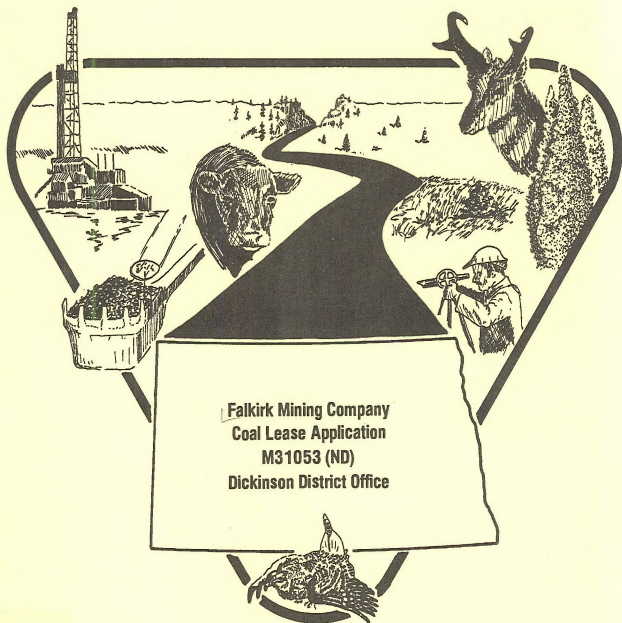




LAND USE ANALYSIS

Technical Examination/Environmental Assessment



Falkirk Mining Company
 Coal Lease Application
 M31053 (ND)
 Dickinson District Office

TD
 198
 JONB
 F372
 1977



United States Department of the Interior
 Bureau of Land Management

Bureau of Land Management
Library
Denver Service Center

81026013
BLM Library
D-563A, Building 50
Denver Federal Center
P. O. Box 25047
Denver, CO 80225-0047

MT-030-48-9-3

TD
195
C58
F372
1979

LAND USE ANALYSIS/TECHNICAL EXAMINATION/ENVIRONMENTAL ASSESSMENT RECORD

FALKIRK COAL LEASE APPLICATION M-31053 (ND)

July 1979

Prepared By:

Chuck Steele	District Manager
Jerry Pittman	Chief, Division of Resources & Operations
Ron Gunnufson	Geologist
Lyle Chase	Agronomist
Don Ruffledt	Soil Scientist
Chuck Pettee	Hydrologist
Ken Burke	Realty Specialist
Al Caldwell	Surface Protection Specialist
Merle Richmond	Wildlife Biologist
Loren Cabe	Regional Economist
Burt Williams	Archaeologist
Mel Ingeroi	Writer/Editor

Typed By:

Sandra Nelson	Administrative Clerk
Connie Schmidt	Mail/File Clerk

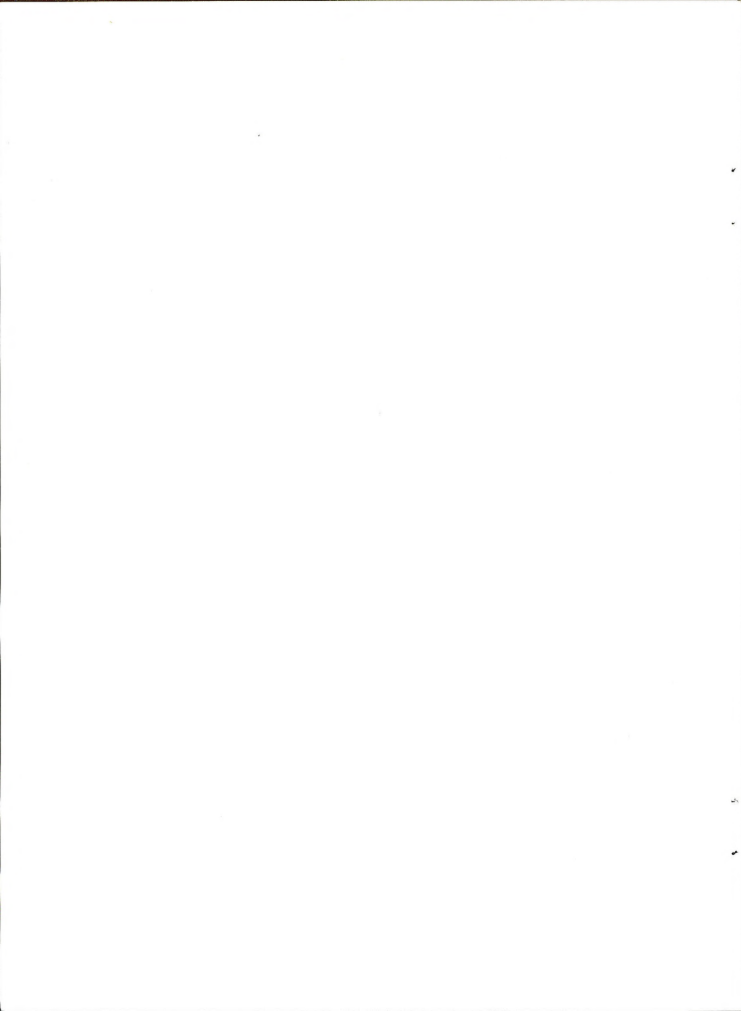
Bureau of Land Management
Library
Denver Service Center

UNIVERSITY OF CALIFORNIA
LIBRARY
DIVERSITY CENTER
100 SHREVE DRIVE
BERKELEY, CALIF. 94720

UNIVERSITY OF CALIFORNIA
LIBRARY
DIVERSITY CENTER
100 SHREVE DRIVE
BERKELEY, CALIF. 94720

TABLE OF CONTENTS

Introduction	1
Technical Examination/Environmental Assessment Record	I-6
Chapter 1 - Proposed Action	I-7
Chapter 2 - Description of the Environment	I-17
Chapter 3 - Environmental Impacts	I-41
Chapter 4 - Mitigating or Enhancing Measures	I-53
Chapter 5 - Residual Adverse Impacts	I-59
Chapter 6 - Short-Term Uses vs. Long-Term Productivity	I-63
Chapter 7 - Irrecoverable Resource Commitments	I-65
Chapter 8 - Alternatives to the Proposed Action	I-66
Chapter 9 - Consultation and Coordination	I-67
Appendix I - Soils Information	II-71
Appendix II - Visual Resources	II-78
Appendix III - Hunting Data	II-84
Appendix IV - Wetland Types	II-85
Application of Unsuitability Criteria	III-89
Surface Owner Views	IV-114
Relationship to State and Local Planning	V-116
Proposed Special Stipulations	VI-118
Initial Recommendations and Rationale	VII-121



INTRODUCTION

INTRODUCTION

The Bureau of Land Management, U.S. Department of Interior, is the federal agency responsible for the management of the federal coal reserves in North Dakota and other states. As the managing agency, the Bureau of Land Management (BLM) pursues the coal development objectives established by the President, Congress, and Secretary of Interior. Through laws, policies, and directives, the BLM is pursuing a program that will make coal available to help meet the energy needs of the nation.

In June 1979, the Secretary of the Interior issued a document that described the new Federal Coal Management Program. With the publication of the document, an eight-year history of starts, stops, and restarts in Federal Coal Policy making and administratively and judicially imposed moratoria on federal coal leasing reached its conclusion. Under the "Preferred Program", which Secretary Cecil Andrus chose for implementation, major leasing of federal coal would again resume in certain regions of the nation.

During the last moratorium on leasing, the Secretary and the Court recognized the need for providing federal coal to maintain existing operations, to allow companies to meet contractual commitments, and to avoid bypass of federal coal. To provide for these "short-term" needs, some exceptions to the moratorium were made. Standards for

short-term leasing were set out in an amended court order of June 1978. These were modifications of criteria that the Secretary had earlier developed. The Department of the Interior, through the BLM, attempted to respond to critical industry needs and bypass situations that met the criteria.

The lease application in the present case was received before the new federal coal program went into effect. However, because publication of the notice and the lease sale will take place after July 19, 1979, the lease will be issued under the Secretary of Interior's new coal management regulations. This new program, titled "Leasing on Application" or "Emergency Leasing" (43 CFR 3425), provides for leasing in a condensed time frame. It has been determined that this application meets the criteria established for emergency leasing as established by these new regulations.

Falkirk Mining Company, a subsidiary of North American Coal Company, recently opened a mine (Sunburst Mine) in McLean County, near Underwood, North Dakota. There are approximately 1,000 acres of federal coal reserves within the proposed area of operation of the mine. Falkirk wants to obtain this federal coal to round out their operation. Being able to mine all the coal in an area, generally, provides for a more efficient and economic mining operation for the coal company.

A few years ago Falkirk Mining Company made an application to lease all the federal coal (1,000 acres) within the mine's operational

area. The BLM took action on the application and completed an environmental assessment in March 1976. However, the injunction which stopped federal coal leasing precluded BLM from issuing a lease to the Falkirk Mining Company at that time.

Falkirk Mining Company submitted a new application under the Court's short-term criteria. Recognizing that all of the federal coal in the mine area did not fit the short-term criteria for leasing, they submitted an application for only 160 acres of federal coal. They anticipated that this acreage would be bypassed in their mining operation. Since the federal government wants to avoid bypassing federal coal reserves, the BLM is taking action on the application.

Land use planning, technical examination, and environmental assessment are prerequisites to federal coal leasing. This document is a record of those actions. In most cases a major "comprehensive land use plan" would be prepared; however, since the federal coal is under private surface and the acreage included is small, the BLM opted to do a land use analysis to meet planning requirements. Authority to do a land use analysis is provided for in the Federal Coal Leasing Amendment Act of 1975 (Sec. 3-(3) (A) (i). According to this act, lease sales may be held for areas with nonfederal surface ownership if the state has prepared a land use plan, or if Interior (BLM) prepares a land use analysis.

The major analytical document of the land use analysis is a technical examination/environmental assessment record (TE/EAR). The "technical examination" is the analysis of mineral disposal actions. The "environmental assessment" is the analysis of impacts of a proposed federal action on the physical, social, and economic environment. The two analyses are so similar in content that they were merged and recorded in one document.

The total Falkirk Land Use Analysis is being accomplished in two phases, with a document prepared for each phase. The first phase consists primarily of the analytical processes and the initial recommendations. This document, which is a record of these analyses and recommendations, will be presented to the public for review and comment. The second phase is the decision statement, which contains the public comments, an analysis of these comments, and the final recommendations of the BLM to be forwarded to the Secretary of Interior. After reviewing the documents and conferring with the Governor of North Dakota, the Secretary will then decide whether or not to lease the proposed areas.

The total documentation program is as follows:

Phase I (Analysis and Initial Recommendations)

1. Introduction
2. Technical Examination/Environmental Assessment Record

3. Application of Unsuitability Criteria
4. Resource Trade-Offs
5. Surface Owner Views
6. Relationship to State and Local Planning
7. Initial Leasing and Special Stipulation Recommendations

Phase II (Decision Statement)

1. Introduction
2. Public Review Comments and Analysis
3. Final Leasing and Special Stipulation Recommendations
4. Environmental Impact Statement Declaration

As previously stated, this document is a record of Phase I. The public is invited and urged to review and comment on any or all portions of it. For this purpose, a 30-day comment period will be provided. After this period, the Phase II Decision Document will be developed and made available to the general public.

TECHNICAL EXAMINATION/ENVIRONMENTAL ASSESSMENT RECORD

Figure 1
LOCATION OF REPORT AREA



Chapter 1

PROPOSED ACTION

The proposed action to be analyzed in this Environmental Assessment Record is a pending federal coal lease application from the Falkirk Mining Company for a 160-acre tract located $\frac{1}{2}$ -mile west of the town of Underwood in McLean County, North Dakota. The legal description of this tract is:

T146N, R82W, 5th P.M. - Section 20: NW $\frac{1}{4}$.

The town of Underwood is located on Highway 83, about 45 miles north of Bismarck and about 7 miles south of Snake Creek Reservoir, a part of Lake Sakakawea. Underwood is located about 12 miles east and 2 miles south of Garrison Dam.

The application meets the Secretary of Interior's criteria for "Emergency Leasing" (43 CFR 3425), as the coal will be bypassed and probably lost if not mined within a logical mining sequence. It is estimated that the tract will be bypassed by 1982. The Falkirk Mining Company estimates it would take about five years to mine the coal in the application area.

The federal government does not own the surface rights in the tract area, but the mineral rights are administered by the Bureau of Land

LEGEND


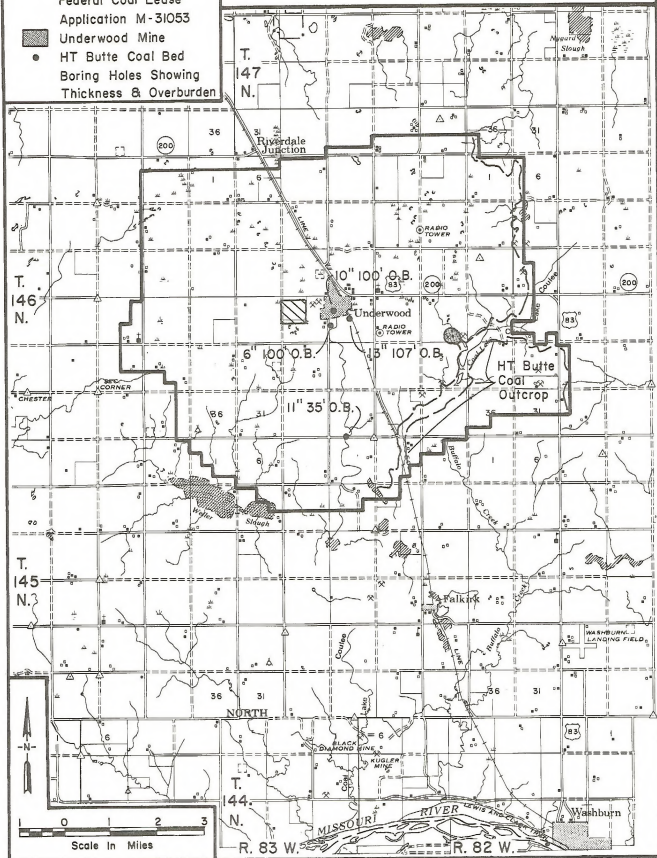
-  Falkirk Mining Company
-  Federal Coal Lease
-  Underwood Mine
-  HT Butte Coal Bed
-  Boring Holes Showing
-  Thickness & Overburden

Figure 2

LOCATION OF TRACT



Management. The surface is privately owned and the Falkirk Mining Company holds a lease covering the rights of the surface owner.

The Falkirk Mining Company is a wholly owned subsidiary of North American Coal Corporation, a corporation organized under the laws of the State of Ohio. The company was organized in August 1974 to acquire and hold fee and/or leased coal lands in the State of North Dakota and to construct and operate a mine, or mines, to supply lignite as fuel for the Coal Creek Generating Station. This two-unit plant, which will have a total generating capacity of 1100 megawatts (MW), is presently under construction south of Underwood, North Dakota, (T145N, R82W, Section 17). The plant will be owned and operated by United Power Association, Elk River, Minnesota, and by Cooperative Power Association, Minneapolis, Minnesota.

In 1978, its first year of operation, the mine produced 1,600,000 tons of coal. Annual production will increase to a planned level of 5-6 million tons of coal by 1981. This coal is committed to Coal Creek Generating Station under a 35-year contract. The first unit of the plant is scheduled to be ready for operation by July 1979. The second unit is to be ready the following year.

The Falkirk Mining Company controls 21,899 acres of surface and 23,952 acres of coal lands. All of the surface area is leased from private landowners.

The Bureau of Land Management (BLM) completed an environmental assessment for all of the federal coal (1,000 acres) within the Sunburst Mine's operational area in March 1976.

BLM issues leases for federal coal for the Department of the Interior. If a decision is made to lease the coal in a short-term lease application area, the BLM would develop special requirements for protection of resources other than coal and for the post-mining use of the affected lands. These special requirements would be included in the federal coal lease and reclamation plans.

Any company involved in the surface mining of coal must comply with applicable federal and state regulation. Mining and reclamation plans must meet the appropriate standards of the North Dakota Century Code. Mining permits must be obtained from the North Dakota Public Service Commission, and construction permits are required by the North Dakota State Department of Health.

Mining and reclamation plans must also meet the requirements of the federal Surface Mining Control and Reclamation Act of 1977 (PL 95-87 and the subsequent regulations and 30 CFR parts 700 and 800). Mining and reclamation plans are reviewed and approved by the Office of Surface Mining, Reclamation and Enforcement, in consultation with the State of North Dakota. Where federal coal is involved, additional consultation with the BLM and Geological Survey is required.

Conditional use permits for various parts of the mine must be issued by the McLean County Board of Commissioners.

The application area would be developed by strip mining techniques as determined by present technology and economics. Reclamation of the tract should be completed within three years after termination of the mining permit, according to North Dakota State law. The company must be given two one-year extensions by the State upon request. Further extensions on a year-to-year basis may be granted at the discretion of the State.

Mining

About 5,640,000 tons of coal per year will have to be mined in order to fuel the 1100 MW Coal Creek Station. A large-scale surface mining operation will be required, with approximately 400 acres affected by mining at any given time.

To minimize the length of haul, the power plant was located near the coal mine. Two large, 105-cubic-yard electric draglines, each with a 328-foot operating radius, will be used to uncover the coal seam. These draglines will be fed electricity through 23,000-volt ground-laid cables. The coal will be excavated and loaded into 160-ton trucks by two 19-cubic-yard electric shovels. A fleet of trucks operating over a network of private haul roads will transport the coal from the mining pits to a truck dump near the plant site, where the coal will be crushed and

conveyed through a mine surge facility to the power plant receiving point.

A detailed program of operation for each of the two draglines in the Suburst Mine is being developed as follows:

1. Topsoil and subsoil are first removed from an initial mining area, which includes the first overburden spoil site. The topsoil and subsoil are excavated, transported, and stockpiled by a fleet of rubber-tired tractor scrapers. Stockpiles are protected from wind erosion by seeding. A "box" cut is dug, with resulting spoil piled in a neat windrow on the surface outside of the mineable coal reserve limit. A long (5,000 foot, if possible) pit of 120-foot minimum width is excavated, with provisions for truck ramps down to the coal surface established on the spoil side of the cut. Each stripping dragline operates in sequence with a 19-cubic-yard coal-loading shovel mounted on an electric crawler. Stripping continues 24 hours a day, 7 days a week, while coal loading operates on a lesser schedule of 16 hours a day, 5 days per week, to suit the planned ratio balance.
2. At a prescribed distance behind the dragline, the lignite is bladed off to remove loose clay and rock by a large front-end loader or a grader. To fracture the lignite, the area is blasted with Anfo (ammonium nitrate and fuel oil) or ripped

with a crawler dozer. The coal-loading shovel then digs and loads the coal into 160-ton, diesel-powered, "coal haulers" (off-highway, bottom-dump trucks). A fleet of these trucks transports the coal over carefully engineered and maintained haul roads to the truck dump.

3. The stripping and coal-loading activity described are integrated carefully, since the stripping dragline must reverse its direction at the planned pit end. The dragline "walks" toward its starting point on the "highwall" side of the cut to a point where the coal has been removed in the box cut adjacent to the highwall. Such moves involve prior grading of the highwall by bulldozers. Once repositioned, the dragline digs into the highwall, establishing a new digging face. The dragline advances while digging toward the original cut starting point. Spoil from this new highwall inset cut is placed in the old pit, now cleared of all coal by the loading shovel, which is advancing away from the dragline. The sequence described continues, resulting in long parallel spoil windrows.
4. The second or third spoil windrow back from the pit (depending on timing and especially stability factors) is leveled to a rolling or flat topography, depending upon the prescribed reclamation plan. A smaller, 17-cubic-yard dragline may be used, assisted by bulldozers, to level the spoil windrows. Grading follows leveling, subsoil is respread, and finally

topsoil is redistributed by tractor scrapers. The topsoil may be brought either from stockpiles or the highwall side of the cut, whichever the plan dictates. Final grading of topsoil and seeding are done as the season permits. A large fleet of scrapers and bulldozers is required for this work. Careful monitoring to insure timely reseeding is a mandatory requirement.

The final highwalls will be trimmed down and blended into the rolling topography, according to the reclamation plan.

Reclamation

The surface landowner designates his/her preference for the final land use pattern and vegetative cover, the reclamation process must conform to these preferences.

The reclamation of the surface is as cyclic as the mining. Final leveling and shaping of spoil by bulldozers follows immediately after mining. Replacement of topsoil and subsoil is as immediate as weather conditions permit. Cultivation (surface preparation, seeding, and fertilization) is obviously a seasonal activity, with spring and fall planting. Careful attention is required to prevent erosion during the time before plant growth can retain the surface materials. Impoundments will be constructed as a means of controlling sedimentation.

A complete reclamation plan is required as part of the requirements of both state and federal mining permits. The plan requires the following:

Regrading

During reclamation, the overburden piles are reshaped to a level or gently rolling form. This includes the final highwall, or last cut, which normally has little overburden put back into it. The highwall is cut back and graded to blend with the adjacent terrain. Reshaping is usually done two to three spoil piles behind the mining operation, depending on weather and working conditions.

Topsolling

Following the reshaping process, subsoil is spread on the graded overburden. Topsoil is then replaced and spread over the subsoil. The topsolling operation is normally done during the dry season of the year.

Revegetation

The seeding operation involves site preparation (such as contour plowing) and seeding with appropriate vegetation. This may include the use of a bulldozer, but is normally limited to farm tractors and implements.

Technical Examination Addendum

The following subjects and comments are required in a Technical Examination (43 CFR 23.5 and 43 CFR 3041.2) but are not covered elsewhere in the text.

Fire and Fire Hazards: There would be no additional fire hazards if the subject tract is leased and mined.

Toxic Materials: It is assumed that no toxic materials will be used during mining. If any toxic material is used or encountered, state and federal laws dictate that it be isolated and buried several feet below the rooting zone, so as not to interfere with the establishment of vegetation.

Landslide Potential: The highwall would provide the only landslide problem in this area. The high moisture content of the unconsolidated or poorly consolidated sediments could cause slumping. The problem is minimized or solved by sloping the highwall.

Hazardous Exploration or Mine Workings: There are no known hazards.

Bonding Requirements: The amount of bonding required in 43 CFR 3041.3 and 3504.2-1(b) will be determined by the authorized officer in consultation with USGS. The minimum bond in 3504.2-1(b) is \$1,000 for coal leases. State bonding is also required.

Chapter 2

DESCRIPTION OF THE ENVIRONMENT

CLIMATE AND AIR QUALITY

The Underwood area is located in the center of North Dakota and has a typically continental climate. Air masses passing over this area from the west are modified considerably by the Rocky Mountains, while there are no obstacles to air masses coming for the Gulf or Polar regions. The result is a highly variable climate with large daily as well as annual fluctuations in climatic variables.

The annual precipitation for this area is about 16 inches, most of which falls between the months of April and September. June is the wettest month of the year. Temperatures vary from thirty below zero to just over one hundred degrees annually. The prevailing wind is from the northwest.

The North Dakota State Department of Health monitors an air quality network for the state. For the application area, there are monitoring stations at Garrison and Stanton. Both of these are rural stations and were established in September of 1974. The station at Garrison measures total suspended particulates, sulfur dioxide, and nitrogen dioxide on a six-day schedule. The Stanton station monitors these, plus photochemical oxidants, wind speed, wind direction and temperature, all on a continuous basis.

There are no nonattainment areas in the state; and in the vicinity of the proposed coal lease, the area is all Class II. The primary air quality pollutant is total suspended particulates.

GEOLOGY

General

The application area lies about $\frac{1}{2}$ mile directly west of the town of Underwood, North Dakota, in McLean County. McLean County is located in west-central North Dakota on the east flank of the Williston Basin. The county is underlain by 8,500 to 13,000 feet of Paleozoic, Mesozoic, and Cenozoic rocks that dip gently to the west. Glacial drift, which occurs throughout the county, reaches a maximum thickness of about 400 feet, but it is probably less than 50 feet thick in the application area. In the tract area glacial drift overlies the Sentinel Butte Formation, which contains commercial coal beds.

Stratigraphy

The geologic formations underlying the tract range in age from Precambrian (basement rocks) to Holocene (reworked glacial sediments). Since all commercial coals lie within the Fort Union Group, formations lying stratigraphically below this group are not pertinent to this study and will not be discussed.




The Fort Union Group of Tertiary Age consists of the Cannonball, Tongue River, and Sentinel Butte Formations. The Tongue River and Sentinel Butte Formations are predominantly continental nonmarine deposits and contain the most important coal beds. In western McLean County, they have a maximum thickness of 800 feet.

The Cannonball Formation, the lower-most member of the Fort Union Group, is believed to be the marine equivalent of the Ludlow Formation. It consists of olive black, carbonaceous, and lignitic siltstone; shale; lignite; and micaceous friable sandstones. The Cannonball Formation is about 250-300 feet thick in the application area.

The Tongue River Formation, which overlies the Cannonball Formation, consists of orange, buff, and gray sands; silts; and clays that range from poorly to well cemented. The sands are commonly cross-bedded and have local horizons of sandstone concretions. Lignite beds are present in the Tongue River Formation of McLean County, but the coals are not mineable.

The Sentinel Butte Formation in McLean County generally consists of light-gray to brownish-gray sands and silts. The Sentinel Butte Formation can be differentiated from the Tongue River Formation by its gray color and uniform texture. The lignite beds of commercial importance pertinent to the application area are found in the Sentinel Butte Formation. This formation was deposited in a low-lying, swampy environment. Slow,

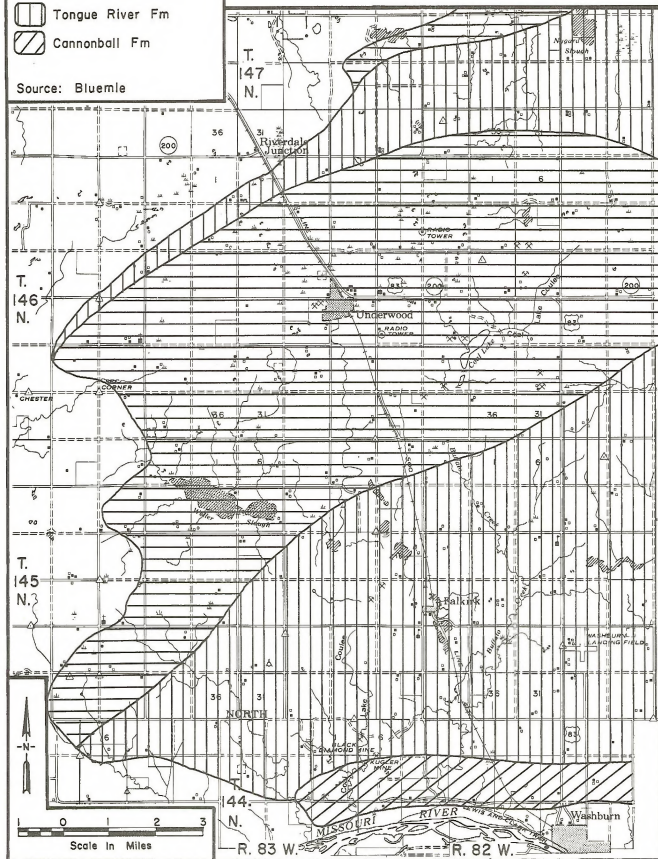
LEGEND

-  Sentinel Butte Fm
-  Tongue River Fm
-  Cannonball Fm

Source: Bluemle

Figure 3

BEDROCK GEOLOGY








meandering rivers deposited sand, silt, and clay; and the dense vegetation accumulated in swampy areas was later converted to lignite coal.

The Coleharbor Formation, which overlies the Sentinel Butte Formation, consists of glacial till and fluvial sediments. This formation is glacial in origin and is one of the most extensive formations in the state. The Coleharbor Formation consists of thousands of alternating beds, but only three main facies: (1) interlayered bouldery, cobbly, pebbly, sandy, silty clay; (2) sand and gravels; and (3) silt and clay. In North Dakota the formation ranges in thickness from 0 to 600 feet. The type area for the Coleharbor Formation is about six miles west of the town of Coleharbor, along the shore of Lake Sakakawea in McLean County. The formation covers about 95 percent of McLean County and reaches a thickness of more than 400 feet. In the tract area the formation is probably less than 50 feet thick. Drill logs from borings drilled in the town of Underwood ($\frac{1}{2}$ mile east) show less than 20 feet of glacial till.

The Coleharbor Formation was deposited during the ice age, from several hundred thousand to about 9,000 years ago. The boulder-clay facies of the formation is mainly glacial till that was eroded and deposited by the glaciers. This facies is found at the surface in the tract area. The sand and gravel facies of the Coleharbor Formation was deposited mainly by rivers and streams during glacial times. Many of the streams were probably fed by melt water from the glaciers. The Coleharbor silt

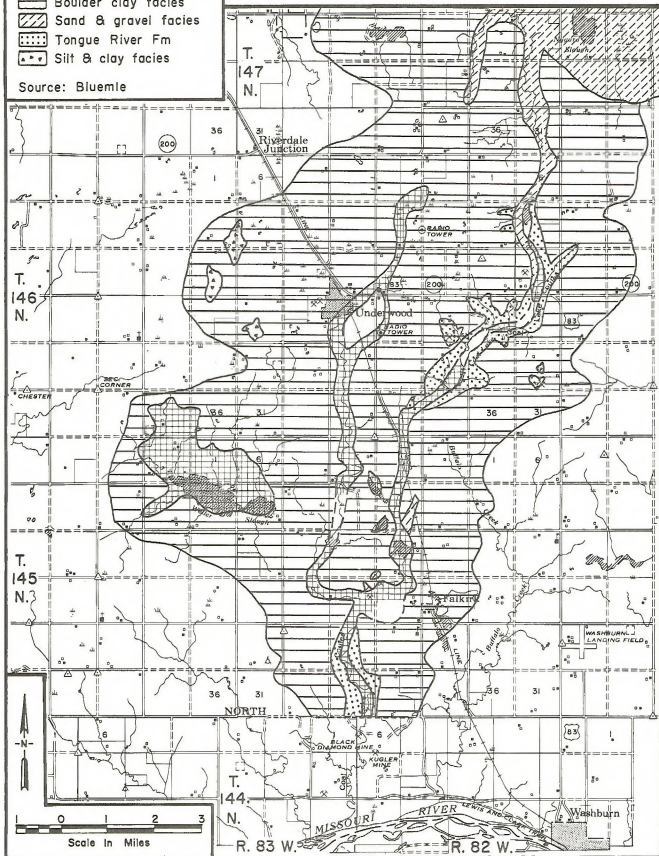
LEGEND

-  Unnamed Fm, alluvial deposits, Coleharbor Fm
-  Boulder clay facies
-  Sand & gravel facies
-  Tongue River Fm
-  Silt & clay facies

Source: Bluemle

Figure 4

SURFACE GEOLOGY



and clay facies were deposited in lakes that formed naturally (western McLean) and in lakes that were formed, in part, by glacial ice (eastern McLean).

Paleontology

There are no known fossil sites within the tract area. The Tongue River Formation is known to contain gastropods, pelecypods, and ostracods; but this formation lies 200-300 feet below the tract surface. Fossils in the Sentinel Butte Formation are scarce and insignificant. Fossils can also be found in glacial lake deposits, but these deposits are not found in the application area.

Structure

McLean County is situated on the east flank of the Williston Basin, an intracratonic, structural basin containing a thick sequence of sedimentary rocks. The basin was formed in early Paleozoic time (about 620 million years ago) and contains a sedimentary section in excess of 13,000 feet in the area. In McLean County the rocks dip to the west at less than 25 feet per mile, or less than 1 degree. There are no known faults in the tract area.

Coal Beds

The Sentinel Butte Formation contains the lignite coals of commercial importance within the tract. The tract falls within the Underwood KRCRA (Known Recoverable Coal Resource Area). This KRCRA is based on the presence of the HT Butte coal bed, which was formerly called the Underwood bed.

The HT Butte coal bed is projected to average about 9.0 feet in thickness from data derived from 4 borings drilled in or near the town of Underwood ($\frac{1}{2}$ mile east of the tract). Depth of overburden should range from about 110 to 155 feet and average about 135 feet in thickness over the tract. As much as 20-50 feet of glacial drift (Coleharbor Formation) may overlies bedrock (Sentinel Butte Formation) in the tract area.

An analysis of the coal (as received) in the area was provided by the Falkirk Mining Company. The coal averages 6,415 BTU, with 0.61 percent sulfur, 39.45 percent moisture, 27.97 percent volatile matter, 25.76 percent fixed carbon, and 6.81 percent ash. The coal has a low sodium content, which makes this coal an attractive fuel for electric power generation due to its nonfouling properties.

The coal reserves in the application area are based on the HT Butte coal bed. The Sentinel Butte Formation contains a number of coal beds that lie stratigraphically below the HT Butte coal; however, these coals are

not currently considered commercial, because they are at greater depths and are not as thick as the HT Butte coal bed. The total stripable and recoverable reserves of the tract are estimated at 2,520,000 and 2,142,000 short tons, respectively.

TOPOGRAPHY

The tract falls within the Coteau Slope physiographic area, where relief is moderate and generally less than 25 feet; however, within the tract boundaries, elevations range from about 2,030 feet to 2,075 feet and relief is about 45 feet. The topography of the Coteau Slope was formed by a hummocky accumulation of glacial drift on a stream dissected bedrock surface. Glacial drift overlies the coal bearing Sentinel Butte Formation in the application area.

The tract falls within an area of dead-ice moraine, which is characterized by knob-and-kettle topography, nonintegrated drainage with numerous small ponds and sloughs, and a bouldery surface on till. The topsoil consists predominantly of a black clayey silt with gravel, pebbles, cobbles, and boulders.

SOILS

The Soil Conservation Service (SCS) has identified and mapped two soil mapping units on the lease application area. This was done as part of

their work in preparing the detailed soil survey report for McLean County, which is currently being published. The major mapping unit is the Max-Zahl loams on 6-9 percent slopes. The other unit is the Williams-Bowbells loams on 3-6 percent slopes. The soils are cultivated except for the small areas in undrained depressions. Water erosion has removed much of the topsoil from the convex ridges and deposited it on the gentler side slopes and lower concave parts of the landscape. This has resulted in only a few inches of topsoil on the ridges, but up to 20 inches or more on some of the lower positions. Generally, however, there are 5-10 inches of topsoil and 5-15 inches of good subsoil in the soil profiles of the major soils mentioned above. The lowest layer of the subsoil usually becomes calcareous (high in calcium carbonate) and grades into glacial till parent material through the remainder of the profiles, which are described to a depth of 60 inches.

Cobbles and even some boulders are present on the quarter section of the tract. Most of the boulders and many of the larger cobbles are occasionally moved together onto several small "rockpiles" on the tract in order to facilitate cultivation.

Neither of the two soil mapping units are considered prime farmland by the SCS. For more detailed soil information see Appendix I.

WATER

The tract lies in the southern glaciated area of McLean County. As glaciers advanced across the sands, shales, and lignites of the Fort Union Formation, they scraped off high areas and filled in valleys. When they receded, the meltwaters cut new channels and valleys. As this advance and retreat repeated itself, the conditions were created for the present-day network of interconnected surface and shallow ground hydrologic system. The climate in the area is continental in nature, with an annual precipitation of 16 to 17 inches. Most of this falls in the form of rain during the spring and early summer months.

Surface runoff from the 160-acre tract is to two unnamed intermittent draws. Both of these drain to Weller Slough, a closed basin collection area. On the tract itself, there are no defined channels, and runoff occurs only during snowmelt and heavy thunderstorms. Much of the tract has small pothole basins with no external surface drainage. These potholes are intermittent wetlands, many of which are farmed over most years. Recharge to these potholes is from precipitation, and discharge occurs through evaporation and seepage.

The tract occupies a topographically high area, where there is about 20 feet of ground moraine overlying the Fort Union formation. The formation at this site is sandstone interbedded with clay layers on top of about a ten-foot-thick lignite bed. Below the lignite there are about 200 feet of shale, which overlies another thick sandstone bed. The upper sandstone

bed is local in extent. Lying along a northeast-southwest line, it is thickest just south of Underwood. The lignite bed and the shale and sandstone below it are continuous over most of this part of the county.

There are two aquifer systems associated with this stratigraphy. The upper one includes the upper sandstone and lignite beds, the lower one includes the lower sandstone bed. The upper aquifer is localized in extent and also in recharge and discharge. Infiltration of precipitation, pothole seepage, and surface runoff in the localized area provide recharge to this system. The lower aquifer receives its recharge from outside the Underwood area. Both aquifers contain water of sufficient quantity and quality to use for domestic, stock, and municipal purposes. Below these two systems lie the other major ground water systems that occur over most of the state.

There is no use of surface or ground water on the 160-acre tract, aside from growing pasture grass and farm crops. There are a few farmsteads in the surrounding sections that have domestic and/or stock wells, but these wells have not been inventoried. Generally, in this part of McLean County most rural wells are less than 100 feet deep. The city of Underwood, which is located one mile to the east of this tract, has three municipal wells currently in use. All three of them tap the lignite bed at 80-95 feet. City officials have indicated that they would like to expand their municipal water supply to meet recent increases in demand.

There are no Municipal Watersheds, National Resource Waters, Floodplains or Alluvial Valley Floors located in the vicinity of this tract.

VEGETATION

The land covered by this report has produced crops for many years. At the time of field inspection there was wheat stubble on the west half, and the east half was in summer fallow. The tract has numerous wet depressions, with water standing in them from spring snowmelt. Most of them will probably be dry by early summer. If this tract had remained in native plant cover, it would have been classified as a silt range site with thin uplands range sites on the hilltops and wet meadow range sites in the depressions.

Cropland

The present cropping system is a rotation of wheat and summer fallow, with 1/3-1/2 in fallow each year and the rest planted to wheat. Spring wheat yields on this tract should average 20-25 bushels per acre annually. Crop yields will be very low on the eroded hilltops and high on the deeper, low-lying soils. There are some hen-egg size rocks on the surface, but the big rocks have been removed and piled at various locations on the field. The section line road on the west side is grassed over with smooth brome and crested wheat.

Native Vegetation

The only surviving native vegetation is found on some of the wet depressions. These are classified by SCS as wet meadow range sites. Based on Stewart and Kantrud's classification of natural ponds and lakes in the Glaciated Prairie Region, 1971, the wetlands on this tract will range from Class I (ephemeral ponds) to Class III (seasonal ponds and lakes). In dryer years, portions of these wetlands were farmed. These wetlands have not been mapped, but their estimated size ranges from $\frac{1}{4}$ of an acre to less than 2 acres.

At the time of the writing of this report, North Dakota does not have any plants on the federal list of threatened and/or endangered plant species. However, North Dakota does have a "rare and unique list." No plants from this list have been identified on the tract, and it is highly unlikely any would be found.

ANIMALS

The 160-acre tract proposed for federal coal leasing is located in the prairie pothole biotic region, where heavy glaciation has left various glacial landforms and numerous wetlands throughout (Stewart 1975). Typically, the topography of the region is rolling and has poorly developed drainages. The uplands are largely devoted to wheat production.

The tract is within the Central Flyway, which is the major migratory corridor for numerous species. It is the major flyway for ducks migrating to and from the prairie pothole breeding area, for geese migrating to and from the arctic tundra, and whooping cranes (an endangered species) migrating to and from Wood Buffalo National Park. In addition, numerous species of songbirds, raptors, and shorebirds migrate through the flyway.

The prairie pothole region in North Dakota is the major duck-breeding area in the lower United States, and the wetlands on this 160-acre tract contribute to the habitat necessary to support migrating and locally breeding birds, many having national importance. In addition, Stewart and Kantrud (1972) considered this area to be important for all bird species.

The uplands of the tract have a rolling topography, and are being farmed to produce wheat. The tract does not support any domestic animal grazing. At the time the tract was field-inspected, the eastern half was in fallow and the western half was in stubble. These farming practices alternate yearly.

Several Type I wetlands exist on the area (see Addendum). There are approximately five acres of Type III wetlands. Most of the shallow, ephemeral potholes (Type I wetlands) have been farmed through in a north/south direction, but the farmer has been forced to circumvent the deeper, semi-permanent potholes (Type III wetlands). The Type III and a

few Type I wetlands have a considerable amount of vegetation around and within them. The vegetation around the periphery of potholes gives an "edge effect" to the wetland habitat. Edge effect greatly enhances the value of habitat to wildlife.

On recent field inspections (April 24 and May 4, 1979) 200-300 ducks, a pair of Canadian geese, and several songbird species were observed. A white-tailed jackrabbit and fox tracks were seen. One species of songbird, the red-winged blackbird, was setting up breeding territories, and the Canadian geese were probably nesting. Many other species will migrate through or set up territories at a later date. In mid and late summer, the exposed mud in the dry potholes will provide feeding habitat for many species, especially shorebirds.

The only endangered/threatened species which could possibly use habitat on this tract are the whooping crane, peregrine falcon, and bald eagle. Whooping cranes are known to use the Audubon National Wildlife Refuge (nine miles north). Although the tract has attractive habitat, they have not been known to use the tract or its immediate vicinity. There are no known peregrine falcon nests in North Dakota, but--even though its probability is extremely unlikely--migrating or wandering peregrine falcons could use the tract for feeding. Bald eagles have not been observed in this area.

CULTURAL RESOURCES

C.L. Dill of the State Historical Society of North Dakota has recorded prehistoric and historic sites in the vicinity of the proposed federal lease area, on other portions of the Falkirk Mine. These sites include tipi rings, rock cairns, and conical mounds. The historic features that were recorded are associated with underground coal mining (Dill 1975, 1976, 1977).

An intensive BLM inventory of the proposed bypass lease area, however, discovered no intact cultural resource sites. Cultivation of the entire 160-acre tract would have removed traces of sites similar to those recorded by C.L. Dill. The cultural resources inventoried by BLM include one Knife River flint debitage flake and scattered, fragmented, and localized historic crockery, glass, and iron. These limited discoveries do not indicate a possibility of buried remains below the modern plow zone.

The results of the inventory were forwarded to the North Dakota State Historic Preservation Officer. His office concurred with the findings "that no actual definable sites were found within the proposed coal lease site." He went on further to say "it is the opinion of this office that no further cultural resource work shall be recommended."

AESTHETICS

Aesthetics as defined for inclusion into this EAR concerns the overall appearance of the landscape, as perceived through the senses of sight, sound, smell, taste, and touch. Since 87 percent of man's perception of his environment is sensed through sight, emphasis will be focused upon visual resources.

The tract involved in this proposed federal coal lease consists of a gently rolling plain with "potholes" (small sloughs). The entire tract is used for cropland, except for portions of the wetlands. The area surrounding the tract includes cropland, hayland, and pasture. The impression created by farming practices is a repetitious pattern of alternating pieces of cropland, fallow field, pasture, and hayland. The overall effect is that of a giant crazy quilt. The rectangular geometric pattern generated by section line and quarter section roads is broken by the sloughs or potholes in poorly developed drainages.

The water surface and bordering vegetation of the potholes provide pleasant contrasts with the surrounding landscape of croplands either in fallow or wheat. A bonus of the potholes is the large number of waterfowl and shore birds, which greatly enhance the visual resource.

The landscape is dominated by artificial elements (form) resulting from agricultural practices and roads. This pattern strongly conflicts with

the naturally free-flowing, smoothly textured, and relatively formless topography.

The scenic values of the mining area were qualitatively rated according to procedures contained in BLM Manual 6310. This involves rating various elements of homogenous areas in order to obtain a numerical score. The possible scores range from 1 to 24. After the numerical score is obtained, the rated areas are grouped into the following classes:

1. Class A (15-24 pts.) Excellent or outstanding scenic values.
2. Class B (10-14 pts.) Moderate (above average) scenic values.
3. Class C (1-9 pts.) Low (common or average) scenic values.

The mining area was rated for its scenic value. The rating is in Scenic Class C, common or average scenery. A list of the scenic rating criteria and the Quality Evaluation Score Sheets are attached (Appendix II).

Visual sensitivity indicates the relative importance of the visual environment. Areas near roads, towns, parks, etc., are seen more often and, consequently, are more sensitive. Sensitivity is usually rated as high, medium, and low.

Visual zones, areas which can be seen from major roadways or use areas, are identified as foreground-middleground, background, or seldom-seen zones. These zones are visible to a distance of 3-5 miles, 5-15 miles, and beyond 15 miles, respectively. In relative degrees of importance,

the foreground-middleground is most important, the background is moderately important, and the seldom-seen area is the least important.

Visual resource management is based on a system of set standards that describe the degree of alteration that is subjectively acceptable within the characteristic landscape. Visual resource management classes have been developed through analysis of the scenery quality classes, visual sensitivity levels, and visual zones. Definition of these classes are as follows:

1. Class I areas (preservation) provide for natural ecological changes only. This class includes primitive areas, some natural areas, and other similar situations where landscape modification activities should be restricted.
2. Class II (retention of the landscape character) includes areas where changes in any of the basic elements (form, line, color, or texture) caused by a management activity should not be evident in the characteristic landscape.
3. Class III (partial retention of the landscape character) includes areas where changes in the basic elements (form, line, color, or texture) caused by a management activity may be evident in the characteristic landscape. However, the changes should remain subordinate to the visual strength of the existing character.

4. Class IV (modification of the landscape character) includes areas where changes may subordinate the original composition and character, but should reflect what could be a natural occurrence within the characteristic landscape.

5. Class V (rehabilitation or enhancement of the landscape character) includes areas where change is needed. This class applies to areas where the landscape character has been disturbed to a point where rehabilitation is needed to bring it back into character with the surrounding countryside. This class would apply to areas where the quality class has been reduced because of unacceptable intrusions. It should be considered an interim short-term classification until one of the other classes can be reached through rehabilitation or enhancement.

In the West-Central North Dakota EIS (1978) the tract is within the area designated as Class III Visual Management. This determination was based on: (1) high sensitivity, since it is less than one mile from the town of Underwood; (2) average scenic quality class; and (3) a foreground-midground visual zone, since it is within three miles of a major road.

Although the coal extraction will increase noises and odors, the expected increases are not considered to be significantly offensive or annoying. The present noises and odors are associated with agricultural practices.

RECREATION

The 160-acre tract proposed for leasing does not have any developed recreational sites. The major kind of recreational use is hunting of waterfowl and some upland game birds. Opportunities for hunting white-tailed deer are limited by the complete absence of woody vegetation. The estimated hunting use (Table 1, Appendix III) in McLean County is 42,016 hunter days (1975).

The hunting pressure on the lease tract is practically impossible to extrapolate, but several spent shotgun shells were observed during a field inspection trip on April 24, 1979. There are several game management areas (GMAs) associated with the Garrison Reservoir development where public hunting opportunities are available. The GMAs are listed in Table 2, Appendix III.

Developed recreational sites, also associated with Garrison Reservoir, provide both local and nonlocal users with considerable opportunities for outdoor recreation. Those sites within one hour's drive from the proposed lease tract are listed and their estimated visitor use indicated in Tables 2 and 3, Appendix III. The local visitors are not distinguished from nonlocal visitors in visitor data shown in Table 3.

Urban recreational facilities, such as bowling alleys and theaters, were not inventoried; but outdoor sports facilities, such as baseball diamonds, swimming pools, and golf courses, are listed in Table 3.

SOCIAL CONDITIONS

Initial analysis indicated that there would be no impact on the social environment from this action. Since there will be no increase in the rate of production of coal, there will be no change in the social state. Therefore, a detailed description of the social environment, i.e., schools, hospitals, and housing.

ECONOMIC CONDITIONS

The tract is located in McLean County and economically influenced by both Minot and Bismarck. The primary industry in the area is agriculture, with mining and manufacturing as secondary industries. In recent years the influence of mining in the area has increased rapidly, while agriculture and manufacturing have grown more slowly.

The population of McLean County dropped by 37.5 percent between 1930 and 1970. This reflects an out migration of people, mostly younger ones, which is typical of most agricultural areas. This is often due to a lack of job opportunities. In 1970 the median family income was \$9590 nationally, \$7,838 in North Dakota, and \$7,106 in McLean County. Higher paying jobs elsewhere also contributes to a decrease in population. The annual unemployment rate varied from 8.7 percent to 8.1 percent from 1972 to 1974 (North Dakota Employment Security Division).

LAND USE

Gladys S. Rust is the surface owner of the proposed lease area. This parcel has been rented for several years for agricultural purpose, with small grain as the primary crop. The rolling topography creates 10-15 small potholes or wetlands. These potholes contain approximately 5-7 acres that cannot be farmed during wet years. The potholes or wetlands provide good habitat for waterfowl and shorebirds.

A paved county road and power distribution lines are located along the north side of the tract. The road (number FAS 918) connects Underwood with the rural areas to the west. The 41.6 KV powerline adjacent to the road runs from the Coleharbor substation to the city of Underwood. Both of these improvements are considered to be of significant importance within the area.

Chapter 3

ENVIRONMENTAL IMPACTS

CLIMATE AND AIR QUALITY

As a consequence of the proposed action, the vegetative cover would be destroyed through the removal and stockpiling of topsoil. Vegetation normally has a cooling effect by shading the surface; therefore, air temperature would increase. Air flow would be altered due to the change in landform created by the overburden piles. These impacts would only alter the microclimate.

Mining of this tract would increase the particulate matter in the air. Ambient air standards would be exceeded locally during periods of high winds, but would not be increased in the monitored area; as the mining of this tract would not represent an increase in mining--only a move from a mined-out area to a new area. State Air Quality Standards must be met in order to continue operations.

Exhaust emissions from heavy equipment would not be increased, as the same equipment presently operating in the mine would be working on this site. This is a low impact, which is insignificant outside the proximity of the operation of the engines.

Fugitive dust would increase locally during the mining operation but would not increase over the general area.

GEOLOGY

The primary environmental impact on the geology would occur during the removal of the overburden and the coal resource. The integrity of the coal bed and the overlying strata would be completely destroyed during the mining operation. The paleontological values, which are negligible, would also be destroyed.

TOPOGRAPHY

The major impact to the landscape would occur with the removal of overburden during the mining operation. Initially, the topography would be radically modified. During reclamation, the land surface will be reshaped to a condition that supports agriculture and wildlife.

SOILS

Presently, there is some variation in the thickness of topsoil and the depth to the calcareous layer in the subsoil of the major soils found on the tract. Removal of the soil would be in response to these depths. The first lift would not include soils with more than 10 percent calcium

carbonate nor less than 1½ percent organic matter, according to state regulations. The second lift would probably include the remainder of the soil down to 5 feet. However, when the material is respread, there would be a much more uniform soil depth created, because the two lifts would be averaged over the tract. The creation of a new soil that would have a thicker surface layer than the existing Zahl, for instance, could enhance the probability of successful reclamation. Due to the averaging, some of the areas would have less soil free of calcium carbonate than existed prior to mining. This may or may not have negative effects on vegetative productivity, depending on the quality of the material respread.

Removal would cause some alteration of soil quality, since chemical and physical properties characteristic to each series of soil would be mixed. Some of the properties would enhance the restored soil's quality, while others may produce some negative effects. The properties producing negative effects can largely be avoided by careful soil removal. Also, most of the soils within the tract are not highly contrasting, so mixing should not cause serious problems.

Some excess soil compaction would occur in mined areas during rehabilitation work and on roads where the soil had not been removed. This would have some negative effects on soil drainage, infiltration, and permeability, especially if the soil is disturbed or compacted when wet. Careful procedures during rehabilitation would be necessary to keep excessive compaction to a minimum.

The present nutrient cycle would be disrupted due to soil mixing during removal. This could cause problems with nutrient availability at the time of rehabilitation. However, fertilization during the reclamation process would largely eliminate this problem.

Stripping off vegetative cover and stockpiling the soil increases the opportunity for wind and water erosion. This, along with equipment problems and operator error, would cause the unavoidable loss of some soil. However, the restoration of gentle slopes, protection of stockpiles, proper care and operation of equipment, and quick revegetation of reclaimed areas would keep losses minimal.

Many cobbles would be removed and stockpiled during the mining process, and respread with the soil during the reclamation process. However, they can be removed from the surface of reclaimed areas with mechanical pickers, so they should not cause serious problems. Any boulders encountered during soil removal could be disposed of at that time.

Uneven compaction during respreading of overburden would cause some subsidence or slumping, and result in unexpected surface drainage patterns and depressions. This could lead to unwanted wet spots and excess water erosion. The uneven compaction might also cause a subsurface channeling of water, known as "piping," resulting in the creation of subsurface caverns. However, slumping and piping may not be serious problems on this tract, because the area is quite level and underlain by glacial

till and sandstone. The gentle topography should minimize surface water erosion, and the overburden should compact better than the type composed of highly sodic, shaley material.

WATER

After the tract had been stripped of vegetation and the topsoil removed and stockpiled, large areas of soil and overburden would be exposed to the erosive forces of wind and water. With this would come increases in local surface runoff and larger amounts of sediments in that runoff. Due to the low relief and lack of stream channels on this tract, this impact should be low.

The wetlands on the tract would be destroyed, and any recharge to ground water due to seepage from these would be altered. As the overburden is removed and replaced, all of the stratified layers of bedrock would be intermixed. In the till portion, this would not cause a change in permeability, because the till's present nature is not bedded. The sandstone bed is intermingled with layers of silt and clay. The path of recharge is through the more permeable sand, which, if mixed with clay, would lose some of its permeability. It is impossible, at this time, to quantify this impact.

The coal that would be removed is a waterbearing material; in fact, several water wells are screened at the coal seam level, including those

of the city of Underwood. This lignite would be removed and replaced with a less permeable material.

The destruction of this zone on this 160-acre tract alone would probably not significantly affect Underwood's water supply. However, Falkirk's present intent is to mine a considerably larger area, regardless of this federal lease application outcome. In this case, it is reasonable to assume that the town's water supply will be degraded, if not reduced to useless quantities. There is presently a groundwater study and modeling effort being made by the mining company to determine more precisely what impacts will be made to Underwood's (and many farmsteads') water supply, given a number of mining alternatives.

While the pits were open, there would be a considerable amount of water collecting in them, which is the case in the presently open pits of the area. It happens because the lignite and sandstone function as an aquifer. This pit water would have to be pumped from the pit and either held in a pond or, if its quality is good enough, discharged.

While this water was being pumped, water levels in the surrounding local area would be lowered possibly by as much as several feet. After the overburden is replaced, water levels should return approximately to their premining level. Other aquifer characteristics mentioned previously may be altered, however.

Due to the fact that the area around the lease application tract is going to be mined, the mining of this 160 acres would not cause any impacts additional to those already occurring.

VEGETATION

The mining process would destroy all existing vegetation in the proposed lease tract. This would be a short-time loss until reclamation is achieved.

ANIMALS

During the mining and reclamation phases, wildlife would not be able to occupy and forage in the wheatfield and pothole habitats, even though some or all of the potholes are excluded from leasing. The potholes are by far the more important habitat. In terms of numbers to be adversely impacted, the migratory birds (e.g., waterfowl, shorebirds, songbirds, etc.) vastly outweigh nonmigratory birds (pheasants, sharp-tailed grouse, etc.) and mammals (deer, rodents, etc.).

Even if the potholes are excluded from mining, the potential for maintaining or recharging water in these isolated wetlands would be drastically reduced when the surrounding lands are excavated. Without any watershed or ground water potential, the potholes would dry up and become unuseable to wildlife until their watershed or ground water potentials are restored.

In the spring the habitat in these retained potholes may appear attractive to various species of waterfowl, shorebirds, and songbirds for nesting, but after the eggs have hatched, the habitat may be too dry to support the demands of nestlings for food. In addition, there might not be a body of water available to which ducks and geese can move to protect their broods from predators. As a consequence, young hatched in these potholes may be lost to the overall production in the pothole biotic region. Since the nesting elsewhere may be more successful, perhaps nesting should be discouraged until reclamation is completed.

If the wetlands are included in the mining area, nonmobile animals and those with limited mobility would be destroyed. No seasonal adjustment or timing of the excavation would eliminate the imminent threat to nonmobile adults and their young. Breeding birds and some mammals would be able to easily escape, but during the reproductive season their young would not be able to emigrate. Animals forced to emigrate seldom find new niches or territories, and usually stray until they become casualties.

Endangered Species

Since the tract is located within the migratory path of the whooping crane, they may use the tract on very infrequent occasions for resting or for feeding. The tract is not within any area legally designated by the U.S. Fish and Wildlife Service as critical habitat. Peregrine falcons also migrate through North Dakota. On very infrequent occasions, they could possibly hunt on the tract for prey; however, other nearby

areas, e.g., Weller Slough (four miles south), Audubon National Wildlife Refuge, and Lake Sakakawea, probably provide more attractive and extensive areas to seek prey. Since bald eagles have not been observed in this area and the habitat is not conducive for their habitation, no impact is expected.

CULTURAL RESOURCES

The scattered cultural debris found on the tract have no associational integrity, having been already disturbed by farming. Although mining would further disturb and remove the soil from the area, it would not further impact the visible cultural resources. Some potential exists for mining disturbance of previously unknown buried cultural resources.

AESTHETICS

During the mining and reclamation phases, impacts upon scenery and other aesthetic values would be high. Spoil piles, draglines, operation facilities, and reclamation equipment would intrude and dominate the otherwise flat to rolling landscape.

After reclamation has been completed, the landscape would be returned to approximately its original landform; although the expansion of the overburden would result in a general raising of the surface. The potholes and their ecosystems would either be excluded from mining or reclaimed. Thus, after the tract has been mined, the landscape would have been

changed very little. It would be in the same scenic class, C (Average), as before mining.

RECREATION

Since this tract does not have any recreational sites and does not offer public hunting, the impacts to recreation are expected to be low, especially as ample opportunities for hunting and observing wildlife occur elsewhere on both public and private areas. In addition, increased recreational demand due to population increases attributable to coal development will occur regardless of whether this federal tract is leased or not. This is because extensive coal mining will occur around the federal lease tract.

Therefore, leasing this federal tract, per se, would not contribute to an increase in the local labor force, and direct and indirect impacts to recreation needs would to be negligible.

SOCIAL CONDITIONS

No significant social impacts are anticipated if the proposed action takes place. Surface mining has impacts on several aspects of the social environment, such as housing, education facilities, social services and public health and safety. However, since the mining operation in this area is ongoing and will continue at its present rate regardless of

the proposed action decision, no population fluctuations are anticipated that would impact the existing social environment.

ECONOMIC CONDITIONS

Leasing the proposed tract would continue the economic growths associated with mining in this area and provide royalties to the federal government, revenues to the state government, and compensation to the surface owner. Surface mining operations have many impacts on a rural area. The operation creates new better paying jobs. It brings in new people, and this increase in population means more money spent locally on goods and services. More housing and industry means a greater local tax base. These conditions, however, presently exist in the area, as the mining operation is ongoing. It will continue regardless of whether or not federal coal is leased.

The impact of leasing this particular tract of federal coal would be to extend the life of the mine in the area and, therefore, extend the influx of people and money into the area. Based on a 9-foot thick coal seam over 160 acres and a mining rate of 6 million tons per year, this action would extend the mine's life about 5 months.

LAND USE

Mining the proposed tracts would require that the current land uses be temporarily interrupted. Crop production would be stopped, the road

would be closed to traffic, the power distribution line would be removed and the wildlife habitat would be destroyed during the mining operation. Only after reclamation could uses be restored.

The impacts on the agricultural and wildlife uses within the county and state would be insignificant because of the relatively small area involved. However, impacts on traffic movement and power transmission are significant. Before any mining could occur within the rights-of-way of the road and transmission line, these facilities would have to be relocated. A relocation would cause some inconvenience and possible increased travel distance for users of the road. A new right-of-way would have to be acquired in the relocation of the transmission line, causing additional land use changes.

Chapter 4

MITIGATING OR ENHANCING MEASURES

CLIMATE AND AIR QUALITY

Impacts on the climate would be insignificant; therefore, no mitigations are recommended.

In order to minimize the amount of exhaust emissions, keep all combustion type mining equipment properly maintained. To reduce the amount of particulate matter entering the air, water or oil all roads and parking areas used in the mining operation.

GEOLOGY

There are no feasible mitigating or enhancing measures applicable to the geology of the environment.

TOPOGRAPHY

Slope the last highwalls and blend them into conformance with the recreated topography. Grade all spoils to the approximate original land surface, and restore some of the wetland areas. Replace all topsoil and seed the area to native grasses.

SOILS

Follow all regulations and use the best techniques possible to remove, stockpile, and redistribute the soil and overburden. This helps control problems with compaction, subsidence, piping, surface erosion, and quality of soil.

Use proper types and amounts of fertilizers on rehabilitated areas to insure the restoration of a good nutrient cycle. Fertilization improves the quality of soil that might have been diminished by mixing and averaging.

Keep equipment used in soil handling operations in good repair. This helps keep soil quality as high as possible and soil losses during handling to a minimum.

Remove and bury any boulders encountered during mining and pick cobbles from the redistributed surface soil during reclamation to facilitate seedbed preparation, seeding, etc.

WATER

Do not discharge any water, whether natural runoff water, holding pond water, or pumped pit water from the mine area unless it meets state and federal water quality standards. This would eliminate most of the increased sediment loading and reduce the total natural runoff from the

mine area. However, because there would be a large amount of pit water that is clean enough to be discharged, the total surface discharge from the mine area would not change significantly.

Recontour the area to include mitigation for any significant wetland areas destroyed. This would replace the approximate wetland surface area and seepage that existed before mining. By consolidating and rearranging the locations of the wetlands, much of the area could be leveled and drained to provide better farming potential. This could be more effective if it were made part of the plan for the entire mine area, rather than for just this 160 acres.

Replace all water sources destroyed or degraded by mining activities with water of equal or better quality and quantity. There is a sandstone aquifer located below the lignite that is essentially isolated from the upper aquifer. This zone provides an alternate source of water for those users in this local area whose water source was destroyed or degraded. There are also deeper aquifers in the Fort Union formation and below with water suitable for most uses.

VEGETATION

Conduct the mining and reclamation operations in accordance with state and federal regulations. The crop production could be enhanced by leveling out the existing topography, resulting in a more even stand of grain. Existing erosion would also be reduced.

In the first few years following the return of the topsoil, the mining company should plan on additional work for those portions of the landscape where subsidence occurs.

Some wetland species, such as rumex, would reestablish themselves. Reestablish rhizominous species, such as switch grass, prairie cord grasses, and others, by replacing the vegetative strippings (that were removed prior to mining) on reclaimed sites. The vegetative layer would also act as a seed source. Landowner consent would be required before plant material could be taken from one property to another.

ANIMALS

If disturbances to the tract, especially on the pothole (wetland) habitats, do not occur during the period from April through mid-July, most nestlings and young mammals would be allowed sufficient time to fledge or mature enough to be physically able to emigrate. During the mining process, the retained and isolated potholes would not have recharge potential for water; therefore, discourage nesting attempts at that time to prevent nesting that would probably result in failure.

If all or some potholes are mined, there are several measures which may be taken to assure their restoration.

1. If all the potholes are mined, restore them according to respective sizes and types.

2. Exclude the Type III wetlands from mining and restore the I wetlands according to their size.

3. Mine all the wetlands; restore the Type III wetlands according to their respective size; and create a few (2-3) Type III wetlands in place of the numerous Type I wetlands.

4. Remove and stockpile bottom sediments of the wetlands to be mined. Use these sediments for restoring wetlands, especially Type III.

The recommended approach and measures for dealing with the potholes on the tract are those in the third and fourth categories above. The stored bottom sediments of the potholes should be used for either reestablishing or inoculating the bottoms of the restored potholes.

CULTURAL RESOURCES

As no intact cultural resources were identified in the lease tract, no immediate mitigating measures would be necessary. In the unlikely event that preliminary removal of topsoil and overburden would uncover archaeological remains, cease mining activities until an archaeologist has had the opportunity to examine the remains. If the remains are determined to be significant, further mitigating measures would become necessary.

AESTHETICS

Reclaim the landscape to approximately its original landform. This includes reclaiming some of the potholes.

RECREATION

Since recreational demand and supply would be impacted very little from this lease, there is no basis for the generation of any mitigation or enhancement measures.

SOCIAL AND ECONOMIC CONDITIONS

No mitigation would be required for social or economic impacts that are a result of this proposed action.

LAND USE

The applicant is committed to full compliance with federal, state, and local laws and permit regulations.

In the mining of the coal, the applicant would be required to honor the rights-of-way that are held by McLean County and McLean Electric Cooperative, Inc. Mining could take place within these rights-of-way if satisfactory agreements were made to relocate the road and powerline.

Chapter 5

RESIDUAL ADVERSE IMPACTS

CLIMATE AND AIR QUALITY

Even with properly maintained equipment and watered or oiled roads and parking areas, some residual adverse air quality conditions in the form of increased particulates would result. This residual would be very small in magnitude and very localized in extent.

GEOLOGY

The impacts to geology cannot be mitigated and must be regarded as residual adverse impacts. The coal bed, the overlying strata, and the paleontological values would be destroyed by the mining operation. Approximately 378,000 tons of the in-place reserves of 2,520,000 tons of coal will not be recovered and lost to future generations.

TOPOGRAPHY

In regard to topography, there would be no residual adverse impacts.

SOILS

Even if all precautionary measures are conscientiously applied by the operator, there would be some soil loss during soil handling operations due to erosion, equipment problems, operator error, etc. However, this loss would not be of significant proportions. Regulatory authorities require that soils be stockpiled and protected to insure that losses are kept to a minimum, so that successful reclamation can be achieved.

There would probably be some excess soil compaction and soil problems associated with subsidence and piping. However, the more rigorously the mitigating measures are followed, the less often these problems would occur.

WATER

Any alteration in the water quality, recharge and yield of the lignite and sand aquifer would remain after reclamation. However, there is a suitable alternate source of water available for the city of Underwood and other users whose water supply must be replaced by the mining company.

Even though all runoff must be treated prior to discharge from the mine site, there may be a small amount of increased sediment loading. This residual amount should be very small.

During the time mine pits are open and water is pumped from them, water levels in wells within a mile or two of the pit may be lowered.

The entire area surrounding this tract is going to be mined regardless of the outcome of this application. All of the impacts and residuals attributable to this mining will occur in the area when this happens. Mining this tract in addition to the surrounding area will do very little to increase the impacts, and not mining it will do very little to decrease the impacts.

VEGETATION

Once the ground has stabilized, adverse impacts to vegetation should be of a low level or nonexistent. The return to normal would take time, probably 5-10 years.

ANIMALS

During the mining and reclamation phases, there would be little or no wildlife use on the tract; however, after reclamation is completed, most wildlife would probably resume, in terms of both numbers and species. If the Type I wetlands are replaced by several Type III wetlands some minor differences in both numbers and species may be expected. Any attempt to quantify these changes would be conjecture. Replacing Type I with Type III wetlands, rather than Type I, may benefit wildlife overall.

CULTURAL RESOURCES

No intact cultural resources were identified, thus making impacts negligible. The lack of mitigating measures should not produce significant residual adverse impacts.

AESTHETICS

Residual impacts to scenic values would be minimal.

RECREATION

Since the wetland ecosystems would be reclaimed, residual impacts to recreation, mainly hunting and some wildlife observing, would be nil.

SOCIAL AND ECONOMIC CONDITIONS

The proposed action would cause no residual adverse impacts to the social or economic conditions.

LAND USE

After the land has been rehabilitated, there would be no residual adverse impacts.

Chapter 6

SHORT-TERM USES VS. LONG-TERM PRODUCTIVITY

Mining 2,142,000 tons of coal on this site would extend the Sunburst Mine life in this area by about one-half year. Including premining tests, production, and reclamation, the short-term use of this area would be about five to ten years. "Long term" refers to the characteristics of this tract for an indefinite period beyond the short-term use.

During the short-term use time frame of up to ten years, the economic viability of the area, in terms of employment and income from the operations of the mine, would not be affected. The geology from the base of the coal bed to the soil materials would be committed to mining; the opportunity to develop surface or subsurface water in the section would be eliminated; and the soil structure necessary to support vegetation would be removed. The aesthetics of the area would be disrupted and any cultural resource remains not removed or documented would be destroyed. The pre-existing vegetation would be unavailable for wild and domestic animal use. Likewise, recreational, grazing, or farming opportunities would be temporarily unavailable. Water diverted into holding would not be available for downstream use.

In the long term, the coal bed containing an estimated 2,520,000 tons of coal would be lost to future mining; however, the coal may also be lost to man's use even though not mined (because of the economics involved in a bypass). The reduction of slopes, even redistribution of topsoil, and management practices oriented toward controlling erosion and maintaining organic matter content and fertility could make the productivity of the tract better in the future than that prior to mining. Any buried cultural resources not recovered or documented during mining would be lost.

Mining would degrade a local aquifer; however, aquifers, below the coal would be unaffected. The geology below the lignite would be unaffected, and the remaining environmental components, vegetation, wild and domestic animal habitat and use, aesthetics, surface water patterns, recreation, grazing and farming opportunities would return. At this point the land would be considered reclaimed for its post-mining land use, which is wildlife habitat and cropland.

CHAPTER 7

IRRETRIEVABLE RESOURCE COMMITMENTS

The purpose of this chapter is to identify impacts that would cause irreparable damage or permanent or exceptionally long-term changes to the environment.

The lignite is a nonrenewable resource that cannot be replaced after mining. It forms a part of a local shallow aquifer system. Removal of this lignite and mixing the overburden may degrade this aquifer as a local water source. This would affect larger quantity users, such as the city of Underwood, more than rural domestic users. The soil units as they now exist would be destroyed. With proper reclamation, new soils would form that could be even more productive than those destroyed.

Any archaeological or paleontological resources that are not recovered or adequately documented would be lost. The mining company would expend labor, capital, and energy (in the forms of electricity and fossil fuels) to recover the lignite.

CHAPTER 8

ALTERNATIVES TO THE PROPOSED ACTION

There is no viable alternative to leasing the tract, except not to grant the lease. Environmental impacts will occur in the area even if the tract is not mined, as the Falkirk Mining Company controls the coal reserves surrounding the tract. One adverse economic impact, if the lease was not granted, would be the loss of federal and state royalties derived from the 2,142,000 tons of recoverable coal. The Falkirk Mining Company would also suffer an adverse economic impact, because the company has purchased the surface land in anticipation of mining the tract. If the tract is not leased, the coal will simply be bypassed and approximately 2,520,000 (inplace) reserve tons of lignite would be lost to any future mining operation.

Chapter 9

CONSULTATION AND COORDINATION

North American Coal Company

Mark Schulz - Administrative Assistant to the Vice President of
Engineering

Dean Jacot - Vice President of Falkirk Mining Company

North Dakota Game and Fish Department

Bill Lynott

North Dakota Geological Survey

Gerald Groenewold - Geologist, Grand Forks, North Dakota

North Dakota Outdoor Recreation Agency

North Dakota Public Service Commission

Ervin Barchenger - Bismarck, North Dakota

Terry Zich - Geologist

Jim Deutsch - Soil Scientist, Bismarck, North Dakota

North Dakota State Historical Society

James E. Sperry - State Historic Preservation Officer,
Bismarck, North Dakota

C.L. Dill

- 1975 1975 Archeological and Historic Site Survey of the Falkirk Mining Company Extended Mining Plan Area, McLean County, North Dakota. Manuscript, State Historical Society of North Dakota, Bismarck.
- 1976 Archeological and Historic Site Survey of USBR Transmission Line in McLean County, North Dakota. Letter, State Historical Society of North Dakota files, Bismarck.
- 1977 Cultural Resources Survey of the 1977 Falkirk Mine Addition, E $\frac{1}{2}$ Section 1, T145N, R83W, and SE $\frac{1}{4}$ Section 36, T146N, R83W. Letter, State Historical Society of North Dakota files, Bismarck.

Soil Conservation Service

Sylvester Ekart - State Soil Scientist, Bismarck, North Dakota
Kenneth Thompson - Area Soil Scientist, Dickinson, North Dakota
Gary Tibke - District Conservationist, Washburn, North Dakota

Surface Owner

Gladys S. Rust, Underwood, North Dakota

U.S. Fish and Wildlife Service

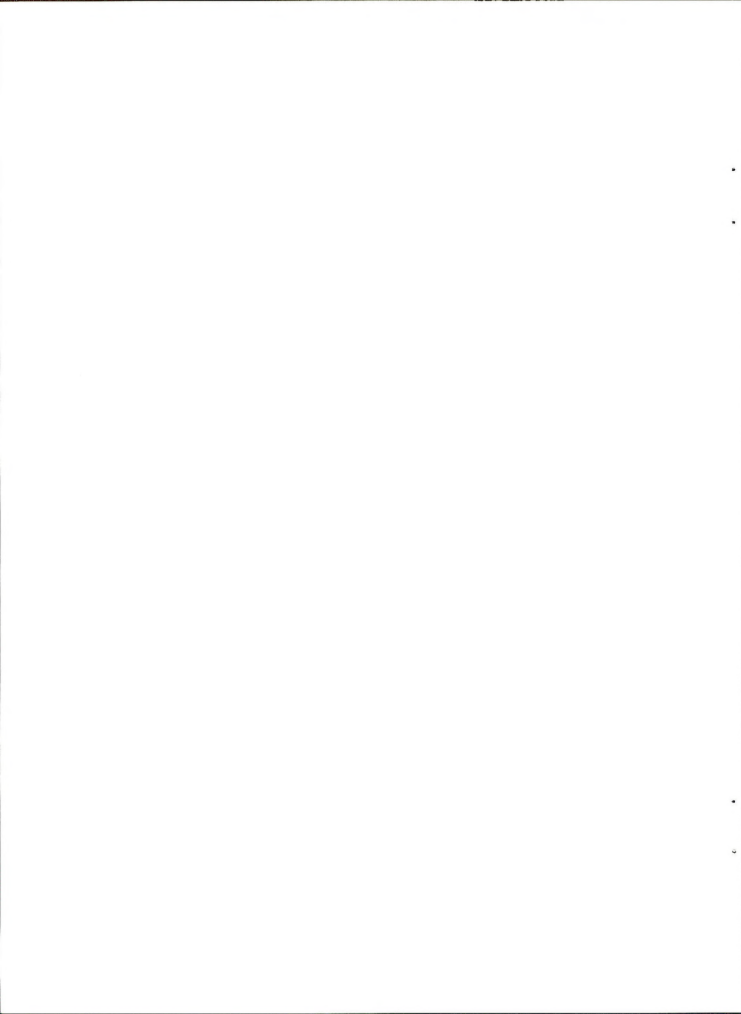
James Nelson - Biologist, Bismarck, North Dakota

Frank Cole - Biologist, Bismarck, North Dakota

James C. Gritman - Acting Regional Director, Region 6,
Denver, Colorado

U.S. Geological Survey

Mark Crowley - Hydrologist, Bismarck, North Dakota



APPENDICES

APPENDIX I - SOILS INFORMATION

APPENDIX II - VISUAL RESOURCE

APPENDIX III - HUNTING DATA

APPENDIX IV - WETLAND TYPES



APPENDIX I

MAPPING UNIT DESCRIPTIONS^{1/}

Max-Zahl Loams - 6-9 percent slopes (79C)

This complex is on gently rolling to sloping glacial till uplands. About 65 percent is Max loam and 25 percent is Zahl loam. The Max soils occur on the side slopes and Zahl is on the convex ridges. About 10 percent of the unit is Bowbells and Williams soils, which occur on gentler slopes and concave areas. Also included are small areas of Tonka and Parnell in undrained depressions.

This soil is well drained with medium to rapid runoff. It has a moderate erosion hazard.

More than half of the acreage is cultivated, with the remainder in native range or pasture. It is suited to the crops commonly grown in the county. Control of erosion is an essential part of management. Conservation of moisture and maintenance of fertility and tilth are also important. Contour strip cropping is generally not practical because of the short irregular slopes.

Capability Unit IIIe6. Max part: silty range site, windbreak suitability group 3. Zahl part,: thin upland range site, windbreak suitability group 8.

Williams-Bowbells Loams - 3-6 percent slopes (63B)

This undulating and gently sloping soil is on glacial till uplands. About 60 percent is Williams loam and 30 percent is Bowbells loam. The remaining 10 percent is minor soils. The Williams portion occurs on the smooth and slightly convex slopes. The Bowbells occurs on the lower and concave parts of the landscape. Included in mapping are small areas of Zahl, Max and Arnegard. Also included are small areas of Tonka and Parnell soils in undrained depressions.

This soil is well drained with medium runoff. It has a slight erosion hazard.

Most of the acreage is used for cropland. This soil is suited to all the crops commonly grown in the county. Control of erosion, conservation of moisture, and maintenance of fertility and tilth are the main problems. The remainder of the acreage is in native range or pasture.

Capability Unit IIe6. Williams part: silty range site, windbreak suitability group 3. Bowbells part,: silty range site, windbreak suitability group 1.

BRIEF SOIL SERIES DESCRIPTIONS^{1/}

Bowbells Series

This series consists of deep, nearly level and slightly concave, moderately well drained loam soils. They have formed in glacial till.

In a representative profile the surface layer is dark grayish-brown loam, about 9 inches thick. The subsoil, about 16 inches thick, is a dark grayish-brown loam in the upper part and a grayish-brown firm clay loam in the lower part. The underlying material is a light brownish-gray clay loam with strong effervescence.

The permeability is moderate in the subsoil and is moderately slow in the underlying material. Available water capacity and organic matter content is high. Natural fertility is high.

Most of these soils are cultivated and are used for small grain and alfalfa. Native vegetation consists of mid and short prairie grasses.

Series Classification: fine-loamy, mixed Pachic Argiboroll.

Max Series

This series consists of deep, undulating to hilly, well-drained soils. They have formed in loamy glacial till.

In a representative profile, the surface layer is a dark grayish-brown loam, about five inches thick. The friable, loam subsoil, about four inches thick, is dark grayish brown. The underlying material is a light olive-brown, mottled, calcareous clay loam glacial till.

Permeability is moderate in the subsoil and is moderately slow in the underlying materials. Available water capacity is high. Organic matter content is moderate and natural fertility is medium. There are one to ten percent pebbles and stones throughout the soil profile.

The soil is mostly used as cropland. Native vegetation consists of mid and short prairie grasses.

Series Classification: fine-loamy, mixed Typic Haploboroll.

Williams Series

This series consists of deep, nearly level to rolling, well-drained soils. They formed in loamy glacial till.

In a representative profile, the surface layer is dark grayish-brown loam, about five inches thick. The friable clay loam subsoil, about 11 inches thick, is brown in the upper part and light grayish brown in the lower part. The lower part of the subsoil has strong effervescence. The underlying material is friable, calcareous glacial till.

Permeability is moderate in the subsoil and moderately slow in the underlying material. Available water capacity and natural fertility is high. Organic matter content is moderate.

Most of the acreage of these soils is cultivated and used for small grain, corn, and alfalfa. Native vegetation consists of mid and short prairie grasses.

Series Classification: fine-loamy, mixed Typic Argiboroll.

Zahl Series

This series consists of deep, rolling to steep, well-drained soils. They have formed in loamy glacial till.

In a representative profile the surface layer is dark grayish-brown loam about six inches thick. The underlying material is friable light brownish-gray loam in the upper part and light olive-gray in the lower part. The subsoil has violent effervescence. The underlying material is calcareous glacial till.

Permeability is moderate in the upper part of the profile and slow in the underlying material. Available water capacity is high and the organic matter content is moderate. Natural fertility is low. There are one to ten percent pebbles and stones throughout the soil profile.

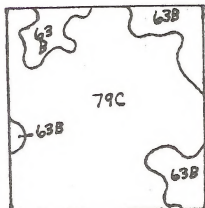
Most of the acreage is used for range and pasture, but there are areas used for cropland. Native vegetation is mid and short grasses.

Series Classification: fine-loamy, mixed Entic Haploboroll.

^{1/}U.S. Department of Agriculture, Soil Conservation Service.
Soil Survey of McLean County, North Dakota - Manuscript. (Final
report currently being published.)

SOIL MAP^{1/}

T146N, R82W
 Sec. 20 NW $\frac{1}{4}$



Scale: 4" = 1 mile

<u>Map Symbol</u>	<u>Map Unit and Slope</u>	<u>Acres</u>	<u>Percent of Area</u>
63B	Williams-Bowbells Loams, 3-6%	34.0	21.3
79C	Max-Zahl Loams, 6-9%	<u>126.0</u>	<u>78.7</u>
	Totals	160.0	100.0

APPENDIX II

VISUAL RESOURCE MANAGEMENT CLASSES

The following visual resource management classes are to be used as tentative minimum management objectives for the visual management in BLM planning.

Class I - This class provides primarily for natural ecological changes only. It is applied to primitive areas, some natural areas and other similar situations where management activities are to be restricted.

Class II - Changes in any of the basic elements (form, line, color, or texture) caused by a management activity should not be evident in the characteristic landscape.

Class III - Changes in the basic elements (form, line, color, or texture) caused by a management activity may be evident in the characteristic landscape. However, the changes should remain subordinate to the visual strength of the existing character.

Class IV - Changes may subordinate the original composition and character but must reflect what could be a natural occurrence within the characteristic landscape.

Class V - Change is needed. This class applies to areas where the naturalistic character has been disturbed to a point where rehabilitation is needed to bring it back into character with the surrounding countryside. This class would apply to areas identified in the scenery evaluation where the quality class has been reduced because of unacceptable intrusions. It should be considered an interim short-term classification until one of the other objectives can be reached through rehabilitation or enhancement. The desired visual quality objective should be identified.

APPENDIX II

Scenery Quality Inventory Chart

Scenery Quality Inventory Chart			
KEY FACTORS	RATING CRITERIA AND SCORE		
1 LAND FORM	Vertical or near vertical cliffs, spires, highly eroded formations, massive rock outcrops, unusual rock formation variation 4	Strong relation with terrain, interesting structural patterns, variety in size & shape of land forms 2	Rolling hills, benches, flat valley bottoms 1
2 COLOR	Rich color, combination variety or unusual contrasts in the color of soil, rocks, vegetation or water 4	Some variety in colors and contrast of the soil, rocks & vegetation, but not dominant 2	Subtle color variations, little contrast, generally muted tones, lacking really eye-catching 1
3 WATER	Still, shallow, reflective pools or lakes adding white water, a dominant feature in the landscape 4	Moving and in view, in still but not dominant 2	Absent or present but seldom seen 1
4 VEGETATION	A harmonious variety in form, texture, pattern, and type 4	Some variation in patterns and textures, but only one or two major types 2	Little or no variation, somewhat lacking 1
5 UNIQUENESS	Clear of a kind or very rare within region 4	Unusual but similar to others within the region 2	Interesting in its setting, but fairly common within the region 1
6 INTRUSIONS	Tree lines, artificial structures or devices, radiant lights and billboards 2	Some quality in some what depersonated by obtrusiveness, intrusion but no intrusion that the scene qualities are seriously impaired 1	Intrusions are an extension that scene qualities are for the most part nullified 0
<p>Scenery A = 15-24</p> <p>Scenery B = 10-14</p> <p>Scenery C = 1-9</p>			
SOURCE: BLM Manual 6-111, 1975			

EXPLANATION OF RATING CRITERIA

1 Land form or topography becomes more interesting as it gets steeper and more massive. Examples of outstanding land forms are found in the Grand Canyon, the Sawtooth Mountain Range in Idaho, the Wrangell Mountain Range in Alaska, and the Rocky Mountain National Park.

2 Color Consider the overall color of the basic components of the landscape (i.e., soil, rocks, vegetation, etc.) as they appear during the high-use season. Key factors to consider in rating "color" are variety, contrast, and harmony.

3 Water is the ingredient which adds movement or serenity to a scene. The degree to which water dominates the scene is the primary consideration in selecting the rating score.

4 Vegetation Give primary consideration to the variety of patterns, forms, and texture created by the vegetation.

5 Uniqueness This factor provides an opportunity to give added importance to one or all of the scenic features that appear to be relatively unique within any one physiographic region. There may also be cases where a separate evaluation of each of the key factors does not give a true picture of the overall scenic quality of an area. Often it is a number of not so spectacular elements in the proper combination that produces the most pleasing scenery — the uniqueness factor can be used to recognize this type of area and give it the added emphasis it needs.

6 Intrusions Consider the impact of man-made improvements on the aesthetic quality. These intrusions can have a positive or negative aesthetic impact. Rate accordingly.

1. Date

2. Rater

3. State

4. District

5. Plan Unit

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

QUALITY EVALUATION SCORESHEET

6. Recreation Activity

Scenery

CLASS

SCORE
RANGE

7

A

15-24

B

10-14

C

1-9

8. KEY FACTORS

Landform
 Color
 Water
 Vegetation
 Uniqueness
 Intrusions
 Rater's Option*
 11. TOTAL SCORE
 12. CLASS

*Opportunity
for rater to
add or subtract
points for
special reasons.

9. RATING AREA

10. POINT MAXIMUM

13. REMARKS

NO.
(a)

NAME
(b)

C

Sec. 20, T146N, R82W

1

1

1

1

1

2

7

C

Wheat land

1974 INVENTORY OF NORTH DAKOTA OUTDOOR RECREATION FACILITIES

STATE OUTDOOR RECREATION AGENCY, 403 EAST BROADWAY, BISMARCK, NORTH DAKOTA 58102

SCHOOL COUNTY	NAME OF AREA	LOCATION	Elevation	TOTAL ACRES	WATER SURFACE ACRES	FISHING ACRES	BOATING ACRES	HUNTING ACRES	TRAILS	PICNICKING	TRAILS	EQUESTRIAN	ARCHERY	CAMPING	HUNTING	COURTS	PLAY AREAS	TENNIS	SKI TRAILS	SQUASH	VOLLEYBALL	BASEBALL	SUNBATHING	WADING	FISHING	OTHER	TOTAL	FACILITY
	John Johnson - total *	County	F	82,989	239	34,432																						
	Douglas Creek Restoration Area	148-84-34	F	990	x	x	x	x															1					
	Carlton Bible Camp	S. of City	F	79	x	x	x	x																				
	Leo's Beach	S. of Garrison	F	25	x	x	x	x						4	13	13	15											
	Pike Camp	S. of Garrison	F	370	x	x	x	x																				
	Lutheran Bible Camp	E. of Garrison	F	80	x	x	x	x																				
	Ex. Stevenson State Park	Int. S. - FTS	F	636	x	x	x	x																				
	Vadon Trail Public Use Area	State Parkland	F	114	x	x	x	x							30	29												
	Wolf Creek Public Use Area	S. of Bismarck	F	10	x	x	x	x																				
	Deer Water Catch Dam	3rd St. Dam	F	2,262	x	x	x	x																				
	Missouri River - total*	County	F	5,254	321	3672		3672																				
	Washington Park	City	H	4	x	x	x	x							5	12												
	Wiggins A-B Camp	144-81	F	87	x	x	x	x															3					
	Benjamin Recreation Area	114-81	F	302	x	x	x	x																				
	Leola A. Cook Historic Site	w. of Washburn	C	10																								
	Lake Melick	148-81	C	147	147	147																						
	Siwerton	City	F	5																								
	Carlton Park	City	H	0																								
	Washington Golf Course	City	F	60																								
	Carlton Golf Course	City	F	60																								
	Underwood Park	City	H	0																								
	Carlton Swimming Pool	City	H	0																								
	Washington Swimming Pool	City	H	0																								
	Wilson Park	City	H	11																								
	Cookin Dam	145-83-39	S-C	67	67	67																						
	Topknot Dam, Milton	147-00-20	S-P	86	26	73																						
	Sun Lake	147-70-16	S-P	400	400	400																						
	Arch Lake Recreation Area	147-70-37	S-P	305	305	305																						
	Cranford Lake, Public Lake	148-80-8	S-P	379	379	379																						
	Macpherson Lake, Dam	149-80-3	S-P	305	145	145	x	145																				
	Bucke Lake Park	City	H	10																								
	Riverdale Picnic Ground	114-80-8	F	10																								
	City of Bismarck	City	H	0																								

1974 - S & C marked should be marked

Dam - marked if water controlled

S-C - swimming

H - horse riding

E - equestrian

M - mountain

P - picnic

F - fishing

S - school

M - marked if built

APPENDIX II

Table 3

McLEAN COUNTY VISITATION

Recreation Areas	1970	1971	1972	1973	1974	1975**
<u>Corps of Eng Mgmt</u>						
Downstream	61,881	77,985	78,960	74,325	79,152	51,400
Tailrace	77,730	108,516	97,515	124,629	107,964	72,462
Powerplant	37,236	42,030	59,355	54,444	15,012	15,683
Intake Picnic*	38,166	41,025	42,555	40,260	42,068	19,690
Wolf Creek	42,954	48,720	49,005	43,083	41,271	31,526
Totten Trail	99,927	105,885	115,710	122,430	121,976	36,010
Douglas Creek	12,696	14,385	15,660	11,706	7,837	2,419
Deepwater	22,485	23,055	24,390	24,567	26,000	13,652
Riverdale Rec Area	No data	No data	59,775	50,616	46,599	41,940
Spillway Overlook	78,648	99,900	97,575	70,554	100,920	52,772
<u>State Parks Mgmt</u>						
Fort Stevenson	61,056	70,461	72,225	59,745	40,311	17,929
Lake Sakakawea*	65,754	75,816	77,715	69,225	172,464	173,444
Total for entire lake project	1,044,438	1,075,305	1,122,954	1,134,723	1,320,835	861,638

* Located on eastern edge of Mercer County and therefore directly effected by McLean County

** Through September 1975

APPENDIX III

Table 1
 MCLEAN COUNTY 1975 HUNTING DATA ESTIMATES^{1/}

<u>SPECIES</u>	<u>NO. HUNTERS</u>	<u>HUNTER DAYS/HUNTER</u>	<u>TOTAL HUNTER DAYS</u>
Deer	3,000	4	3,903
Gray Partridge	---	---	3,879
Waterfowl	2,465	9.3	28,362
Sharptail	---	---	2,105
Antelope	---	---	123
Turkey	---	---	316
Pheasant	<u>2,418</u>	<u>2.45</u>	<u>3,328</u>
Totals	7,483		42,016

^{1/}Harmoning, Arlen. 1977. North Dakota State Game and Fish Department. Unpublished.

APPENDIX IV

WETLAND TYPES

Circular 39 by Samuel P. Shaw and C. Gordon Fredine, titled "Wetlands of the United States - Their Extent and Their Value to Waterfowl and Other Wildlife," describes 20 wetland types within the conterminous United States, Fish and Wildlife Service 1956. Only two types of the 20 wetland types described by Shaw and Fredine are encountered on the tract, namely Types I and III.

TYPE I WETLANDS

General Description

1. Usually cropped every year.
2. Usually do not have water plants.
3. Usually wet in early spring or after heavy rainfall.



Looking south from about the center of the tract.

TYPE III WETLANDS

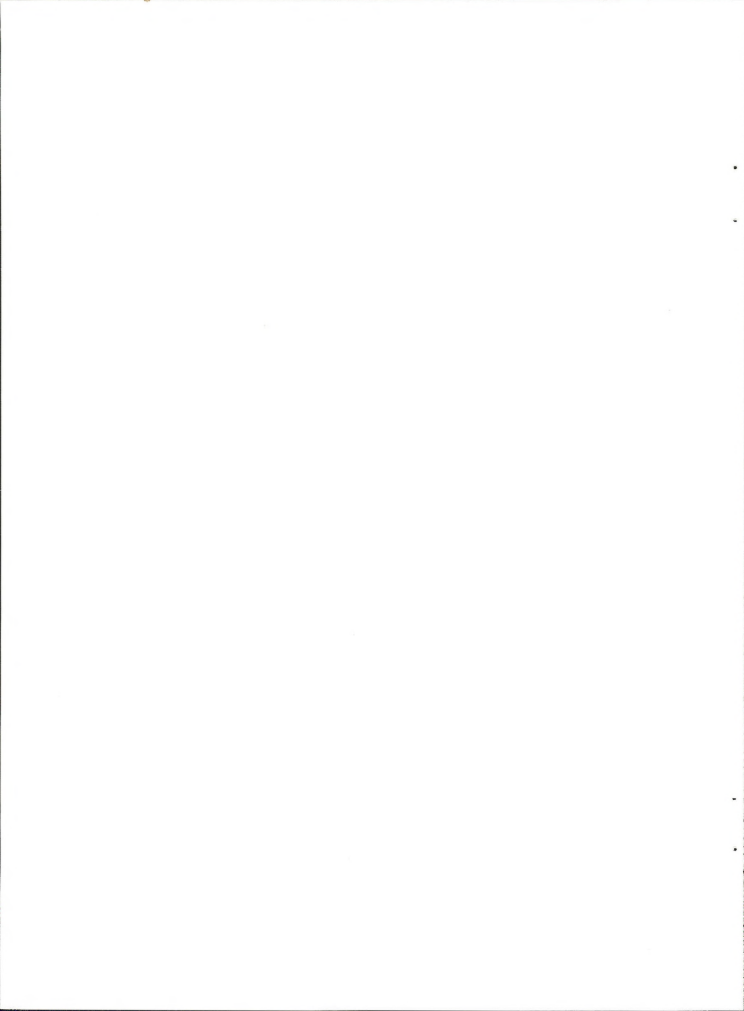
General Description

1. Usually too wet to crop.
2. May hold water into early summer.
3. Some of the following water plants are usually present:

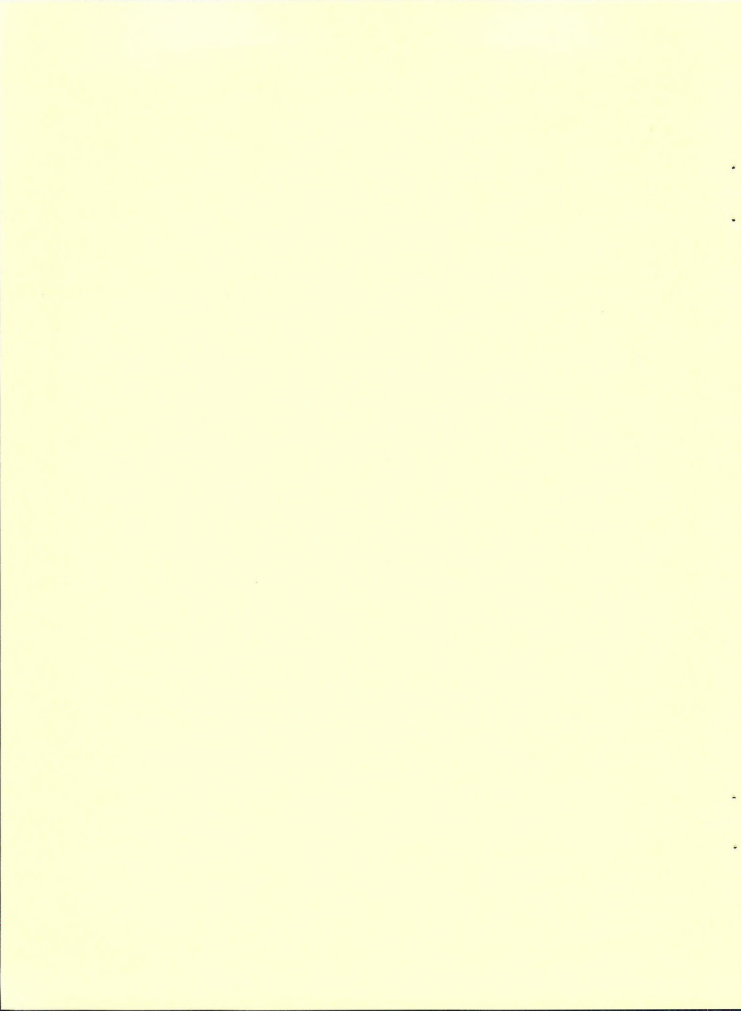


- a. Slough grass (sedge)
- b. Reed canary-grass
- c. Bulrushes
- d. White top grass
- e. Cattail
- f. Smartweed
- g. Spikerush

Looking northeast from the center of west 80 acre half of the tract.



APPLICATION OF UNSUITABILITY CRITERIA



APPLICATION OF UNSUITABILITY CRITERIA

General Application Procedures

Section 522 (b) of the Surface Mining Control and Reclamation Act of 1977 requires that the Secretary of Interior conduct a review of the federal lands to determine whether there are areas on federal lands that are unsuitable for all or certain types of surface coal mining operations. In pursuit of this mandate, the Secretary has had developed within the Department of Interior a list of 20 unsuitability criteria that are to be applied to federal lands where leasing of federal coal may be proposed.

A list of the unsuitability criteria is located in Appendix A at the end of this section. Each criterion describes a condition or conditions that may cause an area of federal land to be designated as unsuitable for surface coal mining. Most of the criteria, however, have some factors described that may exempt the area from being designated as unsuitable. These "exceptions" generally are allowances for applying practices that would mitigate impacts on the resources addressed by each criterion. Application of the exceptions by the land manager is discretionary.

The following is an abbreviated step-by-step discussion of unsuitability application procedures:

Step 1

Areas that are over qualifying coal deposits and that meet the conditions spelled out by each criterion are delineated on a composite map. These are initial unsuitable areas.

Step 2

Every area that has an initial unsuitable designation has the appropriate exceptions criteria applied. The unsuitable designation may be dropped where an exception action can be taken. The land manager has the discretion to drop or not drop the unsuitable designation where an exception fits. If an exception cannot be appropriately applied, the area remains designated as unsuitable for mining.

In many cases the decision on unsuitability may be deferred. An example is the designation of buffer zones along county roads. It is probably more appropriate that the exceptions be applied when a mining company has a definite mining proposal in an area containing a county road. At that time the mining company can go to the county authorities to request temporary relocation of the road. If the authorities decide "no", then a buffer zone of 100 feet on either side of the road becomes an area unsuitable for surface mining.

Step 3

The areas that remain as unsuitable are portrayed on a composite map.

Step 4

A document is prepared that discusses the application of unsuitability. This includes initial designation, use of exceptions, and final designations.

Step 5

A document is prepared on the impact of unsuitability designation. This includes: 1) the potential coal resources involved; 2) the demand for such resources; and 3) the impact of such designation on the environment, the economy, and the supply of coal.

Step 6

As a part of the normal public participation phase of the BLM land use planning process, the unsuitability maps and documents are presented to the public for comment.

Step 7

Unsuitable area designations are finalized after analysis of public comment and, where appropriate, adjustments have been made. Final designations will be a part of the decision document of the land use plan. The decision document, which also includes public comments and BLM's response to them, will be made available to the public.

Once the planning recommendations are presented, any person whose interests may be adversely affected by the recommendations may request a public hearing on the plan prior to its adoption.

APPLICATION OF UNSUITABILITY CRITERIA

ON FEDERAL COAL IN THE BYPASS APPLICATION AREA AT THE SUNBURST MINE

All 20 unsuitability criteria were addressed when doing the land use analysis on the Falkirk bypass application. They were only applied to the area of federal coal included in the bypass application. The federal coal areas have conditions or situations that fitted only two criteria. These are:

Criterion 3 - Buffer Zones Along Rights-of-Way and Adjacent
to Communities and Buildings;

Criterion 14 - Migratory Birds.

See the list of Unsuitability Criteria in Appendix A of this section for the definition of each of the above mentioned criteria. See the Initial Unsuitable - Without Exceptions Applied Map for the delineation of these areas.

A discussion of the application of each unsuitability criterion follows:

Criterion 1. Federal Land Systems

There are no federal land systems within the subject coal area. Therefore, no area was excluded under this criterion.

Criterion 2. Rights-of-Way and Easements

There are no federal lands within the bypass area with rights-of-way or easements. Therefore, no area was excluded under this criterion.

Criterion 3. Buffer Zones Along Rights-of-Way and Adjacent to Communities and Buildings

There are roads in the subject area that meet the conditions of this criterion. These are delineated on the Initial Unsuitable Areas Map.

Criterion 4. Wilderness Study Areas

In the subject area, there are no federal lands designated as wilderness or federal lands under review, and no federal lands that have wilderness characteristics. Therefore, no areas have been excluded under this criterion.

Criterion 5. Scenic Areas

This criterion is not applicable because neither the tract nor its immediate environs has Class I scenery.

Criterion 6. Lands Used for Scientific Studies

There are no lands used for scientific studies within the bypass area. Therefore, no areas were excluded under this criterion.

Criterion 7. Historic Land and Sites

This tract contains no lands that are unsuitable under this criterion, because no sites were found that were determined eligible for the National Register of Historic Places.

Criterion 8. Natural Areas

The tract contains no areas or sites on (or presently eligible for inclusion on) the National Register of Natural Landmarks. Therefore, no areas were excluded under this criterion.

Criterion 9. Federal Listed Endangered Species

There are no federal listed threatened or endangered plants identified for the State of North Dakota. There are no threatened or endangered animals or critical habitats for endangered animals known to exist on the proposed lease tract.

Criterion 10. State Listed Endangered Species

No state listed endangered plants have been identified in the area covered by this report, nor would any be expected to be found on this tract. There are no state listed endangered animals or habitats for these animals known to exist on the proposed lease tract.

Criterion 11. Bald and Golden Eagle Nests

There are no bald eagle or golden eagle nests on the proposed lease tract.

Criterion 12. Bald Eagle and Golden Eagle Roost and Concentration Areas

Roost and concentration areas for bald and golden eagles do not exist on the proposed lease tract.

Criterion 13. Falcon Cliff Nesting Sites

There are no falcon cliff nesting sites on the proposed lease site.

Criterion 14. Migratory Birds

As the potholes on the proposed tract provide high-priority habitat for migratory birds having high federal interest, they may be considered unsuitable for mining.

Criterion 15. State Resident Fish and Wildlife

There is no habitat on the proposed lease tract that is essential for maintaining priority resident wildlife species.

Criterion 16. Floodplains

There are no floodplains within the proposed coal lease area, therefore, no areas were considered unsuitable under this criterion.

Criterion 17. Municipal Watersheds

There are no Municipal Watersheds within the proposed coal lease area; therefore, no areas were considered unsuitable under this criterion.

Criterion 18. National Resource Waters

There are no National Resource Waters on or with $\frac{1}{4}$ mile of the proposed coal lease area; therefore, no areas were considered unsuitable under this criterion.

Criterion 19. Alluvial Valley Floor

There are no Alluvial Valley Floors within the proposed coal lease area, nor any so close to the area that their water systems would be materially damaged due to mining this tract; therefore, no areas were considered unsuitable under this criterion.

Criterion 20. State Proposed Criteria

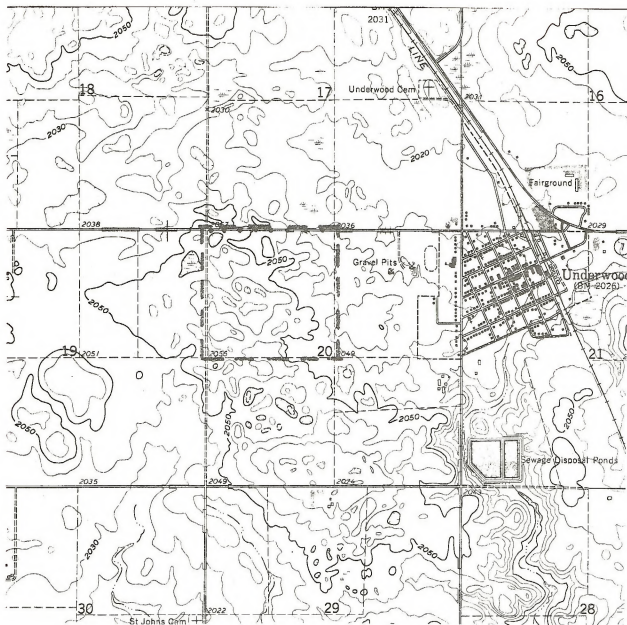
There are no state proposed criteria that have been adopted by the Secretary of the Interior.



LEGEND

-----	Federal Coal Lease Application Area	====	Improved Roads
.....	Criterion 3-Buffer Zones (Roads)	== =	Other Roads
		+ + +	Railroads

INITIAL UNSUITABLE AREAS —
WITHOUT EXCEPTIONS APPLIED



T146N

LEGEND

 Federal Coal Lease Application Area	 Improved Roads
 Criterion 3-Buffer Zones (Roads)	 Other Roads
	 Railroads

UNSUITABILITY DECISION DEFERRED

APPLICATION OF EXCEPTIONS TO INITIAL UNSUITABLE AREAS

The philosophy used in applying exceptions and designating the final unsuitable areas in this land use plan centers on conservation and economic efficiency. It is felt that once the major decision is made to develop the coal in a particular area, the development should proceed in a manner that will achieve greatest economic efficiency in coal recovery, highest utilization of the coal resource (conservation), and minimal environmental damage. These goals can be achieved through the application of mitigating measures (exceptions) where allowable, acceptable, and feasible.

Criterion 3. Buffer Zones Along Right-of-Way and Adjacent to Communities and Buildings

On June 6, 1979, the BLM met with the McLean County Commissioners to discuss the application of Criterion No. 3 for the 2 county roads that border the tract on the north and west.

The county commissioners said there would be no problem in mining the section line right-of-way on the west side of the tract.

The paved county road along the north side of the tract is the primary route that serves a large rural area west of Underwood. The road is part of the FAS (Federal Aid Secondary) in which the county receives

public funds to help finance maintenance of the road. The county commissioners voted to defer the decision to authorize the relocation of the road, which would allow mining within the right-of-way and a 100-foot buffer. Their decision was based on a lack of information. They need input from the general public and Falkirk Mining Company. This input will be solicited at the time of a coal company proposal.

It is recommended that the application of the exception and the final decision on unsuitability be deferred until mining plan approval time for the paved road on the north (as shown on the Unsuitability Decision Deferred Map).

The road on the west (section line right-of-way) is an unimproved trail with casual usage. Mining within the right-of-way and buffer should be permitted.

Criterion 14. Migratory Birds

There are about 5-10 acres of wetlands scattered across this tract, ranging from small puddles which dry up and are farmed over most years to a couple of half-acre ponds that are perennial most years. There is sufficient evidence that these wetlands have significant values as wildlife habitat to warrant application of this criterion at this time. However, the use of appropriately stipulated reclamation technology will provide for restoration of these wildlife values. After applying the criterion and the exception, no areas have been determined to be unsuitable.

APPENDIX A

FINAL APPROVED
UNSUITABILITY CRITERIA

JULY 19, 1979

On December 5, 1978, Guy R. Martin, Assistant Secretary, Land and Water Resources, Department of the Interior, announced a statement of policy for the "Coordination of Federal Lands Review Under the Surface Mining Control and Reclamation Act (SMCRA), Land Use Planning Under the Federal Land Policy and Management Act, and the Federal Coal Management Review Under the President's Environmental Message of May 1977." This announcement was published in the Federal Register on Friday, December 8, 1978 (Volume 43, No. 237, pages 57661-57670). This Departmental policy statement explained how future, ongoing, and updated BLM (land use) management framework plans would be made consistent with recent statutory changes involving new environmental protection measures that may affect potential development of coal resources on federal lands.

The final approved (July 19, 1979) criteria for designating areas unsuitable for surface coal mining are part of the Federal lands review required by Section 522-523 of SMCRA. The actual formal designation will follow approval of the plan supplement. (Section 522-523 of SMCRA are reproduced in full immediately after the list of final criteria.)

It should also be noted that the results of the above review are subject to public review and right to petition under Section 522(c). The Federal lands program for regulation of surface coal mining on Federal lands under Section 523 of SMCRA shall not constitute a major action within the meaning of Section 102(2)(c) of the National Environmental Policy Act of 1969 (42 USC 4332) according to Section 702(d) of SMCRA.

The unsuitability criteria used during this planning update follows:

Section 3461.1 Criteria for assessing lands unsuitable for all or certain stipulated methods of coal mining.

(a)(1) Criterion Number 1. All Federal lands included in the following land systems or categories shall be considered unsuitable: National Park System, National Wildlife Refuge System, National System of Trails, National Wilderness Preservation System, National Wild and Scenic Rivers System, National Recreation Areas, lands acquired with money derived from the Land and Water Conservation Fund, National Forests, and Federal lands in incorporated cities, towns, and villages. All Federal lands which are recommended for inclusion in any of the above systems or categories by the administration in legislative proposals submitted to the Congress or which are required by statute to be studied for inclusion in such systems or categories shall be considered unsuitable.

(2) Exceptions. (i) A lease may be issued within the boundaries of any National Forest if the Secretary finds no significant recreational, timber, economic or other values which may be incompatible with the lease; and (A) surface operations and impacts are incident to an underground coal mine, or (B) where the Secretary of Agriculture determines,

with respect to lands which do not have significant forest cover within those National Forests west of the 100th meridian, that surface mining may be in compliance with the Multiple-Use Sustained-Yield Act of 1960, the Federal Coal Leasing Amendments Act of 1976 and the Surface Mining Control and Reclamation Act of 1977. (ii) A lease may be issued within the Custer National Forest with the consent of the Department of Agriculture as long as no surface coal mining operations are permitted.

(3) Exemptions. The application of this criterion to lands within the listed land systems and categories is subject to valid existing rights, and does not apply to surface coal mining operations existing on August 3, 1977. The application of the portion of this criterion applying to land proposed for inclusion in the listed systems does not apply to lands: to which substantial legal and financial commitments were made prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

(b)(1) Criterion Number 2. Federal lands that are within rights-of-way or easements or within surface leases for residential, commercial, industrial, or other public purposes, or for agricultural crop production on Federally owned surface shall be considered unsuitable.

(2) Exceptions. A lease may be issued, and mining operations approved, in such areas if the surface management agency determined that:

(i) All or certain types of coal development (e.g., underground mining) will not interfere with the purpose of the right-of-way or easement; or

(ii) The right-of-way or easement was granted for mining purposes; or

(iii) The right-of-way or easement was issued for a purpose for which it is not being used; or

(iv) The parties involved in the right-of-way or easement agree, in writing, to leasing; or

(v) It is impractical to exclude such areas due to the location of coal and method of mining and such areas or uses can be protected through appropriate stipulations.

(3) Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

(c)(1) Criterion Number 3. Federal lands affected by section 522(e) (4) and (5) of the Surface Mining Control and Reclamation Act of 1977 shall be considered unsuitable. This includes lands within 100 feet of the outside line of the right-of-way of a public road or within 100 feet of a cemetery, or within 300 feet of any public building, school, church, community or institutional building or public park or within 300 feet of an occupied dwelling.

(2) Exceptions. A lease may be issued for lands:

(i) Used as mine access roads or haulage roads that join the right-of-way for a public road;

(ii) For which the Office of Surface Mining Reclamation and Enforcement has issued a permit to have public roads relocated;

(iii) For which owners of occupied buildings have given written permission to mine within 300 feet of their buildings.

(3) Exemptions. The application of this criterion is subject to valid existing rights, and does not apply to surface coal mining operations existing on August 3, 1977.

(d)(1) Criterion Number 4. Federal lands designated as wilderness study areas shall be considered unsuitable while under review by the Administration and the Congress for possible wilderness designation. For any Federal land which is to be leased or mined prior to completion of the wilderness inventory by the surface management agency, the environmental assessment or impact statement on the lease sale or mine plan shall consider whether the land possesses the characteristics of a wilderness study area. If the finding is affirmative, the land shall be considered unsuitable, unless issuance of noncompetitive coal leases and mining on leases is authorized under the Wilderness Act and the Federal Land Policy and Management Act of 1976.

(2) Exemption. The application of this criterion to lands for which the Bureau of Land Management is the surface management agency and lands in designated wilderness areas in National Forests is subject to valid existing rights.

(e)(1) Criterion Number 5. Scenic Federal lands designated by visual resource management analysis as Class I (an area of outstanding scenic quality or high visual sensitivity) but not currently on the National Register of Natural Landmarks shall be considered unsuitable. A lease may be issued if the surface management agency determined that surface coal mining operations will not significantly diminish or adversely affect the scenic quality of the designated area.

(2) Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

(f)(1) Criterion Number 6. Federal lands under permit by the surface management agency, and being used for scientific studies involving food or fiber production, natural resources, or technology demonstrations and experiments shall be considered unsuitable for the duration of the study, demonstration or experiment, except where mining could be conducted in such a way as to enhance or not jeopardize the purposes of the study, as determined by the surface management agency, or where the principal scientific user or agency gives written concurrence to all or certain methods of mining.

(2) Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

(g)(1) Criterion Number 7. All districts, sites, buildings, structures, and objects of historical, architectural, archeological, or cultural significance on Federal lands which are included in or eligible for inclusion in the National Register of Historic Places, and an appropriate buffer zone around the outside boundary of the designated property (to protect the inherent values of the property that make it eligible for listing in the National Register) as determined by the surface management agency, in consultation with the Advisory Council on Historic Preservation and the State Historic Preservation Office shall be considered unsuitable.

(2) Exceptions. All or certain stipulated methods of coal mining may be allowed if the surface management agency determined, after consultation with the Advisory Council on Historic Preservation and State Historic Preservation Office that the direct and indirect effects of mining, as stipulated, on a property in or eligible for the National Register of Historic Places will not result in significant adverse impacts of the property.

(3) Exemptions. The application of this criterion to a property listed in the National Register is subject to valid existing rights, and does not apply to surface coal mining operations existing on August 3, 1977. The application of the criterion to buffer zones and properties eligible for the National Register does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

(h)(1) Criterion Number 8. Federal lands designated as natural areas or as National Natural Landmarks shall be considered unsuitable.

(2) Exceptions. A lease may be issued and mining operation approved in an area or site if the surface management agency determines that:

(1) With the concurrence of the state, the area or site is of regional or local significance only;

(ii) The use of appropriate stipulated mining technology will result in no significant adverse impact to the area or site; or

(iii) The mining of the coal resource under appropriate stipulations will enhance information recovery (e.g., paleontological sites).

(3) Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which includes operations on which a permit has been issued.

(i)(1) Criterion Number 9. Federally designated critical habitat for threatened or endangered plant and animals species, and habitat for Federal threatened or endangered species which is determined by the Fish and Wildlife Service and the surface management agency to be of essential value and where the presence of threatened or endangered species has been scientifically documented, shall be considered unsuitable.

(2) Exception. A lease may be issued and mining operations approved if, after consultation with the Fish and Wildlife Service, the Service determines that the proposed activity is not likely to jeopardize the continued existence of the listed species and/or its critical habitat.

(j)(1) Criterion Number 10. Federal lands containing habitat determined to be critical or essential for plant or animals species listed by a state pursuant to state law as endangered or threatened shall be considered unsuitable.

(2) Exception. A lease may be issued and mining operations approved if, after consultation with the state, the surface management agency determines that the species will not be adversely affected by all or certain stipulated methods of coal mining.

(3) Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

(k)(1) Criterion Number 11. A bald or golden eagle nest or site on Federal lands that is determined to be active and an appropriate buffer zone of land around the nest site shall be considered unsuitable. Consideration of availability of habitat for prey species and of terrain shall be included in the determination of buffer zones. Buffer zones shall be determined in consultation with the Fish and Wildlife Service.

(2) Exceptions. A lease may be issued if:

(i) It can be conditioned in such a way, either in manner or period of operation, that eagles will not be disturbed during breeding season; or

(ii) The surface management agency, with the concurrence of the Fish and Wildlife Service, determines that the golden eagle nest(s) will be moved.

(iii) Buffer zones may be decreased if the surface management agency determines that the active eagle nests will not be adversely affected.

(l)(1) Criterion Number 12. Bald or golden eagle roost and concentration areas on Federal lands used during migration and wintering shall be considered unsuitable.

(2) Exception. A lease may be issued if the surface management agency determines that all or certain stipulated methods of coal mining can be conducted in such a way, and during such periods of time, to ensure that eagles shall not be adversely disturbed.

(m)(1) Criterion Number 13. Federal lands containing a falcon (excluding kestrel) cliff nesting site with an active nest and buffer zone of Federal land around the nest site shall be considered unsuitable. Consideration of availability of habitat for prey species and of terrain shall be included in the determination of buffer zones. Buffer zones shall be determined in consultation with the Fish and Wildlife Service.

(2) Exception. A lease may be issued where the surface management agency, after consultation with the Fish and Wildlife Service, determines that all or certain stipulated methods of coal mining will not adversely affect the falcon habitat during the periods when such habitat is used by the falcons.

(n)(1) Criterion Number 14. Federal lands which are high priority habitat for migratory bird species of high Federal interest on a regional or national basis, as determined jointly by the surface management agency and the Fish and Wildlife Service, shall be considered unsuitable.

(2) Exception. A lease may be issued where the surface management agency, after consultation with the Fish and Wildlife Service, determines that all or certain stipulated methods of coal mining will not adversely affect the migratory bird habitat during the periods when such habitat is used by the species.

(o)(1) Criterion Number 15. Federal lands which the surface management agency and the state jointly agree are fish and wildlife habitat for resident species of high interest to the state and which are essential for maintaining these priority wildlife species shall be considered unsuitable. Examples of such lands which serve a critical function for the species involved include:

(i) Active dancing and strutting grounds for sage grouse, sharp-tailed grouse, and prairie chicken;

(ii) Winter ranges most critical for deer, antelope, and elk; and

(iii) Migration corridors for elk.

A lease may be issued if, after consultation with the state, the surface management agency determines that all or certain stipulated methods of coal mining will not have a significant long-term impact on the species being protected.

(2) Exemptions. This criterion does not apply to lands; to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

(p)(1) Criterion Number 16. Federal lands in riverine, coastal, and special floodplains (100-year recurrence interval) shall be considered unsuitable unless, after consultation with Geological Survey, the surface management agency determines that all or certain stipulated methods of coal mining can be undertaken without substantial threat of loss to people or property, and to the natural and beneficial values of the floodplain on the lease tract and downstream.

(2) Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

(q)(1) Criterion Number 17. Federal lands which have been committed by the surface management agency to use as municipal watersheds shall be considered unsuitable.

(2) Exception. A lease may be issued where:

(i) The surface management agency determines, as a result of studies, that all or certain stipulated methods of coal mining will not adversely affect the watershed to any significant degree; and

(ii) The municipality (incorporated entity) or the responsible governmental unit concurs in writing in the issuance of the lease.

(3) Exemptions. This criterion does not apply to lands; to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

(r)(1) Criterion Number 18. Federal lands with National Resource Waters, as identified by states in their water quality management plans, and a buffer zone of Federal lands 1/4 mile from the outer edge of the far banks of the water, shall be unsuitable.

(2) Exception. The buffer zone may be eliminated or reduced in size where the surface management agency determines that it is not necessary to protect the National Resource Waters.

(3) Exemptions. This criterion does not apply to lands; to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

(s)(1) Criterion Number 19. Federal lands identified by the surface management agency, in consultation with the state in which they are located, as alluvial valley floors according to the definition in section 3400.0-5(a) of this title, the standards in 30 CFR Part 822, the final alluvial valley floor guidelines of the Office of Surface Mining Reclamation and Enforcement when published, and approved state programs under the Surface Mining Control and Reclamation Act of 1977, where mining would interrupt, discontinue, or preclude farming, shall be considered unsuitable. Additionally, when mining Federal land outside an alluvial valley floor would materially damage the quantity or quality of water in surface or underground water systems that would supply alluvial valley floors, the land shall be considered unsuitable.

(2) Exemptions. This criterion does not apply to surface coal mining operations which produced coal in commercial quantities in the year preceding August 3, 1977, or which had obtained a permit to conduct surface coal mining operations.

(t)(1) Criterion Number 20. Federal lands in a state to which is applicable a criterion (1) proposed by that state, and (ii) adopted by rulemaking by the Secretary, shall be considered unsuitable.

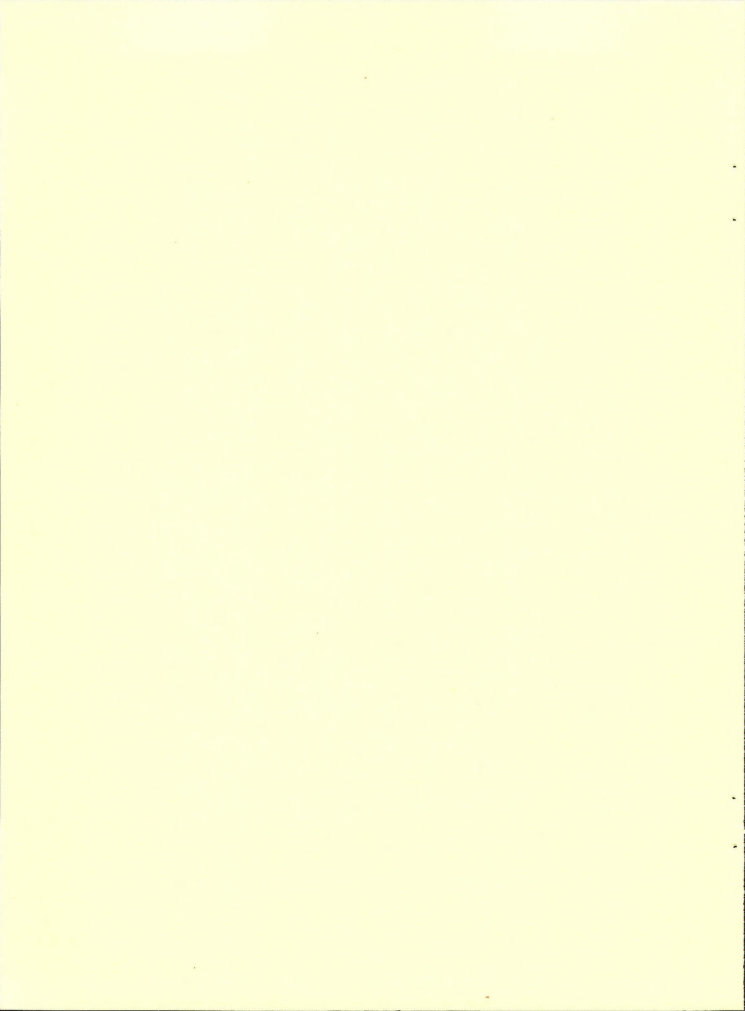
(2) Exceptions. A lease may be issued when:

(1) Such criterion is adopted by the Secretary less than 6 months prior to the publication of the draft comprehensive land use plan or land use analysis, plan, or supplement to a comprehensive land use plan, for the area in which such land is included, or

(ii) After consultation with the state, the surface management agency determines that all or certain stipulated methods of coal mining will not adversely affect the value which the criterion would protect.

(3) Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

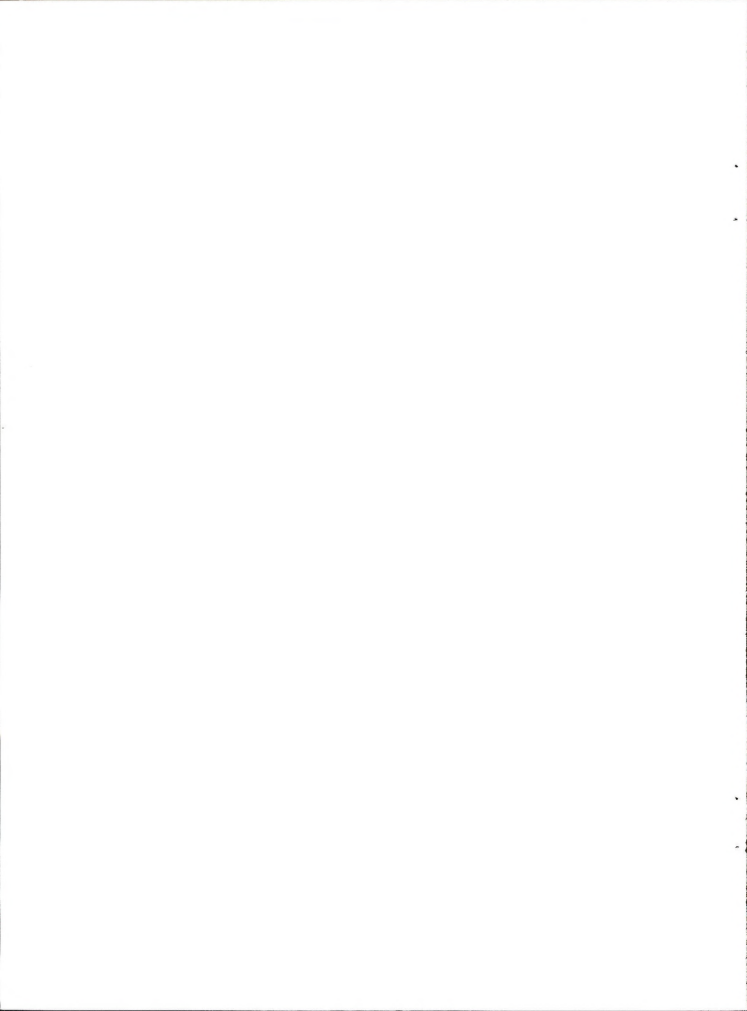
SURFACE OWNER VIEWS



SURFACE OWNER VIEWS

On July 29, 1971, Gladys S. Rust, surface owner, entered into a lease with Charles L. Donlin, giving the lessee the right to conduct mining operations on the parcel of land in question. This lease is taken as evidence that the surface owner consents to the use of her land for purposes of mining the underlying federal coal. This lease has been assigned three times, with Cooperative Power Association being the current lessee.

Gladys Rust was contacted on May 5, 1979, by a BLM representative to discuss reclamation and post-mining land use. Mrs. Rust said the subject tract should be reclaimed to maximize cropland use. Any wetland areas that are restored should not exceed the premining wetland acreage.



RELATIONSHIP TO STATE AND LOCAL PLANNING



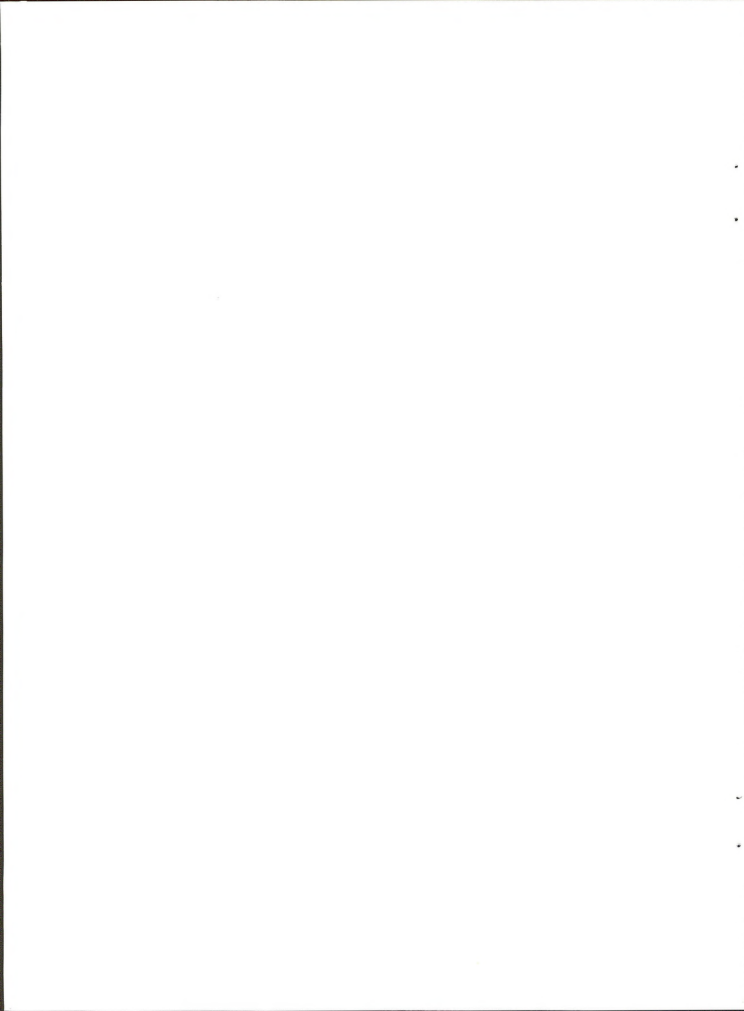
RELATIONSHIP TO STATE AND LOCAL PLANNING

The State of North Dakota does not have a land use plan that covers the Falkirk area of McLean County. However, the North Dakota Century Code has empowered the County Board of Commissioners to enact planning and zoning within their county. The McLean County Planning and Zoning Commission has been set up to advise the county commissioners on all planning and zoning matters. In 1974 the McLean County Zoning Ordinance was adopted. This ordinance sets forth the minimum requirements for land use.

The subject tract is currently zoned for agricultural use. The primary use of the lands within the agricultural districts is that of general farming and ranching activity. However, a conditional use permit can be granted to allow coal excavation.

Section 3.1.1, Conditional Use, d. of the McLean County Zoning Ordinance prohibits excavation or mining operations within thirty feet of an adjacent property line unless a written agreement is made with the owner of said property. Evidence of said agreement shall be submitted to the Planning Commission.

The BLM's proposal to lease coal within the operational area of the Falkirk Mine is compatible with the McLean County land use policy.



PROPOSED SPECIAL STIPULATIONS



PROPOSED SPECIAL STIPULATIONS

The purpose of this section of the land use analysis is to present the recommended special stipulations that are to be made a part of the coal lease issued in response to the short-term bypass application. Special stipulations are those developed and placed in a standard lease form that direct the lessee to conduct certain operations not already prescribed by law, regulations, or standard lease terms. They are also used to clarify or make more specific already prescribed requirements.

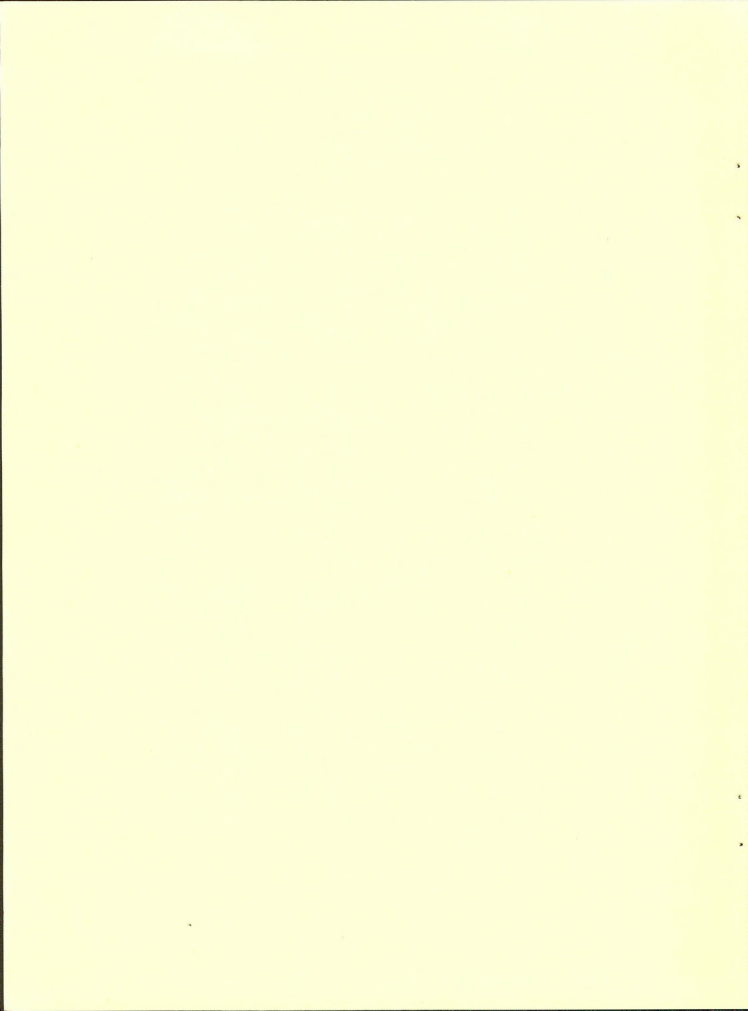
The intent of the special stipulations recommended for this lease is to mandate to the lessee what is required as a product of mining and reclamation, rather than mandate how to achieve it. This provides flexibility and allows application of practices that best fit the lessee's operation and specific situations. Procedures must be spelled out in an Operation and Reclamation Plan which must be approved by the North Dakota Public Service Commission and the Office of Surface Mining, in consultation with the Bureau of Land Management and U.S. Geological Survey. Many of the mitigating measures in the TE/EAR are not reflected here as proposed stipulations, because they are elsewhere covered by law or regulation or are procedural rather than product oriented.

The following special lease stipulations are recommended for this bypass lease application:

1. Reclamation shall result in the mined over lands being returned to their premining use unless otherwise excepted by the North Dakota Public Service Commission and Office of Surface Mining.
2. Upon completion of mining, five acres of Type III wetlands will be restored on the area. These wetlands will be restored as two large bodies rather than several small ones. The minimum size of the two individual wetlands to be restored will be two acres.

During removal and stockpiling of soil, material from the bottoms of existing Type III wetlands shall be stockpiled apart from other soils and used as the final surface material in restoration of the two wetland areas.

INITIAL RECOMMENDATIONS AND RATIONALE



INITIAL RECOMMENDATIONS AND RATIONALE

It is recommended that the tract of federal coal included in this land use analysis be offered for lease and that the special stipulations listed in the Proposed Special Stipulations section of this analysis be made part of the lease. The legal description of the 160 acre tract in McLean County, North Dakota is:

T146N, R82W, 5TH. P.M. - Section 20, NW $\frac{1}{4}$

The impact assessment done as part of this land use analysis indicates that environmental damage would be minimal if mining and reclamation are done according to standards required by law, regulation, and lease terms.

This recommendation is based on the following criteria:

1. This coal would help meet the energy needs of the state and nation.
2. The coal needs to be leased at this time to avoid having it bypassed. If bypassed, it would essentially be lost, as economic factors would prevent it from being mined in the future.

3. The short-term criteria and emergency leasing criteria under the new Federal Coal Management Program mandated by the Federal Court have been met.
4. The area has the potential for successful reclamation. A good reclamation plan must be developed and carried out for complete success.
5. A new electric generating plant is dependent upon coal in this area.
6. Irreversible environmental impacts would be insignificant.
7. Development of the coal will not have any adverse social and economic impacts.
8. The coal is needed for efficient mining of the area, resulting in lower mining and subsequent energy costs.
9. Irreversible impacts are not significant.
10. There will be beneficial economic impacts to the state and federal governments through the collection of taxes, rentals, and royalties.

11. The area is recommended to be returned to a condition that supports agriculture and wildlife as that is the desire of the surface owner and it is also the most productive use of the land.

12. Overall environmental damage would be of short duration and insignificant in nature.

Bureau of Land Management
Library
Denver Service Center

Form 1326-3
June 1984)

BORROWER

TD 195 .058 F372
Falkirk coal les
application N-

DATE
LOANED

BORROWER

USDI - BLM

Bureau of Land Management
Library
Denver Service Center

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Dickinson District Office
P. O. Box 1229
Dickinson, N. D. 58601

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, \$300

AN EQUAL OPPORTUNITY EMPLOYER

POSTAGE AND FEES PAID
U. S. DEPARTMENT OF THE INTERIOR
INT-415

