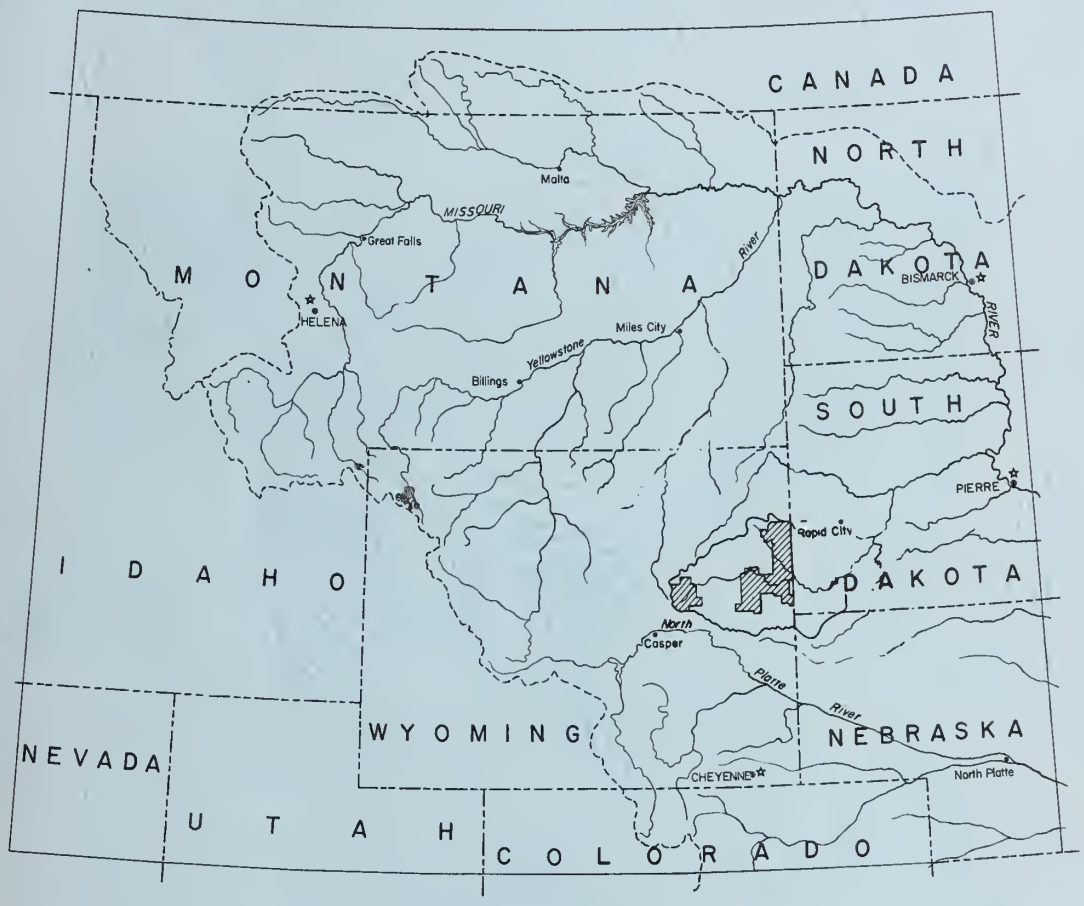
...NING AND CLASSIFICATION REPORT OF THE PUBLIC DOMAIN LANDS IN THE

UPPER CHEYENNE RIVER BASIN



WYOMING

A MISSOURI RIVER BASIN INVESTIGATION

(For Administrative Use Only)

United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Area 3 – Denver, Colorado

April 1957

Land Planning and Classification Report of the Public Domain Lands

in the

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A (Missouri River Basin Investigation)

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This report was compiled as a feature of the program of the Department of the Interior for the development of the resources of the Missouri River Basin

PRESENT STATUS OF BUREAU OF LAND MANAGEMENT STUDIES IN THE MISSOURI RIVER BASIN

(LAND CLASSIFICATION)

APRIL 30, 1957

TRANSMITTAL AND ACKNOWLEDGEMENT

This report has been prepared as a feature of the comprehensive program of the Department of the Interior for development of resources of the Missouri River Basin. The data presented are based primarily upon field examination of public domain administered by the Bureau of Land Management and such associated lands as form parts of the natural management units. All agencies of the Department of the Interior concerned with development and administration of resources in the study area have furnished data. Other Federal agencies, State and local government units, and local livestock operators have also contributed data incorporated in this report.

During 1953, under the direction of R. D. Nielson, the land resource data were measured and collected by field crews of the Bureau of Land Management, composed of L. A. Merryfield, H. H. Hoyt, R. E. Cleveland, C. L. Hase, L. J. Keilman.

Report was prepared by H. H. Hoyt and maps by John Kovacs. Staff members of the Wyoming State Office of the Bureau of Land Management contributed to the data presented herein.

These Studies are directed by Harold T. Tysk, Lands Officer, Bureau of Land Management, Area 3, Denver, Colorado.

W. B. Nelson

Area Administrator

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INTRODUCTION

Upper Cheyenne River Basin is an important sector of the Missouri River Basin for the developments, resources and problems it contains and also because of its relation to the Angostura and Oahe Reservoirs, and other downstream projects. This basin also is of great importance to the economy of the Midwest and to that of the entire nation. The area extends upstream from the mouth of Rapid Creek nearly to Douglas and Casper, in Wyoming. This basin has common divides with the Glendo, Niobrara, White, Lower Cheyenne, Belle Fourche and Powder River Basins. Reports are available for these adjoining areas of common interest as shown on the progress map which is the frontispiece of this report.

The preliminary land planning and classification report for the Upper Cheyenne River Basin was published by the Bureau of Land Management, Region III, in June 1950 under the title of the Angostura Area. That report identified problems relating to the public lands. It outlined certain parts of the area in which these problems and the relative density of public lands warranted the inclusion of all other associated lands in the detailed studies needed to determine the best future use and management of the public lands.

The detailed studies presented herein were completed in 1953, in accordance with plans outlined in the preliminary report and by methods outlined in Appendix A of this report. Joint consideration of the two reports and frequent reference to the accompanying maps will materially increase understanding of the problems involved. All lands have been classified in the detailed study areas, which include those portions of northwestern Converse, northern Niobrara and southeastern Weston Counties, Wyoming, in which there is the heaviest concentration of public lands administered by the Bureau of Land Management. These public lands comprise approximately one-sixth of the total area in these areas of over-all, intensive study as outlined on the map accompanying this report. In the remaining portions of the study area only the public domain lands were classified.

This report and two of the accompanying maps present the findings of the detailed studies. These two maps show the West and East Study Areas of the Upper Cheyenne River Basin. One map shows vegetation, land use capability, degree and type of erosion and

the recommended carrying capacity. The symbols denoting these classification features and their application are given in appendices A to I. The second of these two maps shows proposed land use, proposed improvements, proposed management units and erosion classification. This erosion classification has been adapted from a study made by Richard F. Hadley of the Water Resources Division of the U. S. Geological Survey published in July 1955, entitled "Reconnaissance Investigations, on Sources of Sediment in the Cheyenne River Basin above Angostura Reservoir." Both of these maps show land ownership, status, drainage and pertinent culture. The third map in the map appendix shows the entire basin area, with all political and administrative subdivisions, culture, drainage, and landownership. This map is titled, "Angostura Area Public Domain Map."

Relationships between the various classes of land ownership and the relative merits of present use and management are discussed in the report. Adjustments in use and management are proposed, where needed, in accordance with sound land management principles.

Primarily the report is concerned with problems affecting the public domain lands in the study areas, and with programs and adjustments designed to alleviate these problems. Responsibilities of the Bureau of Land Management for the proper administration of valuable public resources within the area are also considered. Improvements are proposed to promote proper use and conservation of the land resource.

Upper Cheyenne River Basin extends northward 102 miles into Wyoming and South Dakota from its southern extremity in the northwestern corner of Sioux County, Nebraska. From the most eastern point, on Sheep Mountain Table, south of Scenic, South Dakota, the basin extends westward 176 miles to the vicinity of Pine Tree and Casper, in Wyoming. Gross area of the basin is 11,314 square miles. Included are 1,116 square miles of the Black Hills National Forest, 216 square miles of the Pine Ridge Indian Reservation, 162 square miles of Custer State Park, 54 square miles belonging to Wind Cave National Park, 11 square miles within Badlands and Jewel Cave National Monuments, and 5 square miles comprising the Battle Mountain Sanitarium Reserve of the Veterans Administration. The remaining area of the basin covers 6,240,000 acres of public domain and land utilization land in Federal ownership,and private and State-owned lands. Public domain land is concentrated in two areas within the western portion of the basin which is in Wyoming. The detailed study maps cover these two areas only.

Upper Cheyenne River Basin includes portions of Nebraska, South Dakota and Wyoming. The largest area is in Wyoming, covering 63 per cent of the basin. This area includes portions of Campbell, Converse, Niobrara and Weston Counties. South Dakota contains 33 per cent of the basin in parts of Fall River, Pennington and Washington Counties, and all of Custer County. Nebraska includes 4 per cent of the basin, all of which is within Sioux County. Intensive aerial classification has been made in the public domain and associated lands in the two areas of concentration in Wyoming. Elsewhere in Wyoming and in Nebraska and South Dakota, classification has been restricted to the isolated tracts of public domain.

Present land use has been determined within the two study areas and proposals have been made for adjustments and changes in management. Multiple and conflicting uses of the public domain and associated lands have been considered. Problems of the enterprises in the area are presented. A detailed consideration of erosion and sedimentation problems by tributary basins within most of the area is presented in the work, "Reconnaissance Investigations, on Sources of Sediment in the Cheyenne River Basin above Angostura Reservoir" by Richard F. Hadley, U. S. Geological Survey Water Resources Division, July 1955.

Natural conditions in the area call for careful conservation operation and management by all enterprise operators within the basin. There is a great variability in range forage production due to cyclical variations in precipitation and other factors. The physical problems are severe for both range and herd preservation and conservation. Ample supplies of supplemental forage should be provided. These factors combine to demand skillful conservative operation of resource livestock and fiscal management on the part of all operators.

GENERAL DESCRIPTION

Location and Size

The Upper Cheyenne River Basin includes approximately 11,314 square miles, located above the mouth of Rapid Creek in South Dakota. Drainage areas tributary to this part of the river include about 505 square miles in northwestern Nebraska, 3,744 square miles in southwestern South Dakota and 7,065 square miles in eastcentral Wyoming. The detailed study areas, as shown on the two Land Classification Maps, lie entirely in Wyoming and include 1,304,958 acres, or approximately 2,040 square miles in Converse, Niobrara and Weston Counties. The Converse County portion lies south and west of the Thunder Basin Land Utilization Project, on the headwaters of the Cheyenne River. The Niobrara County portion lies south and east of this land utilization project and includes most of the Cheyenne River. The remainder of the area is situated mostly east of this land utilization project in southeastern Weston County and lies almost entirely in the Beaver Creek drainage.

Drainage areas tributary to the Cheyenne River below the mouth of Rapid Creek are considered in the "Land Planning and Classification Report of the Public Domain Lands in the Lower Cheyenne River Basin", published by Region III of the Bureau of Land Management at Billings, Montana, in August 1953. The preliminary land planning and classification report for the Upper Cheyenne River Basin was published in June 1950 by the Bureau of Land Management. This report was titled, "Angostura Area". Other reports are available for adjacent basin areas as shown on the progress map which is the frontispiece of this report.

Topography

The detailed study portions of the Upper Cheyenne River Basin lie in the Missouri Plateau. One minor portion in northeastern Weston County, is in the Black Hills Division of the Great Plains Province. Topography varies sharply from the sage and grass covered rolling plains and occasional badlands to the pine and grass mountainous terrain of the Black Hills. Elevations range from less than 4,000 feet where the Cheyenne River leaves the area on the South Dakota State Line to 6,095 feet at Summit Ridge Lookout, less than 30 miles north. Along the Powder River Divide, over a hundred miles west, elevations are approxi-

mately 5,000 feet. The principal tributary drainages included are Beaver and Lance Creeks in Niobrara and Weston Counties. Antelope, Sand and Bear Creeks, as well as Dry Fork of the Cheyenne River are the principal headwater drainages included in northwestern Converse County.

Geology

Figures 1 and 2 contain a generalized geologic index map of the Angostura Area (see opposite page 6).

The central core of the Black Hills Uplift dominates the northeastern portion of the area. The domal uplift has brought above the general surface level an area of Precambrian crystalline rocks about which there is upturned a nearly complete sequence of the Paleozoic and Mesozoic rocks from Cambrian to Upper Cretaceous, all dipping away from the central nucleus. There are also extensive overlaps of Tertiary deposits in the western part of the basin area and to a lesser extent in the eastern and southern parts. The oldest sedimentary rocks within the basin area constitute an escarpment facing the crystalline rocks in the northeast, and each higher stratum passes beneath a younger one in regular succession outward towards the east, south and west margins of the basin.

The basin may be conveniently divided into five major units:

(1) The Central Core unit of the Black Hills, in the northeastern part of the basin, comprises scattered rocky ridges and groups of mountains made up of Precambrian granite, gneiss, pegmatite, schist and quartzite.

(2) The Limestone Plateau unit, with its infacing escarpment, occupies a wide area fringing the central core unit and rises above the greater part of the nucleal area of Precambrian rocks. The plateau has a very broad flat surface to the west of the crystalline core area but narrows considerably to the south and east. Formations making up the plateau are the Minnekahta limestone, Minneluse formation, Pahasapa limestone and Englewood limestone of Carboniferous age, and the Deadwood formation of Cambrian age.

(3) The Red Valley unit is a wide depression within the "red beds" of the Triassic Spearfish formation, that extends more or less continuously around the Black Hills outward from the limestone plateau.

(4) The Hogback Range unit constitutes the outer rim of the Black Hills and nearly always presents a steep face toward the Red Valley. The hogback range is chiefly composed of Cretaceous Lakota and Dakota Sandstone.

(5) The Plains unit, which covers well over three fourths of the basin area, stretches away from the outer hogback range to the east, south and most extensively to the west. It is a region of gently undulating prairie and underlain by shale beds. Formations making up the Plains unit range from Cretaceous Graneros shale up through the Tertiary White River formation.

The east study area is underlain by Cretaceous sediments of the Plains unit except where narrow belts of the Red Valley and Hogback Range units traverse the extreme northeast portion.

The west study area is entirely underlain by Cenozoic sediments of the Plains unit.

Soils

Soils in the Weston County portion of the detailed study area vary from the thin, residual mountain soils of the Black Hills to the deeper, alluvial soils of the main watercourse flood plains. Soils formed from underlying shale rock are generally shallow, poorly developed and unstable. Those formed on sandstone capped ridges are also shallow and poorly developed, but quite stable due to their pervious structure.

Soils of the headwaters portion of this area in northwestern Converse County are mostly poorly developed, sandy soils covering stabilized sand dunes. In other portions of the area soils are of varied type, depending on the underlying rock. None of the soils on public domain are suitable for sustained cultivation.

Climate

Climate of the detailed study area varies between the open grass and sagebrush covered plains to the grass and pine covered mountains of the Black Hills. Precipitation at Ross, Wyoming, in Converse County, averages 11.47 inches annually, while at Newcastle, at the edge of the Black Hills, it averages 15.93 inches, an increase of 39 percent. Temperatures, length of growing season and precipitation are sufficient for limited production of hay and small grain on arable soils in the Black Hills and on some of the best soils in the adjoining plains area.

NATURAL RESOURCES

Cropland, range, timber, wildlife, water supply and minerals are the important natural resources of the detailed study areas.

Two hundred and six different types of range land and plant cover within the study areas are shown on the Vegetation, Capability, Erosion and Carrying Capacity Map, accompanying this report. The map shows the distribution of types of plant cover and range sites, including three principal plant species, type by aspect, condition of range resource, and recommended stocking rate, range site designation, land use capability, slope, degree and type of erosion, and major soil characteristics.

Cropland

Production of cultivated crops is restricted to the best soils and is most successful under the higher precipitation of the Black Hills or on bottomlands where limited irrigation is possible. Crop production of 22,326 acres in the detailed study areas consists chiefly of hay or other forage crops, and is estimated (on the basis of three animal unit months per acre) to be 66,978 animal unit months. Cropland is most important as the source of essential supplementary

livestock feed, but such crops provide considerable complementary income for the livestock-farm enterprises.

Range

Native forage, produced on the predominantly poor soils and topographically rolling to rough terrain of the semi-arid plains and foothills, is utilized by a vigorous livestock industry. Grassland and sagebrush types are widely distributed and include various kinds of grass, sagebrush and forbs. Greasewood grown on saline lowland is interspersed with various grasses and forbs. Cottonwood trees grow along most of the water courses and sometimes form an overstory for the common sagebrush and grass of the bottomlands. Limited grazing is provided by various kinds of browse and grass which grow under the pine and juniper covering the shallow soils and steep slopes of the Black Hills. Saltbrush and western wheatgrass are the principal plants which grwo on the shale soils of the plains areas.

Grazing capacity for the 1,282,632 acres of range lands in the detailed study areas is estimated at 277,018 animal unit months and is shown by landownership class in Table 1, under the Land Use and Ownership section of this report.

Timber

Western yellow pine and Rocky Mountain juniper cover many of the shallow, rocky soils and steep slopes in the Black Hills. Stands are extremely variable in extent, density, composition and quality. Timber stands possessing economic values of sufficient importance to warrant continued Federal management occur on public domain only in the Stockade Beaver Creek Area. This area is discussed in more detail under the Land Use Problems section of this report.

Total volume of merchantable timber and posts on public domain in this area is estimated at 8,510 M. B. F. and 1,766,000 posts.

Wildlife

There is abundant wildlife in the detailed study area,

especially in the Black Hills portion. Mule deer and antelope are probably the two most widely distributed and best known species of big game, although elk and black bear are not uncommon in the Black Hills portion. Fur bearers, such as racoon, weasel, mink, skunk, muskrat, beaver, badger, bobcat, coyote, fox and jack rabbits are present in varying numbers depending upon the character of the habitat in various localities.

Upland game includes several native species such as the dusky, ruffed, sharp-tailed and sage grouse, mourning dove, cottontail rabbit and the introduced Hungarian partridge and ring-neck pheasant. Numerous species of rodents are also present, the most injurious being mice, porcupine, prairie dogs, and pocket gophers. There are some trout in Stockade Beaver Creek and other fish, such as blue-gill, perch, croppies and bullheads, in some of the larger reservoirs.

Minerals

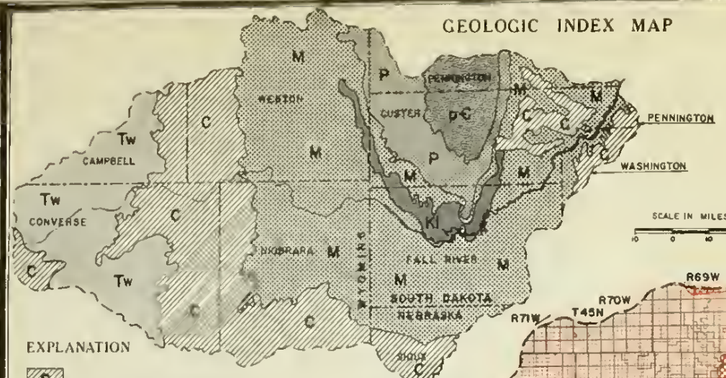
General

The relation of the mineral resources within the basin area to the public land can best be classified according to whether the minerals are leasable (Act of February 25, 1920, as amended, and supplemented, 30 U.S.G. 181) or locatable minerals (Act of May 10, 1872, as amended, 30 U.S.C. 26.33). Recent legislation for multiple mineral development allows for dual exploration and development of both leasable and locatable minerals. Other recent legislation which affects the mineral development and land utilization are Public Laws 167 and 357 of the 84th Congress. Public Law 167 provides that the common varieties of sand, stone, gravel, etc., are no longer locatable but are subject to disposal under the Sale of Materials Act (Act of July 31, 1947, 43 U.S.C. 1185). It further provides for more adequate measures for multiple use of surface and mineral resources. Public Law 357 provides for the exploration and exploitation, under the mining laws, of uraniferous coal deposits. Figure 1 shows that extensive beds of sub-bituminous coal underlie the western part of the basin. However, little or no activity is expected under Public Law 357 in this area, since none of these coal deposits are believed to be uranium bearing.

COAL RESOURCES OF THE ANGOSTURA AREA (UPPER CHEYENNE RIVER BASIN) IN WYOMING, SOUTH DAKOTA AND NEBRASKA.

FIGURE 1.

GEOLOGIC INDEX MAP



EXPLANATION

- C — CENOZOIC SEDIMENTARY ROCKS
- Tw — TERTIARY WASATCH FORMATION (URANIUM BEARING)
- M — MESOZOIC SEDIMENTARY ROCKS
- Ki — CRETACEOUS INYAN KARA GROUP (URANIUM BEARING)
- P — PALEOZOIC SEDIMENTARY ROCKS
- pC — CHIEFLY PRE-CAMBRIAN IGNEOUS AND METAMORPHIC ROCKS

SCALE IN MILES

MISOURI RIVER BASIN INVESTIGATION

LOCATION MAP

EXPLANATION

BITUMINOUS COAL

- AREA UNDERLAIN BY COAL BEDS MORE THAN 14 INCHES THICK
- AREA UNDERLAIN BY COAL BEDS LESS THAN 14 INCHES THICK

SUB BITUMINOUS COAL

- AREA UNDERLAIN BY COAL BEDS MORE THAN 30 INCHES THICK
- AREA UNDERLAIN BY COAL BEDS GENERALLY LESS THAN 30 INCHES THICK

From U S G S Coal Investigation Map C-6

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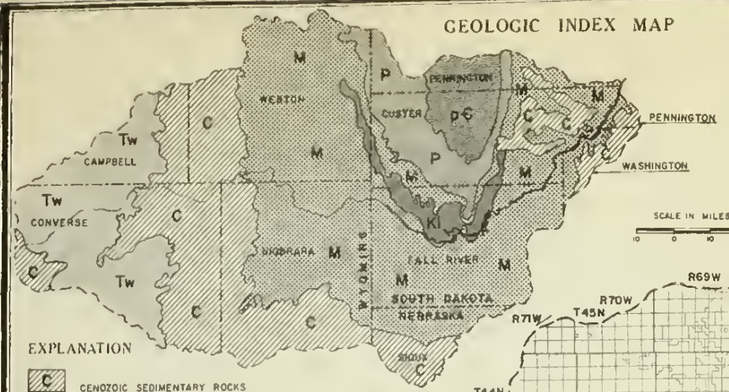
METALLIC AND NONMETALLIC MINERAL RESOURCES OF THE ANGOSTURA AREA (UPPER CHEYENNE RIVER BASIN) IN WYOMING, SOUTH DAKOTA AND NEBRASKA.

FIGURE 2.

GEOLOGIC INDEX MAP



EXPLANATION

- C — CENOZOIC SEDIMENTARY ROCKS
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- M — MESOZOIC SEDIMENTARY ROCKS
- Ki — CRETACEOUS INYAN KARA GROUP (URANIUM BEARING)
- P — PALEOZOIC SEDIMENTARY ROCKS
- pC — CHIEFLY PRE-CAMBRIAN IGNEOUS AND METAMORPHIC ROCKS

MISOURI RIVER BASIN INVESTIGATION

LOCATION MAP

SCALE IN MILES

5 4 2 0 2 4 6

KNOWN OIL FIELDS

EXPLANATION

- Au,Ag — GOLD-SILVER DEPOSIT
- ANOMALOUS RADIOACTIVE AREA
- U — URANIUM DEPOSIT
- PEGMATITE AREA CONTAINING DEPOSITS OF BERYL, COLUMBIUM-TANTALUM, FELDSPAR, MICA AND LITHIUM
- gp — GYPSUM DEPOSIT
- bn — AREA CONTAINING BENTONITE DEPOSITS
- fu — FULLERS EARTH DEPOSIT

Source data from A.E.C., Bureau of Mines and U.S. Geological Survey.

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Leasable Minerals

The importance of leasable minerals, especially oil and gas, in the Upper Cheyenne River Basin is shown by receipts of the Bureau of Land Management for rentals of public domain lands under the Mineral Leasing Act of February 25, 1920 (41 Stat. 437: 30 U.S.C. 181) as amended and supplemented. Since these receipts are segregated only by counties, it has been necessary to make adjustments according to the part of each county lying within the basin, except where the exact location of the leased property is known as with producing leases. Total receipts from nonproducing mineral lease rentals for each county which can be credited to this basin is estimated for calendar year 1956 as follows:

State & County	Producing Oil & Gas Royalties (dollars)	Non-Producing Oil & Gas Rentals (dollars)	Coal & Other (dollars)	Total (dollars)
Wyoming:				
Campbell		51,419	8	51,427
Converse		187,683	72	187,755
Niobrara	354,731	186,900		541,631
Weston	659,874	127,300	—	787,174
Sub-Total	1,014,605	553,302	80	1,567,987
South Dakota:				
Custer		8,310		8,310
Fall River		12,880		12,880
Pennington		1,220		1,220
Washington		—		—
Sub-Total		22,410		22,410
Nebraska:				
Sioux		143		143
Sub-Total		143		143
Totals:				
Wyoming, South Dakota and Nebraska	1,014,605	575,855	80	1,590,540

Petroleum and Natural Gas (Subject to Mineral Leasing)

Figures 1 and 2 show the general location of known oil fields in the Upper Cheyenne Basin. Known reserves of crude oil and natural gas in the Basin area were estimated at 80 million barrels of oil and 90 billion cubic feet of gas on January 1, 1954, according to Bureau of Mines Preliminary Report No. 95 of October 1954 entitled "Petroleum and Natural Gas Resources and Development in the Cheyenne Division of the Missouri River Basin". The above estimate is somewhat low as the discovery of new fields and proving of additional reserves has continued since, but later figures are not available.

Approximately 17 producing fields exist in Niobrara and Weston counties, Wyoming, and about half of these are within the east study area. There are no known oil fields within the west study area.

Coal (Subject to Mineral Leasing)

Figure 1 shows the coal resources of the Upper Cheyenne River Basin. Sub-bituminous coal beds extend from the Powder River Basin eastward into Niobrara and Converse Counties, Wyoming. These coal beds underlie the entire west study area and extend into the southwestern part of the east study area. Most of the beds are less than 30 inches thick and there is no known production at present. There appears to be little or no chance of development in the foreseeable future.

Two small bituminous coal fields are located in Weston County, Wyoming, just north of Newcastle. The southern field is located partly within the east study field. No activity is expected in either field in the foreseeable future.

Non-leasable Minerals

The importance of non-leasable minerals in the Upper Cheyenne Basin is somewhat reflected in information obtained from County Mining Records. During 1954 through 1956 over 10,000 mining claims (mostly lode) were located within the Basin area. Over 95 percent of these were located for uranium. Only about 300 claims were located as placers and the majority of these were for uranium. The few remaining were chiefly bentonite placers. During 1956 approximately 2,700 affidavits of annual assessment work in the area were recorded. This is less than one-third of the 3-year total of claims located and is a fair indication of a general decline in uranium activity throughout the area.

In the west study area, approximately 4,000 uranium claims were located during 1954 through 1956. These claim locations covered most of the available public lands including lands patented with mineral reservations and L. U. repurchased lands. In 1956 only about 300 affidavits of annual assessment work, less than 1 percent of the claims located in the west study area, were recorded in the Converse County Mining Records. Speculative activity has practically ceased and most of the earlier claimed public land has reverted back to non-possessory status. Present activity is confined to 3 or 4 sizeable producers in the Monument Hill District in T. 37 N., R. 73 W., 6th P. M., Wyoming. These mines are chiefly on State and private land. Actual uranium production in the District is expected to increase somewhat during the next year or two, but no increased prospecting activity is expected. There are no other significant mineral resources within the west study area.

In the east study area in Niobrara and Weston counties, Wyoming, about 1,000 mining claims were located in the 3-year period, 1954 through 1956. These were all uranium locations except for 10 to 15 bentonite claims. Only approximately 5 affidavits of annual assessment work were recorded in 1956 and these were for long standing, but inactive bentonite locations. Most of the uranium locations were in the Lance Creek District which is now inactive and has little or no future potential. Present uranium activity within the east study area is confined to two small mines in the Clifton area in T. 42 N., R. 60 W., 6th P. M., Wyoming. No increased activity is expected in this area. Several old, inactive bentonite deposits exist within the study area but no reactivation is expected in the foreseeable future. Except for petroleum, which is discussed elsewhere, there are no other significant mineral resources within the east study area.

Uranium (Subject to location under the U. S. Mining Law)

Figure 2 shows the areas of uranium interest. Uranium activity in the Upper Cheyenne Basin area was greatest during 1953 and 1954. Since then, there has been a steady decline as speculation ceased and interest was confined to proven areas. At present the Edgemont District in Fall River County, South Dakota is the principal area of production in the basin. Essentially all the production comes from 3 or 4 mines chiefly located in the Black Hills National Forest and on private land.

The Monument Hill District is now second in production importance and a slight continued increase in production is expected during the next couple of years. However, overall activity is not expected to increase, since all production will probably be confined to a few large operations.

The only other uranium production in the basin comes from two relatively small operations near Turncrest in Campbell County, and Clifton in Weston County, Wyoming. No increased activity is expected in either of these areas.

Bentonite (Subject to location under the U. S. Mining Laws)

Figure 2 shows the areas containing bentonite deposits. Bentonite and bentoniferous clays are found in several upper Cretaceous formations flanking the Black Hills, both in Wyoming and South Dakota. Workable deposits are confined chiefly to the Mowry formation. Present production within the basin comes from two large operations in the vicinity of Upton in Weston County, Wyoming. Both of these bentonite producers are within the east study area. At present about half of the actual mining is on unpatented mining claims. The remaining half is on patented claims and land owned by local ranchers. With the anticipated continuing high demand for bentonite, increased activity is expected, and more and more claims will probably be patented. However, with this increased activity, little conflict with other land use is likely, since nearly all the bentonite deposits are on lands unsuitable for agricultural purposes.

Although present production in the basin area is confined to the Upton region, it is probable that the immense deposits of low grade bentonite in the basin will later be valuable.

Gold-Silver (Subject to location under the U. S. Mining Laws.)

Numerous old inactive gold and silver mines exist in the Southern Black Hills region of Wyoming within the Black Hills National Forest. (Figure 2) However, no additional activity is expected in the foreseeable future

Pegmatite Minerals: Beryl Columbium - Tantalum, Feldspar, Lithium and Mica (Subject to location under the U. S. Mining Laws.)

Major quantities of Beryl, Columbium - Tantalum, Feldspar, Lithium and Mica are presently being mined from numerous pegmatites, occurring in the Precambrian granite, gneisses and schists in the Harney Peak area of the Southern Black Hills. Approximately 100 known pegmatite mines or prospects are located in the Harney Peak area. The pegmatite area is shown on Figure 2 and is located entirely within the boundaries of the Black Hills National Forest. No increased activity is expected in the foreseeable future.

Fullers Earth (Subject to location under the U. S. Mining Laws.)

Large indicated reserves of Fullers earth occur in the Tertiary Chadron formation near Fairburn in Custer County, South Dakota. (Figure 2) There has been no mining of the deposits for over 50 years and no activity is expected in the foreseeable future.

Minerals Subject to Disposal under Sale of Materials Act of July 31, 1947.

Extensive gypsum deposits of economic thickness occur within the Triassie Spearfish formation in Pennington, Custer and Fall River Counties, South Dakota. (Figure 2) Production has been small and sporadic and no change is expected.

Reserves of limestone and deposits of sand and gravel are widespread throughout the basin area, but only small operations and sales to supply local needs can be expected.

Water Supply

Surface Water

Precipitation over the plains portions of the Upper Cheyenne River Basin, as previously mentioned, averages approximately 12 inches annually. In the Black Hills portion the annual average is nearly 16 inches. Runoff from the limited precipitation varies sharply with topography and the nature of the underlying rock formations. The Black Hills portion of the area is all tributary to Beaver Creek. Higher precipitation and higher channel gradients tend to increase runoff from this portion of the area, but much of it is utilized in irrigation and water spreading systems along the main channels after leaving the Hills.

Westward from Beaver Creek most of the area is underlain successively by the Lance, Fort Union and Wasatch formations mentioned earlier in this report. Average rates of infiltration for soils overlying these formations have been measured at 5.0 inches per hour, 1.3 inches per hour and 9.2 inches per hour respectively. 1/ Such marked differences of infiltration rates obviously have a tremendous effect upon the amount of runoff from drainage basins rising in or traversing these different formations.

1/ Reconnaissance Investigations on Sources of Sediment in the Cheyenne River Basin Above Angostura Reservoir, by Richard F. Hadley, U. S. Geological Survey, Water Resources Division, July 1955.

Records of runoff from the various portions of the basin prior to 1951 are fragmentary and inconclusive, but are available for the four year period ending with 1954. They were made as part of the cooperative studies of the U. S. Geological Survey and Bureau of Reclamation initiated in 1950 to "determine the general location of major sediment sources above the reservoir (Angostura) and particularly to evaluate the effect of the several thousand stock reservoirs located within the drainage basin on runoff and sediment movement to the Cheyenne River."

The table below has been derived from unpublished data of the U. S. Geological Survey and shows the average runoff from the major portion of the basin for the past four years.

Drainage Unit	Drainage Area (Sq. Mi.)	Average Annual Runoff Per Yr. (Acre Ft.)	Per Sq. Mi. (Acre Ft.)
Beaver Creek	1,320	15,658	11.7
Cheyenne R. above Lance Cr.	3,200	15,783	4.9
Lance Creek	2,070	19,945	9.6
Hat Creek	1,044	14,465	13.8
Remaining Tributary Areas	1,076	20,394	18.9
Total Basin above Reservoir	8,710	86,245	9.9

U. S. Geological Survey Circular 223, published in 1953, reported the results of the first season's field work under the cooperative studies mentioned above. It was found that the aggregate storage capacity of stock-water reservoirs existing on 49 per cent of the drainage area averaged 11.8 acre feet per square mile. Field data show that these reservoirs retain from 20 to 33 percent of the runoff depending upon the relative amount of precipitation; the higher percentage being retained in the years of lower rainfall.

Ground Water

No studies have been made of ground water supplies in the drainage basin. Field observations indicate that the occurrence of ground water in the area is erratic, and reliance for stock-water is placed chiefly on reservoirs. Artesian water has been encountered during exploratory drilling for oil at a number of locations in the Osage Oil field, which is near the headwaters of Beaver Creek in northern Weston County. Over the area as a whole, there are few

springs. Beaver Creek is the only perennial stream, Cheyenne River itself being dry much of the time over most of its length.

HISTORY OF RESOURCE USE

Use of range and crop lands in the detailed study areas has followed the usual pattern of adjustment between ranchers seeking open range, stock-water and winter feed and farmers seeking arable soils from which to wrest a living. Appropriation of land under the various homestead laws during the period 1890 to 1930 resulted in passage to private ownership of over 80 percent of the land area. Withdrawals of public lands for stock driveways and public water reserves were not extensive. Farmers augmented their production with small numbers of livestock, and ranchers stabilized their operation by production of more winter feed on their own lands or by purchase of feed from neighboring farmers. Both grazed their livestock on the fast dwindling adjoining public domain. These factors have generally resulted in a well balanced livestock and farm economy.

AREA ECONOMY

Livestock raising, with its complementary farming, and the development of the petroleum industry are the principal industries of the area. While a considerable portion of the farm land is devoted to the production of cash crops, most of the cash crop land is situated outside of the detailed study area, and livestock- farm operations are generally well balanced. In the detailed study areas about $19\frac{1}{2}$ percent of the total estimated forage production is from crop lands and should be sufficient to carry range livestock through a $2\frac{1}{2}$ or 3 month feeding period.

Development of the petroleum industry has expanded rapidly during the past four years. Exploration and proving activities have extended from Newcastle southwestward for 75 miles across Weston County and the Cheyenne River into northwestern Niobrara County. These activities are also extending eastward from the Sussex Field, in the Powder River Basin, onto the headwaters of the Cheyenne River. At the end of September 1953 there were about sixty large, rotary well drilling rigs and thirty small, service rigs operating in the Weston County area alone. Several large oil field supply firms have established branches and constructed warehouses in Newcastle, county seat of Weston County, during the past four years. During this period the assessed valuation of property in Weston County increased from less than $7,000,000 to more than $30,000,000. Developments on the headwaters of the Cheyenne River will doubtless be supplied from Casper, in the adjoining North Platte Basin.

Mining, lumbering and tourist trade are also important in some portions of the Angostura Area. They are not important in the detailed study areas except at Newcastle where the effects of nation-wide increased travel are evident in the construction of several new motels and other tourist accommodations.

Rural population in the detailed study area has shown little growth since publication of the preliminary report in 1950. However, the population of Newcastle, Wyoming, the only important town in this part of the area, tripled in four years, being estimated at 6,000 in September 1953. Osage, fourteen miles north and west of Newcastle, at the edge of the Osage oil field and the site of the Black Hills Power and Light Company's generating plant has an estimated population of about 200. The only other organized community is Lance Creek in the oil field northwest of Lusk. It also has a population of about 200.

LAND USE AND OWNERSHIP

In the detailed study areas range and crop lands are segregated and the various forms of tenure for Federal lands are shown in Table 1 of this report. Acreages for various ownership and tenure classes are shown by counties, and the estimated grazing capacity is given in animal unit months of forage for each. These areas include nearly one-fifth of the total basin. Approximately one-sixth of all lands in these portions of the basin are administered by the Bureau of Land Management, the remainder being State and privately-owned. Of the 1,304,958 acres included in the detailed study areas, only 22,326 acres, or about 1.7 per cent are wastelands in land-use capability class VIII. The remainder is in capability classes VI and VII and is used for grazing, except for approximately 5,000 acres or about three-tenths of one per cent which is utilized by highways, railroads and townsites.

Ownership as shown in Table 1 is as follows: Federal - 215,435 acres or $16\frac{1}{2}$ per cent; State - 99,521 acres or $7\frac{1}{2}$ per cent; and private - 990,002 acres or 76 per cent; total 1,304,958 acres.

Table 1. - Acreage and Carrying Capacity of Lands by Ownership Class in the Detailed Study Portions of the Upper Cheyenne River Basin, Wyoming, 1953 1/

Ownership Class	Converse County		Niobrara County		Weston County		Total	
	Acres	A.U.M.'s	Acres	A.U.M.'s	Acres	A.U.M.'s	Acres	A.U.M.'s
Bureau of Land Management Lands:								
Public Domain	36,305	8,033	114,917 2/	20,080	51,509	7,165	202,731	35,278
Public Water Reserve	241	72	120	32	80	10	441	114
Stock Driveway Withdrawal	10,623	3,182			1,560	219	12,183	3,401
Total B.L.M.	47,169	11,287	115,037	20,112	53,149	7,394	215,355	38,793
Other Federal:					80	5	80	5
Total Federal	47,169	11,287	115,037	20,112	53,229	7,399	215,435	38,798
State Lands:								
Range Lands	26,243	7,360	40,987	8,638	31,966	7,029	99,196	23,027
Crop Lands	80	240	35	105	210	630	325	975
Total State	26,323	7,600	41,022	8,743	32,176	7,659	99,521	24,002
Patented Lands:								
Range Lands	220,617	58,200	473,030	99,206	274,354	57,787	968,001	215,193
Crop Lands	370	1,110	4,466	13,398	17,165	51,495	22,001	66,003
Total Patented	220,987	59,310	477,496	112,604	291,519	109,282	990,002	281,196
TOTAL LANDS	294,479	78,197	633,555	141,459	376,924	124,340	1,304,958	343,996

1/ Recommended carrying capacity is shown in animal unit months. An animal unit month is the amount of forage necessary to feed one cow for one month.
2/ Includes 40 acres Small Tract Classification at Lance Creek, Wyoming.

PROBLEMS AFFECTING PUBLIC DOMAIN LANDS IN THE UPPER CHEYENNE RIVER BASIN

The importance of problems affecting public domain lands administered by the Bureau of Land Management depends to a great extent upon the relative amount of such lands as compared with other classes of land-ownership or tenure. Table 4 in the preliminary report on the Angostura Area shows that these public lands comprise only 4.1 per cent of the total basin area. Further analysis shows that in the Nebraska and South Dakota portion of the area they comprise only a little over one half of one per cent. In the Wyoming portion these public domain lands comprise about $6\frac{1}{4}$ per cent, of which the U. S. Forest Service administers slightly over 10 per cent of the total. Lands administered by the Forest Service consist of public domain transferred to the Department of Agriculture, homestead relinquishments, and purchases of sub-marginal farm lands. All come under Title III of the Bankhead-Jones Farm Tenant Act of July 22, 1937 (50 Stat. 525), and all are located in the Thunder Basin Land Utilization Project, LU - WY - 21.

Sediment Contribution to Angostura Reservoir

This is the most serious problem affecting public domain lands situated in the tributary drainage area. The cooperative studies initiated by the U. S. Geological Survey and Bureau of Reclamation in 1950 and mentioned under Water Supply in this report were concluded in 1953 and 1954 with a reconnaissance examination of all sub-basins in the drainage area. Results of these studies were reported in July 1955 under the title "Reconnaissance Investigations on Sources of Sediment in the Cheyenne River Basin Above Angostura Reservoir", by Richard F. Hadley, Water Resources Division, U. S. Geological Survey. Sediment gauging stations were set up in 1950 at four points to measure contributions from the three major tributaries, Lance Creek, Beaver Creek and Hat Creek and the entire basin above the reservoir.

The following tabulation has been derived from a supplement to the above report. The figures shown are averages for the five year period 1950 through 1954, except for Hat Creek, which are averages for only the last four years.

Name	Drainage Area Square Miles (Acre - Feet)	Water Discharge Volume (Acre - Feet)	Sediment Discharge Volume (Acre - Feet)
Lance Creek	2,070	18,912	621.0
Beaver Creek	1,320	14,710	92.4
Hat Creek	1,044	14,465	83.5
All Remaining	4,276	31,853	335.4
Total Above Reservoir	8,710	79,940	1,132.3

In terms of percentage the above tabulation would reveal the following:

Name	Drainage Area Square Miles (Percent)	Water Discharge Volume (Percent)	Sediment Discharge Volume (Percent)
Lance Creek	25	24	55
Beaver Creek	16	18	8
Hat Creek	12	18	8
All Remaining	47	40	29
Total Above Reservoir	100	100	100

The period of record is short. These measurements support the conclusions reached during field examination of the area. These conclusions may be summarized briefly as follows:

1. Lance Creek drainage is the major problem area with respect to sediment being carried to Angostura Reservoir.

2. The extreme western part of the basin, underlain by the Wasatch formation, does not present any serious erosion problems.

3. Beaver Creek drainage shows no evidence of being a high sediment contributor, although several of its minor tributary drainage areas show severe erosion.

4. The badlands in Hat Creek drainage are a major sediment source, but it is believed that channel and flood plain aggradation intercept much of the sediment before it reaches the main channel.

From a consideration of the foregoing tabulations it is apparent that for the period of record 29 per cent of the sediment was carried by the 40 per cent of runoff coming from the remaining 47 per cent of the drainage area above Angostura reservoir. Of this 47 per cent, approximately 37 per cent lies above the mouth of Lance Creek and includes the extreme western part of the basin mentioned under conclusion number 2 above, as well as Black Thunder and Lodgepole Creek basins. Sediment contributions from this portion of the basin have not been measured due to the extreme infrequency of runoff. The remaining 10 per cent of tributary area comprises Beaver Creek drainage below old highway 85 in Weston County, as well as the drainage areas of Pass Creek, Bennett Canyon and Cavern Canyon coming directly from the Black Hills. This last mentioned portion of the tributary drainage area is believed to contribute no significant amounts of sediment, although runoff is fairly heavy due to the higher precipitation and higher channel gradients of this portion of the basin. It seems reasonable to conclude that a large part, if not most, of the 29 per cent of sediment borne by 40 per cent of the runoff is derived from that portion of the western part of the basin underlain by the Fort Union formation. This area is situated almost entirely in the Land Utilization Project Area.

Table 5 of the sediment sources report classifies 39 sub-basins in the tributary drainage area according to degree of upland and channel erosion, sediment yield in acre feet per square mile of drainage area, erosion index number and sediment yield class. Drainage units with the most severe erosion problems and the highest potential sediment yield are Lower Walker Creek, Lower Dry Fork, Cow Creek, Twentymile Creek, Lower Dry Creek, Black Thunder Creek, Turner Creek, Little Lightning Creek and Iron Creek. On scales of increasing severity of one to five, these basins have upland erosion from two to three and channel erosion from three to four sediment yields range from one-fourth acre foot per square mile for Iron Creek to six tenths acre foot per square mile for Lower Walker Creek. Figures for these three measurements are multiplied together to produce an

erosion index number. These indices range from 2.5 for Iron Creek to 7.2 for Lower Walker Creek. These figures compare with indices of 1.0 to 1.9 in sediment yield class 2 basins, .47 to .80 in class 3, .33 to .46 in class 4, and only .17 to .30 in class 5 sediment yield basins.

Five of the nine sub-basins with greatest sediment yield, Class 1, are located almost entirely within the Land Utilization Project Area. The other four are tributaries of Lance Creek, and are mostly within the East Detailed Study Area outlined on two of the maps accompanying this report. Five of the nine sub-basins in sediment yield Class 2 are almost entirely within the Land Utilization Project Area; one, partially in each of these areas; and two are in the East Detailed Study Area mentioned above. The sub-basins situated in the East Detailed Study Area will be given further consideration in the discussion of that area.

This sediment sources report lists proposed sites in eleven tributary basins for the diversion of flood flows with water-spreading on adjacent bottom lands. These basins are Beaver Creek, Little Thunder Creek, Black Thunder Creek, Dry Fork, Old Woman Creek, Young Woman Creek, Little Lightning Creek, Twenty-mile Creek, Walker Creek, Dry Creek and Indian Creek.

Cadastral Surveys

Many of the original cadastral surveys in the study area were made as early as 1873, and most of the native stone monuments and corners have been obliterated or destroyed. A number of re-surveys have been made in recent years in order to establish definite ownership lines required by the expanding petroleum industry, mostly in Weston County. A block of nine townships in Campbell, Converse and Natrona Counties was set up for re-survey in 1954, in conformance with requests from the Geological Survey and various oil companies. About a third of this block lies on the headwaters of the Cheyenne River and the balance is in the Powder River Basin. All were completed by the end of the 1955 field season.

In most parts of the detailed study areas, division fences between livestock operating units vary from actual owner-

ship lines to conform with topographic features. In such areas the cost of re-surveys can be justified only by the development of mineral resources which requires definite establishment of ownership lines. Rapid extension of petroleum exploration and development, as well as exploration for uranium and other minerals, will doubtless necessitate many additional re-surveys in the near future, since the original survey corners are virtually non-existent.

PROBLEMS AFFECTING PUBLIC DOMAIN LANDS IN THE DETAILED STUDY AREAS

The two areas selected for detailed study, as outlined on two of the maps accompanying this report, include a total of 1,304,958 acres, of which 16½ per cent or 215,355 acres are public domain lands administered by the Bureau of Land Management, as shown in Table 1. These lands consist of tracts varying in size from 40 to 7,600 acres which are leased to owners of adjoining lands for grazing purposes under Section 15 of the Taylor Grazing Act (Approved June 28, 1934), as amended. They are the least desirable lands in this portion of the area, being the remnants of the Government land disposal program under the various homestead laws. They include the least accessible, steepest, rockiest and roughest lands with the shallowest, most unstable, poorest and least productive soils. Generally, they have the least protective vegetative cover, the most rapid runoff rate and probably produce the greatest amounts of sediment per unit area as compared with lands of other ownerships in their vicinity. These lands also include the major portion of waste lands in capability class VIII, although these are not extensive. Average productivity of public domain range lands, as measured in animal unit months of forage per acre, is 19 per cent below the average for all range lands in the detailed study areas.

Land Use Problems

Multiple Use

1. Multiple use problems in the detailed study areas are intensified in the Stockade Beaver Creek area recommended for management in northeastern Weston County, as shown on the Proposed Land Use and Improvements Map accompanying this report. The

total proposed management unit land area in Sections 3, 4, 5 and 6, Township 42 North, Range 60 West, and Townships 43 to 47 North, inclusive, Range 60 West, is 65,118 acres, of which 4,237 acres are National Forest lands. Classification, ownership and estimated carrying capacities of range, timber and waste lands in this area, exclusive of the National Forest lands, are summarized in the following tabulation:

Status	Crop (Acres)	Range (Acres)	Timber (Acres)	Capability Class VIII (Acres)	Area (Acres)	Totals Recommended Stocking (Aums.)
Public Domain		5,416	9,847	2,440	17,703	1,437
State	10	1,349	2,270	770	4,399	477
Private	6,126	16,290	14,516	1,847	38,779	22,116
Totals	6,136	23,055	26,633	5,057	60,881	24,030

Production of crop land is estimated on the basis of three animal unit months of forage per acre in this tabulation.

Much of the above area is very rough and is broken by numerous limestone escarpments bordering steep canyons. Accessibility is limited to the Stockade Beaver Creek county road and a few jeep or truck trails. Fire protection for all lands is provided by the U. S. Forest Service as a necessary adjunct to the protection of valuable timber stands and watersheds on the contiguous Black Hills National Forest. Acquisition of the 4,237 acres of National Forest lands in this area by the Department of Agriculture was made in order to facilitate such protection. The Forest Service is reimbursed by the Bureau of Land Management for fire supression on an actual cost basis for public domain lands involved. Most of the public domain and all of the National Forest lands in this area are located between Stockade Beaver Creek and the Wyoming-South Dakota State lines north of Township 42 North. These lands are in large, continuous blocks, as shown on the maps accompanying this report.

The 17,703 acres of public domain in this area are classified as shown in the following tabulation:

Twp.	Range	Waste Lands	Range Acres	Lands AUM'S	Timber Lands Acres	Timber Lands AUM'S	Timber Lands MBM	1,000 Posts	Total Acres
42N	60W				80	8	80	20	80
43N	60W		540	73	4,050	406	2,439	899	4,590
44N	60W	923	2,466	237	1,354	139	380	199	4,743
45N	60W	1,467	1,881	166	1,739	134	3,405	391	5,087
46N	60W	50	399	20	1,624	160	1,041	185	2,073
47N	60W		130	14	1,000	80	1,195	72	1,130
Totals		2,440	5,416	510	9,847	927	8,540	1,766	17,703

From the above tabulation it is apparent that resource values on these lands are predominantly of multiple use nature. All of these lands have high watershed values as well as considerable scenic and recreational values, although use of the latter is limited.

The total acreage of public domain and other Federally-owned lands administered by the Bureau of Land Management in this part of the basin does not warrant the establishment of a local office. The nearest existing office is located at Casper, nearly 200 miles away with little intervening land requiring administrative attention. In this situation, adequate protection of public domain against fire by the Bureau of Land Management is clearly impossible, and efficient administration of timber sales and other public land uses is extremely difficult, often unsatisfactory to the public, and expensive.

Except in the Stockade Beaver Creek area, scenic attractions in the basin are negligible and the proximity of the Black Hills National Forest, just across the state line, detracts from the popularity of this area. Mallo Camp, at the extreme northern end of the area, provides excellent public recreational facilities for those who wish to stay in Wyoming.

There has been little opposition by ranchers to the free exercise of hunting privileges by the public in accordance with State laws. Access to public domain could be completely controlled in almost all cases by the surrounding patented lands, but few operating livestock units are posted against hunting or trespassing. The location and extent of public domain in the detailed study areas, as shown on the map, are such that its retention in Federal ownership could have little effect on the availability of hunting privileges to the public.

Stock Driveways

2. There are two minor stock driveways in the detailed study areas. One, on the headwaters of the Cheyenne River, in northwestern Converse County, provides access to the shipping point at Orpha, Wyoming, on the Chicago, Burlington and Quincy Railroad, in the adjoining North Platte Basin. The other, in southeastern Weston County, leads to the shipping point at Dewey, South Dakota, on the Lincoln-Billings line of the same railroad. Both traverse areas of predominantly patented lands, and both are used almost exclusively for market trailing by a few large operators.

The Orpha driveway crosses the west detailed study area for approximately 25 miles from Ross, Wyoming, to the North Platte Divide. It consists of seven separate parcels varying in size from 480 acres to 3,263 acres and including a total of 10,623 acres with an estimated 3,182 animal unit months of forage. Except for two adjoining "forties" and two "eighties" of public domain, each parcel is entirely surrounded by state-owned or private land and each is traversed by the county road from Orpha to Ross.

Legitimate use on the twenty miles of this driveway in the North Platte Basin is estimated at 653 animal unit months of forage. 1/ Use on the segment which traverses the detailed study area is about the same, indicating an excess of 2,529 animal unit months. Driveway lands are leased to adjoining livestock operators, subject to legitimate use by trailing livestock, but such use is insufficient to warrant retention of this driveway.

The Dewey driveway, in the east detailed study area, consists of five parcels of public land embracing a total of 1,560 acres, which produce an estimated 219 animal unit months of forage. The Morrissey County Road traverses four of these parcels, including 640 acres with 120 animal unit months of forage. The remaining 920 acres and 99 animal unit months of forage are in a single block, including 340 acres of capability class VIII waste

1/ "Land Planning and Classification Report as Relates to the Public Domain Lands in the Glendo Area, Wyoming", Bureau of Land Management, Region III, Billings, Montana, October 1951.

lands. By following the old highway from its junction with the Morrissey Road to the top of the hill south of Beaver Creek, 140 acres and 14 animal unit months can be reached. Access to 425 acres and 85 animal unit months is across a half mile of patented land from the same point. Distance from this point to Dewey is about five miles on the county road.

Use on this driveway is irregular. Some of the largest operators who trail the greatest distance occasionally ship from Douglas, Gillette, Moorcroft, or Upton, Wyoming. There are five principal users owning a total of about 3,200 cattle and marketing about half that many each year. Distance trailed varies from 25 to 60 miles. The location of the driveway is such that cattle can stop on it only one night. For one night, 1,600 cattle would utilize about 53 animal unit months of forage, indicating an excess of 188 animal unit months on this driveway. There was formerly some occasional local use by sheep. Trespass use by adjacent operators ordinarily leaves little forage for trailing stock. The principal users do not rely on the availability of driveway forage, customarily making their own arrangements for overnight pasture with owners of lands adjacent to their route of travel. This procedure is also followed in the adjoining land utilization project where no lands are set aside for driveway use. Present use of this driveway is not sufficient to justify its retention in Federal ownership.

Few small operators market sufficient numbers of livestock to warrant shipment by rail, most of them customarily trucking their own stock to local sales rings or delivering at the ranch direct to buyers. Most large operators in the study area prefer trailing and rail shipment to market rather than trucking. They maintain that it is less expensive and easier on the stock and consequently results in obtaining higher prices.

Public Water Reserves

3. In the detailed study areas there are eight public water reserves embracing a total of 441 acres. Two of them, consisting of single "forties" located in the Osage oil field of Weston County, were withdrawn due to artesian water encountered in exploratory drilling for oil. A third reserve includes 120 acres in extreme northwestern Niobrara County and has a small reser-

voir. The others have no water. All are inside of fenced pastures and none of them are needed by the public, since ample watering facilities exist on adjoining patented lands.

Other Uses

4. Mallo Camp, on Stockade Beaver Creek at the South Dakota State line in extreme northeastern Weston County, is county owned and operated. It leases, under Section 15 of the Taylor Act, approximately 55 acres of public domain located in Lots 2 and 3, Section 3, T. 47 N., R. 60 W., 6th Principal Meridian.

The town of Lance Creek, Wyoming, in west central Niobrara County, and located in the Lance Creek oil field includes approximately 40 acres of public domain, classified for development under the Small Tract Act of June 1938. There are 61 lots of various shapes, ranging in size from 0.076 acres to 4.047 acres. Nineteen leases are in effect for development as home and business sites. The original order provided for lease only, but has since been amended to provide for leasing and sale. This is a small oil field town and any future expansion is improbable.

Management Problems

The importance of land management problems varies with the vulnerability of natural resources to damage through mis-use. Vulnerability of surface resources to damage depends to a large extent upon the soil and underlying geologic rock formations from which the soil has been derived. Tremendous differences in the importance of management problems exist between the East and West detailed study areas due to differences in soils and underlying rock formation mentioned in preceding sections of this report.

West Detailed Study Area

1. This area, located in extreme northwestern Converse County, includes 10,623 acres of stock driveway withdrawal, 241 acres of public water reserve, 33,065 acres of vacant public domain and 227,510 acres of State and privately owned lands, or a total of 271,439 acres. It includes portions of the headwaters of Wind, Antelope, Sand, Bear and Willow Creeks and Dry Fork of the Cheyenne River. The Lance formation underlies a variable

strip along the Powder River divide, and the Wasatch formation underlies the remainder. The high absorption rate of soils derived from these two formations and the low precipitation prevailing in this part of the area combine to reduce runoff and sediment contribution to a minimum. Upland slopes are gently rolling, and channels are generally shallow and sandy or poorly defined. Blowouts, caused by wind erosion of the sandy soil, are common and can easily be aggravated by over-use of the forage cover. This area presents no management problems which could justify permanent Federal management of the public domain lands.

East Detailed Study Area

2. As shown on the map accompanying this report, this area extends almost all the way across the Upper Cheyenne River Basin in east central Wyoming. It includes 1,560 acres of stock driveway withdrawal, 169,746 acres of vacant public domain, 200 acres of public water reserve and 862,013 acres of State and privately owned land, or a total of 1,033,519 acres. It includes major portions of Beaver Creek and Lance Creek drainages outside of the Land Utilization Project Area, as well as Snyder Creek, several minor drainages, and a portion of the main Cheyenne River.

In sharp contrast to the uniformity of geologic formations underlying the West Detailed Study Area, the formations underlying this area are extremely varied and include portions of every formation in the Wyoming portion, excepting the Wasatch, Ogallala and Arikaree formations. Consequently, vulnerability to erosion varies sharply from one drainage unit to another, and even between parts of a single unit where a change in the underlying rock formation exists.

The following tabulation has been derived from Table 5 of the report referred to under Sediment Contribution to Angostura Reservoir. Only those drainage units which are pertinent to this detailed study area are included.

Name	Sq. Mi.	Degree of Erosion Upland	Degree of Erosion Channel	Adj. Sed. Yield Acre Ft. Per Sq. Mi.	Eros. Index No.	Sed. Yield Class
Lower Walker Cr.	56	3	4	.60	7.2	1
Cow Cr.	148	3	3	.50	4.5	1
Twentymile Cr.	208	2.5	3.5	.48	4.2	1
Little Lightning Cr.	74	2	3	.56	3.4	1
Sheep Cr.	40	2	2	.33	1.3	2
South Beaver Cr.	137	2	3	.19	1.2	2
Lower Stockade Beaver Cr.	57	2	1.5	.27	.80	3
Blacktail Cr.	38	2	1	.32	.64	3
Fiddle Cr.	40	1	2	.31	.62	3
Snyder Cr.	93	3	1	.10	.30	4
Dogie Cr.	54	3	1	.10	.30	4
Oil Cr.	152	1.5	1	.19	.28	4
Skull Cr.	130	1	1	.20	.20	4
Upper Stockade Beaver Cr.	199	1	1	.17	.17	4

The first four of the above named drainage units in sediment yield Class 1, as well as Dogie Creek in sediment yield class 4 are all tributaries of Lance Creek. Snyder Creek drains most of the area between Lance Creek and the Cheyenne River. The major portions of both South Beaver and Fiddle Creek drainages are located in the Land Utilization Project Area. Drainage units in sediment yield Class 2 (Sheep Creek and South Beaver Creek and class 3 (Lower Stockade Beaver Creek, Blacktail Creek and Fiddle Creek) present some erosion problems, but they are much less severe than those in Class 1, while those in Class 4 contribute very little sediment to the Cheyenne River, according to the report on sediment sources, previously mentioned. Other pertinent conclusions reached in that report are:

1. The construction of additional stock reservoirs was not considered as being an effective measure in reducing appreciably the sediment yield to the Cheyenne River or any major tributary.

2. Diversion of flood dlows on selected tributaries by low dams and water-spreading on the adjacent flood plains is the most feasible way to intercept and cause redeposition of sediment from upland sources.

3. If diversion of flood flows and water-spreading is initiated as a means of reducing sediment yield to the Cheyenne River, it must be done at

the cost of runoff.

4. Any type of water-spreading treatment that is undertaken must be carefully maintained so that renewed cutting does not begin in the artificially induced deposits.

Since the most feasible sediment control measures are diversion dams and water spreading on adjacent flood plains, it is evident that suitable locations can be found only along the main channels. Except in very isolated instances, such channels do not traverse public domain lands. It, therefore, follows that nearly all sediment control measures undertaken will be located on patented lands. The report on sources of sediment previously referred to, designated eleven sites in the Wyoming portion of the basin as being suitable for sediment control measures. Only two of these are in the east detailed study area, and both are entirely on patented land.

A brief summary of erosion conditions existing on the four drainage units in sediment yield class 1, as outlined in the report, is believed pertinent at this point.

1. Walker Creek - Sediment derived from sheet and gully erosion on steep uplands and stream bank erosion - only opportunity for sediment control is on about two miles of flood plain at extreme lower end.

2. Cow Creek - Sediment derived from sheet and gully erosion on steep uplands and raw channel - flood plain is narrow with deep, narrow channel, offering little chance for sediment control.

Sediment accumulation in acre feet per square mile of tributary drainage area for two reservoirs in the Cow Creek Basin was as follows:

Location	Length of Record (Year)	Mean Annual Sediment Accumulation (Acre ft. / sq. mi.)
T. 39 N., R. 66 W., Sec. 27	15	1.70
T. 39 N., R. 66 W., Sec. 33	10	1.50

3. Twenty-mile Creek - Vulnerability of various sub-basins in this drainage and contribution to the main channel are variable. The best opportunity for sediment control is on flood plain in Sections 18 and 19, T. 36 N., R. 66 W.

4. Little Lightning Creek - Sediment derived chiefly from sheet and rill erosion and badlands with no severe stream bank erosion - the most feasible area of control is above the town of Lance Creek in the isolated tract classification area.

Vulnerability to upland erosion, as described in this report, is shown on the Land Use adjustments and Proposed Improvements Map accompanying this report.

The Land Classification Map accompanying this report shows the vegetative type 1 with key numbers referring to descriptive formulae, giving the three principal plant species, vegetative condition, grazing capacities, range site, land use capability class, slope, erosion condition and soil factors of all lands within the detailed study areas.

Administrative Problems

The most difficult administrative problem in the Upper Cheyenne River Basin is the determination as to what public lands should be retained under Federal management and what lands should be disposed of by public sale or other means to non-Federal agencies such as states, institutions or private enterprise. A brief glance at the Angostura Area Public Domain Map accompanying the Preliminary Land Planning and Classification Report on the Angostura Area, published by Region III of the Bureau of Land Management in June 1950, shows that the public land pattern is extremely variable. Areas for detailed study were outlined solely on the basis of density of public domain lands administered by the Bureau of Land Management.

Only $16\frac{1}{2}$ per cent of the lands in these detailed study areas is Federally owned. Since these lands consist of tracts varying in size from 40 to approximately 7,600 acres, there is no sharp line of demarcation between areas in which continued Federal management is clearly justified and those in which it definitely cannot be justified. The situation is further complicated by the existence of large blocks of Federal land in the land utilization project area, LU-WY-21, previously mentioned, and lying immediately to the north and west of the east detailed study area. Obviously, the problems existing in the east detailed study area are very similar to those in the land utilization project area and should be accorded similar treatment by the two Federal agencies.

The Forest Service, administering lands in the Land Utilization Project Area, proposes holding these lands under continued Federal management in order to alleviate sediment contribution to Angostura Reservoir.

It would, therefore, be poor policy for the Bureau of Land Management to offer similar nearby lands for disposition to a state or private enterprise on the basis that they do not contribute to any erosion problem or constitute a public hazard.

Another aspect of this problem to be considered is the probable effect on the local economy of offering large acreages of public domain lands to the State or for public sale. During the past two decades most livestock operations have acquired a degree of stability virtually unknown to such enterprises prior to passage of the Taylor Act in 1934.

Many large operations have profited tremendously by the extremely low cost range afforded by the vacant public domain lands administered by the Bureau of Land Management. On the other hand, few small operations have enough such range for its low cost to have much effect on their net operating profits. Large operators are generally very much in favor of maintaining the status quo because they are not fearful of losing control of the range and because leasing it from the Bureau of Land Management costs so much less than ownership. Small operators are almost unanimous in their desire to purchase whatever public lands they have under their control, feeling that ownership constitutes their only real guarantee of continued availability of the range to them. This problem changes radically inside the Land Utilization Project Area where charges for the use of Federal range lands are on a much more realistic basis, being leased for approximately three times as much as for similar range lands administered by the Bureau of Land Management.

PROBLEMS AFFECTING PUBLIC DOMAIN LANDS IN THE ISOLATED TRACT CLASSIFICATION AREAS

In the isolated tract classification portions of the Upper Cheyenne River Basin the pattern of public domain lands administered by the Bureau of Land Management is one of widely scattered tracts ranging in size from 40 to 1,960 acres. These lands are generally of better quality than the public domain in the detailed study area, but are not as good as the surrounding patented lands. They are suitable only for the production of permanent, native vegetation and apparently serve no purpose in any permanent management program of the Bureau of Land Management at present.

Each tract of public domain land within the isolated tract areas is shown in Table 4 of this report by legal description, acreage, and general land character with animal unit months of forage, present land use, land use capability, principal suitability and proposed management. A brief summary of Table 4, showing, by counties and states, the number of tracts, the total acreages, the animal unit months of forage and the aggregate acreage in each land use capability class follows in Table 2.

Table 2 - Summary of Isolated Tracts Described in Table 4

State-County	No. of Tracts	AUM'S	Land Use Capability Class (acres) VI	VII	VIII	Total Acres
Wyoming						
Campbell	20	1,049	120.00	5,680.50		5,800.50
Converse	87	2,924	3,374.83	11,419.03		14,793.86
Natrona	1	180		720.00		720.00
Niobrara	169	3,362	2,792.21*	13,623.65	1,747.19	18,163.05
Weston	43	1,013	1,090.00	3,809.63	1,096.14	5,995.30
Wyoming Sub-Total	320	8,528	7,377.04*	35,252.81	2,843.33	45,472.71
South Dakota						
Custer	62	1,436	1,303.66	5,509.43	185.16	6,998.25
Fall River	64	1,456	325.44	7,096.62	305.00	7,727.06
Pennington	4	123	150.00	290.00	20.00	460.00
South Dakota Sub-Total	130	3,015	1,779.10	12,896.05	510.16	15,185.31
Nebraska						
Sioux	14	165	270.00**	526.88	85.00	881.88
Grand Total	464	11,708	9,426.14	48,675.74	3,438.49	61,539.90

* Includes 10.00 acres in Land Use Capability Class V.
** Includes 60.00 acres in Land Use Capability Class V.

From the above tabulation it is determined that the average size of the 464 isolated tracts in this area is approximately 130 acres; that 15½ per cent is in Capability Class VI; 79 per cent is in Class VII; and 5½ per cent is in Class VIII, or waste land. The acreage of land in Class V is negligible.

PROGRAMS AND PROPOSED ADJUSTMENTS AFFECTING PUBLIC DOMAIN LANDS

Intensive management is recommended for an area extending northward from township 35 North to township 42 North and from range 63 West to range 68 West as shown on the Proposed Land Use and Improvements Map with this report. Total area of this proposed management unit is 655½ square miles. Three fourths of the area presents major erosion problems as shown on the map. This 75 per cent has a high sediment yield potential, 73 per cent being 5 to 25 per cent slopes with high sediment yields and 2 per cent are badlands. Only 1½ per cent of the area has

slight erosion potential, 23½ per cent being classed as moderate. Distribution of these classes is shown on the Land Use and Improvements Map. The Badlands are in the Lower Creek and Walker Creek drainages. The balance of the major erosion areas are located in all ten of the drainages except Dogie Creek. Those with moderate sediment yield are in the Cheyenne River portion of the area, and within the drainages of Dogie, Lance, Walker and Little Lightning Creeks. The small area of slight erosion potential is within the Cheyenne River portion of the drainage in this area.

This proposed management area adjoins the land utilization area where erosion conditions are similar. It is proposed that land management of the two areas be coordinated.

The two proposed management areas in the extreme western and eastern portions of the study areas present no serious erosion problems. The western area is sandy loam land with good permeability. The eastern area is forest land with slight erosion and low sediment production potentials. The western area is recommended for continued management because it is adjacent to and contiguous with a large management area of public domain lands in the Powder River and North Platte Basins. The eastern management area on the Stockade Beaver Creek drainage is multiple use forest land adjoining the Black Hills National Forest. It is recommended that the public lands in this area be administered by the Forest Service.

The balance of the public domain lands outside of these proposed management areas is scattered tracts with no serious inherent problems which require corrective treatment by this Bureau. Neither do they have any significant multiple use values which would not apparently be served equally as well under private ownership.

The one remaining question, then, is what disposition can be made of these lands that will satisfactorily discharge the obligations of the Bureau of Land Management for the proper administration of a public resource? Sustained cultivation is not possible because of adverse climate, poor soil and unfavorable topographic features. So the lands are not subject to disposition under the homestead or desert land laws. Except for a few tracts, as noted in the preceding section of this report, the lands are not suitable for home, cabin, recreational or business sites because of their unfavorable location and the lack of scenic values. They are primarily grazing lands which are capable of supporting taxation, and since they serve no

purpose in any management program of this Bureau, there is no reason for retaining them under its administration.

It is, therefore, proposed that the following programs be initiated and carried out in the order listed:

In the Detailed Study Areas

1. Administer the three management units to include areas designated (M) on the Proposed Land Use and Improvement Map, accompanying this report.

2. Transfer all public domain in the Stockade Beaver Creek Management area to the Department of Agriculture for administration in conjunction with contiguous Federal lands in the Black Hills National Forest. There are 17,703 acres of public domain lands in this area.

3. Revoke all withdrawals for stock driveways and public water reserves and restore to the status of vacant public domain. There are 12,463 acres of these lands.

4. Offer all remaining vacant public domain lands not included in the management units for disposal under the provisions of the Public Sale Law. Including the 12,463 acres of stock driveway and public water reserve withdrawals mentioned under 3 above, there are 96,766 acres of these lands in 340 tracts ranging in size from less than 40 acres to approximately 3,760 acres. They comprise about one-eighth of the total land area. It is essential that these lands be offered at public sale before offering them to the State of Wyoming in order to safeguard the stability of the existing local livestock economy to the greatest possible extent.

5. List all public domain lands not sold under the public sale offering with the State of Wyoming for:

(a) The satisfaction of any outstanding lien selections due that State.

(b) In exchange for an approximately equal acreage of State-owned lands within Federal grazing districts in Wyoming or within the proposed management units of the adjoining North Platte and Powder River Basins. There are over 200,000 acres of State-owned range lands in the adjoining Upper Powder Management unit alone, much more than the total acreage proposed for offering at public sale in this entire drainage area.

In the Proposed Management Units

1. West Management Unit - This unit includes a total of approximately 45,135 acres, of which 15,370 acres or 34 per cent is public domain administered by the Bureau of Land Management. The remainder is state or privately owned.

Based chiefly on the high percentage of Federal land in this unit, it is proposed that these lands be retained under Federal management in conjunction with other Federal lands in the adjoining Powder River and North Platte management areas. However, the boundary line of this management unit was arbitrarily established solely on the basis of density of Federal lands, and there sould be no hesitancy to comply with applications for the purchase of such lands under the provisions of the Public Sale Law. The entire area is in upland erosion Class 4, as shown on the Proposed Land Use and Improvement Map accompanying this report.

2. East Management Unit - This unit includes a total of approximately 418,976 acres, of which 85,596 acres, or 20 per cent, is public domain administered by the Bureau of Land Management. The remainder is state or privately owned. Continued management by this Bureau is proposed for the Federal lands in this unit for the following reasons:

(a) To assist, as far as possible, in the alleviation of sedimentation of the Angostura reservoir by proper management of the public domain lands.

(b) To avoid possible disturbance of the local livestock economy which might be caused by disposition of these lands to private or state ownership.

(c) To cooperate with the Federal agency administering the public lands in the adjoining land utilization project area, LU-WY-21, in the determination of the best future use and administration of these lands.

The last mentioned reason involves a final decision as to what lands are to be kept permanently under Federal management, and what lands are to be disposed of by public sale or other means to the state or to private enterprise. This decision must be based on a careful consideration of the effects of public land disposal in both the proposed management unit and the adjoining land utilization project area. The size of livestock operations generally tends to increase with an increase in the density of Federal lands

in this part of Wyoming. The percentage of Federal lands in the Land Utilization Project Area is much higher than in the proposed management unit, as shown on the map accompanying the Preliminary Land Classification Report. 1/

Livestock operations in both areas are large. As stated previously, owners of large livestock operations are generally averse to the purchase of public lands where such lands are administered by the Bureau of Land Management on account of the extremely cheap rates charged for their use. However, where the rates charged are on a more realistic basis, as in the Land Utilization Project Area, these operators are inclined much more favorable toward such purchase, since the cost of leasing is more often equal to, or in excess of, the cost of ownership.

When considered on the basis of the best possible future use and administration of the Federal lands in the proposed management unit, there are few valid reasons for retaining these lands under permanent Federal management. As stated under Problems Affecting Public Domain Lands in the East Detailed Study Area, the Geological Survey made a comprehensive study of the sedimentation problem, concluding the following: 2/

1. Construction of additional stock reservoirs was not an effective measure in reducing appreciably the sediment yield to the Cheyenne River or any major tributary.

2. Diversion of flood flows on selected tributaries by low dams and water spreading on the adjacent flood plains is the most feasible way to intercept and cause redeposition of sediment from upland sources.

Eleven sites were designated as being suitable for sediment control measures in the entire basin. Only two of these are in this proposed management unit and both are entirely on patented land.

1/ Preliminary Land Planning and Classification Report - Angostura Area, Bureau of Land Management, Region III, Billings, Montana, June 1950.
2/ Reconnaissance Investigations on Sources of Sediment in the Cheyenne River Basin Above Angostura Reservoir, by Richard F. Hadley, U. S. Geological Survey, Water Resources Division, July 1955.

It is, therefore, apparent that the Federal lands in this unit will derive little benefit from continued Federal management that could not be derived under private ownership of the lands. Federal ownership of these lands has, in fact, been detrimental to them by barring them from participation in the Agricultural Stabilization and Conservation Programs of the Department of Agriculture and similar, preceding improvement programs during the past two decades. This feature has recently been changed so that improvements under these programs may now be placed on Federal lands. These programs and improvements programs under the Watershed Protection and Flood Prevention Act, approved August 4, 1954, 1/ are expected to be much more effective in the future.

It is also apparent that Federal lands are in no better vegetative condition than similar lands under private ownership. This may be due to the virtually complete lack of control exercised by the Bureau of Land Management over the use of these lands by lease under Section 15 of the Taylor Act, approved June 28, 1934, to adjoining livestock operators. More probably, it is due to the fact that good range management has become the rule rather than the exception, and is no longer an attribute solely of Federal land management.

It is, therefore, proposed that Federal lands in this management unit be made subject to disposal upon application under the Public Sale Law, but that no action by taken by this Bureau to put them on the public sale market by its own motion. It is also proposed that no range improvement and development program be initiated by the Bureau of Land Management pending final decision as to the ultimate disposition of these lands.

Improvements as shown on the Proposed Land Use and Improvements Map inside the proposed East Management Unit are contemplated in the event that a final decision is reached to retain these lands permanently under Federal management. Pending this decision it is proposed that the Bureau of Land Management participate actively by sharing in the costs of any development program initiated by local organizations under the Watershed Protection and Flood Prevention Act of 1954 previously mentioned.

Estimated costs of the contemplated improvements in the Proposed East Management Unit are segregated for Federal and Non-Federal lands in Table 3. Estimated costs of the proposed improvements as shown on the map outside of the proposed East Management Unit are not included in this report. It is noted that less than 17 per cent of the proposed improvements in the East Management Unit are located on public domain lands.

1/ Public Law 566 - 83rd Congress - 68 Stat. 666

Table 3. - Estimated Costs of Contemplated Improvements - Proposed East Management Unit - Upper Cheyenne River Basin - Wyoming

Location		Reservoirs				Rodent Control				Water Spreading		
T-N	R-W	Federal		State & Private		Federal		State & Private		State & Private		Total
		No.	Cost	No.	Cost	Acres	Cost	Acres	Cost	Acres	Cost	Costs
36	65			1	700							700
36	66	2	1,400	7	4,900							6,300
36	67			6	4,200							4,200
37	65			1	700							700
37	66	1	700	8	5,600							6,300
37	67	1	700	5	3,500							4,200
38	65			6	4,200					380	4,180	8,380
38	66	3	2,100	5	3,500							5,600
38	67	2	1,400	5	3,500							4,900
39	64	1	700	5	3,500			125	6			4,206
39	66	2	1,400									1,400
39	67			1	700							700
40	64					40	2	930	47			49
40	66			1	700							700
40	67			3	2,100							2,100
Totals		12	8,400	54	37,800	40	2	1,055	53	380	4,180	50,435

Total Federal - $8,402.00 or less than 17 per cent of total.

In the Isolated Tract Classification Areas

1. Complete transfer of 71 tracts with a total of 10,086.46 acres and 1,977 animal unit months of forage in Custer and Fall River Counties, South Dakota, as listed in Table 2 under Proposed Federal Management to the Department of Agriculture for administration in conjunction with the adjoining Black Hills National Forest. These lands were selected by the Forest Service and have been classified as follows: 639.38 acres - land use Capability Class VI, 9,072.08 acres - Capability Class VII, and 375.00 acres - Capability Class VIII, or waste lands.

2. List all remaining tracts of vacant public domain shown in Table 2 for disposal under provisions of the public sale law. There are 393 tracts with a total of 51,453.44 acres of these lands. Land use Capability Classification of these lands is as follows: Class V - 70.00 acres, Class VI - 8,716.76 acres, Class VII - 36,603.19 acres, and Class VIII - 3,063.49 acres.

Table 4.- Description, Area, Classification, Suitability and Proposed Management of Unreserved Public Domain, by Counties Within the Isolated Tract Portion of the Angostura Area, Wyoming, Nebraska, and South Dakota, 1953 1/

6th P. M.
Wyoming

Twp. North	Range West	Sec.	Subdivision	Acres	General Land Character	AUM's	Present Land Use	Land Capability Classification 2/	Principal Suitability	Proposed Managemen
Campbell County										
41	74	5	SW¼NE¼	40.00	Gently rolling	10	Grazing	VI	Grazing	Private
41	76	24	All 3/	640.00	Steeply rolling	204	Grazing	VII	Grazing	Private
		25	NE¼NE¼	40.00	Steeply rolling	12	Grazing	VII	Grazing	Private
		29	E½NE¼	80.00	Roughly rolling	24	Grazing	VII	Grazing	Private
42	74	22	NW¼SE¼	40.00	Hilly to steeply rolling		Grazing	VI	Grazing	Private
45	69	10	SW¼NE¼, S½NW¼	120.00	Very rough and broken	18	Grazing	VII	Grazing	Private
		11	NW¼	160.00	Very rough and broken	24	Grazing	VII	Grazing	Private
		12	SE¼NE¼, W½NE¼, NW¼	280.00	Very rough and broken	42	Grazing	VII	Grazing	Private
		14	NW¼NW¼	40.00	Rough and broken badlands	6	Grazing	VII	Grazing	Private
		15	SE¼SE¼	40.00	Rough and broken badlands	6	Grazing	VII	Grazing	Private
		20	All	640.00	Rough and broken badlands	96	Grazing	VII	Grazing	Private
		21	W½W½	160.00	Rough and broken badlands	24	Grazing	VII	Grazing	Private
		22	N½SE¼, SE¼SE¼	120.00	Rough and broken badlands	18	Grazing	VII	Grazing	Private
		23	W½	320.00	Rough and broken badlands	48	Grazing	VII	Grazing	Private
		25	SE¼NW¼	40.00	Rough and broken badlands	6	Grazing	VII	Grazing	Private
		26	SW¼	160.00	Rough and broken badlands	24	Grazing	VII	Grazing	Private
		27	SE¼NE¼, W½NE¼, W½SW¼, NE¼SE¼	240.00	Rough and broken badlands	36	Grazing	VII	Grazing	Private
		28	NW¼NE¼, S½NE¼, SE¼	280.00	Rough and broken badlands	42	Grazing	VII	Grazing	Private
		29	All	640.00	Rough and broken badlands	96	Grazing	VII	Grazing	Private
		30	E½	320.00	Rough and broken badlands	48	Grazing	VII	Grazing	Private
		31	Lots 1, NE¼NW¼, N½NE¼,	160.40	Rough and broken badlands	24	Grazing	VII	Grazing	Private
		32	SE¼NE¼, NW¼NW¼, S½	400.00	Rough and broken badlands	61	Grazing	VII	Grazing	Private
		33	S½NW¼, SW¼	240.00	Rough and broken badlands	36	Grazing	VII	Grazing	Private
		34	W½NE¼, NE¼NW¼, NW¼SE¼, SE¼SE¼	200.00	Rough and broken badlands	30	Grazing	VII	Grazing	Private
		35	NE¼, N½NW¼, N½SE¼	320.00	Rough and broken badlands	48	Grazing	VII	Grazing	Private
45	70	29	NW¼SW¼	40.00	Steeply rolling	10	Grazing	VI	Grazing	Private

-Continued

Table 4.- Description, Area, Classification, Suitability and Proposed Management of Unreserved Public Domain, by Counties, Within the Isolated Tract Portion of the Angostura Area, Wyoming, Nebraska, and South Dakota, 1953 1/

6th P.M. Wyoming Twp. North	Range West	Sec.	Subdivision	Acres	General Land Character	AUM's	Present Land Use	Land Capability Classification 2/	Principal Suitability	Proposed Management
Campbell County										
45	70	30	Lot 3	40.10	Steeply rolling	8	Grazing	VII	Grazing	Private
Converse County										
33	68	2	Lots 3, 4, $NE\frac{1}{4}SE\frac{1}{4}$	120.83	Rough	12	Grazing	VII	Grazing	Private
		3	Lot 1	40.66	Rough	4	Grazing	VII	Grazing	Private
		4	$SW\frac{1}{4}$	160.00	Rough	16	Grazing	VII	Grazing	Private
		5	$SE\frac{1}{4}$	160.00	Rough	16	Grazing	VII	Grazing	Private
		9	$N\frac{1}{2}NW\frac{1}{4}$, $SE\frac{1}{4}NW\frac{1}{4}$, $NE\frac{1}{4}SW\frac{1}{4}$	160.00	Rough	16	Grazing	VII	Grazing	Private
34	68	2	$S\frac{1}{2}SE\frac{1}{4}$	80.00	Rough to mountainous	10	Grazing	VII	Grazing	Private
		20	$W\frac{1}{2}SE\frac{1}{4}$	80.00	Rolling	20	Grazing	VI	Grazing	Private
		24	$SE\frac{1}{4}SE\frac{1}{4}$	40.00	Rolling to rough	12	Grazing	VII	Grazing	Private
		27	$SW\frac{1}{4}SW\frac{1}{4}$	40.00	Rough	4	Grazing	VII	Grazing	Private
		29	$NW\frac{1}{4}NW\frac{1}{4}$	40.00	Rolling	10	Grazing	VI	Grazing	Private
		34	$SW\frac{1}{4}NW\frac{1}{4}$, $E\frac{1}{2}SE\frac{1}{4}$	120.00	Rough	12	Grazing	VII	Grazing	Private
34	70	7	Lot 4, $E\frac{1}{2}SW\frac{1}{4}$ 3/	121.25	Rolling	30	Grazing	VI	Grazing	Private
34	71	4	$SE\frac{1}{4}NE\frac{1}{4}$	40.00	Rough	10	Grazing	VII	Grazing	Private
35	67	4	$SW\frac{1}{4}$	160.00	Rough to rolling	32	Grazing	VII	Grazing	Private
		6	Lot 2, $SW\frac{1}{4}NE\frac{1}{4}$, Lots 3,4	150.79	Rough	15	Grazing	VII	Grazing	Private
		18	$E\frac{1}{2}$, $E\frac{1}{2}SW\frac{1}{4}$, Lots 3,4	468.94	Rough to rolling	78	Grazing	VII	Grazing	Private
		19	$NE\frac{1}{4}$, $E\frac{1}{2}NW\frac{1}{4}$, Lots 1,2	309.43	Rough to rolling	50	Grazing	VII	Grazing	Private
35	68	1	$SE\frac{1}{4}NE\frac{1}{4}$, $S\frac{1}{2}SW\frac{1}{4}$, $E\frac{1}{2}SE\frac{1}{4}$	200.00	Rough to rolling	40	Grazing	VII	Grazing	Private
		10	$NE\frac{1}{4}NW\frac{1}{4}$, $SE\frac{1}{4}$	200.00	Rough to rolling	40	Grazing	VII	Grazing	Private
		11	$N\frac{1}{2}$, $N\frac{1}{2}S\frac{1}{2}$, $S\frac{1}{2}SW\frac{1}{4}$, $SW\frac{1}{4}SE\frac{1}{4}$	600.00	Rough to rolling	120	Grazing	120/VI:480/VII	Grazing	Private
		12	$NW\frac{1}{4}NE\frac{1}{4}$, $N\frac{1}{2}NW\frac{1}{4}$	120.00	Rough to rolling	24	Grazing	VII	Grazing	Private
		13	$E\frac{1}{2}SW\frac{1}{4}$, $S\frac{1}{2}SE\frac{1}{4}$	160.00	Rough to rolling	40	Grazing	VII	Grazing	Private
		21	$SE\frac{1}{4}SW\frac{1}{4}$	40.00	Rough to rolling	5	Grazing	VI	Grazing	Private
		23	$SW\frac{1}{4}$	160.00	Rough to mountainous	20	Grazing	VII	Grazing	Private

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Table 4.- Description, Area, Classification, Suitability and Proposed Management of Unreserved Public Domain, by Counties, Within the Isolated Tract Portion of the Angostura Area, Wyoming, Nebraska and South Dakota, 1953 1/

6th P. M. Wyoming Twp. North	Range West	Sec.	Subdivision	Acres	General Land Character	AUM's	Present Land Use	Land Capability Classification 2/	Principal Suitability	Proposed Management
Converse County										
35	68	24	NW¼NW¼, SW¼SW¼	80.00	Rough to mountainous	8	Grazing	VII	Grazing	Private
		25	N½SW¼	80.00	Rough to mountainous	10	Grazing	VII	Grazing	Private
		26	W½E½, NW¼, E½SW¼	400.00	Rough to mountainous	50	Grazing	VII	Grazing	Private
		28	NE¼NW¼	40.00	Rolling to rough	5	Grazing	VI	Grazing	Private
35	69	34	SE¼NE¼, NE¼SE¼	80.00	Rolling	23	Grazing	VI	Grazing	Private
35	70	21	NE¼, N½NW¼ 3/	240.00	Gently rolling	48	Grazing	VI	Grazing	Private
35	71	5	SE¼NW¼, E½SE¼	120.00	Roughly rolling	40	Grazing	VII	Grazing	Private
		18	Lot 1	32.87	Rolling to rough	10	Grazing	VII	Grazing	Private
		31	Lots 1,2,3,4, NW¼NE¼, E½NW¼, NE¼SW¼	299.00	Rough	50	Grazing	VII	Grazing	Private
35	72	4	SE¼SW¼	40.00	Roughly rolling	8	Grazing	VII	Grazing	Private
		12	E½NE¼, SW¼NE¼, SE¼	280.00	Rolling to rough	70	Grazing	VII	Grazing	Private
36	68	7	SE¼NE¼, SW¼SE¼	80.00	Rolling to rough	20	Grazing	VII	Grazing	Private
		33	NE¼NE¼, W½NE¼	120.00	Rolling to rough	12	Grazing	VII	Grazing	Private
36	69	1	SW¼SW¼	40.00	Rough to steep	4	Grazing	VII	Grazing	Private
		4	SW¼NE¼	40.00	Rough to steep	6	Grazing	VII	Grazing	Private
		11	W½NE¼, N½SE¼, SE¼SE¼	200.00	Rough to steep	16	Grazing	VII	Grazing	Private
		12	SW¼, SW¼SE¼	200.00	Rough to steep	17	Grazing	VII	Grazing	Private
		17	S½NW¼	80.00	Rough to rolling	24	Grazing	VII	Grazing	Private
		19	Lot 2, NE¼NE¼, S½NE¼, SE¼NW¼, NE¼SW¼, N½SE¼	315.17	Rough to rolling	96	Grazing	VII	Grazing	Private
		20	SW¼	160.00	Rough to rolling	48	Grazing	VII	Grazing	Private
36	70	1	SW¼SW¼, E½SW¼	120.00	Steeply rolling	40	Grazing	VII	Grazing	Private
		4	Lot 1, SE¼NE¼, E½SE¼,	162.71	Gently sloping	32	Stock Drivewav	VI	Stock Drive-way	State
		4	Lot 2, SW¼NE¼, W½SE¼	162.50	Gently sloping	32	Grazing	VI	Grazing	Private
		14	E½SW¼	80.00	Gently rolling	20	Grazing	VI	Grazing	Private
36	71	4	Lots 3,4, S½NW¼	166.47	Rolling to rough	41	Grazing	VII	Grazing	Private

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Table 4.- Description, Area, Classification, Suitability and Proposed Management of Unreserved Public Domain, by Counties, Within the Isolated Tract Portion of the Angostura Area, Wyoming, Nebraska, and South Dakota, 1953 1/

6th P. M. Wyoming Twp. North	Range West	Sec.	Subdivision	Acres	General Land Character	AUM's	Present Land Use	Land Capability Classification 2/	Principal Suitability	Proposed Management
Converse County										
36	71	5	Lots 1,2,3,4, S½N½	334.04	Rolling to rough	84	Grazing	VII	Grazing	Private
		12	N½NE¼	80.00	Rolling	20	Grazing	VI	Grazing	Private
		31	SW¼NE¼	40.00	Roughly rolling	8	Grazing	VII	Grazing	Private
36	72	1	NW¼SE¼, SE¼SE¼	80.00	Rolling to rough	16	Grazing	VII	Grazing	Private
		3	SE¼NW¼	40.00	Rolling	10	Grazing	VI	Grazing	Private
		4	SW¼NE¼	40.00	Rolling	10	Grazing	VI	Grazing	Private
		6	Lots 2,3	80.59	Rolling	20	Grazing	VI	Grazing	Private
		7	Lot 2 4/	47.78	Level to rolling	7	Grazing	VI	Grazing	Private
		8	NE¼NE¼ 4/	40.00	Level to rolling	6	Grazing	VI	Grazing	Private
		17	SW¼SW¼, W½NW¼ 4/	120.00	Level to rolling	30	Grazing	VI	Grazing	Private
		22	SE¼SE¼	40.00	Rough	8	Grazing	VII	Grazing	Private
		23	S½S½	160.00	Rough	32	Grazing	VII	Grazing	Private
		25	NE¼SE¼, W½SE¼	120.00	Rolling to rough	24	Grazing	40/VI:80/VII	Grazing	Private
		26	N½	320.00	Rough	64	Grazing	VII	Grazing	Private
		27	N½	320.00	Rough	64	Grazing	VII	Grazing	Private
36	73	5	Lots 1,2, S½NE¼	162.77	Rolling to rough	40	Grazing	VII	Grazing	Private
		6	Lot 4	36.75	Rolling to rough	10	Grazing	VII	Grazing	Private
		9	NE¼	160.00	Rolling	53	Grazing	VI	Grazing	Private
		12	E½NE¼, SE¼SE¼	120.00	Rolling	38	Grazing	VI	Grazing	Private
		13	NW¼SW¼ 4/	40.00	Rolling	12	Grazing	VI	Grazing	Private
		23	NE¼NE¼	40.00	Undulating	10	Grazing	VI	Grazing	Private
		26	SE¼SE¼	40.00	Rolling	10	Grazing	VI	Grazing	Private
		34	NW¼NW¼	40.00	Gently rolling	8	Grazing	VI	Grazing	Private
36	74	3	Lots 3, 4	79.56	Steeply rolling	25	Grazing	VII	Grazing	Private
		5	SW¼NW¼, NW¼SW¼	80.00	Steeply rolling	25	Grazing	VII	Grazing	Private
		6	SE¼NE¼, NE¼SE¼	80.00	Steeply rolling	25	Grazing	VII	Grazing	Private
		7	NE¼NE¼, SW¼NE¼, NE¼SE¼	120.00	Steeply rolling	38	Grazing	VII	Grazing	Private
		8	N½NW¼, N½SW¼	160.00	Steeply rolling	50	Grazing	VII	Grazing	Private

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Table 4.- Description, Area, Classification, Suitability and Proposed Management of Unreserved Public Domain, by Counties, Within the Isolated Tract Portion of the Angostura Area, Wyoming, Nebraska, and South Dakota, 1953 1/

6th P.M. Wyoming Twp. North	Range West	Sec.	Subdivision	Acres	General Land Character	AUM's	Present Land Use	Land Capability Classification 2/	Principal Suitability	Proposed Management
Converse County										
36	74	17	SE¼NE¼	40.00	Steeply rolling	12	Grazing	VII	Grazing	Private
37	69	2	NW¼NE¼	40.00	Rolling	10	Grazing	VI	Grazing	Private
		10	S½SW¼, SW¼SE¼	120.00	Rolling	30	Grazing	VI	Grazing	Private
		24	N½N½, SE¼NE¼, E½SE¼, SW¼SE¼	320.00	Rough semi-badlands	16	Grazing	VII	Grazing	Private
		25	N½, E½SW¼, SE¼	560.00	Rough semi-badlands	28	Grazing	VII	Grazing	Private
		33	SE¼NE¼	40.00	Rough semi-badlands	2	Grazing	VII	Grazing	Private
		34	E½E½	160.00	Rough semi-badlands	8	Grazing	VII	Grazing	Private
		35	W½, W½E½	480.00	Rough semi-badlands	24	Grazing	VII	Grazing	Private
37	72	10	NW¼NE¼ 4/	40.00	Rolling to rough	10	Grazing	VII	Grazing	Private
		17	NE¼SE¼	40.00	Rolling	10	Grazing	VI	Grazing	Private
		20	NE¼SW¼	40.00	Rolling	10	Grazing	VI	Grazing	Private
		21	NE¼NE¼	40.00	Rolling	10	Grazing	VI	Grazing	Private
		22	SE¼SW¼	40.00	Rolling	10	Grazing	VI	Grazing	Private
		28	W½NW¼	80.00	Rolling to rough	20	Grazing	VII	Grazing	Private
		31	SE¼SE¼	40.00	Rolling	10	Grazing	VI	Grazing	Private
		32	NW¼NW¼	40.00	Rolling	10	Grazing	VI	Grazing	Private
		34	W½SE¼	80.00	Rolling	20	Grazing	VI	Grazing	Private
40	74	10	NW¼SW¼	40.00	Steeply rolling to broken	10	Grazing	VII	Grazing	Private
		11	S½NE¼, N½SE¼ 4/	160.00	Steeply rolling to broken	40	Grazing	VII	Grazing	Private
		12	SW¼SE¼	40.00	Steeply rolling to broken	6	Grazing	VII	Grazing	Private
		13	W½NE¼	80.00	Steeply rolling to broken	12	Grazing	VII	Grazing	Private
		14	NW¼SE¼	40.00	Steeply rolling to broken	10	Grazing	VII	Grazing	Private
		34	SW¼NW¼, SW¼SW¼, E½SW¼	160.00	Rolling	48	Grazing	VI	Grazing	Private
40	76	1	SW¼NE¼	40.00	Gently to steeply rolling	11	Grazing	VII	Grazing	Private
		2	Lot 4	32.17	Gently to steeply rolling	8	Grazing	VII	Grazing	Private
		6	Lots 5,6,7, SE¼SW¼	136.18	Gently to steeply rolling	34	Grazing	VII	Grazing	Private
		10	NE¼NW¼	40.00	Gently to steeply rolling	11	Grazing	VII	Grazing	Private

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Table 4.- Description, Area, Classification, Suitability and Proposed Management of Unreserved Public Domain, by Counties, Within the Isolated Tract Portion of the Angostura Area, Wyoming, Nebraska, and South Dakota, 1953 1/

6th P. M. Wyoming Twp. North	Range West	Sec.	Subdivision	Acres	General Land Character	AUM's	Present Land Use	Land Capability Classification 2/	Principal Suitability	Proposed Management
Converse County										
40	76	14	SE¼SE¼	40.00	Gently to steeply rolling	10	Grazing	VII	Grazing	Private
		17	S½NE¼, SE¼NW¼	120.00	Gently to steeply rolling	30	Grazing	VII	Grazing	Private
		18	Lots 1,2,3,4, W½NE¼, E½W½, NW¼SE¼	413.40	Gently to steeply rolling	103	Grazing	VII	Grazing	Private
40	77	1	SE¼	160.00	Gently to steeply rolling	40	Grazing	VII	Grazing	Private
		14	SW¼SW¼	40.00	Steeply rolling to rough	8	Grazing	VII	Grazing	Private
41	74	33	SE¼NW¼	40.00	Steeply sloping to rolling	10	Grazing	VI	Grazing	Private
41	76	28	SW¼, W½SE¼	240.00	Roughly rolling	72	Grazing	VI	Grazing	Private
		29	E½SW¼, SE¼	240.00	Roughly rolling	72	Grazing	VI	Grazing	Private
		32	E½NE¼, NE¼SE¼	120.00	Roughly rolling	36	Grazing	VI	Grazing	Private
Natrona County										
40	77	10	S½N½, S½	480.00	Mountainous	120	Grazing	VII	Grazing	Private
		15	N½N½, SW¼NE¼, NW¼SE¼	240.00	Mountainous	60	Grazing	VII	Grazing	Private
Niobrara County										
33	60	6	SW¼NE¼, NE¼SW¼, NW¼SE¼	120.00	Steeply rolling to rough	8	Grazing	80/VII:40/VIII	Grazing	Private
33	61	1	SE¼SW¼, S½SE¼	120.00	Steeply rolling	24	Grazing	VII	Grazing	Private
		18	Lots 1,2, E½NW¼	153.71	Steeply rolling to rough	30	Grazing	40/VI:113.71/ VII	Grazing	Private
33	62	14	NW¼NE¼	40.00	Steeply rolling to rough	10	Grazing	VII	Grazing	Private
33	63	2	NE¼NW¼	39.08	Steeply rolling	14	Grazing	VII	Grazing	Private
		7	W½SE¼	80.00	Level to rough and steep	22	Grazing	VII	Grazing	Private
33	65	19	NE¼SW¼	40.00	Rolling	8	Grazing	VII	Grazing	Private
33	66	5	SW¼NE¼	40.00	Rolling	7	Grazing	VII	Grazing	Private
		6	Lot 1	44.71	Rolling	9	Grazing	VII	Grazing	Private

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Table 4.- Description, Area, Classification, Suitability and Proposed Management of Unreserved Public Domain, by Counties, Within the Isolated Tract Portion of the Angostura Area, Wyoming, Nebraska, and South Dakota, 1953 1/

6th P. M. Wyoming Twp. North	Range West	Sec.	Subdivision	Acres	General Land Character	AUM's	Present Land Use	Land Capability Classification 2/	Principal Suitability	Proposed Management
Niobrara County										
33	66	8	NE¼NE¼	40.00	Rolling	7	Grazing	VII	Grazing	Private
		10	N½SW¼	80.00	Rolling	15	Grazing	VII	Grazing	Private
		21	SW¼NW¼	40.00	Undulating to level	14	Grazing	VI	Grazing	Private
34	60	6	Lot 2	40.44	Rough broken badlands	10	Grazing	VI	Grazing	Private
		7	SW¼SE¼	40.00	Rough broken badlands	6	Grazing	VII	Grazing	Private
		15	Lot 2, S½SW¼	104.74	Rough broken badlands	16	Grazing	VII	Grazing	Private
		18	SE¼NW¼	40.00	Rough broken badlands	6	Grazing	VII	Grazing	Private
		31	Lots 2, 3	78.76	Steeply sloping to broken	24	Grazing	VI	Grazing	Private
34	61	1	Lot 1	40.12	Very rough and broken	10	Grazing	VI	Grazing	Private
		3	S½NW¼, SW¼	240.00	Very rough and broken	36	Grazing	VII	Grazing	Private
		4	S½NE¼, N½SW¼, SE¼SW¼, SE¼	360.00	Very rough and broken	54	Grazing	VII	Grazing	Private
		5	S½NW¼	80.00	Badly broken, steep draws	12	Grazing	VII	Grazing	Private
		9	NW¼NE¼	40.00	Very rough and broken	6	Grazing	VII	Grazing	Private
		10	N½NW¼	80.00	Very rough and broken	12	Grazing	VII	Grazing	Private
		13	E½W½, W½SE¼	240.00	Badly cut breaks	24	Grazing	VII	Grazing	Private
		15	W½SW¼	80.00	Gently sloping	20	Grazing	VI	Grazing	Private
		24	NW¼NE¼, NE¼NW¼, SW¼SE¼	120.00	Badly cut breaks	20	Grazing	80/VII:40/VIII	Grazing	Private
		28	S½SW¼, SW¼SE¼	120.00	Rough and mountainous	24	Grazing	VII	Grazing	Private
		29	SE¼SE¼	40.00	Rough and mountainous	8	Grazing	VII	Grazing	Private
		31	SE¼SE¼	40.00	Rough and mountainous	10	Grazing	VII	Grazing	Private
		33	NE¼NW¼	40.00	Rough and mountainous	8	Grazing	VII	Grazing	Private
34	62	1	SW¼SW¼	40.00	Level to gently sloping	10	Grazing	10/V:30/VI	Grazing	Private
		23	NW¼NE¼, NW¼SE¼	80.00	Gently rolling to rough	12	Grazing	40/VI:40/VII	Grazing	Private
		24	W½SE¼	80.00	Gently rolling to rough	20	Grazing	VI	Grazing	Private
		26	SW¼NE¼, SE¼NW¼, NW¼SE¼	120.00	Gently rolling to rough	30	Grazing	VI	Grazing	Private
		34	SW¼SE¼	40.00	Gently rolling to rough	8	Grazing	VII	Grazing	Private
34	63	31	SE¼NE¼	40.00	Steeply rolling mountainous	12	Grazing	VII	Grazing	Private
		33	SE¼NW¼	40.00	Steeply rolling mountainous	12	Grazing	VII	Grazing	Private

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Table 4.- Description, Area, Classification, Suitability and Proposed Management of Unreserved Public Domain, by Counties, Within the Isolated Tract Portion of the Angostura Area, Wyoming, Nebraska, and South Dakota, 1953 1/

6th P. M. Wyoming Twp. North	Range West	Sec.	Subdivision	Acres	General Land Character	AUM's	Present Land Use	Land Capability Classification 2/	Principal Suitability	Proposed Management
Niobrara County										
34	64	7	E½NW¼	80.00	Rolling	20	Grazing	VI	Grazing	Private
34	65	31	SW¼NE¼	40.00	Sloping to rolling	8	Grazing	VI	Grazing	Private
34	66	1	E½NE¼	80.01	Rolling to rough	6	Grazing	VII	Grazing	Private
		4	Lot 3	40.92	Rolling to rough	8	Grazing	VII	Grazing	Private
		10	SE¼NE¼	40.00	Rolling to rough	8	Grazing	VII	Grazing	Private
		29	NW¼SW¼, E½SW¼	120.00	Rolling	30	Grazing	VII	Grazing	Private
		31	Lot 1, SE¼NE¼, NE¼SE¼	125.99	Rolling	28	Grazing	VII	Grazing	Private
		32	SW¼NW¼, SE¼NE¼	80.00	Rolling	18	Grazing	40/VI:40/VII	Grazing	Private
		33	NW¼NW¼	40.00	Sloping to gently rolling	10	Grazing	VI	Grazing	Private
35	60	3	Lots 3,4	23.64	Gently to steeply rolling	6	Grazing	VII	Grazing	Private
		8	NE¼	160.00	Gently to steeply rolling	32	Grazing	VII	Grazing	Private
		9	W½	320.00	Gently to steeply rolling	64	Grazing	VII	Grazing	Private
		10	Lots 1,2	27.56	Gently to steeply rolling	7	Grazing	VII	Grazing	Private
		15	N½NW¼, Lots 1, 2	114.05	Gently to steeply rolling	20	Grazing	VII	Grazing	Private
		20	SW¼	160.00	Gently to steeply rolling	40	Grazing	VII	Grazing	Private
		21	NE¼SE¼	40.00	Gently to steeply rolling	8	Grazing	VII	Grazing	Private
		22	Lots 1,2	28.05	Gently to steeply rolling	9	Grazing	VI	Grazing	Private
		27	Lots 1, 2	26.20	Gently to steeply rolling	9	Grazing	VI	Grazing	Private
		29	NW¼, S½	480.00	Gently to steeply rolling	120	Grazing	VII	Grazing	Private
		31	Lots 1,2, SW¼NE¼, SW¼SE¼	160.38	Gently to steeply rolling	40	Grazing	VI	Grazing	Private
		32	SE¼NW¼, NW¼SW¼	80.00	Gently to steeply rolling	20	Grazing	VI	Grazing	Private
		34	Lot 1	11.51	Gently to steeply rolling	4	Grazing	VI	Grazing	Private
35	61	4	NW¼SW¼, S½SW¼, SW¼SE¼	120.00	Sloping to gently rolling	30	Grazing	VI	Grazing	Private
		5	Lot 4, E½SW¼, SE¼SE¼	163.72	Sloping to broken badlands	25	Grazing	40/VI:43.72/VII: 80/VIII	Grazing	Private
		8	NE¼NW¼, E½	360.00	Sloping to broken badlands	54	Grazing	VII	Grazing	Private
		9	NW¼, N½SW¼, SW¼SW¼	280.00	Sloping to broken badlands	56	Grazing	VII	Grazing	Private
		19	SE¼SE¼	40.00	Sloping to broken badlands	6	Grazing	VII	Grazing	Private

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Table 4.- Description, Area, Classification, Suitability and Proposed Management of Unreserved Public Domain, by Counties, Within the Isolated Tract Portion of the Angostura Area, Wyoming, Nebraska, and South Dakota, 1953 1/

6th P. M. Wyoming Twp. North	Range West	Sec.	Subdivision	Acres	General Land Character	AUM's	Present Land Use	Land Capability Classification 2/	Principal Suitability	Proposed Management
Niobrara County										
35	61	29	NW¼NW¼, E½NW¼, SW¼NE¼, NW¼SE¼	200.00	Sloping to broken badlands	30	Grazing	VII	Grazing	Private
		30	Lots 2,3, SE¼NW¼, E½SW¼, S½SE¼	277.50	Sloping to broken badlands	32	Grazing	VII	Grazing	Private
35	62	1	Lots 1,2, SE¼NE¼, SW¼SW¼, NE¼SE¼	205.08	Very rough and broken	23	Grazing	40/VII:165.08/VIII	Grazing	Private
		10	NW¼NE¼	40.00	Very rough and broken	6	Grazing	VII	Grazing	Private
		19	Lot 4	39.65	Steep sandstone bluffs	10	Grazing	VII	Grazing	Private
35	63	4	S½NW¼, SW¼, SE¼SE¼	280.00	Rough	40	Grazing	160/VII:120/VIII	Grazing	Private
		5	NE¼NW¼, SE¼NE¼, NE¼SE¼	120.00	Rough	20	Grazing	80/VII:40/VIII	Grazing	Private
		8	SW¼SW¼	40.00	Very rough and broken	4	Grazing	VIII	Grazing	Private
		19	W½NE¼, E½NW¼, Lots 3,4, E½SW¼, NW¼SE¼	366.66	Very rough and broken	20	Grazing	VIII	Grazing	Private
		26	NE¼SE¼	40.00	Steep sandstone bluffs	10	Grazing	VII	Grazing	Private
		30	Lots 1,2, E½NW¼	168.15	Very rough and broken	17	Grazing	VIII	Grazing	Private
35	64	18	Lots 1,2,4, NE¼NW¼, SE¼SW¼	213.02	Rolling to rough	27	Grazing	VII	Grazing	Private
		19	Lot 4	43.39	Rolling to rough	5	Grazing	VII	Grazing	Private
		21	E½SW¼	80.00	Rough	4	Grazing	VII	Grazing	Private
		28	NW¼SW¼	40.00	Rough	4	Grazing	VII	Grazing	Private
35	65	13	S½NE¼	80.00	Rolling to rough badlands	10	Grazing	50/VII:30/VIII	Grazing	Private
		17	SW¼SW¼	40.00	Rolling to rough badlands	2	Grazing	20/VII:20/VIII	Grazing	Private
		20	SE¼SW¼	40.00	Rolling to rough badlands	2	Grazing	20/VII:20/VIII	Grazing	Private
		29	E½NW¼, N½SW¼	160.00	Rolling to rough badlands	6	Grazing	60/VII:100/VIII	Grazing	Private
35	66	6	E½SE¼	80.00	Rolling to rough	12	Grazing	VII	Grazing	Private
		8	S½SW¼	80.00	Rolling to rough	10	Grazing	VII	Grazing	Private
		17	NW¼	160.00	Rolling to rough	22	Grazing	VII	Grazing	Private
		19	Lots 1,2,3,4, E½W½	324.40	Rolling to rough	50	Grazing	VII	Grazing	Private

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Table 4.- Description, Area, Classification, Suitability and Proposed Management of Unreserved Public Domain, by Counties, Within the Isolated Tract Portion of the Angostura Area, Wyoming, Nebraska, and South Dakota, 1953 1/

6th P. M. Wyoming Twp. North	Range West	Sec.	Subdivision	Acres	General Land Character	AUM's	Present Land Use	Land Capability Classification 2/	Principal Suitability	Proposed Management
Niobrara County										
35	66	25	SE¼NE¼	40.00	Rough and barren		Grazing	VIII	Grazing	Private
		28	SW¼SE¼	40.00	Rolling to rough	8	Grazing	VII	Grazing	Private
		30	Lots 1,2, E½NW¼, NE¼SW¼	205.34	Rolling to rough	36	Grazing	VII	Grazing	Private
		32	NE¼SW¼	40.00	Rolling to rough	8	Grazing	VII	Grazing	Private
		33	W½SW¼	80.00	Rolling to rough	16	Grazing	VII	Grazing	Private
		35	S½SW¼, SE¼, SE¼NE¼	280.00	Rolling to rough	43	Grazing	VII	Grazing	Private
35	67	12	S½NE¼, SW¼NW¼, S½SW¼	200.00	Rolling to rough	40	Grazing	VII	Grazing	Private
		13	W½NE¼, SW¼SE¼	120.00	Rolling to rough	22	Grazing	VII	Grazing	Private
		35	SE¼NE¼	40.00	Rolling to rough	8	Grazing	VII	Grazing	Private
36	60	17	NE¼NE¼, NE¼NW¼	80.00	Rolling to rough	16	Grazing	VII	Grazing	Private
		28	NE¼NE¼	40.00	Gently to steeply rolling	10	Grazing	VI	Grazing	Private
36	61	2	Lot 1, SW¼NW¼	78.45	Steeply rolling to rough	12	Grazing	VII	Grazing	Private
		3	NW¼SE¼	40.00	Steeply rolling to rough	6	Grazing	VII	Grazing	Private
		4	Lots 1, 4, SE¼NE¼, SW¼NW¼, SE¼SE¼	195.45	Steeply rolling to rough	40	Grazing	VII	Grazing	Private
		5	Lot 1	36.48	Steeply rolling to rough	8	Grazing	VII	Grazing	Private
		6	Lot 5, SE¼NW¼	77.30	Steeply rolling to rough	14	Grazing	40/VI:37.30/VIII	Grazing	Private
		10	SW¼NE¼, S½SE¼	120.00	Steeply rolling to rough	18	Grazing	VII	Grazing	Private
		12	SE¼SW¼	40.00	Steeply rolling to rough	6	Grazing	VII	Grazing	Private
		18	NE¼SE¼	40.00	Gently rolling	10	Grazing	VI	Grazing	Private
		20	NE¼NW¼	40.00	Gently rolling	8	Grazing	VII	Grazing	Private
		28	SW¼NE¼	40.00	Gently rolling	8	Grazing	VII	Grazing	Private
		30	W½NE¼	80.00	Gently rolling	20	Grazing	VI	Grazing	Private
36	62	3	Lots 3,4, S½NW¼, N½SW¼	239.21	Steeply rolling to mountainous	48	Grazing	VII	Grazing	Private
		4	Lot 1, SE¼NE¼, NE¼SE¼	118.70	Steeply rolling to mountainous	24	Grazing	VII	Grazing	Private
		11	NE¼NE¼, SW¼NE¼, NW¼SE¼	120.00	Steeply rolling to rough	24	Grazing	VII	Grazing	Private
		12	W½NE¼, NW¼, N½SW¼	320.00	Steeply rolling to rough	48	Grazing	160/VII:160/VIII	Grazing	Private
		13	W½SE¼	80.00	Steeply rolling to rough	16	Grazing	VII	Grazing	Private

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Table 4.- Description, Area, Classification, Suitability and Proposed Management of Unreserved Public Domain, by Counties, Within the Isolated Tract Portion of the Angostura Area, Wyoming, Nebraska and South Dakota, 1953 1/

6th P. M. Wyoming Twp. North	Range West	Sec.	Subdivision	Acres	General Land Character	AUM's	Present Land Use	Land Capability Classification 2/	Principal Suitability	Proposed Management
Niobrara County										
36	62	14	SE¼NE¼, E½SE¼	120.00	Steeply rolling to rough	18	Grazing	80/VII:40/VIII	Grazing	Private
		20	SW¼SE¼	40.00	Steeply rolling to rough	6	Grazing	VII	Grazing	Private
		23	SW¼SE¼	40.00	Steeply rolling to rough	10	Grazing	VII	Grazing	Private
		25	S½NW¼, N½SW¼, NW¼SE¼	200.00	Steeply rolling to rough	50	Grazing	100/VI:100/VII	Grazing	Private
		34	SE¼SW¼, S½SE¼	120.00	Steeply rolling to rough	6	Grazing	VIII	Grazing	Private
		35	E½E½	160.00	Steeply rolling to rough	32	Grazing	VII	Grazing	Private
36	63	10	NE¼NW¼, S½NW¼, N½SW¼	200.00	Rolling to rough	50	Grazing	VII	Grazing	Private
		28	SE¼NW¼	40.00	Rolling to rough	10	Grazing	VII	Grazing	Private
		29	SE¼NE¼, W½NE¼, NW¼	280.00	Rolling to rough	70	Grazing	VII	Grazing	Private
		35	SW¼NW¼, N½SW¼, SW¼SW¼	160.00	Rolling to rough	53	Grazing	VII	Grazing	Private
36	64	5	NW¼SW¼	40.00	Sloping to gently rolling	12	Grazing	VI	Grazing	Private
		20	NW¼NW¼	40.00	Rolling to rough	8	Grazing	VII	Grazing	Private
		21	NW¼NE¼	40.00	Gently rolling	11	Grazing	VI	Grazing	Private
		26	S½NW¼, N½S½	240.00	Gently rolling	60	Grazing	VI	Grazing	Private
		30	Lots 1, 4, SE¼SW¼	131.00	Gently rolling	29	Grazing	VI	Grazing	Private
		31	Lots 1,2,3, E½NW¼,NE¼SW¼	254.79	Gently rolling	59	Grazing	VI	Grazing	Private
		33	SW¼SW¼, SE¼NE¼, NE¼SE¼	120.00	Rolling to rough	22	Grazing	VII	Grazing	Private
		35	N½NE¼	80.00	Gently rolling	20	Grazing	VI	Grazing	Private
37	62	1	SW¼SW¼	40.00	Very rough and broken	4	Grazing	VIII	Grazing	Private
		2	SE¼NW¼	40.00	Very rough and broken	4	Grazing	VIII	Grazing	Private
		14	NE¼NE¼, SW¼SE¼	80.00	Steeply rolling to mountainous	18	Grazing	40/VI:40/VII	Grazing	Private
		19	Lot 4, SE¼SW¼, SW¼SE¼	119.80	Gently to steeply rolling	36	Grazing	VI	Grazing	Private
		21	E½E½	160.00	Steeply rolling to mountainous	32	Grazing	VII	Grazing	Private
		22	S½NW¼, SW¼, SW¼NE¼	280.00	Steeply rolling to mountainous	56	Grazing	VII	Grazing	Private
		23	S½SW¼, NW¼NE¼	120.00	Steeply rolling to mountainous	32	Grazing	VII	Grazing	Private
		25	SE¼NE¼	40.00	Steeply rolling to mountainous	8	Grazing	VII	Grazing	Private
		26	NE¼NW¼, W½NW¼, NW¼SW¼	160.00	Steeply rolling to mountainous	24	Grazing	VII	Grazing	Private
		34	S½SW¼	80.00	Steeply rolling to mountainous	16	Grazing	VII	Grazing	Private
37	63	1	SW¼SE¼	40.00	Very rough and broken	8	Grazing	VII	Grazing	Private

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Table 4.- Description, Area, Classification, Suitability and Proposed Management of Unreserved Public Domain, by Counties, Within the Isolated Tract Portion of the Angostura Area, Wyoming, Nebraska and South Dakota, 1953 1/

6th P. M. Wyoming Twp. North	Range West	Sec.	Subdivision	Acres	General Land Character	AUM's	Present Land Use	Land Capability Classification 2/	Principal Suitability	Proposed Management
Niobrara County										
37	63	2	NW¼, NW¼SW¼	196.51	Very rough and broken	40	Grazing	VII	Grazing	Private
		22	SE¼NE¼, NW¼NW¼, SW¼SW¼	120.00	Steeply rolling to mountainous	24	Grazing	VII	Grazing	Private
		24	S½SE¼	80.00	Gently to steeply rolling	20	Grazing	VII	Grazing	Private
		25	W½NE¼	80.00	Gently to steeply rolling	20	Grazing	VII	Grazing	Private
37	64	2	NW¼SW¼	40.00	Rough and broken badlands	6	Grazing	VII	Grazing	Private
		3	Lot 4, SW¼NW¼, NW¼SW¼	121.22	Rough and broken badlands	18	Grazing	VII	Grazing	Private
		8	SE¼SE¼	40.00	Rough and broken badlands	2	Grazing	VII	Grazing	Private
		10	E½	320.00	Rough and broken badlands	48	Grazing	VII	Grazing	Private
38	60	7	Lots 3,4, E½SW¼	163.90	Rolling to rough	12	Grazing	123.90/VII:40/VIII	Grazing	Private
		9	SE¼SW¼, SW¼SE¼, E½SE¼	160.00	Rolling to rough	44	Grazing	VII	Grazing	Private
		19	SE¼SE¼	40.00	Rolling to rough	10	Grazing	VII	Grazing	Private
38	63	19	NE¼	160.00	Rolling	48	Grazing	VI	Grazing	Private
		27	NE¼SW¼, S½SW¼	120.00	Steeply rolling to rough	24	Grazing	VII	Grazing	Private
		31	Lot 2, NE¼SW¼	81.16	Steeply rolling to rough	20	Grazing	VII	Grazing	Private
		33	NE¼NE¼	40.00	Steeply rolling to rough	10	Grazing	VII	Grazing	Private
38	64	20	SW¼SW¼	40.00	Rough and broken	8	Grazing	VII	Grazing	Private
		27	E½NE¼	80.00	Rough and broken	12	Grazing	VII	Grazing	Private
		29	SW¼NW¼, E½SW¼	120.00	Rough and broken	24	Grazing	VII	Grazing	Private
		32	SE¼NW¼, NE¼SW¼, N½SE¼	160.00	Rough and broken	32	Grazing	VII	Grazing	Private
		33	SW¼SW¼	40.00	Rough and broken	8	Grazing	VII	Grazing	Private
		35	E½NE¼	80.00	Rough and broken	12	Grazing	VII	Grazing	Private
39	60	18	Lot 2, SE¼NW¼, SW¼SE¼	122.30	Rough	18	Grazing	VII	Grazing	Private
Weston County										
45	67	2	SW¼SW¼	40.00	Steeply rolling, rough	9	Grazing	VII	Grazing	Private
		3	Lots 2,3,4, S½NW¼, SW¼NE¼, NW¼SE¼, S½SE¼	361.75	Steeply rolling, rough	78	Grazing	VII	Grazing	Private
		7	Lots 1, 2	80.22	Steeply rolling, rough	16	Grazing	VII	Grazing	Private

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Table 4.- Description, Area, Classification, Suitability and Proposed Management of Unreserved Public Domain, by Counties, Within the Isolated Tract Portion of the Angostura Area, Wyoming, Nebraska and South Dakota, 1953 1/

6th P. M. Wyoming Twp. North	Range West	Sec.	Subdivision	Acres	Genral Land Character	AUM's	Present Land Use	Land Capability Classification 2/	Principal Suitability	Proposed Management
Weston County										
45	67	10	NW¼NE¼, E½NE¼	120.00	Steeply rolling, rough	26	Grazing	VII	Grazing	Private
		11	W½NW¼	80.00	Steeply rolling, rough	17	Grazing	30/VI:50/VII	Grazing	Private
		12	NW¼SW¼	40.00	Steeply rolling, rough	9	Grazing	VII	Grazing	Private
45	68	1	Lot 4, SW¼NW¼, W½SW¼	160.05	Steeply rolling, rough	38	Grazing	VII	Grazing	Private
		2	Lots 1, 2, 3, 4	162.35	Steeply rolling, rough	38	Grazing	VII	Grazing	Private
		3	SW¼SW¼, SE¼	200.00	Steeply rolling, rough	49	Grazing	60/VI:140/VII	Grazing	Private
		4	SE¼	160.00	Steeply rolling, rough	31	Grazing	40/VI:120/VII	Grazing	Private
		7	NE¼SE¼	40.00	Steeply rolling, rough	8	Grazing	VI	Grazing	Private
		8	NW¼SW¼	40.00	Steeply rolling, rough	8	Grazing	VI	Grazing	Private
		9	E½, E½W½, SW¼SW¼	520.00	Steeply rolling, rough	129	Grazing	140/VI:380/VII	Grazing	Private
		10	NW¼, N½SW¼	240.00	Steeply rolling, rough	58	Grazing	40/VI:200/VII	Grazing	Private
		11	S½SW¼	80.00	Steeply rolling, rough	20	Grazing	VI	Grazing	Private
		15	S½S½	160.00	Steeply rolling, rough	39	Grazing	80/VI:80/VII	Grazing	Private
		19	SW¼NE¼, SE¼SE¼	80.00	Steeply rolling, rough	16	Grazing	30/VI:50/VII	Grazing	Private
		21	NE¼, E½NW¼, SW¼NW¼, SW¼	440.00	Steeply rolling, rough	108	Grazing	60/VI:380/VII	Grazing	Private
		29	SE¼NE¼, NE¼SE¼, SW¼NW¼	120.00	Steeply rolling, rough	24	Grazing	40/VI:80/VII	Grazing	Private
		31	SE¼	160.00	Steeply rolling, rough	33	Grazing	50/VI:110/VII	Grazing	Private
46	68	25	S½SE¼, NE¼SE¼	120.00	Gently to steeply rolling	21	Grazing	VII	Grazing	Private
46	61	35	SW¼SW¼	40.00	Rolling to rough	3	Grazing	VII	Grazing, Timber	Private
46	62	4	W½SW¼	80.00	Mountainous	5	Grazing	40/VII:40/VIII	Grazing	Private
		15	NW¼NW¼, N½SW¼	120.00	Mountainous	6	Grazing	60/VII:60/VIII	Grazing	Private
		23	SW¼NE¼, SE¼NW¼	80.00	Mountainous	4	Grazing	20/VI:60/VIII	Grazing	Private
		25	NW¼	160.00	Mountainous	15	Grazing	75/VI:85/VIII	Grazing	Private
		27	NW¼NE¼, NE¼SE¼, SW¼SE¼	120.00	Mountainous	6	Grazing	30/VI:90/VIII	Grazing	Private
		33	NE¼SE¼	40.00	Mountainous	2	Grazing	15/VII:25/VIII	Grazing	Private
46	67	22	S½SE¼	80.00	Gently to steeply rolling	14	Grazing	VI	Grazing	Private
		27	E½NE¼	80.00	Gently to steeply rolling	14	Grazing	VI	Grazing	Private

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Table 4.- Description, Area, Classification, Suitability and Proposed Management of Unreserved Public Domain, by Counties, Within the Isolated Tract Portion of the Angostura Area, Wyoming, Nebraska and South Dakota, 1953 1/

6th P. M. Wyoming Twp. North	Range West	Sec.	Subdivision	Acres	General Land Character	AUM's	Present Land Use	Land Capability Classification 2/	Principal Suitability	Proposed Management
Weston County										
46	67	30	Lots 2,3,4, NE¼SW¼, NW¼SE¼	199.59	Gently to steeply rolling	35	Grazing	VII	Grazing	Private
		31	Lots 1,2,3,4	160.20	Gently to steeply rolling	28	Grazing	VII	Grazing	Private
		34	SE¼	160.00	Steeply rolling to rough hills	24	Grazing	VII	Grazing	Private
47	61	14	NE¼NW¼	40.00	Rolling to rough	6	Grazing	VII	Grazing	Private
		19	NE¼NW¼	40.00	Mountainous	3	Grazing	VII	Grazing	Private
		21	E½NE¼	80.00	Mountainous	8	Grazing	VII	Grazing	Private
		26	SW¼NW¼	40.00	Rolling to rough	4	Grazing	VII	Grazing	Private
		28	SE¼NE¼	40.00	Mountainous	2	Grazing	VII	Grazing	Private
		34	NE¼NW¼	40.00	Rolling to rough	6	Grazing	VII	Grazing	Private
47	62	5	W½NE¼, NW¼SE¼, SW¼NW¼, W½SW¼	240.03	Mountainous	7	Grazing	10/VI:230.03/VIII	Grazing	Private
		6	NE¼SW¼	40.00	Mountainous	1	Grazing	VIII	Grazing	Private
		7	Lot 1, NE¼NW¼, NW¼SE¼	117.48	Mountainous	6	Grazing	30/VI:87.48/VIII	Grazing	Private
		8	SE¼SW¼, S½SE¼, NE¼SE¼	160.00	Mountainous	4	Grazing	20/VI:140/VIII	Grazing	Private
		12	NW¼NE¼	40.00	Mountainous	2	Grazing	10/VI:30/VIII	Grazing	Private
		14	NE¼SW¼, NW¼SE¼	80.00	Mountainous	2	Grazing	VIII	Grazing	Private
		17	NE¼NW¼	40.00	Mountainous	1	Grazing	5/VI:35/VIII	Grazing	Private
		19	Lots 3, 4	73.63	Mountainous	4	Grazing	20/VII:53.63/VIII		
48	61	31	NW¼NE¼	40.00	Gently to steeply sloping	5	Grazing	VII	Grazing	Private
48	63	13	SE¼SE¼	40.00	Mountainous	3	Grazing	30/VII:10/VIII	Grazing, Timber	Private
		13	SW¼SW¼	40.00	Mountainous	6	Grazing	30/VII:10/VIII	Grazing	Private
		14	SE¼SE¼	40.00	Mountainous	6	Grazing	30/VII:10/VIII	Grazing	Private
		24	NE¼NE¼	40.00	Mountainous	6	Grazing	30/VII:10/VIII	Grazing	Private

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Table 4.- Description, Area, Classification, Suitability and Proposed Management of Unreserved Public Domain, by Counties, Within the Isolated Tract Portion of the Angostura Area, Wyoming, Nebraska and South Dakota, 1953 1/

Black Hills P.M.
South Dakota

Twp. South	Range East	Sec.	Subdivision	Acres	General Land Character	AUM's	Present Land Use	Land Capability Classification 2/	Principal Suitability	Proposed Management
Custer County										
6	6	2	SW¼NE¼	40.00	Rough and broken	5	Grazing	VII	Grazing	Private
		4	Lot 3	40.08	Rough and mountainous	6	Grazing	VII	Grazing	Private
		13	NE¼SW¼	40.00	Rough and mountainous	4	Grazing	VII	Grazing	Private
		14	SE¼NE¼	40.00	Rough and mountainous	6	Grazing	VII	Grazing	Private
		27	SW¼SE¼	40.00	Mountainous	10	Grazing	30/VI:10/VII	Grazing	Private
		30	Lot 1	36.60	Steeply rolling	12	Grazing	VI	Grazing	Federal
		32	SW¼SE¼	40.00	Steeply rolling	12	Grazing	VI	Grazing	Federal
		34	NE¼NE¼, NE¼SE¼	80.00	Mountainous	20	Grazing	60/VI:20/VII	Grazing	Private
6	3	3	Lot 3	40.08	Gently rolling	12	Grazing	VI	Grazing, Wildlife	Federal
		6	Lots 3,4, SE¼SW¼	108.34	Steeply rolling	26	Grazing	VII	Grazing, Wildlife	Federal
		10	SE¼SW¼	40.00	Steeply rolling	5	Grazing	VII	Grazing, Wildlife	Federal
		15	NW¼NW¼, S½NW¼, SW¼NE¼	160.00	Steep coulees and canyons	19	Grazing, Wildlife	VII	Grazing, Wildlife	Federal
		24	NE¼NE¼, W½NE¼	120.00	Steeply rolling	21	Grazing	VII	Grazing	Federal
		31	Lots 1,2	64.77	Steeply rolling	14	Grazing	VII	Grazing	Federal
6	2	1	N½NE¼, NE¼NW¼	120.00	Steeply rolling	24	Grazing	VII	Grazing	Federal
		3	N½SW¼	80.00	Steeply rolling	20	Grazing	VII	Grazing	Federal
		4	NE¼SE¼	40.00	Steeply rolling	10	Grazing	VII	Grazing, Wildlife	Federal
		5	N½N½, SE¼NE¼	200.00	Steeply rolling	45	Grazing	VII	Grazing, Wildlife	Federal
		6	N½NE¼, E½NW¼, Lots 1,2	255.51	Steeply rolling	57	Grazing	VII	Grazing, Wildlife	Federal
		7	SE¼SW¼	40.00	Steeply rolling	8	Grazing	VII	Grazing, Wildlife	Federal

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Table 4.- Description, Area, Classification, Suitability and Proposed Management of Unreserved Public Domain, by Counties, Within the Isolated Tract Portion of the Angostura Area, Wyoming, Nebraska and South Dakota, 1953 1/

Black Hills P.M.
South Dakota

Twp. South	Range East	Sec.	Subdivision	Acres	General Land Character	AUM's	Present Land Use	Land Capability Classification 2/	Principal Suitability	Proposed Management
Custer County										
6	2	11	NW¼SE¼	40.00	Mountainous	8	Grazing	VII	Grazing, Wildlife	Federal
		12	W½SE¼, SE¼SE¼	120.00	Mountainous	22	Grazing	VII	Grazing, Wildlife	Federal
		25	NE¼NW¼	40.00	Mountainous	8	Grazing	VII	Grazing, Wildlife	Federal
		34	Lot 3, NW¼SE¼	76.65	Mountainous	12	Grazing	VII	Grazing, Wildlife	Federal
6	1	1	Lots 2,3,4, SW¼NE¼, S½NW¼, SW¼	400.00	Coulees and cut banks	80	Grazing, Wildlife	VII	Grazing, Wildlife	Federal
		2	Lot 1, SE¼NE¼, SW¼SE¼, E½SE¼	200.00	Steeply rolling, coulees, banks	40	Grazing, Wildlife	VII	Grazing, Wildlife	Federal
		6	SE¼NE¼	40.00	Steeply rolling, coulees, banks	8	Grazing, Wildlife	VII	Grazing, Wildlife	Federal
		8	Lot 2	39.98	Steeply rolling, coulees, banks	8	Grazing, Wildlife	VII	Grazing, Wildlife	Federal
		12	W½NW¼	80.00	Steeply rolling	16	Grazing	VII	Grazing, Wildlife	Federal
		21	SW¼SE¼	40.00	Steeply rolling	5	Grazing	VII	Grazing	Federal
		28	W½NE¼, SE¼NW¼	120.00	Steeply rolling	15	Grazing	VII	Grazing	Federal
5	7	14	S½SW¼	80.00	Rolling to rough	27	Grazing	VII	Grazing	Private
		23	NE¼NW¼	40.00	Rolling to rough	13	Grazing	VII	Grazing	Private
5	6	28	SW¼SW¼	40.00	Rolling to rough	5	Grazing	VII	Grazing	Federal
5	2	6	Lots 1, 2	73.51	Rough and mountainous	10	Grazing	VII	Grazing	Private
		18	NE¼NW¼	40.00	Rough and mountainous	4	Grazing	VII	Grazing	Federal
		30	SE¼SW¼	40.00	Steeply rolling	8	Grazing	VII	Grazing	Federal
		31	NE¼NW¼	40.00	Steeply rolling	8	Grazing	VII	Grazing	Federal
		32	S½NE¼, S½SW¼, SE¼	320.00	Steeply rolling	64	Grazing	VII	Grazing, Timber	Federal

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Table 4.- Description, Area, Classification, Suitability and Proposed Management of Unreserved Public Domain, by Counties, Within the Isolated Tract Portion of the Angostura Area, Wyoming, Nebraska and South Dakota, 1953 1/

Black Hills P. M.
South Dakota

Twp. South	Range East	Sec.	Subdivision	Acres	General Land Character	AUM's	Present Land Use	Land Capability Classification 2/	Principal Suitability	Proposed Management
Custer County										
5	2	33	SW¼, N½SE¼	240.00	Coulees and cutbanks	48	Grazing	VII	Grazing, Timber	Federal
5	1	1	Lot 2	36.65	Mountainous	5	Grazing	VII	Timber, Grazing	Federal
		2	Lot 3, SE¼NW¼, SW¼NE¼	117.15	Gently to steeply rolling	40	Wildlife	VI	Timber, Grazing	Federal
		2	N½SE¼	80.00	Rolling to rough	20	Grazing	VI	Grazing	Federal
		10	NW¼SE¼	40.00	Steeply rolling	10	Grazing	VII	Grazing	Federal
		22	W½SW¼, SE¼	240.00	Deep coulees, rough	50	Grazing	VII	Grazing	Federal
		25	SW¼NE¼, W½SE¼	120.00	Steep, rough cliffs	8	Grazing	VII	Grazing	Federal
		26	SE¼SE¼	40.00	Rough and mountainous	4	Grazing	VII	Grazing	Federal
		27	SW¼NW¼, NE¼SE¼	80.00	Badly cut, barren	10	Grazing	VIII	Grazing	Federal
		35	NE¼, NE¼SE¼, Lot 4	226.62	Rough and mountainous	53	Grazing	VII	Grazing	Federal
4	8	11	SW¼NW¼	40.00	Rough and broken	5	Grazing	30/VII:10/VIII	Grazing	Private
		14	S½NE¼, SE¼NW¼, NW¼SW¼, E½SW¼, NW¼SE¼	280.00	Rolling to rough	77	Grazing	VI	Grazing	Private
		22	N½NE¼	80.00	Rolling to rough	22	Grazing	VI	Grazing	Private
		23	N½NE¼, NW¼	240.00	Rolling to rough	66	Grazing	VI	Grazing	Private
		26	SE¼NE¼	40.00	Rolling to rough	9	Grazing	VI	Grazing	Private
4	7	7	Lot 2	40.11	Steep hill	12	Grazing	VI	Grazing	Private
		30	SW¼SE¼	40.00	Steep rough and mountainous	4	Grazing	VII	Grazing	Private
		34	NE¼SE¼	40.00	Hilly	10	Grazing	VII	Grazing	Private
4	2	31	E½SE¼	80.00	Mountainous	11	Grazing	VII	Grazing	Private
		31	Lots 2, 4	70.36	Mountainous	10	Grazing	VII	Timber, Grazing	Federal
		32	SW¼SE¼	40.00	Mountainous	10	Grazing	VII	Timber, Grazing	Federal
4	1	4	SW¼NW¼	40.00	Mountainous	10	Grazing	VII	Grazing, Wildlife	Federal

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Table 4.- Description, Area, Classification, Suitability and Proposed Management of Unreserved Public Domain, by Counties, Within the Isolated Tract Portion of the Angostura Area, Wyoming, Nebraska and South Dakota, 1953 1/

Black Hills P. M.
South Dakota

Twp. South	Range East	Sec.	Subidivision	Acres	General Land Character	AUM's	Present Land Use	Land Capability Classification 2/	Principal Suitability	Proposed Management
Custer County										
4	1	33	SE¼NE¼, W½NE¼, SE¼	280.00	Gently to steeply rolling	56	Grazing	VII	Grazing, Wildlife	Federal
		34	NE¼SW¼, W½SW¼	120.00	Steep coulees	24	Wildlife	VII	Grazing, Wildlife	Federal
3	9	6	Lot 1, SE¼NE¼, SE¼NW¼, NE¼SE¼	159.72	Rolling	44	Grazing	VI	Grazing	Private
3	8	11	SW¼SE¼	40.00	Rolling	7	Grazing	20/VI:20/VII	Grazing	Private
3	7	2	Lot 3	40.16	Very rough and mountainous	5	Grazing	25/VII:15.16/VIII	Grazing	Private
		11	SW¼NW¼	40.00	Steeply rolling and mountainous	10	Grazing	VII	Grazing	Private
		31	NW¼NE¼	40.00	Steeply rolling and steep coulees	7	Grazing	VII	Grazing	Private
3	1	20	N½NW¼, SE¼SE¼SE¼	90.00	Rough and mountainous	10	Grazing	VII	Grazing	Federal
		21	S½S½	160.00	Rough and mountainous	28	Grazing	VII	Stock Driveway	Federal
		28	SE¼SW¼	40.00	Rough and mountainous	5	Grazing	VII	Timber, Wildlife	Federal
		29	N½NE¼	80.00	Very rough and mountainous	14	Stock Driveway	VII	Stock Driveway	Federal
		30	Lot 1	41.96	Mountainous	5	Wildlife	VII	Grazing, Wildlife	Federal
		31	SE¼NE¼	40.00	Steeply rolling	10	Grazing	VI	Grazing	Federal
2	7	19	W½NE¼SW¼	20.00	Rough and mountainous		Mining	VIII	Mining	Federal
		29	E½W½NE¼, W½SE¼NW¼	60.00	Rough and mountainous		Mining	VIII	Mining	Federal
Fall River County										
10	4	10	NW¼NW¼	40.00	Steeply rolling to rough	8	Grazing	VII	Grazing	Private
		17	E½NE¼	80.00	Gently rolling	12	Grazing	VII	Grazing	Private
10	3	1	S½NW¼	80.00	Steeply rolling to rough	10	Grazing	VII	Grazing	Private

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Table 4.- Description, Area, Classification, Suitability and Proposed Management of Unreserved Public Domain, by Counties, Within the Isolated Tract Portion of the Angostura Area, Wyoming, Nebraska and South Dakota, 1953 1/

Black Hills P. M. South Dakota

Twp. South	Range East	Sec.	Subdivision	Acres	General Land Character	AUM's	Present Land Use	Land Capability Classification 2/	Principal Suitability	Proposed Management
Fall River County										
10	3	21	NW¼SW¼	40.00	Steeply rolling to rough	5	Grazing	VII	Grazing	Private
		34	NE¼NE¼	40.00	Rough badlands	5	Grazing	VII	Grazing	Private
		35	SE¼NW¼	40.00	Rough badlands	5	Grazing	VII	Grazing	Private
9	6	10	NW¼SE¼	40.00	Gently rolling	20	Grazing	VI	Grazing	Federal
9	5	11	SW¼SW¼, E½SW¼	120.00	Steeply rolling	24	Grazing	VII	Grazing	Federal
		14	N½NW¼, N½SW¼	160.00	Steeply rolling	36	Grazing	VII	Grazing	Federal
		15	N½, NW¼SW¼	360.00	Steeply rolling	60	Grazing	VII	Grazing	Federal
		17	NE¼, S½NW¼	240.00	Steeply rolling	40	Grazing	VII	Grazing	Federal
		24	NE¼NE¼	40.00	Steeply rolling	10	Grazing	VI	Grazing	Federal
9	4	3	SW¼SE¼	40.00	Gently rolling to broken	8	Grazing	5/VI:20/VII: 15/VIII	Grazing	Federal
		10	NW¼NE¼	40.00	Gently rolling	2	Grazing	VII	Grazing	Federal
		10	NW¼SE¼	40.00	Gently rolling	2	Grazing	VII	Grazing	Private
		11	NE¼NE¼	40.00	Gently rolling	8	Grazing	VII	Grazing	Federal
		27	SW¼NW¼	40.00	Steep, rocky hills	10	Grazing	VII	Grazing	Private
9	3	2	NW¼SE¼, S½SE¼	120.00	Sandstone cliffs	18	Grazing	VII	Grazing	Federal
		11	N½NE¼	80.00	Sandstone cliffs	30	Grazing	VII	Grazing	Federal
		11	S½S½	160.00	Steeply rolling to rough	28	Grazing	140/VII:20/VIII	Grazing	Private
		12	W½NW¼	80.00	Steeply rolling to rough	13	Grazing	VII	Grazing	Private
		13	SW¼NE¼	40.00	Rough, broken	5	Grazing	VII	Grazing	Federal
		14	N½	320.00	Steeply rolling to rough	56	Grazing	270/VII:50/VIII	Grazing	Private
		15	S½NE¼, S½SW¼, SE¼	320.00	Steeply rolling to rough	66	Grazing	300/VII:20/VIII	Grazing	Private
		18	N½NE¼, SE¼NE¼	120.00	Steeply rolling to rough	19	Grazing	VII	Grazing	Private
		22	NE¼	160.00	Steeply rolling to rough	32	Grazing	VII	Grazing	Private
		26	SE¼SW¼	40.00	Gently to steeply rolling	8	Grazing	VII	Grazing	Private
		31	Lot 4	30.95	Gently to steeply rolling	5	Grazing	VII	Grazing	Private
		31	NE¼SE¼	40.00	Rough badlands	5	Grazing	VII	Grazing	Private
8	7	11	NE¼SE¼	40.00	Steeply rolling	12	Grazing	VI	Grazing	Private
8	6	11	NW¼NE¼	40.00	Steeply rolling river banks	4	Grazing	VII	Grazing	Private

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Table 4.- Description, Area, Classification, Suitability and Proposed Management of Unreserved Public Domain, by Counties, Within the Isolated Tract Portion of the Angostura Area, Wyoming, Nebraska, and South Dakota, 1953 1/

Black Hills P. M.
South Dakota

Twp. South	Range East	Sec.	Subdivision	Acres	General Land Character	AUM's	Present Land Use	Land Capability Classification 2/	Principal Suitability	Proposed Management
Fall River County										
8	3	21	S½NE¼, N½SE¼	160.00	Rough and steep	47	Grazing	VII	Grazing	Federal
		22	SW¼NW¼, N½SW¼, SE¼SW¼	160.00	Rough and steep	47	Grazing	VII	Grazing	Federal
		28	SE¼NW¼, NE¼SW¼, SW¼NE¼, NW¼SE¼	160.00	Rough and steep	48	Grazing	VII	Grazing	Federal
8	2	2	SW¼SW¼	40.00	Steeply rolling	8	Grazing	VII	Grazing	Federal
		3	Lot 2, SE¼SE¼	82.74	Steeply rolling	13	Grazing	VII	Grazing	Federal
		8	SE¼SW¼, SW¼SE¼	80.00	Gently rolling	13	Grazing	VII	Grazing	Federal
		10	NE¼	160.00	Steeply rolling	25	Grazing	VII	Grazing	Federal
		11	N½NW¼	80.00	Steeply rolling	12	Grazing	VII	Grazing	Federal
		12	NW¼NE¼	40.00	Steeply rolling	10	Grazing	VII	Grazing	Federal
		22	NE¼SE¼	40.00	Steeply rolling	8	Grazing	VII	Grazing	Federal
		27	NE¼NW¼	40.00	Steeply rolling	10	Grazing	VII	Grazing	Federal
		33	NW¼NE¼	40.00	Steeply rolling	8	Grazing	VII	Grazing	Private
		34	NE¼SW¼	40.00	Steeply rolling	8	Grazing	VII	Grazing	Private
7	8	5	SE¼	160.00	Steeply rolling	24	Grazing	VII	Grazing	Private
		8	NE¼NE¼	40.00	Steeply rolling	6	Grazing	VII	Grazing	Private
		9	NE¼NW¼, NW¼NE¼	80.00	Rolling to rough	8	Grazing	VII	Grazing	Private
		10	SW¼NE¼, SE¼NW¼	80.00	Rolling to rough	10	Grazing	VII	Grazing	Private
7	7	8	Lot 4	4.42	Rolling to rough	1	Grazing	VII	Grazing	Private
		17	Lots 1,2,3,4,5,6,7,8	90.79	Rolling to rough	9	Grazing	VII	Grazing	Private
		17	NW¼SW¼	40.00	Rolling to rough and broken	6	Grazing	VII	Grazing	Private
		18	NE¼SE¼	40.00	Rolling to rough and broken	6	Grazing	VII	Grazing	Private
		20	SW¼NW¼	40.00	Rolling to rough and broken	8	Grazing	VII	Grazing	Private
		29	N½NW¼, W½SW¼	160.00	Rolling to rough	24	Grazing	VII	Grazing	Private
		30	Lot 4, N½NE¼, SE¼SW¼, SE¼SE¼	199.54	Rolling to rough	52	Grazing	VII	Grazing	Private
		31	Lots 1,2, E½NW¼	159.24	Rolling to rough	40	Grazing	VII	Grazing	Private
7	6	1	Lot 4	40.44	Rough and mountainous	10	Grazing	VII	Grazing	Private
		5	SE¼SE¼	40.00	Rough and mo untainous	8	Grazing	VII	Grazing	Federal

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Table 4.- Description, Area, Classification, Suitability and Proposed Management of Unreserved Public Domain, by Counties, Within the Isolated Tract Portion of the Angostura Area, Wyoming, Nebraska, and South Dakota, 1953 1/

Black Hills P. M.
South Dakota

Twp. South	Range East	Sec.	Subdivision	Acres	General Land Character	AUM's	Present Land Use	Land Capability Classification 2/	Principal Suitability	Proposed Management
Fall River County										
7	6	8	NE¼NE¼	40.00	Rough and mountainous	8	Grazing	VII	Grazing	Federal
		20	SE¼	160.00	Rough and mountainous	24	Grazing	VII	Grazing, Timber	Federal
		21	SW¼, SW¼SE¼	200.00	Rough and mountainous	32	Grazing	VII	Grazing	Federal
		26	NW¼SE¼, S½SE¼	120.00	Broken badlands	15	Grazing	VII	Grazing	Federal
		28	SW¼NW¼	40.00	Rough and mountainous	6	Grazing	VII	Grazing, Timber	Federal
		29	N½NE¼, SE¼NE¼	120.00	Rough and mountainous	20	Grazing	VII	Grazing, Timber	Federal
		35	NE¼, E½SW¼	240.00	Broken badlands	30	Grazing	VII	Grazing	Federal
7	3	3	Lots 3,4, S½SW¼	158.94	Rolling, mountainous	24	Grazing	VII	Grazing, Timber	Federal
		10	NE¼NE¼, NE¼SW¼, N½SE¼	160.00	Rolling,mountainous	38	Grazing	VII	Grazing, Timber	Federal
		11	W½NW¼	80.00	Rolling, mountainous	18	Grazing	VII	Grazing, Timber	Federal
7	2	3	SE¼NE¼	40.00	Gently rolling	10	Grazing	VI	Grazing	Federal
		18	NE¼SW¼	40.00	Mountainous, steep	6	Grazing	VII	Grazing, Timber	Federal
		34	SE¼NW¼, NE¼	200.00	Rolling, mountainous	50	Grazing	VII	Grazing, Timber	Federal
7	1	3	SE¼SE¼	40.00	Badlands	6	Grazing	VII	Grazing	Federal
		4	E½SW¼	80.00	Steeply rolling	20	Grazing	VII	Grazing	Federal
		8	N½SW¼	80.00	Steeply rolling	12	Grazing	VII	Grazing	Federal
		10	NE¼SE¼	40.00	Badlands	5	Grazing	VII	Grazing	Federal
		11	W½NW¼, NW¼SW¼	120.00	Badlands	24	Grazing	VII	Grazing	Federal
		12	NE¼SW¼	40.00	Badlands	8	Grazing	VII	Grazing	Federal
		14	SE¼NE¼	40.00	Badlands	9	Grazing	VII	Grazing	Federal

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Table 4.- Description, Area, Classification, Suitability and Proposed Management of Unreserved Public Domain, by Counties, Within the Isolated Tract Portion of the Angostura Area, Wyoming, Nebraska, and South Dakota, 1953 1/

Twp. South	Range East	Sec.	Subdivision	Acres	General Land Character	AUM's	Present Land Use	Land Capability Classification 2/	Principal Suitability	Proposed Management
Black Hills P. M. South Dakota										
Fall River County										
7	1	17	NE¼SW¼, N½SE¼	120.00	Steeply rolling	22	Grazing	VII	Grazing	Federal
		18	N½NE¼	80.00	Steeply rolling	20	Grazing	VI	Grazing	Federal
		24	SE¼SE¼	40.00	Rough and mountainous	8	Grazing	VII	Grazing	Federal
		26	NW¼NW¼	40.00	Steeply rolling	6	Grazing	VII	Grazing	Federal
		27	NE¼NE¼	40.00	Steeply rolling	6	Grazing	VII	Grazing	Federal
Pennington County										
2	7	2	NW¼SE¼	40.00	Steeply rolling to rough	10	Grazing	20/VI:20/VII	Grazing	Private
		13	SW¼SW¼	40.00	Steeply rolling to rough	10	Grazing	20/VI:20/VII	Grazing	Private
		14	S½S½	160.00	Steeply rolling to rough	50	Grazing	110/VI:50/VII	Grazing	Private
		19	W½NE¼SW¼	20.00	Very rough and mountainous		Grazing	20/VIII	Grazing	Private
1	7	35	W½E½, NE¼NE¼	200.00	Steeply rolling to mountainous	53	Grazing	VII	Grazing	Private
6th P. M. Nebraska										
Sioux County										
32	56	2	NW¼SE¼	40.00	Rolling pine hills	4	Grazing	5/V:20/VI:15/VIII	Grazing	Private
		9	W½NW¼	80.00	Rolling to rough	8	Grazing	VII	Grazing	Private
		12	SE¼NW¼, NE¼SW¼	80.00	Rolling pine hills	10	Grazing	25/V:55/VII	Grazing	Private
		24	NE¼NW¼, NW¼NE¼	80.00	Rolling pine hills	15	Grazing	30/V:50/VI	Grazing	Private
32	57	2	Lot 4, SE¼NW¼, SW¼NE¼	121.88	Rolling to rough and steep	25	Grazing	VII	Grazing	Private
33	54	2	NE¼SW¼	40.00	Level to rolling	10	Grazing	VII	Grazing	Private
		13	NE¼NW¼	40.00	Rolling pine hills	8	Grazing	10/VI:30/VII	Grazing	Private
		34	NE¼NW¼	40.00	Level to rolling	11	Grazing	25/VI:15/VIII	Grazing	Private

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Table 4.- Description, Area, Classification, Suitability and Proposed Management of Unreserved Public Domain, by Counties, Within the Isolated Tract Portion of the Angostura Area, Wyoming, Nebraska, and South Dakota, 1953 1/

6th P. M.
Nebraska

Twp. North	Range West	Sec.	Subdivision	Acres	General Land Character	AUM's	Present Land Use	Land Capability Classification 2/	Principal Suitability	Proposed Management
Sioux County										
33	55	33	NW¼NE¼	40.00	Rough, barren		Watershed	VIII	Watershed	Private
33	56	7	SE¼SE¼	40.00	Level to rolling	6	Grazing	VI	Grazing	Private
		35	SW¼NW¼, NW¼SW¼	80.00	Rolling with steep coulees	24	Grazing	65/VI:15/VIII	Grazing	Private
34	54	35	SW¼SW¼	40.00	Level to rolling	10	Grazing	VII	Grazing	Private
34	57	22	SW¼	160.00	Benches and cut coulees	34	Grazing	VII	Grazing	Private

Totals by Counties	Total Acres	Acres by Land Capability Classes V	VI	VII	VIII
Wyoming:					
Campbell	5,800.50		120.00	5,680.50	
Converse	14,793.86		3,374.83	11,419.03	
Natrona	720.00			720.00	
Niobrara	18,163.05	10.00	2,661.05	13,744.81	1,747.19
Weston	5,995.30		1,090.00	3,809.16	1,096.14
South Dakota:					
Custer	6,998.25		1,303.66	5,509.43	185.16
Fall River	7,727.06		245.00	7,377.06	105.00
Pennington	460.00		150.00	290.00	20.00
Nebraska:					
Sioux	881.88	60.00	210.00	526.88	85.00
GRAND TOTAL	61,539.90	70.00	9,154.54	49,076.87	3,238.49

1/ This table has been compiled from the individual tract classification reports of the Bureau of Land Management, Billings, Montana
2/ See appendix C for detailed description of land-use capability classification.
3/ Stock driveway withdrawal.
4/ Public Water Reserve.

Appendix A - Methods of Land Classification

Land classification in the Angostura Area was based on delineation of various range sites, as defined by the Soil Conservation Service of the Department of Agriculture and described in Appendix B of this report.

On each site vegetative condition was determined by examination of the plant cover and comparison with the standards of composition shown in the applicable technician's guide, Appendix G, H or I, also developed by the Soil Conservation Service. Carrying capacity was then computed in animal unit months of forage per acre according to site, condition and rainfall belt, as shown in the guide.

Each range site is described on the Land Classification Map, accompanying this report, by a formula showing, in the numerator, the type, as described in Appendix E, symbols for the three principal plant species, as listed in Appendix F and the vegetative condition and carrying capacity, as determined by the applicable technician's guide, Appendix G, H or I. In the denominator are shown the range site (Appendix B), the land use capability class (Appendix C), the slope class and the erosion condition class (Appendix D). On land use capability class VI and better, a set of four symbols consisting of two numbers each, followed by a capital letter designating the soil factors of depth, texture, permeability and underlying material are also shown. Explanations of slope classes and soil factors are shown on the Land Classification Map accompanying this report.

Appendix B - Description of Range Sites in the Detailed Study Portion of the Angostura Area, Wyoming

Symbol	Name	Description
WL	Wet land	Land with water table over the surface during part of the growing season and subirrigated. (Too wet for cultivated crops but highly productive under natural cover. Not open water marsh.)
Ld	Lowland	Nearly flat bottomlands bordering watercourses, 60 inches or more of very heavy to moderately heavy soil.
SL	Saline lowland	Same as above, except for salinity - usually indicated by presence of greasewood
Sa	Sands	Usually gently rolling plains with light to very light sand at least 20 inches in depth
CS	Choppy sandhills	Stabilized sand dunes with soils similar to above, "Sands"
Sy	Sandy	Same as "Sands" above, but only moderately light soil
OU	Ordinary upland	Medium to moderately heavy soils at least 20 inches deep on moderate slopes
CL	Clay	Heavy to very heavy soils at least 20 inches deep on moderate slopes
SS	Savannah	Moderately heavy to very light soils at least 20 inches deep under scattered pine trees
Sw	Shallow	Any textured soil from 10 to 20 inches deep on moderate slopes
CU	Coarse upland	Medium to very light soils at least 20 inches deep stronger slopes
VS	Very shallow	Heavy to light soils less than 10 inches deep on any slope
Gr	Gravel	Uplands where rock fragments of gravel or small stone size occur in and on the soil. Coarse materials greatly reduce moisture retention and affect kind of native vegetation. A sharp-pointed spade cannot be forced into the soil. (Included here are some river terraces and outwash deltas.)
Sh	Shale	Very heavy to heavy soils less than 10 inches deep over shale bedrock, usually occupied by saltbush, western wheatgrass and others

Appendix C – Description and definitions of land-use capability classes 1/

Class	Suitable for	Topography		Characteristic Native Vegetation	Soil Characteristics						Vulnerability to Erosion	Requisite Special Practices
		Slope (percent)	Character of Surface		Texture	Depth	Relative Salinity	Fertility	Productivity	Drainage		
I	Best type of farming land	0 to 2	Level or nearly level	Tall and mid-grasses, thrifty sagebrush, deciduous trees	Medium; Friable	12" or more; subsoil 36" or more	Negligible	High	Good to High	Good to Excellent	Low	None to minor
II	Farming with simple conservation practices	0 to 10	Irregular	Tall, mid, and short grasses; big sagebrush, deciduous trees	Light to Heavy; Friable	8" or more; subsoil 36" or more	Negligible to slight	Good to High	Moderate to High	Good	Slight to moderate	Minor to simple practices
III	Farming with complex conservation practices	0 to 10	Irregular	Tall, mid, and short grasses; big sagebrush, rabbitbrush, greasewood, coniferous, and deciduous trees	Light to Heavy; Friable	6" or more; subsoil 24" or more	Slight to moderate	Fair to Good	Moderate to High with management	Often poor; may be needed	Moderate to High	Complex practices essential
IV	Limited or occasional cultivation; best for permanent hay or pasture	0 to 15	Irregular or stony	Tall, mid, and short grasses; big sagebrush, rabbitbrush, greasewood, coniferous, deciduous trees, saltbush, winterfat	Sandy to Clay; porous or tight	6" or more; may have shallow hardpan	Negligible to critical	Poor to Good	Poor for row crops; best for hay and pasture	Not justifiable if needed	Moderate to High or nil	Complex and intensive practices with good management
V	Range or woodland; farming only if irrigation water becomes available	0 to 5	Smooth to irregular; may be stony or wet	Tall, mid, and short grasses; big sagebrush, rabbitbrush, greasewood, coniferous, and deciduous trees	Light to Heavy; Friable	Good permeability to 24" depth	Negligible to moderate	Good to High	Moderate to High	Usually not a problem	Low	None to minor or drainage
VI	Range and woodland only	0 to 20 (greater only on good soils)	Irregular to rough or rocky	Tall, mid, and short grasses; big sagebrush, rabbitbrush, greasewood, coniferous, deciduous trees, saltbush, winterfat	Very Light to Heavy	Shallow to moderate; permeability excessive to poor	Negligible to moderate	Fair to Good	Light to Moderate;	Not practicable if a problem	Moderate	Proper management with simple restrictions
VII	Range and woodland with severe restrictions	0 to 100	Rough, rocky, or eroded	Tall, mid, and short grasses; big sagebrush, rabbitbrush, greasewood, coniferous, deciduous trees, saltbush, winterfat, mountain browse and annuals	Any: May be tight clay or open sand or gravel	Often shallow, poorly developed	Negligible to critical	May be Poor	Poor to Light	Seldom a problem or not practicable	High	Proper management with complex restrictions and intensive practices
VIII	Watershed, wildlife and recreation	Generally steep or swampy	Extremely rough, barren or inaccessible	Often only annuals or scanty perennials; may be dense coniferous timber	Usually poorly developed	Very shallow or nil	May be excessive for plant growth	Usually very low	Usually very low or nil	Often poor;not justifiable if a problem	High (unless a swamp)	Complete protection

1/ Adapted from Soil Conservation Service Standards, U. S. Department of Agriculture. Any one of the factors listed may classify a soil, factors determining classification singly, not necessarily in combination.

Appendix D — Description and definitions of soil erosion condition classes

Erosion Class	Description of degree of erosion	Sheet Erosion 1/	Wind Erosion 1/	Gully Erosion 1/
1	None to Slight	0-10 percent of topsoil removed. Little apparent evidence of surface erosion and then only localized areas too small to delineate into Class 2. Vegetation often climax type. Generally smooth to gently undulating plains and forested lands; dominantly 0-3 percent slopes.	None to only local evidence of slight soil drift or surface soil removal. 0-10 percent of topsoil removed. Soil usually well protected by sod or plant litter.	No evidence of active gullying. All waterways well established.
2	Slight to Moderate	10-25 percent of topsoil removed, but with little evidence of vegetation breaking up. Slopes generally moderate; characterized by climax type of vegetation with few annual weeds and of usually lower density than vegetation in Class 1 above.	Local evidence of slight to moderate soil drifting and surface soil removal and/or accumulation. Most soil types, particularly the silty and fine sandy textured soils under certain conditions of culture and drought combined with high winds, are subject to this form of soil deterioration.	Occasional active gullies which are usually shallow, occuring primarily along main watercourses at intervals of more than 100 feet. In open areas and where slopes permit, little difficulty in traversing the area in a car.
3	Moderate to Severe	25-50 percent of topsoil removed. "Cat steps" and terraces noticeable on slopes which may be moderate to steep. Bare spots are quite common. Undesirable weeds and plants are beginning to dominate the vegetation with climax types more often scattered than dominant. Perennial woody plants frequently pedestalled. Subsoil rarely exposed except in localized areas.	Bare spots common and areas generally more consistently subject to damage by soil blowing. Soils often removed to depths of 1 to 4 inches and drift accumulations and hummocks noticeable. Sod grass deterioration and plant pedestals in evidence and plant cover is insufficient for soil protection. Subsoil occasionally exposed and soils containing gravel show pavement appearance.	Occasional gullies shallow or deep occuring at intervals of more than 100 feet apart. Concentration of run-off and drainage channeling generally due to steepness of slope. Main water courses deeply channeled, generally U-shaped with tributaries usually V-shaped. Moderate difficulty in traversing area in car, ordinarily having to "head" gully in crossing. Generally associated with extensive shoe-string or rill gullying.
4	Severe to Critical	50-100 percent of topsoil removed and subsoil may be exposed in many places and is being removed to varying depths. Bare spots and trampled out areas common and plant pedestalling and erosion pavement highly evidenced. Loss of surface soil may be complete, associated with active gullying and high mortality of climax species of vegetation. Annual and perennial invaders may dominate the vegetation.	Majority of topsoil may be removed; usually accompanied by destructive accumulations in form of hummocks and dunes particularly along such obstructions as fences and edges of drainageways. Perennial vegetation often scanty and extensively pedestalled.	Frequent, usually shallow, gullies occuring at intervals of less than 100 feet apart. Main waterways deeply channeled and undergoing active gullying, usually U-shaped. Areas often incised by shoestring gullies and rills but are not generally so numerous or deep as to destroy the land completely but dissection permits rapid drainage of surface water. Corduroyed surface makes car travel impossible.
5	Critical to Extreme	Usually all the surface soil has been removed and utility and productivity of land has been largely destroyed by advanced stages of gully erosion which usually continues and retirement from use is, therefore, mandatory. Barren wastelands are often in this class. Desirable perennials never have occupied the area or have been practically obliterated and low density of annuals usually predominates.	Represents a condition of soil deterioration amounting to essential destruction. Retirement from further uee is mandatory and artificial treatment is often essential to soil stabilization. Constantly shifting dunes are common. Deep fine sandy soils usually predominate in areas so classified.	Frequent and deep gullies. Generally represents maximum destruction by erosion. Complete and rapid drainage of surface water and soil moisture effected through intricate dissection of soil by gullies. Deeply channeled waterways with edges eroken and caved in. Gully banks, slopes and bottoms in active erosion stage.

1/ The erosion condition and proposed improvement map utilizes three numbers in series to show the degree of erosion in each of the three types of erosion in this order; sheet, wind, gully. An example would be 3 - 2 - 1.

Appendix E - Type Numbers and Descriptions for Use in Mapping As Approved by Western Inter-Agency Range Examiners

Type No.	Type Characteristics	Remarks
1- Grass	Bgr, Cfi, Bgr-Asm, Buffalograss, etc., Asm, Kcr, Bunch grass, Alpine grassland, etc.	Grassland
2- Meadow	Meadow sedges, moisture enduring grasses and sedges	Wet or dry meadows
3- Weeds	Perennial weeds; untimbered areas	Type usually soon replaced
4- Sagebrush Untimbered	Sagebrush dominant by aspect. Shrubby species	Aca, Atr, Afi, Asp, etc.
5- Browse-Shrub Untimbered	Browse and shrubs, except sagebrush, predominate	Mountain mahogany willows, Ceanothus
6- Conifer Pine, Fir, Spruce	Woodland type, supporting browse, grasses and weeds	
7- Waste, Dense timber and brush	No or slight value for grazing, not barren	Large areas of very sparse forage
8- Barren, no or very little vegetation	Lake beds, sand dune, saline flats lava flows	To be differentiated from waste lands
9- Pinon Juniper	Pinon pine and Juniper, Digger pine, etc.	May have an excellent stand of grass and forage
10- Broad-leaf, Decidiuous trees	Cottonwood, Aspen, Oak birch, Alder, Ash, Elm	
11- Creosote bush	Creosote, (Covillea) Dominant	
12- Mesquite	Mesquite (Prosopis) Dominant	
13- Saltbush Atriplex	Atriplex dominant, separate from Desert Shrub	Atriplex is sufficiently dominant to show type

14- Greasewood-Sarcobatus	Where Sarcobatus is dominant. Valley floors	Overflow areas, with saline soils
15- Winterfat	Where winterfat gives a characteristic aspect	Becomes a type in Utah and Nevada
16- Desert Shrub-General Type	Coleogyne, Simmondsia, Acacia, Mimosa, Hopsage	Hopsage, Horse grush, Rabbitbrush, etc.
17- Half Shrub	Gutierrezia, Aploppus, Erigonum, Artemesia Frigida	Seldom of sufficient size to type
18- Annual Weeds	Annual weeds; cheat grass, six week fescue	

Appendix F - Principal Plants of the Upper Cheyenne River Basin

Symbol	Scientific Name		Common Name
	Grass		
Afu	Andropogon	furcatus	Big bluestem
Aha	Andropogon	halli	Sand bluestem
Apa	Agropyron	pauciflorum	Slender wheatgrass
ARI	Aristida	sp.	Perennial threeawns
Asc		scoparius	Little bluestem
Asm	Agropyron	smithi	Bluestem wheatgrass
Asp		spicatum	Bearded bluebunch wheatgrass
Bcu	Bouteloua	curtipendula	Sideoats grama
Bda	Buchloe	dactyloides	Buffalograss
Bgr		gracilis	Blue grama
Bte	Bromus	tectorum	Cheatgrass brome
Clo	Calamovilfa	longifolia	Prairie sandreedgrass
Dca	Elymus	canadensis	Canada wild rye
Dst	Distichlis	stricta	Inland saltgrass
Eco	Elymus	condensatus	Giant wildrye
Fid	Festuca	idahoensis	Idaho fescue
Fou	Festuca ouina	ouina	Sheep fescue
Kcr	Koelaria	cristata	Prairie junegrass
Mca	Muhlenbergia	cuspidata	Story hills muhly
Ohy	Oryzopsis	hymenoides	Indian ricegrass
Pca	Poa	canbyi	Canby bluegrass
Pcp	Panicum	capillare	Ticklegrass
Pfe	Poa	fendleriana	Muttongrass
Pna	Puccinellia	nutalli	Nuttal alkaligrass
Pse	Poa	secunda	Sandberg bluegrass
Sai	Sporobolus	airoides	Alkali socaton
Sco	Stipa	comata	Needleandthread
SPA	Spartina	sp.	cordgrass
SOR	Sorghastrum	sp.	Indiangrass
Svi		viridula	Green needlegrass
	Grass-like plants		
Cel	Carex	eleocharis	Needleleaf sedge
Cfi	Carex	filifolia	Threadleaf sedge
	Shrubs		
Aca	Artemisia	cana	Silver sagebrush
Acx	Artiplex	canescens	Fourwing saltbrush
Agn	Artemisia	gnafaloides	Cudweed sage

Symbol	Scientific Name		Common Name
	Shrubs		
Anu	Atriplex	nuttallii	Gardner saltbush
Atr	Artemisia	tridentata	Big sagebrush
Cll	Chrysothamnus	lanceolatus	Lanceleaf rabbitbrush
Opo	Opuntia	polyancantha	Plains pricklypear
Sro	Symphoricarpos	rotundifolius	Roundleaf snowberry
Sve	Sarcobatus	vermiculatus	Black greasewood
	Forbs		
Ela	Eurotia	lanata	Winterfat
ERI	Eriogonum	(spp)	Eriogonum
PHL	Phlox	sp.	Plox
	Trees		
Cmo	Cercocarpus	montanus	True mountainmahogany
Ptr	Populus	tremuloides	Quaking aspen

Appendix G - TECHNICIANS' GUIDE TO RANGE SITES, CONDITION CLASSES, AND RECOMMENDED STOCKING RATES IN PINE BLUFFS, LINGLE-FORT LARAMIE, NORTH PLATTE, GOSHEN HOLE SOIL CONSERVATION DISTRICTS, & NIOBRARA COUNTY, WYOMING

PART I: Key species and their response to grazing as judged from climax

DECREASERS	INCREASERS (By Range Sites)	Maximum % in Climax																								INVADERS
		15"-19"												10"-14"												
		WL	Ld	SL	Sa	CS	Sy	OU	Cl	SS	Sw	CU	VS	Gr	WL	Ld	SL	Sa	CS	Sy	OU	Cl	Sw	CU	VS	Gr	SU	Sh	
Big bluestem	Western wheatgrass	5	15	d	10	10	20	30	45	30	d	d	d	d	5	20	d	10	10	25	35	50	d	d	d	d	d	d	All Annuals
Sand bluestem	Prairie sandreed	-	5	-	30	35	25	d	d	d	d	d	d	d	-	10	-	30	35	25	d	d	d	d	d	d	d	d	All exotics
Switchgrass	Needleandthread	-	-	-	30	30	35	25	d	25	d	30	d	d	-	-	-	35	35	40	30	d	d	30	d	d	d	d	Tumblegrass
Cordgrasses	Sand dropseed	-	-	-	10	10	5	5	-	5	5	10	d	d	-	-	-	10	10	5	5	-	5	10	d	d	-	-	Foxtail
Indiangrass	Blue & Hairy grama	-	-	-	10	10	20	25	30	25	30	20	40	20	-	-	-	15	15	20	20	25	30	20	40	20	40	d	barley
Canada wildrye	Prairie junegrass	-	-	-	-	-	10	10	10	10	d	d	d	d	-	-	-	-	-	10	15	15	d	d	d	d	d	d	Western
Prairie sandreed	Perennial threeawns	-	-	-	-	-	-	--	-	-	-	5	5	10	-	-	-	-	-	-	-	-	-	5	5	10	-	-	ragweed
Sand lovegrass	Sandberg bluegrass	-	-	-	-	-	5	5	5	5	5	5	15	10	-	-	-	-	-	5	5	5	5	5	15	10	20	20	Dandelion
Green needlegrass	Inland saltgrass	-	-	20	-	-	-	-	-	-	-	-	-	-	-	5	25	-	-	-	-	-	-	-	-	-	10	15	Curlycup
Bluebunch wheatgrass	Buffalograss	-	-	-	-	-	-	5	10	-	10	-	-	-	-	-	-	-	-	-	-	5	5	-	-	-	-	-	gumweed
Slender wheatgrass	Dryland sedges	-	-	-	5	5	10	10	10	10	20	10	30	10	-	-	-	10	10	15	15	10	25	15	40	15	10	10	Verbena
Little bluestem	Sageworts	-	-	-	5	5	5	5	-	5	5	10	10	10	-	-	-	5	5	5	5	-	5	10	10	10	-	-	Broom
Indian ricegrass	Eriogonum	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-	-	5	-	-	10	Snakeweed
Idaho fescue	Sagebrushes	-	5	-	5	5	5	-	-	-	-	5	5	-	-	5	-	5	5	5	-	-	-	5	5	-	-	-	
Alkali sacaton	Forb increasers	5	5	5	10	5	5	5	5	5	5	5	10	5	5	5	5	10	5	5	5	5	5	5	10	5	5	5	
Sideoats grama	Other woody increasers	-	10	10	5	5	5	5	-	20	5	10	15	10	-	5	10	5	5	5	-	-	-	10	15	10	5	5	
Canby bluegrass																													
Forb decreasers																													

The symbol "-" means the species has less than 2½% coverage or is not in the climax for the site. The symbol "d" means the species is a decreaser on this site. WL - Wet Land is w1 - w3 (subirrigated); Ld - Lowland is f1 - f3 overflowed (use the lowland guide to determine condition and stocking of native pasture areas with water spreading systems. Map separately and label separately as Water Spreading System); SL - Saline Lowland is p4 - p5, S2 - S4 with f1 to f3 overflow and/or w1 to w2; Sa - Sands is L to C texture, 1 - 3 depth; CS - Choppy Sandhills is C texture, D to F complex slopes; Sy - Sandy is S texture, 1 to 3 depth; OU - Ordinary Upland is F to M texture, 1 - 3 depth; Cl - Clay is V - H texture, 1 - 3 depth; Sw - Shallow is 4 depth, (deeper rooting generally impossible because of no deeper moisture storage or a restrictive layer) without f, w, S or p factors; SS - Savannah Site (originally had isolated trees) is 1 - 3 depth, with F to C texture at margins of forest climates and soils; or with r, v, or c, X textures in grassland climates, 4 to 7 upper permeability with 1 to 4 lower permeability; CU - Coarse Upland is 1 - 3 depth, M to C texture with g, r, s, v, or c, 4 - 7 permeability (except gravel site); Gr - Gravel is 2, 6 to 7 permeability; VS - Very Shallow is 5 depth, except shale site, (Usually has some joints in the base rock that develop deep soil pockets which are commonly marked by tall grass, shrub or tree growth); SU - Saline Upland is p4 - p5, S2 to S4, 1 - 2 permeability; Sh - Shale is 5 depth, V or H texture over K.

PART II: Recommended Stocking Rates Based on Precipitation Belt, Site, and Range Condition in Percent. For Sands, Savannah Site, Sandy, Choppy Sandhills, Ordinary Upland, and Clay Sites use the values in line with the precipitation belt of the site. For Wet Lands double the values for the 25"-29" belt. For Lowland use values of next higher precipitation belt. For Saline Lowland go up ½ precipitation belt except on p5 areas go down one or more belts. For Shallow go down ½ precipitation belt. On Coarse Upland, Very Shallow, and Saline Upland use values of next lower precipitation belt. On Shale go down two or more precipitation belts.

Precipitation Belt	Range Condition Percentages		
	100	75	50	25
(Inches)		(Animal Unit Months Per Acre)		
30 - 34	1.2	.9	.6	.3
25 - 29	1.0	.75	.5	.25
20 - 24	.8	.6	.4	.2
15 - 19	.6	.45	.3	.15
10 - 14	.4	.3	.2	.1
5 - 9	.2	.15	.1	.05

The range soil categories are described with determinant Standard Symbols for Conservation Surveys of the S.C.S. published in 1951. Any local deviations in mapping symbols will be sent to the planners by the State Soil Scientist, for attachment to range technicians' guides.

Appendix H -

TECHNICIANS' GUIDE TO RANGE SITES, CONDITION CLASSES, AND RECOMMENDED STOCKING RATES IN THE LAPRELE, GLENROCK, & CASPER-ALCOVA SOIL CONSERVATION DISTRICTS, WYOMING 1/

PART I: Key Species and their response to grazing as judged from climax

DECREASERS	INCREASERS (By Range Sites)	Maximum % in Climax																						INVADERS
		15"-19"										10"-14"												
		WL	Ld	Sa	Sy	SS	OU	C1	Sw	CU	VS	WL	Ld	SL	Sa	CS	Sy	OU	C1	Sw	CU	VS	SU	Sh	
Giant wildrye	Western wheatgrass)																								All annuals
Canada wildrye	Thickspike wheatgrass)	-	5	5	10	20	25	40	25	15	d	5	20	d	10	10	20	35	45	35	d	d	d	d	All exotics
Prairie sandreed	Needleandthread	-	-	30	35	30	25	d	30	30	d	-	-	-	35	35	40	30	d	d	30	d	d	d	Tumblegrass
Spikefescue	Blue & Hairy grama	-	-	5	10	10	10	15	20	15	30	-	-	-	10	10	20	20	25	30	20	40	35	d	Foxtail barley
Sand bluestem	Sandberg bluegrass	-	-	-	5	5	5	5	5	5	15	-	-	-	5	5	5	5	10	10	10	10	10	15	Western ragweed
Cordgraeses	Prairie junegrass	-	-	5	10	10	10	15	10	10	d	-	5	-	5	5	10	10	15	10	10	d	d	d	Dandelion
Green needlegrass	Dryland sedges	-	-	5	10	10	10	10	20	10	10	-	-	-	10	10	15	15	5	25	15	30	10	10	Curlycup gumweed
Canby bluegrass	Perennial threeawn	-	-	-	-	-	-	-	-	5	10	-	-	-	-	-	-	-	-	-	5	5	-	-	Broom snakeweed
Plains reedgrass	Saltgrass	-	-	-	-	-	-	-	-	-	-	-	5	25	-	-	-	-	-	-	-	-	5	-	Rabbitbrush
Sideoats grama	Squirreltail	-	-	-	-	-	-	5	-	-	d	-	-	5	-	-	-	-	5	-	-	-	d	d	
Bluebunch wheatgrass	Sageworts	-	5	-	5	5	5	-	5	5	5	-	5	-	5	5	5	5	-	5	5	5	-	-	
Slender wheatgrass	Eriogonum	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-	-	5	5	5	
Sand dropseed	Sand sagebrush	-	-	5	-	-	-	-	-	-	-	-	-	-	5	5	-	-	-	-	-	-	-	-	
Big bluegrass	Big sagebrush	-	5	5	5	5	5	-	-	5	-	-	5	-	-	-	-	5	-	-	5	-	-	-	
Little bluestem	Black eagebrush	-	-	-	-	-	-	-	-	5	5	-	-	-	-	-	-	-	-	5	5	5	-	-	
Indian ricegrass	Silver sagebrush	-	5	-	5	-	-	-	-	-	-	-	5	-	-	-	5	-	-	-	-	-	-	-	
Idaho fescue	Greasewood	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-	-	-	-	-	-	5	-	
Sheep fescue	Phlox	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-	5	5	-	-	
Mutton grass	Forb increasers	5	5	10	10	10	5	5	5	5	10	5	5	-	10	10	10	5	5	5	5	5	5	5	
Alkali sacaton	Other woody increasers	5	-	5	5	15	5	-	10	10	15	5	5	-	-	-	5	5	-	-	5	5	-	-	
Winterfat																									
Fourwing saltbueh																									
Forb decreasers																									
Gardner saltbush																									

Appendix I -

TECHNICIANS' GUIDE TO RANGE SITES, CONDITION CLASSES AND RECOMMENDED STOCKING RATES in INTERMOUNTAIN, UPPER CHEYENNE RIVER SOIL CONSERVATION DISTRICTS, AND S. W. CORNER BUFFALO BELLE SOIL CONSERVATION DISTRICT, & WESTON COUNTY

PART I: Key Species and their response to grazing as judged from climax

DECREASERS	INCREASERS (By Range Sites)	Maximum % in Climax																								INVADERS
		15"-19"													10"-14"											
		WL	Ld	SL	Sa	Sy	OU	C	Sw	SS	CU	VS	SU	Sh	WL	Ld	SL	Sa	Sy	OU	C	Sw	CU	VS	SU	Sh	
Giant wildrye	Western wheatgrass	5	15	d	15	25	30	40	30	20	d	d	d	d	5	20	d	15	25	35	45	30	d	d	d	d	All annuals
Sand bluestem	Needleandthread	-	-	-	30	35	25	d	d	25	30	d	d	d	-	-	-	35	40	30	d	d	30	d	d	d	All exotics
Canada wildrye	Blue grama	-	-	-	10	15	20	25	30	20	15	40	35	d	-	-	-	15	20	20	25	35	20	40	35	d	Tumblegrass
Cordgrasses	Sandberg bluegrass	-	-	-	-	5	5	5	5	5	5	10	10	15	-	-	-	5	5	5	5	5	5	10	10	15	Curlycup gumweed
Prairie sandreed	Sand dropseed	-	-	-	10	5	5	-	5	5	10	d	d	d	-	-	-	15	10	5	-	5	10	d	d	d	Snakeweed
Tall reedgrasses	Prairie junegrass	-	-	-	5	10	10	10	15	10	10	d	d	d	-	-	-	5	10	10	10	15	10	d	d	d	Foxtail barley
Green needlegrass	Perennial threeawns	-	-	-	-	-	-	-	-	-	5	5	-	-	-	-	-	-	-	-	-	-	5	5	-	-	Cacti
Bluebunch wheatgrass	Squirreltail	-	-	5	-	-	-	5	-	-	-	-	5	10	-	-	5	-	-	-	5	-	-	-	d	d	Western ragweed
Slender wheatgrass	Dryland sedges	-	-	-	5	15	10	5	20	10	15	25	5	5	-	-	-	10	15	15	5	25	15	30	10	10	Dandelion
Little bluestem	Inland saltgrass	-	-	25	-	-	-	-	-	-	-	-	5	5	-	5	25	-	-	-	-	-	-	-	5	5	Others
Indian ricegrass	Buffalograss	-	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-	
Idaho fescue	Stonyhills muhly	-	-	-	-	-	-	-	5	5	10	15	-	-	-	-	-	-	-	-	-	-	5	10	-	-	
Alkali sacaton	Sageworts	-	5	-	5	5	-	-	-	-	5	-	-	-	-	5	-	5	5	-	-	-	5	5	-	-	
Sideoats grama	Greasewood	-	-	5	-	-	-	-	-	-	-	-	10	5	-	-	10	-	-	-	-	-	-	-	10	10	
Canby bluegrass	Big sagebrush	-	-	-	-	5	5	5	-	5	-	-	-	-	-	5	-	5	5	5	5	-	-	-	-	-	
Nuttall alkaligrass	Silver sagebrush	-	5	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-	
Forb decreasere	Eriogonum	-	-	-	-	-	-	-	-	-	-	5	-	5	-	-	-	-	-	-	-	-	-	5	-	5	
	Phlox	-	-	-	-	-	-	-	5	-	5	5	-	-	-	-	-	-	-	-	-	-	5	5	5	-	-	
	Forb increasers	5	5	5	10	10	5	5	5	5	10	10	-	-	5	5	5	10	10	5	5	-	5	5	-	-	
	Woody increasers	-	5	-	5	5	5	-	5	10	5	5	-	5	-	5	-	-	5	5	-	5	5	5	-	-	

GPO 846449

WEST STUDY AREA MAP

(Sixth Principal Meridian, Wyoming)

TRACT CLASSIFICATION

ISOLATED TRACT CLASSIFICATION

WEST DETAILED STUDY AREA

LAND UTILIZATION AREA

ISOLATED TRACT CLASSIFICATION

OSAGE FIELD

OSAGE GENERATING PLANT

ISOLATED TRACT CLASSIFICATION

STOCKADE - BEAVER CREEK AREA

NEWCASTLE

SKULL CREEK FIELD

STOCKADE - BEAVER CREEK AREA

ISOLATED TRACT CLASSIFICATION

LAND UTILIZATION AREA

LAND UTILIZATION AREA

LAND UTILIZATION AREA

CHEYENNE

WESTON COUNTY

WESTON COUNTY

NIOBRARA COUNTY

BLACK HILLS NATIONAL FOREST

BLACK HILLS NATIONAL FOREST

SOUTH DAKOTA

POWDER RIVER BASIN

NORTH PLATTE RIVER BASIN

I.T.C.

LEGEND

TOPOGRAPHY

- River
- Permanent Streams
- Intermittent Streams
- Canal
- Dams
- Spring
- Spring, Improved
- Well, Water
- Well, Oil
- Artesian Well
- Windmill
- Corral
- Cropland

WORK AND STRUCTURES

- Railroad
- U.S. Highway (Hard Surface)
- Improved Dirt Road
- Unimproved Dirt Road
- Truck, Trail
- Fence
- Telephone or Telegraph Line
- Power Transmission Line
- Pipeline

BOUNDARIES

- Angostura Area Drainage
- State
- County
- National Forest
- Land Utilization
- Oil Field

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
AREA 3

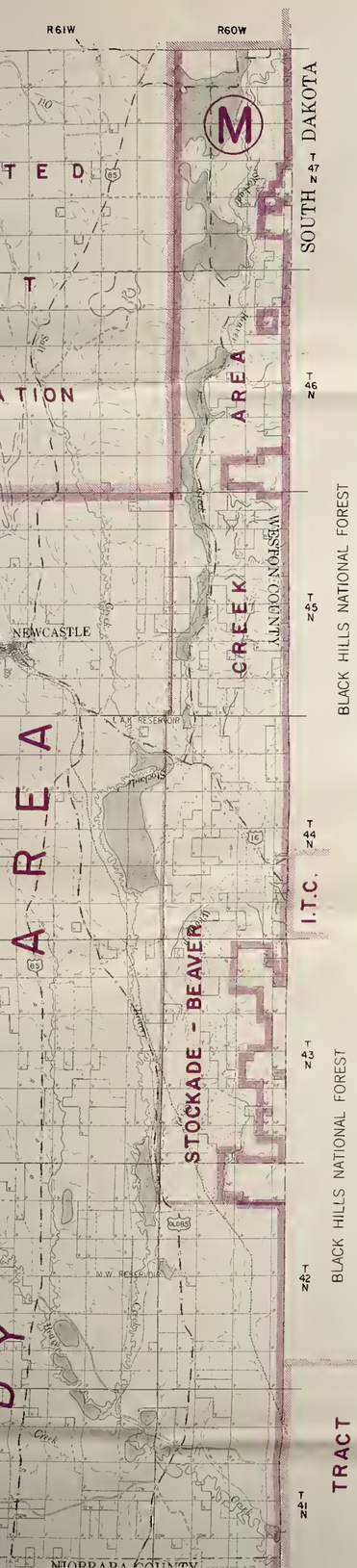
UPPER CHEYENNE RIVER BASIN MAP

WYOMING

SHOWING

PROPOSED LAND USE, IMPROVEMENTS AND MANAGEMENT UNITS, AND EROSION CLASSIFICATION

SCALE IN MILES 0 1 2 3 4 5



LEGEND

TOPOGRAPHY

- River
- Permanent Streams
- Intermittent Streams
- Canal
- Dams
- Spring
- Spring, Improved
- Well, Water
- Well, Oil
- Artesian Well
- Windmill
- Corral
- Cropland

WORK AND STRUCTURES

- Railroad
- U.S. Highway (Hard Surface)
- Improved Dirt Road
- Unimproved Dirt Road
- Truck Trail
- Fence
- Telephone or Telegraph Line
- Power Transmission Line
- Pipeline

BOUNDARIES

- Angostura Area Drainage
- State
- County
- National Forest
- Land Utilization
- Oil Field

LEGEND

EXPLANATION

UPLAND AREAS

(1) Badlands, slopes 60-100 percent; vegetative cover poor to nonexistent; sheet and rill erosion very severe. Includes all areas of active badland erosion in beds of White River group and elsewhere throughout the basin. Infiltration rates lowest in the basin.

(2) Slopes are variable in gradient (5-25 percent); vegetative cover fair to poor; sheet and rill erosion locally severe; includes most major erosion problem areas with high sediment yield to tributary channels. Surficial mantle is medium - to fine-grained and infiltration rates are generally low.

(3) Slopes vary from 10-15 percent; vegetative cover fair; sheet and rill erosion locally severe; minor aggradation in tributary channels; moderate sediment yield to tributary channels. Surficial mantle is fine-grained and infiltration rates are generally low.

(4) Slopes generally less than 10 percent; vegetative cover good; sheet and gully erosion slight; low sediment yield to tributary channels. Surficial mantle is moderately sandy and infiltration rates are relatively high.

DRAINAGE AREAS

- (A) *Cheyenne River*
- (B) *Snyder Creek*
- (C) *Dogie Creek*
- (D) *Lance Creek*
- (E) *Cow Creek*
- (F) *Lightning Creek*
- (G) *Walker Creek*
- (H) *Twentymile Creek*
- (I) *Little Lightning Creek*
- (J) *Dry Creek*

Drainage Boundary Line

NOTE: The Erosion Classification shown on this map has been adapted from U.S. Geological Survey report on Reconnaissance Investigations on Sources of Sediment in the Cheyenne River Basin Above Angostura Reservoir, July 1955.

LEGEND

- (R) Pest Control (Rodents)
- (A) Pest Control (Ants)
- (W) Waterspreading
- (M) Area Proposed for Continued Federal Land Management
- Boundary Line of Detailed Study Areas
- Boundary Line of Isolated Tract Classification
- Boundary Line of Area Proposed for Continued Federal Land Management
- Proposed Reservoir
- (D) Desilting Area

EAST STUDY AREA MAP

(Sixth Principal Meridian, Wyoming)

LAND UTILIZATION AREA

ISOLATED TRACT

LAND UTILIZATION AREA

ISOLATED TRACT CLASSIFICATION

STUDY AREA

ISOLATED TRACT

LAND UTILIZATION AREA

CLASSIFICATION

WESTON COUNTY

NIOBRARA COUNTY

CONVERSE COUNTY

SOUTH DAKOTA

CHEYENNE RIVER BASIN

CHEYENNE RIVER

WEST MULE CREEK FIELD

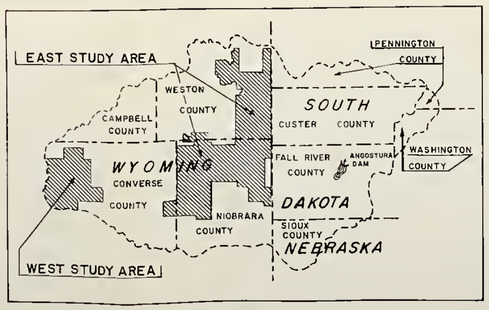
MULE CREEK FIELD

LANCE CREEK FIELD

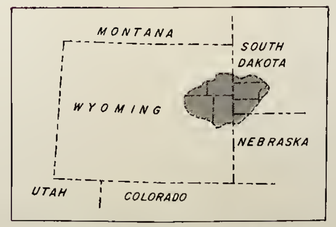
R68W R67W R66W R65W R64W R63W R62W R61W R60W

T 42 N T 41 N T 40 N T 39 N T 38 N T 37 N T 36 N T 35 N

DETAIL STUDY AREAS KEY MAP



ANGOSTURA AREA LOCATION MAP



Land Utilization

Oil Field

Drainage Boundary Line

NOTE: The Erosion Classification shown on this map has been adapted from U.S. Geological Survey report on Reconnaissance Investigations on Sources of Sediment in the Cheyenne River Basin Above Angostura Reservoir, July 1955.

STUDY

ISOLATED TRACT CLASSIFICATION

BLACK HILLS

LAND UTILIZATION AREA

NIOBRARA COUNTY

SOUTH DAKOTA

CHEYENNE RIVER

WEST MULE CREEK FIELD

MULE CREEK FIELD

M.W. RESERVOIR

Redford

T 42 N
T 41 N
T 40 N
T 39 N
T 38 N
T 37 N
T 36 N

R61W
R60W

CLASSIFICATION

ANGOSTURA AREA LOCATION MAP

MONTANA
SOUTH DAKOTA
WYOMING
NEBRASKA
UTAH
COLORADO

DENVER DRAFTING OFFICE - FEBR. 1958

WEST STUDY AREA MAP

(Sixth Principal Meridian, Wyoming)

TRACT CLASSIFICATION

ISOLATED

ISOLATED TRACT CLASSIFICATION

LAND UTILIZATION AREA

LAND UTILIZATION AREA

LAND UTILIZATION AREA

LAND UTILIZATION AREA

LAND UTILIZATION AREA

ISOLATED TRACT CLASSIFICATION

BLACK HILLS NATIONAL FOREST

BLACK HILLS NATIONAL FOREST

I. T. C.

ISOLATED TRACT CLASSIFICATION

SOUTH DAKOTA

NEBRASKA

POWDER RIVER BASIN

NORTH PLATTE RIVER BASIN

SAGE FIELD

SKULL CREEK FIELD

NEWCASTLE

LAK RESERVOIR

N.W. RESERVOIR

CHEYENNE

WESTON COUNTY

NIOBRARA COUNTY

Badger Coal Mine

R 75W R 74W R 73W R 77W R 76W R 64W R 63W R 62W R61W R60W R67W R66W R65W

T 40 N T 39 N T 38 N T 37 N T 36 N T 47 N T 46 N T 45 N T 44 N T 43 N T 42 N T 41 N

LEGEND

TOPOGRAPHY

- River
- Permanent Streams
- Intermittent Streams
- Canal
- Dams
- Spring
- Spring, Improved
- Well, Water
- Well, Oil
- Artesian Well
- Windmill
- Corral
- Cropland

WORK AND STRUCTURES

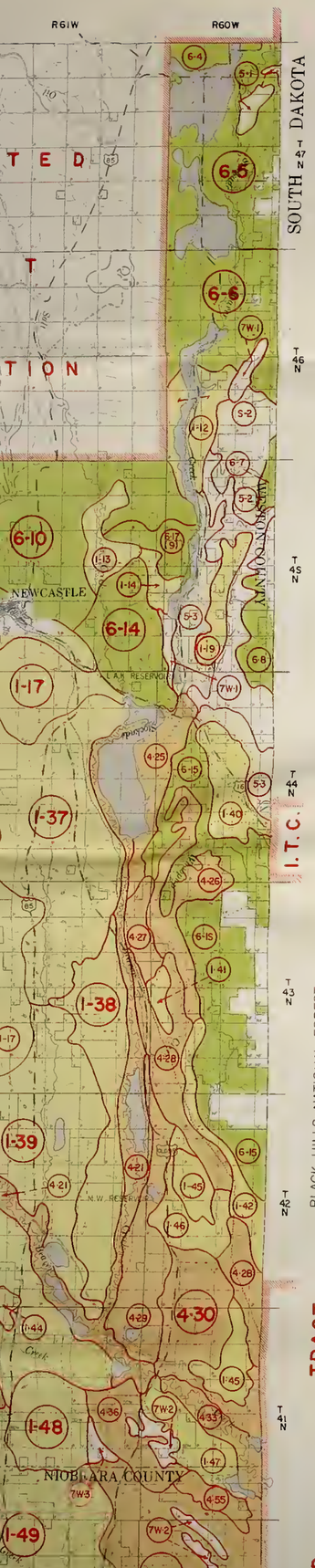
- Railroad
- U.S. Highway (Hard Surface)
- Improved Dirt Road
- Unimproved Dirt Road
- Truck Trail
- Fence
- Telephone or Telegraph Line
- Power Transmission Line
- Pipeline

BOUNDARIES

- Angostura Area Drainage
- State
- County
- National Forest
- Land Utilization
- Oil Field

WEST STUDY AREA MA

1 / 1-11	
1-1	I - Cfi - Bgr - Sco / Sa VII D
1-2	I - Cfi - Bgr - Sco / Sa VII D I
1-3	I - Cfi - Bgr - Sc / Sa VI B I - 2 -
1-4	I - Cfi - Bgr - Sca / Sa VI C I - 2 - I
1-5	I - Cfi - Bgr - Sco / Sa VI B I - 2 -
1-6	I - Asm - Sal / So VI A I - 2 -



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
AREA 3

UPPER CHEYENNE RIVER BASIN MAP

WYOMING

SHOWING

VEGETATION, CAPABILITY, EROSION, AND CARRYING CAPACITY

SCALE IN MILES 1 0 1 2 3 4 5

EXPLANATION OF SYMBOLS

(See Text and accompanying Tables)

LEGEND

TOPOGRAPHY

- River
- Permanent Streams
- Intermittent Streams
- Canal
- Dams
- Spring
- Spring, Improved
- Well, Water
- Well, Oil
- Artesian Well
- Windmill
- Corral
- Cropland

WORK AND STRUCTURES

- Railroad
- U S Highway (Hard Surface)
- Improved Dirt Road
- Unimproved Dirt Road
- Truck, Trail
- Fence
- Telephone or Telegraph Line
- Power Transmission Line
- Pipeline

BOUNDARIES

- Angostura Area Drainage
- State
- County
- National Forest
- Land Utilization
- Oil Field

Isolated Tract Classification Boundary Line

Range Site Boundary

1-91 - Gross

4-86 - 4 - Sagebrush Untimbered

5-3 - 5 - Browse-Shrub Untimbered

6-17 - 6 - Conifer (Pine, Fir, Spruce, Juniper)

7W-3 - 7W - Waste, Dense Timber and Brush

10-2 - 10 - Broadleaf Trees, Deciduous Trees

13-2 - 13 - Saltbush, Atriplex

14-3 - 14 - Greasewood-Sarcobatus

LAND USE CAPABILITY

V - Range or woodland; forming only if irrigation water becomes available

VI - Range and woodland only

VII - Range and woodland with severe restrictions

VIII - Watershed, wildlife and recreation

CONDITION CLASSIFICATION

E - Excellent (75-100% of climax species remaining)
G - Good (50-75% of climax species remaining)
F - Fair (25-50% of climax species remaining)
P - Poor (25% or less of climax species remaining)

RECOMMENDED STOCKING RATE AUM'S/ACRE

PRINCIPAL SPECIES OF VEGETATION

TYPE NUMBERS AND DESCRIPTION

1-Bgr-Cfi-Asm G .30
Ld VI B 2-1-3 3S 4F

SITE DESIGNATION

Ld - Lowland
OU - Ordinary Upland
Sy - Sandy
Sw - Shallow
VS - Very Shallow
Sh - Shale
SS - Sovannah Site
Sa - Sands
WL - Wet Land
CS - Choppy Sandhills
Cl - Clay
Sc - Scabland
SL - Saline Lowland

EROSION

1 - None to Slight
2 - Slight to Moderate
3 - Moderate to Severe
4 - Severe to Critical
5 - Critical to Extreme

Sheet, Wind, Gully Condition Classification

SLOPE

A - Nearly level Slope 0-3%
B - Gently sloping Up to 4-15% slopes
C - Moderately sloping Up to 16-30% slopes
D - Strongly sloping Up to 31-45% slopes
E - Steep Up to 46-60% slopes
F - Very steep over 60% slopes

MAJOR SOIL CHARACTERISTICS

Texture of topsoil
H - Heavy
F - Moderate heavy
M - Medium
S - Moderate light
L - Light

Effective Depth
2 - Deep 36" - 60"
3 - Moderately deep 20" - 36"
4 - Shallow 10" - 20"

Permeability of subsoil
2 - Slow
3 - Moderately slow
4 - Moderate
5 - Moderately rapid
6 - Rapid

Type of underlying material
F - Sandstone
K - Shale
L - Limestone
Y - Clay

LAND CLASSIFICATION

WEST STUDY AREA MAP

1 / 1-11

1-1	1-Cfi-Bgr-Sco G .30	Sa VII 0 1-2-1
1-2	1-Cfi-Bgr-Sco F .20	Sa VII D 1-2-1
1-3	1-Cfi-Bgr-Sco G .30	Sa VI B 1-2-1 2L 5F
1-4	1-Cfi-Bgr-Sco G .30	Sa VI C 1-2-1 2L 5F
1-5	1-Cfi-Bgr-Sco G .30	Sa VI B 1-2-1 3L 6F
1-6	1-Asm-Sal G .30	Sa VI A 1-2-1 2L 6F
1-7	1-Bgr-Cfi-Asm G .30	Sa VI A 1-2-1 2L 6F
1-8	1-Sco-Bgr-Cfi G .15	CS VII D 1-3-1

EAST STUDY AREA MAP

1 / 12-91

1-12	1-Asm-Bgr-Sco G .20	Sw VI C 2-1-1 4M 4L
1-13	1-Asm-Bgr-Sco G .30	Sw VI B 2-1-1 4M 4L
1-14	1-Asm-Bgr-Bcu G .25	Sw VII C 2-1-2
1-15	1-Asm-Bgr-Bte G .20	VS VII B 2-1-1
1-16	1-Asm-Bgr-Sai G .30	Sw VI B 2-1-1 4H 2K
1-17	1-Asm-Bgr-Cfi G .25	VS VII C 2-1-2
1-18	1-Bgr-Asm-Svl G .30	Sw VI B 2-1-1 4F 3K
1-19	1-Asm-Bgr-Bcu G .20	
1-52	1-Bgr-Cfi-Sco G .25	Sw VI B 2-1-1 4S 5F
1-53	1-Bgr-Cfi-Opo F .15	Sw VI B 2-1-1 4S 5F
1-54	1-Cfi-Bgr-Sco G .35	Sw VI B 2-1-1 4S 4Y
1-55	1-Bgr-Cfi-Asm G .25	Sw VI B 2-1-1 4S 4F
1-56	1-Bgr-Cfi-Sco G .30	Ld VI A 2-1-2 2M 4F
1-57	1-Bgr-Cfi-Sco G .30	Sw VII C 3-1-3
1-58	1-Bgr-Cfi-Asm G .25	OU VI C 2-1-2 3M 4F
1-59	1-Bgr-Cfi-Asm G .25	Sw VI C 1-1-1 4M 4F
1-60	1-Bgr-Cfi-Sco G .30	OU VI B 2-1-1 3M 4F
1-61	1-Bgr-Cfi-Sco G .30	

4 / 10-86

4-10	4-Asm-Bgr-Atr F .20	Sw VI B 2-1-2 4F 4K
4-11	4-Asm-Aca-Sve G .40	Ld VI A 1-1-1 2M 4K
4-12	4-Bgr-Cfi-Atr G .25	VS VII C 2-1-2
4-13	4-Asm-Bgr-Atr F .20	Sw VI B 2-1-1 4H 2K
4-14	4-Asm-Anu-Atr G .10	Sh VII B 3-1-3
4-15	4-Asm-Bgr-Svl G .30	Sw VI A 2-1-1 4H 2K
4-16	4-Asm-Aca-Sve F .15	Ld VI A 1-1-1 2H 2K
4-17	4-Asm-Bgr-Atr G .25	Sw VI B 2-1-1 4H 2K
4-18	4-Asm-Bgr-Atr G .10	Sh VII B 3-1-3
4-19	4-Asm-Bgr-Atr F .15	
4-52	4-Bgr-Cfi-Sco G .25	OU VI C 2-1-2 3M 4F
4-53	4-Bgr-Cfi-Sco G .25	Sw VI C 2-1-1 4L 4F
4-54	4-Bgr-Cfi-Sco G .12	Sw VII D 2-1-3
4-55	4-Bgr-Cfi-Atr F .20	Sw VII O 3-1-3
4-56	4-Ost-Sai-Asm G .30	Ld VI B 2-1-2 3S 4F
4-57	4-Bgr-Cfi-Asm F .17	Sw VII O 3-1-3
4-58	4-Bgr-Cfi-Sco G .25	Sw VI C 2-1-2
4-59	4-Bgr-Cfi-Sco G .25	Sw VI B 2-1-2 4M 4F
4-60	4-Bgr-Cfi-Asm F .20	Sw VII C 3-1-2
4-61	4-Bgr-Cfi-Sco F .25	

6 / 4-17

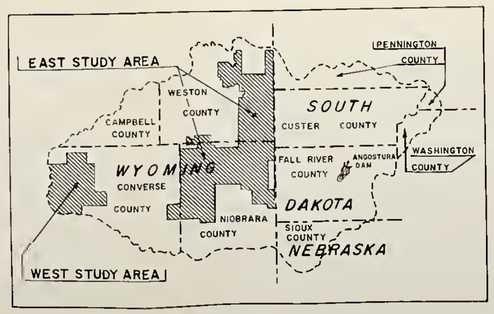
6-4	6-Asm-Bcu-Bgr G .10	VS VII C 2-1-1
6-5	6-Asm-Bcu-Bgr F .08	VS VII D 2-1-1
6-6	6-Asm-Bcu-Bgr G .10	VS VII D 2-1-1
6-7	6-Asm-Asc-Bgr G .10	VS VII D 2-1-1
6-8	6-Asp-Asc-Bgr G .07	VS VII O 2-1-1
6-9	6-Bgr-Asp-Asc F .15	VS VII D 2-1-1
6-10	6-Bgr-Clo-Asc F .15	VS VII C 2-1-2
6-11	6-Asm-Bgr-Asc G .10	VS VII C 2-1-1
6-12	6-Asm-Bgr-Atr F .15	SS VII C 3-1-2
	6-Bgr-Asp-Asc G .10	

EAST STUDY AREA MAP

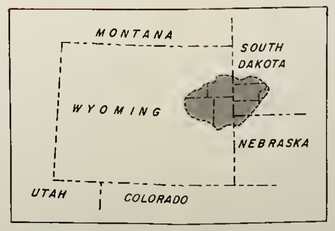
(Sixth Principal Meridian, Wyoming)

WEST STUDY AREA MAP

1 / 1-11	1-1	I-Cfl-Bgr-Sco G Sa VII D 1-2-
	1-2	I-Cfl-Bgr-Sco F Sa VII D 1-2-
	1-3	I-Cfl-Bgr-Sco G Sa VI B 1-2-1 2L
	1-4	I-Cfl-Bgr-Sco G Sa VI C 1-2-1 2L
	1-5	I-Cfl-Bgr-Sco G So VI B 1-2-1 3L
	1-6	I-Asm-Sol G Sa VI A 1-2-1 2L
	1-7	I-Bgr-Cfl-Asm G So VI A 1-2-1 2L
	1-8	I-Sco-Bgr-Cfl G CS VII D 1-3
	1-9	I-Sco-Bgr-Cfl CS VII D 1-3
	1-10	I-Cfl-Asm-Bgr Sw VII C 2-
	1-11	I-Cfl-Bgr-Sco So VII D 1-3
4 / 1-8	4-1	4-Bgr-Asm-Sco Sa VII D
	4-2	4-Bgr-Asm-Sco So VII D
	4-3	4-Cfl-Bgr-Sco So VII D
	4-4	4-Cfi-Bgr-Sco So VII D
	4-5	4-Bgr-Cfi-Asm So VI B 1-2-1
	4-6	4-Bgr-Sco-Cfl So VII D
	4-7	4-Bgr-Cfi-Asm So VII D
	4-8	4-Cfl-Sco-Bgr So VI B 1-2-1
6 / 1-3	6-1	6-Bgr-Asm-Sco Sw VII D 2
	6-2	6-Bgr-Asm-Sco Sw VII C
	6-3	6-Bgr-Asm-Sco Sw VII E



DETAIL STUDY AREAS KEY MAP



ANGOSTURA AREA LOCATION MAP

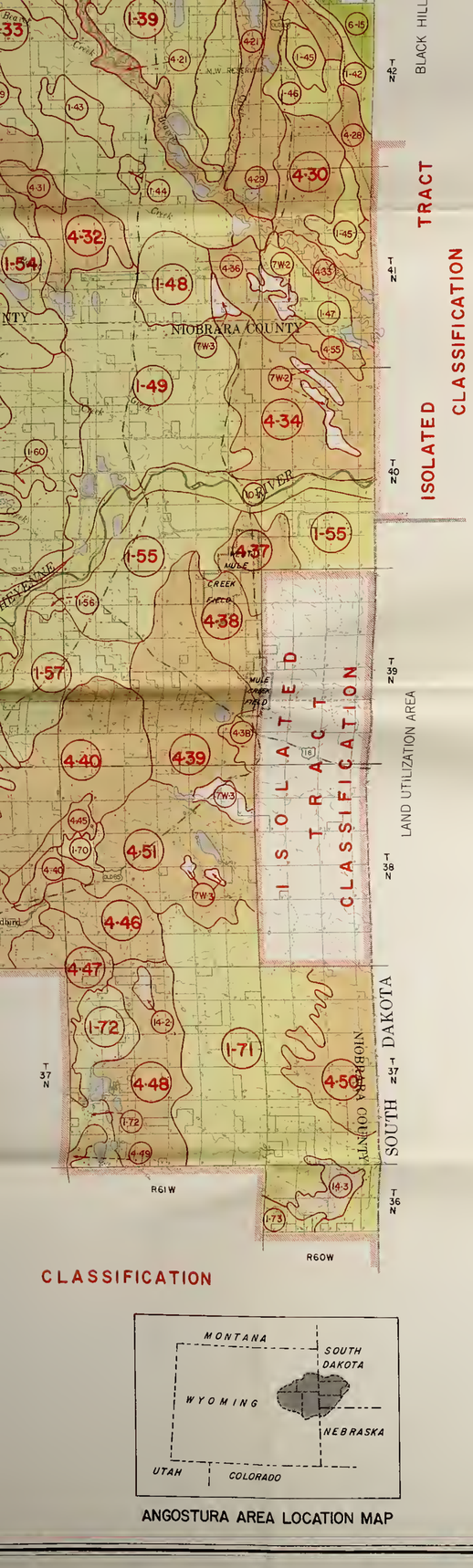
CLASSIFICATION

ISOLATED TRACT

LAND UTILIZATION AREA

Land Utilization

Oil Field



CLASSIFICATION

ANGOSTURA AREA LOCATION MAP

National Forest
Land Utilization
Oil Field

LAND CLASSIFICATION

WEST STUDY AREA MAP

1 (1-11)

1-1	I-Cfi-Bgr-Sco	G .30	So VII	O	1-2-1		
1-2	I-Cfi-Bgr-Sco	F .20	So VII	D	1-2-1		
1-3	I-Cfi-Bgr-Sco	G .30	So VI	B	1-2-1	2L 5F	
1-4	I-Cfi-Bgr-Sco	G .30	So VI	C	1-2-1	2L 5F	
1-5	I-Cfi-Bgr-Sco	G .30	Sa VI	B	1-2-1	3L 6F	
1-6	I-Asm-Sol	G .30	Sa VI	A	1-2-1	2L 6F	
1-7	I-Bgr-Cfi-Asm	G .30	So VI	A	1-2-1	2L 6F	
1-8	I-Sco-Bgr-Cfi	G .15	CS VII	D	1-3-1		
1-9	I-Sco-Bgr-Cfi	G .25	CS VII	D	1-3-1		
1-10	I-Cfi-Asm-Bgr	G .25	Sw VII	C	2-1-2		
1-11	I-Cfi-Bgr-Sco	G .30	Sa VII	D	1-3-1		

4 (1-8)

4-1	4-Bgr-Asm-Sco	G .25	So VII	D	1-2-1		
4-2	4-Bgr-Asm-Sco	G .25	So VII	O	2-1-1		
4-3	4-Cfi-Bgr-Sco	G .25	So VII	D	1-2-1		
4-4	4-Cfi-Bgr-Sco	G .30	So VII	O	1-3-1		
4-5	4-Bgr-Cfi-Asm	G .30	So VI	B	1-2-1	2L 6F	
4-6	4-Bgr-Sco-Cfi	G .25	Sa VII	O	2-1-2		
4-7	4-Bgr-Cfi-Asm	G .25	So VII	O	2-1-2		
4-8	4-Cfi-Sco-Bgr	G .30	So VI	B	1-2-1	2L 6F	

6 (1-3)

6-1	6-Bgr-Asm-Sco	G .15	Sw VII	D	2-1-2		
6-2	6-Bgr-Asm-Sco	G .15	Sw VII	C	2-1-2		
6-3	6-Bgr-Asm-Sco	G .05	Sw VII	E	4-1-3		

EAST STUDY AREA MAP

1 (12-91)

1-12	I-Asm-Bgr-Sco	G .20	Sw VI	C	2-1-1	4M 4L	
1-13	I-Asm-Bgr-Sco	G .30	Sw VI	B	2-1-1	4M 4L	
1-14	I-Asm-Bgr-Bcu	G .25	Sw VII	C	2-1-2		
1-15	I-Asm-Bgr-Bte	G .20	VS VII	B	2-1-1		
1-16	I-Asm-Bgr-Soi	G .30	Sw VI	B	2-1-1	4H 2K	
1-17	I-Asm-Bgr-Cfi	G .25	VS VII	C	2-1-2		
1-18	I-Bgr-Asm-Svi	G .30	Sw VI	B	2-1-1	4F 3K	
1-19	I-Asm-Bgr-Bcu	G .20	VS VII	C	2-1-1		
1-20	I-Asm-Bgr-Asp	G .20	VS VII	C	2-1-1		
1-21	I-Asm-Bgr-Cfi	G .12	Sh VII	C	3-1-3		
1-22	I-Asm-Bgr-ERI	G .05	Sh VII	C	3-1-3		
1-23	I-Asm-Bgr-Cfi	G .12	Sh VII	C	3-1-2		
1-24	I-Asm-Bgr-Opo	P .10	Sw VI	B	2-1-1	4H 2K	
1-25	I-Asm-Bgr-Sco	G .25	Sw VI	B	2-1-1	4H 2K	
1-26	I-Asm-Bgr-Cfi	G .25	VS VII	C	2-1-1		
1-27	I-Asm-Bgr-Bte	F .20	VS VII	B	2-1-1		
1-28	I-Asm-Cfi-Sco	G .30	Sw VI	B	2-1-1	4M 4K	
1-29	I-Asm-Bgr-Cfi	G .15	VS VII	B	2-1-2		
1-30	I-Asm-Bgr-Sol	G .30	Sw VI	A	1-1-1	4H 2K	
1-31	I-Asm-Bgr-Svi	F .20	Sw VI	A	2-1-1	4H 2K	
1-32	I-Asm-Bgr-Soi	G .05	Sh VII	B	3-1-2		
1-33	I-Asm-Bgr-Opo	F .20	Sw VI	B	2-1-1	4F 3Y	
1-34	I-Bgr-Cfi-Sco	G .25	Sw VI	B	2-1-1	4SSF	
1-35	I-Asm-Bgr-Sco	G .15	VS VII	B	2-1-2		
1-36	I-Asm-Bgr-Cfi	G .10	Sh VII	C	4-1-3		
1-37	I-Asm-Bgr-Cfi	E .30	Sw VI	B	2-1-1	4F 4Y	
1-38	I-Bgr-Cfi-Sco	G .15	VS VII	C	2-1-1		
1-39	I-Asm-Bgr-Cfi	F .20	Sw VI	B	2-1-2	4M 3F	
1-40	I-Asm-Bgr-Cfi	G .25	Sw VI	B	2-1-1	4L 6L	
1-41	I-Asm-Bgr-Cfi	F .10	SS VII	C	3-1-2		
1-42	I-Asm-Bgr-Sco	G .15	VS VII	O	2-1-2		
1-43	I-Bgr-Asm-Cfi	G .15	VS VII	B	2-1-1		
1-44	I-Asm-Bgr-Sco	G .15	VS VII	C	2-1-1		
1-45	I-Asm-Bgr-Cfi	F .15	SS VII	B	2-1-2		
1-46	I-Aho-Clo-Bgr	G .15	Sh VII	B	3-1-2		
1-47	I-Asm-Bgr-Soi	G .20	Sw VI	B	2-1-2	4H 2K	
1-48	I-Asm-Bgr-Cfi	G .10	VS VII	B	2-1-1		
1-49	I-Bgr-Cfi-Sco	G .30	Sw VI	B	2-1-1	4S 4F	
1-50	I-Cfi-Bgr-Sco	E .30	Sw VII	O	2-1-2		
1-51	I-Bgr-Cfi-Sco	G .20	Sw VII	D	2-1-2		
1-52	I-Bgr-Cfi-Sco	G .25	Sw VI	B	2-1-1	4S 5F	
1-53	I-Bgr-Cfi-Opo	F .15	Sw VI	B	2-1-1	4S 5F	
1-54	I-Cfi-Bgr-Sco	G .35	Sw VI	B	2-1-1	4S 4Y	
1-55	I-Bgr-Cfi-Asm	G .25	Sw VI	B	2-1-1	4S 4F	
1-56	I-Bgr-Cfi-Sco	G .30	Ld VI	A	2-1-2	2M 4F	
1-57	I-Bgr-Cfi-Sco	G .30	Sw VII	C	3-1-3		
1-58	I-Bgr-Cfi-Asm	G .25	OU VI	C	2-1-2	3M 4F	
1-59	I-Bgr-Cfi-Asm	G .25	Sw VI	C	1-1-1	4M 4F	
1-60	I-Bgr-Cfi-Sco	G .30	OU VI	B	2-1-1	3M 4F	
1-61	I-Bgr-Cfi-Sco	G .30	OU VI	C	1-1-1	3M 4F	
1-62	I-Bgr-Cfi-Sco	G .10	Sw VII	D	3-1-4		
1-63	I-Bgr-Sco-Asm	F .30	OU V	A	1-1-1	3M 4F	
1-64	I-Bgr-Cfi-Sco	G .30	Ld VI	A	2-1-1	2M 4F	
1-65	I-Bgr-Cfi-Sco	G .30	Ld VI	A	1-1-1	2M 4F	
1-66	I-Bgr-Cfi-Asm	G .10	Sw VII	D	3-1-3		
1-67	I-Bgr-Cfi-Sco	G .30	OU VI	B	2-1-1	3M 4F	
1-68	I-Bgr-Cfi-Sco	G .30	OU VI	B	2-1-1	3M 4F	
1-69	I-Bgr-Cfi-Asm	G .30	OU VI	C	2-1-1	3M 4F	
1-70	I-Bgr-Cfi-Asm	G .20	Sw VI	A	2-1-1	4H 2K	
1-71	I-Asm-Asp	G .20	Sw VII	C	2-1-2		
1-72	I-Asm-Sco-Bgr	G .20	OU VI	C	2-1-2	3M 4F	
1-73	I-Bgr-Asm-Asp	G .20	Sw VII	C	2-1-2		
1-74	I-Bgr-Sco-Cfi	G .30	OU VI	C	2-1-1	3M 4F	
1-75	I-Bgr-Cfi-Asm	F .20	Sw VII	C	2-1-2		
1-76	I-Bgr-Asm-Sco	G .20	Sw VII	D	3-1-2		
1-77	I-Bgr-Sco-Cfi	G .30	Sw VI	B	2-1-1	4M 4F	
1-78	I-Bgr-Sco-Cfi	G .30	Sw VI	B	2-1-2	4M 4F	
1-79	I-Bgr-Cfi-Sco	G .12	Sw VII	D	2-1-3		
1-80	I-Cfi-Bgr-Sco	G .15	Sw VII	D	2-1-2		
1-81	I-Bgr-Cfi-Sco	F .17	OU VI	B	2-1-1	3M 4F	
1-82	I-Bgr-Cfi-Sco	G .25	Sw VI	C	2-1-2	4M 4F	
1-83	I-Cfi-Bgr-Sco	F .20	Sw VI	C	2-1-2	4M 4F	
1-84	I-Cfi-Bgr-Sco	F .20	Sw VI	B	2-1-2	4M 4F	
1-85	I-Cfi-Bgr-Sco	F .20	Sw VI	B	2-1-2	4M 4F	
1-86	I-Bgr-Cfi-Sco	G .25	Sy VII	D	2-2-2		
1-87	I-Bgr-Cfi-Sco	G .25	OU VI	B	2-1-1	3M 4F	
1-88	I-Bgr-Cfi-Asm	G .30	Ld VI	B	2-1-2	3S4F	
1-89	I-Bgr-Cfi-Asm	G .30	OU VI	B	1-1-1	3M 4F	
1-90	I-Bgr-Cfi-Asm	G .30	Ld VI	B	2-1-1	3S 4F	
1-91	I-Bgr-Cfi-Asm	G .25	Ld VI	B	2-1-2	3S 4F	

4 (10-86)

4-10	4-Asm-Bgr-Atr	F .20	Sw VI	B	2-1-2	4F 4K	
4-11	4-Asm-Aco-Sve	G .40	Ld VI	A	1-1-1	2M 4K	
4-12	4-Bgr-Cfi-Atr	G .25	VS VII	C	2-1-3		
4-13	4-Asm-Bgr-Atr	F .20	Sw VI	B	2-1-1	4H 2K	
4-14	4-Asm-Anu-Atr	G .10	Sh VII	B	3-1-3		
4-15	4-Asm-Bgr-Svi	G .30	Sw VI	A	2-1-1	4H 2K	
4-16	4-Asm-Aco-Sve	F .15	Ld VI	A	1-1-1	2H 2K	
4-17	4-Asm-Bgr-Atr	G .25	Sw VI	B	2-1-1	4H 2K	
4-18	4-Asm-Bgr-Atr	G .10	Sh VII	B	3-1-3		
4-19	4-Asm-Bgr-Atr	F .15	Sw VI	B	2-1-2	4H 2K	
4-20	4-Asm-Bgr-Asp	G .20	VS VII	C	2-1-2		
4-21	4-Asm-Aco-Sve	G .40	Ld VI	A	1-1-1	2M 3K	
4-22	4-Asm-Aco-Sve	G .25	Ld VI	A	1-1-1	2H 2K	
4-23	4-Asm-Aco-Sve	G .40	Ld VI	A	1-1-1	2F 3K	
4-24	4-Cfi-Bgr-Sco	E .30	Sw VII	C	2-1-2		
4-25	4-Asm-Bgr-Atr	F .15	Sw VII	C	3-1-2		
4-26	4-Asm-Bgr-Atr	F .12	VS VII	B	2-1-1		
4-27	4-Asm-Asp-Atr	G .15	VS VII	D	2-1-2		
4-28	4-Asm-Bgr-Atr	F .15	Sw VI	B	2-1-1	4F 3Y	
4-29	4-Bgr-Cfi-Atr	F .10	VS VII	C	3-1-2		
4-30	4-Aho-Clo-Bgr	G .15	VS VII	B	2-1-1		
4-31	4-Asm-Bgr-Sco	G .10	Sh VII	C	4-1-3		
4-32	4-Bgr-Asm-Opo	G .10	VS VII	B	3-1-2		
4-33	4-Asm-Aco-Sve	G .40	Ld VI	A	1-1-1	2F 2K	
4-34	4-Asm-Bgr-Atr	G .15	VS VII	C	2-1-2		
4-35	4-Asm-Atr-Bgr	G .10	Sh VII	B	4-1-3		
4-36	4-Asm-Bgr-Atr	G .10	VS VII	B	2-1-2		
4-37	4-Bgr-Cfi-Atr	G .15	VS VII	C	2-1-2		
4-38	4-Bgr-Asm-Atr	G .10	Sh VII	C	4-1-3		
4-39	4-Asm-Atr-Clo	G .17	Sh VII	B	2-1-2		
4-40	4-Bgr-Asm-Atr	F .20	Sw VII	D	3-1-3		
4-41	4-Bgr-Cfi-Asm	G .25	Sw VII	D	3-1-3		
4-42	4-Bgr-Cfi-Asm	G .10	Sw VII	D	3-1-3		
4-43	4-Cfi-Bgr-Sco	F .20	OU VI	B	2-1-2	3M 4F	
4-44	4-Cfi-Bgr-Asm	F .12	Sw VII	D	3-1-3		
4-45	4-Asm-Atr-Sve	G .05	Sh VII	D	3-1-3		
4-46	4-Asm-Bgr-Atr	F .20	Sw VI	B	2-1-2	4H 2K	
4-47	4-Bgr-Asp-Asm	G .12	Sw VII	D	3-1-3		
4-48	4-Bgr-Asm-Atr	F .10	Sh VII	C	3-1-3		
4-49	4-Bgr-Asm-Atr	E .12	Sh VII	O	3-1-3		
4-50	4-Asm-Asp-Clo-Aco	F .17	Sw VII	C	3-1-2		
4-51	4-Asm-Bgr-Atr	F .10	Sh VII	B	2-1-2		

5 (1-3)

5-1	5-Asm-Sro-Pte	G .10	VS VII	D	2-1-1		
5-2	5-Bgr-Asp-Cmo	G .05	VS VII	D	2-1-2		
5-3	5-Asp-Cfi-Cmo	G .05	VS VII	D	2-1-2		

6 (4-17)

4-52	4-Bgr-Cfi-Sco	G .25	OU VI	C	2-1-2	3M 4F	
4-53	4-Bgr-Cfi-Sco	G .25	Sw VI	C	2-1-1	4L 4F	
4-54	4-Bgr-Cfi-Sco	G .12	Sw VII	D	2-1-3		
4-55	4-Bgr-Cfi-Asm	G .20	Sw VII	O	3-1-3		
4-56	4-Dst-Soi-Asm	G .30	Ld VI	B	2-1-2	3S4F	
4-57	4-Bgr-Cfi-Asm	F .17	Sw VII	O	3-1-3		
4-58	4-Bgr-Cfi-Sco	G .25	Sw VII	C	2-1-2		
4-59	4-Bgr-Cfi-Sco	G .25	Sw VI	B	2-1-2	4M4F	
4-60	4-Bgr-Cfi-Asm	F .20	Sw VII	C	3-1-2		
4-61	4-Bgr-Cfi-Sco	F .25	OU VI	B	2-1-1	3M4F	
4-62	4-Bgr-Cfi-Asm	G .25	Sw VII	D	2-1-3		
4-63	4-Bgr-Cfi-Asp	G .10	Sw VII	D	3-1-3		
4-64	4-Bgr-Cfi-Asp	F .10	Sw VII	O	3-1-3		
4-65	4-Bgr-Cfi-Sco	F .12	Sw VII	D	3-1-3		
4-66	4-Bgr-Cfi-Sco	F .20	Sw VII	C	3-1-2		
4-67	4-Bgr-Cfi-Sco	G .30	OU VI	B	2-1-1	3M4F	
4-68	4-Bgr-Cfi-Asm	G .30	Ld VI	B	2-1-1	3S 4F	
4-69	4-Bgr-Cfi-Asm	G .20	Sw VII	C	2-1-2		
4-70	4-Bgr-Cfi-Sco	G .25	OU VII	C	2-1-2		
4-71	4-Bgr-Asp-Sco	F .15	Sw VII	D	3-1-3		
4-72	4-Bgr-Cfi-Asm	G .12	Sw VII	D	3-1-3		
4-73	4-Bgr-Cfi-Asm	G .25	OU VI	B	2-1-2	3M 4F	
4-74	4-Bgr-Asm-Sco	F .20	Cl VII	C	2-1-2		
4-75	4-Asm-Bgr-Atr	G .15	Sw VII	D	3-1-3		
4-76	4-Bgr-Cfi-Asm	G .15	Sw VII	O	3-1-3		
4-77	4-Bgr-Asm-Sco	F .25	OU VII	C	2-1-2		
4-78	4-Bgr-Cfi-Sco	F .05	VS VII	D	3-1-3		
4-79	4-Asm-Atr-Bgr	G .20	Cl VII	C	2-1-2		
4-80	4-Bgr-Cfi-Sco	G .25	OU VI	C	2-1-1	2M 4F	
4-81	4-Bgr-Sco-Asm	G .25	OU VI	B	2-1-1	3M 4F	
4-82	4-Bgr-Cfi-Asm	G .30	OU VI	B	2-1-1	2M 4F	
4-83	4-Bgr-Atr-Asm	G .25	Cl VII	C	2-1-2		
4-84	4-Bgr-Sco-Asm	G .15	Sw VII	D	3-1-3		
4-85	4-Bgr-Cfi-Sco	F .20	Sw VII	C	2-1-3		
4-86	4-Bgr-Sco-Atr	F .20	OU VI	C	2-1-2	3M 4F	

7W (1-3)

7W-1	7-W		VIII	F	2-1-2		
7W-2	7-W		VIII	E	5-1-5		
7W-3	7-W		VIII	D	3-1-4		

10 (1-2)

10-1	10-Sol-Dst-Eco	G .50	Ld V	A	2-1-2	2M 4F	
10-2	10-Sal-Dst-Eco	G .50	Ld VI	A	2-1-2	2M 4F	

13 (1-2)

13-1	13-Asm-Anu-Bgr	G .10	Sh VII	C	3-1-3		
13-2	13-Asm-Anu-Bgr	F .10	Sh VII	B	3-1-2		

14 (1-3)

14-1	14-Asm-Bgr-Soi	G .30	SL VI	A	1-1-1	4H 2K	
14-2	14-Asm-Sve-Opo	F .05	Sc VII	A	3-1-1		
14-3	14-Asm-Aca-Sve	G .10	Sh VII	C	3-1-2		

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(1-42) I-Asm-Bgr-Sco G .15
VS VII D 2-1-2

(1-43) I-Bgr-Asm-Cfi G .15
VS VII B 2-1-1

(1-44) I-Asm-Bgr-Sco G .15
VS VII C 2-1-1

(1-45) I-Asm-Bgr-Cfi F .15
SS VII B 2-1-2

(1-46) I-Aha-Clo-Bgr G .15
Sh VII B 3-1-2

(1-47) I-Asm-Bgr-Sai G .20
Sw VI B 2-1-2 4H 2K

(1-48) I-Asm-Bgr-Cfi G .10
VS VII B 2-1-1

(1-49) I-Bgr-Cfi-Sco G .30
Sw VI B 2-1-1 4S 4F

(1-50) I-Cfi-Bgr-Sco E .30
Sw VII D 2-1-2

(1-51) I-Bgr-Cfi-Sco G .20
Sw VII D 2-1-2

(1-84) I-Cfi-Bgr-Sco F .20
Sw VI B 2-1-2 4M 4F

(1-85) I-Cfi-Bgr-Sco F .20
Sw VI B 2-1-2 4 M 4F

(1-86) I-Bgr-Cfi-Sco G .25
Sy VII D 2-2-2

(1-87) I-Bgr-Cfi-Sco G .25
OU VI B 2-1-1 3M 4F

(1-88) I-Bgr-Cfi-Asm G .30
Ld VI B 2-1-2 3S4F

(1-89) I-Bgr-Cfi-Asm G .30
OU VI B 1-1-1 3M 4F

(1-90) I-Bgr-Cfi-Asm G .30
Ld VI B 2-1-1 3S 4F

(1-91) I-Bgr-Cfi-Asm G .25
Ld VI B 2-1-2 3S 4F

(4-42) –

(4-43) –

(4-44) –

(4-45) –

(4-46) –

(4-47) –

(4-48) –

(4-49) –

(4-50) –

(4-51) –