |        | 10-27 | .07                                 | 0      |      |               |        |
|                                         |               |        | 11-4  | .15                                 | 0      |      |               |        |
|                                         |               |        | 11-11 | .03                                 | .009   |      |               |        |
|                                         |               |        | 11-12 | .03                                 | 0      |      |               |        |
|                                         |               |        | 11-18 | .07                                 | 0      |      |               |        |
|                                         |               |        | 11-21 | .05                                 | 0      |      |               |        |
|                                         |               |        | 11-22 | .03                                 | 0      |      |               |        |
|                                         |               |        | 11-23 | .23                                 | 0      |      |               |        |
|                                         |               |        | 12-3  | .03                                 | 0      |      |               |        |
|                                         |               |        | 12-4  | .02                                 | 0      |      |               |        |
|                                         |               |        | 12-20 | .03                                 | 0      |      |               |        |
|                                         |               |        | 12-21 | .02                                 | 0      |      |               |        |
|                                         |               |        | 12-26 | .01                                 | 0      |      |               |        |
|                                         |               |        | 12-27 | .02                                 | 0      |      |               |        |
|                                         |               |        | 12-31 | .04                                 | 0      |      |               |        |
| Notes:                                  |               |        |       |                                     |        |      |               |        |



## NEWELL, SOUTH DAKOTA Watershed W-12

LOCATION: Butte Co., South Dakota, 9 mi. east of Newell; Belle Fourche River Watershed.

AREA: 90 Acres.

SHAPE: Fan shape 2200' by 2500'.

SLOPES: 10% is 0-3%; 25% is 3-9%; 65% is 9-16%.

ASPECT: S

SOILS: Residual, zonal: 21% - moderately deep somewhat dispersed clay soils, gently sloping, very slow permeability; 72% - shallow to shale clay soils, slope 6 to 18%, very slow permeability; 6% - severely solodized clay soils, very slow permeability; 1% - barren clay solonchalk; very slow permeability; all soils have large cracks when dry and that swell when wet. Pierre Lismas clays - 61%; Pierre clays, nearly level and gently sloping - 21%; Lismas clays, gently sloping - 8%; Hurley clays, severely solodized and nearly level - less VIII clays - 3%; Hurley silty clay loam - 1%.  
Internal Drainage - very slow.  
EROSION: 1 - 100%.

LAND CAPABILITY: VI s = 99'; VIII = 1'.

SURFACE DRAINAGE: V-h: Four well developed channels, length 3200' to 1500'.

CHARACTER OF FLOW: Ephemeral, continuous.

INSTRUMENTATION: Runoff: A-35 waterstage recorder. Precipitation: One recording gage.

WATERSHED CONDITIONS: 100% Rangeland. Condition classes: Good - 0%; Fair - 6%. Leading species: Western wheat grass - 50%; blue grama - 5%; salt bush, cacti, etc. - 45%.  
Production of cover: 1025 lbs/acre.  
Range sites: Shallow - 7%; dense clay - 1%; panspots - 4%.

USE: (Degree of grazing of rangeland) 1957 - full; 1958 - full; 1959 - close.

GENERALLY REPRESENTS: Rangeland in Pierre Shale area, especially areas leading into breaks toward large drainages. Pierre Shale Plains and Badlands land resource area (G-60).

## MONTHLY PRECIPITATION AND RUNOFF (Inches)

Newell, South Dakota Watershed W-12

| Year   | Month  | Jan.     | Feb.     | Mar.        | Apr.         | May          | June         | July      | Aug.          | Sept.        | Oct.        | Nov.        | Dec.        | Year          |
|--------|--------|----------|----------|-------------|--------------|--------------|--------------|-----------|---------------|--------------|-------------|-------------|-------------|---------------|
|        |        | 1958     | P<br>Q   | 0.19<br>0   | 0.34<br>.024 | 1.17<br>.074 | 1.18<br>.500 | 0.74<br>0 | 5.57<br>1.837 | 1.67<br>.192 | 0.32<br>0   | 0.05<br>0   | 0.15<br>0   |               |
| 1959   | P<br>Q | .28<br>0 | .26<br>0 | .13<br>.455 | .79<br>.181  | 2.01<br>.558 | 2.00<br>.022 | .93<br>0  | .03<br>0      | 1.80<br>.015 | .36<br>.003 | .51<br>.029 | .11<br>.060 | 10.11<br>1.32 |
| Normal | P      | .44      | .37      | .79         | 1.67         | 2.65         | 2.95         | 2.11      | 1.34          | 1.29         | 1.02        | .55         | .39         | 15.57         |

Notes: Normal P based on 52 year record (1908-1959) at Newell USWB station, Newell, South Dakota.

| DAILY PRECIPITATION AND RUNOFF (Inches) |               |                    |      |               |                  | Newell, South Dakota Watershed W-12 |               |        |
|-----------------------------------------|---------------|--------------------|------|---------------|------------------|-------------------------------------|---------------|--------|
| Date                                    | Precipitation | Runoff <u>1/</u>   | Date | Precipitation | Runoff <u>1/</u> | Date                                | Precipitation | Runoff |
| 1958                                    |               |                    | 1959 |               |                  |                                     |               |        |
| 1-29 <u>2/</u>                          | 0.01          | 0                  | 1-1  | 0.03          | 0                |                                     |               |        |
| 1-30                                    | .18           | 0                  | 1-13 | .02           | 0                |                                     |               |        |
| 2-17 <u>3/</u>                          | .02           | 0                  | 1-17 | .06           | 0                |                                     |               |        |
| 2-25                                    | .21           | .02 <sup>1/2</sup> | 1-25 | .09           | 0                |                                     |               |        |
| 2-28                                    | .11           | 0                  | 1-29 | .05           | 0                |                                     |               |        |
| 3-10                                    | .05           | 0                  | 1-30 | .03           | 0                |                                     |               |        |
| 3-19                                    | .06           | 0                  | 2-3  | .01           | 0                |                                     |               |        |
| 3-21                                    | 0             | .030               | 2-4  | .01           | 0                |                                     |               |        |
| 3-22                                    | .06           | .006               | 2-5  | .01           | 0                |                                     |               |        |
| 3-23                                    | 0             | .015               | 2-9  | .04           | 0                |                                     |               |        |
| 3-24                                    | 0             | .003               | 2-13 | .07           | 0                |                                     |               |        |
| 3-25                                    | .04           | .002               | 2-17 | .08           | 0                |                                     |               |        |
| 3-26                                    | .04           | .005               | 2-25 | .01           | 0                |                                     |               |        |
| 3-27                                    | .01           | .002               | 2-26 | .03           | 0                |                                     |               |        |
| 3-28                                    | 0             | .004               | 3-9  | .06           | .135 <u>1/2</u>  |                                     |               |        |
| 3-29                                    | 0             | .004               | 3-10 | 0             | .034             |                                     |               |        |
| 3-30                                    | 0             | .003               | 3-11 | 0             | .031             |                                     |               |        |
| 3-31                                    | .91           | 0                  | 3-12 | .01           | .025             |                                     |               |        |
| 4-1                                     | .02           | 0                  | 3-13 | .02           | .052             |                                     |               |        |
| 4-5                                     | .20           | 0                  | 3-14 | 0             | .060             |                                     |               |        |
| 4-6                                     | .04           | 0                  | 3-15 | 0             | .004             |                                     |               |        |
| 4-7                                     | 0             | .182               | 3-16 | 0             | 0                |                                     |               |        |
| 4-21                                    | .05           | 0                  | 3-17 | 0             | .029             |                                     |               |        |
| 4-22                                    | .33           | 0                  | 3-24 | .04           | 0                |                                     |               |        |
| 4-23                                    | .05           | 0                  | 3-26 | 0             | .075             |                                     |               |        |
| 4-24                                    | .09           | .104               | 4-2  | .03           | 0                |                                     |               |        |
| 4-25                                    | .40           | .056               | 4-15 | .12           | 0                |                                     |               |        |
| 4-26                                    | 0             | .094               | 4-16 | .41           | .004             |                                     |               |        |
| 4-27                                    | 0             | .057               | 4-18 | .03           | .004             |                                     |               |        |
| 4-28                                    | 0             | .007               | 4-19 | .07           | .047             |                                     |               |        |
| 4-29                                    | 0             | 0                  | 4-20 | .03           | .008             |                                     |               |        |
| 5-6                                     | .16           | 0                  | 4-21 | 0             | .061             |                                     |               |        |
| 5-25                                    | .08           | 0                  | 4-22 | 0             | .053             |                                     |               |        |
| 5-29                                    | .10           | 0                  | 4-23 | .05           | .004             |                                     |               |        |
| 6-2                                     | 1.17          | 0                  | 4-25 | .05           | 0                |                                     |               |        |
| 6-3                                     | .64           | .111               | 5-4  | .14           | .003             |                                     |               |        |
| 6-7                                     | .95           | .427               | 5-5  | .03           | 0                |                                     |               |        |
| 6-8                                     | .24           | .030               | 5-6  | .02           | 0                |                                     |               |        |
| 6-9                                     | .23           | .044               | 5-9  | .06           | 0                |                                     |               |        |
| 6-10                                    | .03           | 0                  | 5-19 | .05           | 0                |                                     |               |        |
| 6-11                                    | .18           | .026               | 5-20 | .63           | .019             |                                     |               |        |
| 6-12                                    | .28           | .039               | 5-25 | .12           | .008             |                                     |               |        |
| 6-14                                    | .09           | .676               | 5-27 | .08           | 0                |                                     |               |        |
| 6-15                                    | .64           | .487               | 5-28 | .15           | 0                |                                     |               |        |
| 6-19                                    | .07           | 0                  | 5-29 | 1.20          | .365             |                                     |               |        |
| 6-20                                    | .18           | 0                  | 5-30 | .37           | .158             |                                     |               |        |
| 6-21                                    | .04           | 0                  | 5-31 | .06           | .005             |                                     |               |        |
| 7-3                                     | .87           | .129               | 6-13 | .02           | 0                |                                     |               |        |
| 7-4                                     | .01           | 0                  | 6-21 | .03           | 0                |                                     |               |        |
| 7-10                                    | .46           | .063               | 6-24 | .81           | .013             |                                     |               |        |
| 7-18                                    | .16           | 0                  | 6-26 | .08           | 0                |                                     |               |        |
| 7-27                                    | .17           | 0                  | 6-29 | .40           | 0                |                                     |               |        |
| 8-5                                     | .06           | 0                  | 6-30 | .66           | .009             |                                     |               |        |
| 8-29                                    | .04           | 0                  | 7-3  | .02           | 0                |                                     |               |        |
| 8-30                                    | .22           | 0                  | 7-6  | .02           | 0                |                                     |               |        |
| 9-22                                    | .05           | 0                  | 7-15 | .47           | 0                |                                     |               |        |
| 10-20                                   | .10           | 0                  | 7-16 | .04           | 0                |                                     |               |        |
| 10-21                                   | .04           | 0                  | 7-17 | .27           | 0                |                                     |               |        |
| 10-27                                   | .01           | 0                  | 7-21 | .11           | 0                |                                     |               |        |
| 11-8                                    | .06           | 0                  | 8-7  | .01           | 0                |                                     |               |        |
| 11-14                                   | .20           | 0                  | 8-12 | .01           | 0                |                                     |               |        |
| 11-17                                   | 0             | .016               | 8-31 | .01           | 0                |                                     |               |        |
| 11-18                                   | 0             | .003               | 9-16 | .47           | 0                |                                     |               |        |
| 11-19                                   | 0             | .006               | 9-17 | .30           | 0                |                                     |               |        |
| 11-20                                   | 0             | .004               | 9-18 | .06           | 0                |                                     |               |        |

Notes: Quality of records: Precipitation - good; Runoff - good except for period during winter months which is fair. Months of Jan., Feb., Mar., Apr., Nov. and Dec. include snow and snow melt. 1/ Runoff based on weekly observations during winter months. 2/ Start of observations. 3/ Recording rain gage installed. 4/ Runoff between observation dates.

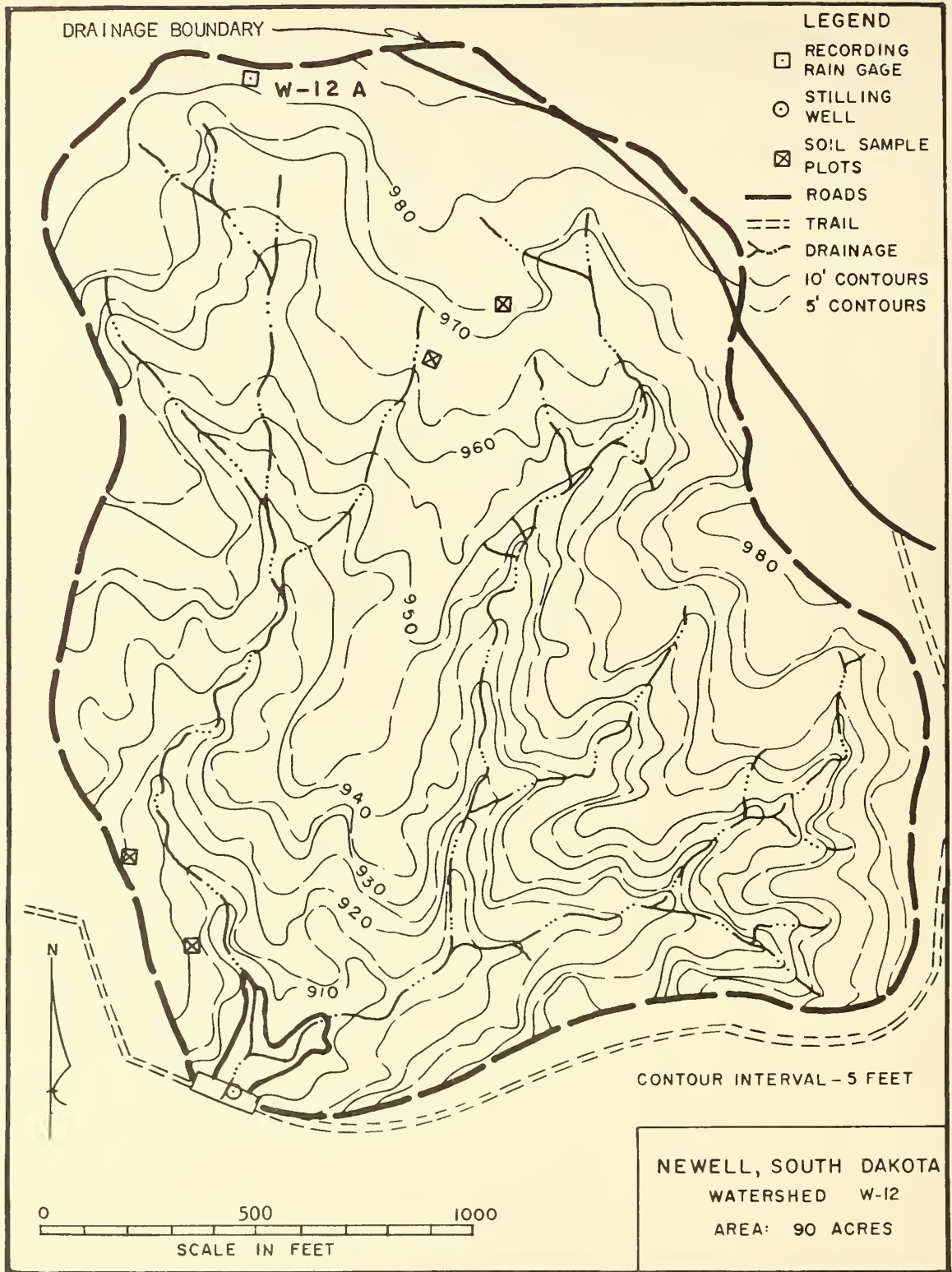
DAILY PRECIPITATION AND RUNOFF (Inches)

Newell, South Dakota Watershed W-12

| Date  | Precipitation | Runoff | Date  | Precipitation | Runoff | Date | Precipitation | Runoff |
|-------|---------------|--------|-------|---------------|--------|------|---------------|--------|
| 1958  |               |        | 1959  |               |        |      |               |        |
| 11-22 | 0             | .003   | 9-21  | .04           | .003   |      |               |        |
| 11-30 | .01           | 0      | 9-24  | .41           | .006   |      |               |        |
| 12-11 | .02           | 0      | 9-25  | .23           | .006   |      |               |        |
| 12-22 | .02           | 0      | 9-28  | .05           | 0      |      |               |        |
|       |               |        | 9-29  | .01           | 0      |      |               |        |
|       |               |        | 10-7  | .10           | 0      |      |               |        |
|       |               |        | 10-9  | .18           | .003   |      |               |        |
|       |               |        | 10-25 | .06           | 0      |      |               |        |
|       |               |        | 11-4  | .09           | .009   |      |               |        |
|       |               |        | 11-7  | 0             | .003   |      |               |        |
|       |               |        | 11-11 | .06           | 0      |      |               |        |
|       |               |        | 11-12 | .04           | 0      |      |               |        |
|       |               |        | 11-21 | .03           | 0      |      |               |        |
|       |               |        | 11-22 | .02           | 0      |      |               |        |
|       |               |        | 11-23 | .30           | 0      |      |               |        |
|       |               |        | 11-30 | 0             | .017   |      |               |        |
|       |               |        | 12-4  | .04           | .040   |      |               |        |
|       |               |        | 12-11 | 0             | .020   |      |               |        |
|       |               |        | 12-20 | .01           | 0      |      |               |        |
|       |               |        | 12-21 | .02           | 0      |      |               |        |
|       |               |        | 12-26 | .01           | 0      |      |               |        |
|       |               |        | 12-27 | .01           | 0      |      |               |        |
|       |               |        | 12-29 | .01           | 0      |      |               |        |
|       |               |        | 12-31 | .01           | 0      |      |               |        |

Notes:





NEWELL, SOUTH DAKOTA Watershed W-13

LOCATION: Meade Co., South Dakota, 26 mi. east of Newell, South Fork Sulphur Creek; Cheyenne River Watershed.

AREA: 140 Acres. SHAPE: Trapezoidal, club shape 5500' by 2000'.

SLOPES: 12' is 0-3'; 10' is 3-9'; 8' is 0-10'; 2' is 1'-25'. ASPECT: SE

SOILS: Residual, coral: 70% - deep and moderately deep somewhat dispersed clay soils and clay loam surface soils with very slow permeability of subsoils; 30% - deep medium textured soils, moderate permeability; 7% - solodized solonch- clay pan soils, slow permeability; 5% - shallow to very shallow medium textured soils to rock outcrops over sandy to silt shales, moderate permeability. Prairie clay - 1'; Pierre heavy clay - 1'; Cushman loam - 7%; Platte loam - 4%; ----- loam lens - 12'; Pierre-Missoua clays - 5'; Solonchalk shallow shale - 2'; Midway-Bainville-Soak outcrop - 2'; Alluvial soils, silt-sandstone - 2'; Midway clay loam - 1'; Meade-Deer loams - 1'; Chava and DeSmar loams - trace. Internal Drainage - slow.

PROS: 1 - 100%

L. CAPACITY: 11g = 7; 12g = 7; 14g = 10; 15g = 21; 16g = 11; 17g = 24; 18g = 24.

INTERNAL DRAINAGE: local, to drainage to 0' and 500'.

TEXTURE OF L: Spherulic, siltaceous.

INTERNAL DRAINAGE: runoff; 1-2% to surface water. Circulation: Three records.

PLANT COMMUNITIES: 100% cropland. Soil types: Excellent - 3%; Good - 2%; fair - 1%. Principal species: eastern red cedar - 1%; blue oars - 1%; white oars - 10%; black locust - 1%; ash - 2%; other species - 21%. Production of cover: 100 lbs/acre. Range sites: Clover - 2; alfalfa - 2; hay - 2; corn - 2; sorghum - 2; very shallow - 2; hollow - 1.

REMARKS: Pierre Shale Plains and Badlands land resource area (G-60). Part of this watershed is on private rather than on public land.

MONTHLY PRECIPITATION AND RUNOFF (Inches)

Newell, South Dakota Watershed W-13

| Month<br>Year        | Jan.      | Feb.         | Mar.         | Apr.         | May          | June          | July        | Aug.      | Sept.        | Oct.        | Nov.         | Dec.      | Year          |
|----------------------|-----------|--------------|--------------|--------------|--------------|---------------|-------------|-----------|--------------|-------------|--------------|-----------|---------------|
| 1958<br>P<br>0       | 0.01<br>0 | 0.11<br>.004 | 0.57<br>.000 | 1.12<br>.023 | 1.02<br>0    | 1.33<br>1.210 | 0.72<br>0   | 0.10<br>0 | 0            | 0.10<br>0   | 0.33<br>.003 | 0.17<br>0 | 10.71<br>1.30 |
| 1959<br>1/<br>P<br>Q | .20<br>0  | .33<br>0     | .11<br>.132  | .71<br>.000  | 1.76<br>.013 | 1.24<br>.001  | .53<br>.003 | .27<br>0  | 1.24<br>.002 | .67<br>.001 | .01<br>.002  | .11<br>0  | 9.26<br>1.4   |
| Normal<br>P          | .44       | .37          | .79          | 1.67         | 2.65         | 2.95          | 2.11        | 1.34      | 1.29         | 1.02        | .55          | .39       | 15.57         |

Notes: 1/ Thiessen weighted precipitation after June 1959. (3 pages)  
Normal P based on 52 year record (1908-1959) at Newell USWB station, Newell, South Dakota.

| DAILY PRECIPITATION AND RUNOFF (Inches) |               |                  |         |               |                  | Neveall, South Dakota Watershed W-13 |               |        |
|-----------------------------------------|---------------|------------------|---------|---------------|------------------|--------------------------------------|---------------|--------|
| Date                                    | Precipitation | Runoff <u>1/</u> | Date    | Precipitation | Runoff <u>1/</u> | Date                                 | Precipitation | Runoff |
| 1958                                    |               |                  | 1959    |               |                  |                                      |               |        |
| 1-29 <u>2/</u>                          | 0.01          | 0                | 1-1     | 0.03          | 0                |                                      |               |        |
| 2-4                                     | .13           | 0                | 1-13    | .05           | 0                |                                      |               |        |
| 2-11 <u>3/</u>                          | .02           | 0                | 1-19    | .09           | 0                |                                      |               |        |
| 2-25                                    | .06           | 0                | 1-22    | .04           | 0                |                                      |               |        |
| 2-26                                    | .14           | .004             | 1-25    | .05           | 0                |                                      |               |        |
| 2-27                                    | .06           | 0                | 1-30,31 | .03           | 0                |                                      |               |        |
| 3-8                                     | .06           | .009             | 2-4     | .05           | 0                |                                      |               |        |
| 3-25                                    | .05           | 0                | 2-9     | .07           | 0                |                                      |               |        |
| 3-26                                    | .04           | 0                | 2-13    | .08           | 0                |                                      |               |        |
| 3-31                                    | .42           | 0                | 2-16,17 | .06           | 0                |                                      |               |        |
| 4-1                                     | .03           | .004             | 2-18,19 | .03           | 0                |                                      |               |        |
| 4-5                                     | .18           | 0                | 2-25,26 | .04           | 0                |                                      |               |        |
| 4-20                                    | .40           | .004             | 3-9     | .08           | .126 <u>4/</u>   |                                      |               |        |
| 4-21                                    | .18           | 0                | 3-10    | T             | .006             |                                      |               |        |
| 4-23                                    | .64           | 0                | 3-11    | 0             | .011             |                                      |               |        |
| 4-29                                    | 0             | .055             | 3-12    | .01           | .181             |                                      |               |        |
| 5-4                                     | .04           | 0                | 3-13    | .02           | .079             |                                      |               |        |
| 5-21                                    | .16           | 0                | 3-16    | 0             | .006             |                                      |               |        |
| 5-29                                    | .18           | 0                | 3-17    | 0             | .014             |                                      |               |        |
| 5-30                                    | .82           | 0                | 3-18    | .01           | .010             |                                      |               |        |
| 5-31                                    | .62           | 0                | 3-19    | .02           | 0                |                                      |               |        |
| 6-2                                     | .26           | .008             | 4-1     | .03           | 0                |                                      |               |        |
| 6-3                                     | .14           | .003             | 4-15    | .10           | 0                |                                      |               |        |
| 6-7                                     | 2.07          | .973             | 4-16    | .26           | 0                |                                      |               |        |
| 6-8                                     | .07           | .118             | 4-17    | .14           | 0                |                                      |               |        |
| 6-9                                     | .17           | .006             | 4-18    | T             | 0                |                                      |               |        |
| 6-12                                    | .18           | .003             | 4-19    | .12           | .009             |                                      |               |        |
| 6-13                                    | .24           | 0                | 4-20    | .05           | 0                |                                      |               |        |
| 6-14                                    | .73           | .064             | 4-25    | .04           | 0                |                                      |               |        |
| 6-15                                    | .30           | 0                | 5-4     | .06           | 0                |                                      |               |        |
| 6-21                                    | .15           | .032             | 5-5     | .05           | 0                |                                      |               |        |
| 7-4                                     | .12           | 0                | 5-10    | .07           | 0                |                                      |               |        |
| 7-10                                    | .12           | 0                | 5-18    | .41           | 0                |                                      |               |        |
| 7-12                                    | .12           | 0                | 5-19    | T             | .002             |                                      |               |        |
| 7-19                                    | .19           | 0                | 5-20    | .34           | .002             |                                      |               |        |
| 7-29                                    | .11           | 0                | 5-27    | .20           | 0                |                                      |               |        |
| 7-31                                    | .06           | 0                | 5-29    | .33           | .002             |                                      |               |        |
| 8-30                                    | .09           | .003             | 5-30    | .24           | .006             |                                      |               |        |
| 8-31                                    | .39           | 0                | 5-31    | .06           | 0                |                                      |               |        |
| 10-8                                    | .02           | 0                | 6-15    | .36           | T                |                                      |               |        |
| 10-20                                   | .06           | 0                | 6-24    | .36           | 0                |                                      |               |        |
| 10-21                                   | .76           | 0                | 6-25    | .08           | 0                |                                      |               |        |
| 10-31                                   | .05           | 0                | 6-26    | .06           | 0                |                                      |               |        |
| 11-8                                    | .06           | 0                | 6-29    | .21           | 0                |                                      |               |        |
| 11-13                                   | .25           | 0                | 6-30    | .87           | 0                |                                      |               |        |
| 11-20                                   | 0             | .009             | 7-3     | .06           | 0                |                                      |               |        |
| 11-20                                   | .02           | 0                | 7-15    | .28           | 0                |                                      |               |        |
| 12-11                                   | .05           | 0                | 7-16    | .40           | 0                |                                      |               |        |
| 12-14                                   | .10           | 0                | 7-21    | .03           | 0                |                                      |               |        |
| 12-22                                   | .02           | 0                | 8-1     | .10           | 0                |                                      |               |        |
|                                         |               |                  | 8-5     | .14           | 0                |                                      |               |        |
|                                         |               |                  | 8-12    | .02           | 0                |                                      |               |        |
|                                         |               |                  | 8-19    | .01           | 0                |                                      |               |        |
|                                         |               |                  | 9-16    | .37           | 0                |                                      |               |        |
|                                         |               |                  | 9-17    | .27           | 0                |                                      |               |        |
|                                         |               |                  | 9-18    | .05           | 0                |                                      |               |        |
|                                         |               |                  | 9-19    | .04           | 0                |                                      |               |        |
|                                         |               |                  | 9-20    | .05           | 0                |                                      |               |        |
|                                         |               |                  | 9-21    | .06           | 0                |                                      |               |        |
|                                         |               |                  | 9-24    | .23           | 0                |                                      |               |        |
|                                         |               |                  | 9-25    | .21           | .002             |                                      |               |        |
|                                         |               |                  | 9-27    | .02           | 0                |                                      |               |        |
|                                         |               |                  | 9-28,29 | .02           | 0                |                                      |               |        |
|                                         |               |                  | 10-7    | .11           | 0                |                                      |               |        |
|                                         |               |                  | 10-9    | .41           | T                |                                      |               |        |

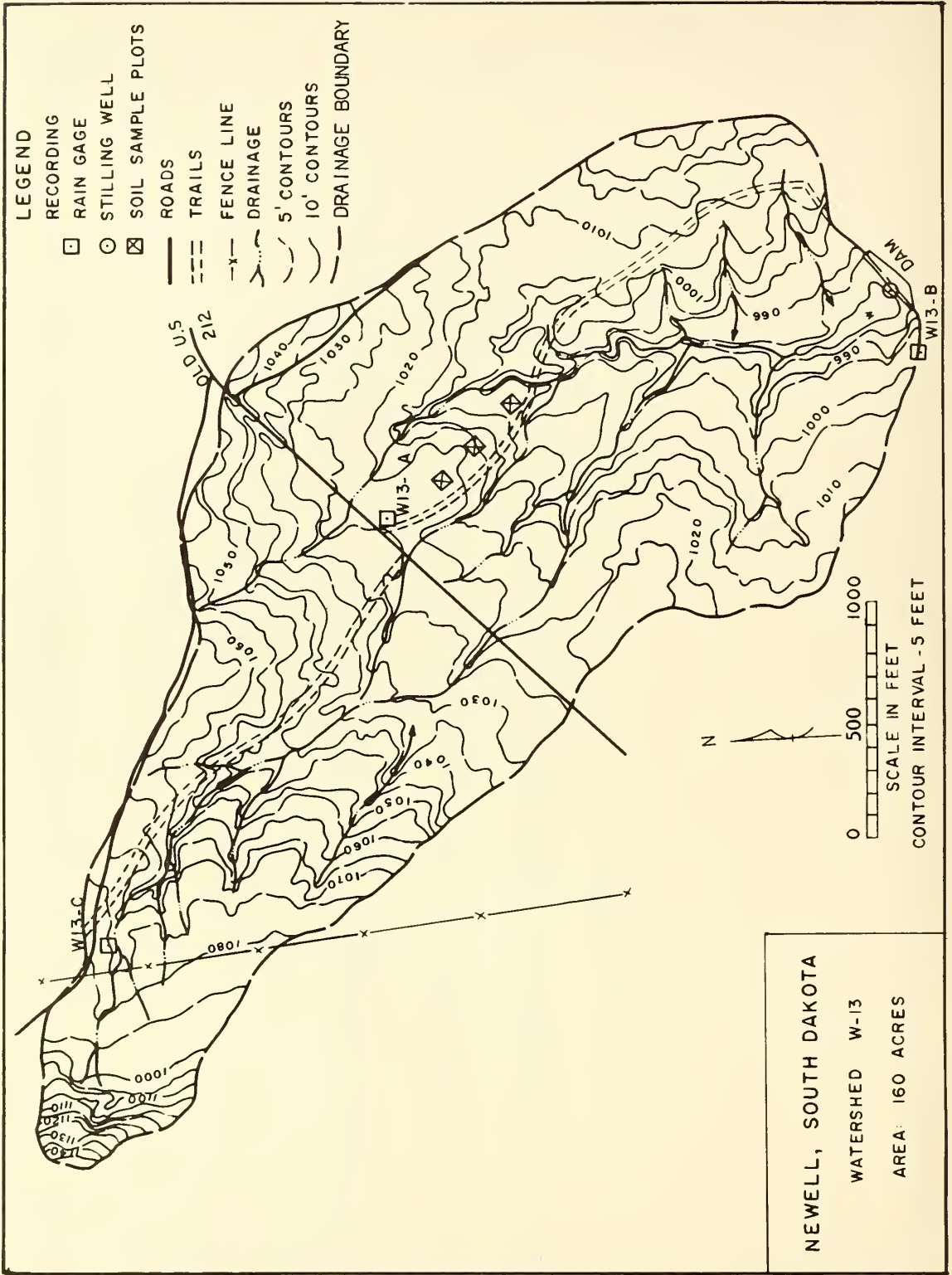
Notes: Quality of records: Precipitation - good; Runoff - good except during winter months which is fair. Months of Jan., Feb., Mar., Apr., Nov. and Dec. include snow and snow melt. 1/ Runoff based on weekly observations during winter months. 2/ Start of observations. 3/ Recording raingages installed. 4/ Runoff between observation dates.

DAILY PRECIPITATION AND RUNOFF (Inches)

Newell, South Dakota Watershed W-13

| Date | Precipitation | Runoff | Date  | Precipitation | Runoff | Date | Precipitation | Runoff |
|------|---------------|--------|-------|---------------|--------|------|---------------|--------|
|      |               |        | 1959  |               |        |      |               |        |
|      |               |        | 10-12 | .04           | 0      |      |               |        |
|      |               |        | 10-15 | .01           | 0      |      |               |        |
|      |               |        | 10-21 | .02           | 0      |      |               |        |
|      |               |        | 10-25 | .09           | 0      |      |               |        |
|      |               |        | 10-27 | .01           | 0      |      |               |        |
|      |               |        | 10-29 | .01           | 0      |      |               |        |
|      |               |        | 11-4  | .12           | 0      |      |               |        |
|      |               |        | 11-5  | T             | 0      |      |               |        |
|      |               |        | 11-10 | .04           | 0      |      |               |        |
|      |               |        | 11-11 | .08           | 0      |      |               |        |
|      |               |        | 11-12 | .02           | 0      |      |               |        |
|      |               |        | 11-13 | .01           | 0      |      |               |        |
|      |               |        | 11-16 | .12           | 0      |      |               |        |
|      |               |        | 11-21 | .03           | 0      |      |               |        |
|      |               |        | 11-22 | .02           | 0      |      |               |        |
|      |               |        | 11-23 | .35           | 0      |      |               |        |
|      |               |        | 12-7  | .06           | 0      |      |               |        |
|      |               |        | 12-20 | .02           | 0      |      |               |        |
|      |               |        | 12-21 | .01           | 0      |      |               |        |
|      |               |        | 12-26 | .01           | 0      |      |               |        |
|      |               |        | 12-27 | .02           | 0      |      |               |        |
|      |               |        | 12-28 | .01           | 0      |      |               |        |
|      |               |        | 12-31 | .02           | 0      |      |               |        |

Notes:





PIERRE, SOUTH DAKOTA Watershed -14.

LOCATION: Butte Co., 16 mi. SE of Newell; Belle Fourche River Watershed.

AREA: 75 Acres.

SHAPE: Rectangular, 2000' by 2000'.

SLOPE: 0% to 1%; 1% to 2%.

GENERAL

SOILS: Residual, zone 1 - moderately deep and deep clay soils with slow permeability - regular surface drainage at 2-5 inches thick over plastic and blocky sub-surface horizons with clay shale or shaly siltstone - 2' to 4' thick, large cracks on surface that swell when wet; 2 - shallow to shale clay soil - Pierre - surface area - 96%; 3 - clay - 4'. Internal Drainage - very slow.

ROCK: 1 - 100%.

LAND CAPABILITY: 1 - 100%.

WATER QUALITY: Good, well above standard, length 2000'.

WATER USE: General, continuous.

PRECIPITATION: 1950 - 1959 - 15.57 inches. Early precipitation records from 1 in. gage on John Anderson ranch 3.6 miles southwest of dam.

PRECIPITATION RECORD: 1950 - 1959 - 15.57 inches. Early precipitation records from 1 in. gage on John Anderson ranch 3.6 miles southwest of dam.

PRECIPITATION RECORD: 1950 - 1959 - 15.57 inches. Early precipitation records from 1 in. gage on John Anderson ranch 3.6 miles southwest of dam.

USE: (Degree of grazing of rangeland) 1957 - moderate; 1958 - moderate; 1959 - moderate.

GENERALLY REPRESENTS: Rangelands in Pierre Shale Plains, particularly eastward in 15-19 inch precipitation area. Pierre Shale Plains and Badlands land resource area (G-60).

MONTHLY PRECIPITATION AND RUNOFF (Inches)

Newell, South Dakota Watershed W-14

| Month<br>Year | Jan. | Feb. | Mar. | Apr. | May  | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year  |
|---------------|------|------|------|------|------|------|------|------|-------|------|------|------|-------|
| 1958 1/2      | 0    | 0.25 | 0.20 | 1.82 | 0.45 | 4.67 | 5.00 | 0.42 | 0.10  | 0.51 | 0.45 | 0.14 | 14.60 |
| 1959          | 0    | .12  | .15  | .74  | 2.36 | 1.42 | .09  | .22  | 2.02  | .15  | .66  | .12  | 9.12  |
| Normal P      | .44  | .37  | .79  | 1.67 | 2.65 | 2.95 | 2.11 | 1.34 | 1.29  | 1.02 | .55  | .39  | 15.57 |

Notes: 1/ Precipitation record prior to 1-1-50 by Anderson gage. Normal P based on 52 year record (1908-1959) at Newell USWB station, Newell, South Dakota.

| DAILY PRECIPITATION AND RUNOFF (Inches) |                             |                    |         | Newell, South Dakota Watershed W-11 |        |      |               |        |
|-----------------------------------------|-----------------------------|--------------------|---------|-------------------------------------|--------|------|---------------|--------|
| Date                                    | Precipitation <sup>2/</sup> | Runoff             | Date    | Precipitation                       | Runoff | Date | Precipitation | Runoff |
| 1958                                    |                             |                    | 1959    |                                     |        |      |               |        |
| 2-21 <sup>2/</sup>                      | 0.25                        | 0                  | 1-1     | .05                                 | 0      |      |               |        |
| 3-6                                     | .25                         | 0                  | 1-4,5   | .10                                 | 0      |      |               |        |
| 3-11                                    | .01                         | 0                  | 1-13    | .05                                 | 0      |      |               |        |
| 4-3 <sup>1/</sup>                       | 1.00                        | .017 <sup>3/</sup> | 1-25    | .04                                 | 0      |      |               |        |
| 4-5                                     | .08                         | 0                  | 2-3     | .01                                 | 0      |      |               |        |
| 4-6                                     | .08                         | 0                  | 2-5     | .01                                 | 0      |      |               |        |
| 4-11                                    | 0                           | .024 <sup>3/</sup> | 2-9     | .01                                 | 0      |      |               |        |
| 4-18                                    | 0                           | 0                  | 2-13    | .01                                 | 0      |      |               |        |
| 4-21                                    | .06                         | 0                  | 2-16,17 | .04                                 | 0      |      |               |        |
| 4-22                                    | .10                         | 0                  | 2-24    | 0                                   | .092   |      |               |        |
| 4-23                                    | .10                         | 0                  | 2-26    | .04                                 | 0      |      |               |        |
| 4-24                                    | .10                         | 0                  | 3-6     | 0                                   | .142   |      |               |        |
| 4-25                                    | .10                         | 0                  | 3-9     | .05                                 | 0      |      |               |        |
| 4-26                                    | .10                         | 0                  | 3-12,13 | .03                                 | 0      |      |               |        |
| 4-28                                    | .10                         | 0                  | 3-19    | .03                                 | 0      |      |               |        |
| 4-29                                    | 0                           | .046 <sup>3/</sup> | 3-24    | .04                                 | 0      |      |               |        |
| 5-7                                     | .12                         | 0                  | 4-2     | .10                                 | 0      |      |               |        |
| 5-30                                    | .51                         | 0                  | 4-15    | .03                                 | 0      |      |               |        |
| 5-31                                    | .02                         | 0                  | 4-16    | .32                                 | 0      |      |               |        |
| 6-1                                     | .73                         | 0                  | 4-19    | .17                                 | .015   |      |               |        |
| 6-2                                     | .86                         | 0                  | 4-20    | .08                                 | .006   |      |               |        |
| 6-3                                     | .11                         | 0                  | 4-22    | 0                                   | .033   |      |               |        |
| 6-4                                     | .04                         | 0                  | 4-25    | .04                                 | .003   |      |               |        |
| 6-5                                     | 0                           | .006 <sup>3/</sup> | 4-26    | 0                                   | .003   |      |               |        |
| 6-7 <sup>5/</sup>                       | .71 <sup>5/</sup>           | .012               | 5-4     | .14                                 | 0      |      |               |        |
| 6-8                                     | .26                         | .083               | 5-5     | .05                                 | 0      |      |               |        |
| 6-9                                     | 0                           | .004               | 5-6     | T                                   | 0      |      |               |        |
| 6-11                                    | .47                         | .007               | 5-9     | .04                                 | 0      |      |               |        |
| 6-12                                    | .27                         | .014               | 5-10    | .04                                 | 0      |      |               |        |
| 6-13                                    | .07                         | .035               | 5-11    | .02                                 | 0      |      |               |        |
| 6-14                                    | .82                         | .344               | 5-16    | .18                                 | 0      |      |               |        |
| 6-15                                    | .11                         | 0                  | 5-17    | T                                   | 0      |      |               |        |
| 6-16                                    | .02                         | 0                  | 5-18    | T                                   | 0      |      |               |        |
| 6-18                                    | .06                         | 0                  | 5-19    | .32                                 | 0      |      |               |        |
| 6-19                                    | .04                         | 0                  | 5-20    | .29                                 | .012   |      |               |        |
| 6-20                                    | .10                         | 0                  | 5-24    | T                                   | 0      |      |               |        |
| 7-3                                     | 3.04                        | .948               | 5-25    | .05                                 | 0      |      |               |        |
| 7-4                                     | .16                         | .013               | 5-26    | .03                                 | 0      |      |               |        |
| 7-10                                    | .97                         | .167               | 5-27    | .03                                 | 0      |      |               |        |
| 7-12                                    | .31                         | 0                  | 5-29    | .56                                 | 0      |      |               |        |
| 7-18                                    | .11                         | 0                  | 5-30    | .44                                 | .012   |      |               |        |
| 7-19                                    | .19                         | 0                  | 5-31    | .17                                 | .006   |      |               |        |
| 7-24                                    | .10                         | 0                  | 6-1     | .04                                 | 0      |      |               |        |
| 7-29                                    | .08                         | 0                  | 6-14    | .04                                 | 0      |      |               |        |
| 7-30                                    | .12                         | 0                  | 6-17    | T                                   | 0      |      |               |        |
| 8-5                                     | .45                         | 0                  | 6-21    | .18                                 | 0      |      |               |        |
| 8-30                                    | .17                         | 0                  | 6-23    | .17                                 | 0      |      |               |        |
| 9-24                                    | .10                         | 0                  | 6-24    | .08                                 | 0      |      |               |        |
| 10-8                                    | .04                         | 0                  | 6-25    | .20                                 | 0      |      |               |        |
| 10-20                                   | .11                         | 0                  | 6-26    | .04                                 | 0      |      |               |        |
| 10-21                                   | .33                         | 0                  | 6-27    | .04                                 | 0      |      |               |        |
| 10-30                                   | .03                         | 0                  | 6-28    | .10                                 | 0      |      |               |        |
| 11-14                                   | .20                         | 0                  | 6-29    | .24                                 | 0      |      |               |        |
| 11-15                                   | .02                         | 0                  | 6-30    | .30                                 | .007   |      |               |        |
| 11-16                                   | .13                         | .014               | 6-31    | 0                                   | .010   |      |               |        |
| 11-17                                   | .08                         | .003               | 7-3     | .16                                 | .010   |      |               |        |
| 11-23                                   | .02                         | 0                  | 7-7     | .04                                 | 0      |      |               |        |
| 12-4                                    | .07                         | 0                  | 7-15    | .46                                 | .003   |      |               |        |
| 12-7                                    | .03                         | 0                  | 7-17    | .23                                 | .003   |      |               |        |
| 12-12                                   | .06                         | .012               | 8-7     | .02                                 | 0      |      |               |        |
|                                         |                             |                    | 8-11    | .18                                 | 0      |      |               |        |
|                                         |                             |                    | 8-25    | .03                                 | 0      |      |               |        |
|                                         |                             |                    | 9-16    | .80                                 | .004   |      |               |        |
|                                         |                             |                    | 9-17    | .30                                 | .002   |      |               |        |
|                                         |                             |                    | 9-18    | .03                                 | 0      |      |               |        |

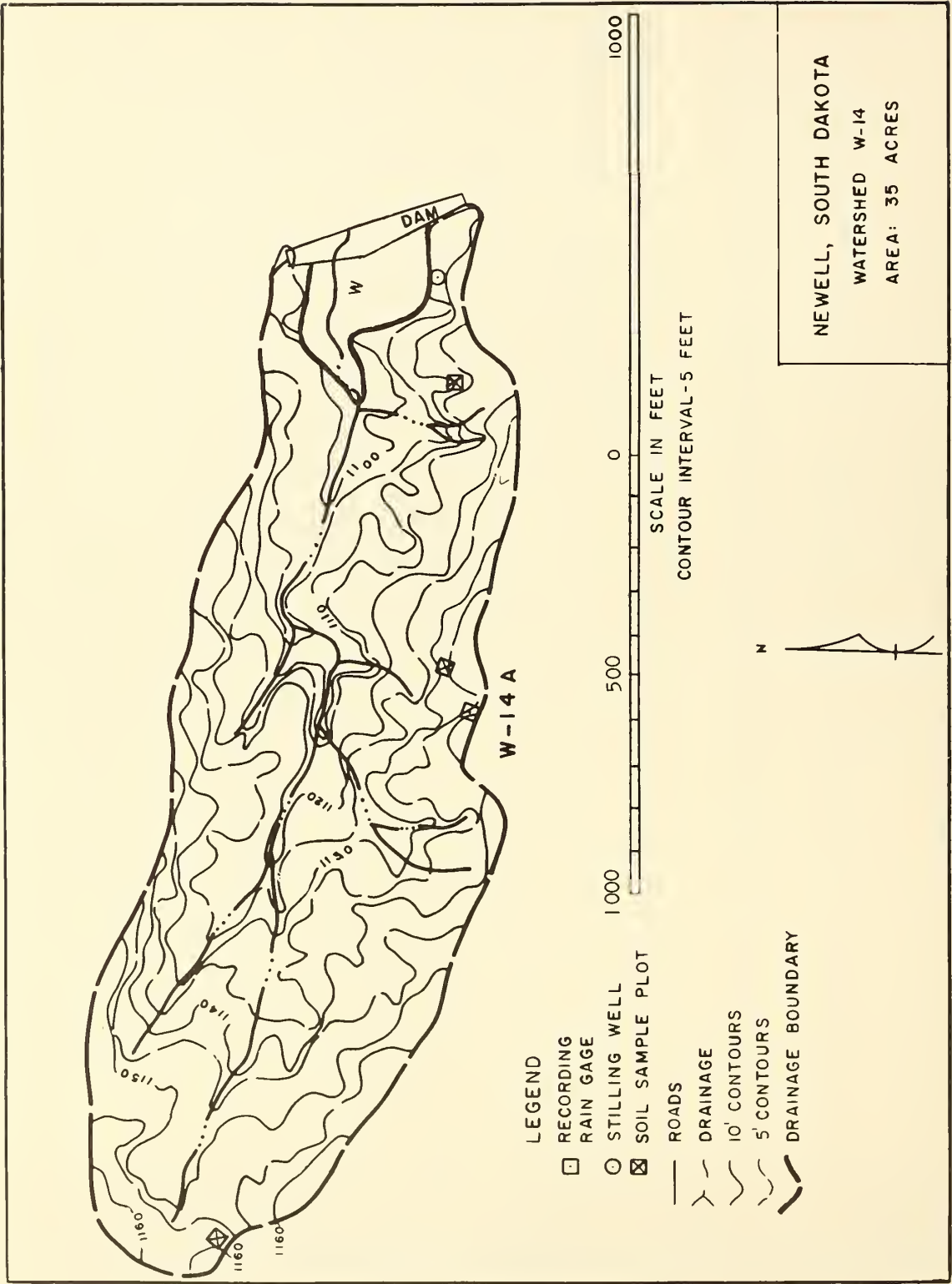
Notes: Quality of record: Precipitation - good except for period before 4-3-58 which is fair; runoff - good except for period before 6-7-58 which is fair. Months of Jan., Feb., Mar., Apr., Nov. and Dec. include snow and snow melt. <sup>1/</sup> Start of observations. <sup>2/</sup> Precipitation prior to 4-1-58 from Anderson gage. <sup>3/</sup> Runoff between observation dates. <sup>4/</sup> Rain gauge installed. <sup>5/</sup> Stage recorder installed. <sup>6/</sup> Hail storm.

DAILY PRECIPITATION AND RUNOFF (Inches)

Newell, South Dakota Watershed W-11

| Date | Precipitation | Runoff | Date     | Precipitation | Runoff | Date | Precipitation | Runoff |
|------|---------------|--------|----------|---------------|--------|------|---------------|--------|
|      |               |        | 1959     |               |        |      |               |        |
|      |               |        | 9-20     | .02           | 0      |      |               |        |
|      |               |        | 9-21     | .02           | 0      |      |               |        |
|      |               |        | 9-21     | .63           | .003   |      |               |        |
|      |               |        | 9-25     | .18           | .009   |      |               |        |
|      |               |        | 9-28     | .01           | 0      |      |               |        |
|      |               |        | 10-1     | .05           | 0      |      |               |        |
|      |               |        | 10-7     | .01           | 0      |      |               |        |
|      |               |        | 10-9     | .23           | 0      |      |               |        |
|      |               |        | 10-12    | .03           | 0      |      |               |        |
|      |               |        | 10-25    | .10           | 0      |      |               |        |
|      |               |        | 11-1     | .07           | 0      |      |               |        |
|      |               |        | 11-6     | 0             | .019   |      |               |        |
|      |               |        | 11-11,16 | .15           | 0      |      |               |        |
|      |               |        | 11-18    | 0             | T      |      |               |        |
|      |               |        | 11-21,22 | .11           | 0      |      |               |        |
|      |               |        | 11-30    | 0             | .019   |      |               |        |
|      |               |        | 12-3,11  | .03           | 0      |      |               |        |
|      |               |        | 12-11    | 0             | .009   |      |               |        |
|      |               |        | 12-20,21 | .06           | 0      |      |               |        |
|      |               |        | 12-27    | .02           | 0      |      |               |        |
|      |               |        | 12-31    | .02           | 0      |      |               |        |

Notes:



NEWELL, SOUTH DAKOTA Watershed W-15

LOCATION: Meade Co., South Dakota, 16 mi SE of Newell; Belle Fourche River Watershed.

AREA: 115 Acres.

SHAPE: Flattened Cen, 4500' by 1200'.

SLOPES: 10% is 1-3%; 10% is 2-3%.

SOILS: Residual, zonal: 81" - moderately deep and deep clay pan soils with slow permeability - irregular surface horizons 2-4 inches thick over gamic and block subsurface horizons with clay shale at variable depths - 2' to 4 inches, large cracks when dry and that seal when wet; 10" - moderately deep somewhat localized clay pan soils, very slow permeability; 1" - shallow clay soils. Pierre-Fronise clays, gently sloping - 1"; Hurley clays - 1"; Pierre clay gently sloping - 1". Internal Drainage - very slow.

EROSION: 1 - 100%.

LAND CAPABILITY: 1Ae = 1; 1B = 10%.

SURFACE DRAINAGE: Good, well defined channel 800' long.

FACTORS OF EROSION: Spheroidal, continuous.

INSTRUMENTATION: Gage: 1 - automatic recorder. Precipitation: One monthly gage. Early precipitation record from 1 in. gage on John Anderson ranch 3.6 miles southwest of dam.

WATERWAY: 1 - 100' channel. Condition class: 100' - 100' - 100'. Low flow regime: Western wheat grass - 30'; Blue stem - 30'; other species of grasses and forbs - 7%.

Production of cover - 130 lbs/acre.

Plant sites: Clover - 1%; alfalfa - 10%; other - 1%.

USE: (Degree of grazing of rangeland) 1957 - moderate; 1958 - moderate; 1959 - moderate.

LAND USE: 1 - 100% (100%); 2 - moderate; 3 - moderate; 4 - moderate; 5 - moderate; 6 - moderate; 7 - moderate; 8 - moderate; 9 - moderate; 10 - moderate; 11 - moderate; 12 - moderate; 13 - moderate; 14 - moderate; 15 - moderate; 16 - moderate; 17 - moderate; 18 - moderate; 19 - moderate; 20 - moderate; 21 - moderate; 22 - moderate; 23 - moderate; 24 - moderate; 25 - moderate; 26 - moderate; 27 - moderate; 28 - moderate; 29 - moderate; 30 - moderate; 31 - moderate; 32 - moderate; 33 - moderate; 34 - moderate; 35 - moderate; 36 - moderate; 37 - moderate; 38 - moderate; 39 - moderate; 40 - moderate; 41 - moderate; 42 - moderate; 43 - moderate; 44 - moderate; 45 - moderate; 46 - moderate; 47 - moderate; 48 - moderate; 49 - moderate; 50 - moderate; 51 - moderate; 52 - moderate; 53 - moderate; 54 - moderate; 55 - moderate; 56 - moderate; 57 - moderate; 58 - moderate; 59 - moderate; 60 - moderate; 61 - moderate; 62 - moderate; 63 - moderate; 64 - moderate; 65 - moderate; 66 - moderate; 67 - moderate; 68 - moderate; 69 - moderate; 70 - moderate; 71 - moderate; 72 - moderate; 73 - moderate; 74 - moderate; 75 - moderate; 76 - moderate; 77 - moderate; 78 - moderate; 79 - moderate; 80 - moderate; 81 - moderate; 82 - moderate; 83 - moderate; 84 - moderate; 85 - moderate; 86 - moderate; 87 - moderate; 88 - moderate; 89 - moderate; 90 - moderate; 91 - moderate; 92 - moderate; 93 - moderate; 94 - moderate; 95 - moderate; 96 - moderate; 97 - moderate; 98 - moderate; 99 - moderate; 100 - moderate.

MONTHLY PRECIPITATION AND RUNOFF (Inches)

Newell, South Dakota Watershed W-15

| Month Year  | Jan.     | Feb.      | Mar.         | Apr.         | May          | June         | July         | Aug.      | Sept.        | Oct.         | Nov.         | Dec.      | Year          |
|-------------|----------|-----------|--------------|--------------|--------------|--------------|--------------|-----------|--------------|--------------|--------------|-----------|---------------|
| 1955 1<br>2 | T<br>0   | 0.25<br>0 | 0.20<br>0.05 | 1.00<br>0.01 | 0.70<br>0    | 1.70<br>0.53 | 5.45<br>1.21 | 0.65<br>0 | 0.60<br>0    | 0.91<br>0.05 | 0.50<br>0.02 | 0.18<br>0 | 15.52<br>2.20 |
| 1956 P<br>Q | .35<br>0 | .16<br>0  | .12<br>0.08  | .16<br>0.06  | 2.14<br>0.25 | 1.56<br>0.07 | 1.00<br>0    | .20<br>0  | 2.13<br>0.05 | .50<br>0.12  | 1.00<br>0.02 | .15<br>0  | 10.22<br>0.27 |
| Normal P    | .44      | .37       | .79          | 1.67         | 2.65         | 2.95         | 2.11         | 1.34      | 1.29         | 1.02         | .55          | .39       | 15.57         |

Notes: 1/ Precipitation record prior to 4-1-59 by Anderson gage.  
Normal P based on 52 year record (1908-1959) at Newell USWB station, Newell, South Dakota.



| DAILY PRECIPITATION AND RUNOFF (Inches) |               |         |          | Neveall, South Dakota Watershed W-15 |        |      |               |        |
|-----------------------------------------|---------------|---------|----------|--------------------------------------|--------|------|---------------|--------|
| Date                                    | Precipitation | Runoff  | Date     | Precipitation                        | Runoff | Date | Precipitation | Runoff |
| 1958                                    |               |         | 1959     |                                      |        |      |               |        |
| 2-21 1/                                 | .25           | 0       | 1-1      | .05                                  | 0      |      |               |        |
| 3-3                                     | .25           | 0       | 1-11     | .04                                  | 0      |      |               |        |
| 3-6                                     | 0             | .078 3/ | 1-5      | .06                                  | 0      |      |               |        |
| 3-12                                    | .04 2/        | 0       | 1-13     | .05                                  | 0      |      |               |        |
| 3-15 4/                                 | T             | 0       | 1-19     | .05                                  | 0      |      |               |        |
| 4-3                                     | 1.00          | .002 3/ | 1-22     | .05                                  | 0      |      |               |        |
| 4-11                                    | .16           | 0       | 1-24     | .05                                  | 0      |      |               |        |
| 4-29                                    | .66           | .201    | 2-2      | .02                                  | 0      |      |               |        |
| 5-15                                    | .15           | 0       | 2-5      | .03                                  | 0      |      |               |        |
| 5-24                                    | T             | 0       | 2-9      | .03                                  | 0      |      |               |        |
| 5-27                                    | .10           | 0       | 2-13     | .01                                  | 0      |      |               |        |
| 5-30                                    | .25           | 0       | 2-16, 17 | .03                                  | 0      |      |               |        |
| 5-31                                    | .28           | 0       | 2-25, 26 | .04                                  | 0      |      |               |        |
| 6-1                                     | .03           | 0       | 3-9      | .05                                  | 0      |      |               |        |
| 6-2                                     | .70           | 0       | 3-10     | 0                                    | .044   |      |               |        |
| 6-3                                     | .65           | 0       | 3-11     | 0                                    | .004   |      |               |        |
| 6-4                                     | .01           | 0       | 3-12     | .01                                  | .012   |      |               |        |
| 6-7                                     | 1.15          | .003    | 3-13     | .02                                  | .006   |      |               |        |
| 6-8                                     | .22           | .155    | 3-17     | 0                                    | .023   |      |               |        |
| 6-9                                     | .02           | 0       | 3-24     | .04                                  | 0      |      |               |        |
| 6-11                                    | .46           | .013    | 4-2      | .12                                  | 0      |      |               |        |
| 6-12                                    | .22           | .041    | 4-15     | .10                                  | .003   |      |               |        |
| 6-13                                    | .01           | .017    | 4-16     | .30                                  | .001   |      |               |        |
| 6-14                                    | .20           | .274    | 4-17     | T                                    | 0      |      |               |        |
| 6-15                                    | .12           | 0       | 4-18     | .03                                  | T      |      |               |        |
| 6-19                                    | .10           | 0       | 4-19     | .17                                  | .005   |      |               |        |
| 6-20                                    | .17           | 0       | 4-20     | .12                                  | .011   |      |               |        |
| 6-21                                    | .02           | 0       | 4-22     | 0                                    | .040   |      |               |        |
| 7-3                                     | 3.54          | 1.025   | 4-25     | .04                                  | 0      |      |               |        |
| 7-4                                     | .04           | .016    | 5-1      | .14                                  | .002   |      |               |        |
| 7-10                                    | .27           | .141    | 5-5      | .08                                  | 0      |      |               |        |
| 7-12                                    | .33           | 0       | 5-6      | .07                                  | 0      |      |               |        |
| 7-16                                    | .15           | 0       | 5-9      | .04                                  | .002   |      |               |        |
| 7-19                                    | .16           | 0       | 5-10     | .04                                  | 0      |      |               |        |
| 7-24                                    | .17           | 0       | 5-11     | .02                                  | 0      |      |               |        |
| 7-29                                    | .23           | 0       | 5-16     | .18                                  | 0      |      |               |        |
| 7-30                                    | .13           | 0       | 5-19     | .32                                  | 0      |      |               |        |
| 8-5                                     | .45           | 0       | 5-20     | .29                                  | .009   |      |               |        |
| 8-29                                    | .05           | 0       | 5-25     | .05                                  | .004   |      |               |        |
| 8-30                                    | .15           | 0       | 5-27     | .06                                  | 0      |      |               |        |
| 9-24                                    | .08           | 0       | 5-29     | .62                                  | 0      |      |               |        |
| 10-8                                    | .10           | .005    | 5-30     | .38                                  | .008   |      |               |        |
| 10-20                                   | .11           | 0       | 5-31     | .15                                  | 0      |      |               |        |
| 10-21                                   | .33           | 0       | 6-1      | .01                                  | 0      |      |               |        |
| 11-6                                    | .03           | 0       | 6-14     | .03                                  | 0      |      |               |        |
| 11-14                                   | .20           | 0       | 6-21     | .23                                  | 0      |      |               |        |
| 11-15                                   | .02           | 0       | 6-23     | .20                                  | T      |      |               |        |
| 11-16                                   | .13           | .013    | 6-24     | .12                                  | 0      |      |               |        |
| 11-17                                   | .10           | .002    | 6-25     | .34                                  | 0      |      |               |        |
| 11-23                                   | .02           | .003    | 6-26     | .03                                  | 0      |      |               |        |
| 12-1                                    | .07           | .025    | 6-27     | .07                                  | 0      |      |               |        |
| 12-7                                    | .03           | 0       | 6-28     | .10                                  | 0      |      |               |        |
| 12-11                                   | .08           | 0       | 6-29     | .24                                  | T      |      |               |        |
|                                         |               |         | 6-30     | .19                                  | .004   |      |               |        |
|                                         |               |         | 7-3      | .22                                  | 0      |      |               |        |
|                                         |               |         | 7-7      | .08                                  | 0      |      |               |        |
|                                         |               |         | 7-15     | .57                                  | 0      |      |               |        |
|                                         |               |         | 7-17     | .15                                  | T      |      |               |        |
|                                         |               |         | 8-1      | .18                                  | 0      |      |               |        |
|                                         |               |         | 8-7      | .08                                  | 0      |      |               |        |
|                                         |               |         | 8-25     | .03                                  | 0      |      |               |        |
|                                         |               |         | 9-16     | .82                                  | .018   |      |               |        |
|                                         |               |         | 9-17     | .31                                  | .005   |      |               |        |
|                                         |               |         | 9-18     | .04                                  | 0      |      |               |        |
|                                         |               |         | 9-20     | .01                                  | 0      |      |               |        |

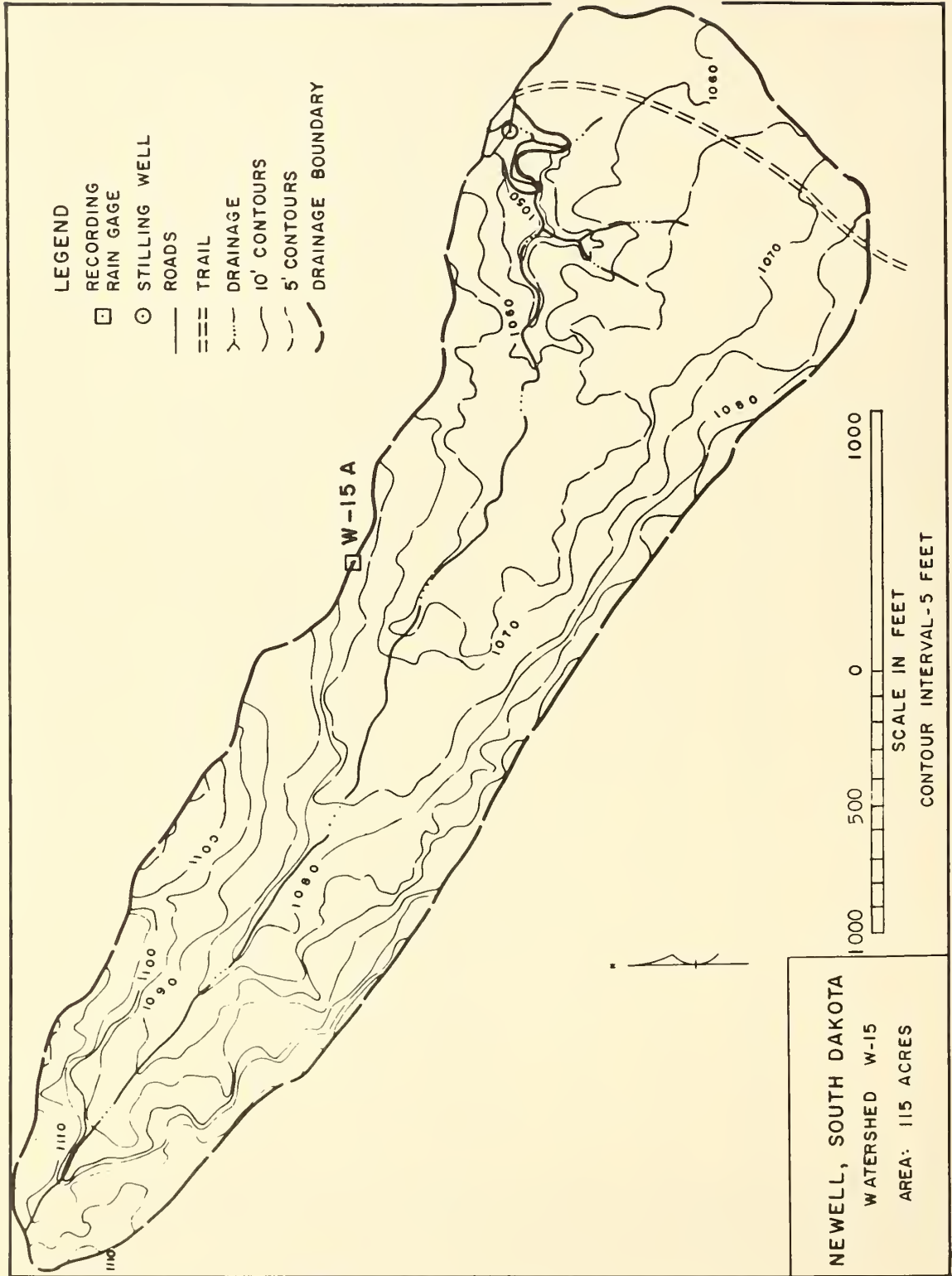
Notes: 1/ Starting observation date. 2/ Precipitation record prior to 4-1-58 from Anderson gage. 3/ Runoff between observation dates. 4/ Recording rain gauge installed. Months of Jan., Feb., Mar. Apr., Nov. and Dec. include snow and snow melt. Quality of records: Precipitation - good. Runoff - good, except for period before 5-6-58 which is fair

DAILY PRECIPITATION AND RUNOFF (Inches)

Newell, South Dakota Watershed W-15

| Date | Precipitation | Runoff | Date  | Precipitation | Runoff | Date | Precipitation | Runoff |
|------|---------------|--------|-------|---------------|--------|------|---------------|--------|
|      |               |        | 1959  |               |        |      |               |        |
|      |               |        | 9-21  | .03           | 0      |      |               |        |
|      |               |        | 9-24  | .68           | .005   |      |               |        |
|      |               |        | 9-25  | .19           | .004   |      |               |        |
|      |               |        | 9-28  | .04           | .003   |      |               |        |
|      |               |        | 9-29  | .01           | 0      |      |               |        |
|      |               |        | 10-1  | .07           | .001   |      |               |        |
|      |               |        | 10-7  | .08           | .002   |      |               |        |
|      |               |        | 10-9  | .29           | .007   |      |               |        |
|      |               |        | 10-12 | .04           | 0      |      |               |        |
|      |               |        | 10-25 | .11           | .002   |      |               |        |
|      |               |        | 11-4  | .22           | .002   |      |               |        |
|      |               |        | 11-12 | .03           | .002   |      |               |        |
|      |               |        | 11-13 | .06           | 0      |      |               |        |
|      |               |        | 11-14 | .05           | 0      |      |               |        |
|      |               |        | 11-15 | .01           | 0      |      |               |        |
|      |               |        | 11-17 | .16           | 0      |      |               |        |
|      |               |        | 11-18 | .03           | 0      |      |               |        |
|      |               |        | 11-21 | .08           | 0      |      |               |        |
|      |               |        | 11-22 | .07           | 0      |      |               |        |
|      |               |        | 11-23 | .34           | 0      |      |               |        |
|      |               |        | 11-25 | .02           | .024   |      |               |        |
|      |               |        | 12-3  | .02           | 0      |      |               |        |
|      |               |        | 12-4  | .01           | 0      |      |               |        |
|      |               |        | 12-20 | .02           | 0      |      |               |        |
|      |               |        | 12-21 | .05           | 0      |      |               |        |
|      |               |        | 12-27 | .02           | 0      |      |               |        |
|      |               |        | 12-28 | .01           | 0      |      |               |        |
|      |               |        | 12-31 | .02           | 0      |      |               |        |

Notes:



Meade County, S. D.; 49 mi. SE of Newell; \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Drainage - Medium.

Internal

precipitation record from 1 in. gage on Harold Gossard ranch 1.2 miles east of pond.

Early

SE: (Degree of grazing of rangeland) 1957 - moderate; 1958 - moderate; 1959 - full.

Pierre S.ale Plains and Badlands land resource area (G-00).

MONTHLY PRECIPITATION AND RUNOFF (Inches)

Newell, South Dakota started 1916

| Month<br>Year | Jan. | Feb.      | Mar.        | Apr.        | May        | June         | July      | Aug.      | Sept.     | Oct.      | Nov.       | Dec.      | Year         |
|---------------|------|-----------|-------------|-------------|------------|--------------|-----------|-----------|-----------|-----------|------------|-----------|--------------|
| 1956 1/2 2/   | 0    | 0.06      | 0.11<br>.30 | 1.42<br>.15 | 1.0<br>T   | 1.74<br>.121 | 1.9<br>T  | 1.0<br>0  | 0.1<br>0  | 0.1<br>0  | 0.3<br>0   | 0.12<br>0 | 11.26<br>.23 |
| 1 1/2 2/      | 0    | .2<br>.00 | .1<br>.11   | 1.2<br>.27  | 2.1<br>.25 | 2.0<br>.16   | 1.7<br>.2 | 1.6<br>.2 | 1.6<br>.2 | 1.1<br>.2 | 1.2<br>.01 | .1<br>0   | 12.06<br>.1  |
| Normal P      | .44  | .37       | .79         | 1.67        | 2.65       | 2.95         | 2.11      | 1.34      | 1.29      | 1.02      | .55        | .39       | 15.57        |

Notes: 1/ Precipitation prior to 4-13-58 from Gossard's gage.  
 2/ Thiesser wichee precipitation (4 gages).  
 Normal P based on 52 year record (1908-1959) at Newell USWB station, Newell, South Dakota.

Cooperative Research Project of USDA and South Dakota Agricultural Experiment Station

| DAILY PRECIPITATION AND RUNOFF (Inches) |                         |                  | Newell, South Dakota Watershed W-16 |               |        |      |               |        |
|-----------------------------------------|-------------------------|------------------|-------------------------------------|---------------|--------|------|---------------|--------|
| Date                                    | Precipitation <u>1/</u> | Runoff <u>2/</u> | Date                                | Precipitation | Runoff | Date | Precipitation | Runoff |
| 1958                                    |                         |                  | 1959                                |               |        |      |               |        |
| 1-16 <u>3/</u>                          | T                       | 0                | 1-4                                 | .03           | 0      |      |               |        |
| 2-25                                    | .05                     | 0                | 1-16                                | .04           | 0      |      |               |        |
| 3-11 <u>4/</u>                          | 0                       | .029             | 1-18                                | .15           | 0      |      |               |        |
| 3-23                                    | .10                     | .004             | 1-25                                | .04           | 0      |      |               |        |
| 3-30                                    | 0                       | .006             | 2-1                                 | .03           | 0      |      |               |        |
| 4-1                                     | .15                     | 0                | 2-12                                | .08           | 0      |      |               |        |
| 4-2                                     | .23                     | 0                | 2-13                                | .08           | 0      |      |               |        |
| 4-3                                     | .28                     | .027             | 2-24                                | .06           | 0      |      |               |        |
| 4-4                                     | .09                     | 0                | 2-27                                | .04           | .018   |      |               |        |
| 4-13 <u>5/</u>                          | .11                     | 0                | 2-28                                | 0             | .002   |      |               |        |
| 4-20                                    | .01                     | 0                | 3-1                                 | .03           | .001   |      |               |        |
| 4-23                                    | .16                     | .119             | 3-4                                 | 0             | .001   |      |               |        |
| 4-27                                    | .06                     | .007             | 3-5                                 | 0             | .001   |      |               |        |
| 4-30                                    | .08                     | .004             | 3-8                                 | 0             | .001   |      |               |        |
| 5-4                                     | .02                     | 0                | 3-9                                 | 0             | .001   |      |               |        |
| 5-17                                    | .18                     | T                | 3-10                                | 0             | .001   |      |               |        |
| 5-30                                    | 1.00                    | T                | 3-11                                | 0             | .001   |      |               |        |
| 5-31                                    | .16                     | T                | 3-24                                | .08           | 0      |      |               |        |
| 6-1                                     | .25                     | 0                | 4-10                                | .15           | 0      |      |               |        |
| 6-4                                     | .02                     | 0                | 4-12                                | .04           | 0      |      |               |        |
| 6-7                                     | .55                     | 0                | 4-16                                | .12           | .005   |      |               |        |
| 6-8                                     | 1.84                    | .073             | 4-17                                | 0             | .001   |      |               |        |
| 6-9                                     | .31                     | .041             | 4-18                                | 0             | .009   |      |               |        |
| 6-10                                    | 0                       | T                | 4-19                                | 0             | .008   |      |               |        |
| 6-11                                    | .18                     | T                | 4-20                                | 1.00          | .004   |      |               |        |
| 6-12                                    | .25                     | T                | 4-26                                | .03           | 0      |      |               |        |
| 6-13                                    | .16                     | .002             | 5-3                                 | .10           | .002   |      |               |        |
| 6-14                                    | 0                       | .005             | 5-4                                 | .84           | .012   |      |               |        |
| 6-15                                    | .15                     | .006             | 5-5                                 | 0             | .002   |      |               |        |
| 6-20                                    | .16                     | 0                | 5-10                                | .06           | 0      |      |               |        |
| 6-21                                    | .17                     | 0                | 5-19                                | .14           | 0      |      |               |        |
| 7-2                                     | .31                     | 0                | 5-20                                | .59           | T      |      |               |        |
| 7-3                                     | .17                     | 0                | 5-24                                | .05           | 0      |      |               |        |
| 7-6                                     | .04                     | 0                | 5-27                                | .50           | 0      |      |               |        |
| 7-14                                    | .25                     | 0                | 5-29                                | .02           | 0      |      |               |        |
| 7-19                                    | .21                     | 0                | 5-30                                | .12           | .017   |      |               |        |
| 7-29                                    | .08                     | 0                | 5-31                                | 0             | .002   |      |               |        |
| 7-30                                    | .16                     | 0                | 6-2                                 | .37           | 0      |      |               |        |
| 7-31                                    | .01                     | 0                | 6-14                                | .05           | 0      |      |               |        |
| 8-2                                     | .04                     | 0                | 6-15                                | .03           | 0      |      |               |        |
| 8-14                                    | .11                     | 0                | 6-16                                | .03           | 0      |      |               |        |
| 8-16                                    | .63                     | 0                | 6-20                                | .06           | 0      |      |               |        |
| 8-23                                    | .12                     | 0                | 6-24                                | .06           | 0      |      |               |        |
| 9-9                                     | .35                     | 0                | 6-25                                | .08           | 0      |      |               |        |
| 9-13                                    | .08                     | 0                | 6-26                                | .39           | 0      |      |               |        |
| 10-20                                   | .25                     | 0                | 6-27                                | .23           | 0      |      |               |        |
| 10-21                                   | .10                     | 0                | 6-28                                | .11           | 0      |      |               |        |
| 10-22                                   | .08                     | 0                | 6-29                                | .34           | .008   |      |               |        |
| 11-14                                   | .02                     | 0                | 6-30                                | .15           | 0      |      |               |        |
| 11-15                                   | .02                     | 0                | 7-3                                 | .38           | .002   |      |               |        |
| 11-16                                   | .04                     | 0                | 7-9                                 | .02           | 0      |      |               |        |
| 11-21                                   | .02                     | 0                | 7-15                                | .72           | .001   |      |               |        |
| 11-24                                   | .04                     | 0                | 7-16                                | .24           | 0      |      |               |        |
| 12-1                                    | .03                     | 0                | 7-22                                | .04           | 0      |      |               |        |
| 12-7                                    | .23                     | 0                | 8-14                                | .55           | 0      |      |               |        |
| 12-8                                    | .02                     | 0                | 9-17                                | .14           | .001   |      |               |        |
| 12-14                                   | .04                     | 0                | 9-18                                | .22           | .002   |      |               |        |
|                                         |                         |                  | 9-19                                | 0             | .003   |      |               |        |
|                                         |                         |                  | 9-20                                | .04           | 0      |      |               |        |
|                                         |                         |                  | 9-24                                | .34           | .017   |      |               |        |
|                                         |                         |                  | 9-25                                | .04           | 0      |      |               |        |
|                                         |                         |                  | 10-1                                | .13           | 0      |      |               |        |
|                                         |                         |                  | 10-18                               | .03           | 0      |      |               |        |
|                                         |                         |                  | 10-26                               | .02           | 0      |      |               |        |
|                                         |                         |                  | 11-4                                | .18           | 0      |      |               |        |

Notes: Quality of records: Precipitation - fair except for period before 4-13-59 which is poor. Runoff - good. Months of Jan., Feb., Mar., Apr., Nov. and Dec. include snow and snow melt. 1/ Precipitation prior to 4-13-59 from Gossard's gage. 2/ Runoff prior to 3-11-59 based on weekly observations. 3/ Resinping of observations. 4/ State recorder installed. 5/ Recording raingages installed.

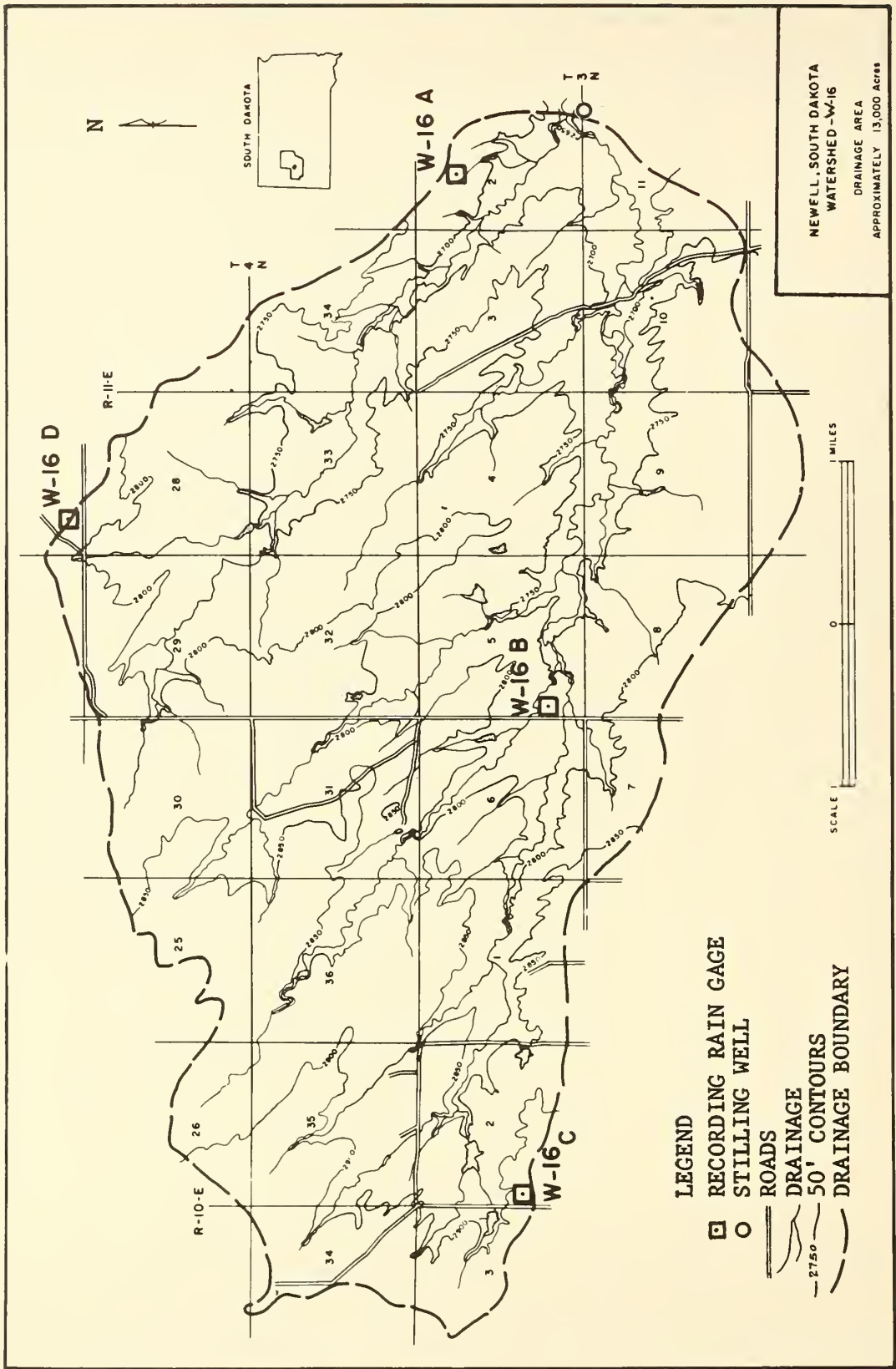


DAILY PRECIPITATION AND RUNOFF (Inches)

Newell, South Dakota Watershed W-16

| Date | Precipitation | Runoff | Date  | Precipitation | Runoff | Date | Precipitation | Runoff |
|------|---------------|--------|-------|---------------|--------|------|---------------|--------|
|      |               |        | 1959  |               |        |      |               |        |
|      |               |        | 11-10 | .10           | 0      |      |               |        |
|      |               |        | 11-11 | .30           | 0      |      |               |        |
|      |               |        | 11-12 | .12           | 0      |      |               |        |
|      |               |        | 11-15 | .08           | 0      |      |               |        |
|      |               |        | 11-20 | .05           | 0      |      |               |        |
|      |               |        | 11-21 | .10           | T      |      |               |        |
|      |               |        | 11-24 | 0             | .015   |      |               |        |
|      |               |        | 11-26 | .01           | 0      |      |               |        |
|      |               |        | 11-27 | .01           | 0      |      |               |        |
|      |               |        | 12-3  | .05           | 0      |      |               |        |
|      |               |        | 12-21 | .02           | 0      |      |               |        |
|      |               |        | 12-25 | .01           | 0      |      |               |        |
|      |               |        | 12-26 | .02           | 0      |      |               |        |

Notes:



MOOREFIELD, WEST VIRGINIA Watershed 1

LOCATION: Hardy County, West Virginia; approximately 5 miles southwest of Moorefield; South Branch Potomac River Basin.

AREA: 8.25 acres.

SHAPE: Roughly leaf-shaped, major axis 930 ft., minor axis 640 ft.

SLOPES: 8% is in 3-10% class; 62% in 10-20%; 30% in 20-30%. Aspect: S

SOILS: Residual, derived from gray siltstones with some interbedding of calcareous shales. 1 Litz shaly silt loam 90%; 2 Undifferentiated Alluvium (silty clay loam) 6%; 3 Litz shaly silt loam (moderately deep phase) 3%; 4 Litz silt loam 1%. Topsoil - weak fine granular structure, 1 & 3; strong fine subangular blocky, 2; moderate fine granular structure, 4; av. depth - 4 in., 1; 8 in., 2; 2 in., 3; 3 in., 4. Subsoil - weak fine granular structure, 1; structureless, 2; weak fine subangular blocky, 3; weak to moderate, medium subangular blocky to structureless in lower layer, 4; depth to shale bedrock - 12 in., av., 1; 24 to 36 in., 2; 16 to 26 in., 3; 22 in. av., 4. Permeability of topsoil and subsoil - rapid, 1; variable, 2; moderate to rapid, 3; moderate, 4. Internal drainage - medium, 1 & 4; variable, 2; rapid, 3.

EROSION: 1 - 4%; 2 - 3%; 3 - 92%; 4 - 1%.

LAND CAPABILITY: II - 4%, III - 4%, IV - 91%, VII - 1%.

SURFACE DRAINAGE: Good, length of principle waterway approximately 1000 ft., a natural watershed with surface flow to two well-defined waterways which intersect 30 ft. above the gaging station.

CHARACTER OF FLOW: Spring-fed intermittent, continuous.

INSTRUMENTATION: Runoff - H-4.5 precalibrated flume. Flume walls and approach walls are of treated T-g, cutoff walls and stilling well concrete. FW-1 recorder. Precipitation - recording gage.

WATERSHED CONDITIONS: Pasture, mixed cover, native perennial Lespedeza, Canada and Kentucky Bluegrass, poverty grass, and Buckhorn plantain being the predominant species. Controlled livestock grazing April through November. 800 lbs./acre of 0-20-0 fertilizer applied May 19-22, 1958; 2 tons/acre of lime applied May 22-June 2, 1958. Heavily infested area of bull thistle sprayed with amino-triazole May 20, 1959. Scattered oak sprouts eradicated by annual brush-hogging.

GENERALLY REPRESENTS: Pasture practices on shallow shale soil typical of large areas in Eastern West Virginia, Central Pennsylvania, Western Maryland, and parts of Virginia and Tennessee. Applicable to similar lands in the land resource areas of the Southern Appalachian Ridges and Valleys (N-128) and the Northern Appalachian Ridges and Valleys (S-147).

MONTHLY PRECIPITATION AND RUNOFF (Inches)

Moorefield, West Virginia, Watershed 1

| Year   | Month | Jan. | Feb. | Mar. | Apr.     | May      | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year  |
|--------|-------|------|------|------|----------|----------|------|------|------|-------|------|------|------|-------|
|        |       | 1958 | P    |      |          |          | 2.67 | 2.22 | 3.00 | 4.55  | 3.17 | 1.17 | 0.65 | 1.42  |
|        | Q     |      |      |      | <u>1</u> | <u>1</u> | .11  | .05  | .46  | 0     | 0    | 0    | 0    | .62   |
| 1959   | P     | 1.59 | 0.49 | 1.58 | 3.34     | 2.77     | 2.80 | 4.82 | 2.15 | 2.54  | 3.27 | .87  | 1.98 | 28.20 |
|        | Q     | 0    | 0    | 0    | .08      | .04      | .14  | T    | 0    | T     | .12  | 0    | .08  | .46   |
| Normal | P     | 2.30 | 2.03 | 2.61 | 2.73     | 3.45     | 3.78 | 3.33 | 3.12 | 2.48  | 2.23 | 1.78 | 2.03 | 31.87 |

ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS

Moorefield, West Virginia Watershed 1

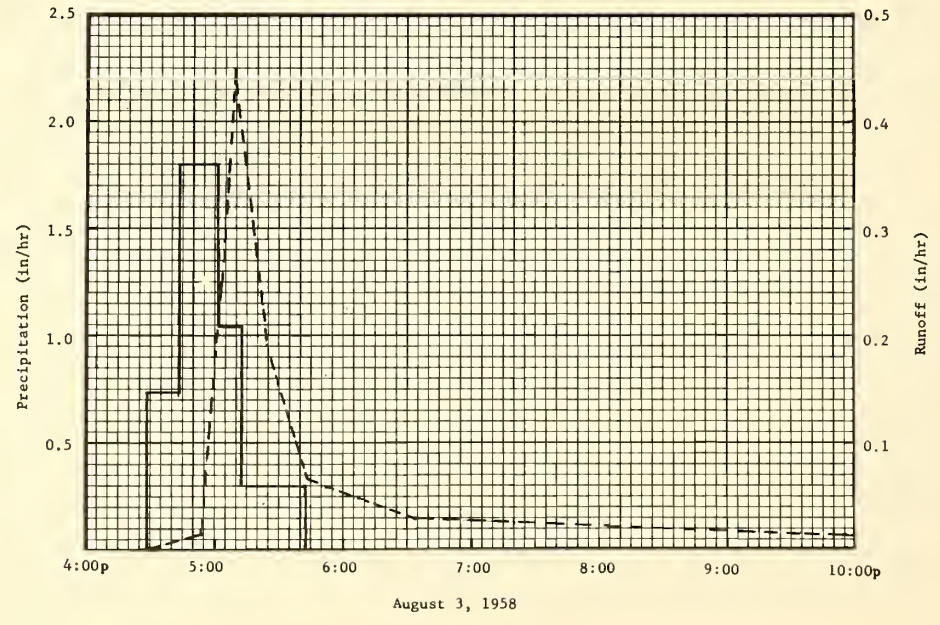
| YEAR               | MAXIMUM DISCHARGE |      | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |      |         |      |         |      |          |      |       |      |        |      |        |      |
|--------------------|-------------------|------|-------------------------------------------|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
|                    |                   |      | 1 hour                                    |      | 2 hours |      | 6 hours |      | 12 hours |      | 1 day |      | 2 days |      | 8 days |      |
|                    | Date              | Rate | Date                                      | Vol. | Date    | Vol. | Date    | Vol. | Date     | Vol. | Date  | Vol. | Date   | Vol. | Date   | Vol. |
| 1958 <sup>1/</sup> | 8-3               | 0.44 | 8-3                                       | 0.17 | 8-3     | 0.19 | 8-3     | 0.22 | .3       | 0.24 | 5-3   | 0.27 | 8-3    | 0.30 | 8-3    | 0.39 |
| 1959               | 10-24             | .03  | 10-24                                     | .02  | 10-24   | .03  | 6-2     | .05  | 10-24    | .08  | 10-24 | .09  | 6-1    | .12  | 6-1    | .14  |

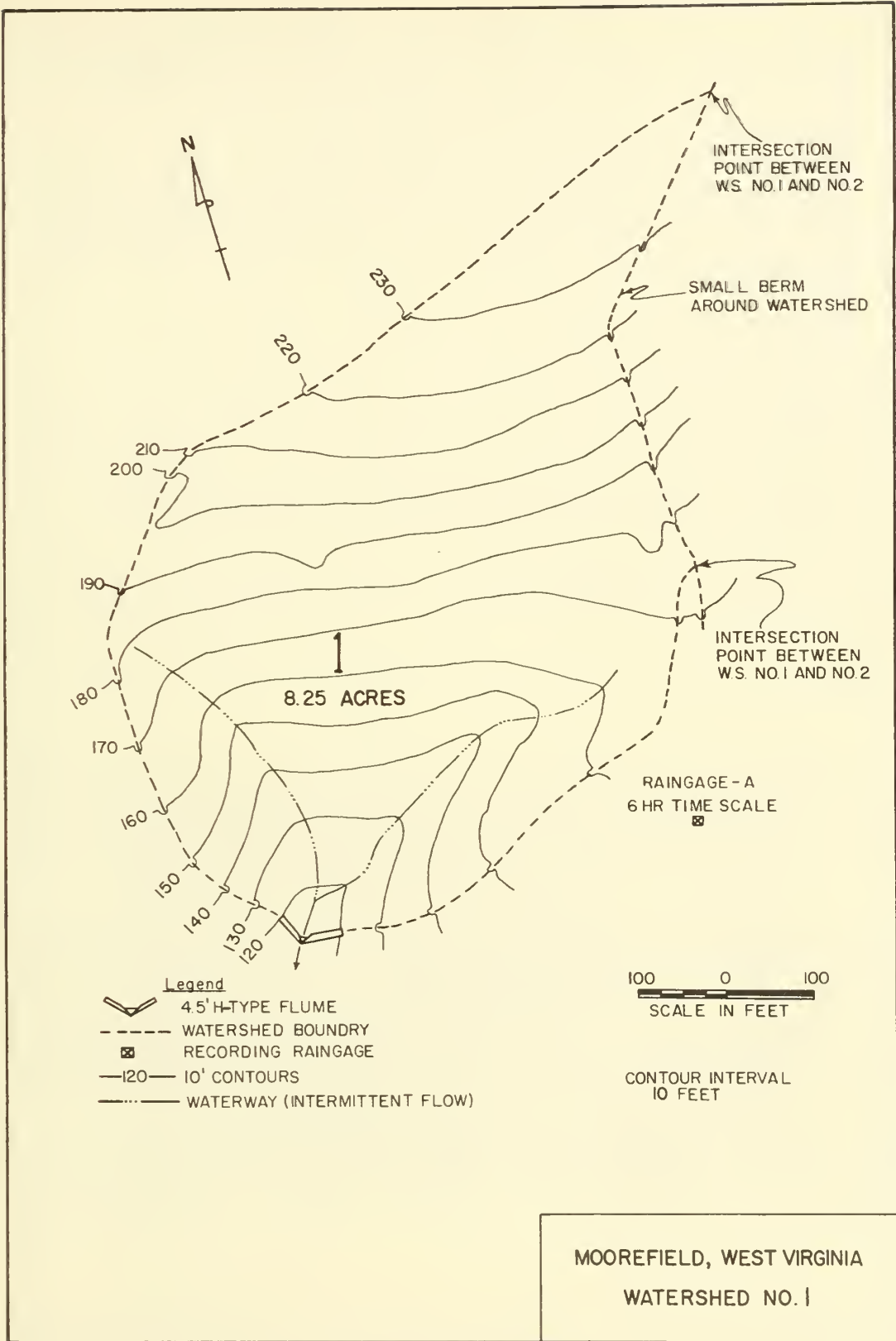
Notes: <sup>1/</sup> Station not in complete operation January through May 1958. Quality of records: Monthly P and Q - excellent; annual maximum discharges and volumes - excellent; watershed conditions: 1958, grassland 100%, no grazing; in 1959, grassland 100%; controlled grazing April through November; heavily infested area of thistle sprayed in May 1959. Normal P based on 46-year USWB record Moorefield, West Virginia.

| SELECTED RUNOFF EVENTS  |                   |                 |               |                   |               | Moorefield, West Virginia, Watershed 1 (8.25 Acres) |              |               |
|-------------------------|-------------------|-----------------|---------------|-------------------|---------------|-----------------------------------------------------|--------------|---------------|
| Antecedent conditions   |                   |                 | Rainfall      |                   |               | Runoff                                              |              |               |
| Date                    | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time                                       | Rate (in/hr) | Acc. (inches) |
| Event of August 3, 1958 |                   |                 |               |                   |               |                                                     |              |               |
| 7-4-58                  | 0.25              | 0               | 8-3-58        | Raingage A        |               | 8-3-58                                              |              |               |
| 7-5                     | .05               | 0               | 4:28p         | 0                 | 0             | 4:29p                                               | 0            | 0             |
| 7-6,7                   | 0                 | 0               | :43           | .72               | .18           | :54                                                 | .0069        | T             |
| 7-8                     | .02               | 0               | 5:02          | 1.80              | .75           | 5:03                                                | .2472        | .02           |
| 7-9                     | .03               | 0               | :13           | 1.04              | .94           | :06                                                 | .3426        | .03           |
| 7-10,11                 | 0                 | 0               | :43           | .30               | 1.09          | :10                                                 | .4436        | .06           |
| 7-12                    | .20               | 0               |               |                   |               | :24                                                 | .1948        | .13           |
| 7-13,17                 | 0                 | 0               |               |                   |               | :43                                                 | .0684        | .18           |
| 7-18                    | .50               | T               |               |                   |               | 6:34                                                | .0142        | .21           |
| 7-19,20                 | 0                 | 0               |               |                   |               | 9:54                                                | .0069        | .25           |
| 7-21                    | .68               | T               |               |                   |               |                                                     |              |               |
| 7-22                    | 1.49              | .03             |               |                   |               | 12:00n <sup>1/</sup>                                | .0018        | .30           |
| 7-23                    | .50               | T               |               |                   |               |                                                     |              |               |
| 7-24                    | .25               | T               |               |                   |               |                                                     |              |               |
| 7-25                    | 0                 | 0               |               |                   |               |                                                     |              |               |
| 7-26                    | .45               | T               |               |                   |               |                                                     |              |               |
| 7-27                    | .08               | .01             |               |                   |               |                                                     |              |               |
| 7-28                    | .20               | T               |               |                   |               |                                                     |              |               |
| 7-29                    | 0                 | T               |               |                   |               |                                                     |              |               |
| 7-30                    | 0                 | 0               |               |                   |               |                                                     |              |               |
| 7-31                    | .10               | 0               |               |                   |               |                                                     |              |               |
| 8-1                     | .25               | T               |               |                   |               |                                                     |              |               |
| 8-2                     | 0                 | 0               |               |                   |               |                                                     |              |               |
| 8-3 to 4:28p            | .21               | 0               |               |                   |               |                                                     |              |               |

Watershed Conditions:  
Mixed grass cover; 70-75%  
of area covered by vegetation

Notes: To convert runoff in in./hr. to cfs, multiply by 8.3188. <sup>1/</sup> Runoff continued at a rate less than .001 in./hr. until runoff ends at 11:00p 8-14-58.







## MOOREFIELD, WEST VIRGINIA Watershed 2

**LOCATION:** Hardy County, West Virginia; approximately 5 miles southwest of Moorefield; South Branch Potomac River Basin.

**AREA:** 10.06 acres.

**SHAPE:** Rectangular - 900 ft. long by 530 ft. wide.

**SLOPES:** 17% - 3-10% class; 62% - 10-20% class; 20% - 20-30% class; 1% - 30-40% class. Aspect - S

**SOILS:** Residual, derived from gray siltstones with some interbedding of calcareous shales. 1 Litz shaly silt loam 83%; 2 Undifferentiated Alluvium (silty clay loam) 8%; 3 Clarksburg silt loam 7%; 4 Litz silt loam (moderately well drained phase) 2%. Topsoil - weak fine granular structure, 1 & 4; strong fine subangular blocky, 2; weak medium granular structure, 3; av. depth - 4 in., 1 & 4; 8 in., 2; 6 in., 3. Subsoil - weak fine granular structure, 1; structureless, 2; moderate fine subangular blocky to strong fine blocky to massive structure in lower layers, 3; moderate, fine to medium, subangular blocky to massive structure in lower layer, 4; depth to shale bedrock - 12 in. av., 1; 24 to 36 in., 2; 64 in. av., 3; 17 in. av., 4. Permeability of topsoil & subsoil - rapid, 1; variable, 2; slow, 3; moderate to slow, 4. Internal drainage - medium, 1 & 3; variable, 2; slow, 4.

**EROSION:** 1 - 8%; 3 - 89%; 4 - 3%.

**LAND CAPABILITY:** II - 6%; III - 15%; IV - 77%; VII - 2%.

**SURFACE DRAINAGE:** Good, length of principle waterway 1000 ft., a natural watershed with surface flow into a well-defined waterway.

**CHARACTER OF FLOW:** Spring-fed intermittent, continuous.

**INSTRUMENTATION:** Runoff - H-4.5 precalibrated flume. Flume walls and approach walls are of treated T-g, cutoff walls and stilling well concrete. Heating elements in flume floor and stilling well. FW-1 recorder. Precipitation - recording gage.

**WATERSHED CONDITIONS:** Pasture, mixed cover, Buckhorn plantain, Kentucky Bluegrass, Canada Bluegrass, cheat, poverty grass and sheep sorrel principle species. 800 lbs./acre of 0-20-0 fertilizer applied May 19-22, 1958; 2 tons/acre of lime applied May 22 - June 2, 1958. Controlled, annual grazing by livestock April through November. Scattered oak sprouts eradicated by annual brush-hogging.

**GENERALLY REPRESENTS:** Pasture practices on shallow shale soil typical of large areas in Eastern West Virginia, Central Pennsylvania, Western Maryland and parts of Virginia and Tennessee. Applicable to similar lands in the land resource areas of Southern Appalachian Ridges and Valleys (N-128) and Northern Appalachian Ridges and Valleys (S-147).

## MONTHLY PRECIPITATION AND RUNOFF (Inches)

Moorefield, West Virginia, Watershed 2

| Year   | Month | Jan. | Feb. | Mar. | Apr. | May          | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year  |
|--------|-------|------|------|------|------|--------------|------|------|------|-------|------|------|------|-------|
|        |       | 1958 | P    |      |      |              | 2.67 | 2.22 | 3.00 | 4.55  | 3.17 | 1.17 | 0.65 | 1.42  |
|        | Q     |      |      |      |      | $\frac{1}{}$ | .05  | .22  | .54  | 0     | 0    | 0    | 0    | .81   |
| 1959   | P     | 1.59 | 0.49 | 1.58 | 3.34 | 2.77         | 2.80 | 4.82 | 2.15 | 2.54  | 3.27 | .87  | 1.98 | 28.20 |
|        | Q     | 0    | 0    | T    | .24  | .16          | .36  | .05  | T    | .03   | .29  | T    | .26  | 1.39  |
| Normal | P     | 2.30 | 2.03 | 2.61 | 2.73 | 3.95         | 3.78 | 3.33 | 3.12 | 2.48  | 2.23 | 1.78 | 2.03 | 31.87 |

## ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS

Moorefield, West Virginia Watershed 2

| YEAR               | MAXIMUM DISCHARGE |      | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |      |         |      |         |      |          |      |       |      |        |      |        |      |
|--------------------|-------------------|------|-------------------------------------------|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
|                    |                   |      | 1 hour                                    |      | 2 hours |      | 6 hours |      | 12 hours |      | 1 day |      | 2 days |      | 8 days |      |
|                    | Date              | Rate | Date                                      | Vol. | Date    | Vol. | Date    | Vol. | Date     | Vol. | Date  | Vol. | Date   | Vol. | Date   | Vol. |
| 1958 <sup>1/</sup> | 8-3               | 0.76 | 8-3                                       | 0.34 | 8-3     | 0.38 | 8-3     | 0.42 | 8-3      | 0.44 | 8-3   | 0.45 | 8-3    | 0.47 | 8-1    | 0.53 |
| 1959               | 4-28              | .18  | 4-28                                      | .10  | 4-28    | .13  | 4-28    | .17  | 4-28     | .20  | 6-1   | .31  | 6-1    | .36  | 6-1    | .36  |

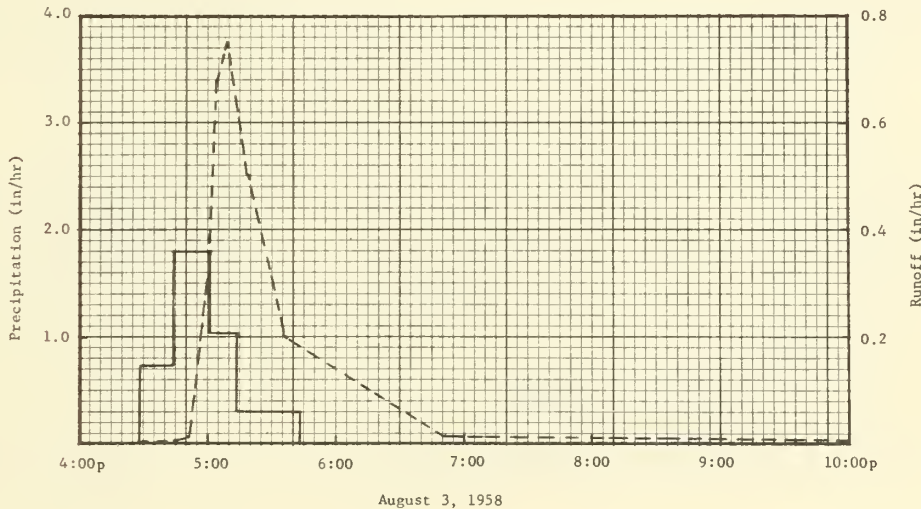
Notes: <sup>1/</sup> Station not in complete operation January through May 1958. Quality of records: Monthly P and Q - excellent; annual maximum discharges and volumes - excellent; watershed conditions: in 1958, 100% grassland with no grazing; in 1959, 100% grassland with controlled livestock grazing April through November. Normal P based on 46-year USWB record Moorefield, West Virginia.

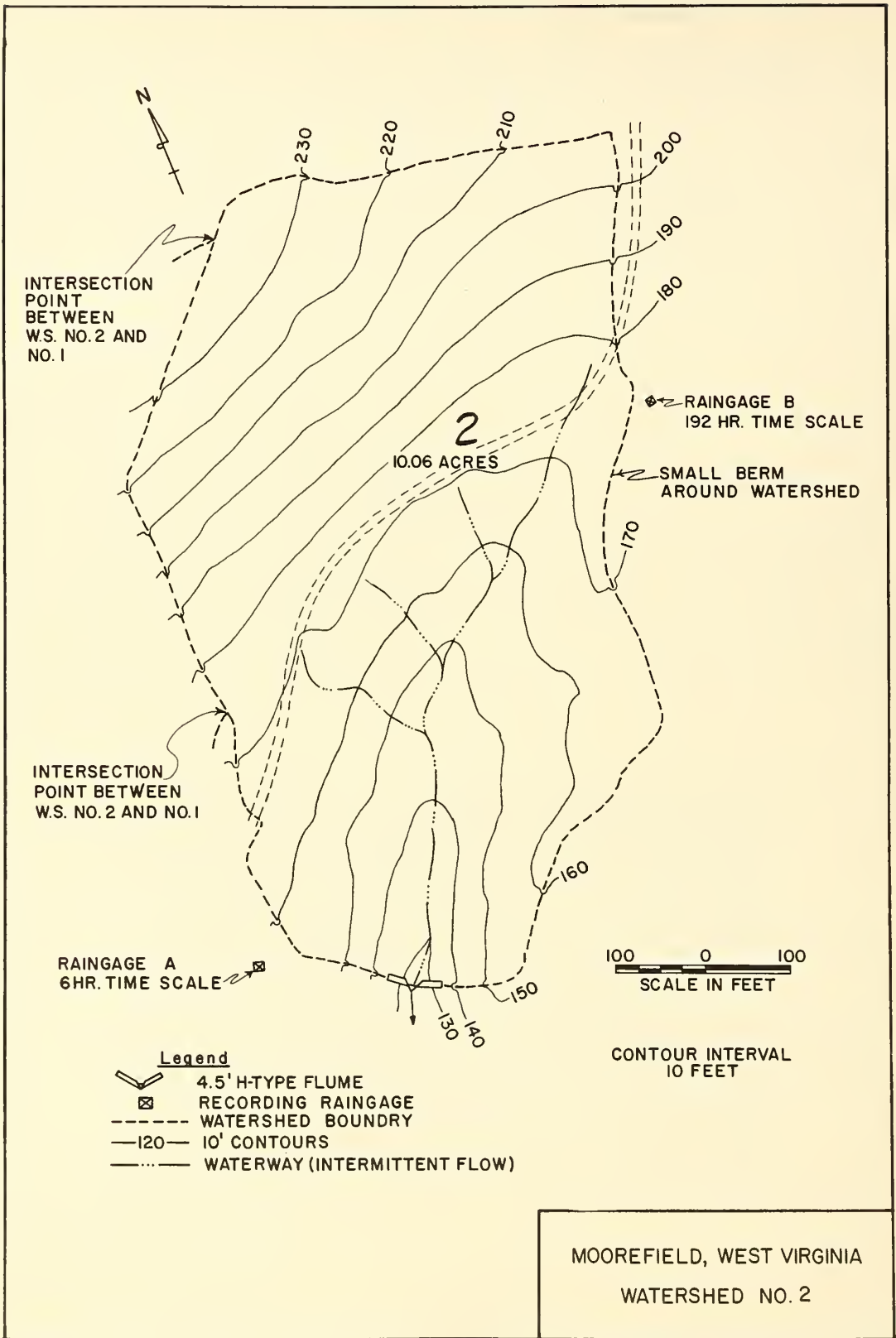
SELECTED RUNOFF EVENTS

Moorefield, West Virginia, Watershed 2 (10.06 acres)

| Antecedent conditions                                                          |                   |                 | Rainfall      |                   |               | Runoff               |              |               |
|--------------------------------------------------------------------------------|-------------------|-----------------|---------------|-------------------|---------------|----------------------|--------------|---------------|
| Date                                                                           | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr) | Acc. (inches) | Date and time        | Rate (in/hr) | Acc. (inches) |
| Event of August 3, 1958                                                        |                   |                 |               |                   |               |                      |              |               |
| 7-4-58                                                                         | 0.25              | 0               | 8-3-58        | Raingage A        |               | 8-3-58               |              |               |
| 7-5                                                                            | .05               | 0               | 4:28p         | 0                 | 0             | 4:28p                | 0.0006       | 0             |
| 7-6,7                                                                          | 0                 | 0               | :43           | .72               | .18           | :46                  | .0066        | .001          |
| 7-8                                                                            | .02               | 0               | 5:02          | 1.80              | .75           | :51                  | .0180        | .002          |
| 7-9                                                                            | .03               | 0               | :13           | 1.04              | .94           | 5:01                 | .3499        | .033          |
| 7-10,11                                                                        | 0                 | 0               | :43           | .30               | 1.09          | :04                  | .6672        | .058          |
| 7-12                                                                           | .20               | 0               |               |                   |               | :08                  | .7682        | .106          |
| 7-13,17                                                                        | 0                 | 0               |               |                   |               | :18                  | .4988        | .211          |
| 7-18                                                                           | .50               | 0               |               |                   |               | :36                  | .2010        | .316          |
| 7-19,20                                                                        | 0                 | 0               |               |                   |               | :56                  | .0833        | .363          |
| 7-21                                                                           | .68               | T               |               |                   |               | 6:52                 | .0180        | .411          |
| 7-22                                                                           | 1.49              | .140            |               |                   |               | 12:00m               | .0040        | .467          |
| 7-23                                                                           | .50               | .027            |               |                   |               | 8-4-58               |              |               |
| 7-24                                                                           | .25               | .016            |               |                   |               | 12:00m <sub>1/</sub> | .0006        | .522          |
| 7-25                                                                           | 0                 | T               |               |                   |               |                      |              |               |
| 7-26                                                                           | .45               | .024            |               |                   |               |                      |              |               |
| 7-27                                                                           | .08               | .002            |               |                   |               |                      |              |               |
| 7-28                                                                           | .20               | T               |               |                   |               |                      |              |               |
| 7-29,30                                                                        | 0                 | 0               |               |                   |               |                      |              |               |
| 7-31                                                                           | .10               | .007            |               |                   |               |                      |              |               |
| Watershed conditions: Mixed grass cover; 60-70% of area covered by vegetation. |                   |                 |               |                   |               |                      |              |               |
| 8-1                                                                            | .25               | .014            |               |                   |               |                      |              |               |
| 8-2                                                                            | 0                 | .011            |               |                   |               |                      |              |               |
| 8-3 to 4:28p                                                                   | .21               | .007            |               |                   |               |                      |              |               |

Notes: To convert runoff in in./hr. to cfs, multiply by 10.1437. <sub>1/</sub> Runoff continued at a rate less than .0006 in./hr. until runoff ended 12:25 a 8-7-58.





## MOOREFIELD, WEST VIRGINIA Watershed 4

**LOCATION:** Hardy County, West Virginia; approximately 5 miles southwest of Moorefield; South Branch Potomac River Basin.

**AREA:** 6.32 acres

**SHAPE:** Rectangular - 600 ft. long by 450 ft. wide.

**SLOPES:** 26% - 3-10% class; 74% - 10-20% class; Aspect - SE

**SOILS:** Residual, derived from gray siltstones with some interbedding of calcareous shales. 1 Litz shaly silt loam 79%; 2 Litz silt loam 14%; 3 Litz silt loam (moderately well drained phase) 7%. Topsoil - weak fine granular structure, 1 & 3; moderate fine granular structure, 2; av. depth - 4 in., 1 & 3; 3 in., 2. Subsoil - weak fine granular structure, 1; weak to moderate, medium subangular blocky to structureless in lower layer, 2; moderate, fine to medium, subangular blocky to massive structure in lower layer, 3; depth to shale bedrock - 12 in. av., 1; 22 in. av., 2; 17 in. av., 3. Permeability of topsoil and subsoil - rapid, 1; moderate, 2; moderate to slow, 3. Internal drainage - medium, 1 & 2; slow, 3.

**EROSION:** 2 - 1%; 3 - 99%.

**LAND CAPABILITY:** II - 7%; III - 30%; IV - 63%.

**SURFACE DRAINAGE:** Good, length of principle waterway 760 ft., a 290-ft. diversion used to bring runoff from west slope through gaging station. Remainder of watershed drains into a well-defined waterway.

**CHARACTER OF FLOW:** Spring-fed intermittent, continuous.

**INSTRUMENTATION:** Runoff - H-4,5 precalibrated flume. Flume walls and approach walls are of treated T-G; cutoff walls and stilling well concrete. Heating elements in flume floor and stilling well. FW-1 recorder. Precipitation - recording gage.

**WATERSHED CONDITIONS:** Pasture, mixed cover, Kentucky Bluegrass, cinquefoil, poverty grass, Buckhorn plantain, and native perennial lespedeza the major species. 800 lbs./acre of 0-20-0 fertilizer applied May 19-22, 1958; 2 tons/acre of lime applied May 22 - June 2, 1958. Controlled annual grazing by livestock April through November. Scattered oak sprouts eradicated by annual brush-hogging.

**GENERALLY REPRESENTS:** Pasture practices on shallow shale soil typical of large areas in Eastern West Virginia, Central Pennsylvania, Western Maryland and parts of Virginia and Tennessee. Applicable to similar lands in the land resource areas of the Southern Appalachian Ridges and Valleys (N-128) and the Northern Appalachian Ridges and Valleys (S-147).

## MONTHLY PRECIPITATION AND RUNOFF (Inches)

Moorefield, West Virginia Watershed 4

| Year               | Month | Jan. | Feb. | Mar. | Apr. | May  | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year  |
|--------------------|-------|------|------|------|------|------|------|------|------|-------|------|------|------|-------|
|                    |       | P    | Q    | P    | Q    | P    | Q    | P    | Q    | P     | Q    | P    | Q    |       |
| 1958 <sup>1/</sup> | P     |      |      |      |      |      | 2.98 | 4.31 | 3.19 | 1.09  | 0.62 | 1.36 | 0.33 | 13.88 |
|                    | Q     |      |      |      |      |      | .07  | .25  | .61  | 0     | 0    | .01  | 0    | .94   |
| 1959               | P     | 1.60 | 0.49 | 1.65 | 3.32 | 2.90 | 2.95 | 4.85 | 2.25 | 2.46  | 3.23 | .91  | 2.01 | 28.62 |
|                    | Q     | .01  | 0    | T    | .09  | .04  | .16  | .15  | .02  | .08   | .21  | .01  | .11  | .88   |
| Normal             | P     | 2.30 | 2.03 | 2.61 | 2.73 | 3.45 | 3.78 | 3.33 | 3.12 | 2.48  | 2.23 | 1.78 | 2.03 | 31.87 |

## ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS

Moorefield, West Virginia Watershed 4

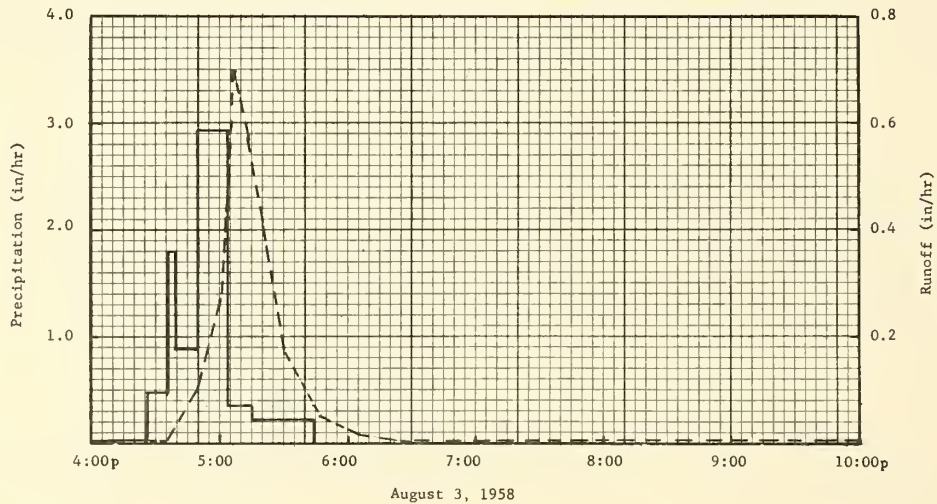
| YEAR               | MAXIMUM DISCHARGE |      | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |      |         |      |         |      |          |      |       |      |        |      |        |      |
|--------------------|-------------------|------|-------------------------------------------|------|---------|------|---------|------|----------|------|-------|------|--------|------|--------|------|
|                    |                   |      | 1 hour                                    |      | 2 hours |      | 6 hours |      | 12 hours |      | 1 day |      | 2 days |      | 8 days |      |
|                    | Date              | Rate | Date                                      | Vol. | Date    | Vol. | Date    | Vol. | Date     | Vol. | Date  | Vol. | Date   | Vol. | Date   | Vol. |
| 1958 <sup>1/</sup> | 8-3               | 0.68 | 8-3                                       | 0.27 | 8-3     | 0.28 | 8-3     | 0.30 | 8-3      | 0.32 | 8-3   | 0.35 | 8-3    | 0.36 | 8-3    | 0.55 |
| 1959               | 7-26              | .48  | 10-23                                     | .07  | 10-23   | .08  | 10-23   | .12  | 10-23    | .17  | 10-23 | .20  | 10-23  | .20  | 10-23  | .21  |

**Notes:** 1/ Station not in complete operation January through May 1958. Quality of records: Monthly P and Q excellent; annual maximum discharges and volumes, excellent; watershed conditions: in 1958, 100% grassland with no grazing; in 1959, 100% grassland with controlled livestock grazing April through November. Normal P based on 46-year USWB record, Moorefield, West Virginia

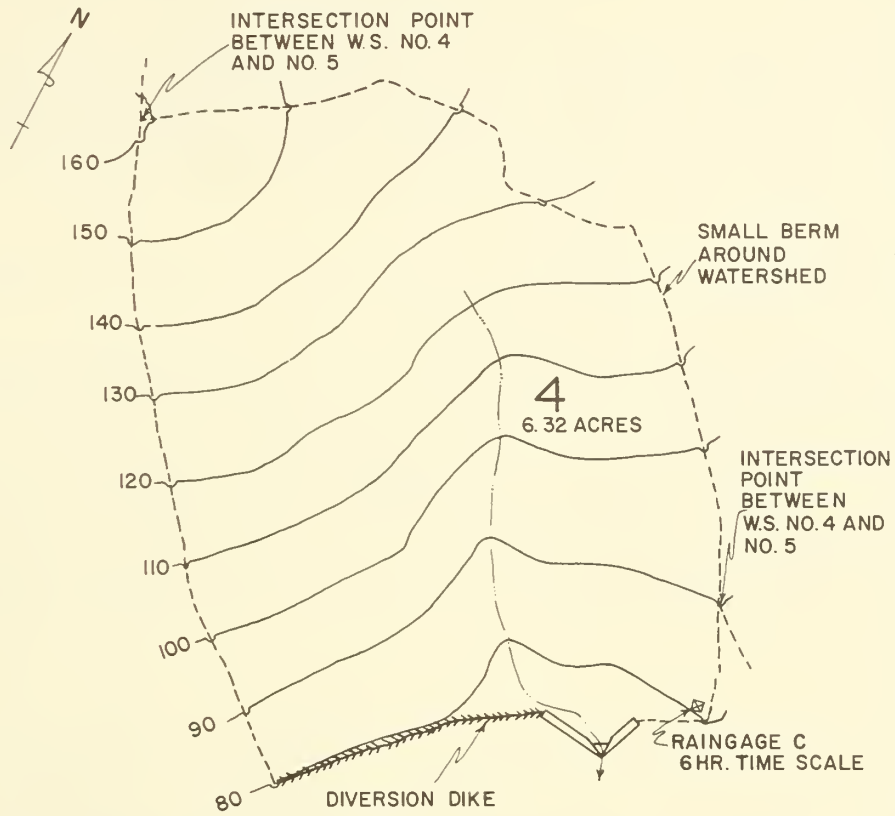


| SELECTED RUNOFF EVENTS  |                   |                 |               | Moorefield, West Virginia Watershed 4 (6.32 acres) |               |                      |              |               |
|-------------------------|-------------------|-----------------|---------------|----------------------------------------------------|---------------|----------------------|--------------|---------------|
| Antecedent conditions   |                   |                 | Rainfall      |                                                    |               | Runoff               |              |               |
| Date                    | Rainfall (inches) | Runoff (inches) | Date and time | Intensity (in/hr)                                  | Acc. (inches) | Date and time        | Rate (in/hr) | Acc. (inches) |
| Event of August 3, 1958 |                   |                 |               |                                                    |               |                      |              |               |
| 7-4-58                  | 0.25              | 0               | 8-3-58        | Raingage C                                         |               | 8-3-58               |              |               |
| 7-5                     | .05               | 0               | 4:00p         | 0                                                  | 0             | 4:00p                | 0.0001       | 0             |
| 7-6,7                   | 0                 | 0               | :27           | .02                                                | .01           | :48                  | .0488        | .02           |
| 7-8                     | .02               | 0               | :36           | .47                                                | .08           | 5:00                 | .2337        | .05           |
| 7-9                     | .03               | 0               | :39           | 1.80                                               | .17           | :07                  | .6935        | .10           |
| 7-10,11                 | 0                 | 0               | :50           | .87                                                | .33           | :14                  | .5789        | .18           |
| 7-12                    | .20               | 0               | 5:03          | 2.91                                               | .96           | :30                  | .1742        | .28           |
| 7-13,17                 | 0                 | 0               | :15           | .35                                                | 1.03          | :47                  | .0488        | .31           |
| 7-18                    | .50               | T               | :43           | .21                                                | 1.13          | 6:05                 | .0151        | .32           |
| 7-19,20                 | 0                 | 0               |               |                                                    |               | :22                  | .0078        | .32           |
| 7-21                    | .66               | .01             |               |                                                    |               | 12:00m               | .0033        | .35           |
| 7-22                    | 1.29              | .11             |               |                                                    |               | 8-4-58               |              |               |
| 7-23                    | .22               | .01             |               |                                                    |               | 12:00m <sup>1/</sup> | .0016        | .41           |
| 7-24                    | .28               | .01             |               |                                                    |               |                      |              |               |
| 7-25                    | 0                 | 0               |               |                                                    |               |                      |              |               |
| 7-26                    | .44               | .04             |               |                                                    |               |                      |              |               |
| 7-27                    | .11               | .02             |               |                                                    |               |                      |              |               |
| 7-28                    | .14               | .01             |               |                                                    |               |                      |              |               |
| 7-29                    | 0                 | .01             |               |                                                    |               |                      |              |               |
| 7-30                    | 0                 | 0               |               |                                                    |               |                      |              |               |
| 7-31                    | .12               | 0               |               |                                                    |               |                      |              |               |
| 8-1                     | .27               | .01             |               |                                                    |               |                      |              |               |
| 8-2                     | 0                 | 0               |               |                                                    |               |                      |              |               |
| 8-3 to 4:00p            | .16               | T               |               |                                                    |               |                      |              |               |






Notes: To convert runoff in in./hr. to cfs, multiply by 6.3728. <sup>1/</sup> Runoff continued at rates less than .001 in./hr. until runoff ends 3:59p, 8-7-58.

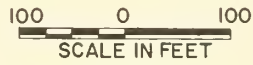






Legend

-  4.5' H-TYPE FLUME
-  WATERSHED BOUNDARY
-  RECORDING RAINGAGE
-  120 10' CONTOURS
-  WATERWAY (INTERMITTENT FLOW)



CONTOUR INTERVAL  
10 FEET

MOOREFIELD, WEST VIRGINIA  
WATERSHED NO. 4

## MOOREFIELD, WEST VIRGINIA Watershed 5

**LOCATION:** Hardy County, West Virginia; approximately 5 miles southwest of Moorefield; South Branch Potomac River Basin.

**AREA:** 9.55 acres

**SHAPE:** Roughly isosceles triangle, base 1040', alt. 600 ft.

**SLOPES:** 63% - 3-10% class; 31% - 10-20% class; 5% - 20-30% class; 1% - 30-40% class

**SOILS:** Residual, derived from gray siltstones with some interbedding of calcareous shales. 1 Litz shaly silt loam 75%; 2 Litz silt loam (moderately well drained phase) 10%; 3 Litz shaly silt loam (moderately deep phase) 8%; 4 Clarksburg silt loam 7%. Topsoil - weak fine granular structure, 1, 2, & 3; weak medium granular structure, 4. Subsoil - weak fine granular structure, 1; moderate, fine to medium, subangular blocky to massive structure in lower layer, 2; weak fine subangular blocky, 3; moderate fine subangular blocky to strong fine blocky to massive structure in lower layers, 4; depth to shale bedrock - 12 in. av., 1; 17 in. av., 2; 16 to 24 in., 3; 64 in. av., 4. Permeability of topsoil & subsoil - rapid, 1; moderate to slow, 2; moderate to rapid, 3; slow, 4. Internal drainage - medium, 1 & 4; slow, 2; rapid, 3.

**EROSION:** 2 - 14%; 3 - 85%; 4 - 1%.

**LAND CAPABILITY:** II - 9%; III - 45%; IV - 45%; VII - 1%.

**SURFACE DRAINAGE:** Good, length of principle waterway 900 feet. A natural watershed with surface flow to a number of subsidiary waterways which drain into a common well-defined waterway.

**CHARACTER OF FLOW:** Spring-fed intermittent, continuous.

**INSTRUMENTATION:** Runoff - H-4.5 precalibrated flume. Flume walls and approach walls are of treated T-G, cutoff walls and stilling well concrete. Heating elements in flume floor and stilling well. FW-1 recorder. Precipitation - recording gage.

**WATERSHED CONDITIONS:** Pasture, mixed cover, Kentucky Bluegrass, Canada Bluegrass, Blackhorn plantain, poverty grass and cinquefoil the predominant species; 800 lbs./acre of 0-20-0 fertilizer applied May 19-22, 1958; 2 tons/acre of lime applied May 22-June 2, 1958. Controlled annual grazing by livestock April through November. Scattered oak sprouts eradicated by annual brush-hogging.

**GENERALLY REPRESENTS:** Pasture practices on shallow shale soil typical of large areas in Eastern West Virginia, Central Pennsylvania, Western Maryland, and parts of Virginia and Tennessee. Applicable to similar lands in the land resource areas of the Southern Appalachian Ridges and Valleys (N-128) and the Northern Appalachian Ridges and Valleys (S-147).

| MONTHLY PRECIPITATION AND RUNOFF (Inches) |       |      |      |      |      |      |      |      |      |       |      |      | Moorefield, West Virginia Watershed 5 |       |
|-------------------------------------------|-------|------|------|------|------|------|------|------|------|-------|------|------|---------------------------------------|-------|
| Year                                      | Month | Jan. | Feb. | Mar. | Apr. | May  | June | July | Aug. | Sept. | Oct. | Nov. | Dec.                                  | Year  |
| 1958 <sup>1/</sup>                        | P     |      |      |      |      |      | 2.98 | 4.31 | 3.19 | 1.09  | 0.62 | 1.36 | 0.33                                  | 13.88 |
|                                           | Q     |      |      |      |      |      | .03  | .15  | .51  | 0     | 0    | 0    | 0                                     | .69   |
| 1959                                      | P     | 1.60 | 0.49 | 1.65 | 3.32 | 2.90 | 2.95 | 4.85 | 2.25 | 2.46  | 3.23 | .91  | 2.01                                  | 28.62 |
|                                           | Q     | 0    | 0    | T    | .26  | .13  | .32  | .05  | T    | T     | .34  | T    | .27                                   | 1.37  |
| Normal                                    | P     | 2.30 | 2.03 | 2.61 | 2.73 | 3.95 | 3.78 | 3.33 | 3.12 | 2.48  | 2.23 | 1.78 | 2.03                                  | 31.87 |

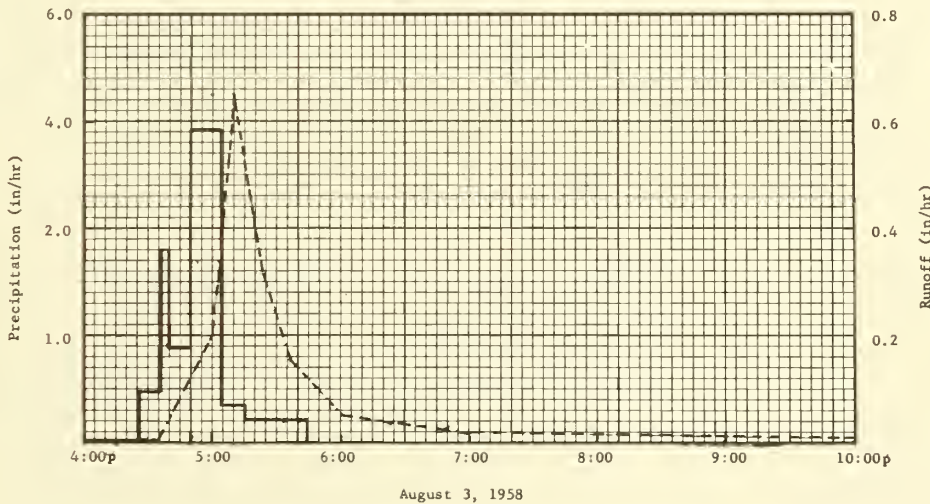
  

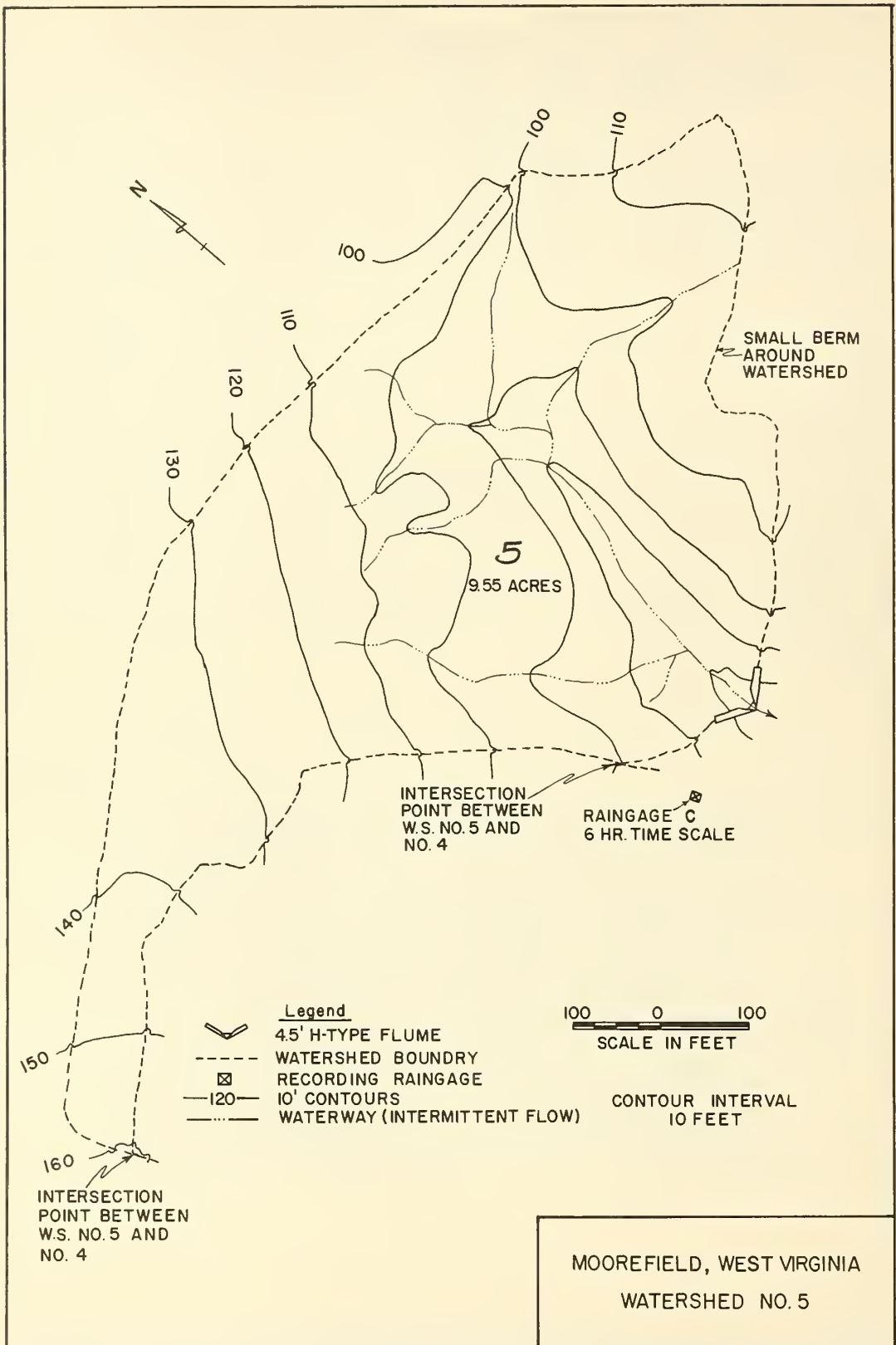
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS |                   |      |                                           |      |         |      |         |      |          |      |       |      | Moorefield, West Virginia Watershed 5 |      |        |      |
|-------------------------------------------------------------------------------------------------------------------------|-------------------|------|-------------------------------------------|------|---------|------|---------|------|----------|------|-------|------|---------------------------------------|------|--------|------|
| YEAR                                                                                                                    | MAXIMUM DISCHARGE |      | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |      |         |      |         |      |          |      |       |      |                                       |      |        |      |
|                                                                                                                         | Date              | Rate | 1 hour                                    |      | 2 hours |      | 6 hours |      | 12 hours |      | 1 day |      | 2 days                                |      | 8 days |      |
|                                                                                                                         |                   |      | Date                                      | Vol. | Date    | Vol. | Date    | Vol. | Date     | Vol. | Date  | Vol. | Date                                  | Vol. | Date   | Vol. |
| 1958 <sup>1/</sup>                                                                                                      | 8-3               | 0.65 | 8-3                                       | 0.27 | 8-3     | 0.31 | 8-3     | 0.37 | 8-3      | 0.42 | 8-3   | 0.46 | 8-3                                   | 0.46 | 8-3    | 0.50 |
| 1959                                                                                                                    | 7-26              | .14  | 4-28                                      | .05  | 4-28    | .07  | 10-24   | .15  | 10-24    | .20  | 10-24 | .26  | 6-1                                   | .30  | 10-23  | .34  |

**Notes:** <sup>1/</sup> Station not in complete operation January through May 1958. Quality of records: Monthly P and Q, excellent; annual maximum discharges and volumes, excellent. Watershed conditions: in 1958, 100% grassland with no grazing; in 1959, 100% grassland with controlled livestock grazing April through November. Normal P based on 46-year USWB record, Moorefield, West Virginia.

| SELECTED RUNOFF EVENTS  |                   |                 | Moorefield, West Virginia Watershed 5 (9.55 acres)                                    |                   |               |                      |              |               |
|-------------------------|-------------------|-----------------|---------------------------------------------------------------------------------------|-------------------|---------------|----------------------|--------------|---------------|
| Antecedent conditions   |                   |                 | Rainfall                                                                              |                   |               | Runoff               |              |               |
| Date                    | Rainfall (inches) | Runoff (inches) | Date and time                                                                         | Intensity (in/hr) | Acc. (inches) | Date and time        | Rate (in/hr) | Acc. (inches) |
| Event of August 3, 1958 |                   |                 |                                                                                       |                   |               |                      |              |               |
| 7-4-58                  | 0.25              | 0               | 8-3-58                                                                                | Raingage C        |               | 8-3-58               |              |               |
| 7-5                     | .05               | 0               | 4:00p                                                                                 | 0                 | 0             | 4:00p                | 0.0001       | 0             |
| 7-6,7                   | 0                 | 0               | :27                                                                                   | .02               | .01           | :37                  | .0007        | T             |
| 7-8                     | .02               | 0               | :36                                                                                   | .47               | .08           | 5:00                 | .2009        | .04           |
| 7-9                     | .03               | 0               | :39                                                                                   | 1.80              | .17           | :03                  | .3820        | .05           |
| 7-10,11                 | 0                 | 0               | :50                                                                                   | .87               | .33           | :09                  | .6513        | .11           |
| 7-12                    | .20               | 0               | 5:03                                                                                  | 2.91              | .96           | :14                  | .5404        | .15           |
| 7-13,17                 | 0                 | 0               | :15                                                                                   | .35               | 1.03          | :23                  | .3147        | .22           |
| 7-18                    | .50               | 0               | :43                                                                                   | .21               | 1.13          | :36                  | .1543        | .27           |
| 7-19,20                 | 0                 | 0               |                                                                                       |                   |               | 6:00                 | .0539        | .31           |
| 7-21                    | .66               | T               |                                                                                       |                   |               | 7:00                 | .0188        | .35           |
| 7-22                    | 1.29              | .08             |                                                                                       |                   |               | 10:00                | .0110        | .39           |
| 7-23                    | .22               | .01             |                                                                                       |                   |               | 8-4-58               |              |               |
| 7-24                    | .28               | .01             |                                                                                       |                   |               | 12:00m <sup>1/</sup> | .0007        | .54           |
| 7-25                    | 0                 | T               |                                                                                       |                   |               |                      |              |               |
| 7-26                    | .44               | .04             |                                                                                       |                   |               |                      |              |               |
| 7-27                    | .11               | .01             |                                                                                       |                   |               |                      |              |               |
| 7-28                    | .14               | T               |                                                                                       |                   |               |                      |              |               |
| 7-29                    | 0                 | T               |                                                                                       |                   |               |                      |              |               |
| 7-30                    | 0                 | 0               |                                                                                       |                   |               |                      |              |               |
| 7-3                     | .12               | T               | Watershed conditions: Mixed<br>grass cover; 50-65% of area<br>covered with vegetation |                   |               |                      |              |               |
| 8-1                     | .27               | .01             |                                                                                       |                   |               |                      |              |               |
| 8-2                     | 0                 | T               |                                                                                       |                   |               |                      |              |               |
| 8-3 to<br>4:00p         | .16               | T               |                                                                                       |                   |               |                      |              |               |

Notes: To convert runoff in in./hr. to cfs, multiply by 9.6296. <sup>1/</sup> Runoff continued at a rate less than .0008 until next event 2:16 a, 8-8-58.







## NORTH DANVILLE, VERMONT Watershed W-1

**LOCATION:** Caledonia Co., Vt., 5 mi. NW of St. Johnsbury; Sleepers River, Connecticut River Basin.

**AREA:** 10,610 ac. (16.58 sq. mi.) **SHAPE:** Roughly triangular, base 4.29 mi., length 5.66 mi.

**SLOPES:** 2% is in 0-3%; 41% in 3-8%; 31% in 8-15%; 17% in 15-25%; 9% in 25-35% and over. Aspect ESE.

**SOILS:** Medium acid to neutral glacial till derived from schist interbedded with limestone. 1 Cabot silt loam and very stony silt loam 33%; 2 Calais loam and very stony loam 18%; 3 Royalton loam and very stony loam 18%; 4 Glover rocky and very rocky loam 16%; 5 Woodstock rocky and very rocky fine sandy loam 7%; 6 Colrain fine sandy loam 4%; 7 Peacham silt loam and very stony silt loam 3%; 8 Miscellaneous soils 1%. Topsoil - 1 moderate medium blocky structure; 2 & 3 moderate weak granular; 4 weak fine granular; 5 & 6 weak granular structure; 7 moderate fine subangular blocky; permeability, 1 moderate, 2 rapid, 3 moderately rapid, 4, 5 & 6 rapid, 7 moderate, 1, 9 in. av.; 2 & 3, 8 in. av.; 4, 7 in. av.; 5 & 6, 6 in. av.; 7, 10 in. av. Subsoil - 1 moderate medium blocky structure; 2 & 3 weak medium subangular blocky; 4 weak fine subangular blocky; 5 & 6 weak granular; 7 structureless massive; permeability, 1, 2, 3 & 4 moderate; 5 & 6 rapid; 7 slow. Permeability and av. depth to substratum - 1, slow at 18 in.; 2, moderate at 27 in.; 3, slow at 27 in.; 4 & 5, zero at 24 in.; 6, rapid at 33 in.; 7, slow at 12 in. Internal drainage - 1, 2, 3 & 4 medium; 5 & 6 rapid; 7 very slow.

**EROSION:** 1 - 99%; 2 - 1%.

**LAND CAPABILITY:** II - 16%; III - 6%; IV - 9%; V - 23%; VI - 42%; VII - 4%.

**SURFACE DRAINAGE:** Well defined - principal waterway 1.58 mi. long with average grade of 2.4%; then splits into two waterways, one 4.82 mi. long with an average grade of 5.1% and the other 4.66 mi. long with an average grade of 4.9%.

**CHARACTER OF FLOW:** Perennial, continuous.

**INSTRUMENTATION:** Runoff - artificial control, 16 in. broad crested concrete weir with 10:1 crest slope for a height of 4.5 ft., continuous waterstage recorder with strip chart speed of 9.6 in. per day; field rating curve established by current meter measurement; precipitation - 17 continuous recording gages, 12 with 24 hr. charts, 2 with 12 hr. charts, 2 with 192 hr. charts, and 1 tipping bucket gage, two standard gages. Nine snow courses taken weekly during the winter months.

**WATERSHED CONDITIONS:** Forest 64%; predominately hardwood, birch, beech, and maple with mixed pine, spruce, and fir softwoods; 15% pasture, consisting of bluegrass and other mixed small grasses; cultivated 17%, most of which is in hay (orchard grass and clover mixture), less than 1% of the watershed is in row crops at any one time, rotation is corn one year then hay for 5 to 10 years; idle land 3%, mostly in bushes and dense grass; home sites 1%, short lawn grasses and buildings.

**GENERALLY REPRESENTS:** Sloping to steep cultivated and forested land at higher elevations in the New England and Eastern New York Upland resource area (R-144) with rapid to slowly permeable soils, rapid to moderate internal drainage, excellent surface drainage, and little or no erosion problems.

| MONTHLY PRECIPITATION AND RUNOFF (Inches) |       |      |      |      |      |      |      |      |      |       |      |      | North Danville, Vermont Watershed W-1 |       |
|-------------------------------------------|-------|------|------|------|------|------|------|------|------|-------|------|------|---------------------------------------|-------|
| Year                                      | Month | Jan. | Feb. | Mar. | Apr. | May  | June | July | Aug. | Sept. | Oct. | Nov. | Dec.                                  | Year  |
| 1958                                      | P     |      |      |      |      |      |      |      |      |       | 5.23 | 2.70 | 1.89                                  | 9.82  |
|                                           | Q     |      |      |      |      |      |      |      |      |       | nr   | 1.23 | nr                                    | 1.23  |
| 1959                                      | P     | 4.01 | 2.51 | 4.01 | 1.17 | 1.62 | 2.98 | 0.78 | 4.60 | 1.54  | 9.02 | 5.57 | 3.80                                  | 41.61 |
|                                           | Q     | 1.50 | 1.38 | 1.20 | 8.66 | 1.46 | 0.66 | 0.17 | 0.29 | 0.27  | 3.24 | 4.03 | 3.40                                  | 26.26 |
| Normal                                    | P     | 2.53 | 2.17 | 2.51 | 2.87 | 3.30 | 3.86 | 3.52 | 3.35 | 3.53  | 2.87 | 3.14 | 2.59                                  | 36.24 |

| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS |                   |      |                                           |      |         |      |         |      |          |      |       |      | North Danville, Vermont Watershed W-1 |      |        |      |
|-------------------------------------------------------------------------------------------------------------------------|-------------------|------|-------------------------------------------|------|---------|------|---------|------|----------|------|-------|------|---------------------------------------|------|--------|------|
| YEAR                                                                                                                    | MAXIMUM DISCHARGE |      | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |      |         |      |         |      |          |      |       |      |                                       |      |        |      |
|                                                                                                                         |                   |      | 1 hour                                    |      | 2 hours |      | 6 hours |      | 12 hours |      | 1 day |      | 2 days                                |      | 8 days |      |
|                                                                                                                         | Date              | Rate | Date                                      | Vol. | Date    | Vol. | Date    | Vol. | Date     | Vol. | Date  | Vol. | Date                                  | Vol. | Date   | Vol. |
| 1958                                                                                                                    | 10-24             | .02  | 10-24                                     | .02  | 10-24   | .06  | 10-24   | .11  | 10-24    | .21  | 10-24 | .27  | 10-24                                 | 0.40 | 10-30  | 1.11 |
| 1959                                                                                                                    | 10-24             | .10  | 10-24                                     | .10  | 10-24   | .20  | 10-24   | .50  | 10-24    | .77  | 10-24 | 1.03 | 10-25                                 | 1.50 | 4-10   | 3.25 |

Notes: Normal P based on 60 yr. record (1894-1954) at St. Johnsbury, Vt. Quality of records: P - excellent, Q - November, 1958 through March, 1959 - fair, remainder - excellent.

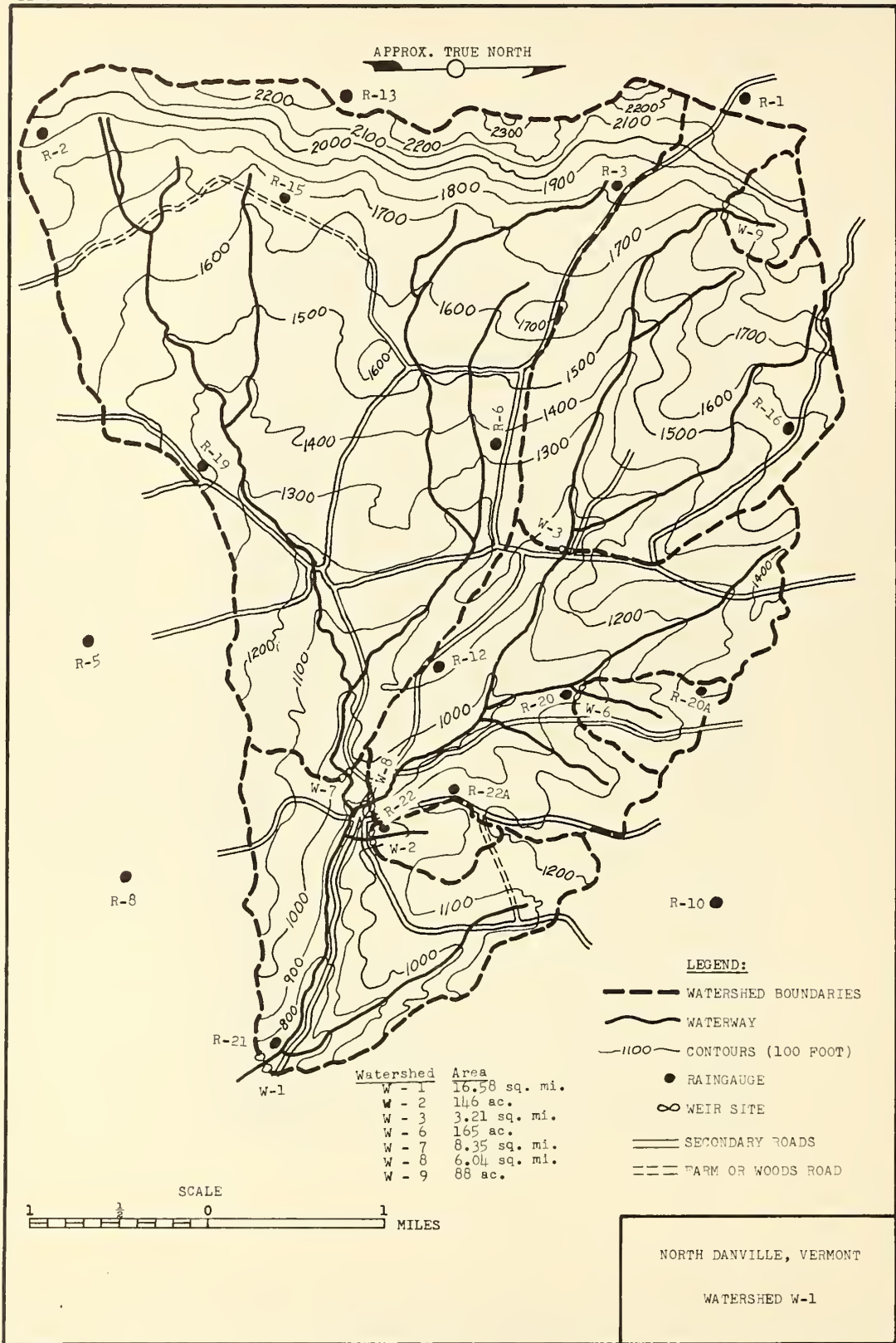
Cooperative Research project of the USDA, the Agricultural Experiment Station and the College of Technology, University of Vermont, and the Vermont State Water Conservation Board



| SELECTED RUNOFF EVENTS                                                                                                                                                                                                                                                                                                                                 |                                    |                     | North Danville, Vermont      |                      |                  | Watershed W-1    |                 |                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|---------------------|------------------------------|----------------------|------------------|------------------|-----------------|------------------|
| Antecedent conditions                                                                                                                                                                                                                                                                                                                                  |                                    |                     | Rainfall                     |                      |                  | Runoff           |                 |                  |
| Date                                                                                                                                                                                                                                                                                                                                                   | Rainfall <sup>1/</sup><br>(inches) | Runoff<br>(inches)  | Date and<br>time             | Intensity<br>(in/hr) | Acc.<br>(inches) | Date and<br>time | Rate<br>(in/hr) | Acc.<br>(inches) |
| Event of October 24, 1959                                                                                                                                                                                                                                                                                                                              |                                    |                     |                              |                      |                  |                  |                 |                  |
| 9-24                                                                                                                                                                                                                                                                                                                                                   | 0                                  | .0044               | 10-24-59                     | Raingage             | R-22A            | 10-24-59         |                 |                  |
| 9-25                                                                                                                                                                                                                                                                                                                                                   | 0                                  | .0042               | 5:30a                        | 0                    | 0                | 5:30a            | .0060           | 0                |
| 9-26                                                                                                                                                                                                                                                                                                                                                   | 0                                  | .0040               | 6:00                         | .10                  | .05              | 7:00             | .0060           | .0090            |
| 9-27                                                                                                                                                                                                                                                                                                                                                   | 0                                  | .0040               | 7:00                         | .20                  | .25              | 7:45             | .0062           | .0135            |
| 9-28                                                                                                                                                                                                                                                                                                                                                   | .04                                | .0042               | 7:45                         | .58                  | .60              | 8:15             | .0075           | .0152            |
| 9-29                                                                                                                                                                                                                                                                                                                                                   | 0                                  | .0030               | 8:00                         | .40                  | .70              | 8:35             | .0097           | .0181            |
| 9-30                                                                                                                                                                                                                                                                                                                                                   | .16                                | .0044               | 9:00                         | .40                  | 1.10             | 8:55             | .0140           | .0221            |
| 10-1                                                                                                                                                                                                                                                                                                                                                   | .77                                | .0117               | 9:45                         | 0                    | 1.10             | 10:00            | .0495           | .0565            |
| 10-2                                                                                                                                                                                                                                                                                                                                                   | 0                                  | .0288               | 10:30                        | .13                  | 1.20             | 10:15            | .0578           | .0699            |
| 10-3                                                                                                                                                                                                                                                                                                                                                   | 0                                  | .0113               | 11:00                        | .08                  | 1.24             | 10:35            | .0629           | .0900            |
| 10-4                                                                                                                                                                                                                                                                                                                                                   | 0                                  | .0086               | 1:30p                        | 0                    | 1.24             | 11:00            | .0645           | .1166            |
| 10-5                                                                                                                                                                                                                                                                                                                                                   | .05                                | .0073               | 1:45                         | .04                  | 1.25             | 11:30            | .0629           | .1485            |
| 10-6                                                                                                                                                                                                                                                                                                                                                   | .70                                | .0380               | 2:45                         | .05                  | 1.30             | 12:00m           | .0599           | .1792            |
| 10-7                                                                                                                                                                                                                                                                                                                                                   | 1.80                               | .2310               | 3:30                         | .20                  | 1.45             | 12:45p           | .0542           | .2219            |
| 10-8                                                                                                                                                                                                                                                                                                                                                   | .10                                | .2311               | 4:10                         | .60                  | 1.85             | 2:00             | .0426           | .2825            |
| 10-9                                                                                                                                                                                                                                                                                                                                                   | .10                                | .0670               | 4:30                         | .75                  | 2.10             | 2:45             | .0365           | .3121            |
| 10-10                                                                                                                                                                                                                                                                                                                                                  | 0                                  | .0360               | 5:00                         | .30                  | 2.25             | 3:30             | .0326           | .3381            |
| 10-11                                                                                                                                                                                                                                                                                                                                                  | .14                                | .0280               | 5:30                         | .20                  | 2.35             | 4:00             | .0307           | .3539            |
| 10-12                                                                                                                                                                                                                                                                                                                                                  | .07                                | .0370               | 5:35                         | .24                  | 2.37             | 4:30             | .0326           | .3697            |
| 10-13                                                                                                                                                                                                                                                                                                                                                  | .03                                | .0213               | 6:05                         | .16                  | 2.45             | 4:45             | .0369           | .3784            |
| 10-14                                                                                                                                                                                                                                                                                                                                                  | 0                                  | .0197               | 6:30                         | 0                    | 2.45             | 5:30             | .0757           | .4206            |
| 10-15                                                                                                                                                                                                                                                                                                                                                  | 0                                  | .0160               | 7:00                         | .24                  | 2.57             | 5:50             | .0894           | .4482            |
| 10-16                                                                                                                                                                                                                                                                                                                                                  | 0                                  | .0139               | 9:45                         | 0                    | 2.57             | 6:10             | .0978           | .4794            |
| 10-17                                                                                                                                                                                                                                                                                                                                                  | .40                                | .0196               | 10:00                        | .08                  | 2.59             | 6:30             | .1007           | .5125            |
| 10-18                                                                                                                                                                                                                                                                                                                                                  | .10                                | .0581               |                              |                      |                  | 7:15             | .1029           | .5888            |
| 10-19                                                                                                                                                                                                                                                                                                                                                  | 0                                  | .0360               | Total Rainfall <sup>4/</sup> |                      |                  | 7:40             | .1021           | .6315            |
| 10-20                                                                                                                                                                                                                                                                                                                                                  | .07                                | .0276               |                              | R-1                  | 2.97             | 8:15             | .0992           | .6902            |
| 10-21                                                                                                                                                                                                                                                                                                                                                  | 0                                  | .0379               |                              | R-2                  | 2.58             | 8:45             | .0901           | .7376            |
| 10-22                                                                                                                                                                                                                                                                                                                                                  | 0                                  | .0284               |                              | R-12                 | 2.78             | 10:00            | .0673           | .8360            |
| 10-23                                                                                                                                                                                                                                                                                                                                                  | .78                                | .1391               |                              | R-16                 | 3.07             | 11:00            | .0542           | .8967            |
| 10-24                                                                                                                                                                                                                                                                                                                                                  | .022 <sup>2/</sup>                 | .0809 <sup>3/</sup> |                              | R-19                 | 3.03             | 12:00m           | .0441           | .9459            |
| Watershed Conditions: All the leaves had fallen providing good forest floor cover, 64%; pastured land had average grass height of 4 inches, 15%; hay with one month growth after last cutting had an average height of 6 inches, 16%; idle land had heavy growth of high grasses and bushes, 3%; plowed land was open with no cover, 1%; homesites, 1% |                                    |                     |                              |                      |                  | 10-25-59         |                 |                  |
|                                                                                                                                                                                                                                                                                                                                                        |                                    |                     |                              |                      |                  | 1:15a            | .0351           | .9953            |
|                                                                                                                                                                                                                                                                                                                                                        |                                    |                     |                              |                      |                  | 2:45             | .0280           | 1.0427           |
|                                                                                                                                                                                                                                                                                                                                                        |                                    |                     |                              |                      |                  | 4:45             | .0224           | 1.0931           |
| Thiessen weighted average<br>2.86                                                                                                                                                                                                                                                                                                                      |                                    |                     |                              |                      |                  | 7:00             | .0180           | 1.1386           |
|                                                                                                                                                                                                                                                                                                                                                        |                                    |                     |                              |                      |                  | 8:45             | .0153           | 1.1677           |
|                                                                                                                                                                                                                                                                                                                                                        |                                    |                     |                              |                      |                  | 10:00            | .0148           | 1.1865           |

Notes: To convert runoff in in/hr to cfs multiply by 10,698.4. 1/ R-22A totals for date shown. 2/ Rainfall ended at 2:30a 10-24-59. 3/ Runoff prior to 5:30a. 4/ Only 6 raingages in operation at time of event.







## NORTH DANVILLE, VERMONT Watershed W-2

**LOCATION:** Caledonia Co., Vt.; 5 mi. NW of St. Johnsbury; unnamed tributary of Sleepers River, Connecticut River Basin.

**AREA:** 146 ac. **SHAPE:** Roughly diamond, short diagonal 2800 ft. long diagonal 3600 ft.

**SLOPES:** 2% is in 0-3%; 16% in 3-8%; 41% in 8-15%; 35% in 15-25%; 6% in 25-35% and over. Aspect S.

**SOILS:** Medium acid to neutral glacial till derived from schist interbedded with limestone. 1 Colrain fine sandy loam 36%; 2 Woodstock rocky and very rocky fine sandy loam 20%; 3 Cabot silt loam and very stony silt loam 16%; 4 Royalton loam 12%; 5 Calais loam and very stony loam 10%; 6 Peacham silt loam and very stony silt loam 6%.  
 Topsoil - 1 & 2 weak granular structure; 3 moderate medium blocky; 4 & 5 moderate medium granular; 6 moderate fine subangular blocky; permeability; 1 & 2 rapid; 3 moderate; 4 moderately rapid; 5 rapid; 6 moderate; 1 & 2, 6 in. av.; 3, 9 in. av.; 4 & 5, 8 in. av.; 6, 10 in. av. Subsoil - 1 & 2 weak granular structure; 3 moderate medium; 4 & 5 weak medium subangular blocky; 6 structureless massive; permeability; 1 & 2, rapid; 3, 4 & 5, moderate; 6, slow. Permeability and av. depth to substratum - 1, rapid at 33 in.; 2, zero at 24 in.; 3, slow at 18 in.; 4, slow at 27 in.; 5, moderate at 27 in.; 6, slow at 12 in. Internal drainage - 1 & 2, rapid; 3, 4 & 5, medium; 6, very slow.

**EROSION:** 1 - 100%

**LAND CAPABILITY:** II - 20%; III - 36%; IV - 10%; V - 20%; VI - 9%; VII - 5%.

**SURFACE DRAINAGE:** Well defined - principal waterway 3950 ft. long. Channel grade 5% for 2500 ft. then 10% for 1450 ft.

**CHARACTER OF FLOW:** Perennial, continuous.

**INSTRUMENTATION:** Runoff - artificial control, 16 in. broad-crested triangular concrete weir with 5:1 crest slope for a height of 3 ft., continuous waterstage recorder with strip chart speed of 9.6 in. per day; a field rating curve established by volumetric measurement; precipitation - two continuous recording gages, one with a 12 hour chart and one with a 24 hour chart; one snow course taken weekly during winter months.

**WATERSHED CONDITIONS:** Cultivated 37%, land last plowed in 1956, since that time it has been in permanent hay consisting of a mixture of orchard grass and clover; pasture 38%, permanent pasture of bluegrass and other small mixed grasses; forest 25%, virgin growth of predominately maple and beech trees.

**GENERALLY REPRESENTS:** Sloping to steep cultivated and forested land at higher elevations in the New England and Eastern New York Upland resource area (R-144) with rapid to slowly permeable soils, rapid to moderate internal drainage, excellent surface drainage, and little or no erosion problems.

| MONTHLY PRECIPITATION AND RUNOFF (Inches) |      |      |      |      |      |      |      | North Danville, Vermont Watershed W-2 |       |      |      |      |       |
|-------------------------------------------|------|------|------|------|------|------|------|---------------------------------------|-------|------|------|------|-------|
| Month                                     | Jan. | Feb. | Mar. | Apr. | May  | June | July | Aug.                                  | Sept. | Oct. | Nov. | Dec. | Year  |
| 1958 P                                    |      |      |      |      |      |      |      |                                       | 2.74  | 4.22 | 2.41 | 1.63 | 11.00 |
| Q                                         |      |      |      |      |      |      |      |                                       |       | .97  | 1.05 | nr   | 2.02  |
| 1959 P                                    | 4.08 | 3.24 | 2.63 | 1.07 | 1.15 | 2.33 | .55  | 4.85                                  | 1.67  | 8.68 | 5.43 | 3.82 | 39.50 |
| Q                                         | nr   | nr   | nr   | nr   | 1.77 | .69  | .14  | .28                                   | .21   | .77  | 2.44 | 3.01 | 9.31  |
| Normal P                                  | 2.53 | 2.17 | 2.51 | 2.87 | 3.30 | 3.86 | 3.52 | 3.35                                  | 3.53  | 2.87 | 3.14 | 2.59 | 36.24 |

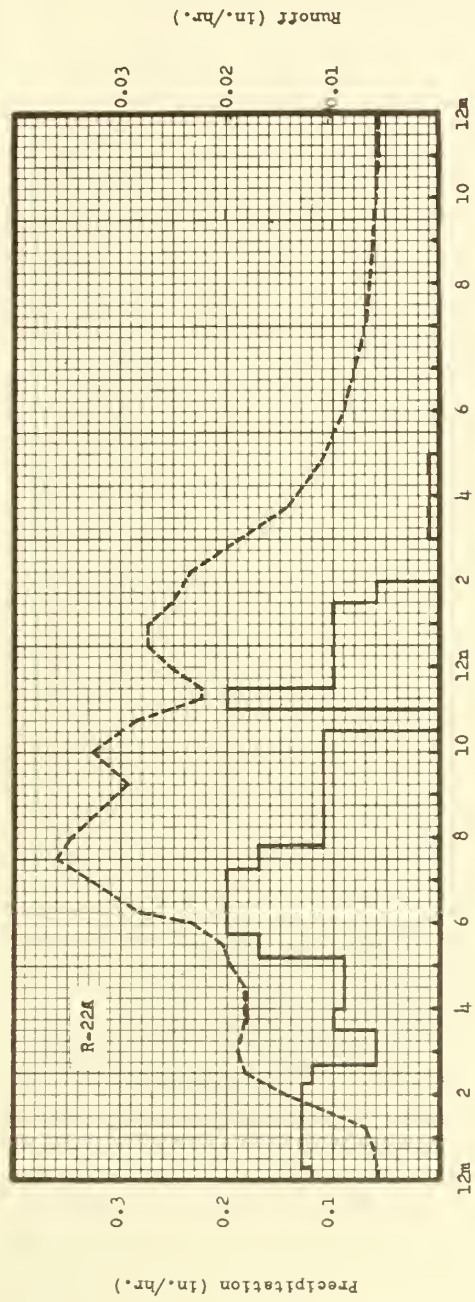
| ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS |                   |      |                                           |      |         |      |         | North Danville, Vermont Watershed W-2 |          |      |       |      |        |      |        |      |
|-------------------------------------------------------------------------------------------------------------------------|-------------------|------|-------------------------------------------|------|---------|------|---------|---------------------------------------|----------|------|-------|------|--------|------|--------|------|
| YEAR                                                                                                                    | MAXIMUM DISCHARGE |      | MAXIMUM VOLUME FOR SELECTED TIME INTERVAL |      |         |      |         |                                       |          |      |       |      |        |      |        |      |
|                                                                                                                         |                   |      | 1 hour                                    |      | 2 hours |      | 6 hours |                                       | 12 hours |      | 1 day |      | 2 days |      | 8 days |      |
|                                                                                                                         | Date              | Rate | Date                                      | Vol. | Date    | Vol. | Date    | Vol.                                  | Date     | Vol. | Date  | Vol. | Date   | Vol. | Date   | Vol. |
| 1958                                                                                                                    | 10-23             | .01  | 10-23                                     | .01  | 10-23   | .02  | 10-23   | .05                                   | 10-23    | .08  | 10-23 | .08  | 10-23  | .13  | 10-23  | .42  |
| 1959                                                                                                                    | 11-28             | .04  | 11-28                                     | .03  | 11-28   | .07  | 11-28   | .18                                   | 11-28    | .31  | 11-28 | .43  | 11-28  | .56  | 11-22  | 1.19 |

Notes: Normal P based on 60 yr. record (1894-1954) at St. Johnsbury, Vt. Quality of records: P - excellent. Q - December, 1958 thru April, 1959 - none, remainder of year - excellent.

| SELECTED RUNOFF EVENTS                                                                                                                                                                                                                                                                                                                                              |                                |                    |                  |                      | North Danville, Vermont |                  | Watershed W-2   |                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|--------------------|------------------|----------------------|-------------------------|------------------|-----------------|------------------|
| Antecedent conditions                                                                                                                                                                                                                                                                                                                                               |                                |                    | Rainfall         |                      |                         | Runoff           |                 |                  |
| Date                                                                                                                                                                                                                                                                                                                                                                | Rainfall <u>1/</u><br>(inches) | Runoff<br>(inches) | Date and<br>time | Intensity<br>(in/hr) | Acc.<br>(inches)        | Date and<br>time | Rate<br>(in/hr) | Acc.<br>(inches) |
| Event of November 28, 1959                                                                                                                                                                                                                                                                                                                                          |                                |                    |                  |                      |                         |                  |                 |                  |
| 10-28                                                                                                                                                                                                                                                                                                                                                               | 0                              | .0360              | 11-27-59         | Raingage             | R-22A <sup>2/</sup>     | 11-27-59         |                 |                  |
| 10-29                                                                                                                                                                                                                                                                                                                                                               | 0                              | .0360              | 12:00m           | 0                    | 0                       | 12:00m           | .0057           | 0                |
| 10-30                                                                                                                                                                                                                                                                                                                                                               | 0                              | .0336              | 11-28-59         |                      |                         | 11-28-59         |                 |                  |
| 10-31                                                                                                                                                                                                                                                                                                                                                               | .41                            | .0631              | 12:20a           | .12                  | .04                     | 12:45a           | .0061           | .0014            |
| 11-1                                                                                                                                                                                                                                                                                                                                                                | .18                            | .0633              | 1:30             | .13                  | .19                     | 1:15             | .0070           | .0077            |
| 11-2                                                                                                                                                                                                                                                                                                                                                                | .05                            | .0506              | 2:15             | .13                  | .29                     | 2:00             | .0145           | .0158            |
| 11-3                                                                                                                                                                                                                                                                                                                                                                | 0                              | .0384              | 2:40             | .12                  | .34                     | 2:30             | .0182           | .0239            |
| 11-4                                                                                                                                                                                                                                                                                                                                                                | .05                            | .0384              | 3:30             | .06                  | .39                     | 3:00             | .0190           | .0332            |
| 11-5                                                                                                                                                                                                                                                                                                                                                                | .02                            | .0480              | 4:00             | .10                  | .44                     | 3:45             | .0182           | .0472            |
| 11-6                                                                                                                                                                                                                                                                                                                                                                | .49                            | .0810              | 5:10             | .09                  | .54                     | 4:15             | .0182           | .0563            |
| 11-7                                                                                                                                                                                                                                                                                                                                                                | 0                              | .0582              | 5:45             | .17                  | .64                     | 5:00             | .0197           | .0705            |
| 11-8                                                                                                                                                                                                                                                                                                                                                                | 0                              | .0480              | 7:15             | .20                  | .94                     | 5:30             | .0204           | .0805            |
| 11-9                                                                                                                                                                                                                                                                                                                                                                | 0                              | .0480              | 7:50             | .17                  | 1.04                    | 6:00             | .0232           | .0914            |
| 11-10                                                                                                                                                                                                                                                                                                                                                               | 0                              | .0480              | 8:45             | .11                  | 1.14                    | 6:15             | .0281           | .0978            |
| 11-11                                                                                                                                                                                                                                                                                                                                                               | 0                              | .0480              | 10:30            | .11                  | 1.34                    | 7:30             | .0360           | .1379            |
| 11-12                                                                                                                                                                                                                                                                                                                                                               | .06                            | .0564              | 11:00            | 0                    | 1.34                    | 8:00             | .0346           | .1555            |
| 11-13                                                                                                                                                                                                                                                                                                                                                               | 0                              | .0480              | 11:30            | .20                  | 1.44                    | 9:15             | .0292           | .1954            |
| 11-14                                                                                                                                                                                                                                                                                                                                                               | .40                            | .0816              | 12:00n           | .10                  | 1.49                    | 10:00            | .0326           | .2186            |
| 11-15                                                                                                                                                                                                                                                                                                                                                               | 0                              | .0682              | 1:00             | .10                  | 1.59                    | 10:45            | .0281           | .2444            |
| 11-16                                                                                                                                                                                                                                                                                                                                                               | 0                              | .0552              | 1:30             | .10                  | 1.64                    | 11:15            | .0224           | .2540            |
| 11-17                                                                                                                                                                                                                                                                                                                                                               | .35                            | .0832              | 2:00             | .06                  | 1.67                    | 11:30            | .0224           | .2596            |
| 11-18                                                                                                                                                                                                                                                                                                                                                               | 0                              | .0630              | 3:00             | 0                    | 1.67                    | 12:00n           | .0251           | .2715            |
| 11-19                                                                                                                                                                                                                                                                                                                                                               | 0                              | .0552              | 4:00             | .01                  | 1.68                    | 12:30p           | .0272           | .2846            |
| 11-20                                                                                                                                                                                                                                                                                                                                                               | 0                              | .0528              | 5:00             | .01                  | 1.69                    | 1:00             | .0272           | .2982            |
| 11-21                                                                                                                                                                                                                                                                                                                                                               | .19                            | .0582              |                  |                      |                         | 1:30             | .0251           | .3112            |
| 11-22                                                                                                                                                                                                                                                                                                                                                               | 0                              | .0648              |                  |                      |                         | 2:15             | .0232           | .3293            |
| 11-23                                                                                                                                                                                                                                                                                                                                                               | .02                            | .0693              |                  |                      |                         | 3:45             | .0145           | .3576            |
| 11-24                                                                                                                                                                                                                                                                                                                                                               | .50                            | .1091              |                  |                      |                         | 4:15             | .0112           | .3705            |
| 11-25                                                                                                                                                                                                                                                                                                                                                               | .71                            | .2125              |                  |                      |                         | 6:00             | .0090           | .3831            |
| 11-26                                                                                                                                                                                                                                                                                                                                                               | 0                              | .0780              |                  |                      |                         | 8:00             | .0070           | .3991            |
| 11-27                                                                                                                                                                                                                                                                                                                                                               | .51 <sup>3/</sup>              | .0972              |                  |                      |                         | 10:00            | .0061           | .4122            |
|                                                                                                                                                                                                                                                                                                                                                                     |                                |                    |                  |                      |                         | 12:00m           | .0057           | .4240            |
|                                                                                                                                                                                                                                                                                                                                                                     |                                |                    |                  |                      |                         | 11-29-59         |                 |                  |
|                                                                                                                                                                                                                                                                                                                                                                     |                                |                    |                  |                      |                         | 3:00a            | .0057           | .4411            |
| <p>Watershed Conditions: Pastured land had average grass height of 4 inches, 38%; hay had made good growth after last cutting and was 6 to 10 inches high, 37%; forested area had excellent ground cover from fallen leaves, 25%. Frost depth was not observed, but estimated to be negligible due to good ground cover and warm temperature prior to rainfall.</p> |                                |                    |                  |                      |                         |                  |                 |                  |

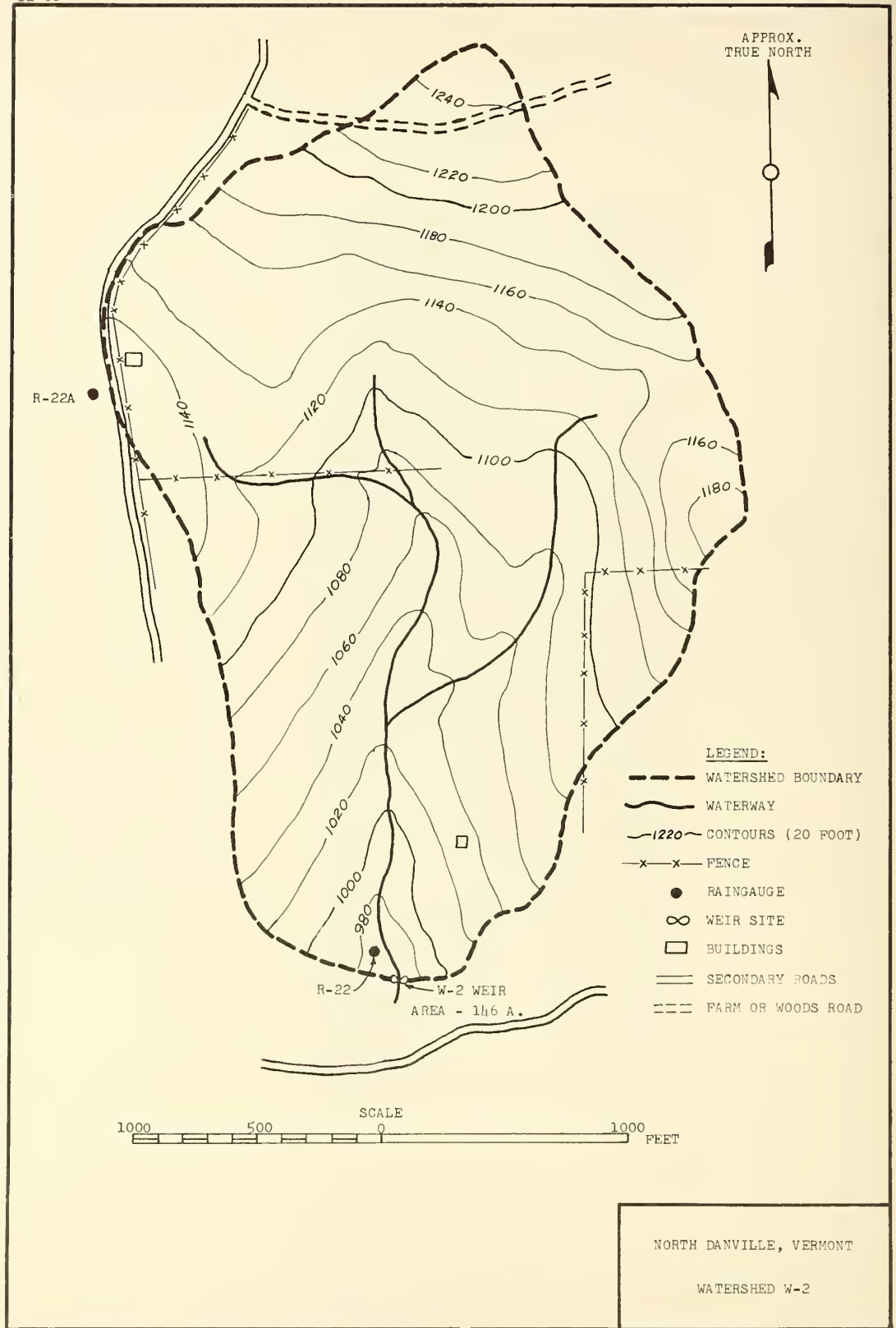
Notes: To convert runoff in in/hr to cfs multiply by 147.22. 1/ R-22A totals for date shown. 2/ Only raingage in operation at time of event. 3/ Rainfall ended at 7:00p 11-27-59.

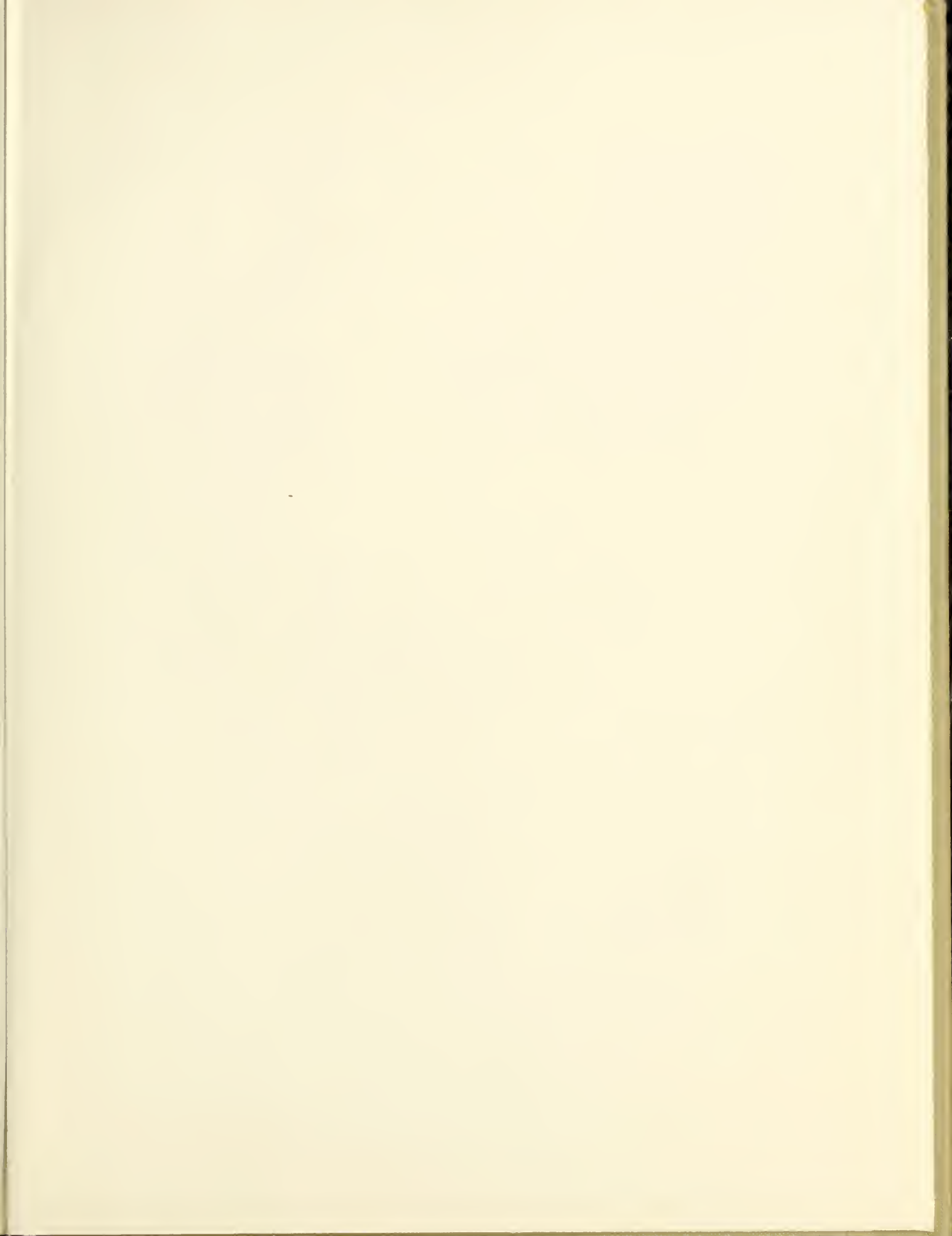


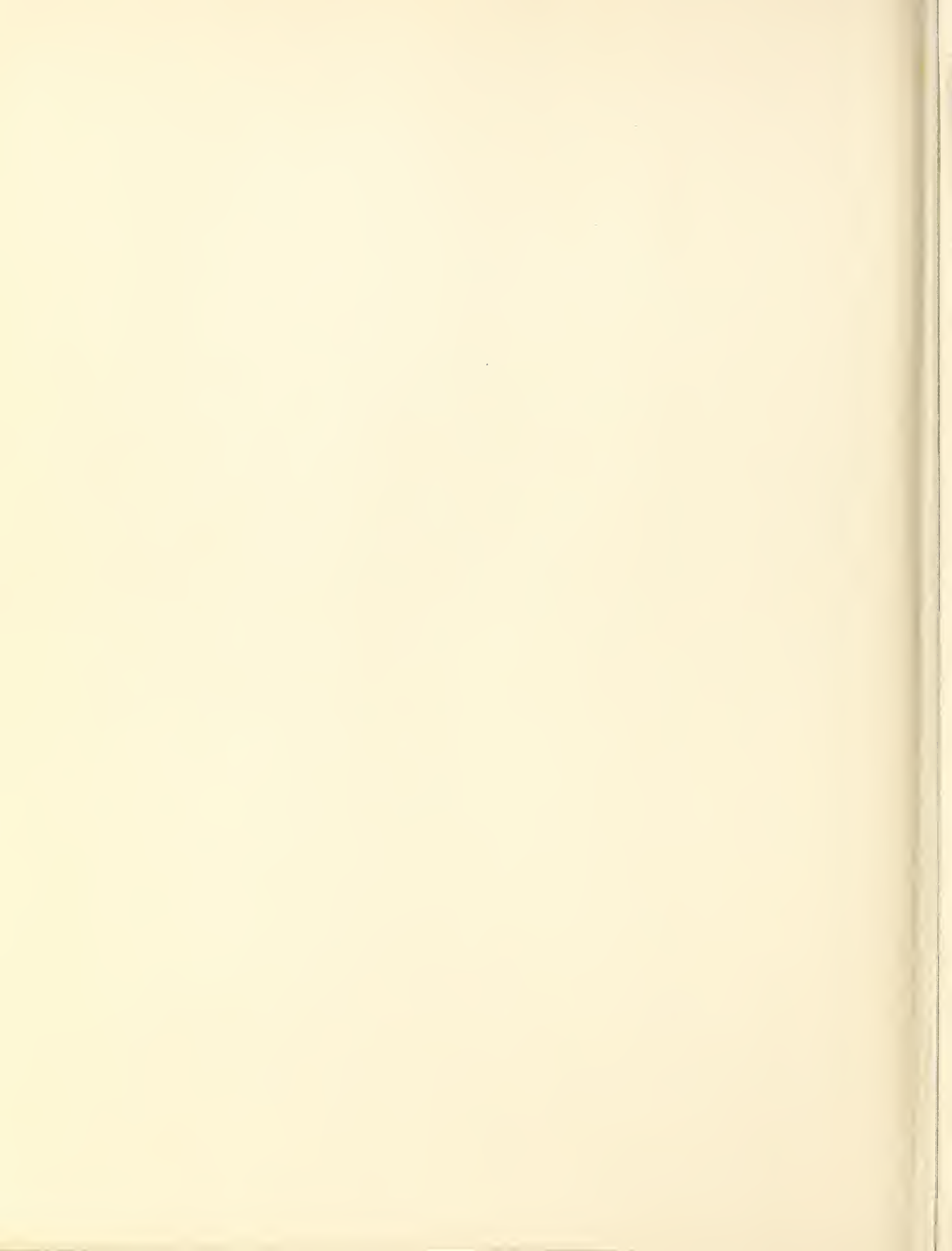


November 28, 1959

NORTH DANVILLE, VERMONT WATERSHED W-2













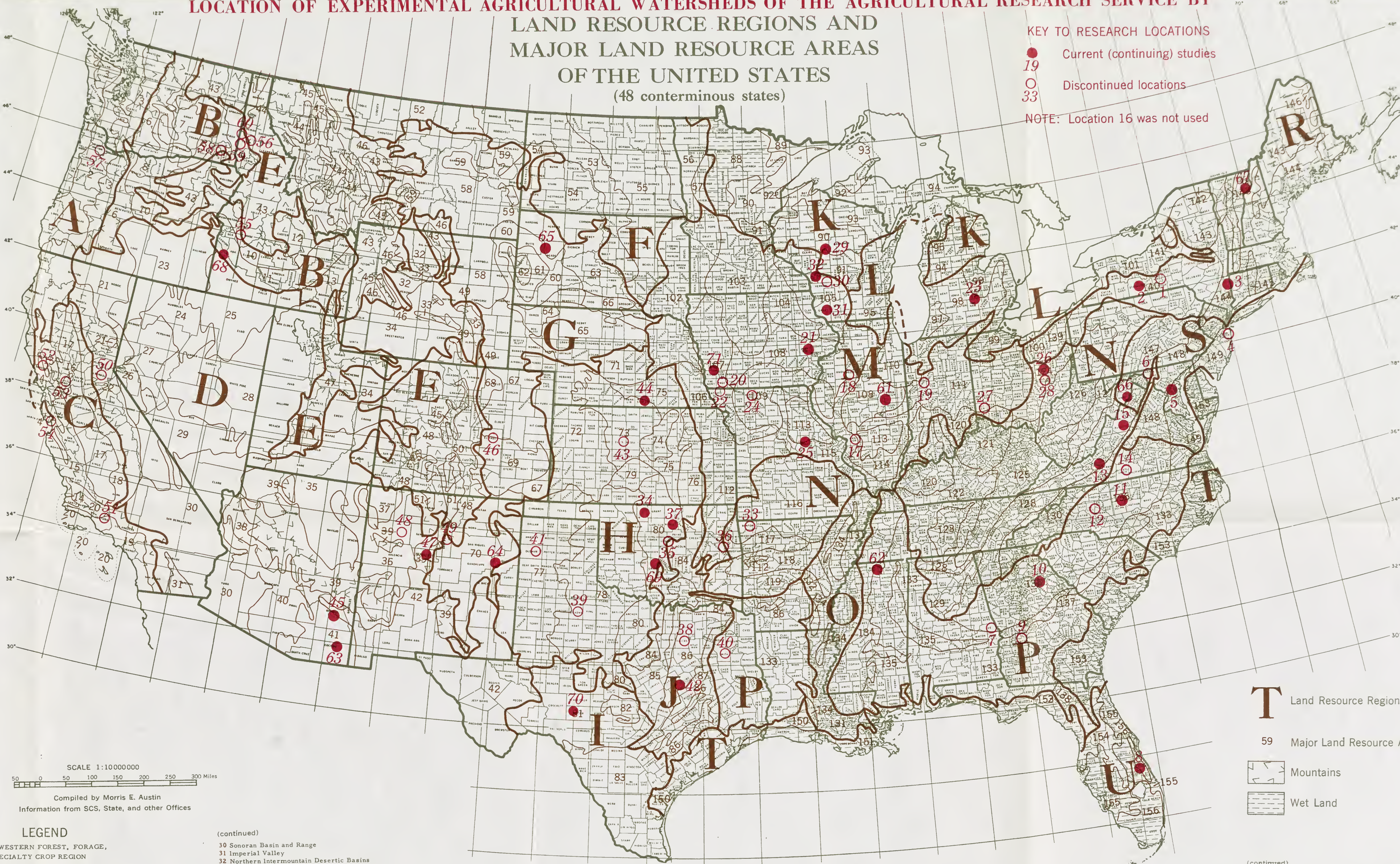


# LOCATION OF EXPERIMENTAL AGRICULTURAL WATERSHEDS OF THE AGRICULTURAL RESEARCH SERVICE BY LAND RESOURCE REGIONS AND MAJOR LAND RESOURCE AREAS OF THE UNITED STATES (48 conterminous states)

**KEY TO RESEARCH LOCATIONS**

- Current (continuing) studies
- 19 Discontinued locations
- 33

NOTE: Location 16 was not used



SCALE 1:10,000,000  
 50 0 50 100 150 200 250 300 Miles  
 Compiled by Morris E. Austin  
 Information from SCS, State, and other Offices

**T** Land Resource Region  
 59 Major Land Resource Area  
 Mountains  
 Wet Land

### LEGEND

- A** NORTHWESTERN FOREST, FORAGE, AND SPECIALTY CROP REGION
  - 1 Northern Pacific Coast Range and Valleys
  - 2 Willamette and Puget Sound Valleys
  - 3 Olympic and Western Slope Cascade Mountains
  - 4 California Coastal Redwood Belt
  - 5 Siskiyou-Trinity Area
- B** NORTHWESTERN WHEAT AND RANGE REGION
  - 6 Eastern Slope Cascade Mountains
  - 7 Columbia Basin
  - 8 Columbia Plateau
  - 9 Palouse and Nez-Perce Prairies
  - 10 Upper Snake River Lava Plains and Hills
  - 11 Snake River Plains
  - 12 Lost River Valleys and Mountains
  - 13 Eastern Idaho Plateaus
- C** CALIFORNIA SUBTROPICAL FRUIT, TRUCK AND SPECIALTY CROP REGION
  - 14 Central California Valleys
  - 15 Central California Coast Range
  - 16 California Delta
  - 17 Sacramento and San Joaquin Valleys
  - 18 Sierra Nevada Foothills
  - 19 Southern California Coastal Plain
  - 20 Southern California Mountains
- D** WESTERN RANGE AND IRRIGATED REGION
  - 21 Klamath and Shasta Valleys and Basins
  - 22 Sierra Nevada Range
  - 23 Malheur High Plateau
  - 24 Humboldt Area
  - 25 Owyhee High Plateau
  - 26 Carson Basin and Mountains
  - 27 Fallon-Lovelock Area
  - 28 Great Salt Lake Area
  - 29 Southern Nevada Basin and Range
- E** ROCKY MOUNTAIN RANGE AND FOREST REGION
  - 30 Sonoran Basin and Range
  - 31 Imperial Valley
  - 32 Northern Intermountain Desertic Basins
  - 33 Semiarid Rocky Mountains
  - 34 Central Desertic Basins, Mountains and Plateaus
  - 35 Colorado and Green Rivers Plateaus and Mesas
  - 36 New Mexico and Arizona Plateaus and Mesas
  - 37 San Juan River Valley Mesas and Plateaus
  - 38 Black, Hualpai, and Cerbat Mountains
  - 39 Arizona and New Mexico Mountains
  - 40 Central Arizona Basin and Range
  - 41 Southeastern Arizona Basin and Range
  - 42 Southern Desertic Basins, Plateaus and Mountains
- F** NORTHERN GREAT PLAINS SPRING WHEAT REGION
  - 43 Northern Rocky Mountains
  - 44 Northern Rocky Mountain Valleys
  - 45 Alpine Meadows and Rockland
  - 46 Northern Rocky Mountain Foothills
  - 47 Wasatch and Uinta Mountains
  - 48 Southern Rocky Mountains
  - 49 Southern Rocky Mountain Foothills
  - 50 San Luis Valley
  - 51 High Intermountain Valleys
- G** WESTERN GREAT PLAINS RANGE AND IRRIGATED REGION
  - 52 Brown Glaciated Plain
  - 53 Dark Brown Glaciated Plain
  - 54 Rolling Soft Shale Plain
  - 55 Black Glaciated Plains
  - 56 Red River Valley of the North
  - 57 Western Minnesota Forest-Prairie Transition

- H** CENTRAL GREAT PLAINS WINTER WHEAT AND RANGE REGION
  - 58 Northern Rolling High Plains
  - 59 Northern Smooth High Plains
  - 60 Pierre Shale Plains and Badlands
  - 61 Black Hills Foothills
  - 62 Black Hills
- I** SOUTHWESTERN PLATEAUS AND PLAINS, RANGE AND COTTON REGION
  - 63 Rolling Pierre Shale Plains
  - 64 Mixed Sandy and Silty Tableland
  - 65 Nebraska Sand Hills
  - 66 Dakota-Nebraska Eroded Tableland
  - 67 Central High Plains
  - 68 Irrigated Upper Platte River Valley
  - 69 Upper Arkansas Valley Rolling Plains
  - 70 Pecos-Canadian Plains and Valleys
- J** SOUTHWESTERN PRAIRIES, COTTON AND FORAGE REGION
  - 71 Central Nebraska Loess Hills
  - 72 Central High Tableland
  - 73 Rolling Plains and Breaks
  - 74 Central Kansas Sandstone Hills
  - 75 Central Loess Plains
  - 76 Bluestem Hills
  - 77 Southern High Plains
  - 78 Central Rolling Red Plains
  - 79 Great Bend Sand Plains
  - 80 Central Rolling Red Prairies
- K** NORTHERN LAKE STATES FOREST AND FORAGE REGION
  - 81 Edwards Plateau
  - 82 Texas Central Basin
  - 83 Rio Grande Plain
- L** LAKE STATES FRUIT, TRUCK, AND DAIRY REGION
  - 84 Cross Timbers
  - 85 Grand Prairie
  - 86 Texas Blackland Prairie
  - 87 Texas Claypan Area
- M** CENTRAL FEED GRAINS AND LIVESTOCK REGION
  - 88 Northern Minnesota Swamps and Lakes
  - 89 Minnesota Rockland Hills
  - 90 Central Wisconsin and Minnesota Thin Loess and Till
  - 91 Wisconsin and Minnesota Sandy Outwash
  - 92 Superior Lake Plain
  - 93 Northern Michigan and Wisconsin Stony, Sandy and Rocky Plains and Hills
  - 94 Northern Michigan Sandy Drift
- N** EAST AND CENTRAL GENERAL FARMING AND FOREST REGION
  - 95 Southeastern Wisconsin Drift Plain
  - 96 Western Michigan Fruit Belt
  - 97 Southwestern Michigan Fruit and Truck Belt
  - 98 Southern Michigan Drift Plain
  - 99 Erie-Huron Lake Plain
  - 100 Erie Fruit and Truck Area
  - 101 Ontario-Mohawk Plain
- O** MISSISSIPPI DELTA COTTON AND FEED GRAINS REGION
  - 102 Loess, Till, and Sandy Prairies
  - 103 Central Iowa and Minnesota Till Prairies
  - 104 Eastern Iowa and Minnesota Till Prairies
  - 105 Northern Mississippi Valley Loess Hills
  - 106 Nebraska and Kansas Loess-Drift Hills
  - 107 Iowa and Missouri Deep Loess Hills
  - 108 Illinois and Iowa Deep Loess and Drift
  - 109 Iowa and Missouri Heavy Till Plain
- P** SOUTH ATLANTIC AND GULF SLOPE CASH CROP, FOREST, AND LIVESTOCK REGION
  - 110 Northern Illinois and Indiana Heavy Till Plain
  - 111 Indiana and Ohio Till Plain
  - 112 Cherokee Prairies
  - 113 Central Claypan Areas
  - 114 Southern Illinois and Indiana Thin Loess and Till Plain
  - 115 Central Mississippi Valley Wooded Slopes

- R** NORTHEASTERN FORAGE AND FOREST REGION
  - 116 (See M Above)
  - 117 Boston Mountains
  - 118 Arkansas Valley and Ridges
  - 119 Ouachita Mountains
  - 120 Kentucky and Indiana Sandstone and Shale Hills and Valleys
  - 121 Kentucky Bluegrass
  - 122 Highland Rim and Pennyroyal
  - 123 Nashville Basin
  - 124 Western Allegheny Plateau
  - 125 Cumberland Plateau and Mountains
  - 126 Central Allegheny Plateau
  - 127 Eastern Allegheny Plateau and Mountains
  - 128 Southern Appalachian Ridges and Valleys
  - 129 Sand Mountain
  - 130 Blue Ridge
- S** NORTHERN ATLANTIC SLOPE TRUCK, FRUIT, AND POULTRY REGION
  - 131 Southern Mississippi Valley Alluvium
  - 132 Eastern Arkansas Prairies
  - 134 (See P below)
- T** ATLANTIC AND GULF COAST LOWLANDS, FOREST AND TRUCK CROP REGION
  - 133 Southern Coastal Plain
  - 134 (See P below)
  - 135 Alabama and Mississippi Blackland Prairies
  - 136 Southern Piedmont
  - 137 Carolina and Georgia Sandhills
  - 138 North Central Florida Ridge
  - 139 Eastern Ohio Till Plain
  - 140 Glaciated Allegheny Plateau and Catskill Mountains
  - 141 Tughill Plateau
  - 142 St. Lawrence-Champlain Plain
  - 143 Northeastern Mountains
  - 144 New England and Eastern New York Upland
  - 145 Connecticut Valley
  - 146 Aroostook Area
- U** FLORIDA SUBTROPICAL FRUIT, TRUCK CROP AND RANGE REGION
  - 147 Northern Appalachian Ridges and Valleys
  - 148 Northern Piedmont
  - 149 Northern Coastal Plain
  - 150 Gulf Coast Prairies
  - 151 Gulf Coast Marsh
  - 152 Gulf Coast Flatwoods
  - 153 Atlantic Coast Flatwoods
  - 154 South Central Florida Ridge
  - 155 Southern Florida Flatwoods
  - 156 Florida Everglades and Associated Areas





