



U.S. DEPARTMENT OF THE INTERIOR
**BUREAU OF LAND
MANAGEMENT**

July 2024

North Dakota Proposed Resource Management Plan and Final Environmental Impact Statement

Volume 3 (Appendices B–L)

Prepared by:

**US Department of the Interior
Bureau of Land Management**

Cover Photo: the Lost Bridge area in Dunn County, North Dakota
(photo credit: Mitch Iverson)

Appendix B

Stipulations and Allocations Applicable to
Fluid Minerals Leasing

This page intentionally left blank.

TABLE OF CONTENTS

Appendix

Page

APPENDIX B. STIPULATIONS AND ALLOCATIONS APPLICABLE TO FLUID MINERALS

LEASING	B-1
B.1 No Leasing Allocations	B-1
B.2 Description of Stipulations	B-1
B.2.1 Standard Terms and Conditions for Fluid Minerals Leasing	B-2
B.2.2 No Surface Occupancy	B-2
B.2.3 Controlled Surface Use	B-2
B.2.4 Timing Limitations	B-2
B.2.5 Lease Notice	B-3
B.2.6 Condition of Approval	B-3
B.2.7 Project Mitigation and Monitoring	B-3
B.3 Exceptions, Modifications, and Waivers	B-3
B.3.1 Standard Modification, Exception, and Waiver	B-3
B.4 Fluid Mineral Leasing by Development Potential and Lease Status	B-61

TABLES

Page

B-1 No Surface Occupancy Stipulations for Fluid Minerals Leasing.....	B-5
B-2 Controlled Surface Use Stipulations for Fluid Minerals Leasing	B-29
B-3 Timing Limitation Stipulations Applicable to Fluid Minerals Leasing	B-45
B-4 Lease Notices Applicable to Fluid Minerals Leasing	B-53
B-5 Fluid Mineral Leasing by Development Potential, Leased Areas, Held by Production	B-61
B-6 Fluid Mineral Leasing by Development Potential, Leased Areas, without an Active Well.....	B-62
B-7 Fluid Mineral Leasing by Development Potential, Unleased	B-63
B-8 Fluid Mineral Leasing by Development Potential, Leased Areas, Held by Production, Individual Stipulations, No Surface Occupancy	B-64
B-9 Fluid Mineral Leasing by Development Potential, Leased Areas, without an Active Well, Individual Stipulations, No Surface Occupancy	B-67
B-10 Fluid Mineral Leasing by Development Potential, Unleased, Individual Stipulations, No Surface Occupancy	B-70
B-11 Fluid Mineral Leasing by Development Potential, Leased Areas, Held by Production, Individual Stipulations, Controlled Surface Use.....	B-73
B-12 Fluid Mineral Leasing by Development Potential, Leased Areas, without an Active Well, Individual Stipulations, Controlled Surface Use.....	B-76
B-13 Fluid Mineral Leasing by Development Potential, Unleased, Individual Stipulations, Controlled Surface Use	B-79
B-14 Fluid Mineral Leasing by development Potential, Leased Areas, Held by Production, Individual Stipulations, Seasonal Timing Limitations.....	B-82
B-15 Fluid Mineral Leasing by Development Potential, Leased Areas, without an Active Well, Individual Stipulations, Seasonal Timing Limitations.....	B-85
B-16 Fluid Mineral Leasing by Development Potential, Unleased, Individual Stipulations, Seasonal Timing Limitations	B-89

This page intentionally left blank.

Appendix B. Stipulations and Allocations Applicable to Fluid Minerals Leasing

This appendix lists by alternative the stipulations for fluid minerals leasing (e.g., oil, gas, helium, and geothermal) referred to throughout the North Dakota Resource Management Plan (RMP) and Environmental Impact Statement (EIS). The stipulations would not apply to activities and uses where they are contrary to laws, regulations, or specific program guidance, including locatable minerals development under the 1872 mining law. While they are not stipulations, this appendix also presents descriptions of the no leasing (NL) allocations for fluid minerals presented in the alternatives.

B.1 NO LEASING ALLOCATIONS

NL State-designated Source Water Protection Areas

In Alternative B, close State-designated Source Water Protection Areas to fluid mineral leasing and geophysical exploration.

B.2 DESCRIPTION OF STIPULATIONS

Table B-1, No Surface Occupancy Stipulations for Fluid Minerals Leasing, **Table B-2**, Controlled Surface Use Stipulations for Fluid Minerals Leasing, and **Table B-3**, Timing Limitation Stipulations Applicable to Fluid Minerals Leasing, provide details of the stipulations and restrictions by alternative. Three types of stipulations and restrictions could be applied to fluid minerals leases: no surface occupancy (NSO), controlled surface use (CSU), and timing limitation (TL).

NSO, CSU, and TL are stipulation decisions and apply to fluid minerals leasing and development of fluid mineral estate underlying Bureau of Land Management (BLM)-administered lands, privately owned lands, and state-owned lands. Stipulation decisions from this RMP do not apply to minerals underlying National Forest System lands, national wildlife refuges, National Park Service lands, Bureau of Reclamation lands, or Army Corps of Engineer lands. To lease minerals beneath surface lands administered by the US Department of Agriculture, Forest Service (Forest Service), the BLM must receive consent to lease from the Forest Service. Also, the BLM must incorporate any accompanying stipulations required by forest land use plans or forest-wide programmatic leasing analyses.

Federal fluid mineral estate acres are greater than BLM-administered surface acres. In the planning area, the BLM administers 58,500 acres of surface estate and 489,300 acres of federal mineral estate for fluid minerals. The latter includes minerals administered by the BLM overlain by BLM-administered and private and state-owned land. Acreages are calculated on current information and may be adjusted in the future through plan maintenance as conditions warrant. A plan maintenance may be warranted if, for example, new minerals are acquired, or new wildlife habitat covered by a stipulation is discovered.

Lease stipulations and lease notices would be applied to all new leases and to expired leases that are reissued. On existing leases, the BLM would develop conditions of approval for applications for permits to drill to achieve resource objectives of lease stipulations contained in the North Dakota RMP. New development on existing leases would have to comply with current management direction. This direction is

consistent with Interior Board of Land Appeals decisions¹. These decisions give the BLM discretion to modify surface operations to add specific mitigation measures, supported by site-specific National Environmental Policy Act (NEPA) analysis undertaken during the development phase on existing leases. Any additional mitigation measures would need to be justifiable, would still need to provide for lease development, and would need to be incorporated in a site-specific document.

B.2.1 Standard Terms and Conditions for Fluid Minerals Leasing

Oil and gas development is subject to standard terms and conditions of the lease. Section 6 of the lease terms (BLM Form 3100-11, Offer to Lease and Lease for Oil and Gas) addresses the conduct of operations on an oil and gas lease, which provides basic environmental protections to resources, land uses and users. Onshore Oil and Gas Order No. 1² gives the BLM the ability to relocate proposed operations up to 656 feet (200 meters) and to prohibit surface-disturbing operations for a period not to exceed 60 days.

B.2.2 No Surface Occupancy

Use or occupancy of the land surface for fluid minerals exploration or development and all activities associated with fluid minerals leasing are prohibited to protect identified resource values. Examples of these activities are truck-mounted drilling, stationary drill rigs in unison, geophysical exploration equipment off designated routes, and construction of wells or pads (refer to **Table B-1**).

The NSO stipulation is a category of major constraints. NSO areas are open to fluid minerals leasing, but surface occupancy or surface-disturbing activities associated with fluid minerals leasing cannot be conducted on the surface of the land. Access to fluid mineral deposits would require directional drilling or drilling from outside the boundaries of the NSO area. This differs from areas identified as closed to leasing in which neither the surface area nor mineral estate is available for fluid minerals leasing.

B.2.3 Controlled Surface Use

CSU is a category of moderate constraint stipulations that allows some use and occupancy of BLM-administered land, while protecting identified resources or values. It is applicable to fluid minerals leasing and all activities associated with it, such as truck-mounted drilling, stationary drill rigs in unison, geophysical exploration equipment off designated routes, and construction of wells or pads. CSU areas are open to fluid minerals leasing, but the stipulation allows the BLM to require special operational constraints. Alternatively, the activity can be shifted more than 656 feet (200 meters) to protect the specified resource or value (refer to **Table B-2**).

B.2.4 Timing Limitations

Areas identified for TL, a moderate constraint, are closed to fluid minerals exploration and development, surface-disturbing activities, and intensive human activity for periods that may exceed 60 days. This stipulation does not apply to operation and basic maintenance, including associated vehicle travel, unless otherwise specified. Construction, drilling, completions, and other operations considered to be intensive are not allowed. Intensive maintenance, such as workovers on wells, is not permitted. Administrative activities are allowed at the discretion of the BLM Authorized Officer (refer to **Table B-3**).

¹ Yates Petroleum Corp., 176 Interior Board of Land Appeals 144 (2008) and William P. Maycock, 180 Interior Board of Land Appeals 1 (2010).

² Onshore Oil and Gas Operations; Federal and Indian Oil and Gas Leases; Approval of Operations regulations (43 CFR, Part 3160).

B.2.5 Lease Notice

A lease notice (LN) provides more-detailed information concerning limitations that already exist in law, lease terms, regulations, or operational orders. An LN also addresses special considerations for lessees when they plan their operations, but it does not impose additional restrictions. LNs are not an RMP-level decision, and new LNs may be added to fluid minerals leases at the time of sale. LNs apply only to leasable minerals, such as oil, gas, helium, and geothermal, and not to other types of leases, such as livestock grazing or coal leases (refer to **Table B-4**).

B.2.6 Condition of Approval

Conditions of approval (COA) are requirements under which an application for permit to drill is approved, after a lease is issued. COAs are based on site-specific analysis and are designed to minimize, mitigate, or prevent effects on resource values or other uses of public lands. A particular condition of approval is not an RMP-level decision and is applicable only to fluid minerals leasing.

B.2.7 Project Mitigation and Monitoring

Stipulations are designed to provide resource-specific protections. Permit holders are responsible for monitoring and reporting deemed necessary to document and maintain mandated protective measures. Also, the BLM retains the right to modify the operations of all surface and other disturbance activities caused by the presence of humans. BLM also has the right to require additional specific or specialized mitigation. This would be required after a lessee submits a detailed plan of development or other project proposal, a monitoring report, and an environmental analysis of such. BLM can require monitoring and mitigation on any federal mineral estate covered under this RMP, whether the estate be fee-fee or fee-federal land.

B.3 EXCEPTIONS, MODIFICATIONS, AND WAIVERS

The BLM Authorized Officer could modify, make exceptions to, or waive stipulations and restrictions, subject to the stipulation's specific exceptions, modifications, or waivers. These actions provide a viable and effective means of applying adaptive management techniques to development of fluid minerals leases.

B.3.1 Standard Modification, Exception, and Waiver

The standard exceptions, modifications, and waivers apply to all NSOs, CSUs, and TLs, unless otherwise stated. (In the following paragraphs, leasehold refers to fluid minerals leases.)

A *modification* is a change to the provisions of a lease stipulation or project, either temporarily or for the lease term or length of the project. Depending on the specific modification, the stipulation may or may not apply to all sites in the leasehold that the restrictive criteria are applied to. The BLM Authorized Officer may modify a stipulation or the area subject to the stipulation. This would be the case if he or she determines that the factors leading to its inclusion in the lease or project area have changed sufficiently.

The BLM Authorized Officer may modify a stipulation as a result of new information under one or more of the following circumstances:

- If the protection provided by the stipulation is no longer justified or necessary to meet resource objectives established in the RMP
- If the protection provided by the stipulation is no longer sufficient to meet resource objectives established in the RMP

- If the proposed operations would not cause unacceptable effects

The BLM Authorized Officer may require additional plans of development, surveys, mitigation proposals, or environmental analyses and may consult with other government agencies or the public to make this determination.

An *exception* is a one-time exemption for a particular site in the leasehold and is determined on a case-by-case basis. The exception continues to apply to all other sites in the leasehold. The BLM Authorized Officer may grant an exception to a stipulation. This would come about if he or she determines that the factors leading to its inclusion in the lease have changed sufficiently such that one of the following occurs:

- The protection provided by the stipulation is no longer justified or necessary to meet resource objectives established in the RMP
- The proposed operations would not cause unacceptable effects

The BLM Authorized Officer may require additional plans of development, surveys, mitigation proposals, or environmental analysis. He or she may consult with other government agencies or the public to make this determination.

A *waiver* is a permanent exemption from a lease stipulation. When a waiver is granted, the stipulation no longer applies anywhere in the leasehold. The BLM Authorized Officer may waive a stipulation. This would be the case if he or she determines that the factors leading to its inclusion in the lease or project no longer exist. The Authorized Officer may require additional plans of development, surveys, mitigation proposals, or environmental analysis. He or she may be required to consult with other government agencies or the public to make this determination.

The environmental analysis document prepared for site-specific proposals, such as oil and gas development, such as applications for permits to drill (APDs) and sundry notices, also needs to address any proposal to modify, except, or waive a surface stipulation.

Table B-1
No Surface Occupancy Stipulations for Fluid Minerals Leasing

Resource: <i>Air Resources</i>	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
NSO New Federal Class I Areas	No surface occupancy is allowed within 1.0 mile of the boundary of the Lostwood Wilderness or the Theodore Roosevelt National Park Class I area	Objective: To protect the air quality and air quality related values within these Federally designated Class I areas. Exception, Modification, Waiver: This stipulation may be waived or reduced, by the Authorized Officer, if the lessee or operator can demonstrate, to the satisfaction of the applicable federal land management agency, that operations will be conducted without causing unacceptable impacts such as degraded visibility, atmospheric deposition impacts, or increased atmospheric concentrations of air pollutants at or above an AAQS within the Class I area and that any adverse impacts will be adequately mitigated.	N	Y	Y	Y

Resource: <i>Soil Resources</i>	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
NSO 11-69 Badlands, Rock Outcrop	Surface occupancy and use is prohibited on badlands and rock outcrops.	Objective: To prevent excessive soil erosion and to avoid disturbing areas subject to potential reclamation problems. Exception: The Authorized Officer may not grant exceptions to this stipulation. Modification: The Authorized Officer may modify the area affected by this stipulation if it is determined that portions of the leasehold do not include these types of areas. Waiver: The Authorized Officer may waive this stipulation if it is determined that the entire leasehold does not include these types of areas.	N	Y	Y	Y

Resource: <i>Water Resources</i>	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
NSO 11-33 Wetlands, Lakes and Ponds	No surface occupancy or use is allowed within 200 feet of wetlands, lakes and ponds to protect surface water and related vegetation.	Objective: To protect wetlands. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. Exception, Modification, Waiver: This stipulation may be waived or reduced if circumstances change, or if the lessee can demonstrate that operations can be conducted without causing unacceptable impacts. Exceptions to this limitation in any particular year may be specifically approved in writing by the authorized officer. In all cases, the stipulation (including any modification) will be designed to present the least restrictive measure for avoiding unacceptable adverse impacts.	Y	N	N	N
NSO 11-36 Yellowstone River Floodplain	No surface occupancy or use is allowed on lands within the floodplain of the Yellowstone River.	Objective: To protect the floodplain from possible pollution. Exception, Modification, Waiver: This stipulation may be waived or reduced if circumstances change, or if the lessee can demonstrate that operations can be conducted without causing unacceptable impacts. Exceptions to this limitation in any particular year may be specifically approved in writing by the authorized officer. In all cases, the stipulation (including any modification) will be designed to present the least restrictive measure for avoiding unacceptable adverse impacts.	Y	N	N	N
NSO 11-39 Missouri River Floodplain	No surface occupancy or use is allowed on lands within the floodplain of the Missouri River.	Objective: To protect the floodplain from possible pollution. Exception, Modification, Waiver: This stipulation may be waived or reduced if circumstances change, or if the lessee can demonstrate that operations can be conducted without causing unacceptable impacts. Exceptions to this limitation in any particular year may be specifically approved in writing by the authorized officer. In all cases, the stipulation (including any modification) will be designed to present the least restrictive measure for avoiding unacceptable adverse impacts.	Y	N	N	N

Resource: <i>Water Resources</i>	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
NSO New Missouri River	Surface occupancy and use is prohibited within 0.50 miles of the ordinary high-water mark for the Missouri River, Lake Sakakawea, and Lake Oahe.	Objective: To recognize the regional importance of the Missouri River as a state class I river used as a major supply of public drinking water. To protect water quality, riparian, wildlife, scenic, and recreational values along the major river corridor. Exceptions: An exception may be granted by the Authorized Officer to allow surface occupancy and use within 0.50 miles but not closer than 1,000 feet of the ordinary high-water mark if the operator can demonstrate the following: • There are no practicable alternatives to locating facilities in these areas; • Terrain features are present that result in the drainage path of any spill or release being greater than 0.50 miles; • Terrain features are present that result in roads and facilities not being visible from the water; • All reclamation goals and objectives would be met; and • The Authorized Officer may require additional surveys, mitigation proposals, and best management practices. Modification: None. Waiver: None	N	Y	N	Y

Resource: <i>Water Resources</i>	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
NSO-11-70 Streams, Waterbodies, Riparian Areas, Wetlands, and Floodplains	Surface occupancy and use is prohibited within perennial or intermittent streams, lakes, ponds, reservoirs, 100-year floodplains, wetlands, and riparian areas.	Objective: To protect the unique biological and hydrological features and functions associated with perennial and intermittent streams, lakes, ponds, reservoirs, floodplains, wetlands, and riparian areas. Waiver: The Authorized Officer may waive this stipulation if it is determined that the entire leasehold does not include these types of areas. Exception: No exceptions would be allowed in streams, natural lakes, or wetlands. An exception may be granted by the Authorized Officer for riparian areas, floodplains, and artificial ponds or reservoirs if the operator can demonstrate that: • there are no practicable alternatives to locating facilities in these areas, • the proposed actions would maintain or enhance resource functions, and • all reclamation goals and objectives would be met. Modification: The Authorized Officer may modify the boundaries of the stipulated area if it is determined that portions of the leasehold do not include these types of areas.	N	Y	Y	Y

Resource: <i>Water Resources</i>	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
NSO 11-71 Source Water Protection Areas	Surface occupancy and use is prohibited within State-designated Source Water Protection Areas.	Objective: To protect human health by minimizing the potential contamination of public water systems. Source water is untreated water from streams, rivers, lakes, or aquifers used to supply public water systems. Ensuring that source water is protected from contamination can reduce the costs of treatment and risks to public health. This stipulation would protect the State-designated Source Water Protection Areas that protect public water systems from potential contamination. Waiver: The Authorized Officer may waive this stipulation if it is determined that the entire leasehold does not include Source Water Protection Areas. Exception: The Authorized Officer may not grant exceptions to this stipulation. Modification: The Authorized Officer may modify the boundaries of the stipulated area if it is determined that portions of the leasehold do not include Source Water Protection Areas.	N	N	Y	N

Resource: <i>Vegetation Communities</i>	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
NSO-New Tallgrass Prairie	Surface occupancy and use is prohibited in identified tallgrass prairie.	Objective: To protect tallgrass prairie. Waiver: The Authorized Officer may waive this stipulation if it is determined that the entire leasehold does not include these types of areas. Exception: The Authorized Officer may not grant exceptions to this stipulation. Modification: The Authorized Officer may modify the area affected by this stipulation if it is determined that portions of the leasehold do not include these types of areas.	N	Y	Y	Y

Resource: Vegetation Communities	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
NSO-New Woody Draws	Surface occupancy and use is prohibited within identified woody draws.	Objective: To protect woody draws. Waiver: The Authorized Officer may waive this stipulation if it is determined that the entire lease area does not contain woody draws. Exception: The Authorized Officer may grant an exception to this stipulation if the operator can demonstrate that the proposed action would not adversely impact the biological features of the woody draw. Modification: The Authorized Officer may modify the area affected by this stipulation if it is determined that portions of the lease area do not include woody draws.	N	Y	N	N
NSO-New Special Status Plants	Surface occupancy and use is prohibited within 0.50 miles of special status plants or habitat.	Objective: To protect and conserve rare plants, associated plant communities, and the habitat that supports them. Waiver: The Authorized Officer may not waive this stipulation. Exception: The Authorized Officer may not grant exceptions to this stipulation. Modification: The Authorized Officer may modify the area affected by this stipulation if it is determined that land within 0.5 mile of the special status plant population does not provide potential habitat for these species.	N	Y	N	N
NSO-New Special Status Plants	Surface occupancy and use is prohibited within 0.25 miles of special status plants or habitat.	Objective: To protect and conserve rare plants, associated plant communities, and the habitat that supports them. Waiver: The Authorized Officer may not waive this stipulation. Exception: The Authorized Officer may not grant exceptions to this stipulation. Modification: The Authorized Officer may modify the area affected by this stipulation if it is determined that land within 0.25 mile of the special status plant population does not provide potential habitat for these species.	N	N	Y	N

Resource: Vegetation Communities	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
NSO 11-24 Special Status Plants	No surface occupancy or use is allowed within 0.25 miles of special status plants or populations.	Objective: To protect and conserve rare plants, associated plant communities, and the habitat that supports them. Waiver: The Authorized Officer may not waive this stipulation. Exception: The Authorized Officer may not grant exceptions to this stipulation. Modification: The Authorized Officer may modify the area affected by this stipulation if it is determined that land within 0.25 miles of the special status plant population does not provide potential habitat for these species.	N	N	N	Y

Resource: <i>Riparian and Wetland Vegetation</i>	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
See <i>Water Resources and Vegetation Communities</i> .						

Resource: Terrestrial and Aquatic Wildlife Resources	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
NSO 11-34 Prairie Falcon Nests	No surface occupancy or use is allowed within 0.50 miles of prairie falcon nests known to have been occupied at least once within the 7 previous years.	Objective: To protect prairie falcon nesting. Exception, Modification, Waiver: This stipulation may be waived or reduced if circumstances change, or if the lessee can demonstrate that operations can be conducted without causing unacceptable impacts. Exceptions to this limitation in any particular year may be specifically approved in writing by the authorized officer. In all cases, the stipulation (including any modification) will be designed to present the least restrictive measure for avoiding unacceptable adverse impacts.	Y	N	N	N

Resource: <i>Terrestrial and Aquatic Wildlife Resources</i>	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
NSO-New Bighorn Sheep Crucial Habitat	Prohibit surface occupancy and use in known or proposed bighorn sheep crucial habitat.	Objective: Limit disturbance to bighorn sheep Waiver: This stipulation may be waived if the Authorized Officer determines that the entire leasehold no longer contains bighorn sheep habitat. Exception: None Modification: The boundaries of the stipulated area may be modified if the Authorized Officer determines that portions of the area no longer contain bighorn sheep habitat.	N	Y	N	N
NSO-11-123 Prairie Dog Habitat	Surface occupancy and use is prohibited for oil and gas exploration and development within 0.25 miles of black-tailed or white-tailed prairie dog habitat. Prairie dog habitat is defined as the maximum extent of areas occupied by prairie dogs at any time during the last 10 years.	Objective: To protect prairie dog habitat, a BLM priority species for management as well as, burrowing owls, mountain plover, and other obligate species. Exception: The Authorized Officer may grant an exception if the action will not impair the function or suitability of the prairie dog habitat. Modification: The Authorized Officer may modify the boundaries of the stipulated area if portions of the leasehold are no longer within 0.25 miles of prairie dog habitat active within the past 10 years. Waiver: The Authorized Officer may waive this stipulation if the entire leasehold is no longer within 0.25 miles of prairie dog colonies active within the past 10 years.	N	Y	N	N

Resource: Terrestrial and Aquatic Wildlife Resources	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
NSO-11-73 Other Raptor Nests	Surface occupancy and use is prohibited within 0.25 miles of raptor nest sites active within the preceding 7 years.	Objective: To protect nest sites of raptors identified as BLM priority species for management. Waiver: The Authorized Officer may waive this stipulation if the entire leasehold is no longer within 0.25 miles of raptor nest sites active within the past 7 years or if the habitat has been altered to an extent, future use by nesting raptors is unlikely. Exception: The Authorized Officer may grant an exception if the action will not result in nest territory abandonment. Modification: The Authorized Officer may modify the boundaries of the stipulated area if portions of the leasehold are no longer within 0.25 miles of raptor nest sites active within the past 7 years.	N	Y	Y	Y
NSO-11-158 Sharp-Tailed Grouse Leks	Surface occupancy and use is prohibited within 0.25 miles of sharp-tailed grouse leks.	Objective: To protect sharp-tailed grouse leks to maintain sharp-tailed grouse populations. Waiver: The stipulation may be waived if the authorized officer determines that the entire leasehold no longer contains sharp-tailed grouse leks. Exception: The Authorized Officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action are acceptable or can be adequately mitigated. Modification: The boundaries of the stipulated area may be modified if the Authorized Officer determines that portions of the area can be occupied without adversely affecting sharp-tailed grouse leks. The Authorized Officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.	N	Y	N	N

Resource: <i>Terrestrial and Aquatic Wildlife Resources</i>	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
NSO-New Wildlife Management Areas	Surface occupancy and use is prohibited within state Wildlife Management Areas.	Objective: To protect wildlife and habitat in state Wildlife Management Areas. Waiver: This stipulation may be waived by the Authorized Officer, in consultation with the North Dakota Game and Fish Department, determines that the entire leasehold no longer contains a state Wildlife Management Area. Exception: An exception may be granted by the Authorized Officer, in consultation with the North Dakota Game and Fish Department, if the operator submits a plan demonstrating that impacts from the proposed action are acceptable or can be mitigated. Modification: The boundaries of the area may be modified by the Authorized Officer, in consultation with the North Dakota Game and Fish Department, if it is determined the management boundaries can be changed.	N	Y	N	Y

Resource: Special Status Species	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
NSO 11-111 Greater Sage-Grouse Priority Habitat Management Area (PHMA)	Surface occupancy and use is prohibited within Greater Sage-Grouse PHMA.	Objective: To protect the integrity of the habitat to maintain or improve Greater Sage- Grouse populations. Waiver: The Authorized Officer may not this stipulation. Exception: The BLM Authorized Officer may grant an exception to a fluid mineral lease NSO stipulation only where the proposed action: i. Will not have direct, indirect, or cumulative effects on Greater Sage-Grouse or its habitat; or ii. Is proposed to be undertaken as an alternative to a similar action occurring on a nearby parcel and will provide a clear conservation gain to Greater Sage-Grouse. Exceptions based on conservation gain (ii) may only be considered in (a) PHMA of mixed ownership where Federal minerals underlie less than fifty percent of the total surface, or (b) areas of the public lands where the proposed exception is an alternative to an action occurring on a nearby parcel subject to a valid Federal fluid mineral lease existing as of the date of this RMPA. Exceptions based on conservation gain must also include measures, such as enforceable institutional controls and buffers, sufficient to allow the BLM to conclude that such benefits will endure for the duration of the proposed action's impacts. Any exceptions to this lease stipulation may be approved by the BLM Authorized Officer only with the concurrence of the State Director. The BLM Authorized Officer may not grant an exception unless the applicable state wildlife agency, the USFWS, and the BLM unanimously find that the proposed action satisfies (i) or (ii). Such finding shall initially be made by a team of one field biologist or other Greater Sage-Grouse expert from each respective agency. In the event the initial finding is not unanimous, the finding may be elevated to the appropriate BLM State Director, USFWS State Ecological Services Director, and state wildlife agency head for final resolution. In the event their finding is not unanimous, the exception will not be granted. Approved exceptions will be made publicly available at least quarterly. Modification: The Authorized Officer may not modify this stipulation.	Y	Y	Y	Y

Resource: Special Status Species	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
NSO 11-35 Greater Sage-Grouse Strutting Grounds	No surface occupancy or use is allowed within 0.25 miles of active Greater Sage-Grouse strutting grounds.	Objective: to protect sage grouse leks. Exception, Modification, Waiver: This stipulation may be waived or reduced if circumstances change, or if the lessee can demonstrate that operations can be conducted without causing unacceptable impacts. Exceptions to this limitation in any particular year may be specifically approved in writing by the authorized officer. In all cases, the stipulation (including any modification) will be designed to present the least restrictive measure for avoiding unacceptable adverse impacts.	Y	Y	Y	Y
NSO 11-38 Golden Eagle Nests	No surface occupancy or use is allowed within 0.50 miles of golden eagle nests known to have been occupied at least once within the 7 previous years.	Objective: To protect golden eagle nesting territories. Exception, Modification, Waiver: This stipulation may be waived or reduced if circumstances change, or if the lessee can demonstrate that operations can be conducted without causing unacceptable impacts. Exceptions to this limitation in any particular year may be specifically approved in writing by the authorized officer. In all cases, the stipulation (including any modification) will be designed to present the least restrictive measure for avoiding unacceptable adverse impacts.	Y	Y	Y	Y
NSO 11-17 Ferruginous Hawk Nest Sites	No surface occupancy or use is allowed within 0.50 miles of ferruginous hawk nest sites.	Objective: Maintain the reproductive potential of ferruginous hawk nest sites. Exception, Modification, Waiver: This stipulation may be waived or reduced if circumstances change, or if the lessee can demonstrate that operations can be conducted without causing unacceptable impacts. Exceptions to this limitation in any particular year may be specifically approved in writing by the authorized officer. In all cases, the stipulation (including any modification) will be designed to present the least restrictive measure for avoiding unacceptable adverse impacts.	Y	N	N	N

Resource: Special Status Species	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
NSO-New Bald Eagles	Surface occupancy and use is prohibited within 1 mile of bald eagle nest sites active within the preceding 5 years.	Objective: To protect nest sites and nesting activities of bald eagles, a BLM priority species for management. Waiver: The Authorized Officer may waive this stipulation if the entire leasehold is no longer within 1 mile of bald eagle nest sites active within the past 5 years or if the habitat has been altered to an extent, future use by nesting bald eagles is unlikely. Exception: The Authorized Officer may grant an exception, subject to coordination with the US Fish and Wildlife Service (USFWS), if the action will not result in nest territory abandonment. Modification: The Authorized Officer may modify the boundaries of the stipulated area if portions of the leasehold are no longer within 1 mile of bald eagle nest sites active within the past 5 years.	N	Y	N	N
NSO-11-74 Bald Eagles	Surface occupancy and use is prohibited within 0.50 miles of bald eagle nest sites active within the preceding 5 years.	Objective: To protect nest sites and nesting activities of bald eagles, a BLM priority species for management. Waiver: The Authorized Officer may waive this stipulation if the entire leasehold is no longer within 0.50 miles of bald eagle nest sites active within the past 5 years or if the habitat has been altered to an extent, future use by nesting bald eagles is unlikely. Exception: The Authorized Officer may grant an exception, subject to coordination with the USFWS, if the action will not result in nest territory abandonment. Modification: The Authorized Officer may modify the boundaries of the stipulated area if portions of the leasehold are no longer within 0.5 mile of bald eagle nest sites active within the past 5 years.	N	N	Y	Y

Resource: Special Status Species	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
NSO-11-122 Peregrine Falcon Nests	Surface occupancy and use is prohibited within 1 mile of peregrine falcon nests active within the preceding 7 years.	Objective: To protect nest sites and nesting activities of peregrine falcons, a BLM priority species for management. Waiver: The Authorized Officer may waive this stipulation of the entire leasehold is no longer within one mile of peregrine falcon nest sites active within the past 7 years or if the habitat has been altered to an extent that future use by nesting peregrine falcons is unlikely. Exception: The Authorized Officer may grant an exception if the action will not result in nest territory abandonment. Modification: The Authorized Officer may modify the boundaries of the stipulated area if portions of the leasehold are no longer within one mile of peregrine falcon nest sites active within the past 7 years.	N	Y	Y	Y
NSO-11-153 Interior Least Tern Active Nests	Surface occupancy and use is prohibited within 0.25 miles of interior least tern active nests.	Objective: To protect and maintain habitat needed to support regional interior least tern populations. Waiver: The stipulation may be waived if the Authorized Officer, in consultation with USFWS, determines that the entire leasehold can be occupied without adversely affecting interior least tern active nests. Exception: An exception to this stipulation may be granted if the Authorized Officer, in consultation with the USFWS, determines that portions of the area can be occupied without adversely affecting interior least tern active nests. Modification: The boundaries of the stipulated area may be modified if the Authorized Officer, in consultation with USFWS, determines that portions of the area can be occupied without adversely affecting interior least tern active nests. The Authorized Officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.	N	Y	Y	Y

Resource: Special Status Species	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
NSO-11-156 Piping Plover Critical Habitat	Surface occupancy and use is prohibited in and within 0.25 miles of piping plover critical habitat.	Objective: To protect piping plover critical habitat and to maintain regional piping plover populations. Waiver: The stipulation may be waived if the Authorized Officer, in consultation with USFWS, determines that the entire leasehold is no longer piping plover critical habitat. Exception: An exception to this stipulation may be granted if the Authorized Officer, in consultation with the USFWS, determines that portions of the area can be occupied without adversely affecting piping plover critical habitat. Modification: The boundaries of the stipulated area may be modified if the Authorized Officer, in consultation with USFWS, determines that portions of the area can be occupied without adversely affecting piping plover critical habitat. The Authorized Officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.	N	Y	Y	Y
NSO-New Dakota Skipper Habitat	Surface occupancy and use is prohibited within 0.62 miles of Dakota skipper habitat.	Objective: To protect Dakota skipper habitat and to maintain regional populations. Waiver: The stipulation may be waived if the Authorized Officer, in consultation with USFWS, determines that the entire leasehold is no longer Dakota skipper habitat. Exception: An exception to this stipulation may be granted if the Authorized Officer, in consultation with the USFWS, determines that portions of the area can be occupied without adversely affecting Dakota skipper habitat. Modification: The boundaries of the stipulated area may be modified if the Authorized Officer, in consultation with USFWS, determines that portions of the area can be occupied without adversely affecting Dakota skipper habitat. The Authorized Officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.	N	Y	Y	N

Resource: Special Status Species	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
NSO-New Dakota Skipper Habitat	Surface occupancy and use is prohibited within 500 meters of occupied Dakota skipper habitat.	Objective: To protect Dakota skipper habitat and to maintain regional populations. Waiver: The stipulation may be waived if the Authorized Officer, in consultation with USFWS, determines that the entire leasehold is no longer occupied Dakota skipper habitat. Exception: An exception to this stipulation may be granted if the Authorized Officer, in consultation with the USFWS, determines that portions of the area can be occupied without adversely affecting Dakota skipper habitat. Modification: The boundaries of the stipulated area may be modified if the Authorized Officer, in consultation with USFWS, determines that portions of the area can be occupied without adversely affecting Dakota skipper habitat. The Authorized Officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.	N	N	N	Y
NSO-New Pallid Sturgeon Habitat	Surface occupancy and use is prohibited within 0.50 miles of the ordinary high-water mark of identified pallid sturgeon habitat.	Objective: To protect pallid sturgeon habitat. Waiver: The Authorized Officer may waive this stipulation if the entire leasehold is no longer within 0.50 miles of the water's edge of the Yellowstone or Missouri Rivers. Exception: The Authorized Officer, subject to consultation with the USFWS, may grant an exception if the action will not impair habitat of the pallid sturgeon. Modification: The Authorized Officer may modify the boundaries of the stipulated area if portions of the leasehold are not within 0.50 miles of the water's edge of the Yellowstone or Missouri Rivers.	N	Y	Y	Y

Resource: <i>Cultural Resources</i>	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
NSO 11-40	No surface occupancy or use is allowed in a visible area within a 3.5-mile radius of the Fort Union Trading Post National Historic Landmark.	Objective: To protect the Fort Union viewshed.	Y	N	N	Y
Fort Union Trading Post National Historic Landmark		Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. Exception, Modification, Waiver: This stipulation may be waived or reduced if circumstances change, or if the lessee can demonstrate that operations can be conducted without causing unacceptable impacts. Exceptions to this limitation in any particular year may be specifically approved in writing by the authorized officer. In all cases, the stipulation (including any modification) will be designed to present the least restrictive measure for avoiding unacceptable adverse impacts.				

Resource: <i>Cultural Resources</i>	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
NSO-New	Surface occupancy and use is prohibited within the visible areas in a 3-mile radius surrounding Lynch Knife River Flint Quarry District, Knife River Indian Villages National Historic Site, Writing Rock State Historic Site (32DV4), Doaks Butte (32BO222), Killdeer Mountain Battle Study Area (32DUx1120), Medicine Rock State Historic Site (32GT129), Theodore Roosevelt's Elkhorn Ranch and Greater Elkhorn Ranchlands District, Fort Union Trading Post National Historic Landmark, Custer Military Trail Archaeological District, Fort Clark Archaeological District, Chateau de Mores State Historic Site (32BI60), Fort Buford State Historic Site/Confluence (32WI25), Huff National Historic Landmark (32MO11), Double Ditch State Historic Site (32BL8), Menoken National Historic Landmark (32BL2), Turtle Effigy State Historic Site (32ME1270), Pulver Mounds (32ML112), and Cross Ranch Archaeological District.	Objective: To protect the Fort Union viewshed and additional sites.	N	Y	N	N
Fort Union Historic Site and Additional Sites		Waiver: The Authorized Officer may not waive this stipulation.				
		Exception: An exception to this stipulation may be granted by the Authorized Officer if the conditions described below are met. - The lessee or project proponent submits a plan demonstrating that adverse impacts or effects to the cultural property can be avoided by project redesign or relocation within the buffer area; or the project is located so that it and any associated surface disturbance will not alter the characteristics of the cultural or historic property by diminishing the integrity of the property's location, design, setting, materials, workmanship, feeling, or association; or so that there will be no destruction, damage, or alteration to all or part of the cultural resource's visual, atmospheric, or audible elements that could diminish the integrity of the property's significant historic features (e.g., project placed behind a hill or screened from view or by some other method within the buffer area). - The lessee or project proponent submits a plan demonstrating that the adverse impacts to cultural properties can be mitigated through data recovery and extensive recordation. Where impacts to cultural resources cannot be mitigated to the satisfaction of the BLM, surface occupancy in the area will be prohibited. - The lessee or operator submits a plan demonstrating that operations will be designed or located in such a manner as to have a minimal impact to the natural setting and characteristics of the immediate area and demonstrating that adverse impacts to TCPs or sites designated for traditional use can be mitigated in consultation with affected American Indian Tribes or American Indian groups. Modification: The Authorized Officer may not modify this stipulation.				
NSO-New	At the Doaks Butte (32BO222) site, no surface occupancy or use is allowed within 300 feet of the site boundary.	Objective: To protect the site for further archaeological research.	N	Y	Y	Y
Doaks Butte		Waiver: The Authorized Officer may not waive this stipulation.				
		Exception: The Authorized Officer may not grant an exception to this stipulation. Modification: The Authorized Officer may not modify this stipulation.				

Resource: <i>Cultural Resources</i>	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
NSO-New	Surface occupancy and use is prohibited within the boundaries of and for a distance of 300 feet from the boundaries of:	Objective: To protect and avoid disturbance and inadvertent impacts to significant cultural properties, districts, and their settings; NRHP-eligible properties and districts; TCPs or those designated for traditional use and the settings in which they occur; and those properties determined to be of particular importance to American Indian groups.	N	Y	N	N
Significant Cultural Resources, National Register of Historic Places (NRHP)-Eligible Properties and Districts, and Traditional Cultural Properties (TCPs)	• sites or areas designated or sites or areas that meet the criteria for allocation for designation for scientific use, conservation use, traditional use (socio-cultural use), public use, and experimental use; • the boundaries of sites or districts determined eligible for or included on the NRHP; and • the boundaries of traditional cultural properties, or sites or areas designated as such, or sites or areas that meet the criteria for allocation for designation for traditional use (socio-cultural use), or cultural properties determined to be of particular importance to Native American groups. Such properties include, but are not limited to, burial locations, pictograph and petroglyph sites, vision quest locations, plant-gathering locations, and areas considered sacred or used for religious purposes.	Waiver: The Authorized Officer may not waive this stipulation. Exception: An exception to this stipulation may be granted by the Authorized Officer if the conditions described below are met. • The lessee or project proponent submits a plan demonstrating that adverse impacts or effects to the cultural property can be avoided by project redesign or relocation within the buffer area; or the project is located so that it and any associated surface disturbance will not alter the characteristics of the cultural or historic property by diminishing the integrity of the property's location, design, setting, materials, workmanship, feeling, or association; or so that there will be no destruction, damage, or alteration to all or part of the cultural resource's visual, atmospheric, or audible elements that could diminish the integrity of the property's significant historic features (e.g., project placed behind a hill or screened from view or by some other method within the buffer area). • The lessee or project proponent submits a plan demonstrating that the adverse impacts to cultural properties can be mitigated through data recovery and extensive recordation. Where impacts to cultural resources cannot be mitigated to the satisfaction of the BLM, surface occupancy in the area will be prohibited. • The lessee or operator submits a plan demonstrating that operations will be designed or located in such a manner as to have a minimal impact to the natural setting and characteristics of the immediate area and demonstrating that adverse impacts to TCPs or sites designated for traditional use can be mitigated in consultation with affected American Indian Tribes or American Indian groups. Modification: The Authorized Officer may not modify this stipulation.				

Resource: <i>Cultural Resources</i>	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
NSO-New	Surface occupancy and use is prohibited within the boundaries of, and for a distance of 100 feet from, the boundaries of:	Objective: To protect and avoid disturbance and inadvertent impacts to significant cultural properties, districts, and their settings; NRHP-eligible properties and districts; TCPs or those designated for traditional use and the settings in which they occur; and those properties determined to be of particular importance to American Indian groups.	N	N	Y	Y
Significant Cultural Resources, NRHP-Eligible Properties and Districts, and TCPs	• sites or areas designated or sites or areas that meet the criteria for allocation for designation for scientific use, conservation use, traditional use (socio-cultural use), public use, and experimental use; • the boundaries of sites or districts determined eligible for or included on the NRHP; and • the boundaries of traditional cultural properties, or sites or areas designated as such, or sites or areas that meet the criteria for allocation for designation for traditional use (socio-cultural use), or cultural properties determined to be of particular importance to Native American groups. Such properties include, but are not limited to, burial locations, pictograph and petroglyph sites, vision quest locations, plant-gathering locations, and areas considered sacred or used for religious purposes.	Waiver: The Authorized Officer may not waive this stipulation. Exception: An exception to this stipulation may be granted by the Authorized Officer if the conditions described below are met. • The lessee or project proponent submits a plan demonstrating that adverse impacts or effects to the cultural property can be avoided by project redesign or relocation within the buffer area; or the project is located so that it and any associated surface disturbance will not alter the characteristics of the cultural or historic property by diminishing the integrity of the property's location, design, setting, materials, workmanship, feeling, or association; or so that there will be no destruction, damage, or alteration to all or part of the cultural resource's visual, atmospheric, or audible elements that could diminish the integrity of the property's significant historic features (e.g., project placed behind a hill or screened from view or by some other method within the buffer area). • The lessee or project proponent submits a plan demonstrating that the adverse impacts to cultural properties can be mitigated through data recovery and extensive recordation. Where impacts to cultural resources cannot be mitigated to the satisfaction of the BLM, surface occupancy in the area will be prohibited. • The lessee or operator submits a plan demonstrating that operations will be designed or located in such a manner as to have a minimal impact to the natural setting and characteristics of the immediate area and demonstrating that adverse impacts to TCPs or sites designated for traditional use can be mitigated in consultation with affected American Indian Tribes or American Indian groups. Modification: The Authorized Officer may not modify this stipulation.				

Resource: <i>Paleontological Resources</i>	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
NSO-11-85 Paleontological Resources	Surface occupancy and use is prohibited in significant paleontological localities.	Objective: To preserve and protect significant vertebrate fossils and paleontological localities. Waiver: None Exception: An exception may be granted by the Authorized Officer if the lessee or project proponent submits a plan demonstrating that the adverse impacts to paleontological localities can be mitigated through data recovery and extensive recordation. Where impacts to paleontological resources cannot be mitigated to the satisfaction of the BLM, surface occupancy on that area will be prohibited. Modification: None	N	Y	Y	Y

Resource: <i>Solid Leasable Minerals</i>	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
NSO-11-63 Coal	Prohibit surface occupancy and use in an authorized federal coal lease existing prior to the time the oil and gas lease was issued, in conformance with 43 CFR 3400.1.	Objective: To protect existing coal leases with approved mining plans. Waiver: This stipulation can be waived by the Authorized Officer if it is determined that all coal lease operations within the leasehold have been completed or the lease is terminated, canceled, or relinquished. Exception: An exception may be granted by the Authorized Officer if the operator submits a plan of operations that is compatible with existing or planned coal mining operations and approved by all affected parties. Modification: The area affected by this stipulation can be modified by the Authorized Officer if it is determined that portions of the area are not needed for existing or planned mining operations or where mining operations have been completed and the modification is approved by all affected parties.	N	Y	Y	Y

Resource: <i>Recreation</i>	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
NSO-New National Historic Trails	Surface occupancy and use is prohibited within the National Trail Management Corridor of designated National Historic Trails. Designated Historic Trails include the Lewis and Clark Trail. The River Corridor is the designated historic trail for the Lewis and Clark Trail. To protect the Lewis and Clark Trail and associated settings, this stipulation will be applied to the water portion of the Missouri River and its reservoirs and the Yellowstone River, and the Trail Management Corridor which extends out 0.50 miles from the high water mark of the rivers and reservoirs.	Objective: To protect the nature and purpose; trail resources, qualities, values, and associated settings; and primary use or uses of the historic trail, in accordance with National Trail System Act. Waiver: None. Exception: An exception to this stipulation may be granted by the Authorized Officer if the lessee or project proponent completes a comprehensive trail inventory, as outlined in Manual 6280, and presents a proposal which demonstrates resource values are not affected or that adverse impacts can be adequately mitigated to prevent impact to: • The nature and purposes of the National Trail. • National Trail resources, qualities, values, and associated settings. • National Trail primary use or uses. • The National Trail from the cumulative or trail-wide perspective. Modification: None.	N	Y	Y	Y
NSO-New North Country National Scenic Trail	Surface occupancy and use is prohibited within management corridor of the existing North Country National Scenic Trail which extends 0.50 miles on either side of the trail centerline.	Objective: To preserve and protect scenic character of the landscape along the trail. Waiver: A waiver may be granted if the trail is moved from current location. Exception: An exception may be granted if this portion of the trail is relocated or if operator submits a plan that demonstrates the impacts to the area and the user experiences can be mitigated. Modification: A modification may be granted should the trail be relocated or impacts of the action will not be noticed by users of the trail.	N	Y	Y	Y

Resource: <i>Recreation</i>	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
NSO-New Backcountry Conservation Areas (BCAs)	Surface occupancy and use is prohibited in BCAs.	Objective: To preserve the generally intact, undeveloped public lands that contain priority habitats for recreationally important wildlife species and that provide high-quality wildlife-dependent recreation opportunities afforded by those species. Waiver: A waiver may be granted should the boundary of the BCA change through land exchanges resulting in the entire lease no longer being part of the BCA. Exception: An exception to this stipulation may be granted by the Authorized Officer if the operator submits a plan that demonstrates that the impacts from the proposed action are minimal or can be adequately mitigated. Modification: A modification may be granted should the boundary of the BCA change through land exchanges resulting in portions of the lease no longer being part of the BCA.	N	Y	Y	Y

Resource: <i>Special Designations</i>	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
NSO-New Areas of Critical Environmental Concern (ACECs)	Surface occupancy and use is prohibited within Mud Buttes ACEC.	Objective: To preserve and protect significant vertebrate fossils and paleontological resources. Waiver: None. Exception: None. Modification: None.	N	Y	Y	Y

Resource: <i>Special Designations</i>	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
NSO-New National Wild and Scenic River System (NWSRS) Suitable Segments	Surface occupancy and use is prohibited within 0.25 miles of the Little Missouri River segment suitable for inclusion in NWSRS.	Objective: To protect the suitability of Wild and Scenic River (WSR) segments. Waiver: This stipulation may be waived if the Authorized Officer determines that the entire leasehold can be occupied without adversely affecting WSR suitability. Exception: An exception to this stipulation may be granted by the Authorized Officer if the operator submits a plan that demonstrates that the impacts from the proposed action are minimal or can be adequately mitigated. Modification: The boundaries of the stipulated area may be modified if the Authorized Officer determines that portions of the area can be occupied without affecting suitability of WSR segments.	N	Y	N	N

Table B-2
Controlled Surface Use Stipulations for Fluid Minerals Leasing

Resource: <i>Air Resources</i>	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
CSU – New Federal Class I Areas	Surface use and occupancy within 2 miles of the boundary of the Lostwood Wilderness or Theodore Roosevelt National Park is subject to the following conditions: prior to surface occupancy and use, the operator must submit an air analysis, including near field dispersion modeling, that demonstrates that proposed exploration or development operations will not result in adverse impacts to air quality and air quality related values and will meet air quality goals, objectives, standards, and thresholds for the Class I areas. The BLM may require modifications to or disapprove a proposed activity that would result in an adverse impact to air quality, exceed an AAQS, or exceed a level of concern for an air quality related value.	Objective: To meet the air quality objectives within the federally designated Class 1 areas. Exception: An exception to this stipulation may be granted by the Authorized Officer if the operator submits a plan demonstrating, to the satisfaction of the applicable federal land management agency, that operations will be conducted without causing unacceptable impacts such as degraded visibility, atmospheric deposition impacts, or increased atmospheric concentrations of air pollutants at or above an AAQS within the Class I area and any adverse impacts will be adequately mitigated. Modification: The BLM may consider a modification to this stipulation if (1) there are no practical alternatives, (2) impacts can be fully mitigated, and (3) the action is designed to enhance the protection of air resource(s). Waiver: This stipulation may be waived, if the Authorized Officer determines that the entire leasehold can be occupied without adversely affecting air resources.	N	Y	Y	Y
CSU NEW Air Resource Protection	Surface use and occupancy is subject to approval of a waste minimization plan that includes design features to minimize air pollutants released from venting, flaring, and leaks during drilling, completion, and production operations.	Objective: Protection of air resources and mitigation of climate change impacts. Exception, Modification, Waiver: This stipulation may be waived or reduced if the lessee or operator demonstrates that adequate pipeline and other infrastructure will be in place prior to production, that captures and transports produced gas and liquids and minimizes venting and flaring or if the operator can demonstrate full compliance with all applicable local, state, federal and tribal waste minimization requirements, air quality standards and emissions regulations.	N	Y	Y	N

Resource: Soil Resources	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
CSU-12-24			N	Y	Y	Y
Soils, Sensitive Soils	Surface occupancy and use is subject to the following operating constraints: prior to surface disturbance on sensitive soils, a reclamation plan must be approved by the administrative officer. Sensitive soils are determined using a combination of slope and soil erodibility. The plan must demonstrate the following: • no other practicable alternatives exist for relocating the activity, • the activity will be located to reduce impacts to soil and water resources, • site productivity will be maintained or restored, • surface runoff and sedimentation will be adequately controlled, • on- and off-site areas will be protected from accelerated erosion, • that no areas susceptible to mass wasting would be disturbed, and • surface-disturbing activities will be prohibited during extended wet periods.	Objective: To maintain the chemical, physical, and biotic properties of soils which includes maintaining soil productivity, soil stability, and soil biotic properties. This will prevent excessive erosion, potential mass wasting, and improve the likelihood of successful reclamation. Exception: The Authorized Officer may grant an exception to this stipulation if the operator can demonstrate that the proposed action will not contribute to degradation of the soil resource (e.g., excessive soil erosion, mass wasting, and/or lost productivity) or downslope resource conditions (e.g., reduced water quality due to sedimentation). Modification: The Authorized Officer may modify the area affected by this stipulation if it is determined that portions of the leasehold do not contain sensitive soils. Waiver: The Authorized Officer may waive this stipulation if it is determined that the entire leasehold does not contain sensitive soils.				

Resource: <i>Water Resources</i>	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
CSU-12-5 Riparian Areas of Wetlands, Streams, and Rivers	Surface occupancy or use will be subject to the following special operating constraint: No disturbance of riparian areas of wetlands, intermittent, ephemeral, or perennial streams and rivers would be allowed except for essential road and utility crossings.	Objective: Protection of riparian habitat. Exception, Modification, Waiver: This stipulation may be waived or reduced if circumstances change, or if the lessee can demonstrate that operations can be conducted without causing unacceptable impacts. Exceptions to this limitation in any particular year may be specifically approved in writing by the authorized officer. In all cases, the stipulation (including any modification) will be designed to present the least restrictive measure for avoiding unacceptable adverse impacts.	Y	N	N	N
CSU NEW Riparian Areas, Wetlands, Streams, and Waterbodies	Surface occupancy and use is subject to the following operating constraints: Prior to surface occupancy and use within 300 feet of riparian areas, wetlands, ephemeral, intermittent, and perennial drainages, and waterbodies, a plan must be approved by the BLM Authorized Officer with design features that demonstrate how actions would maintain or improve the functionality of the resource. The plan would address: 1) mitigation to reduce impacts to a level where the project is neutral or positive to the resource; 2) interim and final reclamation; and 3) monitoring. Following established protocols, the operator must conduct monitoring capable of detecting early signs of changing conditions.	Objective: Protection of surface water, wetland, and riparian area resources. Exception: The Authorized Officer may grant an exception to this stipulation if the operator can demonstrate that the proposed action would not impact surface water, wetland or riparian function, or associated water quality. Modification: The area affected by this stipulation can be modified by the Authorized Officer if it is determined that portions of the lease area do not contain riparian areas, wetlands, streams, or waterbodies. Waiver: This stipulation can be waived by the Authorized Officer if it is determined that the entire lease area does not contain riparian areas, wetlands, streams, or waterbodies.	N	Y	Y	Y

Resource: Vegetation Communities	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
CSU-New Woody Draws	Surface occupancy and use within woody draws is subject to a plan approved by the BLM to maintain functionality of the habitat.	Objective: To protect the biological features and diversity of woody draws. Exception: The Authorized Officer may grant an exception to this stipulation if the operator can demonstrate that the proposed action would not adversely impact the biological features of the wooded draw. Modification: The area affected by this stipulation can be modified by the Authorized Officer if it is determined that portions of the lease area do not contain woody draws. Waiver: This stipulation can be waived by the Authorized Officer if it is determined that the entire lease area does not contain woody draws.	N	N	Y	Y

Resource: Vegetation Communities	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
CSU-12-53 Invasive Species and Noxious Weeds	Surface occupancy and use is subject to the following operating constraints: Noxious weed(s) has been identified within the boundaries of the lease parcel. If the operator(s) chooses to disrupt/build roads/build facilities on the parcel, then the operator(s) will be responsible for providing an Integrated Weed Management plan, and the operator also will be responsible for the cost of treatment and monitoring throughout the duration of the project.	Objective: To prevent the spread and introduction of noxious weeds and ensure desired results of past treatment(s). Exception: The exception to this stipulation may be granted if BLM determines and if current weed site inventory indicates that the portion of the lease identified for surface-disturbing activities does not contain noxious weed(s). If inventory shows no noxious weeds present, the operator must continue to monitor for noxious weeds throughout the duration of the project. Modification: The boundaries of the stipulated area to be inventoried for noxious weeds may be modified if BLM determines that a large portion of the lease identified for surface disturbing activities does not contain noxious weed species. Such as during pre- drill/onsite inspection for noxious weed species determines that the area proposed for access and/or the construction of a drill pad has not noxious weeds present. If inventory shows no noxious weeds present, the operator must continue to monitor for noxious weeds throughout the duration of the project. Waiver: The stipulation may be waived by the Authorized Officer if the noxious weed site inventory determines that the lease is found not to have noxious weed species present. If inventory shows no noxious weeds present, the operator must continue to monitor for noxious weeds throughout the duration of the project.	N	Y	Y	Y

Resource: Vegetation Communities	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
CSU-12-11 Special Status Plant Species	Surface occupancy and use is subject the following special operating constraint: A field inspection will be conducted for special status plant species by the lessee prior to any surface disturbance. A list of special status plant species and any known populations or suitable habitat will be provided to the lessee after the issuance of the lease. Plant species on the list are subject to change over time as new information becomes available. Plant inventories must be conducted at the time of year when the target species are most easily identifiable (for example, when flowering or fruiting). An acceptable report must be provided to the BLM documenting the presence or absence of special status plants in the area proposed for surface disturbing activities. The findings of this report may result in restrictions to the operator's plans or may preclude use and occupancy.	Objective: To protect and conserve rare plants, associated plant communities and the habitat that supports them. Exception: An exception may be granted if the BLM determines that the portion of the lease identified for surface-disturbing activities does not support special status plant species or provide potential habitat for these species. Modification: The boundaries of the area to be inventoried for special status plants may be modified if the BLM determines that a large portion of the lease identified for surface-disturbing activities does not support special status plant species or provide potential habitat for these species. Waiver: The field inspection and plant inventory may be waived by the Authorized Officer if it is determined that the subject lease occurs in an area with no known populations of special status plant species and that the area doesn't provide habitat for those species.	N	Y	Y	Y

Resource: Vegetation Communities	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
CSU-12-12 Threatened, Endangered, or Other Special Status Species	Surface occupancy or use is subject to the following special operating constraints: The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. The BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. The BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. The BLM will not approve any ground-disturbing activity that may affect any such species or requirements of the Endangered Species Act as amended, 16 USC et seq., including completion of any required procedure for conference or consultation.	Objective: To protect threatened, endangered, or other special status species. Waiver: None. Exception: None. Modification: None.	N	Y	Y	Y

Resource: Special Status Species	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
CSU 12-46 Greater Sage-Grouse General Habitat Management Area (GHMA)	All identified Greater Sage-Grouse habitat within GHMA is subject to the following operating constraints: a) Maintain Greater Sage-Grouse habitat to promote movement and genetic diversity of Greater Sage-Grouse populations b) To minimize the impacts of surface disturbing/disruptive activities and ensure maintenance of habitat for sustainable populations of Greater Sage-Grouse within GHMA, surface disturbing and disruptive activities are subject to the following requirements. c) Surface disturbing/disruptive activities will prevent or minimize disturbance to Greater Sage-Grouse or their habitat. Except as identified above or during emergency situations, activities will not compromise the habitat. d) Continuous noise (related to long-term operations and/or activities) will be no greater than 49 decibels at 0.25 miles from the perimeter of the lek. e) Temporary noise (related to installation, maintenance, one-time use, emergency operations, etc.) exceeding 49 decibels at 0.25 miles from the perimeter of a lek or surface disturbing/disruptive activities may be allowed, but only from 10:00 a.m. to 4:00 p.m. between March 15 and May 15.	Objective: Within the Greater Sage Grouse GHMA, maintain integrity of the habitat, to support sustainable Greater Sage-Grouse population. Exception: The Authorized Officer may grant an exception to specific requirements of this stipulation if the action, as proposed or conditioned will not compromise the functionality of the habitat for Greater Sage-Grouse and meet the goals for Great Sage-Grouse habitat. Modification: The Authorized Officer may modify the area subject to the stipulation if an environmental analysis finds a portion of the GHMA is nonessential or no longer Greater Sage-Grouse habitat. Waiver: The Authorized Officer may waive this stipulation if no portion of the leasehold is within 2 miles of the perimeter of an active lek.	Y	Y	Y	Y

Resource: Special Status Species	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
CSU 12-46	f) Manage water developments to reduce the spread of West Nile virus within sage-grouse habitat areas.	(see above)				
Greater Sage-Grouse General Habitat Management Area (GHMA)	Site and/or minimize linear rights-of-way to reduce disturbance to sagebrush habitats.					
(continued)	g) Maximize placement of new utility developments (power lines, pipelines, etc.) and transportation routes in existing utility or transportation corridors.					
	h) Power lines will be buried, eliminated, designed or sited in a manner which does not impact sage- grouse.					
	i) Placement of other high-profile structures, exceeding 10 feet in height, will be eliminated, designed or sited in a manner which does not impact sage-grouse. Remote monitoring of production facilities must be utilized and all permit applications must contain a plan to reduce the frequency of vehicle use.					
	j) Maximize the area of interim reclamation on long-term access roads and well pads including reshaping, topsoiling and revegetating cut and fill slopes.					
	k) Restore disturbed areas at final reclamation to pre-disturbance conditions or desired plant community.					

Resource: Special Status Species	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
CSU 12-46 Greater Sage-Grouse General Habitat Management Area (GHMA) (continued)	l) Permanent (longer than 2 months) structures which create movement must be designed or sited to minimize impacts to sage-grouse. m) Consider use of off-site mitigation, (e.g., creation of sagebrush habitat, purchase conservation easements, or buying down grazing) with proponent dollars to offset habitat losses. n) Consider creation of a "Mitigation Trust Account" when impacts cannot be avoided, minimized, or effectively mitigated through other means. If approved by the BLM, the proponent may contribute funding to maintain habitat function based on the estimated cost of habitat treatments or other mitigation needed to maintain the functions of impacted habitats. Off-site mitigation should only be considered when no feasible options are available to adequately mitigate within and immediately adjacent to the impacted site, or when the off-site location will provide more effective mitigation of the impact than can be achieved on-site.	(see above)				

Resource: Special Status Species	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
CSU 12-29 Black-Tailed Prairie Dogs	Surface occupancy and use within occupied black-tailed prairie dog colonies would be allowed with design features that maintain functionality of the habitat.	Objective: To protect black-tailed prairie dog habitat, a BLM priority species for management, as well as obligate species. Waiver: The Authorized Officer may waive this stipulation if the entire leasehold is no longer within prairie dog colonies active within the past 10 years. Exception: The Authorized Officer may grant an exception if the action will not impair the function or suitability of the prairie dog habitat Modification: The Authorized Officer may modify the boundaries of the stipulated area if portions of the leasehold are no longer prairie dog habitat active within the past 10 years.	N	N	Y	Y
CSU-12-36 Sharp-Tailed Grouse and Greater Prairie Chicken Leks	Oil and gas leasing within 2 miles of a lek will be subject to a plan approved by BLM that provides adequate mitigation measures and conservation actions to protect breeding, nesting, and brood-rearing habitats and limit disturbance in a manner that will support the long-term populations associated with the lek and surrounding habitat.	Objective: Protection of sharp-tailed grouse and greater prairie-chicken nesting and brood rearing habitat. Waiver: This stipulation can be waived if the Authorized Officer determines that the entire leasehold no longer is within 2 miles of sharp-tailed grouse and greater prairie-chicken leks. Exception: An exception to this stipulation can be granted by the Authorized Officer if the operator submits a plan that demonstrates that impacts from the proposed action are acceptable or can be adequately mitigated. Modification: The boundaries of the stipulated area can be modified if the Authorized Officer determines that portions of the area no longer are within 2 miles of sharp-tailed grouse and greater prairie-chicken leks.	N	Y	Y	Y

Resource: Special Status Species	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
CSU-New Interior Least Tern Active Nests	Surface occupancy and use within 0.50 miles of interior least tern active nests is subject to a plan approved by the BLM to maintain functionality of the habitat.	Objective: Protection of interior least tern active nests. Waiver: This stipulation can be waived if the Authorized Officer determines that the entire leasehold no longer is within 0.5 mile of interior least tern active nests. Exception: An exception to this stipulation can be granted by the Authorized Officer if the operator submits a plan that demonstrates that impacts from the proposed action are acceptable or can be adequately mitigated. Modification: The boundaries of the stipulated area can be modified if the Authorized Officer determines that portions of the area no longer are within 0.50 mile of interior least tern active nests.	N	Y	N	Y
CSU-New Piping Plover Critical Habitat	Surface occupancy and use within 0.50 miles of piping plover critical habitat is subject to a plan approved by the BLM to maintain functionality of the habitat.	Objective: Protection of piping plover critical habitat. Waiver: This stipulation can be waived if the Authorized Officer determines that the entire leasehold no longer is within 0.5 mile of piping plover critical habitat. Exception: An exception to this stipulation can be granted by the Authorized Officer if the operator submits a plan that demonstrates that impacts from the proposed action are acceptable or can be adequately mitigated. Modification: The boundaries of the stipulated area can be modified if the Authorized Officer determines that portions of the area no longer are within 0.50 mile of piping plover critical habitat.	N	Y	N	Y

Resource: Special Status Species	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
CSU-New Dakota Skipper Habitat	Surface occupancy and use within 0.62 miles (1 kilometer) of occupied Dakota skipper habitat is subject to a plan approved by the BLM to minimize disturbance.	Objective: To protect Dakota skipper habitat and to maintain regional populations. Waiver: The stipulation may be waived if the Authorized Officer, in consultation with USFWS, determines that the entire leasehold is no longer within 0.62 miles of Dakota skipper habitat. Exception: An exception to this stipulation may be granted if the Authorized Officer, in consultation with the USFWS, determines that portions of the area can be occupied without adversely affecting Dakota skipper habitat. Modification: The boundaries of the stipulated area may be modified if the Authorized Officer, in consultation with USFWS, determines that portions of the area can be occupied without adversely affecting Dakota skipper habitat. The Authorized Officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.	N	N	N	Y

Resource: <i>Cultural Resources</i>	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
CSU-New	Apply design criteria to mitigate visual impacts within 2 miles surrounding Lynch Knife River Flint Quarry District, Knife River Indian Villages National Historic Site, Writing Rock State Historic Site (32DV4), Doaks Butte (32BO222), Killdeer Mountain Battle Study Area (32DUx1120), Medicine Rock State Historic Site (32GT129), Theodore Roosevelt's Elkhorn Ranch and Greater Elkhorn Ranchlands District, Fort Union Trading Post National Historic Landmark, Custer Military Trail Archaeological District, Fort Clark Archaeological District, Chateau de Mores State Historic Site (32BI60), Fort Buford State Historic Site/Confluence (32WI25), Huff National Historic Landmark (32MO11), Double Ditch State Historic Site (32BL8), Menoken National Historic Landmark (32BL2), Turtle Effigy State Historic Site (32ME1270), Pulver Mounds (32ML112), and Cross Ranch Archaeological District.	Objective: To protect the viewshed of historic sites.	N	N	Y	N
Historic Sites		Exception, Modification, Waiver: This stipulation may be waived or reduced if circumstances change, or if the lessee can demonstrate that operations can be conducted without causing unacceptable impacts. Exceptions to this limitation in any particular year may be specifically approved in writing by the authorized officer. In all cases, the stipulation (including any modification) will be designed to present the least restrictive measure for avoiding unacceptable adverse impacts.				

Resource: <i>Cultural Resources</i>	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
CSU-New	Apply design criteria to mitigate visual impacts within 2 miles surrounding Lynch Knife River Flint Quarry District, Knife River Indian Villages National Historic Site, Writing Rock State Historic Site (32DV4), Doaks Butte (32BO222), Killdeer Mountain Battle Study Area (32DUx1120), Medicine Rock State Historic Site (32GT129), Theodore Roosevelt's Elkhorn Ranch and Greater Elkhorn Ranchlands District, Custer Military Trail Archaeological District, Fort Clark Archaeological District, Chateau de Mores State Historic Site (32BI60), Fort Buford State Historic Site/Confluence (32WI25), Huff National Historic Landmark (32MO11), Double Ditch State Historic Site (32BL8), Menoken National Historic Landmark (32BL2), Turtle Effigy State Historic Site (32ME1270), Pulver Mounds (32ML112), and Cross Ranch Archaeological District.	Objective: To protect the viewshed of historic sites.	N	N	N	Y
Historic Sites		Exception, Modification, Waiver: This stipulation may be waived or reduced if circumstances change, or if the lessee can demonstrate that operations can be conducted without causing unacceptable impacts. Exceptions to this limitation in any particular year may be specifically approved in writing by the authorized officer. In all cases, the stipulation (including any modification) will be designed to present the least restrictive measure for avoiding unacceptable adverse impacts.				

Resource: <i>Visual Resources</i>	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
CSU-New National Park Service Units	All surface disturbing activities and construction of semi-permanent and permanent facilities within 3 miles of the boundary of Theodore Roosevelt National Park, Knife River Indian Villages National Historic Site, and Fort Union Trading Post National Historic Landmark, or the management corridor for Lewis & Clark National Historic Trail, or the management corridor of the North Country National Scenic Trail. Surface disturbing activities will require consultation with the NPS and may require special design including location, painting, and camouflage to blend with the natural surroundings and meet the visual quality objectives for the NPS.	Objective: To protect features critical to the visitor experience such as viewsheds, soundscapes, night skies, and air quality of National Park Service units. Waiver: A modification may be granted should the North Country National Scenic Trail being the reason for the CSU, and it be relocated resulting in in the entire lease no longer being within three miles of the trail. Exception: An exception to this stipulation may be granted by the Authorized Officer if the operator submits a plan that demonstrates that the impacts from the proposed action would not be visible from the National Park Service boundary, corridor, or trail. Modification: A modification may be granted should the North Country National Scenic Trail being the reason for the CSU, and it be relocated resulting in portions of the lease no longer being within three miles of the trail.	N	Y	N	Y
CSU-New National Park Service Units	All surface disturbing activities and construction of semi-permanent and permanent facilities within 2 miles of the boundary of Theodore Roosevelt National Park, Knife River Indian Villages National Historic Site, and Fort Union Trading Post National Historic Landmark, or the management corridor for Lewis & Clark National Historic Trail, or the management corridor of the North Country National Scenic Trail. Surface disturbing activities will require consultation with the NPS and may require special design including location, painting, and camouflage to blend with the natural surroundings and meet the visual quality objectives for the NPS.	Objective: To protect features critical to the visitor experience such as viewsheds, soundscapes, night skies, and air quality of National Park Service units. Waiver: A modification may be granted should the North Country National Scenic Trail being the reason for the CSU, and it be relocated resulting in in the entire lease no longer being within two miles of the trail. Exception: An exception to this stipulation may be granted by the Authorized Officer if the operator submits a plan that demonstrates that the impacts from the proposed action would not be visible from the National Park Service boundary, corridor, or trail. Modification: A modification may be granted should the North Country National Scenic Trail being the reason for the CSU, and it be relocated resulting in portions of the lease no longer being within two miles of the trail.	N	N	Y	N

Table B-3
Timing Limitation Stipulations Applicable to Fluid Minerals Leasing

Resource: <i>Terrestrial and Aquatic Wildlife Resources</i>	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
TL-NEW Big Game Birthing and Foraging Areas	No surface use is allowed from April 1 through June 30 in big game birthing and foraging areas to protect mule deer, elk, and antelope from disturbance. This stipulation does not apply to operation and maintenance of production facilities unless the findings of analysis demonstrate the continued need for such mitigation and that less stringent project-specific mitigation measures would be insufficient.	Objective: To protect mule deer, elk, and antelope birthing areas from disturbance and facilitate long-term maintenance of wildlife populations. Waiver: This stipulation may be waived if the authorized officer, in consultation with state game agency, determines that the entire leasehold no longer contains big game birthing or foraging areas. Exception: An exception to this stipulation may be granted by the authorized officer if the operator submits a plan that demonstrates that impacts from the proposed action are acceptable or can be adequately mitigated. Modification: The boundaries of the stipulated area may be modified if the Authorized Officer determines that portions of the area no longer contain birthing habitat for big game species. The dates for the timing restriction may be modified if new wildlife use information indicates that the dates are not valid for the leasehold.	N	Y	Y	N

Resource: <i>Terrestrial and Aquatic Wildlife Resources</i>	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
TL-NEW Big Game Birthing Areas	No surface use is allowed from April 1 through June 30 in big game birthing areas to protect mule deer, elk, and antelope from disturbance. This stipulation does not apply to operation and maintenance of production facilities unless the findings of analysis demonstrate the continued need for such mitigation and that less stringent project-specific mitigation measures would be insufficient.	Objective: To protect mule deer, elk, and antelope birthing areas from disturbance and facilitate long-term maintenance of wildlife populations. Waiver: This stipulation may be waived if the authorized officer, in consultation with state game agency, determines that the entire leasehold no longer contains big game birthing areas. Exception: An exception to this stipulation may be granted by the authorized officer if the operator submits a plan that demonstrates that impacts from the proposed action are acceptable or can be adequately mitigated. Modification: The boundaries of the stipulated area may be modified if the Authorized Officer determines that portions of the area no longer contain birthing habitat for big game species. The dates for the timing restriction may be modified if new wildlife use information indicates that the dates are not valid for the leasehold.	N	N	N	Y

Resource: Terrestrial and Aquatic Wildlife Resources	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
TL-13-7 Big Game Winter/Spring Range	No surface use is allowed from December 1 through May 15 within big game winter/spring range for wildlife. To protect Mule Deer, Elk, Antelope and Moose winter range from disturbance during the winter/spring season. This stipulation does not apply to operation and maintenance of production facilities.	Objective: To protect mule deer, elk, antelope, and moose winter range from disturbance during the winter/spring season, and to facilitate long-term maintenance of wildlife populations. Waiver: This stipulation may be waived if the Authorized Officer, in consultation with FWP, determines that the entire leasehold no longer contains winter/spring range for wildlife. Exception: An exception to this stipulation may be granted by the Authorized Officer in consultation with FWP, if the operator submits a plan that demonstrates that impacts from the proposed action are minimal or can be adequately mitigated. Modification: The boundaries of the stipulated area may be modified if the authorized officer, in consultation with FWP, determines that portions of the area no longer contain wildlife winter/spring range. The dates for the timing restriction may be modified if new wildlife use information indicates that the December 1 through May 15 dates are not valid for the leasehold.	N	Y	Y	N
TL 13-16 Prairie Falcon Nests	No surface use is allowed within 0.50 miles of occupied prairie falcon nests during the following time period: March 15 through July 15. This stipulation does not apply to the operation and maintenance of production facilities.	Objective: To protect prairie falcon nests. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. Exception, Modification, Waiver: This stipulation may be waived or reduced if circumstances change, or if the lessee can demonstrate that operations can be conducted without causing unacceptable impacts. Exceptions to this limitation in any particular year may be specifically approved in writing by the authorized officer. In all cases, the stipulation (including any modification) will be designed to present the least restrictive measure for avoiding unacceptable adverse impacts	Y	N	N	N

Resource: Terrestrial and Aquatic Wildlife Resources	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
TL-13-33 Active Raptor Nests	Surface use is prohibited within 0.50 miles of active raptor nest sites from March 1 through July 31.	Objective: To protect nesting activities associated with raptors identified as BLM priority species for management. Waiver: The Authorized Officer may waive this stipulation if the entire leasehold is no longer within 0.50 miles of an active raptor nest. Exception: The Authorized Officer may grant an exception if the action will not result in nest territory abandonment or decrease productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior. Modification: The Authorized Officer may modify the boundaries of the stipulated area if portions of the leasehold are no longer within 0.50 miles of an active raptor nest.	N	N	Y	Y
TL 13-15 Waterfowl Nesting Habitat	No seismic exploration is allowed within 500 feet of waterfowl nesting habitat from March 1 through July 1 to protect nesting waterfowl. This stipulation does not apply to the operation and maintenance of production facilities.	Objective: To protect nesting waterfowl. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. Exception, Modification, Waiver (<i>only applicable to Alternative C</i>): This stipulation may be waived or reduced if circumstances change, or if the lessee can demonstrate that operations can be conducted without causing unacceptable impacts. Exceptions to this limitation in any particular year may be specifically approved in writing by the authorized officer. In all cases, the stipulation (including any modification) will be designed to present the least restrictive measure for avoiding unacceptable adverse impacts	Y	Y	Y	Y
TL 13-18 Bighorn Sheep Lambing Range	No surface use is allowed on bighorn sheep lambing range during the following time period: April 1 to June 15. This stipulation does not apply to the operation and maintenance of production facilities.	Objective: To protect bighorn sheep lambing activities. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes.	Y	N	N	Y

Resource: <i>Terrestrial and Aquatic Wildlife Resources</i>	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
TL NEW Bighorn Sheep Crucial Habitat	No construction, seismic exploration, or other development is allowed in known or proposed bighorn sheep crucial habitat during the following time period: April 1 to July 15. This stipulation does not apply to the operation and maintenance of production facilities.	Objective: To protect bighorn sheep crucial habitat. Exception, Modification, Waiver: This stipulation may be waived or modified if circumstances change, or if the lessee can demonstrate that operations can be conducted without causing unacceptable impacts. Exceptions to this limitation in any particular year may be specifically approved in writing by the authorized officer. In all cases, the stipulation (including any modification) will be designed to present the least restrictive measure for avoiding unacceptable adverse impacts.	N	N	Y	N
TL 13-19 Bighorn Sheep Winter Range	No surface use is allowed on bighorn sheep winter range during the following time period: December 1 to April 1. This stipulation does not apply to the operation and maintenance of production facilities.	Objective: To protect bighorn sheep winter range activities. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. Exception, Modification, Waiver: This stipulation may be waived or reduced if circumstances change, or if the lessee can demonstrate that operations can be conducted without causing unacceptable impacts. Exceptions to this limitation in any particular year may be specifically approved in writing by the authorized officer. In all cases, the stipulation (including any modification) will be designed to present the least restrictive measure for avoiding unacceptable adverse impacts	Y	N	N	Y

Resource: <i>Terrestrial and Aquatic Wildlife Resources</i>	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
TL 13-22 Elk Calving	No surface use is allowed for elk calving during the following time period: June 1 to July 1. This stipulation does not apply to the operation and maintenance of production facilities.	Objective: To protect elk calving. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. Exception, Modification, Waiver: This stipulation may be waived or reduced if circumstances change, or if the lessee can demonstrate that operations can be conducted without causing unacceptable impacts. Exceptions to this limitation in any particular year may be specifically approved in writing by the authorized officer. In all cases, the stipulation (including any modification) will be designed to present the least restrictive measure for avoiding unacceptable adverse impacts	Y	N	N	N
TL 13-23 Elk Winter Range	No surface use is allowed on Elk winter range during the following time period: November 30 to May 1. This stipulation does not apply to the operation and maintenance of production facilities.	Objective: To protect wintering elk. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. Exception, Modification, Waiver: This stipulation may be waived or reduced if circumstances change, or if the lessee can demonstrate that operations can be conducted without causing unacceptable impacts. Exceptions to this limitation in any particular year may be specifically approved in writing by the authorized officer. In all cases, the stipulation (including any modification) will be designed to present the least restrictive measure for avoiding unacceptable adverse impacts	Y	N	N	N

Resource: <i>Special Status Species</i>	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
TL 13-21 Golden Eagle Nests	No surface use is allowed within 0.50 miles of occupied golden eagle nests during the following time period: February 15 to July 15. This stipulation does not apply to the operation and maintenance of production facilities.	Objective: To protect golden eagle nesting territories. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. Exception, Modification, Waiver: This stipulation may be waived or reduced if circumstances change, or if the lessee can demonstrate that operations can be conducted without causing unacceptable impacts. Exceptions to this limitation in any particular year may be specifically approved in writing by the authorized officer. In all cases, the stipulation (including any modification) will be designed to present the least restrictive measure for avoiding unacceptable adverse impacts	Y	N	N	N
TL 13- 5 Ferruginous Hawk Nests	No surface use is allowed within 0.50 miles of occupied ferruginous hawk nests known to be occupied at least once within the 7 previous years during the following time period: March 15 to July 15. No seismic exploration, construction, or other development would be allowed within 1.2 miles of occupied nests between March 15 and July 15.	Objective: To protect ferruginous hawk nesting. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. Exception, Modification, Waiver This stipulation may be waived or reduced if circumstances change, or if the lessee can demonstrate that operations can be conducted without causing unacceptable impacts. Exceptions to this limitation in any particular year may be specifically approved in writing by the authorized officer. In all cases, the stipulation (including any modification) will be designed to present the least restrictive measure for avoiding unacceptable adverse impacts	Y	Y	Y	Y

Resource: <i>Special Status Species</i>	Stipulation	Objective, Waiver, Exception, Modification	Alternative			
			A	B	C	D
TL- NEW Sprague's Pipit Habitat	Surface use is prohibited from April 15 through July 15 in Sprague's pipit habitat. This stipulation does not apply to operation and maintenance of production facilities.	Objective: The protection of nesting and breeding habitat and the reproductive potential for Sprague's pipit. Waiver: The stipulation may be waived if the Authorized Officer determines that the entire leasehold no longer has Sprague's pipit habitat or nest sites are inactive. Exception: An exception to this stipulation may be granted by the Authorized Officer if the operator submits a plan which demonstrates that the proposed action will not affect Sprague's pipit or their habitat. Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area no longer are within 1 mile of Sprague's pipit. Distance may be reduced if natural barriers (e.g., vegetation or terrain) reduce line-of-sight distance or nest visibility. The timing restriction dates may be modified if new information indicates that the dates are not valid for the leasehold.	N	Y	Y	Y

Table B-4
Lease Notices Applicable to Fluid Minerals Leasing

	Lease Notice	Alternative			
		A	B	C	D
LN-14-1	<u>Land Use Authorization</u> Land Use Authorizations incorporate specific surface land uses allowed on BLM-administered lands by authorized officers and those surface uses acquired by the BLM on lands administered by other entities. These BLM authorizations include rights-of-way, leases, permits, conservation easements, and Recreation and Public Purpose leases and patents. The rights acquired, reserved, or withdrawn by the BLM for specified purposes include non-oil and gas leases, conservation easements, archeological easements, road easements, fence easements and administrative site withdrawals. The existence of such land use authorizations shall not preclude the leasing of the oil and gas. The locations of land use authorizations are noted on the oil and gas plats and in the BLM's automated database (MLRS). The plats are a visual source noting location; MLRS provides location by legal description through the Geographic Cross Reference program. The specifically authorized acreage for land use should be avoided by oil and gas exploration and development activities. All authorized surface land uses are valid claims to prior existing rights unless the authorization states otherwise. The right of the Secretary to issue future land use authorizations on an oil and gas lease is reserved by provision of Section 29 of the Mineral Leasing Act, 30 U.S.C.	Y	Y	Y	Y
LN 14-2	<u>Cultural Resources</u> The Surface Management Agency is responsible for assuring that the leased lands are examined to determine if cultural resources are present and to specify mitigation measures. This notice would be consistent with the present Montana State Office guidance for cultural resource protection related to oil and gas operations (NTL-MSO-85-1).	Y	Y	Y	Y
LN 14-3	<u>Paleontological Resources</u> The lessee or operator shall immediately bring to the attention of the Surface Management Agency (SMA) any paleontological resources, or any other objects of scientific interest, discovered as a result of approved operations under this lease, and shall leave such discoveries intact and undisturbed until directed to proceed by the SMA.	Y	Y	Y	Y
LN 14-4	<u>Cemetery</u> Portions of the lands in this parcel are occupied by a cemetery. As per the Standard Stipulation (May 2001) attached to this lease, occupancy will be excluded from the cemetery and a 300 foot buffer zone around the cemetery.	Y	Y	Y	Y

	Lease Notice	Alternative			
		A	B	C	D
LN 14-11	<u>Greater Sage-grouse Habitat</u> The lease may, in part or in total, contain important greater sage grouse habitats as identified by the BLM, either currently or prospectively. The operator may be required to implement specific measures to reduce impacts of oil and gas operations on the greater sage grouse populations and habitat quality. Such measures shall be developed during the application for permit to drill on-site and environmental review process and will be consistent with the lease rights granted.	Y	Y	Y	Y
	Lease Notice	Alternative			
		A	B	C	D
LN 14-12	<u>Paleontological Resource Inventory Requirement</u> This lease has been identified as being located within geologic units rated as being moderate to very high potential for containing significant paleontological resources. The locations meet the criteria for class 3, 4 and/or 5 as set forth in the Potential Fossil Yield Classification System, WO IM 2008-009, Attachment 2-2. The BLM is responsible for assuring that the leased lands are examined to determine if paleontological resources are present and to specify mitigation measures. Guidance for application of this requirement can be found in WO IM 2008-009 dated October 15, 2007, and WO IM 2009-011 dated October 10, 2008. Prior to undertaking any surface-disturbing activities on the lands covered by this lease, the lessee or project proponent shall contact the BLM to determine if a paleontological resource inventory is required. If an inventory is required, the lessee or project proponent will complete the inventory subject to the following: • the project proponent must engage the services of a qualified paleontologist, acceptable to the BLM, to conduct the inventory. • the project proponent will, at a minimum, inventory a 10-acre area or larger to incorporate possible project relocation which may result from environmental or other resource considerations. • paleontological inventory may identify resources that may require mitigation to the satisfaction of the BLM as directed by WO IM 2009-011.	Y	Y	Y	Y
	Lease Notice	Alternative			
		A	B	C	D
LN 14-13	<u>Grassland/Wetland Easement</u> The lease parcel is encumbered with a USFWS Wetland and/or Grassland Easement to restrict draining, burning, filling, or leveling of wetlands and/or protection of grassland depending on the specific easement. The operator may be required to implement specific measures to reduce the impacts of oil and gas operations on wetlands or grasslands on easements. Additional measures may be developed during the application for permit to drill during the on-site inspection, as well as the environmental review process, consistent with the lease rights granted and in accordance with 43 CFR 3101.1-2.	Y	Y	Y	Y

	Lease Notice	Alternative			
		A	B	C	D
LN 14-14	<u>Cultural Visual Setting</u> The lease is located adjacent to known historic properties that are or may be eligible for listing on the National Register of Historic Places (NRHP). The lease may in part or whole contribute to the importance of the historic properties and values and listing on the NRHP. The operator may be required to implement specific measures to reduce impacts of oil and gas operations on historic properties and values. These measures may include, but are not limited to, project design, location, painting, and camouflage. Such measures shall be developed during the on-site inspection and environmental review of the application for permit to drill (APD) and shall be consistent with lease rights. The goal of this Lease Notice is to provide information to the lessee and operator that would help design and locate oil and gas facilities to preserve the integrity and value of historical properties that are or may be listed on the National Register of Historic Places. This notice is consistent with the present Montana guidance for cultural resource protection related to oil and gas operations (NTL-MSO-85-1).	Y	Y	Y	Y
	Lease Notice	Alternative			
		A	B	C	D
LN 14-15	<u>Sprague's Pipit</u> The lease area may contain habitat for the federal candidate Sprague's pipit. The operator may be required to implement specific measures to reduce impacts of oil and gas operations on Sprague's pipits, their habitat and overall population. Such measures would be developed during the application for permit to drill and environmental review processes, consistent with lease rights. If the USFWS lists the Sprague's pipit as threatened or endangered under the Endangered Species Act, the BLM would enter into formal consultation on proposed permits that may affect the Sprague's pipit and its habitat. Restrictions, modifications, or denial of permits could result from the consultation process.	Y	Y	Y	Y
	Lease Notice	Alternative			
		A	B	C	D
LN-14-18	<u>Air Resource Analysis</u> The lessee/operator is given notice that prior to project-specific approval, additional air resource analyses may be required in order to comply with the NEPA, FLPMA, and/or other applicable laws and regulations. Analyses may include equipment and operations information, emission inventory development, dispersion modeling or photochemical grid modeling for air quality and/or air quality related value impact analysis, and/or emission control determinations. These analyses may result in the imposition of additional project-specific control measures to protect air resources.	Y	Y	Y	Y

	Lease Notice	Alternative			
		A	B	C	D
LN-14-20	<u>Migratory Bird Treaty Act</u> The Operator is responsible for compliance with provisions of the Act by implementing one of the following measures: a) avoidance by timing; ground disturbing activities will not occur from April 15 to July 15, b) habitat manipulation; render proposed project footprints unsuitable for nesting prior to the arrival of migratory birds (blading or pre-clearing of vegetation must occur prior to April 15 within the year and area scheduled for activities between April 15 and July 15 of that year to deter nesting, or c) survey-buffer-monitor; surveys will be conducted by a BLM approved biologist within the area of the proposed action and a 300-foot buffer from the proposed project footprint between April 15 to July 15 if activities are proposed within this timeframe. If nesting birds are found, activities would not be allowed within 0.10 miles of nests until after the birds have fledged. If active nests are not found, construction activities must occur within 7 days of the survey. If this does not occur, new surveys must be conducted. Survey reports will be submitted to the appropriate BLM Office.	Y	Y	Y	Y
	Lease Notice	Alternative			
		A	B	C	D
LN-14-21	<u>Black-footed Ferret Surveys</u> Surface occupancy or use is subject to the following special operating constraints: prior to surface disturbance, prairie dog colonies and complexes 80 acres or more in size will be examined to determine the presence or absence of black-footed ferrets. The findings of this examination may result in some restrictions to the operator's plans or may even preclude use and occupancy. The lessee or operator may, at their own option, conduct an examination to determine the presence or absence of black-footed ferrets. This examination must be done by or under the supervision of a qualified resource specialist approved by the surface management agency. An acceptable report must be provided to the surface management agency documenting the presence or absence of black footed ferrets and identifying the anticipated effects of the proposed action on the black-footed ferret and its habitat.	Y	Y	Y	Y

	Lease Notice	Alternative			
		A	B	C	D
LN-14-23	<u>Setback from Human Occupied Residences Requirement</u> The lease area may contain human occupied residences. Under Regulation 43 CFR 3101.1-2 and terms of the lease (BLM Form 3100-11), the authorized officer may require reasonable measures to minimize adverse impacts to other resource values, land uses, and users not addressed in lease stipulations at the time operations are proposed. Such reasonable measures may include, but are not limited to, modification of siting or design of facilities, which may require relocating proposed operations up to 200 meters, but not off the leasehold. The setback requirement of 500 feet from human occupied residences has been established based upon the best information available. The following condition of approval may be applied as a result of the APD process during the on-site inspection and the environmental review unless an acceptable plan for mitigation of impacts is reached between the resident, lessee and BLM: Facilities will not be allowed within 500 feet of human occupied residences. The intent of this Lease Notice is to provide information to the lessee that would help design and locate oil and gas facilities to preserve the aesthetic qualities around human occupied residences.	Y	Y	Y	Y
	Lease Notice	Alternative			
		A	B	C	D
LN-14-27	<u>Sprague's Pipit Habitat</u> The lease area may contain habitat for the federal candidate Sprague's pipit. The operator may be required to implement specific measures to reduce impacts of oil and gas operations on Sprague's pipits, their habitat and overall population. Such measures would be developed during the APD and environmental review processes, consistent with lease rights. If the USFWS lists the Sprague's pipit as threatened or endangered under the ESA, the BLM would enter into formal consultation on proposed permits that may affect the Sprague's pipit and its habitat. Restrictions, modifications, or denial of permits could result from the consultation process.	Y	Y	Y	Y
	Lease Notice	Alternative			
		A	B	C	D
LN-14-29	<u>Paleontological Resources</u> The lessee or operator shall immediately bring to the attention of the Surface Management Agency (SMA) any paleontological resources or any other objects of scientific interest discovered as a result of approved operations under this lease, and shall leave such discoveries intact and undisturbed until directed to proceed by the SMA.	Y	Y	Y	Y

	Lease Notice	Alternative			
		A	B	C	D
LN-14-33	<u>Cultural Inventory Requirement</u> An inventory of those portions of the leased lands subject to proposed disturbance may be required prior to any surface disturbance to determine whether cultural resources are present and to identify needed mitigation measures. Prior to undertaking any surface-disturbing activities on the lands covered by this lease, the lessee or operator shall: 1. Contact the SMA to determine whether a cultural resource inventory is required. If an inventory is required, then: 2. The SMA will complete the required inventory; or the lessee or operator, at their option may engage the services of a cultural resource consultant acceptable to the SMA to conduct a cultural resource inventory of the area of proposed surface disturbance. The operator may elect to inventory an area larger than the standard ten-acre minimum to cover possible site relocation which may result from environmental or other considerations. An acceptable inventory report is to be submitted to the SMA for review and approval no later than that time when an otherwise complete application for approval of drilling or subsequent surface-disturbing operation is submitted. 3. Implement mitigation measures required by the SMA. Mitigation may include the relocation of proposed lease-related activities or other protective measures such as data recovery and extensive recordation. Where impacts to cultural resources cannot be mitigated to the satisfaction of the SMA, surface occupancy on that area must be prohibited. The lessee or operator shall immediately bring to the attention of the SMA any cultural resources discovered as a result of approved operations under this lease and shall not disturb such discoveries until directed to proceed by the SMA..	Y	Y	Y	Y
	Lease Notice	Alternative			
		A	B	C	D
LN-14-39	<u>Raptors</u> The lease area may contain raptor nest sites active within the last 7 years. At the development stage when surface-disturbing activities are proposed, an active nest inventory of the project area may be required. If active nests are found within 0.25 miles of the proposed action, surface occupancy and use may be prohibited. If active nests are found within 0.50 miles of the proposed action, surface and occupancy and use may be restricted from March 1 through July 31. The BLM may require modification to exploration or development proposals to protect active raptor nests or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized, or mitigated.	Y	Y	Y	Y

	Lease Notice	Alternative			
		A	B	C	D
LN-14-40	<u>Big Game Winter Range and Migration Corridors</u> The lease area may contain habitat for big game winter range and/or migration corridors delineated by Montana Fish, Wildlife and Parks. The lessee/operator is given notice that prior to project-specific approval, the authorized officer may require modifications to exploration and development proposals to conserve or restore habitat necessary to sustain local and regional big-game populations (Secretarial Order 3362, February 9, 2018 and 43 CFR 3101.1-2). The objective of the requirements would be to conserve, restore, minimize, avoid and/or limit activities that could impact habitat for big game winter range and/or migration corridors. Site-specific requirements would be identified during environmental review processes and would be developed into the project proposal as terms and conditions of the subsequent approval.	Y	Y	Y	Y
	Lease Notice	Alternative			
		A	B	C	D
LN-TES Threatened, Endangered, or Other Special Status Species	Surface occupancy or use is subject to the following special operating constraints: The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. The BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. The BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. The BLM will not approve any ground-disturbing activity that may affect any such species or requirements of the Endangered Species Act, as amended, 16 USC et seq., including completion of any required procedure for conference or consultation.	Y	Y	Y	Y
	Lease Notice	Alternative			
		A	B	C	D
LN-TES 16-2 Endangered Species Act Section 7 Consultation	The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. The BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. The BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. The BLM will not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 USC 1531 et seq., including completion of any required procedure for conference or consultation.	Y	Y	Y	Y

Resource: Vegetation Communities	Lease Notice	Alternative			
		A	B	C	D
Surface Management Agency Review	The SMA is responsible for ensuring that the leased land is examined before any surface-disturbing activities begin; this is to determine the effects on any plant or animal species, listed or proposed for listing as endangered or threatened, or their habitats. The findings of this examination may result in some restrictions to the operator's plans or even disallow use and occupancy that would be in violation of the Endangered Species Act of 1973 by detrimentally affecting endangered or threatened species or their habitats. The lessee/operator should, unless notified by the authorized officer of the SMA that the examination is not necessary, conduct the examination on the leased lands at lessee/operator's cost. This examination must be done by or under the supervision of a qualified resources specialist approved by the SMA. An acceptable report must be provided to the SMA, identifying the anticipated effects of a proposed action on endangered or threatened species or their habitats.	Y	Y	Y	Y
	Lease Notice	Alternative			
		A	B	C	D
LN-New Waste Prevention	The lessee or operator is required to reduce the waste of natural gas from venting, flaring, and leaks during oil and gas production activities on federal leases in order to comply with the Federal Onshore Oil and Gas Leasing program, MLA, NEPA, FLPMA, Federal Oil and Gas Royalty Management Act, and/or other applicable laws and regulations. The lessee or operator must certify to capture gas produced and may be required to complete a waste minimization plan, including a leak detection and repair program that provides for regular inspections of the oil and gas production facilities.	Y	Y	Y	Y

B.4 FLUID MINERAL LEASING BY DEVELOPMENT POTENTIAL AND LEASE STATUS

Existing leases and leases held by production would not be subject to new stipulations; however, new stipulations would apply to areas where previously issued leases have expired (i.e., leases without an active well to 10 years). Similarly, APDs that have already been approved would not be subject to the stipulations. New leases would be subject to the stipulations outlined above in this appendix.

Table B-5
Fluid Mineral Leasing by Development Potential, Leased Areas, Held by Production

Development potential	Fluid mineral leasing allocation	Alternative A (acres)	Alternative B (acres)	Alternative C (acres)	Alternative D (acres)
Very High	Closed	0	100	0	100
High	Closed	0	200	0	200
Medium	Closed	0	0	0	0
Low	Closed	0	0	0	0
Very High	Open with mapped stipulations	29,600	36,000	36,100	36,000
High	Open with mapped stipulations	63,300	68,000	68,200	67,900
Medium	Open with mapped stipulations	41,500	47,700	47,700	47,700
Low	Open with mapped stipulations	0	0	0	0
Very High	Open to leasing, subject to STC	8,200	1,700	1,700	1,600
High	Open to leasing, subject to STC	7,600	2,800	2,900	2,900
Medium	Open to leasing, subject to STC	9,600	3,500	3,500	3,500
Low	Open to leasing, subject to STC	0	0	0	0
Very High	Open to leasing, subject to NSO	12,200	23,900	21,200	16,600
High	Open to leasing, subject to NSO	40,000	51,000	47,800	40,200
Medium	Open to leasing, subject to NSO	24,800	33,700	30,500	24,200
Low	Open to leasing, subject to NSO	0	0	0	0
Very High	Open to leasing, subject to CSU	900	34,100	34,300	34,300
High	Open to leasing, subject to CSU	1,900	47,400	47,800	47,900
Medium	Open to leasing, subject to CSU	1,100	37,900	38,300	38,300
Low	Open to leasing, subject to CSU	0	0	0	0
Very High	Open to leasing, subject to TL	27,400	27,700	28,300	28,300
High	Open to leasing, subject to TL	44,100	45,300	46,100	46,000
Medium	Open to leasing, subject to TL	26,800	28,000	28,800	28,800
Low	Open to leasing, subject to TL	0	0	0	0

Table B-6
Fluid Mineral Leasing by Development Potential, Leased Areas, without an Active Well

Development potential	Fluid mineral leasing allocation	Alternative A (acres)	Alternative B (acres)	Alternative C (acres)	Alternative D (acres)
Very High	Closed	0	0	0	0
High	Closed	0	0	0	0
Medium	Closed	0	0	0	0
Low	Closed	0	3,200	0	3,200
Very High	Open with mapped stipulations	3,800	4,000	4,000	4,000
High	Open with mapped stipulations	8,600	9,200	9,200	9,200
Medium	Open with mapped stipulations	16,200	18,100	18,100	18,100
Low	Open with mapped stipulations	1,900	0	2,200	0
Very High	Open to leasing, subject to STC	300	100	100	100
High	Open to leasing, subject to STC	600	0	0	0
Medium	Open to leasing, subject to STC	2,800	1,000	1,000	1,000
Low	Open to leasing, subject to STC	1,300	0	1,000	0
Very High	Open to leasing, subject to NSO	1,000	3,600	3,500	3,400
High	Open to leasing, subject to NSO	7,100	7,100	7,100	6,600
Medium	Open to leasing, subject to NSO	9,300	11,000	10,700	7,500
Low	Open to leasing, subject to NSO	1,600	0	1,600	0
Very High	Open to leasing, subject to CSU	100	4,000	4,000	4,000
High	Open to leasing, subject to CSU	500	6,100	6,200	6,200
Medium	Open to leasing, subject to CSU	400	15,000	15,000	15,100
Low	Open to leasing, subject to CSU	100	0	1,900	0
Very High	Open to leasing, subject to TL	3,700	3,700	3,700	3,700
High	Open to leasing, subject to TL	2,800	3,000	3,400	3,400
Medium	Open to leasing, subject to TL	12,500	12,900	13,200	13,200
Low	Open to leasing, subject to TL	900	0	1,000	0

Table B-7
Fluid Mineral Leasing by Development Potential, Unleased

Development potential	Fluid mineral leasing allocation	Alternative A (acres)	Alternative B (acres)	Alternative C (acres)	Alternative D (acres)
Very High	Closed	0	0	0	0
High	Closed	0	300	0	300
Medium	Closed	0	100	0	100
Low	Closed	0	209,200	0	209,200
Very High	Open with mapped stipulations	4,400	4,600	4,600	4,600
High	Open with mapped stipulations	5,100	5,900	6,000	5,700
Medium	Open with mapped stipulations	60,800	68,100	68,000	67,900
Low	Open with mapped stipulations	167,100	0	183,800	0
Very High	Open to leasing, subject to STC	300	100	100	100
High	Open to leasing, subject to STC	1,200	200	400	400
Medium	Open to leasing, subject to STC	12,800	5,400	5,600	5,600
Low	Open to leasing, subject to STC	42,100	0	25,400	0
Very High	Open to leasing, subject to NSO	1,000	4,300	4,100	4,000
High	Open to leasing, subject to NSO	2,800	3,600	3,500	2,400
Medium	Open to leasing, subject to NSO	29,300	41,900	37,500	25,100
Low	Open to leasing, subject to NSO	73,700	0	82,600	0
Very High	Open to leasing, subject to CSU	100	4,600	4,600	4,600
High	Open to leasing, subject to CSU	500	4,100	4,500	4,300
Medium	Open to leasing, subject to CSU	2,000	57,700	57,800	58,300
Low	Open to leasing, subject to CSU	8,200	0	134,400	0
Very High	Open to leasing, subject to TL	4,400	4,400	4,400	4,400
High	Open to leasing, subject to TL	3,900	3,700	4,000	3,800
Medium	Open to leasing, subject to TL	49,900	50,600	51,400	51,300
Low	Open to leasing, subject to TL	152,200	0	152,700	0

Table B-8
Fluid Mineral Leasing by Development Potential, Leased Areas, Held by Production,
Individual Stipulations, No Surface Occupancy

Stipulation Type	Development potential	Fluid mineral leasing allocation	Alternative A (acres)	Alternative B (acres)	Alternative C (acres)	Alternative D (acres)
ACECs	Very High	Open to leasing, subject to NSO	0	0	0	0
ACECs	High	Open to leasing, subject to NSO	0	0	0	0
ACECs	Medium	Open to leasing, subject to NSO	0	300	300	300
ACECs	Low	Open to leasing, subject to NSO	0	0	0	0
Aquatic wildlife resources	Very High	Open to leasing, subject to NSO	0	3,900	3,900	3,900
Aquatic wildlife resources	High	Open to leasing, subject to NSO	0	1,400	1,400	1,400
Aquatic wildlife resources	Medium	Open to leasing, subject to NSO	0	0	0	0
Aquatic wildlife resources	Low	Open to leasing, subject to NSO	0	0	0	0
BCA	Very High	Open to leasing, subject to NSO	0	3,100	1,500	3,100
BCA	High	Open to leasing, subject to NSO	0	6,300	4,100	6,300
BCA	Medium	Open to leasing, subject to NSO	0	0	0	0
BCA	Low	Open to leasing, subject to NSO	0	0	0	0
Cultural resources	Very High	Open to leasing, subject to NSO	0	600	0	0
Cultural resources	High	Open to leasing, subject to NSO	1,100	2,300	0	500
Cultural resources	Medium	Open to leasing, subject to NSO	900	4,400	0	300
Cultural resources	Low	Open to leasing, subject to NSO	0	0	0	0
NHT	Very High	Open to leasing, subject to NSO	0	3,900	3,900	3,900
NHT	High	Open to leasing, subject to NSO	0	1,400	1,400	1,400
NHT	Medium	Open to leasing, subject to NSO	0	0	0	0
NHT	Low	Open to leasing, subject to NSO	0	0	0	0
NPS	Very High	Open to leasing, subject to NSO	0	0	0	0

B. Stipulations and Allocations Applicable to Fluid Minerals Leasing

Stipulation Type	Development potential	Fluid mineral leasing allocation	Alternative A (acres)	Alternative B (acres)	Alternative C (acres)	Alternative D (acres)
NPS	High	Open to leasing, subject to NSO	0	0	0	0
NPS	Medium	Open to leasing, subject to NSO	0	0	0	0
NPS	Low	Open to leasing, subject to NSO	0	0	0	0
NST	Very High	Open to leasing, subject to NSO	0	0	0	0
NST	High	Open to leasing, subject to NSO	0	0	0	0
NST	Medium	Open to leasing, subject to NSO	0	0	0	0
NST	Low	Open to leasing, subject to NSO	0	0	0	0
Riparian and wetland resources	Very High	Open to leasing, subject to NSO	28,700	10,700	10,700	2,300
Riparian and wetland resources	High	Open to leasing, subject to NSO	62,200	23,100	23,100	4,900
Riparian and wetland resources	Medium	Open to leasing, subject to NSO	41,900	16,100	16,100	3,100
Riparian and wetland resources	Low	Open to leasing, subject to NSO	0	0	0	0
Soil resources	Very High	Open to leasing, subject to NSO	0	10,500	10,500	10,500
Soil resources	High	Open to leasing, subject to NSO	0	10,700	10,700	10,700
Soil resources	Medium	Open to leasing, subject to NSO	0	7,400	7,400	7,400
Soil resources	Low	Open to leasing, subject to NSO	0	0	0	0
Special status species	Very High	Open to leasing, subject to NSO	0	1,200	1,200	1,100
Special status species	High	Open to leasing, subject to NSO	0	3,300	5,300	3,300
Special status species	Medium	Open to leasing, subject to NSO	0	1,100	1,800	1,100
Special status species	Low	Open to leasing, subject to NSO	0	0	0	0
Terrestrial wildlife resources	Very High	Open to leasing, subject to NSO	15,300	6,500	2,300	2,300

B. Stipulations and Allocations Applicable to Fluid Minerals Leasing

Stipulation Type	Development potential	Fluid mineral leasing allocation	Alternative A (acres)	Alternative B (acres)	Alternative C (acres)	Alternative D (acres)
Terrestrial wildlife resources	High	Open to leasing, subject to NSO	72,500	37,900	26,700	26,800
Terrestrial wildlife resources	Medium	Open to leasing, subject to NSO	36,900	19,300	15,900	15,900
Terrestrial wildlife resources	Low	Open to leasing, subject to NSO	0	0	0	0
Vegetation Resources	Very High	Open to leasing, subject to NSO	0	6,400	0	0
Vegetation Resources	High	Open to leasing, subject to NSO	0	4,400	0	0
Vegetation Resources	Medium	Open to leasing, subject to NSO	0	2,800	0	0
Vegetation Resources	Low	Open to leasing, subject to NSO	0	0	0	0
Water resources	Very High	Open to leasing, subject to NSO	100	3,200	100	3,000
Water resources	High	Open to leasing, subject to NSO	2,600	600	300	600
Water resources	Medium	Open to leasing, subject to NSO	0	0	0	0
Water resources	Low	Open to leasing, subject to NSO	0	0	0	0
WSR	Very High	Open to leasing, subject to NSO	0	900	0	0
WSR	High	Open to leasing, subject to NSO	0	2,300	0	0
WSR	Medium	Open to leasing, subject to NSO	0	0	0	0
WSR	Low	Open to leasing, subject to NSO	0	0	0	0

Table B-9
Fluid Mineral Leasing by Development Potential, Leased Areas, without an Active Well,
Individual Stipulations, No Surface Occupancy

Stipulation Type	Development potential	Fluid mineral leasing allocation	Alternative A (acres)	Alternative B (acres)	Alternative C (acres)	Alternative D (acres)
ACECs	Very High	Open to leasing, subject to NSO	0	0	0	0
ACECs	High	Open to leasing, subject to NSO	0	400	400	400
ACECs	Medium	Open to leasing, subject to NSO	0	700	300	300
ACECs	Low	Open to leasing, subject to NSO	0	0	0	0
Aquatic wildlife resources	Very High	Open to leasing, subject to NSO	0	1,500	1,500	1,500
Aquatic wildlife resources	High	Open to leasing, subject to NSO	0	0	0	0
Aquatic wildlife resources	Medium	Open to leasing, subject to NSO	0	0	0	0
Aquatic wildlife resources	Low	Open to leasing, subject to NSO	0	0	0	0
BCAs	Very High	Open to leasing, subject to NSO	0	0	0	0
BCAs	High	Open to leasing, subject to NSO	0	0	0	0
BCAs	Medium	Open to leasing, subject to NSO	0	0	0	0
BCAs	Low	Open to leasing, subject to NSO	0	0	0	0
Cultural resources	Very High	Open to leasing, subject to NSO	0	0	0	0
Cultural resources	High	Open to leasing, subject to NSO	100	100	0	100
Cultural resources	Medium	Open to leasing, subject to NSO	0	400	0	0
Cultural resources	Low	Open to leasing, subject to NSO	0	200	0	0
NHT	Very High	Open to leasing, subject to NSO	0	1500	1,500	1,500
NHT	High	Open to leasing, subject to NSO	0	0	0	0
NHT	Medium	Open to leasing, subject to NSO	0	0	0	0
NHT	Low	Open to leasing, subject to NSO	0	0	0	0
NPS	Very High	Open to leasing, subject to NSO	0	0	0	0

B. Stipulations and Allocations Applicable to Fluid Minerals Leasing

Stipulation Type	Development potential	Fluid mineral leasing allocation	Alternative A (acres)	Alternative B (acres)	Alternative C (acres)	Alternative D (acres)
NPS	High	Open to leasing, subject to NSO	0	0	0	0
NPS	Medium	Open to leasing, subject to NSO	0	0	0	0
NPS	Low	Open to leasing, subject to NSO	0	0	0	0
NST	Very High	Open to leasing, subject to NSO	0	0	0	0
NST	High	Open to leasing, subject to NSO	0	0	0	0
NST	Medium	Open to leasing, subject to NSO	0	0	0	0
NST	Low	Open to leasing, subject to NSO	0	0	0	0
Riparian and wetland resources	Very High	Open to leasing, subject to NSO	1,600	700	700	200
Riparian and wetland resources	High	Open to leasing, subject to NSO	6,800	2,800	2,800	400
Riparian and wetland resources	Medium	Open to leasing, subject to NSO	22,000	7,400	7,400	1,700
Riparian and wetland resources	Low	Open to leasing, subject to NSO	2,200	800	800	200
Soil resources	Very High	Open to leasing, subject to NSO	0	3,100	3,100	3,100
Soil resources	High	Open to leasing, subject to NSO	0	400	400	400
Soil resources	Medium	Open to leasing, subject to NSO	0	2,500	2,500	2,500
Soil resources	Low	Open to leasing, subject to NSO	0	200	200	200
Special status species	Very High	Open to leasing, subject to NSO	0	0	0	0
Special status species	High	Open to leasing, subject to NSO	0	100	200	100
Special status species	Medium	Open to leasing, subject to NSO	0	700	800	700
Special status species	Low	Open to leasing, subject to NSO	0	0	0	0
Terrestrial wildlife resources	Very High	Open to leasing, subject to NSO	2,100	700	600	600

B. Stipulations and Allocations Applicable to Fluid Minerals Leasing

Stipulation Type	Development potential	Fluid mineral leasing allocation	Alternative A (acres)	Alternative B (acres)	Alternative C (acres)	Alternative D (acres)
Terrestrial wildlife resources	High	Open to leasing, subject to NSO	17,400	8,000	7,500	7,100
Terrestrial wildlife resources	Medium	Open to leasing, subject to NSO	13,000	5,600	5,300	5,300
Terrestrial wildlife resources	Low	Open to leasing, subject to NSO	3,100	1,300	1,200	1,200
Vegetation Resources	Very High	Open to leasing, subject to NSO	0	1,500	0	0
Vegetation Resources	High	Open to leasing, subject to NSO	0	100	0	0
Vegetation Resources	Medium	Open to leasing, subject to NSO	0	500	0	0
Vegetation Resources	Low	Open to leasing, subject to NSO	0	0	0	0
Water resources	Very High	Open to leasing, subject to NSO	0	1,400	0	1,400
Water resources	High	Open to leasing, subject to NSO	100	0	0	0
Water resources	Medium	Open to leasing, subject to NSO	0	0	0	0
Water resources	Low	Open to leasing, subject to NSO	0	0	0	0
WSRs	Very High	Open to leasing, subject to NSO	0	0	0	0
WSRs	High	Open to leasing, subject to NSO	0	0	0	0
WSRs	Medium	Open to leasing, subject to NSO	0	0	0	0
WSRs	Low	Open to leasing, subject to NSO	0	0	0	0

Table B-10
Fluid Mineral Leasing by Development Potential, Unleased, Individual Stipulations, No Surface Occupancy

Stipulation Type	Development potential	Fluid mineral leasing allocation	Alternative A (acres)	Alternative B (acres)	Alternative C (acres)	Alternative D (acres)
ACECs	Very High	Open to leasing, subject to NSO	0	0	0	0
ACECs	High	Open to leasing, subject to NSO	0	0	0	0
ACECs	Medium	Open to leasing, subject to NSO	0	0	0	0
ACECs	Low	Open to leasing, subject to NSO	0	0	0	0
Aquatic wildlife resources	Very High	Open to leasing, subject to NSO	0	200	200	200
Aquatic wildlife resources	High	Open to leasing, subject to NSO	0	300	300	300
Aquatic wildlife resources	Medium	Open to leasing, subject to NSO	0	0	0	0
Aquatic wildlife resources	Low	Open to leasing, subject to NSO	0	1,900	1,900	1,900
BCA	Very High	Open to leasing, subject to NSO	0	2,500	2,500	2,500
BCA	High	Open to leasing, subject to NSO	0	0	0	0
BCA	Medium	Open to leasing, subject to NSO	0	0	0	0
BCA	Low	Open to leasing, subject to NSO	0	0	0	0
Cultural resources	Very High	Open to leasing, subject to NSO	0	0	0	0
Cultural resources	High	Open to leasing, subject to NSO	200	700	0	100
Cultural resources	Medium	Open to leasing, subject to NSO	0	6,400	0	0
Cultural resources	Low	Open to leasing, subject to NSO	0	2,800	0	0
NHT	Very High	Open to leasing, subject to NSO	0	200	200	200
NHT	High	Open to leasing, subject to NSO	0	300	300	300
NHT	Medium	Open to leasing, subject to NSO	0	0	0	0
NHT	Low	Open to leasing, subject to NSO	0	1,900	1,900	1,900
NPS	Very High	Open to leasing, subject to NSO	0	0	0	0

B. Stipulations and Allocations Applicable to Fluid Minerals Leasing

Stipulation Type	Development potential	Fluid mineral leasing allocation	Alternative A (acres)	Alternative B (acres)	Alternative C (acres)	Alternative D (acres)
NPS	High	Open to leasing, subject to NSO	0	0	0	0
NPS	Medium	Open to leasing, subject to NSO	0	0	0	0
NPS	Low	Open to leasing, subject to NSO	0	0	0	0
NST	Very High	Open to leasing, subject to NSO	0	0	0	0
NST	High	Open to leasing, subject to NSO	0	0	0	0
NST	Medium	Open to leasing, subject to NSO	0	0	0	0
NST	Low	Open to leasing, subject to NSO	0	1,100	1,100	1,100
Riparian and wetland resources	Very High	Open to leasing, subject to NSO	2,500	900	900	200
Riparian and wetland resources	High	Open to leasing, subject to NSO	5,500	2,000	2,000	500
Riparian and wetland resources	Medium	Open to leasing, subject to NSO	72,200	25,700	25,700	5,300
Riparian and wetland resources	Low	Open to leasing, subject to NSO	303,400	99,800	99,800	31,000
Soil resources	Very High	Open to leasing, subject to NSO	0	3,300	3,300	3,300
Soil resources	High	Open to leasing, subject to NSO	0	600	600	600
Soil resources	Medium	Open to leasing, subject to NSO	0	7,100	7,100	7,100
Soil resources	Low	Open to leasing, subject to NSO	0	3,400	3,400	3,400
Special status species	Very High	Open to leasing, subject to NSO	0	100	100	100
Special status species	High	Open to leasing, subject to NSO	0	500	800	500
Special status species	Medium	Open to leasing, subject to NSO	0	3,600	6,000	3,700
Special status species	Low	Open to leasing, subject to NSO	0	10,300	14,200	10,300
Terrestrial wildlife resources	Very High	Open to leasing, subject to NSO	800	300	200	200

B. Stipulations and Allocations Applicable to Fluid Minerals Leasing

Stipulation Type	Development potential	Fluid mineral leasing allocation	Alternative A (acres)	Alternative B (acres)	Alternative C (acres)	Alternative D (acres)
Terrestrial wildlife resources	High	Open to leasing, subject to NSO	3,800	1,600	1,300	1,300
Terrestrial wildlife resources	Medium	Open to leasing, subject to NSO	32,500	19,400	12,600	12,400
Terrestrial wildlife resources	Low	Open to leasing, subject to NSO	12,000	8,700	4,800	5,900
Vegetation Resources	Very High	Open to leasing, subject to NSO	0	2,000	0	0
Vegetation Resources	High	Open to leasing, subject to NSO	0	200	0	0
Vegetation Resources	Medium	Open to leasing, subject to NSO	0	4,200	100	100
Vegetation Resources	Low	Open to leasing, subject to NSO	0	4,500	1,900	1,900
Water resources	Very High	Open to leasing, subject to NSO	0	100	0	100
Water resources	High	Open to leasing, subject to NSO	600	200	300	200
Water resources	Medium	Open to leasing, subject to NSO	0	0	200	0
Water resources	Low	Open to leasing, subject to NSO	3,400	1,700	1,600	1,700
WSRs	Very High	Open to leasing, subject to NSO	0	0	0	0
WSRs	High	Open to leasing, subject to NSO	0	100	0	0
WSRs	Medium	Open to leasing, subject to NSO	0	0	0	0
WSRs	Low	Open to leasing, subject to NSO	0	0	0	0

Table B-11
Fluid Mineral Leasing by Development Potential, Leased Areas, Held by Production,
Individual Stipulations, Controlled Surface Use

Stipulation Type	Development potential	Fluid mineral leasing allocation	Alternative A (acres)	Alternative B (acres)	Alternative C (acres)	Alternative D (acres)
ACECs	Very High	Open to leasing, subject to CSU	0	0	0	0
ACECs	High	Open to leasing, subject to CSU	0	0	0	0
ACECs	Medium	Open to leasing, subject to CSU	0	0	0	0
ACECs	Low	Open to leasing, subject to CSU	0	0	0	0
Aquatic wildlife resources	Very High	Open to leasing, subject to CSU	0	0	0	0
Aquatic wildlife resources	High	Open to leasing, subject to CSU	0	0	0	0
Aquatic wildlife resources	Medium	Open to leasing, subject to CSU	0	0	0	0
Aquatic wildlife resources	Low	Open to leasing, subject to CSU	0	0	0	0
BCAs	Very High	Open to leasing, subject to CSU	0	0	0	0
BCAs	High	Open to leasing, subject to CSU	0	0	0	0
BCAs	Medium	Open to leasing, subject to CSU	0	0	0	0
BCAs	Low	Open to leasing, subject to CSU	0	0	0	0
Cultural resources	Very High	Open to leasing, subject to CSU	0	0	700	700
Cultural resources	High	Open to leasing, subject to CSU	0	0	900	600
Cultural resources	Medium	Open to leasing, subject to CSU	0	0	2,200	2,200
Cultural resources	Low	Open to leasing, subject to CSU	0	0	0	0
NHT	Very High	Open to leasing, subject to CSU	0	0	0	0
NHT	High	Open to leasing, subject to CSU	0	0	0	0
NHT	Medium	Open to leasing, subject to CSU	0	0	0	0
NHT	Low	Open to leasing, subject to CSU	0	0	0	0
NPS	Very High	Open to leasing, subject to CSU	0	20,900	20,900	20,900

B. Stipulations and Allocations Applicable to Fluid Minerals Leasing

Stipulation Type	Development potential	Fluid mineral leasing allocation	Alternative A (acres)	Alternative B (acres)	Alternative C (acres)	Alternative D (acres)
NPS	High	Open to leasing, subject to CSU	0	6,500	6,200	6,800
NPS	Medium	Open to leasing, subject to CSU	0	2,700	2,700	5,100
NPS	Low	Open to leasing, subject to CSU	0	0	0	0
NST	Very High	Open to leasing, subject to CSU	0	0	0	0
NST	High	Open to leasing, subject to CSU	0	0	0	0
NST	Medium	Open to leasing, subject to CSU	0	0	0	0
NST	Low	Open to leasing, subject to CSU	0	0	0	0
Riparian and wetland resources	Very High	Open to leasing, subject to CSU	3,100	22,200	22,200	23,000
Riparian and wetland resources	High	Open to leasing, subject to CSU	6,400	45,000	45,000	48,700
Riparian and wetland resources	Medium	Open to leasing, subject to CSU	3,500	33,900	33,900	36,000
Riparian and wetland resources	Low	Open to leasing, subject to CSU	0	0	0	0
Soil resources	Very High	Open to leasing, subject to CSU	0	24,900	24,900	24,900
Soil resources	High	Open to leasing, subject to CSU	0	28,700	28,700	28,700
Soil resources	Medium	Open to leasing, subject to CSU	0	27,000	27,000	27,000
Soil resources	Low	Open to leasing, subject to CSU	0	0	0	0
Special status species	Very High	Open to leasing, subject to CSU	0	2,800	0	2,900
Special status species	High	Open to leasing, subject to CSU	0	1,300	0	1,300
Special status species	Medium	Open to leasing, subject to CSU	0	100	0	100
Special status species	Low	Open to leasing, subject to CSU	0	0	0	0
Terrestrial wildlife resources	Very High	Open to leasing, subject to CSU	0	1,100	1,100	1,100

B. Stipulations and Allocations Applicable to Fluid Minerals Leasing

Stipulation Type	Development potential	Fluid mineral leasing allocation	Alternative A (acres)	Alternative B (acres)	Alternative C (acres)	Alternative D (acres)
Terrestrial wildlife resources	High	Open to leasing, subject to CSU	100	200	400	400
Terrestrial wildlife resources	Medium	Open to leasing, subject to CSU	0	0	0	0
Terrestrial wildlife resources	Low	Open to leasing, subject to CSU	0	0	0	0
Vegetation Resources	Very High	Open to leasing, subject to CSU	0	0	6,400	6,400
Vegetation Resources	High	Open to leasing, subject to CSU	0	0	4,300	4,300
Vegetation Resources	Medium	Open to leasing, subject to CSU	0	0	2,700	2,700
Vegetation Resources	Low	Open to leasing, subject to CSU	0	0	0	0
Water resources	Very High	Open to leasing, subject to CSU	0	0	300	0
Water resources	High	Open to leasing, subject to CSU	0	0	0	0
Water resources	Medium	Open to leasing, subject to CSU	0	0	0	0
Water resources	Low	Open to leasing, subject to CSU	0	0	0	0
WSRs	Very High	Open to leasing, subject to CSU	0	0	0	0
WSRs	High	Open to leasing, subject to CSU	0	0	0	0
WSRs	Medium	Open to leasing, subject to CSU	0	0	0	0
WSRs	Low	Open to leasing, subject to CSU	0	0	0	0

Table B-12
Fluid Mineral Leasing by Development Potential, Leased Areas, without an Active Well,
Individual Stipulations, Controlled Surface Use

Stipulation Type	Development potential	Fluid mineral leasing allocation	Alternative A (acres)	Alternative B (acres)	Alternative C (acres)	Alternative D (acres)
ACECs	Very High	Open to leasing, subject to CSU	0	0	0	0
ACECs	High	Open to leasing, subject to CSU	0	0	0	0
ACECs	Medium	Open to leasing, subject to CSU	0	0	0	0
ACECs	Low	Open to leasing, subject to CSU	0	0	0	0
Aquatic wildlife resources	Very High	Open to leasing, subject to CSU	0	0	0	0
Aquatic wildlife resources	High	Open to leasing, subject to CSU	0	0	0	0
Aquatic wildlife resources	Medium	Open to leasing, subject to CSU	0	0	0	0
Aquatic wildlife resources	Low	Open to leasing, subject to CSU	0	0	0	0
BCAs	Very High	Open to leasing, subject to CSU	0	0	0	0
BCAs	High	Open to leasing, subject to CSU	0	0	0	0
BCAs	Medium	Open to leasing, subject to CSU	0	0	0	0
BCAs	Low	Open to leasing, subject to CSU	0	0	0	0
Cultural resources	Very High	Open to leasing, subject to CSU	0	0	0	0
Cultural resources	High	Open to leasing, subject to CSU	0	0	100	0
Cultural resources	Medium	Open to leasing, subject to CSU	0	0	100	100
Cultural resources	Low	Open to leasing, subject to CSU	0	0	0	0
NHT	Very High	Open to leasing, subject to CSU	0	0	0	0
NHT	High	Open to leasing, subject to CSU	0	0	0	0
NHT	Medium	Open to leasing, subject to CSU	0	0	0	0
NHT	Low	Open to leasing, subject to CSU	0	0	0	0
NPS	Very High	Open to leasing, subject to CSU	0	3,700	3,700	3,700

B. Stipulations and Allocations Applicable to Fluid Minerals Leasing

Stipulation Type	Development potential	Fluid mineral leasing allocation	Alternative A (acres)	Alternative B (acres)	Alternative C (acres)	Alternative D (acres)
NPS	High	Open to leasing, subject to CSU	0	800	800	800
NPS	Medium	Open to leasing, subject to CSU	0	500	500	900
NPS	Low	Open to leasing, subject to CSU	0	200	200	200
NST	Very High	Open to leasing, subject to CSU	0	0	0	0
NST	High	Open to leasing, subject to CSU	0	0	0	0
NST	Medium	Open to leasing, subject to CSU	0	0	0	0
NST	Low	Open to leasing, subject to CSU	0	0	0	0
Riparian and wetland resources	Very High	Open to leasing, subject to CSU	400	1,800	1,800	1,800
Riparian and wetland resources	High	Open to leasing, subject to CSU	400	6,000	6,000	6,400
Riparian and wetland resources	Medium	Open to leasing, subject to CSU	1,200	12,100	12,100	13,700
Riparian and wetland resources	Low	Open to leasing, subject to CSU	100	1,600	1,600	1,800
Soil resources	Very High	Open to leasing, subject to CSU	0	3,800	3,800	3,800
Soil resources	High	Open to leasing, subject to CSU	0	4,000	4,000	4,000
Soil resources	Medium	Open to leasing, subject to CSU	0	10,300	10,300	10,300
Soil resources	Low	Open to leasing, subject to CSU	0	1,100	1,100	1,100
Special status species	Very High	Open to leasing, subject to CSU	0	0	0	0
Special status species	High	Open to leasing, subject to CSU	0	0	0	0
Special status species	Medium	Open to leasing, subject to CSU	0	0	0	0
Special status species	Low	Open to leasing, subject to CSU	0	0	0	0
Terrestrial wildlife resources	Very High	Open to leasing, subject to CSU	0	0	0	0

B. Stipulations and Allocations Applicable to Fluid Minerals Leasing

Stipulation Type	Development potential	Fluid mineral leasing allocation	Alternative A (acres)	Alternative B (acres)	Alternative C (acres)	Alternative D (acres)
Terrestrial wildlife resources	High	Open to leasing, subject to CSU	800	400	400	400
Terrestrial wildlife resources	Medium	Open to leasing, subject to CSU	0	400	400	400
Terrestrial wildlife resources	Low	Open to leasing, subject to CSU	300	100	100	100
Vegetation Resources	Very High	Open to leasing, subject to CSU	0	0	1,500	1,500
Vegetation Resources	High	Open to leasing, subject to CSU	0	0	0	0
Vegetation Resources	Medium	Open to leasing, subject to CSU	0	0	500	500
Vegetation Resources	Low	Open to leasing, subject to CSU	0	0	100	0
Water resources	Very High	Open to leasing, subject to CSU	0	0	0	0
Water resources	High	Open to leasing, subject to CSU	0	0	0	0
Water resources	Medium	Open to leasing, subject to CSU	0	0	0	0
Water resources	Low	Open to leasing, subject to CSU	0	0	0	0
WSRs	Very High	Open to leasing, subject to CSU	0	0	0	0
WSRs	High	Open to leasing, subject to CSU	0	0	0	0
WSRs	Medium	Open to leasing, subject to CSU	0	0	0	0
WSRs	Low	Open to leasing, subject to CSU	0	0	0	0

Table B-13
Fluid Mineral Leasing by Development Potential, Unleased, Individual Stipulations,
Controlled Surface Use

Stipulation Type	Development potential	Fluid mineral leasing allocation	Alternative A (acres)	Alternative B (acres)	Alternative C (acres)	Alternative D (acres)
ACECs	Very High	Open to leasing, subject to CSU	0	0	0	0
ACECs	High	Open to leasing, subject to CSU	0	0	0	0
ACECs	Medium	Open to leasing, subject to CSU	0	0	0	0
ACECs	Low	Open to leasing, subject to CSU	0	0	0	0
Aquatic wildlife resources	Very High	Open to leasing, subject to CSU	0	0	0	0
Aquatic wildlife resources	High	Open to leasing, subject to CSU	0	0	0	0
Aquatic wildlife resources	Medium	Open to leasing, subject to CSU	0	0	0	0
Aquatic wildlife resources	Low	Open to leasing, subject to CSU	0	0	0	0
BCAs	Very High	Open to leasing, subject to CSU	0	0	0	0
BCAs	High	Open to leasing, subject to CSU	0	0	0	0
BCAs	Medium	Open to leasing, subject to CSU	0	0	0	0
BCAs	Low	Open to leasing, subject to CSU	0	0	0	0
Cultural resources	Very High	Open to leasing, subject to CSU	0	0	0	0
Cultural resources	High	Open to leasing, subject to CSU	0	0	300	300
Cultural resources	Medium	Open to leasing, subject to CSU	0	0	3,700	3,700
Cultural resources	Low	Open to leasing, subject to CSU	0	0	1,900	1,900
NHT	Very High	Open to leasing, subject to CSU	0	0	0	0
NHT	High	Open to leasing, subject to CSU	0	0	0	0
NHT	Medium	Open to leasing, subject to CSU	0	0	0	0
NHT	Low	Open to leasing, subject to CSU	0	0	0	0
NPS	Very High	Open to leasing, subject to CSU	0	3,600	3,600	3,600

B. Stipulations and Allocations Applicable to Fluid Minerals Leasing

Stipulation Type	Development potential	Fluid mineral leasing allocation	Alternative A (acres)	Alternative B (acres)	Alternative C (acres)	Alternative D (acres)
NPS	High	Open to leasing, subject to CSU	0	1,800	1,800	2,600
NPS	Medium	Open to leasing, subject to CSU	0	11,100	11,100	21,800
NPS	Low	Open to leasing, subject to CSU	0	15,800	15,800	16,500
NST	Very High	Open to leasing, subject to CSU	0	0	0	0
NST	High	Open to leasing, subject to CSU	0	0	0	0
NST	Medium	Open to leasing, subject to CSU	0	0	0	0
NST	Low	Open to leasing, subject to CSU	0	0	0	0
Riparian and wetland resources	Very High	Open to leasing, subject to CSU	400	2,200	2,200	2,200
Riparian and wetland resources	High	Open to leasing, subject to CSU	600	3,600	3,600	4,000
Riparian and wetland resources	Medium	Open to leasing, subject to CSU	5,800	46,700	46,700	51,000
Riparian and wetland resources	Low	Open to leasing, subject to CSU	14,000	125,100	125,100	151,000
Soil resources	Very High	Open to leasing, subject to CSU	0	4,400	4,400	4,400
Soil resources	High	Open to leasing, subject to CSU	0	2,100	2,100	2,100
Soil resources	Medium	Open to leasing, subject to CSU	0	38,200	38,200	38,200
Soil resources	Low	Open to leasing, subject to CSU	0	42,700	42,700	42,700
Special status species	Very High	Open to leasing, subject to CSU	0	100	0	100
Special status species	High	Open to leasing, subject to CSU	0	200	0	200
Special status species	Medium	Open to leasing, subject to CSU	0	1,200	0	4,100
Special status species	Low	Open to leasing, subject to CSU	0	5,500	0	2,700
Terrestrial wildlife resources	Very High	Open to leasing, subject to CSU	0	0	0	0

B. Stipulations and Allocations Applicable to Fluid Minerals Leasing

Stipulation Type	Development potential	Fluid mineral leasing allocation	Alternative A (acres)	Alternative B (acres)	Alternative C (acres)	Alternative D (acres)
Terrestrial wildlife resources	High	Open to leasing, subject to CSU	700	300	300	300
Terrestrial wildlife resources	Medium	Open to leasing, subject to CSU	600	4,800	4,800	4,800
Terrestrial wildlife resources	Low	Open to leasing, subject to CSU	10,200	17,000	17,000	17,000
Vegetation Resources	Very High	Open to leasing, subject to CSU	0	0	2,000	2,000
Vegetation Resources	High	Open to leasing, subject to CSU	0	0	200	200
Vegetation Resources	Medium	Open to leasing, subject to CSU	0	0	4,100	4,100
Vegetation Resources	Low	Open to leasing, subject to CSU	0	0	2,700	2,700
Water resources	Very High	Open to leasing, subject to CSU	0	0	0	0
Water resources	High	Open to leasing, subject to CSU	0	0	0	0
Water resources	Medium	Open to leasing, subject to CSU	0	0	0	0
Water resources	Low	Open to leasing, subject to CSU	0	0	0	0
WSRs	Very High	Open to leasing, subject to CSU	0	0	0	0
WSRs	High	Open to leasing, subject to CSU	0	0	0	0
WSRs	Medium	Open to leasing, subject to CSU	0	0	0	0
WSRs	Low	Open to leasing, subject to CSU	0	0	0	0

Table B-14
Fluid Mineral Leasing by development Potential, Leased Areas, Held by Production,
Individual Stipulations, Seasonal Timing Limitations

Stipulation Type	Development potential	Fluid mineral leasing allocation	Alternative A (acres)	Alternative B (acres)	Alternative C (acres)	Alternative D (acres)
ACECs	Very High	Open to leasing, subject to TL	0	0	0	0
ACECs	High	Open to leasing, subject to TL	0	0	0	0
ACECs	Medium	Open to leasing, subject to TL	0	0	0	0
ACECs	Low	Open to leasing, subject to TL	0	0	0	0
Aquatic wildlife resources	Very High	Open to leasing, subject to TL	0	0	0	0
Aquatic wildlife resources	High	Open to leasing, subject to TL	0	0	0	0
Aquatic wildlife resources	Medium	Open to leasing, subject to TL	0	0	0	0
Aquatic wildlife resources	Low	Open to leasing, subject to TL	0	0	0	0
BCAs	Very High	Open to leasing, subject to TL	0	0	0	0
BCAs	High	Open to leasing, subject to TL	0	0	0	0
BCAs	Medium	Open to leasing, subject to TL	0	0	0	0
BCAs	Low	Open to leasing, subject to TL	0	0	0	0
Cultural resources	Very High	Open to leasing, subject to TL	0	0	0	0
Cultural resources	High	Open to leasing, subject to TL	0	0	0	0
Cultural resources	Medium	Open to leasing, subject to TL	0	0	0	0
Cultural resources	Low	Open to leasing, subject to TL	0	0	0	0
NHT	Very High	Open to leasing, subject to TL	0	0	0	0
NHT	High	Open to leasing, subject to TL	0	0	0	0
NHT	Medium	Open to leasing, subject to TL	0	0	0	0
NHT	Low	Open to leasing, subject to TL	0	0	0	0
NPS	Very High	Open to leasing, subject to TL	0	0	0	0

B. Stipulations and Allocations Applicable to Fluid Minerals Leasing

Stipulation Type	Development potential	Fluid mineral leasing allocation	Alternative A (acres)	Alternative B (acres)	Alternative C (acres)	Alternative D (acres)
NPS	High	Open to leasing, subject to TL	0	0	0	0
NPS	Medium	Open to leasing, subject to TL	0	0	0	0
NPS	Low	Open to leasing, subject to TL	0	0	0	0
NST	Very High	Open to leasing, subject to TL	0	0	0	0
NST	High	Open to leasing, subject to TL	0	0	0	0
NST	Medium	Open to leasing, subject to TL	0	0	0	0
NST	Low	Open to leasing, subject to TL	0	0	0	0
Riparian and wetland resources	Very High	Open to leasing, subject to TL	300	0	0	0
Riparian and wetland resources	High	Open to leasing, subject to TL	800	0	0	0
Riparian and wetland resources	Medium	Open to leasing, subject to TL	300	0	0	0
Riparian and wetland resources	Low	Open to leasing, subject to TL	0	0	0	0
Soil resources	Very High	Open to leasing, subject to TL	0	0	0	0
Soil resources	High	Open to leasing, subject to TL	0	0	0	0
Soil resources	Medium	Open to leasing, subject to TL	0	0	0	0
Soil resources	Low	Open to leasing, subject to TL	0	0	0	0
Special status species	Very High	Open to leasing, subject to TL	0	0	0	0
Special status species	High	Open to leasing, subject to TL	0	0	0	0
Special status species	Medium	Open to leasing, subject to TL	0	0	0	0
Special status species	Low	Open to leasing, subject to TL	0	0	0	0
Terrestrial wildlife resources	Very High	Open to leasing, subject to TL	135,300	44,000	61,200	61,200

B. Stipulations and Allocations Applicable to Fluid Minerals Leasing

Stipulation Type	Development potential	Fluid mineral leasing allocation	Alternative A (acres)	Alternative B (acres)	Alternative C (acres)	Alternative D (acres)
Terrestrial wildlife resources	High	Open to leasing, subject to TL	226,300	73,400	101,700	101,700
Terrestrial wildlife resources	Medium	Open to leasing, subject to TL	108,100	38,500	50,100	50,100
Terrestrial wildlife resources	Low	Open to leasing, subject to TL	0	0	0	0
Vegetation Resources	Very High	Open to leasing, subject to TL	0	0	0	0
Vegetation Resources	High	Open to leasing, subject to TL	0	0	0	0
Vegetation Resources	Medium	Open to leasing, subject to TL	0	0	0	0
Vegetation Resources	Low	Open to leasing, subject to TL	0	0	0	0
Water resources	Very High	Open to leasing, subject to TL	0	0	0	0
Water resources	High	Open to leasing, subject to TL	0	0	0	0
Water resources	Medium	Open to leasing, subject to TL	0	0	0	0
Water resources	Low	Open to leasing, subject to TL	0	0	0	0
WSRs	Very High	Open to leasing, subject to TL	0	0	0	0
WSRs	High	Open to leasing, subject to TL	0	0	0	0
WSRs	Medium	Open to leasing, subject to TL	0	0	0	0
WSRs	Low	Open to leasing, subject to TL	0	0	0	0

Table B-15
Fluid Mineral Leasing by Development Potential, Leased Areas, without an Active Well,
Individual Stipulations, Seasonal Timing Limitations

Stipulation Type	Development potential	Fluid mineral leasing allocation	Alternative A (acres)	Alternative B (acres)	Alternative C (acres)	Alternative D (acres)
ACECs	Very High	Open to leasing, subject to TL	0	0	0	0
ACECs	High	Open to leasing, subject to TL	0	0	0	0
ACECs	Medium	Open to leasing, subject to TL	0	0	0	0
ACECs	Low	Open to leasing, subject to TL	0	0	0	0
Aquatic wildlife resources	Very High	Open to leasing, subject to TL	0	0	0	0
Aquatic wildlife resources	High	Open to leasing, subject to TL	0	0	0	0
Aquatic wildlife resources	Medium	Open to leasing, subject to TL	0	0	0	0
Aquatic wildlife resources	Low	Open to leasing, subject to TL	0	0	0	0
BCAs	Very High	Open to leasing, subject to TL	0	0	0	0
BCAs	High	Open to leasing, subject to TL	0	0	0	0
BCAs	Medium	Open to leasing, subject to TL	0	0	0	0
BCAs	Low	Open to leasing, subject to TL	0	0	0	0
Cultural resources	Very High	Open to leasing, subject to TL	0	0	0	0
Cultural resources	High	Open to leasing, subject to TL	0	0	0	0
Cultural resources	Medium	Open to leasing, subject to TL	0	0	0	0

B. Stipulations and Allocations Applicable to Fluid Minerals Leasing

Stipulation Type	Development potential	Fluid mineral leasing allocation	Alternative A (acres)	Alternative B (acres)	Alternative C (acres)	Alternative D (acres)
Cultural resources	Low	Open to leasing, subject to TL	0	0	0	0
NHT	Very High	Open to leasing, subject to TL	0	0	0	0
NHT	High	Open to leasing, subject to TL	0	0	0	0
NHT	Medium	Open to leasing, subject to TL	0	0	0	0
NHT	Low	Open to leasing, subject to TL	0	0	0	0
NPS	Very High	Open to leasing, subject to TL	0	0	0	0
NPS	High	Open to leasing, subject to TL	0	0	0	0
NPS	Medium	Open to leasing, subject to TL	0	0	0	0
NPS	Low	Open to leasing, subject to TL	0	0	0	0
NST	Very High	Open to leasing, subject to TL	0	0	0	0
NST	High	Open to leasing, subject to TL	0	0	0	0
NST	Medium	Open to leasing, subject to TL	0	0	0	0
NST	Low	Open to leasing, subject to TL	0	0	0	0
Riparian and wetland resources	Very High	Open to leasing, subject to TL	0	0	0	0
Riparian and wetland resources	High	Open to leasing, subject to TL	0	0	0	0
Riparian and wetland resources	Medium	Open to leasing, subject to TL	0	0	0	0

B. Stipulations and Allocations Applicable to Fluid Minerals Leasing

Stipulation Type	Development potential	Fluid mineral leasing allocation	Alternative A (acres)	Alternative B (acres)	Alternative C (acres)	Alternative D (acres)
Riparian and wetland resources	Low	Open to leasing, subject to TL	0	0	0	0
Soil resources	Very High	Open to leasing, subject to TL	0	0	0	0
Soil resources	High	Open to leasing, subject to TL	0	0	0	0
Soil resources	Medium	Open to leasing, subject to TL	0	0	0	0
Soil resources	Low	Open to leasing, subject to TL	0	0	0	0
Special status species	Very High	Open to leasing, subject to TL	0	0	0	0
Special status species	High	Open to leasing, subject to TL	0	0	0	0
Special status species	Medium	Open to leasing, subject to TL	0	0	0	0
Special status species	Low	Open to leasing, subject to TL	0	0	0	0
Terrestrial wildlife resources	Very High	Open to leasing, subject to TL	10,800	5,200	5,900	5,900
Terrestrial wildlife resources	High	Open to leasing, subject to TL	11,400	4,700	5,300	5,300
Terrestrial wildlife resources	Medium	Open to leasing, subject to TL	49,200	20,500	21,600	21,600
Terrestrial wildlife resources	Low	Open to leasing, subject to TL	3,700	1,700	1,800	1,800
Vegetation Resources	Very High	Open to leasing, subject to TL	0	0	0	0
Vegetation Resources	High	Open to leasing, subject to TL	0	0	0	0
Vegetation Resources	Medium	Open to leasing, subject to TL	0	0	0	0

B. Stipulations and Allocations Applicable to Fluid Minerals Leasing

Stipulation Type	Development potential	Fluid mineral leasing allocation	Alternative A (acres)	Alternative B (acres)	Alternative C (acres)	Alternative D (acres)
Vegetation Resources	Low	Open to leasing, subject to TL	0	0	0	0
Water resources	Very High	Open to leasing, subject to TL	0	0	0	0
Water resources	High	Open to leasing, subject to TL	0	0	0	0
Water resources	Medium	Open to leasing, subject to TL	0	0	0	0
Water resources	Low	Open to leasing, subject to TL	0	0	0	0
WSRs	Very High	Open to leasing, subject to TL	0	0	0	0
WSRs	High	Open to leasing, subject to TL	0	0	0	0
WSRs	Medium	Open to leasing, subject to TL	0	0	0	0
WSRs	Low	Open to leasing, subject to TL	0	0	0	0

Table B-16
Fluid Mineral Leasing by Development Potential, Unleased, Individual Stipulations,
Seasonal Timing Limitations

Stipulation Type	Development potential	Fluid mineral leasing allocation	Alternative A (acres)	Alternative B (acres)	Alternative C (acres)	Alternative D (acres)
ACECs	Very High	Open to leasing, subject to TL	0	0	0	0
ACECs	High	Open to leasing, subject to TL	0	0	0	0
ACECs	Medium	Open to leasing, subject to TL	0	0	0	0
ACECs	Low	Open to leasing, subject to TL	0	0	0	0
Aquatic wildlife resources	Very High	Open to leasing, subject to TL	0	0	0	0
Aquatic wildlife resources	High	Open to leasing, subject to TL	0	0	0	0
Aquatic wildlife resources	Medium	Open to leasing, subject to TL	0	0	0	0
Aquatic wildlife resources	Low	Open to leasing, subject to TL	0	0	0	0
BCAs	Very High	Open to leasing, subject to TL	0	0	0	0
BCAs	High	Open to leasing, subject to TL	0	0	0	0
BCAs	Medium	Open to leasing, subject to TL	0	0	0	0
BCAs	Low	Open to leasing, subject to TL	0	0	0	0
Cultural resources	Very High	Open to leasing, subject to TL	0	0	0	0
Cultural resources	High	Open to leasing, subject to TL	0	0	0	0
Cultural resources	Medium	Open to leasing, subject to TL	0	0	0	0
Cultural resources	Low	Open to leasing, subject to TL	0	0	0	0
NHT	Very High	Open to leasing, subject to TL	0	0	0	0
NHT	High	Open to leasing, subject to TL	0	0	0	0
NHT	Medium	Open to leasing, subject to TL	0	0	0	0
NHT	Low	Open to leasing, subject to TL	0	0	0	0
NPS	Very High	Open to leasing, subject to TL	0	0	0	0

B. Stipulations and Allocations Applicable to Fluid Minerals Leasing

Stipulation Type	Development potential	Fluid mineral leasing allocation	Alternative A (acres)	Alternative B (acres)	Alternative C (acres)	Alternative D (acres)
NPS	High	Open to leasing, subject to TL	0	0	0	0
NPS	Medium	Open to leasing, subject to TL	0	0	0	0
NPS	Low	Open to leasing, subject to TL	0	0	0	0
NST	Very High	Open to leasing, subject to TL	0	0	0	0
NST	High	Open to leasing, subject to TL	0	0	0	0
NST	Medium	Open to leasing, subject to TL	0	0	0	0
NST	Low	Open to leasing, subject to TL	0	0	0	0
Riparian and wetland resources	Very High	Open to leasing, subject to TL	0	0	0	0
Riparian and wetland resources	High	Open to leasing, subject to TL	100	0	0	0
Riparian and wetland resources	Medium	Open to leasing, subject to TL	400	0	0	0
Riparian and wetland resources	Low	Open to leasing, subject to TL	1,500	0	0	0
Soil resources	Very High	Open to leasing, subject to TL	0	0	0	0
Soil resources	High	Open to leasing, subject to TL	0	0	0	0
Soil resources	Medium	Open to leasing, subject to TL	0	0	0	0
Soil resources	Low	Open to leasing, subject to TL	0	0	0	0
Special status species	Very High	Open to leasing, subject to TL	0	0	0	0
Special status species	High	Open to leasing, subject to TL	0	0	0	0
Special status species	Medium	Open to leasing, subject to TL	0	0	0	0
Special status species	Low	Open to leasing, subject to TL	0	0	0	0
Terrestrial wildlife resources	Very High	Open to leasing, subject to TL	11,100	6,200	6,600	6,600

B. Stipulations and Allocations Applicable to Fluid Minerals Leasing

Stipulation Type	Development potential	Fluid mineral leasing allocation	Alternative A (acres)	Alternative B (acres)	Alternative C (acres)	Alternative D (acres)
Terrestrial wildlife resources	High	Open to leasing, subject to TL	16,400	6,500	7,000	7,000
Terrestrial wildlife resources	Medium	Open to leasing, subject to TL	208,600	75,400	92,400	92,400
Terrestrial wildlife resources	Low	Open to leasing, subject to TL	718,100	297,200	298,700	298,700
Vegetation Resources	Very High	Open to leasing, subject to TL	0	0	0	0
Vegetation Resources	High	Open to leasing, subject to TL	0	0	0	0
Vegetation Resources	Medium	Open to leasing, subject to TL	0	0	0	0
Vegetation Resources	Low	Open to leasing, subject to TL	0	0	0	0
Water resources	Very High	Open to leasing, subject to TL	0	0	0	0
Water resources	High	Open to leasing, subject to TL	0	0	0	0
Water resources	Medium	Open to leasing, subject to TL	0	0	0	0
Water resources	Low	Open to leasing, subject to TL	0	0	0	0
WSRs	Very High	Open to leasing, subject to TL	0	0	0	0
WSRs	High	Open to leasing, subject to TL	0	0	0	0
WSRs	Medium	Open to leasing, subject to TL	0	0	0	0
WSRs	Low	Open to leasing, subject to TL	0	0	0	0

This page intentionally left blank.

Appendix C

Air Resources Management Plan

This page intentionally left blank.

TABLE OF CONTENTS

Appendix

Page

APPENDIX C. AIR RESOURCES MANAGEMENT PLAN.....	C-1
C.1 Introduction.....	C-1
C.2 General Conditions	C-1
C.2.1 Revisions to the ARMP	C-1
C.2.2 Actions to Protect Air Quality	C-1
C.3 Review of Air Resources Data.....	C-2
C.3.1 Emissions and Activity Level Tracking.....	C-2
C.3.2 Air Monitoring Data Evaluation	C-2
C.3.3 Activity-Level Projections.....	C-2
C.3.4 Air Modeling Study Evaluation	C-3
C.4 Air Resource Protection.....	C-3
C.4.1 Analysis of Impacts from Authorized Actions	C-3
C.4.2 Emissions Inventory	C-3
C.4.3 Lease Notice and Stipulations.....	C-4
C.4.4 Design Features and Best Management Practices	C-4
C.4.5 Management Direction for Air Resources	C-6
C.5 Air Monitoring.....	C-7
C.5.1 Regional Air Monitoring	C-7
C.5.2 Pre-Construction and Project Air Monitoring.....	C-7
C.6 Air Modeling.....	C-8
C.6.1 Project-Specific Modeling.....	C-8
C.6.2 Modeling Protocol	C-8
C.6.3 Regional Air Modeling	C-8

This page intentionally left blank.

Appendix C. Air Resources Management Plan

C.1 INTRODUCTION

The condition of air resources directly relates to human health as well as economic and social development, making the management of these resources an important aspect of the North Dakota Field Office (NDFO) Resource Management Plan and Environmental Impact Statement (RMP/EIS). Primary air quality management authority and responsibility for the planning area rests with the North Dakota Department of Environmental Quality (North Dakota DEQ) Division of Air Quality (for non-Tribal areas of the planning area) and with the US Environmental Protection Agency for Tribal areas. However, the Bureau of Land Management (BLM) also has the authority and responsibility under the Federal Land Policy and Management Act to manage public lands in a manner that will protect the quality of air and atmospheric values (43 United States Code 1701 (a)(8)).

Air quality and atmospheric conditions are constantly changing and continuously influenced by seasonal and regional characteristics, including meteorological patterns, geographic features, and various sources of air pollutant emissions. The dynamic nature of air resources requires a management strategy that is flexible and responsive to change and includes continuous implementation over the life of the RMP. The purpose of this Air Resources Management Plan (ARMP) is to further clarify the goals and objectives of the NDFO RMP/EIS and management actions set forth in **Chapter 2, Table 2-2** related to air resources management.

This ARMP describes air resources management actions and the BLM's commitment for managing air resources and BLM-authorized activities that have the potential to adversely impact air resources within the NDFO planning area. The air resource management actions described in **Chapter 2, Appendix B, Stipulations and Allocations Applicable to Fluid Minerals Leasing**, and **Appendix D, Design Features and Best Management Practices**, in conjunction with the measures included in this ARMP, comprise the blueprint for an adaptive management strategy for managing air resources under the NDFO RMP/EIS.

C.2 GENERAL CONDITIONS

C.2.1 Revisions to the ARMP

This ARMP may be modified as necessary to comply with law, regulation, and policy and to address new information and changing circumstances. Changes to the goals, objectives, or management actions set forth in the NDFO RMP/EIS would require maintenance or amendment of the RMP, while changes to implementation, including modifying this ARMP, may be made without maintaining or amending the RMP.

C.2.2 Actions to Protect Air Quality

The BLM may require specific actions and measures to protect air resources and air quality related values, such as visibility and nitrogen deposition, that may include air monitoring, air quality modeling, and mitigation measures to meet air quality goals and objectives. The BLM will ensure implementation of reasonable mitigation, control measures, and design features through appropriate mechanisms, including lease stipulations and conditions of approval, notices to lessees, and permit terms and conditions as provided for by law and consistent with lease rights and obligations. The BLM will ensure air resource management strategies and control measures are enforceable by including implementation of this ARMP as a

management action in the NDFO RMP/EIS and by including project-specific conditions (both operator-committed and required mitigation) in a Record of Decision for each authorization where applicable.

C.3 REVIEW OF AIR RESOURCES DATA

The BLM will conduct periodic reviews of relevant air resources management data in order to implement and determine the effectiveness of this ARMP. In addition, the review would be used to determine if the air analysis (including the photochemical grid modeling study) conducted for the NDFO RMP/EIS should be updated. Based on the review of emissions, activity levels, and air monitoring data, relevant modeling data or air modeling studies, and oil and gas activity projections, the BLM will determine if current air resources management actions are meeting the goals and objectives established in the NDFO RMP/EIS. Based on the review of air resources management data and evaluation of current strategies, the BLM will determine if the ARMP should be modified. The BLM, in collaboration with the North Dakota DEQ and the US Environmental Protection Agency, may update or modify strategies to effectively manage air resources within the planning area. The review of air resources data will include the tasks described in the following subsections.

C.3.1 Emissions and Activity Level Tracking

At least every 3 years, the BLM will track the number and locations of new oil and gas wells drilled in the federal mineral estate, the number existing producing wells, and an estimate of the number of plugged and abandoned wells on the federal mineral estate within the planning area. These numbers would be compared to the planning area reasonably foreseeable development scenario level of oil and gas development identified in the NDFO RMP/EIS and the level of federal oil and gas development included in the photochemical grid modeling assessment conducted to inform the air analysis in the NDFO RMP/EIS. In addition, at least every 3 years, the BLM will estimate air pollutant emissions from oil and gas wells drilled and associated operations producing from the federal mineral estate within the planning area. Emissions estimates would be based on well types, well numbers, and knowledge of typical equipment and operations. The emissions estimates will also account for implemented mitigation measures and for new emission control regulations as they become effective. Each 3-year oil and gas emission inventory will be compared to emission estimates for the reasonably foreseeable development scenario level of oil and gas development identified in the NDFO RMP/EIS and the level of federal oil and gas development included in the photochemical grid modeling assessment conducted to inform the air analysis in the NDFO RMP/EIS.

C.3.2 Air Monitoring Data Evaluation

At least every 3 years, the BLM will conduct a review and evaluation of current air monitoring data and trends from air monitoring sites within the planning area that could be impacted by BLM-authorized activities that have the potential to adversely impact air resources. This review will be used to evaluate the status of current air quality conditions, including measured concentrations approaching or exceeding National or North Dakota Ambient Air Quality Standards (NAAQS or NDAAQS) or measured adverse impacts to air quality related values at Class I areas within the planning area.

C.3.3 Activity-Level Projections

At least every 3 years, the BLM will conduct a review of available oil and gas development projections that include estimates of future federal oil and gas activities within the planning area for the coming 3- to 5-year period and would compare the projections to the level of predicted future development included in the air analysis (including the photochemical grid modeling study) conducted for the NDFO RMP/EIS.

C.3.4 Air Modeling Study Evaluation

At least every 3 years, the BLM will review air quality modeling studies conducted by BLM, North Dakota DEQ, or other federal or Tribal agencies within the previous 3 years that include emissions sources that are authorized by BLM or affected by BLM-authorized activities and that evaluate potential impacts to air quality within the planning area.

C.4 AIR RESOURCE PROTECTION

The BLM recognizes that many of the activities that it authorizes, permits, or allows generate air pollutant emissions that have the potential to adversely impact air quality and air quality related values. The primary mechanism to reduce air quality impacts is to reduce emissions (mitigation). Identification and implementation of appropriate emission reduction measures is effective at the project authorization stage where the proposed action is defined in terms of temporal and spatial characteristics and technological specifications. The NDFO RMP/EIS and this ARMP include specific actions designed to mitigate the potential impacts on air quality from BLM-authorized actions.

C.4.1 Analysis of Impacts from Authorized Actions

The BLM may conduct, or require the project proponent to conduct, an air analysis to determine the magnitude of potential emissions and impacts on air resources prior to authorization of an oil and gas permit application or plan of development for activities with the potential to adversely impact air resources. The BLM will determine, on a case-by-case basis, the appropriate level of air analysis necessary to assess potential air quality impacts from proposed actions that have the potential to adversely impact air resources. The air analysis will be used to disclose potential impacts and determine any potential mitigation strategies to minimize adverse impacts. When determining the appropriate level of air analysis to be conducted, the BLM would consider the following criteria to identify pollutants of concern and inform its decision:

- a) magnitude of potential air emissions from the proposed activity;
- b) duration of proposed activity;
- c) proximity to a federally mandated Class I area or sensitive Class II area (as identified on a case-by-case basis by North Dakota DEQ or a federal land management or Tribal agency), population center, or other sensitive receptor;
- d) location within or adjacent to a nonattainment or maintenance area;
- e) meteorological and geographic conditions;
- f) existing air quality conditions, including measured exceedances of NAAQS or NDAAQS and measured adverse impacts on air quality related values;
- g) intensity of existing and projected development in the area; and
- h) issues identified during project scoping.

C.4.2 Emissions Inventory

The BLM may compile, or require the project proponent to compile and submit, an emissions inventory of direct and indirect emissions associated with the proposed project. The emissions inventory will include estimated emissions of regulated air pollutants from all sources related to the proposed activity, including fugitive emissions and greenhouse gas emissions, for each year for the life of the project. The BLM will review the emissions inventory to determine its completeness and accuracy.

C.4.3 Lease Notice and Stipulations

The BLM will implement the following Lease Notice and Stipulations to address potential impacts on air quality and air quality related values from federally authorized oil and gas development:

- a) Lease Notice – The lessee/operator is given notice that prior to project-specific approval, additional air resource analyses may be required in order to comply with the National Environmental Policy Act, Federal Land Policy and Management Act, and/or other applicable laws and regulations. Analyses may include equipment and operations information, emission inventory development, dispersion modeling or photochemical grid modeling for air quality and/or air quality related value impact analysis, and/or emission control determinations. These analyses may result in the imposition of additional project-specific control measures to protect air resources.
- b) Controlled Surface Use Stipulation – Surface use and occupancy within 2 miles of the boundary of the Lostwood Wilderness or Theodore Roosevelt National Park is subject to the following conditions: Prior to surface occupancy and use, the operator must submit an air analysis, including near field dispersion modeling, that demonstrates that proposed exploration or development operations will not result in adverse impacts to air quality and air quality related values and will meet air quality goals, objectives, standards, and thresholds for the Class I areas. The BLM may require modifications to or disapprove a proposed activity that would result in an adverse impact to air quality, exceed an ambient air quality standard (AAQS), or exceed a threshold of concern for an air quality related value.
- c) Controlled Surface Use Stipulation - Surface use and occupancy is subject to approval of a waste minimization plan that includes design features to minimize air pollutants released from venting, flaring, and leaks during drilling, completion, and production operations.
- d) No Surface Use Stipulation - No surface occupancy is allowed within 1.0 mile of the boundary of the Lostwood Wilderness or the Theodore Roosevelt National Park Class I area.

C.4.4 Design Features and Best Management Practices

- a) Venting and Flaring – Surface use and occupancy is subject to approval of a waste minimization plan that includes design features to minimize air pollutants released from venting, flaring, and leaks during drilling, completion, and production operations.
- b) Fugitive Dust – Proponents of development projects that have the potential to generate fugitive dust emissions may be required to submit a fugitive dust control plan and may be required to implement fugitive dust control measures as determined on a case-by-case basis by the BLM including:
 - 1. application of water or other approved or allowable dust suppressants,
 - 2. modification or cessation of operations during periods of high wind,
 - 3. installation of wind/dust barriers,
 - 4. installation of vegetation, gravel, or other surface coverage to exposed dirt surfaces,
 - 5. other dust control design features determined as necessary by the authorized officer.
- c) Oil and Gas Operations – Operators and project proponents will comply with all local, state, tribal, and federal regulations for the control of emissions of regulated air pollutants from oil and gas operations and will to the maximum extent feasible plan, coordinate, and incorporate design

features for the reduction of volatile organic compounds, hazardous air pollutants, and greenhouse gas (GHG) emissions from oil and gas activities such as:

1. reduced emissions completion and closed loop drilling technology;
 2. electric, natural gas, or enhanced engine (tier IV) technology for drill rig, completion, and mud pumping engines;
 3. closed storage tanks rather than open tanks or pits;
 4. vapor recovery units on condensate, produced water, and oil storage tanks;
 5. vapor balancing during condensate and oil tanker truck loading;
 6. electric, solar, or air driven pneumatic devices;
 7. electric or solar powered pumpjack engines;
 8. optimized glycol circulation rates on glycol dehydrators;
 9. replacement of wet seals with dry seals in centrifugal compressors;
 10. replacement of worn rod packing in reciprocating compressors;
 11. automated plunger lift systems; and
 12. leak detection and repair program.
- d) Coal Mining Operations – Operators and project proponents will comply with all local, state, tribal, and federal regulations for the control of emissions of regulated air pollutants from mining operations and will, to the maximum extent feasible, plan, coordinate, and incorporate design features for the reduction of volatile organic compounds, hazardous air pollutants, and GHG emissions from coal mining activities such as:
1. electric powered mining equipment
 2. fugitive dust control plan
 3. storage pile management to minimize dust emissions and methane off gassing
 4. pre-mining drainage of methane (i.e., methane recovery wells)
- e) Federal Class I Areas – Surface use and occupancy within 2 miles of the boundary of the Lostwood Wilderness or Theodore Roosevelt National Park is subject to the following conditions; prior to surface occupancy and use, the operator must submit an air analysis, including near field dispersion modeling, that demonstrates that proposed exploration or development operations will not result in adverse impacts to air quality and air quality related values and will meet air quality goals, objectives, standards and thresholds for the Class I areas. The BLM may require modifications to or disapprove a proposed activity that would result in an adverse impact to air quality, exceed an AAQS, or exceed a level of concern for an air quality related value.
- f) GHG Emissions – The BLM will minimize impacts to climate change from anthropogenic GHG emissions associated with its authorizations, routine maintenance, and administrative operations by seeking opportunities to reduce the use of fossil fuels and may require and implement GHG reduction strategies in its authorizations and operations such as:
1. use electric or solar powered tools and equipment
 2. use electric vehicles
 3. use alternative (non-fossil fuel) energy sources at facilities and authorized operations
 4. reduce use of fossil fuel vehicles on BLM-managed roads and trails
 5. provide increased access for human, animal, and electric powered recreation

C.4.5 Management Direction for Air Resources

- a) The BLM will use authorization, leasing stipulations, and conditions of approval for mineral development activities to support the air quality goals and prevent significant impacts (Alternative B, Alternative B.1, and Alternative D).
- b) The BLM will place conditions on BLM actions or authorizations resulting in air quality or visibility degradation to prevent violating AAQS (Alternative C).
- c) The BLM will work cooperatively with the North Dakota DEQ and Tribal and local agencies to minimize impacts on air quality from BLM-authorized actions.
- d) The BLM will support air resource monitoring to determine existing conditions, long-term trends, and the effectiveness of air resource management strategies. The BLM will work collaboratively with state, local, and Tribal agencies; industry; and stakeholders to gather, share, and analyze air quality monitoring data to achieve air quality goals and objectives.
- e) The BLM will prioritize rights-of-way actions for gas-gathering pipelines and consider other management actions to reduce gas venting and flaring.
- f) To prevent air quality or air quality related value degradation, the BLM will request operators to incorporate strategies such as field design features (for example, reinjection, cogeneration, centralized facilities, three-phase transport, and delivery systems), emissions controls, or design features to reduce venting and flaring from BLM-authorized oil and gas wells (Alternative B, Alternative B.1, and Alternative D).
- g) The BLM, in collaboration with the North Dakota DEQ, will require emission controls or design features when significant impacts on air quality or air quality related values from venting and flaring at BLM-authorized oil and gas wells are identified (Alternative C).
- h) To minimize fugitive dust emissions from BLM-authorized activities, the BLM will require a fugitive dust control plan or dust abatement measures developed in coordination with Tribal, state, and local agencies and based on best management practices (Alternative B, Alternative B.1, and Alternative D).
- i) The BLM will apply, on a case-by-case basis, dust abatement measures for BLM-authorized activities (Alternative C).
- j) The BLM will, where feasible, promote the design of field systems that reduce air emissions, such as liquids-gathering and delivery systems, centralized treatment systems, storage facilities, and field compression systems.
- k) The BLM will develop and apply conditions of approval to reduce impacts on air resources when the analysis at the permitting or project stage shows significant adverse impacts on ambient air quality standards or air quality related values.
- l) The BLM will support, conduct, or require a regional air modeling analysis, as needed, to assess cumulative air quality impacts from reasonably foreseeable emissions-producing activities in the planning area. Cumulative air quality modeling is part of a comprehensive strategy to prevent BLM-permitted activities from causing or contributing to violations of ambient air quality standards or causing significant adverse impacts on air quality related values.

- m) The BLM will determine, on a case-by-case basis and in accordance with the ARMP, the appropriate level of air analysis necessary to determine potential air quality impacts from proposed actions and subsequent potential mitigation strategies for project-level EISs and EAs.
- n) The BLM will consider and prioritize actions that reduce or mitigate GHG emissions, such as enhanced energy efficiency, use of lower GHG-emitting technologies, capture or beneficial use of methane emissions, and/or sequestration of carbon dioxide through enhanced oil recovery.
- o) The BLM will prioritize processing of rights-of-way applications for infrastructure (for example, pipelines) that maximize the recovery and delivery of natural gas from well sites to meet the objectives of reducing lost product and minimizing air pollutant emissions from venting and flaring.

C.5 AIR MONITORING

The BLM recognizes that ambient air monitoring provides valuable data for determining current and background concentrations of air pollutants, describing long-term trends in air pollutant concentrations, and evaluating the effectiveness of air emissions control strategies.

C.5.1 Regional Air Monitoring

The BLM will facilitate cooperative engagements with industry, North Dakota DEQ, Forest Service, National Park Service, US Environmental Protection Agency, Tribal governments, local counties, or other entities to establish, fund, operate, and maintain air monitoring sites within the planning area to assess air quality conditions that may be affected by emissions from BLM-authorized actions under the NDFO RMP/EIS. The BLM will facilitate the sharing of air monitoring data collected for purposes of this section with other agencies and the public.

C.5.2 Pre-Construction and Project Air Monitoring

The BLM may require project proponents of oil and gas development proposals or proponents of other emission-generating projects, such as solid mineral development that have the potential to cause adverse air quality impacts, to submit air monitoring data from a site within, adjacent to, or representative of the proposed development area. The BLM may require proponents to submit representative air monitoring data or conduct pre-construction air monitoring for the purpose of establishing baseline air quality conditions prior to development of a proposed project. The BLM may require operators to submit representative air monitoring data or conduct air monitoring for the life of an approved project for the purpose of determining impacts attributable to the project over time and to determine the effectiveness of the BLM's management actions related to the project.

Air monitoring requirements will be determined by the BLM in collaboration with North Dakota DEQ, based on the absence of existing representative air monitoring data and the criteria to inform its decisions listed in Section C4.1 of this ARMP. If the BLM determines that baseline monitoring is necessary, the project proponent may be required to provide a minimum of 1 year of baseline ambient air monitoring data for the pollutant(s) of concern obtained from a site that meets North Dakota DEQ air monitoring standards. The operator or project proponent will be responsible for siting, installing, operating, and maintaining any air monitoring equipment and for reporting air monitoring data to North Dakota DEQ and the BLM. The BLM and North Dakota DEQ will work cooperatively to determine a mechanism to submit and approve air monitoring siting, operation, and monitoring data and ensure that ambient air monitoring data collected as a condition of approval for BLM-authorized activities will be made publicly available.

C.6 AIR MODELING

The BLM recognizes that air quality modeling (including screening models, air dispersion models, and photochemical modeling systems) are useful tools for predicting project-specific impacts on air quality, predicting the potential effectiveness of control measures and strategies, and for predicting trends in regional concentrations of air pollutants from multiple sources. As part of this ARMP, the BLM commits to the measures described in this section with regards to air quality modeling.

C.6.1 Project-Specific Modeling

The BLM may require project proponents of oil and gas development activities or proponents of other emission-generating projects, such as solid mineral development, to conduct air quality modeling to analyze potential impacts from the proposed project. Air quality modeling may be required for pollutant(s) of concern in the absence of other available data to ensure compliance with laws and regulations or to determine the effectiveness of emission control strategies. The BLM may, upon review and approval, allow project proponents to provide results from other modeling analyses that include the proposed project. The BLM will not require an air modeling analysis when the project proponent can demonstrate that the project will result in no net increase in emissions of the pollutant(s) of concern. The decision for conducting air quality modeling will be based on BLM's criteria to inform its decisions listed in **Section C.4.1** of this ARMP.

C.6.2 Modeling Protocol

If a project-specific modeling analysis is required, the BLM will determine the methodology and parameters to be modeled through the development of a modeling protocol. The modeling protocol would be developed collaboratively between the BLM and project proponent with input from the North Dakota DEQ and other affected federal land managers and would be approved by the BLM before the initiation of the air quality modeling.

C.6.3 Regional Air Modeling

Regional air modeling involves the analysis of potential impacts on air quality over a large geographic area, typically multi-state, and for multiple emissions source groups and pollutants. The BLM will support and participate in regional modeling efforts through multi-state and/or multi-agency organizations such as Western Governors' Association – Western Regional Air Partnership and the Intermountain West Data Warehouse. In addition, the BLM may, contingent upon available funding, initiate, conduct, or facilitate a regional air modeling analysis to determine regional impacts from its authorized activities. If a regional modeling analysis is initiated by the BLM, a modeling protocol will be developed collaboratively among the BLM, North Dakota DEQ, and other affected federal agencies and land managers. Final approval and acceptance of the protocol will be determined by the BLM before the initiation of the regional air quality modeling.

Appendix D

Design Features and Best Management Practices

This page intentionally left blank.

TABLE OF CONTENTS

Appendix

Page

APPENDIX D. DESIGN FEATURES AND BEST MANAGEMENT PRACTICESD-1

D.1	Design Features.....	D-1
D.2	Required Design Features for Greater Sage-Grouse.....	D-10
D.3	Best Management Practices	D-20
D.3.1	Air Resources.....	D-20
D.3.2	Climate Change.....	D-20
D.3.3	Fluid Minerals.....	D-21
D.3.4	Healthy Watersheds	D-21
D.3.5	Storm Water	D-21
D.3.6	Riparian Area Management	D-21
D.3.7	Nonpoint Source Management	D-22
D.3.8	Erosion and Sediment Control Practices.....	D-22
D.3.9	Placer Mining.....	D-23
D.3.10	Wind Energy Development	D-23
D.3.11	Solar Energy Development.....	D-24
D.3.12	Communications Towers	D-24
D.3.13	Avian Protection on Power Lines	D-25
D.3.14	Visual Resources.....	D-25
D.3.15	Pasture, Rangelands, and Grazing Operations	D-25
D.3.16	Invasive Species and Noxious Weeds.....	D-27
D.3.17	Vegetation.....	D-27
D.3.18	Management of Land Boundaries.....	D-29
D.3.19	Pollinators	D-29
D.3.20	Hazardous Materials and Waste	D-29
D.4	Conservation Measures for Listed and Candidate Species	D-29

TABLES

Page

D-1	Implementation-Level Design Features	D-2
-----	--	-----

This page intentionally left blank.

Appendix D. Design Features and Best Management Practices

D.1 DESIGN FEATURES

The United States Department of the Interior, Bureau of Land Management (BLM) will use the design features discussed in this appendix to meet statutory requirements for environmental protection and to comply with resource-specific goals and objectives set forward in the North Dakota Resource Management Plan (RMP)/Environmental Impact Statement (EIS). The BLM will apply design features to modify the operations of authorized land uses or activities to meet these obligations.

The BLM will apply these measures to avoid, minimize, rectify, reduce, and compensate for effects if an evaluation of the authorization area indicates the presence of resources of concern. These include air, cultural and paleontological resources, soils, water, vegetation, recreation values, visual resources, and important wildlife habitat. The intent is to reduce effects associated with authorized land uses or activities such as road, pipeline, or power line construction, mineral development, range improvements, and recreation.

The design features for authorizations will be identified as part of the National Environmental Policy Act of 1969 (NEPA) process. This will come about through interdisciplinary analysis involving resource specialists, project proponents, government entities, landowners, and other surface management agencies. Those measures selected for implementation will be identified in the record of decision (ROD) (for an EIS) or Decision Record (for an environmental assessment [EA] or categorical exclusion) for those authorizations. The measures chosen will inform a potential lessee, permittee, or operator of the requirements that must be met when using BLM-administered lands and minerals, consistent with the mining laws, and will mitigate effects from those authorizations.

Because these actions create a clear obligation for the BLM—to ensure any proposed mitigation action adopted in the environmental review process is performed—they will ensure that mitigation will reduce environmental effects in the implementation stage and include binding mechanisms for enforcement¹.

Because of site-specific circumstances and local resource conditions, some design features may not apply to some or all activities (e.g., a resource or conflict is not present on a given site), or they may require slight variations from what is described in this appendix. The BLM may add additional measures it deems necessary through the environmental analysis and as developed through coordination with other federal, state, and local regulatory and resource agencies. Application of design features is subject to valid existing rights and technical and economic feasibility.

The BLM will monitor the effectiveness of design features to determine whether they are achieving resource objectives and accomplishing desired goals. Timely adjustments would be made as necessary to meet the resource goals and objectives.

¹ Council on Environmental Quality memorandum for heads of federal departments and agencies, *Appropriate Use of Mitigation and Clarifying the Appropriate Use of Mitigated Findings of No Significant Impact*, January 14, 2011.

The list included in this appendix is not limiting but references the most frequently used sources. The BLM may add additional site-specific restrictions it deems necessary by further environmental analysis and as developed through coordination with other federal, state, and local regulatory and resource agencies.

Because design features change or are modified, based on new information, the BLM will update the guidelines periodically. As new publications are developed, the BLM may consider those best management practices (BMPs) that they contain. In addition, many BLM handbooks (such as BLM Manual 9113, Roads, and 9213, Interagency Standards for Fire and Aviation Operation) also contain BMP-type measures for minimizing effects. Note that BLM's Information Bulletin 2021-003 highlights the status of the 2016 Waste Prevention Rule and provides guidance; the BLM is updating its waste prevention rules as of early 2024 (see proposed rules here: <https://www.federalregister.gov/documents/2022/11/30/2022-25345/waste-prevention-production-subject-to-royalties-and-resource-conservation>). (These BLM-specific guidance and direction documents are not referenced in this appendix.)

The EIS for this RMP does not decide or dictate the exact wording or inclusion of these design features. Rather, they are used in the RMP and EIS process as a tool to help demonstrate at the land use plan scale how they will be applied when subsequent activity plans and site-specific authorizations are considered.

The design features and their wording are matters of policy. As such, specific wording is subject to change, primarily through administrative review, not through the RMP and EIS process. Any further changes that may be made in the continuing refinement of these design features and any development of program-specific standard procedures will be handled in another forum, which will include appropriate public involvement and input. These design features are not to be confused with actual oil and gas stipulations, which can be found in **Appendix B**, Stipulations and Allocations Applicable to Fluid Minerals Leasing.

Table D-1
Implementation-Level Design Features

Resource	Design Feature
Air Quality	
DF-01, Venting and Flaring	Additional air resource analyses may be required in order to comply with the NEPA, FLPMA, and/or other applicable laws and regulations. Analyses may include equipment and operations information, emission inventory development, dispersion modeling or photochemical grid modeling for air quality and/or air quality related value impact analysis, and/or emission control determinations. These analyses may result in the imposition of additional project-specific control measures to protect air resources.
DF-02, Fugitive Dust	Proponents of development projects that have the potential to generate fugitive dust emissions may be required to submit a fugitive dust control plan and may be required to implement fugitive dust control measures as determined on a case-by-case basis by the Authorized Officer including: 1. application of water or other approved or allowable dust suppressants, 2. modification or cessation of operations during periods of high wind, 3. installation of wind/dust barriers, 4. installation of vegetation, gravel, or other surface coverage to exposed dirt surfaces, 5. other dust control design features determined as necessary by the Authorized Officer.

Resource	Design Feature
DF-03, Oil and Gas Operations	Operators and project proponents will comply with all local, state, Tribal, and federal regulations for the control of emissions of regulated air pollutants from oil and gas operations and will to the maximum extent feasible plan, coordinate, and incorporate design features for the reduction of volatile organic compounds, hazardous air pollutants, and greenhouse gas (GHG) emissions from oil and gas activities such as: 1. reduced emissions completion and closed loop drilling technology; 2. electric, natural gas, or enhanced engine (tier IV) technology for drill rig, completion, and mud pumping engines; 3. closed storage tanks rather than open tanks or pits; 4. vapor recovery units on condensate, produced water, and oil storage tanks; 5. vapor balancing during condensate and oil tanker truck loading; 6. electric, solar, or air driven pneumatic devices; 7. electric or solar powered pumpjack engines; 8. optimized glycol circulation rates on glycol dehydrators; 9. replacement of wet seals with dry seals in centrifugal compressors; 10. replacement of worn rod packing in reciprocating compressors; 11. automated plunger lift systems; and 12. leak detection and repair program.
DF-04, Coal Mining Operations	Operators and project proponents will comply with all local, state, Tribal, and federal regulations for the control of emissions of regulated air pollutants from mining operations and will, to the maximum extent feasible, plan, coordinate, and incorporate design features for the reduction of volatile organic compounds, hazardous air pollutants, and GHG emissions from coal mining activities such as: 1. electric powered mining equipment 2. fugitive dust control plan 3. storage pile management to minimize dust emissions and methane off gassing 4. pre-mining drainage of methane (i.e., methane recovery wells)
DF-05, Federal Class I Areas	Surface use and occupancy within 2 miles of the boundary of the Lostwood Wilderness or Theodore Roosevelt National Park is subject to the following conditions; prior to surface occupancy and use, the operator must submit an air analysis, including near field dispersion modeling, that demonstrates that proposed exploration or development operations will not result in adverse impacts to air quality and air quality related values and will meet air quality goals, objectives, standards and thresholds for the Class I areas. The BLM may require modifications to or disapprove a proposed activity that would result in an adverse impact to air quality, exceed an AAQS, or exceed a level of concern for an air quality related value.

Resource	Design Feature
Cultural Resources	
DF-06, NRHP Eligible Sites	Surface disturbance is prohibited within National Register of Historic Places (NRHP)-eligible properties, districts, and cultural sites allocated to conservation for future, traditional, and public use. Some leased areas may be found to contain historical properties or resources protected under the National Historic Preservation Act, the American Indian Religious Freedom Act, the Native American Graves Protection and Repatriation Act, Executive Order 13007, or other statutes and executive orders. The BLM will not approve any ground-disturbing activities that may affect any such properties or resources until it completes its obligations under applicable requirements of the National Historic Preservation Act and other authorities. The BLM may require modification to development proposals to protect such properties or may disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized, or mitigated.
DF-07, Historic Landmarks and Districts	All surface-disturbing activities and construction of semi-permanent and permanent facilities within 2 miles of the following locations Lynch Knife River Flint Quarry District, Knife River Indian Villages National Historic Site, Writing Rock State Historic Site (32DV4), Doaks Butte (32BO222), Killdeer Mountain Battle Study Area (32DUx1120), Medicine Rock State Historic Site (32GT129), Theodore Roosevelt's Elkhorn Ranch and Greater Elkhorn Ranchlands District, Fort Union Trading Post National Historic Landmark, Custer Military Trail Archaeological District, Fort Clark Archaeological District, Chateau de Mores State Historic Site (32BI60), Fort Buford State Historic Site/Confluence (32WI25), Huff National Historic Landmark (32MO11), Double Ditch State Historic Site (32BL8), Menoken National Historic Landmark (32BL2), Turtle Effigy State Historic Site (32ME1270), Pulver Mounds (32ML112), and Cross Ranch Archaeological District may require special design including location, painting, and camouflage to blend with the natural surroundings.
DF-08, Doaks Butte	Surface disturbance is prohibited within the Doaks Buttes (32BO222) site and disturbance is avoided consistent with management decisions within 300 feet of the site boundary.
Paleontological Resources	
DF-9, Significant Paleontological Localities	Surface disturbance should be avoided in significant paleontological localities. If no practical alternative exists for relocating the activity, an exception may be granted by the BLM Authorized Officer if the project proponent submits a plan demonstrating that the adverse impacts can be mitigated through data recovery and extensive recordation. Where impacts to paleontological resources cannot be mitigated to the satisfaction of the BLM Authorized Officer, surface disturbance on that area will be prohibited.
Soil Resources	
DF-10, Sensitive Soils	Surface disturbance on sensitive soils may be prohibited. If no practical alternative exists for relocating the activity, an exception may be granted by the BLM Authorized Officer subject to approval of a reclamation plan demonstrating the following: (1) that no practical alternative exists for relocating the activity, (2) the activity will be located to reduce effects on soil and water resources, (3) site productivity will be maintained or restored, (4) surface runoff and sedimentation will be adequately controlled, (5) on- and off-site areas will be protected from accelerated erosion, such as rilling, gully, piping, and mass wasting; water quality and quantity will be in conformance with state and federal water quality laws, (6) no areas susceptible to mass wasting will be disturbed, and (7) surface-disturbing activities will be prohibited during extended wet periods; construction will not be allowed when soils are frozen.

Resource	Design Feature
DF-11, Steep Slopes	Surface disturbance on slopes greater than 30 percent may be prohibited. If no practical alternative exists for relocating the activity, an exception may be granted by the BLM Authorized Officer subject to approval of a reclamation plan demonstrating the following: (1) that no practical alternative exists for relocating the activity, (2) the activity will be located to reduce effects on soil and water resources, (3) site productivity will be maintained or restored, (4) surface runoff and sedimentation will be adequately controlled, (5) on- and off-site areas will be protected from accelerated erosion, such as rilling, gully, piping, and mass wasting; water quality and quantity will be in conformance with state and federal water quality laws, (6) no areas susceptible to mass wasting will be disturbed, and (7) surface-disturbing activities will be prohibited during extended wet periods; construction will not be allowed when soils are frozen.
DF-12, Wet Soil Conditions	Surface-disturbing activities may be prohibited during wet soil conditions, when vehicles or equipment can create ruts 4 inches or greater, in order to prevent soil mixing and compaction.
Water, Riparian, Wetlands, and Floodplains	
DF-13, Source Water Protection Areas	For any surface-disturbing activities in State-designated source water protection areas, the BLM will complete a Source Water Protection Plan.
DF-14, Riparian/Wetland, Streams, and Floodplains	Surface-disturbing activities within riparian/wetland areas, ephemeral, intermittent, and perennial drainages, and floodplains may be prohibited. If no practical alternative exists for relocating the activity, an exception may be granted by the BLM Authorized Officer if a plan is approved demonstrating design features that maintain or improve the functionality of these areas and minimizes the potential for adverse effects. Where no alternative to road construction exists, keep roads to the minimum necessary for the approved activity. The plan will address: (1) potential effects on riparian and wetland resources, (b) mitigation to reduce effects to acceptable levels (including timing and restrictions), (c) post-project restoration, and (d) monitoring. Following established protocols, the operator must conduct monitoring capable of detecting early signs of changing riparian and wetland conditions.
Wildlife	
DF-15, Pallid Sturgeon	No instream work from April 1 to July 31 in pallid sturgeon habitat.
DF-16, Migratory Birds	Implement project design features to avoid or minimize impacts from ground disturbing activities to migratory bird nesting.
DF-17, Bighorn Sheep Critical Habitat	Prior to surface disturbance and disrupting activities, the proponent will prepare a plan as a component of the project application to be approved by the BLM Authorized Officer, with confirmation from the state wildlife management agency. The proponent should not initiate surface-disturbing activities unless the Authorized Officer has approved the plan. The plan must demonstrate to the Authorized Officer's satisfaction that the function and suitability of the habitat would not be impaired.
DF-18, Big Game	Surface disturbance and disrupting activities between April 1 and June 30 would be subject to a plan approved by the BLM Authorized Officer that provides adequate mitigations measures and conservation actions to protect mule deer, elk, and antelope birthing areas.

Resource	Design Feature
DF-19, Sharp-tailed Grouse and Greater Prairie Chicken Leks	Surface disturbance and disrupting activities within 2 miles of the perimeter of a lek will be subject to a plan approved by the BLM Authorized Officer that provides adequate mitigation measures and conservation actions to protect breeding, nesting, and brood-rearing habitats and limit disturbance in a manner that will support the long-term populations associated with the lek and surrounding habitat.
DF-20, Special Status Species	Prior to surface disturbance and disrupting activities, the proponent will prepare a plan as a component of the project application to be approved by the BLM Authorized Officer. The proponent should not initiate surface-disturbing activities unless the Authorized Officer has approved the plan. The plan must demonstrate to the Authorized Officer's satisfaction that the function and suitability of the habitat would not be impaired.
DF-21, Greater Sage-grouse	See Section E.2 for Required Design Features to protect Greater Sage-Grouse.
Vegetation	
DF-22, Tallgrass Prairie and Woody Draws	Surface disturbance will be avoided within Tallgrass Prairie and Upland Deciduous Woodland habitat types as identified in coordination with the North Dakota Game and Fish and North Dakota Natural Resource Heritage Program. Where no practicable alternative exists the BLM Authorized Officer may approve development if shown to minimize the potential for adverse environmental impacts.
Backcountry Conservation Areas (BCAs)	
DF-23, BCAs	Surface disturbance and disturbing activities in backcountry conservation areas are subject to the following operating constraint: Prior to surface use, occupancy or disturbance in BCAs, a plan shall be prepared by the proponent and approved by the BLM Authorized Officer with notification to North Dakota Game and Fish. The plan must facilitate the long-term maintenance of big game wildlife populations and promote public access to support wildlife-dependent recreation and hunting opportunities. Proposed activities may not alter or depreciate important recreational values located within BCAs.
Noise and Light in Sensitive Areas	
DF-24, Noise and Light	Minimize noise and light pollution in the following sensitive areas: special status species habitat, within 2 miles surrounding National Park units, recreation areas, and river corridors. Use best available technology such as installation of multi-cylinder pumps, sound reducing mufflers, and placement of exhaust systems to direct noise away from the protection area/ resource. Control exhaust and noise compressors so that operational noise will not exceed 49dB measured at 30 feet from the source. Reduce light pollution by using methods such as limiting height of light poles, timing of lighting operations (meaning limiting lighting to times of darkness associated with operations), limiting wattage intensity, and constructing light shields. An exception may be granted if a determination is made that natural barriers or view sheds would meet these mitigation objectives or if human health and safety were adversely affected.
DF-25, National Park System (NPS) Units	Surface-disturbing activities within 3 miles of the boundary of Theodore Roosevelt National Park, Knife River Indian Villages National Historic Site, and Fort Union Trading Post National Historic Site, the management corridor for Lewis & Clark National Historic Trail, or the management corridor of the North Country National Scenic Trail will require consultation with the NPS and may require special design including location, painting, and camouflage to blend with the natural surroundings and meet the visual quality objectives for the NPS.

Resource	Design Feature
Visual Resources	
DF-26, Split Estate Visual Resources Analysis	Visual design features will be based on the VRM class. The following features will be considered when designing visual mitigation for a project: VRM Class II – Constraints may include utilizing topographic/vegetative screening, matching color tones of facilities with surrounding topographic features, orienting facilities, redesigning facilities to such scale that they may not be evident, or placing facilities outside the VRM Class II area. VRM Class III – Constraints may include utilizing topographic/vegetative screening, matching color tones of facilities with surrounding topographic features, orienting facilities, redesigning facilities to such scale that they are visually subordinate to the landscape, or placing facilities outside the VRM Class III area. VRM Class IV – Constraints may include matching color tones of facilities with surrounding topographic features. *Split-estate lands where BLM has mineral decision area are recommended to incorporate the design features of the adjacent VRM category. If there are no nearby VRM categories, VRI classes would be used to determine recommended design features.
Roads	
DF-27, Roads	- Existing roads and primitive trails would be considered first prior to the development of new roads. - Construct and maintain roads to the standards established in the BLM Gold Book. Roads will follow the contour of the land where practical. Gravel will be proven to be free of the mineral erionite through testing procedures established by the North Dakota Department of Health. Provide timely year-round road maintenance. - Shared-use roadways would be utilized to the greatest extent possible to reduce the number of new roads required. - Roads will be posted with speed limits. - ROW boundaries will be marked and posted to federal survey standards, including section line roads, where appropriate. For new road ROWs, boundary evidence risk assessment per 600 DM 5 and H-9600-1, Chapter 1 will be conducted.
Fluid Minerals	
DF-28, Fluid Mineral Development	Multiple wells will be drilled from a single well pad wherever feasible. Production facilities will be centralized to avoid tanks and associated facilities on each well pad where necessary to address resource issues. Avoid placement of production facilities on hilltops and ridgelines; screen facilities from view. Aboveground facilities, including power boxes, building doors, roofs, and any visible equipment, will be painted a color selected by the BLM from the latest national color charts within 6 months of completion that best allows the facility to blend into the background. The operator is responsible for maintaining paint color for the duration of the project. Lease and rights-of-way corridors boundaries will be evaluated for boundary evidence risk assessment per Onshore Order No. 1, Surface Operating Standards for Oil and Gas Exploration and Development (BLM Gold Book), 600 DM 5, and H-9600-1, Chapter 1. Facilities location and surface disturbance located within one-fourth mile of a lease or rights-of-way corridor boundary will be evaluated for boundary evidence risk assessment per 600 DM 5 and H-9600-1, Chapters 1 and 6.

Resource	Design Feature
Fluid Mineral Developments <i>(continued)</i>	Construct and maintain roads to the standards established in the BLM Gold Book. Roads will follow the contour of the land where practical. Initial gravel application should be a minimum of 6 inches and proven to be free of the mineral erionite through testing procedures established by the North Dakota Department of Health. Provide timely year-round road maintenance and cleanup on the access road.
	Implement dust abatement measures as needed to prevent fugitive dust from vehicular traffic, equipment operations, and wind events.
	Locate and protect existing pipelines, power lines, and telephone lines.
	Use common utility or right-of-way corridors containing roads, power lines, and pipelines. All power lines to individual well locations (excluding major power source lines to the operating oil or gas field) and all flow lines will be buried in or immediately adjacent to the access roads, where feasible. Retrofit existing powerlines by burying them or installing perch guards to prevent their use as raptor perches.
	Raptor perch avoidance devices will be installed on all new power lines and existing lines that present a potential hazard to raptors.
	Use BMPs such as matting, tackifiers, straw mulch, and fiber rolls to aid in prevention of soil erosion.
	Implement preventative measures for the conservation of migratory birds. These measures will be implemented to reduce the potential for bird mortality, injury and/or harm from project activities such as pad construction, drilling, testing, completion, and production of a well. Operators can work with the BLM North Dakota Field Office during all stages of the project to determine and utilize the best preventative measures to implement. Such measures may include but are not limited to netting or covering all containers or pits, mowing vegetation, screening drip buckets or containers, and installing "exhaust cones" on top of exhaust stacks.
	No use of surface pits for water disposal.
	Utilize closed loop drilling system. Drill cuttings will be stored in three sided tanks on locations prior to be transported offsite to an approved disposal facility. Disposal of all solids and liquids (drilling fluids/cuttings, produced water, trash, sewage, and chemicals) would meet all state, federal, and county requirements.
	Locate invert, saltwater, or testing tanks in a contained area and/or diked so that any spilled fluids be contained. During drilling, ensure a berm no less than 2 feet in height surrounds the invert tanks in the event of a spill. Saltwater and diesel tanks should not be placed on topsoil stockpiles.
	Do not dispose of or burn waste, trash, or chemicals on location.
	Install plastic liner under drilling operations, storage tanks, and high-risk processing areas.
	Prepare and adhere to a Stormwater Management Plan (SWMP).
	Develop and implement a Spill Prevention, Control, and Countermeasure (SPCC) plan.

Resource	Design Feature
Fluid Mineral Developments <i>(continued)</i>	Locate production facilities to maximize interim reclamation of the cut and fill slopes (3:1 slope is optimal) of the well pad and centralized tank battery (CTB) (if applicable). Place production tanks on the "cut" portion of the pad, except where interim reclamation re-contouring would preclude that placement. Ensure load lines terminate inside the dike and have adequate drip containment catch basins. Ensure facilities comply with American Petroleum Institute's Recommended Practice for Setting, Maintenance, Inspection, Operation, and Repair of Tanks in Production Service (API RP 12 R1). If a tank battery is constructed on location, surround tank setting, treater, and separator, with lined steel containment dike of sufficient capacity to adequately contain 110 percent of the contents of the largest vessel within it, plus one day of production. Construct an impermeable berm of sufficient dimensions around the perimeter of the well pad such that no fluid, including stormwater, is allowed to migrate off location. Any stormwater or other runoff from the pad will be tested and follow state regulations to dispose or disperse the water from the pad. Conduct interim reclamation within 6 months to minimize erosion and transport of soils from disturbed surfaces. Reclaim portions of the access road and well pad (including any CTB pads) not needed for production. Re-contour cut and fill slopes, rip compacted subsoil, spread topsoil and reseed during the next spring or fall seeding period. Seed mix and seeding method will be determined in conjunction with the landowner or land management agency and the local NRCS and/or county extension offices. See also Appendix E, Reclamation Standards. Regularly monitor and prompt control noxious weeds or other invasive non-native plant species. Take measures to prevent and suppress fires caused by their employees, contractors, or subcontractors, including removal of vegetation around ignition sources. When plugging the well, a steel plate dry marker welded to the surface casing at least 4-feet below recontoured ground is required, and must contain the same information as the well sign as directed by 43 CFR 3162.6 (30 CFR 221.22). Near Lake Sakakawea or other surface water features, pad floor and berms shall be compacted to a minimum density of 95 percent of the maximum dry density obtained by the American Association of State and Highway Transportation Officials (AASHTO) T 99 to help slow and/or prevent any spills from absorbing through the pad and migrating off-site towards Lake Sakakawea. To reduce potential impacts to critical Piping Plover habitat: a. Construction, drilling, and reclamation earthwork shall not be conducted from April 15 to August 31, within 0.50 mile of designated Piping Plover Critical Habitat. b. The final aggregate utilized on the pads will be coarse in nature to prevent the attraction of piping plovers to the newly constructed pad as a nesting site. The size of the aggregate will be no smaller than 1.5 inches in diameter. Near sensitive receptors such as occupied dwellings, install sound mitigation barriers on the pad perimeter to reduce noise levels associated with drilling, completions, and flaring.

Resource	Design Feature
Fluid Mineral Developments <i>(continued)</i>	Near visually sensitive areas such as occupied dwellings, use natural features (such as topography and vegetation) or artificial features such as berms to help conceal facilities. Use low-profile pumping units and tanks to reduce visual impacts in these areas.
	Monitor wells and production facilities using remote monitoring techniques such as SCADA and develop a plan to reduce the frequency of vehicle traffic.
	Surface-disturbing activities may be prohibited during muddy and/or wet soil periods.
	When crossing streams during pipeline construction, pipelines must be bored a minimum of 8 feet below the stream bed.
	Construct and reclaim pipelines to the standards established in the BLM Gold Book. Pipeline routes and roads should be co-located as much as possible to reduce reclamation needs and impacts to other resources. Compact pipeline trenches during backfilling and maintain to correct backfill settling and prevent erosion.
	Pipelines to be abandoned must be flushed and/or purged of all products and capped 4 feet minimum below ground. Any lines buried close to the surface that may become exposed due to water or wind erosion, or soil movement must be removed.
	See also Air Resources Design Features, above.
	See also Appendix E , Reclamation Standards for reclamation measures of success criteria, standards, and practices.
	See also Surface Operating Standards for Oil and Gas Exploration and Development (BLM Gold Book).
General	
DF-29, Erionite Mitigation	Gravel will be proven to be free of the mineral erionite through testing procedures established by the North Dakota Department of Health.

D.2 REQUIRED DESIGN FEATURES FOR GREATER SAGE-GROUSE

Required Design Features (RDFs) are required for certain activities in all greater sage-grouse (GRSG) habitat. RDFs establish the minimum specifications for certain activities to help mitigate adverse impacts. However, the applicability and overall effectiveness of each RDF cannot be fully assessed until the project level when the project location and design are known. Because of site-specific circumstances, some RDFs may not apply to some projects (e.g., a resource is not present on a given site) and/or may require slight variations (for example, a larger or smaller protective area). All variations in RDFs would require that at least one of the following be demonstrated in the NEPA analysis associated with the project/activity:

- A specific RDF is documented to not be applicable to the site-specific conditions of the project/activity (for example, due to site limitations or engineering considerations). Economic considerations, such as increased costs, do not necessarily require that an RDF be varied or rendered inapplicable;
- An alternative RDF, a state-implemented conservation measure, or a plan-level protection is determined to provide equal or better protection for GRSG or its habitat; or
- A specific RDF will provide no additional protection to GRSG or its habitat.

How to Make a Pond that Won't Produce Mosquitoes that Transmit West Nile Virus (from Doherty [2007])

- Increase the size of ponds to accommodate a greater volume of water than is discharged. This will result in un-vegetated and muddy shorelines that breeding *Cx. tarsalis* avoid (De Szalay and Resh 2000). This modification may reduce *Cx. tarsalis* habitat but could create larval habitat for *Culicoides sonorensis*, a vector of blue tongue disease, and should be used sparingly (Schmidtman et al. 2000). Steep shorelines should be used in combination with this technique whenever possible (Knight et al. 2003).
- Build steep and stable shorelines to reduce shallow water (>60 centimeters [cm]) and aquatic vegetation around the perimeter of impoundments (Knight et al. 2003). Construction of steep shorelines also will create more permanent ponds that are a deterrent to colonizing mosquito species like *Cx. tarsalis* which prefer newly flooded sites with high primary productivity (Knight et al. 2003).
- Maintain the water level below that of rooted vegetation for a muddy shoreline that is unfavorable habitat for mosquito larvae. Rooted vegetation includes both aquatic and upland vegetative types. Avoid flooding terrestrial vegetation in flat terrain or low-lying areas. Aquatic habitats with a vegetated inflow and outflow separated by open water produce 5- to 10-fold fewer *Culex* mosquitoes than completely vegetated wetlands (Walton and Workman 1998). Wetlands with open water also had significantly fewer stage III and IV instars which may be attributed to increased predator abundances in open water habitats (Walton and Workman 1998).
- Construct dams or impoundments that restrict down slope seepage or overflow by digging ponds in flat areas rather than damming natural draws for effluent water storage, or lining constructed ponds in areas where seepage is anticipated (Knight et al. 2003).
- Line the channel where discharge water flows into the pond with crushed rock, or use a horizontal pipe to discharge inflow directly into existing open water, thus precluding shallow surface inflow and accumulation of sediment that promotes aquatic vegetation.
- Line the overflow spillway with 3-inch crushed rock, and construct the spillway with steep sides to preclude the accumulation of shallow water and vegetation.
- Fence pond site to restrict access by livestock and other wild ungulates that trample and disturb shorelines, enrich sediments with manure and create hoof print pockets of water that are attractive to breeding mosquitoes.

Literature Cited

- De Szalay, F. A. and V. H. Resh. 2000. "Factors influencing macroinvertebrate colonization of seasonal wetlands: responses to emergent plant cover." *Freshwater Biology*. 45: 295-308.
- Doherty, M. K. 2007. Mosquito populations in the Powder River Basin, Wyoming: a comparison of natural, agricultural and effluent coal bed natural gas aquatic habitats. Master's Thesis. Montana State University, Bozeman.
- Knight, R. L., W. E. Walton, G. F. Meara, W. K. Riesen and R. Wass. 2003. "Strategies for effective mosquito control in constructed treatment wetlands." *Ecological Engineering*. 21: 211-232.

- Schmidtman, E. T., R. J. Bobian, R. P. Beldin. 2000. "Soil chemistries define aquatic habitats with immature populations of the *Culicoides variipennis* complex (Diptera: Ceratopogonidae)." *Journal of Medical Entomology*. 37: 38-64.
- Walton, W. E., and P. D. Workman. 1998. "Effect of marsh design on the abundance of mosquitoes in experimental constructed wetlands in Southern California." *Journal of the American mosquito control Association* 14:95-107.

Fluid Mineral Development

PHMA

Roads

- Design roads to an appropriate standard no higher than necessary to accommodate their intended purpose.
- Locate roads to avoid important areas and habitats.
- Coordinate road construction and use among right-of-way holders.
- Construct road crossing at right angles to ephemeral drainages and stream crossings.
- Establish speed limits on BLM system roads to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.
- Establish trip restrictions or minimization through use of telemetry and remote well control (e.g., Supervisory Control and Data Acquisition).
- Do not issue rights-of-way to counties on newly constructed energy development roads, unless for a temporary use consistent with all other terms and conditions included in this document.
- Restrict vehicle traffic to only authorized users on newly constructed routes (use signing, gates, etc.)
- Use dust abatement practices on roads and pads.
- Close and rehabilitate duplicate roads.

Operations

- Cluster disturbances, operations (fracture stimulation, liquids gathering, etc.), and facilities.
- Use directional and horizontal drilling to reduce surface disturbance.
- Place infrastructure in already disturbed locations where the habitat has not been restored.
- Consider using oak (or other material) mats for drilling activities to reduce vegetation disturbance and for roads between closely spaced wells to reduce soil compaction and maintain soil structure to increase likelihood of vegetation reestablishment following drilling.
- Apply a phased development approach with concurrent reclamation.
- Place liquid gathering facilities outside of priority areas. Have no tanks at well locations within priority areas (minimizes perching and nesting opportunities for ravens and raptors and truck traffic). Pipelines must be under or immediately adjacent to the road (Bui et al. 2010).
- Restrict the construction of tall facilities and fences to the minimum number and amount needed.
- Site and/or minimize linear ROWs to reduce disturbance to sagebrush habitats.
- Place new utility developments (power lines, pipelines, etc.) and transportation routes in existing utility or transportation corridors.

- Bury distribution power lines.
- Corridor power, flow, and small pipelines under or immediately adjacent to roads.
- Design or site permanent structures which create movement (e.g., a pump jack) to minimize impacts to GRSG.
- Cover (e.g., fine mesh netting or use other effective techniques) all drilling and production pits and tanks regardless of size to reduce GRSG mortality.
- Equip tanks and other above ground facilities with structures or devices that discourage nesting of raptors and corvids.
- Control the spread and effects of non-native plant species (e.g., by washing vehicles and equipment).
- Use only closed-loop systems for drilling operations and no reserve pits.
- Restrict pit and impoundment construction to reduce or eliminate threats from West Nile virus (Doherty 2007).
- Remove or re-inject produced water to reduce habitat for mosquitoes that vector West Nile virus. If surface disposal of produced water continues, use the following steps for reservoir design to limit favorable mosquito habitat:
 - Overbuild size of ponds for muddy and non-vegetated shorelines.
 - Build steep shorelines to decrease vegetation and increase wave actions.
 - Avoid flooding terrestrial vegetation in flat terrain or low-lying areas.
 - Construct dams or impoundments that restrict down slope seepage or overflow.
 - Line the channel where discharge water flows into the pond with crushed rock.
 - Construct spillway with steep sides and line it with crushed rock.
 - Treat waters with larvicides to reduce mosquito production where water occurs on the surface.
- The BLM would work with proponents to limit project-related noise where it would be expected to reduce functionality of habitats that support GRSG populations. The BLM would evaluate the potential for limitation of new noise sources on a case-by-case basis as appropriate.

As additional research and information emerges, specific new limitations appropriate to the type of projects being considered would be evaluated, and appropriate limitations would be implemented where necessary to minimize potential for noise impacts on GRSG population behavioral cycles.

As new research is completed, new specific limitations would be coordinated with the North Dakota Game and Fish Department (NDGFD) and partners. Limit noise to less than 10 decibels above ambient (20-24 dBA) at sunrise at the perimeter of a lek during active lek season (Petricelli et al. In preparation).
- Require noise shields when drilling during the lek, nesting, broodrearing, or wintering season.
- Fit transmission towers with anti-perch devices (Lammers and Collopy 2007).
- Require GRSG-safe fences.
- Locate new compressor stations outside PHMA and design them to reduce noise that may be directed towards PHMA.
- Clean up refuse.
- Locate man camps outside of PHMA.

Reclamation

- Include objectives for ensuring habitat restoration to meet GRSG habitat needs in reclamation practices/sites (Pyke 2011). Address post reclamation management in reclamation plan such that goals and objectives are to protect and improve GRSG habitat needs.
- Maximize the area of interim reclamation on long-term access roads and well pads including reshaping, topsoiling and revegetating cut and fill slopes.
- Restore disturbed areas at final reclamation to the pre-disturbance landforms and desired plant community.
- Irrigate interim reclamation if necessary for establishing seedlings more quickly.
- Utilize mulching techniques to expedite reclamation and to protect soils.

GHMA

Make applicable BMPs mandatory as conditions of approval (COA) within GHMA. BMPs are continuously improving as new science and technology become available and therefore are subject to change. At a minimum include the following BMPs:

Roads

- Design roads to an appropriate standard no higher than necessary to accommodate their intended purpose.
- Do not issue ROWs to counties on mining development roads, unless for a temporary use consistent with all other terms and conditions included in this document.
- Coordinate road construction and use among ROW holders.
- Construct road crossing at right angles to ephemeral drainages and stream crossings.
- Establish speed limits on BLM system roads to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.
- Use dust abatement practices on roads and pads.
- Close and reclaim duplicate roads, by restoring original landform and establishing desired vegetation.

Operations

- Cluster disturbances associated with operations and facilities as close as possible.
- Use directional and horizontal drilling to reduce surface disturbance.
- Clean up refuse.
- Restrict the construction of tall facilities and fences to the minimum number and amount needed.
- Use remote monitoring techniques for production facilities and develop a plan to reduce the frequency of vehicle use.
- Cover (e.g., fine mesh netting or use other effective techniques) all pits and tanks regardless of size to reduce GRSG mortality.
- Equip tanks and other above ground facilities with structures or devices that discourage nesting of raptors and corvids.
- Control the spread and effects of non-native plant species (Gelbard and Belnap 2003, Bergquist et al. 2007).

- Restrict pit and impoundment construction to reduce or eliminate augmenting threats from West Nile virus (Doherty 2007).

Reclamation

- Include restoration objectives to meet GRSG habitat needs in reclamation practices/sites. Address post reclamation management in reclamation plan such that goals and objectives are to protect and improve GRSG habitat needs.

Literature Cited

- Blickley, J. L., D. Blackwood, and G. L. Patricelli. In preparation. Experimental evidence for avoidance of chronic anthropogenic noise by greater sage-grouse. University of California, Davis.
- Bui, T. D., J. M. Marzluff, and B. Bedrosian. 2010. "Common raven activity in relation to land use in western Wyoming: implications for greater sage-grouse reproductive success." *Condor* 112:6578.
- Doherty, M. K. 2007. Mosquito populations in the Powder River Basin, Wyoming: a comparison of natural, agricultural and effluent coal-bed natural gas aquatic habitats. Master's thesis, Montana State University, Bozeman.
- Evangelista, P. H., A. W. Crall, and E. Bergquist. 2011. Invasive plants and their response to energy development. Pages 115-129 in D. E. Naugle, editor. Energy development and wildlife conservation in western North America. Island Press, Washington, DC.
- Lammers, W. M., and M. W. Collopy. 2007. "Effectiveness of avian predator perch deterrents on electric transmission lines." *Journal of Wildlife Management* 71:2752-2758.
- Lyon, A. G. and S. H. Anderson. 2003. "Potential gas development impacts on sage grouse nest initiation and movement." *Wildlife Society Bulletin* 31: 486-491.
- Patricelli, G. L., J. L. Blickley, and S. Hooper. 2010. Incorporating the impacts of noise pollution into greater sage-grouse conservation planning. 27th Meeting of the Western Agencies Sage and Columbian Sharp-tailed Grouse Technical Committee Workshop. Twin Falls, Idaho.
- Pyke, D. A. 2011. Restoring and rehabilitating sagebrush habitats. Pp. 531-548 in S. T. Knick and J. W. Connelly (editors). Greater sage-grouse: ecology and conservation of a landscape species and its habitats. Studies in Avian Biology 38. University of California Press. Berkeley.

Fire and Fuels

Fuels Management

- Where applicable, design fuels treatment objective to protect existing sagebrush ecosystems, modify fire behavior, restore native plants, and create landscape patterns which most benefit GRSG habitat.
- Provide training to fuels treatment personnel on GRSG biology, habitat requirements, and identification of areas utilized locally.
- Use fire prescriptions that minimize undesirable effects on vegetation or soils (e.g., minimize mortality of desirable perennial plant species and reduce risk of hydrophobicity).

- Ensure proposed sagebrush treatments are planned with interdisciplinary input from BLM and /or state wildlife agency biologist and that treatment acreage is conservative in the context of surrounding GRSG seasonal habitats and landscape.
- Where appropriate, ensure that treatments are configured in a manner (e.g., strips) that promotes use by GRSG (See Connelly et al. 2000)
- Where applicable, incorporate roads and natural fuel breaks into fuel break design.
- Power-wash all vehicles and equipment involved in fuels management activities prior to entering the area to minimize the introduction of undesirable and/or invasive plant species.
- Design vegetation treatment in areas of high frequency to facilitate firefighting safety, reduce the risk of extreme fire behavior; and to reduce the risk and rate of fire spread to key and restoration habitats.
- Give priority for implementing specific GRSG habitat restoration projects in annual grasslands first to sites which are adjacent to or surrounded by GRSG key habitats. Annual grasslands are second priority for restoration when the sites not adjacent to key habitat, but within two miles of key habitat. The third priority for annual grasslands habitat restoration projects are sites beyond two miles of key habitat. The intent is to focus restoration outward from existing, intact habitat.
- As funding and logistics permit, restore annual grasslands to a species composition characterized by perennial grasses, forbs, and shrubs.
- Emphasize the use of native plant species, recognizing that non-native species may be necessary depending on the availability of native seed and prevailing site conditions.
- Remove standing and encroaching trees within at least 100 meters of occupied GRSG leks and other habitats (e.g., nesting, wintering, and brood rearing) to reduce the availability of perch sites for avian predators, as appropriate, and resources permit.
- Protect wildland areas from wildfire originating on private lands, infrastructure corridors, and recreational areas.
- Reduce the risk of vehicle or human-caused wildfires and the spread of invasive species by planting perennial vegetation (e.g., green-strips) paralleling road rights-of-way.
- Strategically place and maintain pre-treated strips/areas (e.g., mowing, herbicide application, and strictly managed grazed strips) to aid in controlling wildfire should wildfire occur near key habitats or important restoration areas (such as where investments in restoration have already been made).

Fire Management

- Develop state-specific GRSG toolboxes containing maps, a list of resource advisors, contact information, local guidance, and other relevant information.
- Provide localized maps to dispatch offices and extended attack incident commanders for use in prioritizing wildfire suppression resources and designing suppression tactics.
- Assign a GRSG resource advisor to all extended attack fires in or near key GRSG habitat areas. Prior to the fire season, provide training to GRSG resource advisors on wildfire suppression organization, objectives, tactics, and procedures to develop a cadre of qualified individuals.
- On critical fire weather days, pre-position additional fire suppression resources to optimize a quick and efficient response in GRSG habitat areas.
- During periods of multiple fires, ensure line officers are involved in setting priorities.

- To the extent possible, locate wildfire suppression facilities (i.e., base camps, spike camps, drop points, staging areas, heli-bases) in areas where physical disturbance to GRSG habitat can be minimized. These include disturbed areas, grasslands, near roads/trails or in other areas where there is existing disturbance or minimal sagebrush cover.
- Power-wash all firefighting vehicles, to the extent possible, including engines, water tenders, personnel vehicles, and all-terrain vehicles prior to deploying in or near GRSG habitat areas to minimize noxious weed spread.
- Minimize unnecessary cross-country vehicle travel during fire operations in GRSG habitat.
- Minimize burnout operations in key GRSG habitat areas by constructing direct fire line whenever safe and practical to do so.
- Utilize retardant and mechanized equipment to minimize burned acreage during initial attack.
- As safety allows, conduct mop-up where the black adjoins unburned islands, dog legs, or other habitat features to minimize sagebrush loss.

Literature Cited

Connelly, J. W., M. A. Schroeder, A. R. Sands, and C. E. Braun. 2000. Guidelines to Manage Sage-grouse Populations and Their Habitats. *Wildlife Society Bulletin* 28:967-985.

Solid Minerals Development

The following measures outlined would be applied as RDFs for solid minerals. For locatable minerals, the RDFs would be applied to the extent consistent with applicable laws.

Roads

- Design roads to an appropriate standard no higher than necessary to accommodate their intended purpose.
- Locate roads to avoid important areas and habitats.
- Coordinate road construction and use among ROW holders.
- Construct road crossing at right angles to ephemeral drainages and stream crossings.
- Establish speed limits on BLM system roads to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.
- Do not issue ROWs to counties on mining development roads, unless for a temporary use consistent with all other terms and conditions included in this document.
- Restrict vehicle traffic to only authorized users on newly constructed routes (e.g., use signing, and gates)
- Use dust abatement practices on roads and pads.
- Close and reclaim duplicate roads, by restoring original landform and establishing desired vegetation.

Operations

- Cluster disturbances associated with operations and facilities as close as possible.
- Place infrastructure in already disturbed locations where the habitat has not been restored.
- Restrict the construction of tall facilities and fences to the minimum number and amount needed.

- Site and/or minimize linear ROWs to reduce disturbance to sagebrush habitats.
- Place new utility developments (power lines, pipelines, etc.) and transportation routes in existing utility or transportation corridors.
- Bury power lines.
- Cover (e.g., fine mesh netting or use other effective techniques) all pits and tanks regardless of size to reduce GRSG mortality.
- Equip tanks and other above ground facilities with structures or devices that discourage nesting of raptors and corvids.
- Control the spread and effects of non-native plant species (Gelbard and Belnap 2003, Bergquist et al. 2007).
- Restrict pit and impoundment construction to reduce or eliminate threats from West Nile virus (Doherty 2007).
- Remove or re-inject produced water to reduce habitat for mosquitoes that vector West Nile virus. If surface disposal of produced water continues, use the following steps for reservoir design to limit favorable mosquito habitat:
 - Overbuild size of ponds for muddy and non-vegetated shorelines.
 - Build steep shorelines to decrease vegetation and increase wave actions.
 - Avoid flooding terrestrial vegetation in flat terrain or low-lying areas.
 - Construct dams or impoundments that restrict down slope seepage or overflow.
 - Line the channel where discharge water flows into the pond with 3 inch crushed rock.
 - Construct spillway with steep sides and line it with crushed rock
 - Treat waters with larvicides to reduce mosquito production where water occurs on the surface.
- Require GRSG-safe fences.
- Clean up refuse (Bui et al. 2010).
- Locate man camps outside of PHMA.

Reclamation

- Include restoration objectives to meet GRSG habitat needs in reclamation practices/sites.
- Address post reclamation management in reclamation plan such that goals and objectives are to protect and improve GRSG habitat needs.
- Maximize the area of interim reclamation on long-term access roads and well pads including reshaping, topsoiling and revegetating cut and fill slopes.
- Restore disturbed areas at final reclamation to pre-disturbance landform and desired plant community.
- Irrigate interim reclamation as necessary during dry periods.
- Utilize mulching techniques to expedite reclamation.

Literature Cited

Bergquist, E., P. Evangelista, T. J. Stohlgren, and N. Alley. 2007. Invasive species and coal bed methane development in the Powder River Basin, Wyoming. *Environmental Monitoring and Assessment* 128:381-394.

- Bui, T. D., J. M. Marzluff, and B. Bedrosian. 2010. Common raven activity in relation to land use in western Wyoming: implications for greater sage-grouse reproductive success. *Condor* 112:6578.
- Doherty, M. K. 2007. Mosquito populations in the Powder River Basin, Wyoming: a comparison of natural, agricultural and effluent coal bed natural gas aquatic habitats. Thesis. Montana State University, Bozeman
- Gelbard, J. L., and J. Belnap. 2003. Roads as conduits for exotic plant invasions in a semiarid landscape. *Conservation Biology* 17:420-432.

D.3 BEST MANAGEMENT PRACTICES

D.3.1 Air Resources

Publication ref: Comprehensive Air Resource Protection Protocol (CARPP) 2015

Source: Bureau of Land Management

Available at:

https://www.blm.gov/sites/blm.gov/files/uploads/program_natural%20resources_soil%20air%20water_air_co_quick%20link_CARPP.pdf

Description: Identifies (in Table VI-I) a range of typical BMPs for protecting air resources during oil and gas development and production.

D.3.2 Climate Change

Publication ref: **Fourth National Climate Assessment**

Source: US Global Change Research Program

Available at: <https://nca2018.globalchange.gov/> (Chapter 29 Reducing Risks through Emissions Mitigation)

Description: This chapter assesses recent advances in climate science and impacts, adaptation, and vulnerability research that have improved understanding of how potential mitigation pathways can avoid or reduce the long-term risks of climate change within the United States. This chapter does not evaluate technology options, costs, or the adequacy of existing or planned mitigation efforts relative to meeting specific policy targets, as those topics have been the subject of domestic and international analyses.

Publication ref: **Northwest Climate Hub**

Source: United States Department of Agriculture

Available at: <https://www.climatehubs.usda.gov/hubs/northwest/climate-risk-management-practices-introduction>

Description: Report that synthesizes key climate change sensitivities and risk management practices for forest vegetation, non-forest vegetation, water and infrastructure, fisheries and fish habitat, wetlands and riparian areas, wildlife, and recreation.

Publication ref: **North Central Climate Adaptation Science Center Projects**

Source: United States Geological Survey

Available at: https://www.usgs.gov/ecosystems/climate-adaptation-science-centers/north-central-casc?qt-science_support_page_related_con=3#qt-science_support_page_related_con

Description: Provides reports and publications related to understanding how sagebrush and invasive grasses will respond to changes in climate, how future lake temperatures will impact fish populations, how shifts in prairie pothole wetlands will impact critical waterfowl habitats, and much more.

Publication ref: **US Climate Resilience Toolkit**

Source: United States Global Change Research Program (managed by NOAA)

Available at: <https://toolkit.climate.gov/>

Description: The toolkit is a website designed to help people find and use tools, information, and subject matter expertise to build climate resilience. The toolkit offers information from all across the US federal government.

D.3.3 Fluid Minerals

Publication ref: **Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development, The Gold Book (Fourth Edition, Revised 2007)**

Source: Bureau of Land Management and Forest Service

Available at: <https://www.blm.gov/programs/energy-and-minerals/oil-and-gas/operations-and-production/thegold-book>

Description: The BMPs for oil and gas demonstrate practical ideas that may eliminate or minimize adverse effects from oil and gas development on public health and the environment, landowners, and natural resources.

D.3.4 Healthy Watersheds

Source: Environmental Protection Agency

Available at: <https://www.epa.gov/hwp/tools-and-resources-protect-watersheds>

Available at: <https://www.epa.gov/healthywatersheds>

Last accessed: 08/26/2021

Description: Provides conservation approaches and tools designed to ensure healthy watersheds remain intact. It also provides scenarios watershed index and much more.

D.3.5 Storm Water

Source: Environmental Protection Agency

Available at: <https://www.epa.gov/npdes/national-menu-best-management-practices-bmps-stormwater>

Last accessed: 08/26/2021

Description: Provides BMPs designed to meet the minimum requirements for six control measures specified by the United States Environmental Protection Agency's (EPA) Phase II Stormwater Program.

D.3.6 Riparian Area Management

Publication ref: **Grazing Management Processes and Strategies for Riparian-Wetland Areas (TR 1737-20, 2006)**

Source: Bureau of Land Management

Available at: <https://efotg.sc.egov.usda.gov/references/public/NM/range98-Publication.pdf>

Description: This technical reference provides the most current information to further assist livestock operators and land managers in developing successful riparian-wetland grazing management strategies across a wide array of land types. It is also the core document for the Grazing Management for Riparian-Wetlands training course. This technical reference does not set forth a specific formula for identifying the type of grazing strategy best suited for an area. Rather, it provides information to help design appropriate grazing strategies so that soil and vegetation aspects, water issues, and wildlife and livestock needs are addressed in a collaborative manner.

Publication ref: **Living with a River (Special Publication 2012-2013)**

Source: North Dakota Department of Health (Now North Dakota Department of Environmental Quality) and United States Environmental Protection Agency

Available at:

[https://deq.nd.gov/publications/WQ/3_WM/NPS/SWCBinder/Riparian/Living%20With%20A%20River%20Handbook%20\(FINAL\).pdf](https://deq.nd.gov/publications/WQ/3_WM/NPS/SWCBinder/Riparian/Living%20With%20A%20River%20Handbook%20(FINAL).pdf)

Description: Publication was produced to give people and government agencies a better understanding of rivers and how they function so that wise management decisions will be used. The document gives BMP recommendations for riparian and river protection and stabilization.

Publication ref: **North Dakota Forestry Best Management Practices (2010)**

Source: North Dakota Forestry

Available at: <https://www.ag.ndsu.edu/ndfs/documents/bmp-2010-final-doc-11-12-10.pdf>

Description: North Dakota Forestry Best Management Practices are described under the following categories: Resource Planning; Windbreaks; Native Woodland Management; Forest Protection; Timber Harvesting and Site Preparation; Streamside Management; Stream Crossings; and Roads. All of the listed categories have impacts on riparian as well as Nonpoint Source Management, Healthy Watersheds, Storm Water and other ramifications to the watershed.

D.3.7 Nonpoint Source Management

Publication ref: **North Dakota Nonpoint Source Pollution Management Program Plan (2015-2020)**

Source: North Dakota Department of Health (now North Dakota Department of Environmental Quality), Division of Water Quality, Surface Water Quality Management Program

Available at:

https://deq.nd.gov/publications/WQ/3_WM/NPS/Program/Final_NPSProgramMgmtPlan_2015-2020.pdf

Description: Provides information on North Dakota requirements and direction for implementing nonpoint source issues, while following the current NPS Program under 319 Clean Water Act (CWA). This plan identifies and provides details for BMPs to improve and maintain water quality.

Publication ref: **National Management Measures to Control Nonpoint Source Pollution from Agriculture (EPA 841-B-03-004, July 2003)**

Source: Environmental Protection Agency

Available at: <https://www.epa.gov/nps/national-management-measures-control-nonpoint-source-pollution-agriculture>

Description: A technical guidance and reference document for use by State, local, and tribal managers in the implementation of nonpoint source pollution management programs. It contains information on the best available, economically achievable means of reducing pollution of surface and ground water from agriculture.

D.3.8 Erosion and Sediment Control Practices

Publication ref: **Burned Area Emergency Stabilization and Rehabilitation (H1742-1, 2007)**

Source: Bureau of Land Management

Available at:

https://www.blm.gov/sites/blm.gov/files/uploads/Media_Library_BLM_Policy_Handbook_h1742-1.pdf

Description: The practices and standards developed by NRCS address water quality, sediment, erosion control, streambank and shoreline protection, weed control, livestock grazing, habitat restoration and other

aspects of natural resource management. With the exception of the farming practices, many of the standards and practices have applicability to BLM management and may be applied as needed to protect resources, reduce conflicts, and limit impacts associated with resource use.

The BLM Gold Book (see Fluid Minerals above) also provides guidance on the placement of culverts and water bars, as well as proper construction of roads and ditches.

D.3.9 Placer Mining

Publication ref: **Montana placer mining BMPs (Best Management Practices): Guidelines for planning, erosion control, and reclamation**

Source: Montana Bureau of Mines and Geology SP 106

Available at: http://www.mbmng.mtech.edu/mbmgcat/public/ListCitation.asp?pub_id=11696&

Description: Best management practices for placer mining in Montana, including guidelines for planning, erosion control, and reclamation.

D.3.10 Wind Energy Development

Publication ref: **Final Programmatic Environmental Impact Statement for Wind Energy Development (Chapter 2, Section 2.2.3.2)**

Source: Bureau of Land Management

Available at: <http://windeis.anl.gov/documents/fpeis/index.cfm>

Description: BLM developed BMPs for each major step of the wind energy development process, including site monitoring and testing, plan of development preparation, construction, operation, and decommissioning. General BMPs are available for each step, and certain steps also include specific BMPs to address the following resource issues: wildlife and other ecological resources, visual resources, roads, transportation, noise, noxious weeds and pesticides, cultural and historical resources, paleontological resources, hazardous materials and waste management, stormwater, human health and safety, monitoring program, air emissions, and excavation and blasting activities.

Publication ref: **BLM Instruction Memorandum 2009-043, Rights-of-Way for Wind Energy**

Source: Bureau of Land Management

Available at: <https://www.blm.gov/policy/im-2009-043>

Description: This Instruction Memorandum provides updated guidance on processing right-of-way applications for wind energy projects on public lands administered by BLM.

Publication ref: **Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM Administered Lands, First Edition 2013**

Source: Bureau of Land Management

Available at: https://blmwyomingvisual.anl.gov/docs/BLM_RenewableEnergyVisualBMPs_LowRes.pdf

Description: This publication presents 122 BMPs to avoid or reduce potential visual effects associated with siting, designing, constructing, operating, and decommissioning utility-scale renewable energy generation facilities, including wind, solar, and geothermal facilities. The publication includes BMPs for avoiding and reducing visual effects associated with the energy generation components of a facility, such as wind turbines or solar energy collectors, and includes BMPs for reducing visual effects associated with ancillary components, such as electric transmission, roads, and structures.

Publication ref: **US Fish and Wildlife Service Land-Based Wind Energy Guidelines**

Source: US Fish and Wildlife Service

Available at: https://www.fws.gov/ecological-services/es-library/pdfs/WEG_final.pdf

Description: These Guidelines were developed by the USFWS working with the Wind Turbine Guidelines Advisory Committee. The Guidelines discuss various risks to “species of concern” from wind energy projects, including collisions with wind turbines and associated infrastructure; loss and degradation of habitat from turbines and infrastructure; fragmentation of large habitat blocks into smaller segments that may not support sensitive species; displacement and behavioral changes; and indirect effects such as increased predator populations or introduction of invasive plants. The Guidelines assist developers in identifying species of concern that may potentially be affected by their proposed project. The Guidelines use a tiered approach for assessing potential adverse effects to species of concern and their habitats. The Guidelines also provide BMPs for site development, construction, retrofitting, repowering, and decommissioning.

D.3.11 Solar Energy Development

Publication ref: **Programmatic Environmental Impact Statement for Solar Energy Development (2024)**

Source: Bureau of Land Management

Available at: <https://eplanning.blm.gov/eplanning-ui/project/2022371/570>

Description: Provides a set of programmatic design features that would be required for all utility-scale solar energy projects on BLM-administered lands. Addresses the broad possible range of direct and indirect impacts from solar facilities as well as associated transmission facilities, roads, and other infrastructure.

Publication ref: **Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM Administered Lands (First Edition 2013)**

Source: Bureau of Land Management

Available at: https://blmwyomingvisual.anl.gov/docs/BLM_RenewableEnergyVisualBMPs_LowRes.pdf

Description: This publication presents 122 BMPs to avoid or reduce potential visual effects associated with siting, designing, constructing, operating, and decommissioning utility-scale renewable energy generation facilities, including wind, solar, and geothermal facilities. The publication includes BMPs for avoiding and reducing visual effects associated with the energy generation components of a facility, such as wind turbines or solar energy collectors, and includes BMPs for reducing visual effects associated with ancillary components, such as electric transmission, roads, and structures.

D.3.12 Communications Towers

Publication ref: **Service Guidance on the Siting, Construction, Operation and Decommissioning of Communications Towers**

Source: United States Fish and Wildlife Service

Available at: http://www.fws.gov/habitatconservation/com_tow_guidelines.pdf

Description: These guidelines were developed by USFWS personnel from research conducted in several eastern, mid-western, and southern states and have been refined through regional review. They are based on the best information available at this time and are the most prudent and effective measures for avoiding bird strikes at towers.

D.3.13 Avian Protection on Power Lines

Source: Avian Power Line Interaction Committee

Available at: <http://www.aplic.org>

Last accessed: 08/27/2021

Description: Provides practices and guidelines to limit power line hazards to birds. Provides engineers, biologists, utility planners and the public with a comprehensive resource for eliminating or reducing avian electrocutions and collisions, and highlights management options and cooperative partnerships.

D.3.14 Visual Resources

Publication ref: **BLM Visual Resource Management Webpage**

Source: Bureau of Land Management

Available at: <https://www.blm.gov/programs/recreation/recreation-programs/visual-resource-management>

Description: Provides numerous design techniques that can be used to reduce the visual effects from surface-disturbing projects. The techniques described should be used in conjunction with BLM's visual resource contrast rating process, wherein both the existing landscape and the proposed development or activity are analyzed for their basic element of form, line, color, and texture.

Publication ref: **Visual Resource Management for Fluid Minerals Best Management Practices: Better Methods for Achieving Better Results**

Source: Bureau of Land Management

Available at: <https://blmwyomingvisual.anl.gov/docs/Visual%20Resource%20Management%20for%20Fluid%20Minerals%20-%20Field%20Refer.pdf>

Description: This participant notebook was originally created for a BLM training course. It discusses BMPs to reduce the visual and related resource impacts on public lands during the exploration, development and production of fluid minerals resources. Topics include proper site selection, reducing unnecessary disturbance, good color selection, and effective final reclamation.

D.3.15 Pasture, Rangelands, and Grazing Operations

Publication ref: **Field Office Technical Guides, USDA Natural Resources Conservation Service**

Source: Natural Resources Conservation Service

Available at: <https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/fotg/>

Description: The practices and standards developed by NRCS address water quality, sediment, erosion control, streambank and shoreline protection, weed control, livestock grazing, habitat restoration and other aspects of natural resource management. With the exception of the farming practices, many of the standards and practices have applicability to BLM management and may be applied as needed to protect resources, reduce conflicts, and limit impacts associated with resource use.

Publication ref: **Rangeland Health Standards and Guidelines for Livestock Grazing Management, Montana/Dakotas (Dakotas Portion)**

Source: Bureau of Land Management

Available at: <https://www.blm.gov/sites/blm.gov/files/Dakotas%20standards%20for%20rangeland%20health%20and%20guidelines%20for%20grazing.pdf>

Description: Provides standards for rangeland health for uplands, riparian areas, water quality, air quality, and habitat. Includes guidelines for proper management of livestock on public lands. Guidelines for grazing management are preferred or advisable approaches to grazing management practices determined to be appropriate to ensure that standards can be met or that significant progress can be made toward meeting the

standard(s). Guidelines are provided to maintain or improve resource conditions in upland and riparian habitats available for livestock grazing. In both riparian and upland habitats, these guidelines focus on establishment and maintenance of proper functioning condition and healthy rangelands. The application of these guidelines is dependent on individual management objectives.

Publication ref: National Management Measures to Control Nonpoint Source Pollution from Agriculture

Source: Environmental Protection Agency

Available at: <https://www.epa.gov/nps/national-management-measures-control-nonpoint-source-pollution-agriculture>

Description: A technical guidance and reference document for use by State, local, and tribal managers in the implementation of nonpoint source pollution management programs. It contains information on the best available, economically achievable means of reducing pollution of surface and ground water from agriculture. Note that Chapter 4e specifically relates to grazing management.

Publication ref: Riparian Area Management: Grazing Management Processes and Strategies for Riparian-Wetland Areas, Technical Reference 1737-20

Source: Bureau of Land Management

Available at: <https://efotg.sc.egov.usda.gov/references/public/NM/range98-Publication.pdf>

Description: This technical reference provides the most current information to further assist livestock operators and land managers in developing successful riparian-wetland grazing management strategies across a wide array of land types. It is also the core document for the Grazing Management for Riparian-Wetlands training course. This technical reference does not set forth a specific formula for identifying the type of grazing strategy best suited for an area. Rather, it provides information to help design appropriate grazing strategies so that soil and vegetation aspects, water issues, and wildlife and livestock needs are addressed in a collaborative manner.

Publication ref: National Range and Pasture Handbook

Source: Natural Resources Conservation Service

Available at:

<https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/landuse/rangepasture/?cid=stelprdb1043084>

Description: The National Range and Pasture Handbook provide procedures in support of NRCS policy for the inventory, analysis, treatment, and management of grazing land resources. Revision 1 of the handbook contains revisions to incorporate current concepts and format for developing rangeland ecological site descriptions and forage suitability group descriptions. Information was added regarding the effects of vegetation, grazing, and management on rangeland and pastureland hydrology and erosion.

Source: Environmental Protection Agency

Available at: <http://www.epa.gov/oecaagct/anprgbmp.html>

Last accessed: 08/27/2021

Description: provides BMPs compiled by the EPA to prevent or reduce effects from livestock grazing.

D.3.16 Invasive Species and Noxious Weeds

Publication ref: **Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States**

Source: Bureau of Land Management

Available at: <https://www.worldcat.org/title/final-programmatic-environmental-impact-statement-vegetation-treatments-using-herbicides-on-bureau-of-land-management-lands-in-17-western-states/oclc/145747864>

2016 Update online at: <https://www.blm.gov/programs/natural-resources/weeds-and-invasives/vegetative-peis>

Description: This document outlines the specific decisions, standard operating procedures, and mitigation measures based on the Final Programmatic EIS concerning the use of herbicides in the Bureau of Land Management integrated pest management program.

Publication ref: **National Invasive Species Management Council Management Plan (2016-2018)**

Source: National Invasive Species Council (NISC)

Available at: <https://www.doi.gov/invasivespecies/management-plan>

Description: Directs federal efforts (including overall strategy and objectives) to prevent, control and minimize invasive species and their impacts.

D.3.17 Vegetation

Publication ref: **Core Terrestrial Indicators and Methods (2017)**

Source: Bureau of Land Management

Available at: <https://www.blm.gov/documents/national-office/blm-library/technical-note/blm-core-terrestrial-indicators-and-methods>

Description: The BLM Assessment, Inventory, and Monitoring (AIM) Strategy was initiated, in part, to evaluate current monitoring activities and recommend procedures to improve the efficiency and effectiveness of these activities. To this end, the AIM Strategy supports an integrated approach to: (1) document the location and abundance of natural resources on public lands; (2) facilitate the description of resource conditions; and (3) identify natural resource trends or changes. This recommendation will be accomplished through the integration of fundamental processes including: (a) development and application of a consistent set of ecosystem indicators (i.e., quantitative core indicators) and consistent measurement methods; (b) development and implementation of a statistically valid sampling framework; (c) application and integration of remote sensing technologies; and (d) implementation of related data acquisition and management plans. The purpose/intent of this report is to provide an introduction to, and describe, the Core Indicators and Methods component of the AIM Strategy. Further, this report provides guidance on how to maintain consistency of effort and resources (i.e., cited materials) for further details on established protocols. This Core Indicators and Methods component identifies a small set of core indicators (i.e., measurements) that, when collected, can be used for many purposes across ecosystem types including rangeland, forest, and riparian areas. This set of core indicators, based on quantitative land cover and vegetation data using standardized measurements, will allow data to be integrated across field, district, and state office boundaries.

Publication ref: **Integrated Vegetation Management Handbook, H-1740-2 (2008)**

Source: Bureau of Land Management

Available at:

https://www.blm.gov/sites/blm.gov/files/uploads/Media_Library_BLM_Policy_Handbook_H-1740-2.pdf

Description: The BMPs describe practices to limit impacts of vegetation treatment to:

- Invasive plant species
- Soil resources
- Native plant conservation and revegetation
- Using pesticide and biological controls
- Air quality
- Wildlife habitat
- Cultural and historic resources
- Water quality and wetlands
- Recreation, visual, and wilderness resources

Publication ref: **Burned Area Emergency Stabilization and Rehabilitation Handbook (BLM Handbook H-1472-1)**

Source: Bureau of Land Management

Available at: https://www.blm.gov/sites/blm.gov/files/uploads/Media_Library_BLM_Policy_Handbook_h1742-1.pdf

Description: This handbook provides detailed information specific to BLM policies, standards, and procedures used in the Burned Area Emergency Stabilization and Rehabilitation (ES&R) programs. This Handbook is intended to be the primary guidance to BLM ES&R activities. It is tiered to the Department of the Interior (DOI) Departmental Manual 620 DM 3 Wildland Fire Management Burned Area Emergency Stabilization and Rehabilitation relative to planning and implementing ES&R projects on public lands administered by the BLM. This guidance incorporates all pertinent information from the Interagency Burned Area Emergency Response and Interagency Burned Area Rehabilitation Guidebooks.

Publication ref: **Interpreting Indicators of Rangeland Health, Technical Reference 1734-6 (Version 5, 2020)**

Source: Bureau of Land Management

Available at: <https://www.blm.gov/documents/national-office/blm-library/technical-reference/interpreting-indicators-rangeland-health-0>

Description: This book describes a protocol for using 17 qualitative soil and vegetation indicators to evaluate the status of three ecosystem attributes: soil and site stability, hydrologic function, and biotic integrity. Qualitative assessments of rangeland health provide land managers and technical assistance specialists with a good communication tool for use with the public. Many of these tools have been used successfully for this purpose over the past 100 years. The technique described in this book can be used to provide early warnings of resource problems on upland rangelands. It can also be used to help identify specific resource issues (e.g., erosion or invasive species) that must be addressed and to prioritize land for management resources.

D.3.18 Management of Land Boundaries

Publication ref: **Standards for Federal Lands Boundary Evidence Source: Department of the Interior Departmental Manual, Part 600 Public Land Policy, Chapter 5 (600 DM 5).**

Source: Bureau of Land Management

Available at: <https://www.doi.gov/elips/browse>

Description: This manual provides Department of the Interior managers with discretionary guidance to prepare timely, efficient, and economical standards for Boundary Evidence Certificates for federal interest lands and resources. This manual provides managers of federal interest assets with the means to effectively apply boundary evidence to protect assets and provides Department-wide guidance and instruction to reduce conflicts over Federal interest assets and minimize unnecessary land surveys.

D.3.19 Pollinators

Publication ref: **Pollinator Friendly Best Management Practices for Federal Lands. Attachment 1 to IM WO-2016-013 “Managing for Pollinators on Public Lands”.**

Source: Bureau of Land Management

Available at: <https://www.blm.gov/policy/im-2016-013>

Description: This attachment summarizes BLM commitments in the US Department of the Interior Pollinator Protection Plan to enhance pollinator habitat on BLM-administered lands and protect pollinators and their habitat during BLM-authorized activities.

D.3.20 Hazardous Materials and Waste

Publication ref: **2023 Draft Solar Leasing PEIS, Appendix B7 (2023).**

Source: Bureau of Land Management

Available at:

https://eplanning.blm.gov/public_projects/2022371/200538533/20102761/251002761/2023%20Draft%20Solar%20PEIS%20Volume%20%201-10-2024_508compliant.pdf

Description: This document identifies (in Appendix B7) BMPs and design features to avoid, minimize, and/or mitigate impacts from hazardous materials and waste.

D.4 CONSERVATION MEASURES FOR LISTED AND CANDIDATE SPECIES

To minimize impacts on listed species and critical habitat, the BLM would implement the conservation measures described below:

CM-Northern long-eared bat-1: Survey for roosting bats prior to tree removal within the northern long-eared bat’s range.

CM-Northern long-eared bat-2: If wind energy development occurs on BLM-administered lands, the BLM would employ operational strategies (such as feathering turbine blades when bats are most likely to be active) to reduce the severity of impacts described in USFWS 2022c.

CM-Piping plover-1: Motorized, wheeled, cross-country travel would be prohibited in designated critical habitat for piping plovers.

CM-Piping plover-2: Livestock grazing would be prohibited in designated critical habitat for piping plovers.

CM-Piping plover-3: If conducting vegetation treatments within piping plover range or critical habitat, include treatments that reduce encroachment of woody vegetation onto sandbars.

CM-Migratory birds-1: Survey for migratory birds, including rufa red knot and whooping crane, prior to permitting any surface or noise disturbance activities within the migration corridor.

CM-Dakota skipper-1: The BLM would follow all applicable recommended conservation measures outlined by the USFWS, including when planning prescribed fire, haying, livestock grazing, and invasive plant management on BLM-administered lands in Dakota skipper habitat and critical habitat. The BLM would also stipulate compliance with any applicable conservation measures when authorizing ROWs within 0.62 miles of occupied Dakota skipper habitat and critical habitat to minimize the potential for detrimental effects on dispersing adults during the flight season. These may include adherence with conservation recommendations for mowing (hay) and invasive plant management that may be carried out in ROWs.

CM-Dakota skipper-2: Where otherwise allowed under Coal Screen 2 with stipulation for Criterion 15 (**Appendix F**, Table F-1), the BLM would not approve proposals for coal development in suitable habitat for Dakota skipper, including, but not limited to, tallgrass prairie, including within 0.62 miles of these areas. This is because Criterion 15 stipulates that disturbed habitats are reclaimed to equal or better conditions than at the time of disturbance. In practice, however, successful restoration of Dakota skipper habitat has not been demonstrated to date, and there is no evidence to support a presumption that destroyed Dakota skipper habitat could be restored through planting or other means (USFWS 2016c). Therefore, conformance with the stipulation for Criterion 15 is likely impossible.

CM-Dakota skipper-3: Motorized, wheeled, cross-country travel would be prohibited in designated critical habitat for Dakota skippers, as well as known occupied native prairie habitat areas. Known habitat would be determined through consultation with the USFWS.

CM-Dakota skipper-4: Within designated critical habitat for Dakota skippers, as well as known occupied native prairie habitat areas, livestock grazing regimes would be developed using the combined skills and knowledge of persons with Dakota skipper expertise, persons with grazing expertise, and land manager input (or other party familiar with the site's grazing history and characteristics). This would be done to:

- Avoid or minimize the extent of grazing regimes that reduce the density or diversity of floral nectar resources during the flight period.
- Include at least one period of rest during the growing season and to not graze a site during the same time each year.
- Avoid adverse effects from livestock grazing in the wet-mesic prairies that Dakota skippers inhabit in parts of North Dakota, which are more sensitive to disturbance from grazing than in the dry-mesic habitat type.

CM-Monarch butterfly-1: The BLM would incorporate the applicable recommended conservation measures in the Nationwide Candidate Conservation Agreement for Monarch Butterfly on Energy and Transportation Lands (Cardno 2020). Applicable BLM-authorized activities may include, but not be limited to, the following:

- Vegetation management on BLM-administered lands for resource conservation and enhancement
- ROW authorization and ongoing, periodic vegetation management in ROWs on BLM-administered lands
- Minerals leasing, development, and periodic vegetation management in lease areas on BLM-administered surface and subsurface decision areas
- Authorized livestock grazing management

This page intentionally left blank.

Appendix E

Reclamation Standards

This page intentionally left blank.

TABLE OF CONTENTS

Appendix

Page

APPENDIX E. RECLAMATION STANDARDS	E-1
E.1 Introduction and Success Criteria	E-1
E.1.1 Reclamation Plans.....	E-2
E.1.2 Reclamation Practices and Standards	E-3
E.2 Monitoring	E-7

This page intentionally left blank.

Appendix E. Reclamation Standards

E.1 INTRODUCTION AND SUCCESS CRITERIA

The goal for the following reclamation standards and success criteria is to mitigate anticipated impacts to vegetation, soil, and water resources from ground-disturbing activities by re-establishing a self-sustaining, diverse vegetation community composed of species native to their region in sufficient species density and diversity to closely resemble natural, undisturbed vegetation potential.

This appendix supplements the information found in the Bureau of Land Management's (BLM's) *Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development*, commonly referred to as the "The BLM Gold Book."¹ All ground-disturbing activities will be subject to these reclamation standards and monitoring requirements. These include resource improvements initiated by BLM, as well as permitted activities such as right-of-way, fluid, and solid mineral development activities. The level of detail and complexity required for reclamation planning will be dependent on the nature of the resource(s) being impacted and the extent and complexity of the surface-disturbing activity. Some activities may require a highly detailed reclamation plan to ensure that reclamation goals and objectives are achieved, while others may have reclamation measures integrated into the engineering design, permit application, or other comparable documentation. Program-specific guidance in the form of manuals, handbooks, and regulations are to be used when developing mitigation measures and reclamation plans at the project level.

BLM is responsible for implementing these standards and compliance with monitoring requirements. Project proponents for all permitted activities will perform the reclamation work, and effect on-the-ground implementation. Projects must meet reclamation objectives in order to retrieve any associated bonds, or for reclamation to be considered successful.

Short-Term (Two-Year) Interim Reclamation Objectives and Success Criteria

Interim reclamation refers to those actions taken immediately after cessation of ground-disturbing activities. Interim actions are typically taken to stabilize a portion of a site that is no longer undergoing disturbance while activities simultaneously continue to disturb other portions of the same area. For example, interim reclamation may be conducted in perimeter areas of an oil and gas well site when the larger footprint required for the development is reduced in area to that necessary for production. The following interim reclamation success requirements will be used to determine success after 2 years (two complete growing seasons):

- a. The site has been regraded to approximate pre-disturbance topography to the extent practicable, in order to minimize disturbance and lessen erosion potential.
- b. Disturbed soil surface areas have been stabilized to reduce erosion and runoff to or below naturally occurring levels.

¹ BLM (US Department of the Interior, Bureau of Land Management). 2007. The Gold Book (Surface Operating Standards and Guidelines for Oil and Gas Development), Fourth Edition. Bureau of Land Management National Science and Technology Center, Denver, Colorado.

- c. Establishment of a healthy and diverse composition of native species that are or should naturally grow on the site, according to the Ecological Site Description or reference site plant community, which will provide for natural plant and community succession.
- d. Active prevention of noxious weeds and undesirable plants on the disturbed areas and expansion onto adjacent uninfested areas.
- e. Visual contrast has been reduced to meet established visual resource management objectives in all reclaimed areas

Long-Term (Five-Year) Interim and Final Reclamation Objectives and Success Criteria

Final reclamation will occur when no more ground-disturbing activities are expected to occur. The following reclamation success requirements will be used to determine success after 5 years (five complete growing seasons):

- a. The site is clean of all equipment, structures, material, and debris not necessary for the intended use of the site.
- b. Disturbed soil surfaces have been stabilized to reduce erosion and runoff to or below natural background levels. Flow pattern development does not result in rills greater than described in the appropriate Ecological Site Description. Activities do not contribute to pre-existing gullies actively down cutting or head cutting. No slumping or subsidence occurs as a result of surface-disturbing activities.
- c. With the exception of active work areas, all disturbed soils that remain exposed, unprotected, or unreclaimed for longer than one month have been stabilized.
- d. The site has been regraded to approximate pre-disturbance topography to the extent practicable, in order to minimize disturbance, and lessen erosion potential.
- e. Pre-disturbance cover and diversity of native species on site is achieved. Total herbaceous cover is at least 80 percent of the reference site. Trees and shrubs are present and thriving in a manner sufficient to establish these species to pre-disturbance levels over time; 90 percent of the vegetative cover will consist of desirable species identified in the appropriate Ecological Site Description.
- f. The site would not have state- or county-listed noxious weeds within 5 years of reclamation.
- g. Visual quality has been restored, aesthetic values have been enhanced, and visual contrast has been reduced to meet visual resource management objectives on all areas of surface disturbance.

E.1.1 Reclamation Plans

A reclamation plan will be submitted for BLM review and approval prior to surface-disturbing activities. A reclamation plan serves as a binding agreement between the BLM and project proponent(s) and will be included as part of the proposed action in the application. Reclamation plans will provide sufficient detail to demonstrate an understanding of the potential reclamation site and activities required to achieve the stated success criteria for interim and final reclamation. Reclamation plans will include:

Site-specific Baseline Information:

- a. Pre-disturbance terrain and contour
- b. Pre-disturbance land use

- c. Seasonal weather patterns
- d. Topsoil depth and other limitations to plant growth
- e. Vegetation type, dominant species cover, density, and productivity by strata

Reference Site Selection and Documentation:

- a. Appropriate reference sites will be assessed, selected, and characterized following Ecological Site Inventory methods and standards, or an equivalent system as approved by the BLM.
- b. Reference sites will be approved by BLM prior to a permitted disturbance.

Site-specific Revegetation Plan:

- a. Size of disturbed versus reclaimed area
- b. Proposed surface finish and grades
- c. Proposed topsoil handling and treatment
- d. Proposed seed mix (seeding rate, species, and variety)/container stock planting (container size and off-center spacing)
- e. Treatment of noxious and undesirable species
- f. Proposed seeding/mulching techniques
- g. Ongoing maintenance activities expected
- h. Monitoring plan

Bond Agreement Information (if applicable), or Conditions for Future Activity

Bonds to be held against achievement of reclamation success criteria for activities will be determined by program-specific requirements. In general, the amount of a bond will be considered a percentage of the total reclamation costs for a project sufficient to ensure reclamation success. These costs will be demonstrated in the reclamation plan. Documentation of compliance with bonding requirements sufficient to assure reclamation may also be included as part of the approved reclamation plan. Future associated development activities may be precluded until successful reclamation is achieved for a given area or project. Bonds related to drilling operations on a federal oil and gas lease are subject to federal regulations including 43 Code of Federal Regulations 3104, 43 Code of Federal Regulations 2805.20, and 43 Code of Federal Regulations.

E.1.2 Reclamation Practices and Standards

The following practices and standards are intended to provide direction. Some standards are only appropriate for interim or final reclamation, while others will be used in either situation. The intent of BLM's land use planning process is to identify standards and objectives to be met on public lands. Specific methodologies are considered to be activity- or implementation-level planning decisions and not resource management plan decisions. As such, practices are provided to clarify BLM's intent for reclamation activities. The following list is not considered to be all inclusive, but rather is presented to provide a sense of the types of tools that may be necessary to produce acceptable reclamation outcomes. Additional practices may be required, practices may be withdrawn, or practices may be modified during activity-, implementation-, or project level-planning; this may be done without future land use plan decisions or

amendments. Monitoring and adaptive management practices will be used to refine and clarify needed actions consistent with the goals and objectives of this plan. Reclamation practices and standards are listed below. Program-specific guidance in the form of manuals, handbooks, and regulations are to be used when developing mitigating measures and reclamation plans at the project level.

Interim Reclamation Practices and Standards

- a. Limit surface disturbance to the minimum area necessary by avoiding development of roads, pipelines, and well pads on steep slopes; minimize the potential for surface disturbance through careful planning; grouping facilities to the extent possible; and sharing rights-of-way such as burying pipelines along roadways.
- b. Identify, delineate, and salvage topsoil and subsoil based on a site-specific and project-specific soil evaluation. Store topsoil separately from subsoil and identify topsoil stockpiles appropriately to ensure topsoil remains undisturbed until reclamation. Protect stored topsoil from erosion, degradation, noxious weed and invasive plant infestations, and contamination. Stockpiles should be located above the high-water mark and away from riparian areas, floodplains, wetlands, and other sensitive areas.
- c. Topsoil that is not re-spread within 30 days should be stabilized with a tackifier, mulch, or other approved stabilizer. If topsoil is stored for longer than 30 days during the growing season but less than two growing seasons, it would be spread to a maximum depth of 18 inches and planted with an approved native or sterile cover crop. If the topsoil will be stored for longer than two growing seasons it would be stabilized and planted with an approved native seed mixture to maintain biological function.
- d. Minimize the area necessary for construction activities; determine the minimal area needed to facilitate necessary activities and initiate interim reclamation as quickly as practical after construction.
- e. Erosion control and sediment containment structures, such as silt fencing, will be necessary in areas in proximity to water features such as streams, ponds, and wetlands or in other situations where wind or water erosion may otherwise move sediments into sensitive or valuable surrounding habitat. See also *Erosion Control Practices and Standards*.
- f. Control and eradicate all State of North Dakota listed noxious weeds and undesirable species within reclaimed areas.
- g. See also *Seeding Practices and Standards*, and *Invasive Species and Noxious Weeds Practices and Standards*.

Erosion Control Practices and Standards

- a. Minimize accelerated erosion and sedimentation on or adjacent to the reclaimed area with appropriate erosion and sedimentation control measures immediately following disturbance.
- b. Erosion control structures, such as water bars, may be necessary on steep slopes and should be used as necessary on gentler slopes. Vary water bar spacing to fit site conditions, to promptly intercept surface water before the volume of water and velocity increase enough to generate erosion, and to

facilitate drainage toward natural dips, rocky ground, or vegetation to intercept sediment. Water bar spacing guidelines:

- for slopes less than 10 percent, every 100 to 400 feet
 - for slopes 10 to 19 percent, every 75 to 200 feet
 - for slopes 20 to 39 percent, every 50 feet
 - for slopes greater than 39 percent, every 25 feet
- c. Erosion control matting will be unrolled from the bottom toward the top of the slope, placed along the direction of water-flow and loosely over soils with extreme surface roughness, and in compliance with the manufacturer's instructions.
- d. Inspect and maintain all erosion and sediment control structures after major runoff events, 0.5 inch in 24 hours, and until vegetation is reestablished, site is stabilized, or the structures are no longer needed.
- e. The Burned Area Emergency Stabilization and Rehabilitation BLM Handbook H-1742-1 contains further guidance on erosion and sedimentation control best management practices.

Final Reclamation Practices and Standards

- a. Reconstruct the landscape to blend with adjacent contours and to maintain the approximate original contour. However, if the site has stabilized and recontouring would cause additional disturbance, this step may be waived by the Authorized Officer.
- b. Redistribute topsoil and subsoil along contours in a manner similar to the original vertical profile. Incorporate soil material so that it blends in with the adjacent landscape, corresponding to adjacent surface roughness.
- c. Reconstruct drainage basins and reclaim impoundments to maintain the drainage pattern, profile, and dimension to resemble the natural features found in nearby naturally functioning basins.
- d. Reconstruct and stabilize stream channels, drainages, and impoundments to exhibit similar hydrologic characteristics found in stable, naturally functioning systems.
- e. Control and eradicate all State of North Dakota listed noxious weeds and undesirable species within reclaimed areas. See *Invasive Species and Noxious Weeds Practices and Standards*.
- f. Reclaim all roads and trails unless they meet a public demand as determined by the Authorized Officer.
- g. Displaced farmland, whether in production or not, would be reclaimed to original productivity.
- h. See *Seeding Practices and Standards*.

Seeding Practices and Standards

- a. Seed sites when environmental conditions are appropriate and as soon as possible following re-contouring and seedbed preparation.
 1. Seedbed preparation includes:
 - i. Reduce subsoil compaction to an appropriate depth (generally below the root zone or 20 inches, whichever is greater) prior to redistribution of topsoil. Cross-rip along contours perpendicular to each other.
 - ii. Replace topsoil unevenly back over subsoil in order to create microsites.
 - iii. Seed when a weak ball can be formed from soil 2 to 3 inches below the surface.
 - iv. Clods would be less than 2 inches in diameter.
 - v. A 170-pound person would leave footprints no deeper than 0.5 inch.

Spring or fall seeding is recommended. Dormant fall seeding is recommended, typically after October 1st, when soil temperatures are less than 40 degrees Fahrenheit (F) at a 2-inch depth (for 10 days or more) and before the ground freezes. Warm season species are more successful when seeded in the spring, on thawed, friable surface soil when soil temperatures are a minimum of 55 degrees F.

- b. Establish species composition, richness, structure, and total ground cover appropriate for the desired plant community. The site will be compared to an appropriate adjacent reference site or a Natural Resources Conservation Services Ecological Site Description.
- c. Drill seed the disturbed area with a native seed mix at a rate sufficient to achieve site stabilization and desired cover based on reference sites. The recommended drill seeding rate for large-seeded species is 20 pure live seed per square foot (PLS/ft²), and the recommended drill seeding rate for small-seeded species (most seed mixes) is 30 to 40 PLS/ft². Drill seeding is the preferred method of seeding; however, on locations where it is impractical double the drill-seeding rate for broadcast, hydro, or aerial seeding methods to a maximum of 80 PLS/ft².
- d. Drill or broadcast seed parallel to slope contours. If broadcast seeding, follow by packing with a roller or drag (e.g., chain, harrow) with two passes perpendicular to each other. Drill seed with a 6-inch row spacing, or as directed by Authorized Officer. Bury seed at depths 0.25 to 0.75 inches deep. Hydroseeding is not recommended, but if approved, the seed should be spread in an initial pass and then covered by a mulch mixture (if needed) in a second pass; the mulch and seed should never be combined in a single pass.
- e. Seed will be certified and shall not contain federally listed or North Dakota state-listed noxious, prohibited, or restricted weed seed (BLM Manual H-1740-2).
- f. Protect seed and seedling establishment with appropriate measures. Erosion-control matting and mulch will be biodegradable and certified weed and insect free. Matting will contain holes greater than 2 inches in diameter and a 2-year photodegradation life. Tackifier will be biodegradable. Straw or native hay mulch will be mold- and fungi-free and will be crimped in vertically at a rate of 1 to 2 tons per acre, so that 80 to 90 percent of the ground is covered. Wood mulch is not recommended. All twine associated with straw or hay mulch will be biodegradable, but if it is not, then it will be collected and properly disposed.

- g. Fencing may be required to limit wildlife and livestock grazing for a minimum of two growing seasons or until plants are sufficiently established to persist under some physical disturbance. Seeded species will be considered established when at least 80 percent of the plant cover for the reference ecological site is present. Fencing would be installed after dirt work, grading, and seeding are completed and prior to livestock turnout. Wildlife-friendly fence would be used if the objective is to exclude livestock only.

Invasive Species and Noxious Weeds Practices and Standards

- a. The project area will be inventoried for invasive species on and adjacent to the site before initial activities.
- b. Do not allow invasive species to be transported offsite without appropriate disposal measures.
- c. An invasive species management plan will be developed, if appropriate.
- d. Invasive species will be controlled using an integrated pest management approach for the life of the project.

Oil and Gas Reclamation Practices and Standards

- a. If the location and road are built but no well is drilled, disturbed areas will be reclaimed or BLM- and landowner-approved erosion controls built within 90 days after site construction.
- b. Reclaim portions of the access road and well pad not needed for production within 6 months of well completion.
- c. Clean site of all equipment, structures, material, and debris not necessary for the intended use of the site. Surface pipelines and utility lines are removed. Ensure buried lines are purged and capped.
- d. Segregate, treat, remove, and bio-remediate contaminated soil material. Free fluids must be removed. Waste material must be disposed of in accordance with applicable laws, regulations, and policy. Ensure all waste materials moved off-site are transported to an authorized disposal facility.
- e. Bury only authorized (by BLM or state) waste materials on site. Buried material will be covered with a minimum of 5 feet of suitable material or meet other program standards.
- f. Properly plug all drill holes and other subsurface openings and seal from the bottom to the top of water-bearing formations.
- g. Stabilize, properly backfill, cap, and restrict from entry all open shafts, underground workings, pits, and other openings.
- h. When plugging the well, a steel plate dry hole marker welded to the surface casing at least 4 feet below recontoured ground is required and must contain the same information as the well sign.

E.2 MONITORING

Annual monitoring and reporting of results will be required for reclaimed areas. Monitoring will occur annually for either a minimum of 5 years or until performance standards are achieved, whichever is longer. Monitoring methods and reporting standards will be included in reclamation plans and approved by BLM prior to disturbance. Current monitoring methods are outlined below. Required monitoring methodology may change over time.

Methods

Monitoring methods will be approved as part of the site reclamation plan. In general, methods must be used that will yield appropriate quantitative measures by which to address success criteria parameters against a reference site.

- a. Plant species composition and cover will be sampled using either point intercept transect or plot sampling at a sufficiency to demonstrate statistical adequacy at the 85 percent level.
- b. Woody species (tree and shrub) density and survivorship will be assessed using plot or belt transect sampling.
- c. Fixed photo points (location to be determined and used during baseline conditions sampling). Photo points should be placed both in the disturbed areas and on the edges of disturbed areas in order to show a comparison of disturbed and undisturbed areas, (i.e., on both edges and in the middle of the disturbed area).

Monitoring Reports

Reports of annual monitoring efforts will be submitted annually to BLM for approval. The BLM will evaluate the report and reply back within 2 months of receiving the report. Site-specific evaluations may be recommended following BLM evaluation of data. The BLM may suggest remedial measures, alter proposed remedial measures, or alter the method or interval for monitoring and reporting. Each report will address the results of the monitoring in terms of each success criterion and compared to the same parameters for the reference site. Additionally, each report will address the following items:

- a. Text and data to illustrate trends in terms of site conditions against each of the agreed-upon success criteria
- b. Quantitative percent cover data by species for all plant species present on the site, including planted and seeded species, native volunteer species, nonnative species, and noxious weeds
- c. Annotated photographs from fixed photo points illustrating conditions before and after mitigation activities are completed
- d. A figure or shapefile showing locations of fixed photo points and data sampling locations
- e. A brief discussion of the overall mitigation success, incorporating monitoring data. Problem areas identified during the monitoring session will be discussed and adaptive management remediation activities will be recommended, as necessary.
- f. A description of any adaptive management activities performed since the previous annual report for the site as well as planned actions to be taken if plant establishment efforts are sub-standard or completely fail. For these circumstances, the cause of failure must be stated and how corrective actions will mitigate these causes.

Appendix F

Coal Screening Process

This page intentionally left blank.

TABLE OF CONTENTS

Appendix

Page

APPENDIX F. COAL SCREENING PROCESS..... F-1

F.1	Introduction.....	F-1
F.2	Regulatory Overview	F-1
F.3	Coal Screening Results	F-2
F.3.1	Screen 1—Coal Development Potential	F-2
F.3.2	Screen 2—Unsuitability	F-3
F.3.3	Screen 3—Multiple Use.....	F-5
F.3.4	Screen 4—Consultation with Qualified Surface Owners.....	F-8
F.3.5	Screens 1–4: Areas Acceptable for Further Consideration for Leasing.....	F-9
F.3.6	Coal-Producing Counties.....	F-9
F.4	Reference	F-13

TABLES

Page

F-1	Screen 2 Results (Maps F-2 through F-26)	F-3
F-2	Alternatives B and D, Screen 3 Results (Map F-33)	F-7
F-3	Alternative B.1, Screen 3 Results (Map F-34).....	F-7
F-4	Alternative C, Screen 3 Results (Map F-35).....	F-8
F-5	Coal Screening Summary for the Decision Area and the Coal-Producing Counties	F-11

MAPS *(see Attachment 1)*

Screen 1

F-1	Screen 1 Coal Development Potential
-----	-------------------------------------

Screen 2

F-2	Screen 2 Unsuitability—Criterion 1 Federal Land System Data
F-3	Screen 2 Unsuitability—Criterion 1 Federal Land System Results (Without Exception)
F-4	Screen 2 Unsuitability—Criterion 2 Federal Lands within Right-of Ways Data
F-5	Screen 2 Unsuitability—Criterion 2 Federal Lands within Right-of Ways Results (With Exception)
F-6	Screen 2 Unsuitability—Criterion 3 Buffer Zones along Public Roads, Public Buildings, and State Parks Data
F-7	Screen 2 Unsuitability—Criterion 3 Buffer Zones along Public Roads, Public Buildings, and State Parks Results (With Exception)
F-8	Screen 2 Unsuitability—Criterion 7 Historic Lands and Sites Data
F-9	Screen 2 Unsuitability—Criterion 7 Historic Lands and Sites Results (With Exception)
F-10	Screen 2 Unsuitability—Criterion 8 National Natural Landmarks Data
F-11	Screen 2 Unsuitability—Criterion 9 Critical and High Quality Habitat for Threatened and Endangered Species Data
F-12	Screen 2 Unsuitability—Criterion 9 Critical and High Quality Habitat for Threatened and Endangered Species Results (With Exception)
F-13	Screen 2 Unsuitability—Criterion 11 Bald and Golden Eagle Nests Data
F-14	Screen 2 Unsuitability—Criterion 11 Bald and Golden Eagle Nests Results (With Exception)
F-15	Screen 2 Unsuitability—Criterion 13 Falcon Nesting Sites Data
F-16	Screen 2 Unsuitability—Criterion 13 Falcon Nesting Sites Results (With Exception)

- F-17 Screen 2 Unsuitability—Criterion 14 Migratory Birds of High Federal Interest Data
- F-18 Screen 2 Unsuitability—Criterion 14 Migratory Birds of High Federal Interest Results (With Exception)
- F-19 Screen 2 Unsuitability—Criterion 15 Habitat for Species of High Interest to the State Data
- F-20 Screen 2 Unsuitability—Criterion 15 Habitat for Species of High Interest to the State Results (With Exception)
- F-21 Screen 2 Unsuitability—Criterion 16 Floodplains Data
- F-22 Screen 2 Unsuitability—Criterion 16 Floodplains Results (Without Exception)
- F-23 Screen 2 Unsuitability—Criterion 17 Municipal Watersheds Data
- F-24 Screen 2 Unsuitability—Criterion 19 Alluvial Valley Floors Data
- F-25 Screen 2 Unsuitability—Criterion 19 Alluvial Valley Floors Results (Without Exception)
- F-26 Screen 2 Unsuitability—Summary Results

Screen 3

- F-27 Screen 3 Multiple Use—Air and Climate: Existing Infrastructure (Alternatives B and D)
- F-28 Screen 3 Multiple Use—Air and Climate: Limited Expansion (Alternative B.1)
- F-29 Screen 3 Multiple Use—Soils Resources (Alternatives B, B.1, and D)
- F-30 Screen 3 Multiple Use—Fluid Minerals (Alternatives B, B.1, C, and D)
- F-31 Screen 3 Multiple Use—Recreation and Special Designations (Alternatives B, B.1, C, and D)
- F-32 Screen 3 Multiple Use—National Park Service Viewshed (Alternatives B, B.1, and D)
- F-33 Screen 3 Multiple Use—Summary Unacceptable for Leasing (Alternatives B and D)
- F-34 Screen 3 Multiple Use—Summary Unacceptable for Leasing (Alternative B.1)
- F-35 Screen 3 Multiple Use—Summary Unacceptable for Leasing (Alternative C)

Screen 4

- F-36 Screen 4—Surface Owner Consultation Data

Areas Acceptable for Further Consideration for Leasing

- F-37 Areas Acceptable for Further Consideration for Leasing (Alternative B)
- F-38 Areas Acceptable for Further Consideration for Leasing (Alternative B.1)
- F-39 Areas Acceptable for Further Consideration for Leasing (Alternative C)
- F-40 Areas Acceptable for Further Consideration for Leasing (Alternative D)

Coal Producing Counties

- F-41 Screen 1 Coal Development Potential—Coal-Producing Counties
- F-42 Screen 2 Unsuitability—Summary Results - Coal-Producing Counties
- F-43 Screen 3 Multiple Use—Summary Unacceptable for Further Consideration for Leasing (Alternative B) - Coal-Producing Counties
- F-44 Screen 3 Multiple Use—Summary Unacceptable for Further Consideration for Leasing (Alternative B.1) – Coal-Producing Counties
- F-45 Screen 3 Multiple Use—Cumulative Unacceptable for Further Consideration for Leasing (Alternative C) - Coal-Producing Counties
- F-46 Screen 4 Surface Owner Consultation—Coal-Producing Counties
- F-47 Areas Acceptable for Further Consideration for Leasing (Alternative B)—Coal-Producing Counties
- F-48 Areas Acceptable for Further Consideration for Leasing (Alternative B.1)—Coal-Producing Counties
- F-49 Areas Acceptable for Further Consideration for Leasing (Alternative C)—Coal-Producing Counties
- F-50 Areas Acceptable for Further Consideration for Leasing (Alternative D)—Coal Producing Counties

ATTACHMENTS

- 1 Maps
- 2 Sample Private Landowner Letter

This page intentionally left blank.

Appendix F. Coal Screening Process

F.1 INTRODUCTION

As part of the land use planning process (regulated under 43 Code of Federal Regulations [CFR] 1600), surface management agencies are charged with filtering lands overlaying federally administered coal through four screens. These screens ultimately result in the allocation of lands as acceptable for further consideration for leasing and development, taking into account resource conflicts with coal development (43 CFR 3420.1-4(d)).

This appendix describes the coal screening process undertaken by the US Department of the Interior, Bureau of Land Management (BLM) for the North Dakota Field Office (NDFO), complying with 43 CFR 3420.1-4(e). The screening process informs potential land use decisions regarding coal leasing availability under the alternatives analyzed in the NDFO Resource Management Plan (RMP) and Environmental Impact Statement (EIS) revision.

The BLM prepared a RMP and supporting coal screens for the 1988 North Dakota RMP, which allocates federal coal in the planning area. To date, 10,695 acres of federal coal have been leased under the 1988 RMP in North Dakota. In the current RMP revision, Alternative A represents the coal screen results from the 1988 North Dakota RMP (see **Chapter 2**).

The total acres acceptable for further consideration for leasing and development based on this coal screening process are in **Chapter 2, Table 2-1**. Note that coal screen findings that an area is unsuitable for leasing do not permanently withdraw the area; these findings could be revisited and reassessed during a future land use planning effort.

F.2 REGULATORY OVERVIEW

Federal coal is governed by Section 522(b) of the Surface Mining Control and Reclamation Act and by the Federal Land Management Policy Act and its implementing regulations at 43 CFR 3400 and 43 CFR 1600. The BLM has the authority to lease coal under the Surface Mining Control and Reclamation Act. The State, through primacy, then has the authority to regulate development of the lease. Any restrictions that the BLM puts on a coal lease do not preclude the state from implementing Surface Mining Control and Reclamation Act or state regulations.

One aspect of coal leasing governed under these regulations is land use planning (43 CFR 3420.1-4(d); 43 CFR 1610.7-1) and the review of federal lands for suitability for coal leasing (43 CFR 3461). These regulations identify certain lands as unsuitable for surface mining or surface mining operations because they contain significant values that conflict with coal development. These include components of the federal land system; public roadways; floodplains; cultural resources listed on the National Register of Historic Places; critical habitat for threatened and endangered species; incorporated cities, towns, and villages; and other criteria.

The regulations at 43 CFR 3420 govern the land use planning process as it pertains to coal, including the four coal screens for identifying areas acceptable for further consideration for leasing and unsuitable for

surface mining or surface mining operations (43 CFR 3420.1-4). Under this process, the BLM must complete the following:

1. Identification of coal with development potential—Lands determined to have development potential are considered acceptable for further consideration for leasing and are applied to the remaining coal screens. Lands determined to not have development potential are eliminated from further consideration for leasing.
2. Application of unsuitability criteria—Lands with coal potential are assessed with procedures outlined in 43 CFR 3461. Lands with coal potential may be eliminated from further consideration for leasing if determined unsuitable without exception pursuant to Section 522(b) of the Surface Mining Control and Reclamation Act. In accordance with 43 CFR 3461.2-1, the BLM could, based on additional site-specific surveys or changes in resource conditions, change the unsuitability determination of a given tract at the leasing stage.
3. Multiple-use conflict analysis—43 CFR 3420.1-4e(3) states that “multiple land use decisions shall be made which may eliminate additional coal deposits from further consideration for leasing, to protect resource values of a locally important or unique nature not included in the unsuitability criteria.” Multiple-use values may include possible oil and gas development, soil, wildlife, recreation, and air resources. Lands with coal potential may be eliminated from further consideration for leasing where multiple uses conflict.
4. Surface owner consultation—This screen requires the BLM to consult with qualified surface owners whose land overlies federal coal with development potential. The BLM asks the qualified surface owners for their preference for or against offering the coal deposits under their land for lease. Lands with coal potential may be eliminated from further consideration for leasing based on qualified surface owner preference.

F.3 COAL SCREENING RESULTS

F.3.1 Screen 1—Coal Development Potential

To evaluate coal potential in the coal decision area, the BLM consulted with the United States Geological Survey (USGS) and the North Dakota Public Service Commission (ND PSC). The BLM and USGS reviewed available data from the ND PSC, USGS, and data submissions from North Dakota coal companies with existing federal coal leases and developed criteria for evaluating coal potential. Drill hole locations from the USGS were reviewed initially for completeness and representativeness to determine if data gaps existed. The USGS dataset was sparse in the active coal fields. The companies were invited to submit any proprietary data they had to help fill out the drill hole dataset. The combined dataset provided good coverage of the existing mines, but little data exist beyond the mine boundaries. The combined drill hole data were correlated with coal beds, and a predictive model for coal potential was created. The model may not accurately represent coal potential in areas of future expansion of the mines or undeveloped coal fields due to the lack of drill hole data in those regions.

There are approximately 4 million acres of BLM-administered federal coal minerals in the North Dakota RMP/EIS planning area with 1,096,400 acres identified as having coal development potential. **Map F-1** displays the results of Screen 1.

F.3.2 Screen 2—Unsuitability

To assess the applicability of each of the 20 unsuitability criteria to the decision area, the BLM interdisciplinary team of resource specialists reviewed available data and solicited expertise and data from the state (North Dakota's Department of Environmental Quality, Department of Emergency Services, Department of Transportation, Game and Fish, Geological Survey, Industrial Commission, Natural Heritage Program, Parks and Recreation, Public Service Commission, and State Historic Preservation Office) and federal agencies (the US Army Corps of Engineers, US Fish and Wildlife Service, Forest Service, USGS, National Park Service, and Office of Surface Mining and Reclamation).

The acres designated unsuitable under each unsuitability criterion are tabulated under **Table F-1**. Areas identified as unsuitable under each unsuitability criterion are mapped in **Maps F-2 through F-26** in **Attachment 1**. For each criterion, resources that trigger unsuitability are identified. Please note that the acres identified as unsuitable in **Table F-1** are not exhaustive of the resource in the decision area; rather, unsuitable acres are only those that overlie both the coal decision area and coal potential as identified under Screen 1 (**Map F-1**). Acreages are not additive across the table because of overlapping resources (for example, areas containing habitats for species of high interest to the state may also include federal rights-of ways; therefore, they may be subject to overlapping criteria). **Map F-26** shows the aggregate result of Screen 2.

Table F-1. Screen 2 Results (Maps F-2 through F-26)

Criterion Number	Criterion Name/Applicable Resources¹	Acres² Unsuitable
<i>Criterion 1 Map F-3</i>	<i>Federal Land System</i> • National Wildlife Refuge System • Lewis and Clark National Historic Trail • Incorporated cities, towns, and villages	21,467
<i>Criterion 2 Map F-5</i>	<i>Federal Lands within Rights-of-Ways</i> • Rights-of-way	24
<i>Criterion 3 Map F-7</i>	<i>Buffer Zones along Public Roads, Public Buildings, and State Parks</i> • Public roadways • Public buildings (school, church, or institutional buildings) • Cemeteries • State parks	74,832
<i>Criterion 4</i>	<i>Wilderness Study Areas</i>	0
<i>Criterion 5</i>	<i>Federal Designated Class I Scenic Areas</i>	0
<i>Criterion 6</i>	<i>Scientific Study</i>	0
<i>Criterion 7 Map F-9</i>	<i>National Register of Historic Places</i> • Listed sites and districts	2,687
<i>Criterion 8</i>	<i>Natural Areas and National Natural Landmarks</i>	0
<i>Criterion 9 Map F-12</i>	<i>Federally Designated, Proposed, or Essential Critical Habitat for Threatened and Endangered Species</i> • Dakota skipper critical habitat and buffered occupancy locations • Pallid sturgeon • Piping plover critical habitat • Whooping crane high quality habitat	200,142
<i>Criterion 10</i>	<i>State-listed Threatened and Endangered Species</i>	0
<i>Criterion 11 Map F-14</i>	<i>Bald and Golden Eagle Nest Sites</i>	4,585

Criterion Number	Criterion Name/Applicable Resources¹	Acres² Unsuitable
<i>Criterion 12</i>	<i>Bald and Golden Eagle Roost and Concentration Areas</i>	0
<i>Criterion 13</i> <i>Map F-16</i>	<i>Falcon Cliff Nesting Sites</i> • Prairie falcon	500
<i>Criterion 14</i> <i>Map F-18</i>	<i>Migratory Birds of High Federal Interest</i> • Ferruginous hawk nests • Sprague's pipit habitat • Lark bunting habitat • Grasshopper sparrow habitat • Chestnut-collared longspur habitat • Baird's sparrow habitat	154,849
<i>Criterion 15</i> <i>Map F-20</i>	<i>Habitat for Species of High Interest to the State</i> • Pronghorn • Mule deer • Big horn sheep • Greater sage-grouse priority habitat management areas • Sharp-tailed grouse leks and buffer zones • Tallgrass prairie • Woody draws • Riparian areas and wetlands	1,377,733
<i>Criterion 16</i> <i>Map F-22</i>	<i>100-Year Floodplain</i>	5,185
<i>Criterion 17</i>	<i>Municipal Watersheds</i>	1,155
<i>Criterion 18</i>	<i>National Resource Waters</i>	0
<i>Criterion 19</i> <i>Map F-25</i>	<i>Alluvial Valley Floors</i>	29,488
<i>Criterion 20</i>	<i>Tribal and State Proposed Criteria</i>	0

Source: BLM GIS 2021

¹ Screen 2 was only applied to lands within the coal development potential area and the BLM coal decision area.

² Unsuitability criteria "without exception" are highlighted in gray (i.e., acres that will not be made available under any circumstance). The regulations provide an exception for Criterion 1, but the lands in the BLM coal decision area do not meet the criteria for that exception; therefore, they are treated as without exception.

Screen 2 unsuitability without exception criteria are calculated as unavailable acres (see **Map F-2** through **Map F-26**). Screen 2 removed approximately 53,000 acres of federal coal minerals from the coal development potential area. Unsuitability with exception or stipulation criteria are calculated as available acres. All unsuitability criteria will be reviewed at the time of application and acreages may be made available without requiring a land use plan amendment if resource data change.

Stipulation for Criterion 15

All habitat for species of high interest to the state, listed under criterion 15, have reclamation as a stipulated method of coal mining. This stipulation requires reclamation using an approved seed mix that is appropriate to the soil type(s) and resident species of fish, wildlife, or plant species found within the disturbance area.

Stipulation

Stipulated methods of mining include reclamation of the disturbed essential habitat to a value that is equal to or greater than the time of disturbance. The reclamation will include a native seed mix and methods to be approved by the BLM at the time of the lease. Seed mixes will be specific to both ecological site descriptions and the resident species of fish, wildlife, or plant species being addressed. If conflicting habitat types are determined, the

leasing National Environmental Policy Act document will address prioritization or other solutions for maintaining habitat in the site-specific area. There shall be no primary or secondary noxious weed seed in the seed mixture. Seed shall be tested, and the viability testing of seed shall be done in accordance with state law(s) and within 6 months prior to purchase. Commercial seed shall be either certified or registered seed. The seed mixture container shall be tagged in accordance with state law(s) and available for inspection by the BLM Authorized Officer. See **Appendix E** for reclamation standards.

F.3.3 Screen 3—Multiple Use

In addition to the areas unsuitable under Screen 2, land use decisions to protect resources of high value to the public may eliminate additional coal deposits from further consideration. The BLM reviewed other resource values and land uses not addressed under the 20 unsuitability criteria; additional lands were determined unacceptable for further consideration for leasing.

After close review of resources in the coal decision area, and in consultation with state and federal agencies, the BLM identified several resources that are eliminated from further consideration for coal leasing under Screen 3.

Air and Climate -NAAQS

Alternatives B, B.1, C, and D considered a criterion for maintaining air quality standards as part of the multiple-use screen; however, existing data showed no air quality standards were exceeded based on the national ambient air quality standards under the Clean Air Act (see Ramboll 2022). Therefore, no resulting geographic area of land was designated unacceptable for further leasing of coal.

Air and Climate -Leonardite

Alternatives B, B.1, and D applied an air resources criterion that excluded areas with only leonardite potential (no mapped lignite potential) as part of the multiple-use screen. Leonardite is a low-quality coal with higher emission rates (**Map F-27** and **Map F-28**).

Air and Climate -Existing Infrastructure

Alternatives B and D also applied an air resources criterion that limits future federal coal leasing to lands near existing mines and infrastructure. Under Alternative B, a 4-mile-coal leasing development area was added to extend the coal development (leasing) area beyond the approved federal mine permit boundaries as of September 9, 2022, for each mine. The 4-mile development area around the approved federal mine plans is based on proximity to existing infrastructure, long range mine plans as provided by Lease-by-Application (LBA) documents, future areas of interest provided by the mines, and through consideration of a reasonably foreseeable development (RFD) scenario (**Map F -27**).

Air and Climate -Limited Expansion (Existing mine permit boundaries)

Alternative B.1 also applied a permit boundary criterion that limits future federal coal leasing to areas within the existing Office of Surface Mining, Reclamation, and Enforcement approved permit boundaries as of September 9, 2022, for each coal mine (**Map F-28**). This criterion was developed in consideration of a recent Montana/Wyoming court ruling (Western Organization of Resource Councils, et al. v. BLM; 4:20-cv-00076-GF-BMMM 8/3/2022) within the same BLM District Office requiring BLM to provide a broader range of federal coal leasing alternatives. Using the approved mine permit boundaries (as of September 9, 2020) as limits to future federal leasing, the criterion recognizes current mine plans while also complying

with the recent court ruling which requires consideration of an alternative that reduces the amount of federal coal projected to be developed over the life of the plan and reduces the estimated federal GHG emissions over the life of the plan. The BLM estimates that over the planning period under Alternative B.1 federal coal production would be reduced by approximately 28.1 million tons and would result in approximately a 23 percent reduction in the GHG emissions from federal coal mining and downstream combustion relative to the other alternatives (based on 100-year AR6 GWPs). However, the BLM anticipates that total (federal plus nonfederal) coal production will be the same under all alternatives due to increased nonfederal production making up the reduction in federal coal production under Alternative B.1, and the bypass of federal coal to reach nonfederal coal reserves could potentially result in additional emissions.

Soil Resources

Potential conflicts between development of coal mineral resources and soil resources may warrant the designation of steep slopes as unacceptable. These slopes are easily eroded and may be difficult to recontour without additional effort from the coal companies. When disturbed, erosion from these slopes can lead to an increase in sedimentation, a loss of soil nutrients, and decreasing productivity. In Alternatives B, B.1, and D, slopes greater than or equal to 30 percent and covering continuous areas larger than 10 acres were removed from consideration for leasing (**Map F-29**).

Fluid Minerals

Coal development activities can compromise oil and gas well integrity and oil and gas infrastructure around active oil and gas development, where the two overlap. Active oil and gas development areas merit buffers on coal leasing availability to prevent such conflicts. In Alternatives B, B.1, C, and D active oil and gas fields and active oil and gas wells (buffered 0.50 miles) were screened as unacceptable (**Map F-30**). These include:

- Oil and gas fields with new wells drilled since January 1, 2010
- A 0.50-mile buffer around oil and gas wells that have not been plugged

Recreation and Special Designations

Potential conflicts between development of coal mineral resources and recreation and special designation areas warrant their designation as unacceptable.

Areas of critical environmental concern (ACECs) are unique to the BLM and can only be designated on BLM-administered surfaces. These areas require special management to protect and prevent irreparable damage to important historic, cultural, or scenic values; fish and wildlife resources; or other natural systems or processes, or to protect life and safety from natural hazards (43 CFR 1610). An ACEC may emphasize one or more unique resources. Potential conflicts between development of coal mineral resources and the Mud Buttes ACEC warrant its designation as unacceptable in Alternatives B, B.1, C, and D (**Map F-31**).

Alternatives B, B.1, C, and D also propose two backcountry conservation areas (BCAs; Lost Bridge and Figure 4 BCAs) and one special recreation management area (SRMA; Schnell Ranch SRMA). The proposed BCAs and SRMA are outside of coal potential and therefore do not result in the designation of additional acres as unacceptable.

National Park Service Viewshed

The National Park Service provided a viewshed analysis for the area east of the Knife River Indian Villages Historic Site and east of the Missouri River where coal extraction is currently underway. In Alternatives B, B.1, and D, two parcels were removed from further consideration from leasing due to their proximity to the historic site and the potential to impact the viewshed (**Map F-32**).

Similar to Screen 2, Screen 3 acreages are not additive because of overlapping resources (for example, areas containing steep slopes may also contain active oil and gas wells). In Alternatives B and D, Screen 3 removed approximately 1,037,800 acres of federal coal minerals from the coal development potential area (**Map F-33**). In Alternative B.1, Screen 3 removed approximately 1,079,000 acres of federal coal minerals from the coal development potential area (**Map F-34**). In Alternative C, Screen 3 removed approximately 410,800 acres of federal coal minerals from the coal development potential area (**Map F-35**).

Table F-2. Alternatives B and D, Screen 3 Results (Map F-33)

Map	Multiple-Use Screen	Acres Unacceptable for Further Consideration for Leasing
<i>Map F-27</i>	<i>Air and Climate</i> • Lands outside existing infrastructure • Leonardite potential	1,034,732
<i>Map F-29</i>	<i>Soil Resources</i> • Slopes ≥ 30 percent and >10 acres	27,731
<i>Map F-30</i>	<i>Fluid Minerals</i> • Active oil and gas fields • Active oil and gas wells	403,446
<i>Map F-31</i>	<i>Recreation and Special Designations</i> • Mud Buttes, nominated ACEC	640
<i>Map F-32</i>	<i>National Park Service Viewshed</i> • Knife River Indian Villages Historic Site	799

Table F-3. Alternative B.1, Screen 3 Results (Map F-34)

Map	Multiple-Use Screen	Acres Unacceptable for Further Consideration for Leasing
<i>Map F-28</i>	<i>Air and Climate</i> • Lands outside of existing mine permit boundaries as of September 9, 2022. • Leonardite potential	1,078,769
<i>Map F-29</i>	<i>Soil Resources</i> • Slopes ≥ 30 percent and >10 acres	27,731
<i>Map F-30</i>	<i>Fluid Minerals</i> • Active oil and gas fields • Active oil and gas wells	403,446
<i>Map F-31</i>	<i>Recreation and Special Designations</i> • Mud Buttes, nominated ACEC	640
<i>Map F-32</i>	<i>National Park Service Viewshed</i> • Knife River Indian Villages Historic Site	799

Table F-4. Alternative C, Screen 3 Results (Map F-35)

Map	Multiple-Use Screen	Acres Unacceptable for Further Consideration for Leasing
Map F-30	<i>Fluid Minerals</i> • Active oil and gas fields • Active oil and gas wells plus 0.5-mile buffer	403,446
Map F-31	<i>Recreation and Special Designations</i> • Mud Buttes, nominated ACEC	640

F.3.4 Screen 4—Consultation with Qualified Surface Owners

The BLM sent letters to all identifiable surface owners with lands overlying BLM-administered federal coal in areas determined to have coal development potential under Screen 1 and occurring outside of active oil and gas areas that were included in Screen 3. The BLM asked that the surface owners respond with their preference for, against, or undecided to mining by other than underground methods (i.e., surface mining) on the BLM-administered federal coal beneath their land. A sample of the letters sent to private surface owners can be found in **Attachment 2**.

In order to be a qualified surface owner in accordance with the regulations at 43 CFR 3400.0-5, the individual(s) must:

1. Hold legal or equitable title to the surface of split-estate lands;
2. Have their principal place of residence on the land; personally conduct farming or ranching operations upon a farm or ranch unit to be affected by surface mining operations; or receive directly a significant portion of their income, if any, from such farming and ranching operations; and
3. Have met the first two conditions for a period of at least 3 years, except for persons who gave written consent less than 3 years after they met the requirements. In computing the 3-year period, the BLM Authorized Officer shall include periods during which title was owned by a relative of such person by blood or marriage if, during such periods, the relative would have met the requirements of this section.

Between April and November 2020, the BLM contacted 4,029 landowners outside of active oil and gas areas, with land overlying federal coal minerals within coal potential. Responses received by February 1, 2021, were included in Screen 4 of the Draft RMP/EIS. In the letter, the BLM requested verification of landowner qualifications and an opinion on leasing federal coal beneath their surface (in favor, against, and undecided). The BLM included an addressed, postage-paid envelope to encourage response. The BLM also considered whether landowners had previously provided consent for surface mining. The BLM contacted mining companies and obtained information about private lands that were already leased with the mines. The BLM cross-referenced these with the responses and adjusted accordingly. Of the 4,029 landowners contacted, the BLM received 1,801 responses. Of those responses, there were 1,632 qualified landowners within the coal development potential area (Screen 1).

Alternatives B, B.1, and C identified lands as unavailable for further consideration for coal leasing under this screen each time an individual, qualified landowner clearly stated that they were not in favor of leasing. All other lands were identified as available for further consideration for coal leasing under this screen. As a result of the landowner responses, Alternatives B, B.1, and C removed 121,530 acres from consideration for coal leasing (**Map F-36**). Landowner response letters are included in the project record. At the time of

coal leasing, the current landowner will still need to provide written consent to mine, regardless whether they have expressed an opinion in favor of or against leasing in this screening process (30 United States Code 1304).

In response to cooperating agency and public comments on the Draft RMP/EIS, Alternative D looked for trends or clusters of opposition to mining, rather than individual responses. Alternative D did not find significant opposition to mining and did not identify any lands as unavailable for further consideration for coal leasing under this screen. The owners objecting to mining are scattered and mostly separated from active mines. Before potential leases are delineated, BLM will survey surface owners again for surface owner qualification and agreement, in accordance with 30 CFR 1304(c) and the BLM Coal Leasing Handbook.

F.3.5 Screens 1–4: Areas Acceptable for Further Consideration for Leasing

Map F-37 shows the geospatial results of the four coal screens for Alternative B. After the four coal screens are applied in Alternative B, 54,497 acres are available for further consideration for leasing.

Map F-38 shows the geospatial results of the four coal screens for Alternative B.1. After the four coal screens are applied in Alternative B.1, 16,366 acres are available for further consideration for leasing.

Map F-39 shows the geospatial results of the four coal screens for Alternative C. After the four coal screens are applied in Alternative C, 553,363 acres are available for further consideration for leasing.

Map F-40 shows the geospatial results of the four coal screens for Alternative D. After the four coal screens are applied in Alternative D, 58,588 acres are available for further consideration for leasing.

Table F-5 summarizes the coal screening acres.

F.3.6 Coal-Producing Counties

Currently, federal coal production in the planning area comes from four mines located in three counties, McLean, Mercer, and Oliver, in the central portion of the state. Coal screening results for this area are detailed in **Maps F-41** through **F-50**.

This page intentionally left blank.

Table F-5. Coal Screening Summary for the Decision Area and the Coal-Producing Counties

-	All numbers are in acres	Alt A	Alt A	Alt B	Alt B	Alt B.1	Alt B.1	Alt C	Alt C	Alt D	Alt D
-	-	BLM-administered Subsurface	BLM-administered Surface	BLM-administered Subsurface	BLM-administered Surface	BLM-administered Subsurface	BLM-administered Surface	BLM-administered Subsurface	BLM-administered Surface	BLM-administered Subsurface	BLM-administered Surface
North Dakota	Screen 1—Coal decision area: BLM-administered federal coal minerals in coal development potential	1,009,700	unknown	1,096,400	1,400	1,096,400	1,400	1,096,400	1,400	1,096,400	1,400
	Screen 2—Unsuitable with and without exception	193,400	unknown	—	—	—	—	—	—		
	Screen 2—Unsuitable without exception, criteria 1 certain federal lands, 16 100-year floodplains, and 19 alluvial valley floors	—	—	53,000	200	53,000	200	53,000	200	53,000	200
	Screen 2—Unsuitable with exception, criteria 2, 3, 7, 9, 11, 13, 14, 15, 17	—	—	294,400	1,000	294,400	1,000	294,400	1,000	294,400	1,000
	Screen 3—Multiple use	154,600	unknown	1,037,800	1,400	1,079,000	1,400	410,800	1,200	1,037,800	1,400
	Screen 4—Qualified surface owners	87,800	unknown	663,400	—	663,400	—	663,400	—	663,400	—
	Screen 4—Unqualified surface owners	—	—	12,700	—	12,700	—	12,700	—	12,700	—
	Screen 4—Qualified surface owners, not in favor of leasing	—	—	121,500	—	121,500	—	121,500	—	0 [†]	—
	Unacceptable to coal leasing	435,800	unknown	1,042,000	1,400	1,080,100	1,400	542,800	1,200	1,037,800	1,400
	Acceptable to coal leasing	573,900	unknown	54,400	40	16,400	—	553,600	200	58,600	—

-	All numbers are in acres	Alt A	Alt A	Alt B	Alt B	Alt B.1	Alt B.1	Alt C	Alt C	Alt D	Alt D
-	-	BLM-administered Subsurface	BLM-administered Surface	BLM-administered Subsurface	BLM-administered Surface	BLM-administered Subsurface	BLM-administered Surface	BLM-administered Subsurface	BLM-administered Surface	BLM-administered Subsurface	BLM-administered Surface
Coal-producing counties*	County with existing or pending coal lease* (three counties, McLean, Mercer, and Oliver)	153,940	unknown	125,900	600	125,900	600	125,900	600	125,900	600
	Screen 2—Unsuitable with and without exception	33,650	unknown	—	—	—	—	—	—	—	—
	Screen 2—Unsuitable without exception, criteria 1 certain federal lands, 16 100-year floodplains, and 19 alluvial valley floors, county with existing or pending coal lease	—	—	3,000	0	3,000	0	3,000	0	3,000	0
	Screen 3—Multiple-use unacceptable for further consideration for coal leasing, county with existing or pending coal lease	17,398	unknown	68,000	500	109,00	0	1,900	500	68,000	0
	Screen 4—Qualified surface owners	118,700	unknown	118,700	—	118,700	—	118,700	—	118,700†	—
	Unacceptable to coal leasing	55,474	unknown	72,000	0	109,600	40	16,700	0	67,800	0
	Acceptable to coal leasing	98,466	unknown	53,900	40	16,400	0	109,200	40	58,200	40

* Coal-producing counties in this table are those with existing or pending coal leases (McLean, Mercer, and Oliver). Morton County has an existing mine, but the mine is unlikely to expand and is therefore not part of detailed environmental consequences (no future disturbance is anticipated).

† Under Alternative D, BLM re-evaluated the results of coal screen 4 to only consider areas as "no" for surface owner consent if a cluster of surface owners in an area created a large tract of not in favor responses. Because no significant clusters of surface owners responded not in favor the application of this screen has been updated so that no areas are found unsuitable due to surface owners not in favor. Because qualified surface owner agreement is required prior to leasing per 30 CFR 1304(c), upon receiving a lease application BLM will survey qualified surface owners again prior to issuing any lease.

F.4 REFERENCE

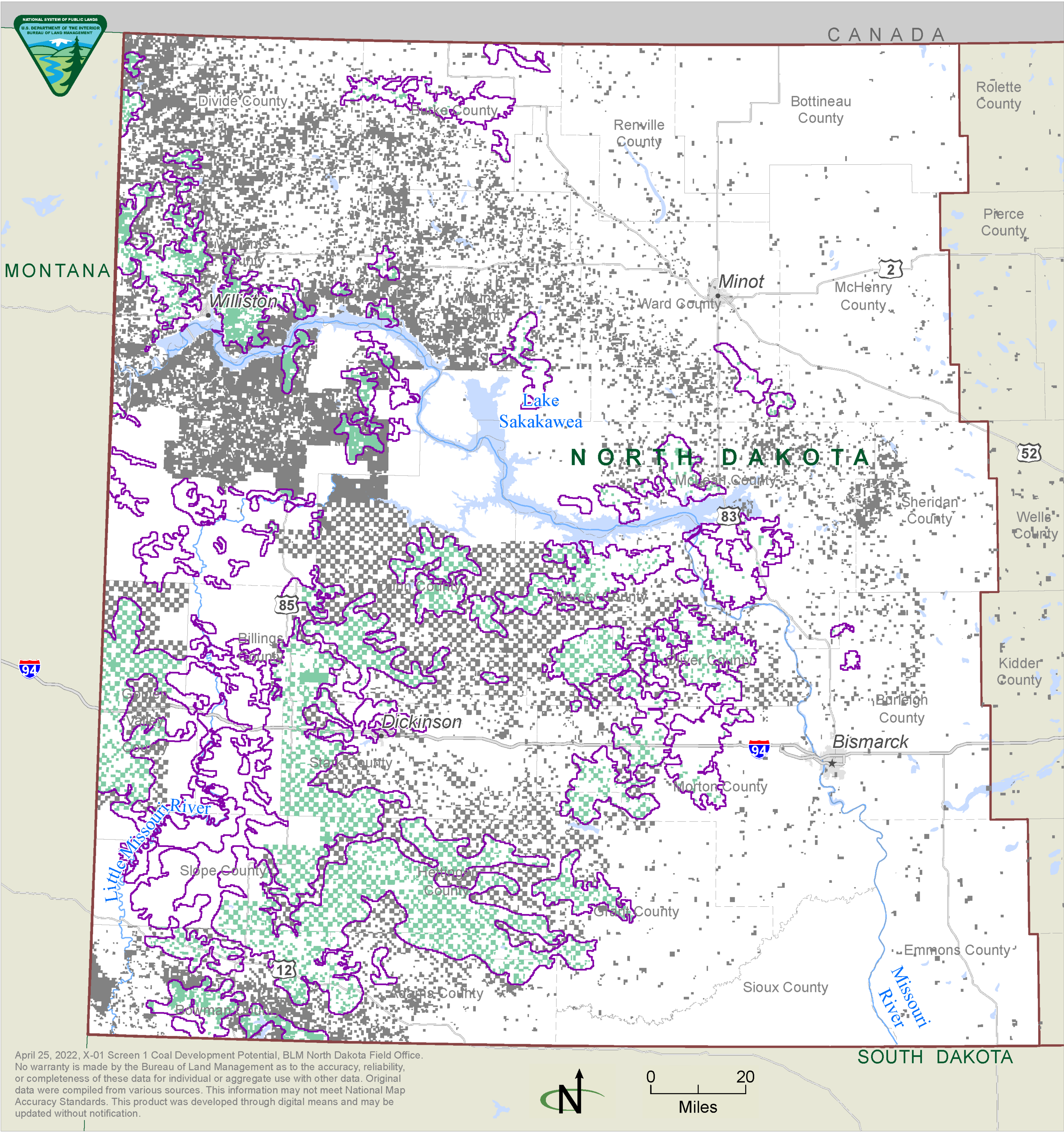
BLM GIS. 2021. GIS data on file with the BLM's eGIS server, used for calculations or figures related to the coal development strategy. BLM, North Dakota Field Office, Dickinson, North Dakota.

This page intentionally left blank.

Attachment 1

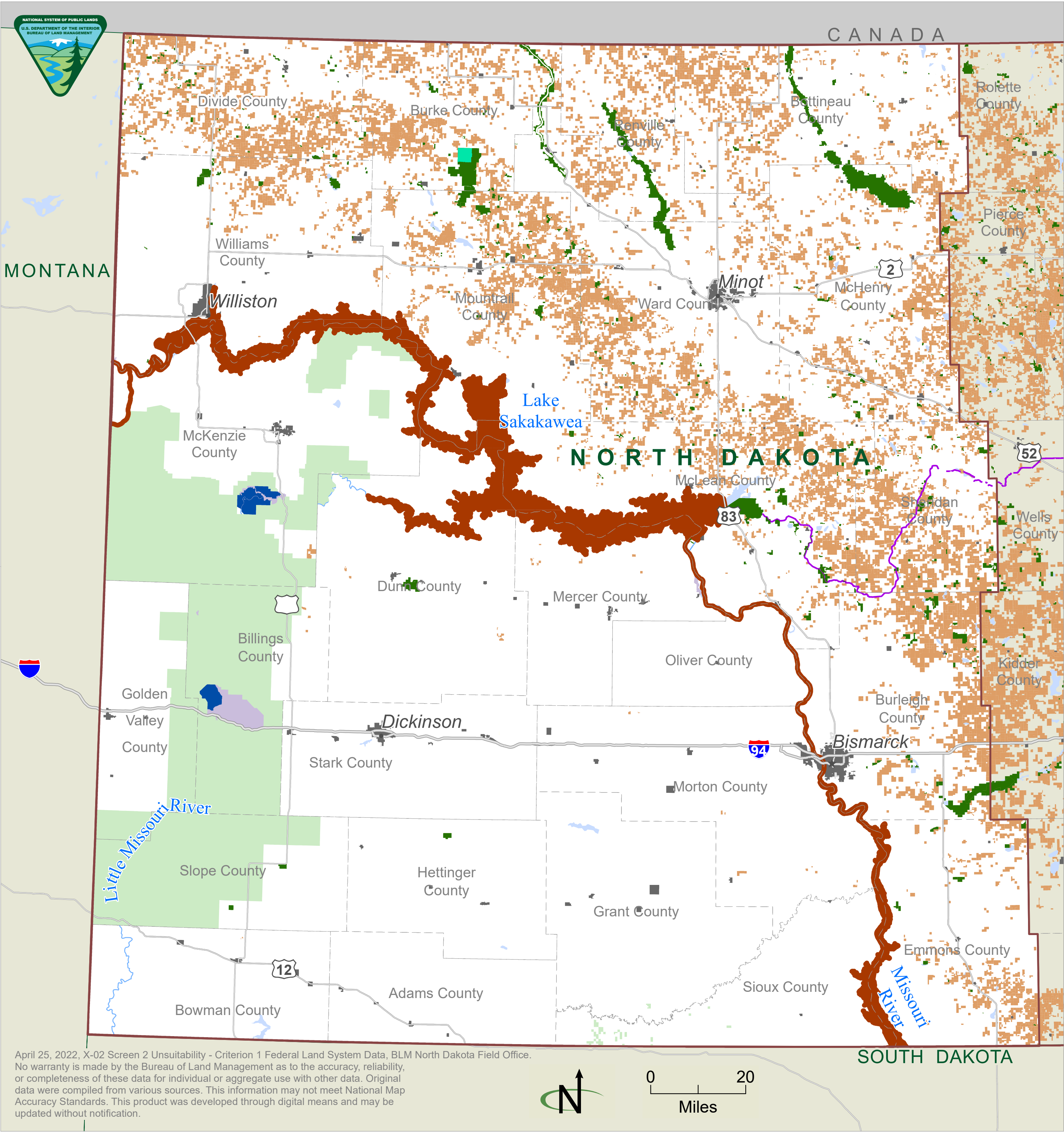
Maps

This page intentionally left blank.



Map F-01
Screen 1 Coal Development Potential

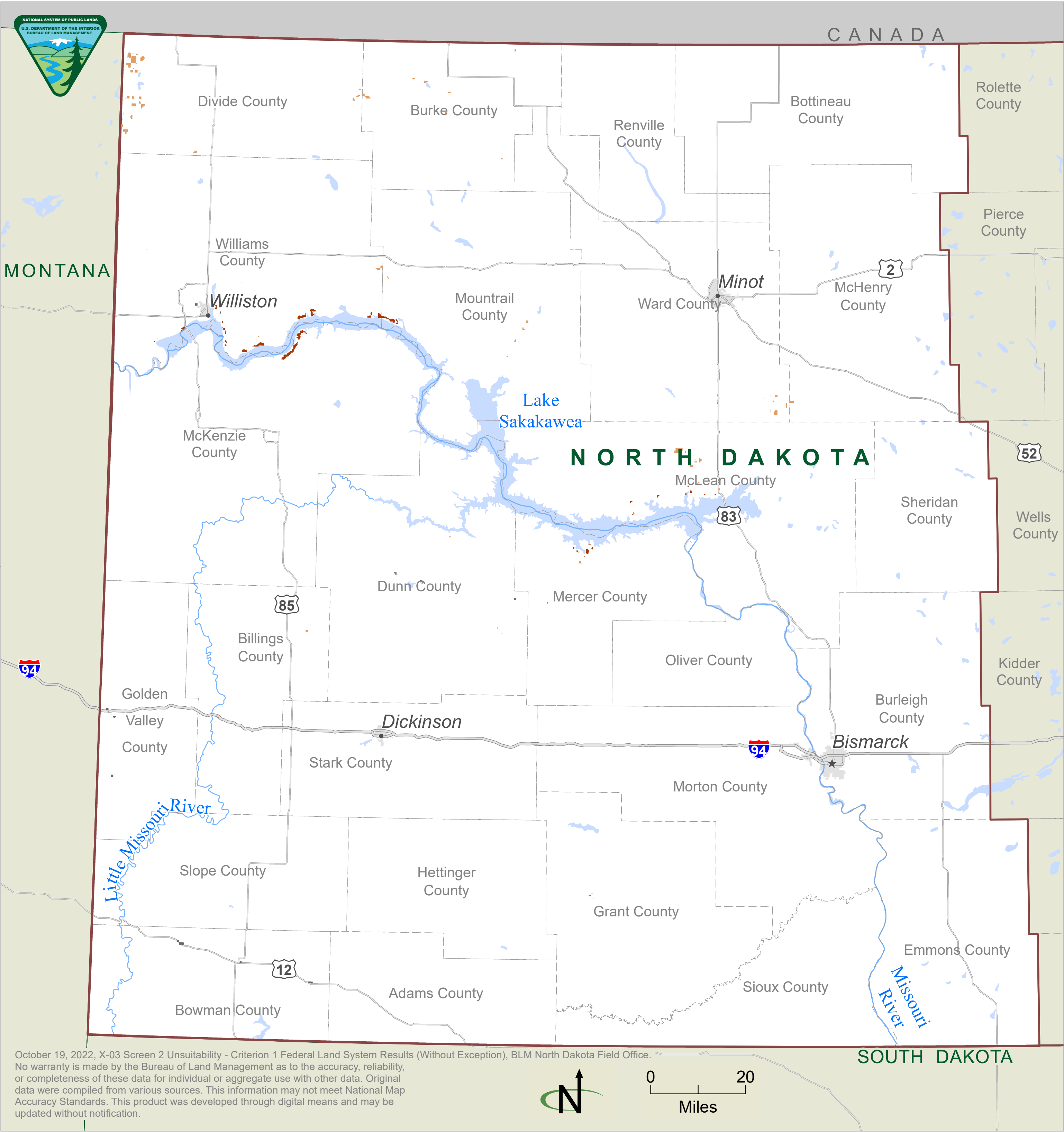
- North Dakota RMP planning area, western half
- Coal Potential
- Coal Decision Area within Coal Potential
- Coal Decision Area



Map F-02

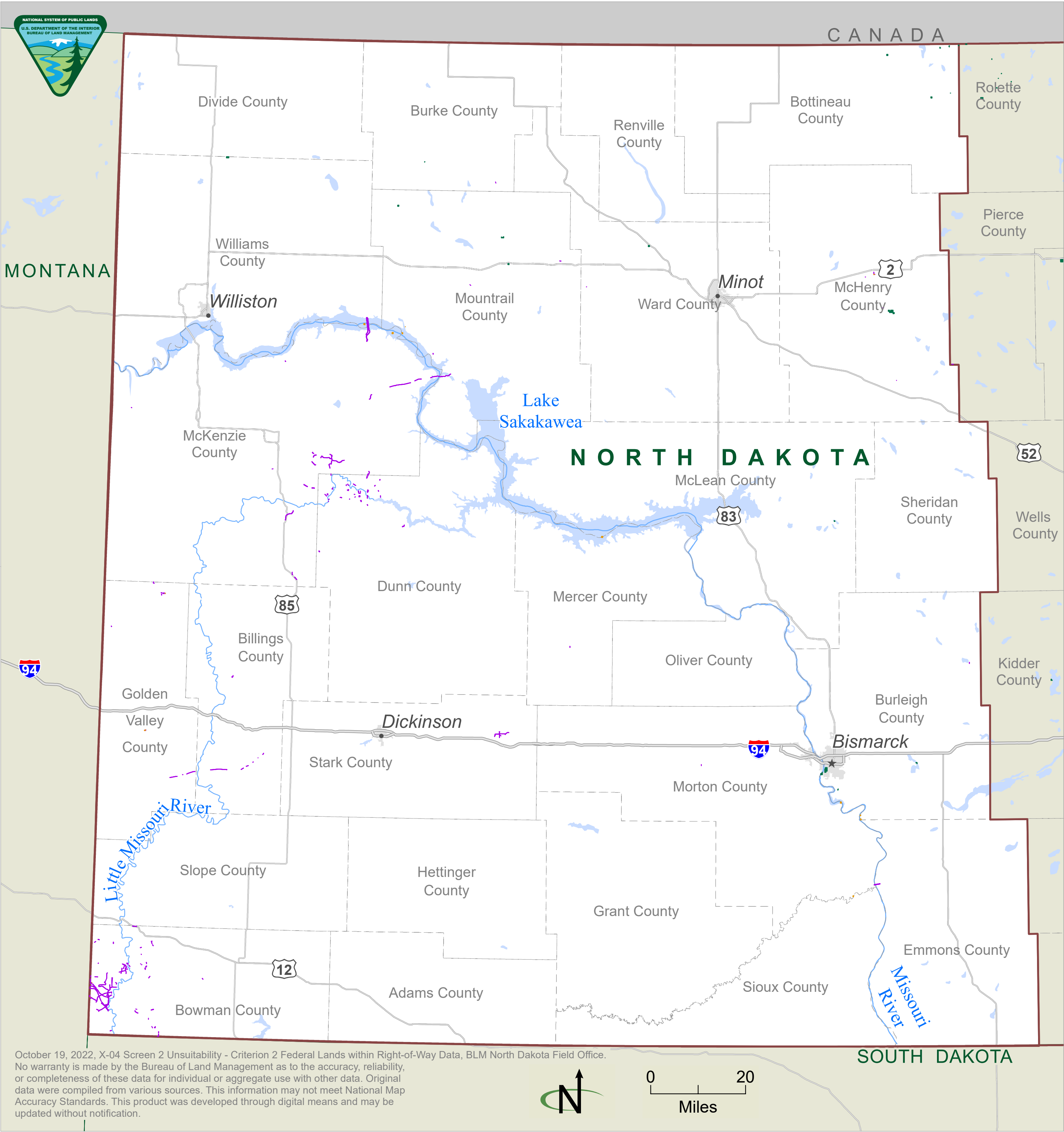
Screen 2 Unsuitability - Criterion 1 Federal Land System Data

- | | | | |
|--|---|---|---|
|  | North Dakota RMP planning area, western half |  | Lands Acquired with LWCF (4.1 acres at Schnell) |
|  | National Park Service |  | National Forests (Administrative Boundaries) |
|  | National System of Trails (L&CNHT) |  | National Wilderness Preservation System (FWS) |
|  | National System of Trails (NCNST) |  | National Wildlife Refuge System |
|  | National Wilderness Preservation System (NPS) |  | USFWS Conservation Easements |
| | |  | Incorporated Areas |

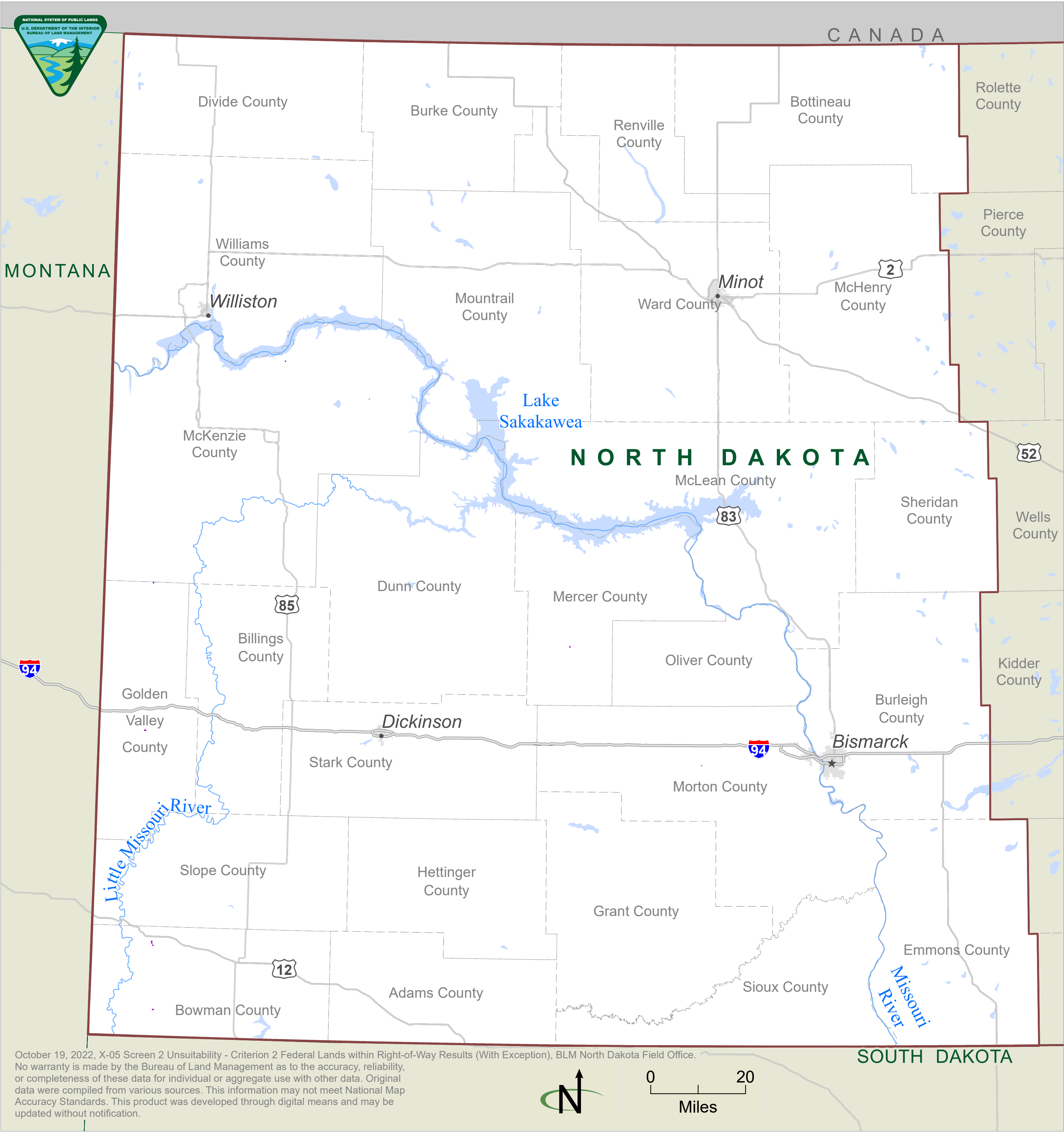


Map F-03
Screen 2 Unsuitability - Criterion 1 Federal Land System Results (Without Exception)

-  North Dakota RMP planning area, western half
-  US Fish and Wildlife
-  National System of Trails (L&CNHT)
-  USFWS Conservation Easements
-  Incorporated Areas

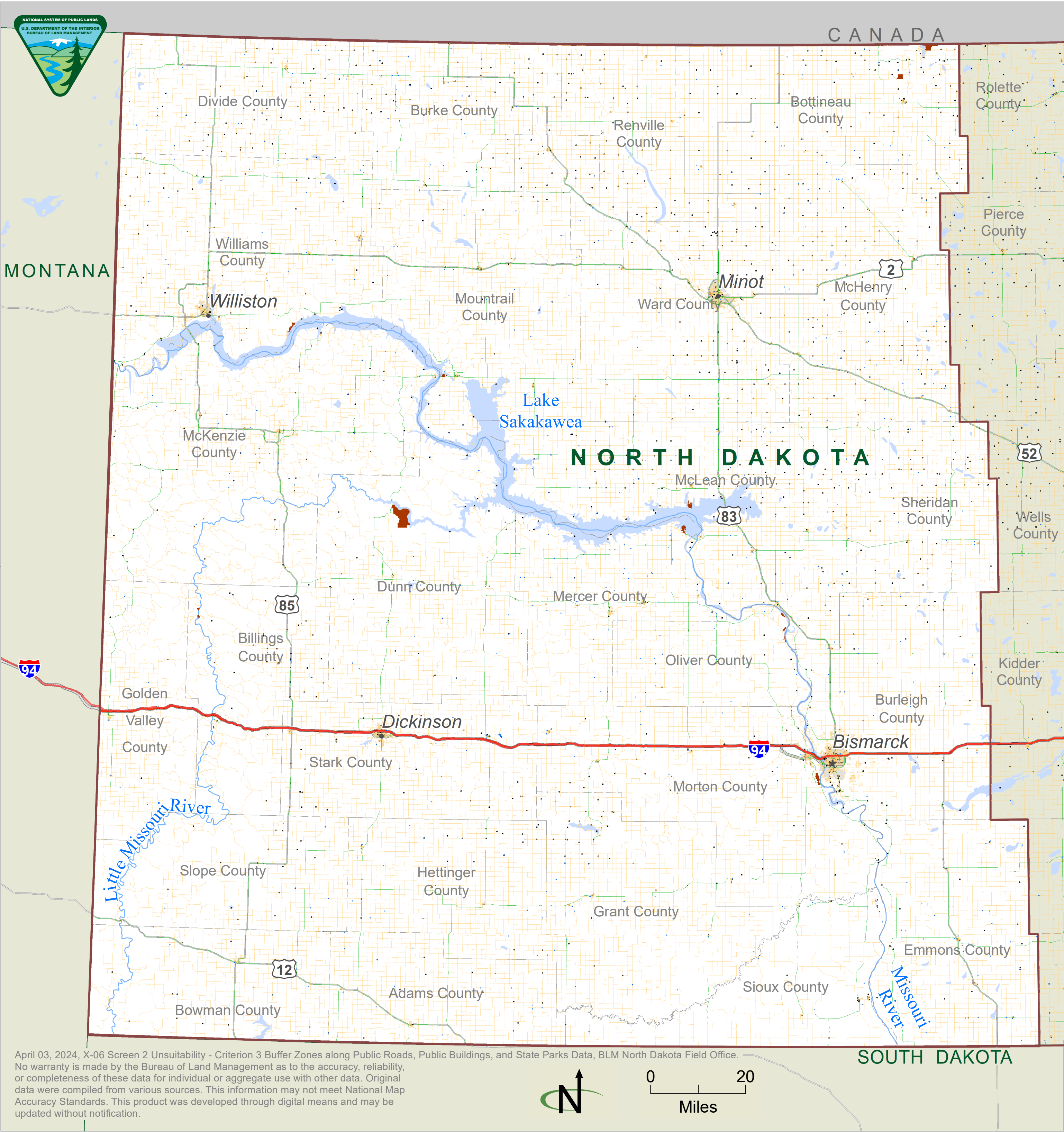


Map F-04
Screen 2 Unsuitability - Criterion 2 Federal Lands within Right-of-Way Data



Map F-05
Screen 2 Unsuitability - Criterion 2 Federal Lands within Right-of-Way Results (With Exception)

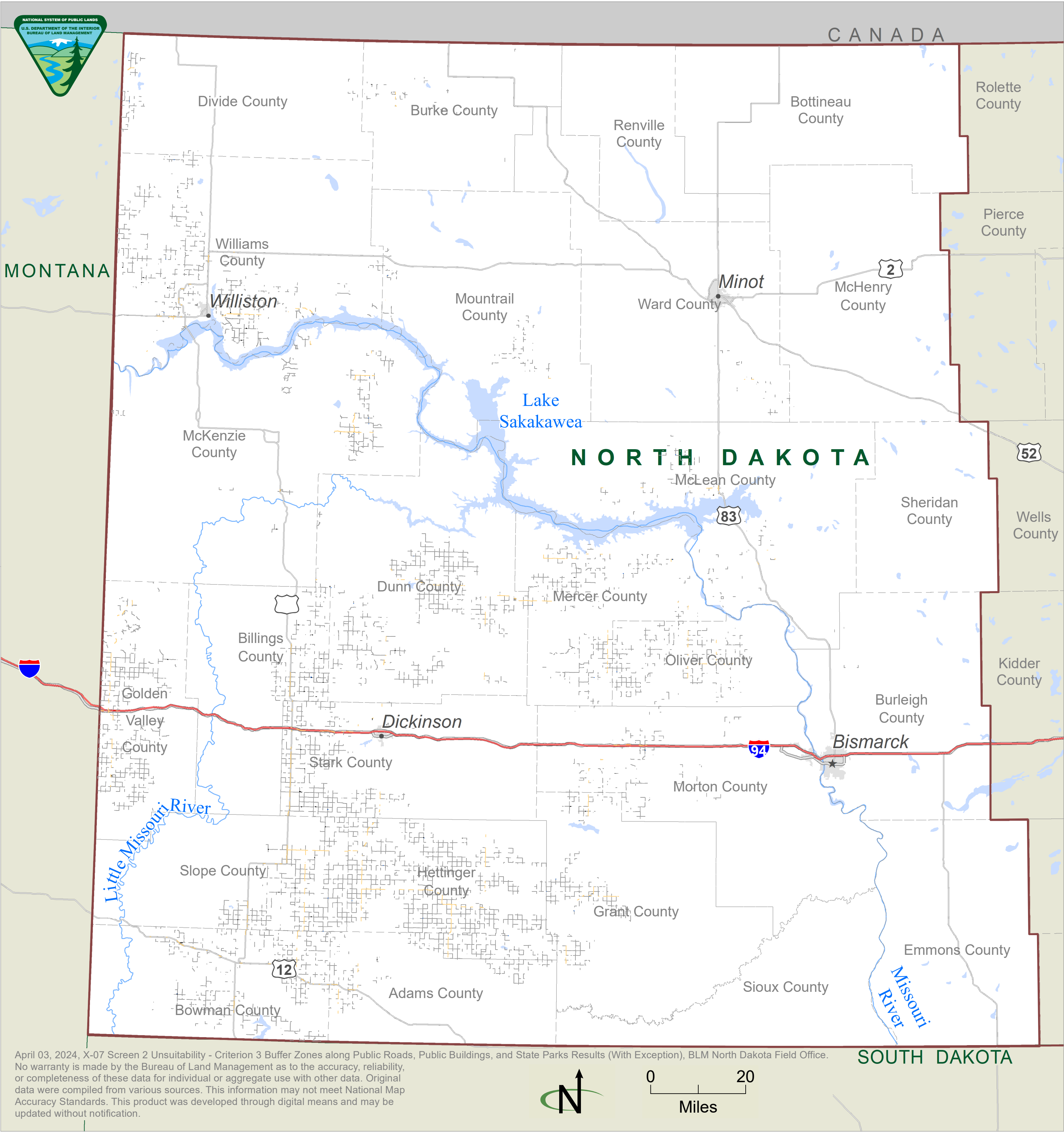
-  North Dakota RMP planning area, western half
-  Right-of-way polygons
-  Right-of-way lines (buffered)



Map F-06

Screen 2 Unsuitability - Criterion 3 Buffer Zones along Public Roads, Public Buildings, and State Parks Data

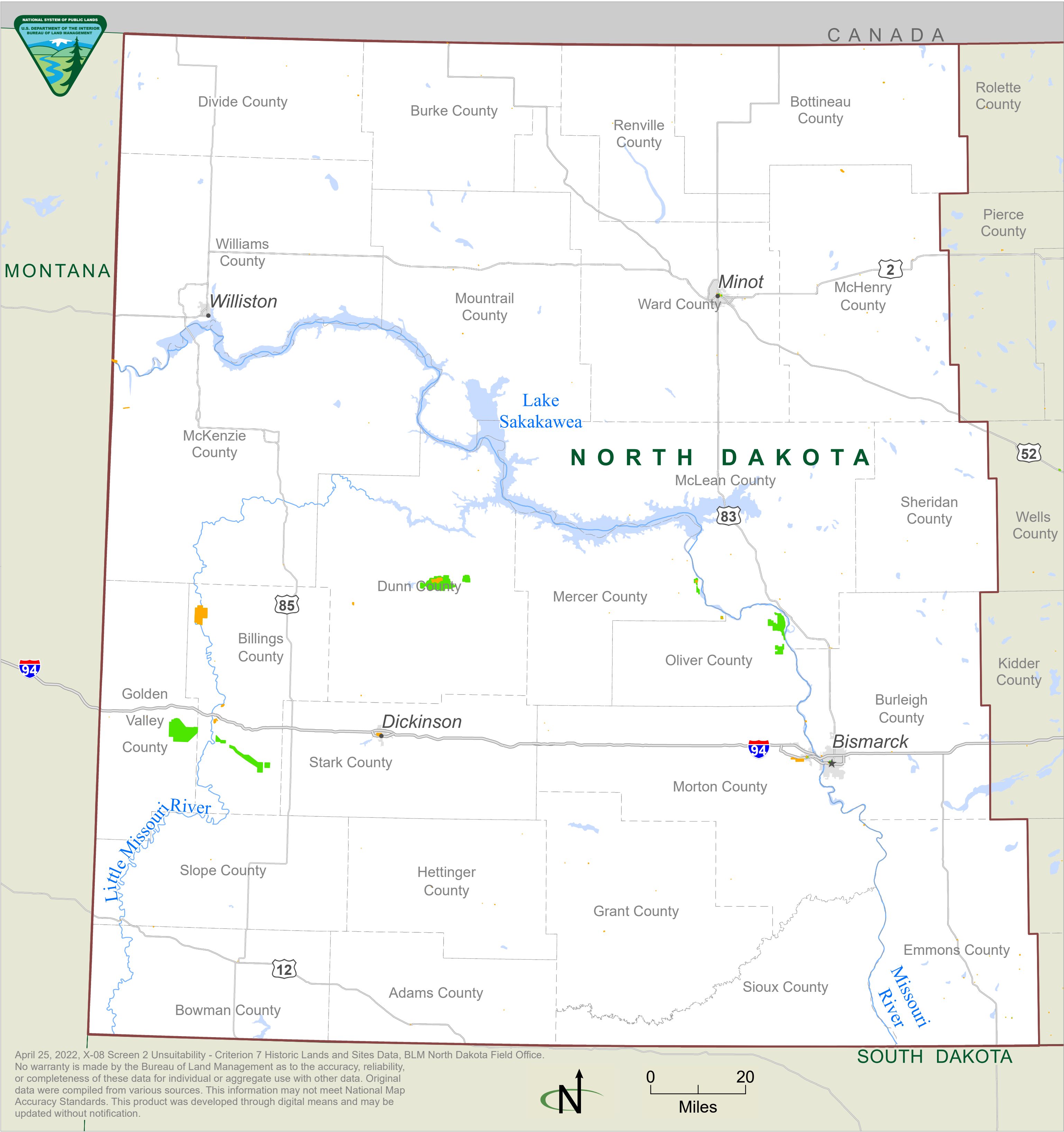
- North Dakota RMP planning area, western half
- Schnell BLM Road
- Interstate
- State and Federal Roads
- City and County Roads
- State Parks
- Public buildings (Buffered)
- Cemeteries (Buffered)



Map F-07

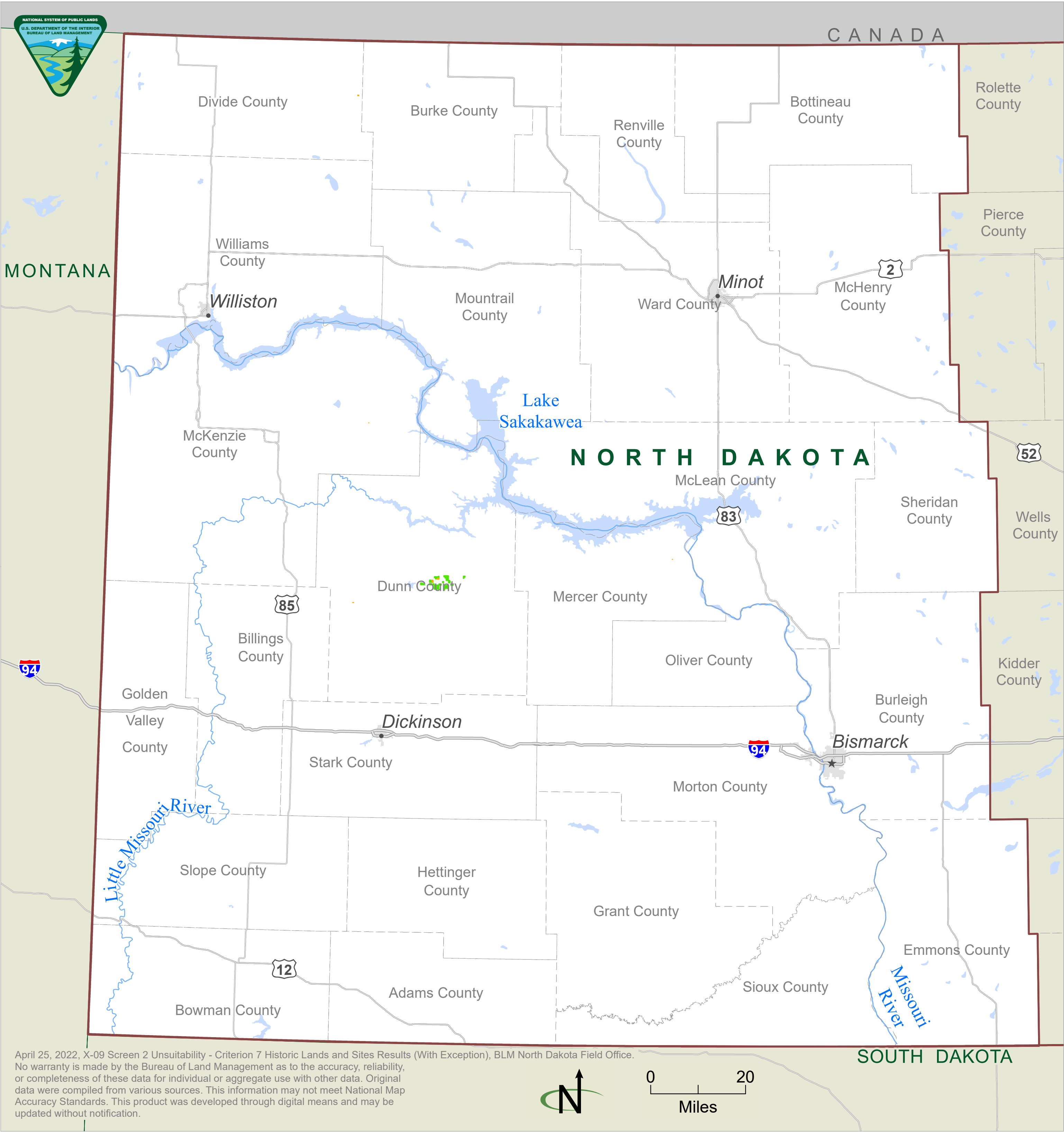
Screen 2 Unsuitability - Criterion 3 Buffer Zones along Public Roads, Public Buildings, and State Parks Results (With Exception)

- North Dakota RMP planning area, western half
- Interstate
- State and Federal Roads
- City and County Roads
- Public buildings (Buffered)
- Cemeteries (Buffered)



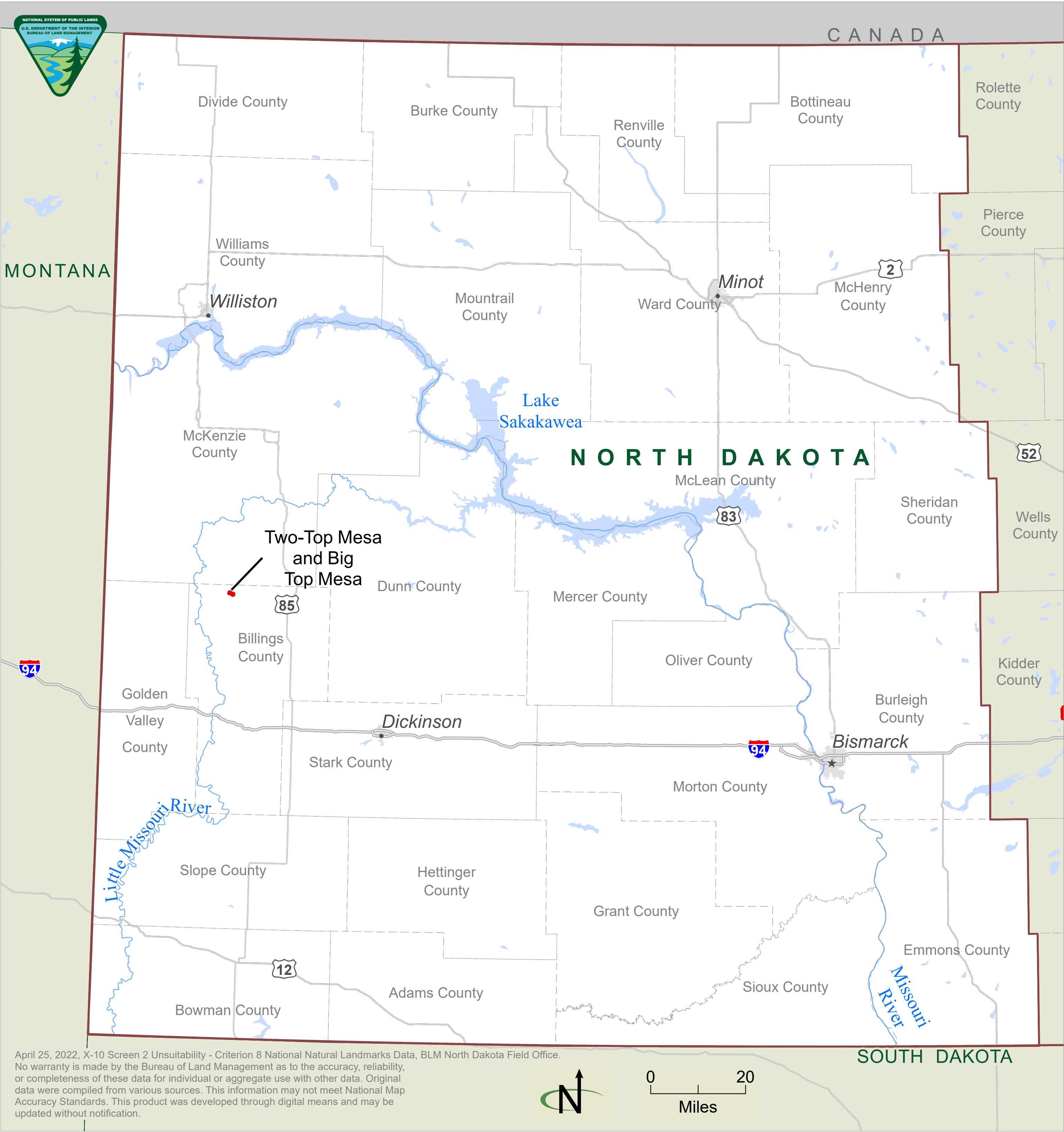
Map F-08
Screen 2 Unsuitability - Criterion 7 Historic Lands and Sites Data

- North Dakota RMP planning area, western half
- National Register of Historic Places (Districts)
- National Register of Historic Places (Sites)



Map F-09
Screen 2 Unsuitability - Criterion 7 Historic Lands and Sites Results (With Exception)

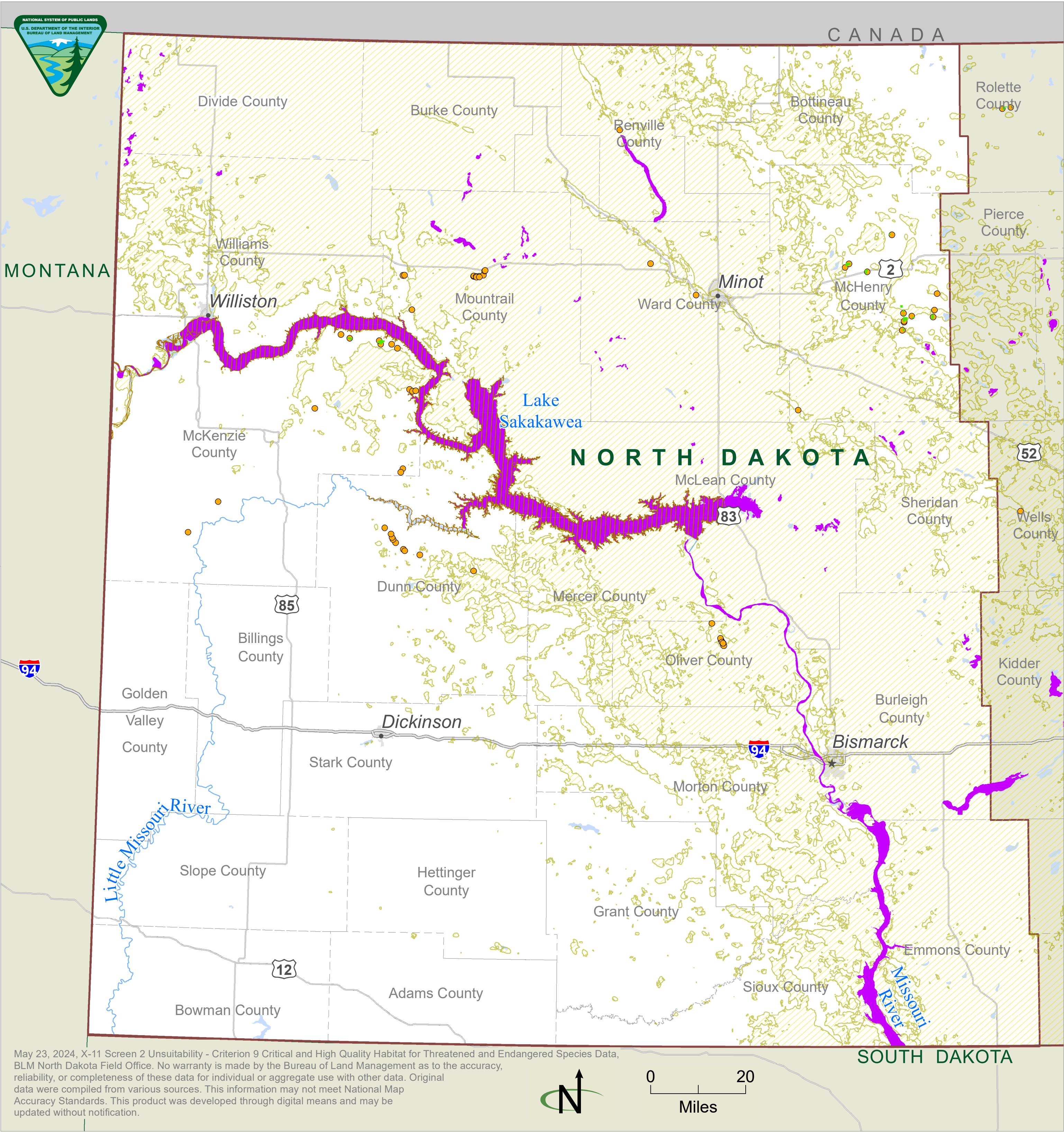
-  North Dakota RMP planning area, western half
-  National Register of Historic Places (Districts)
-  National Register of Historic Places (Sites)



Map F-10

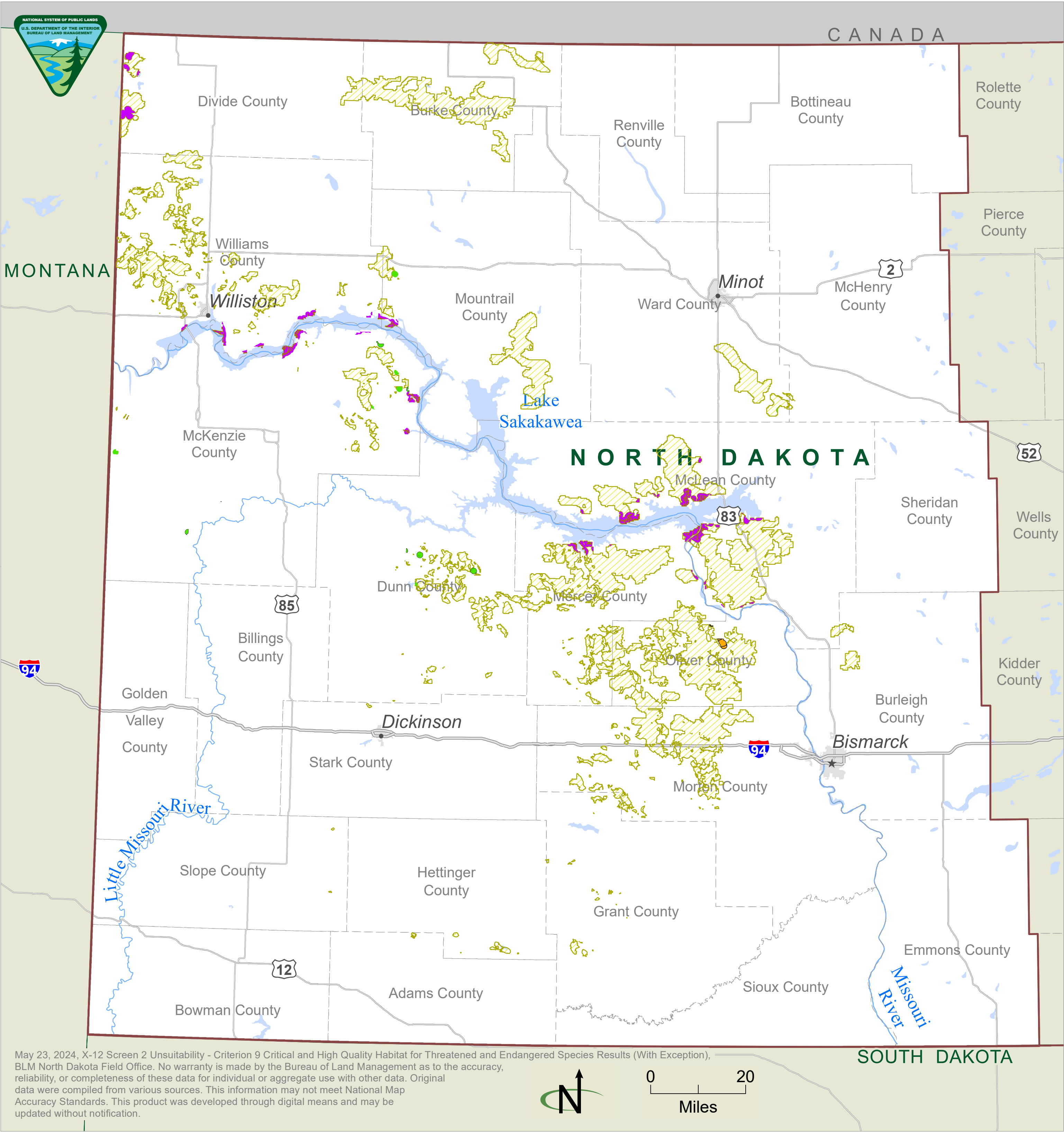
Screen 2 Unsuitability - Criterion 8 National Natural Landmarks Data

- North Dakota RMP planning area, western half
- National Natural Landmarks



Map F-11
Screen 2 Unsuitability - Criterion 9
Critical and High Quality Habitat for Threatened and Endangered Species Data

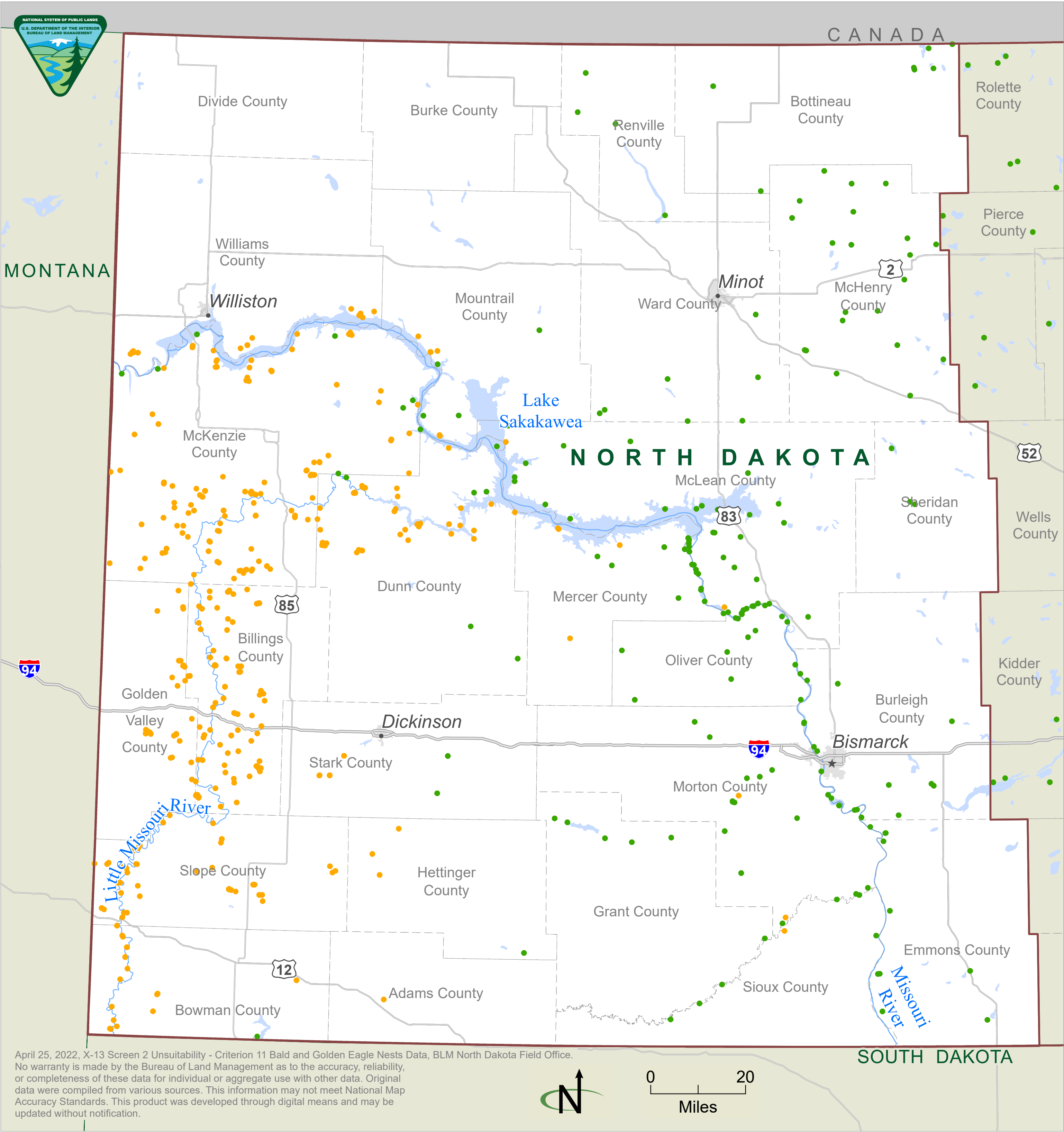
- | | |
|--|---------------------------------------|
| North Dakota RMP planning area, western half | Pallid Sturgeon Habitat |
| Dakota Skipper Critical Habitat | Piping Plover Critical Habitat |
| Dakota Skipper Occupied Habitat (Buffered) | Whooping Crane Habitat (High Quality) |



Map F-12

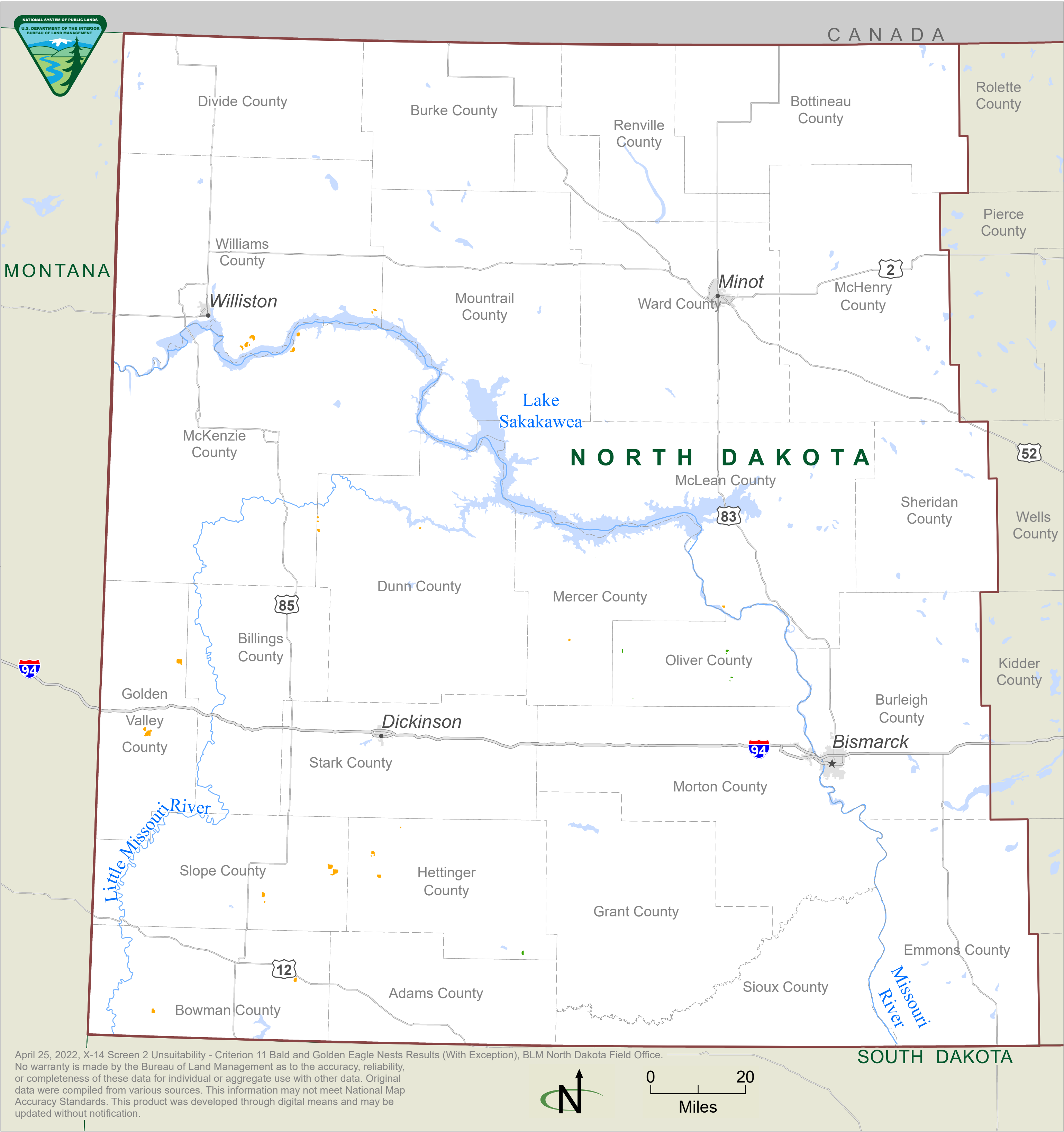
Screen 2 Unsuitability - Criterion 9
Critical and High Quality Habitat for Threatened and Endangered Species Results (With Exception)

- North Dakota RMP planning area, western half
- Dakota Skipper Critical Habitat
- Dakota Skipper Occupied Habitat (Buffered)
- Pallid Sturgeon Habitat
- Piping Plover Critical Habitat
- Whooping Crane Habitat (High Quality)



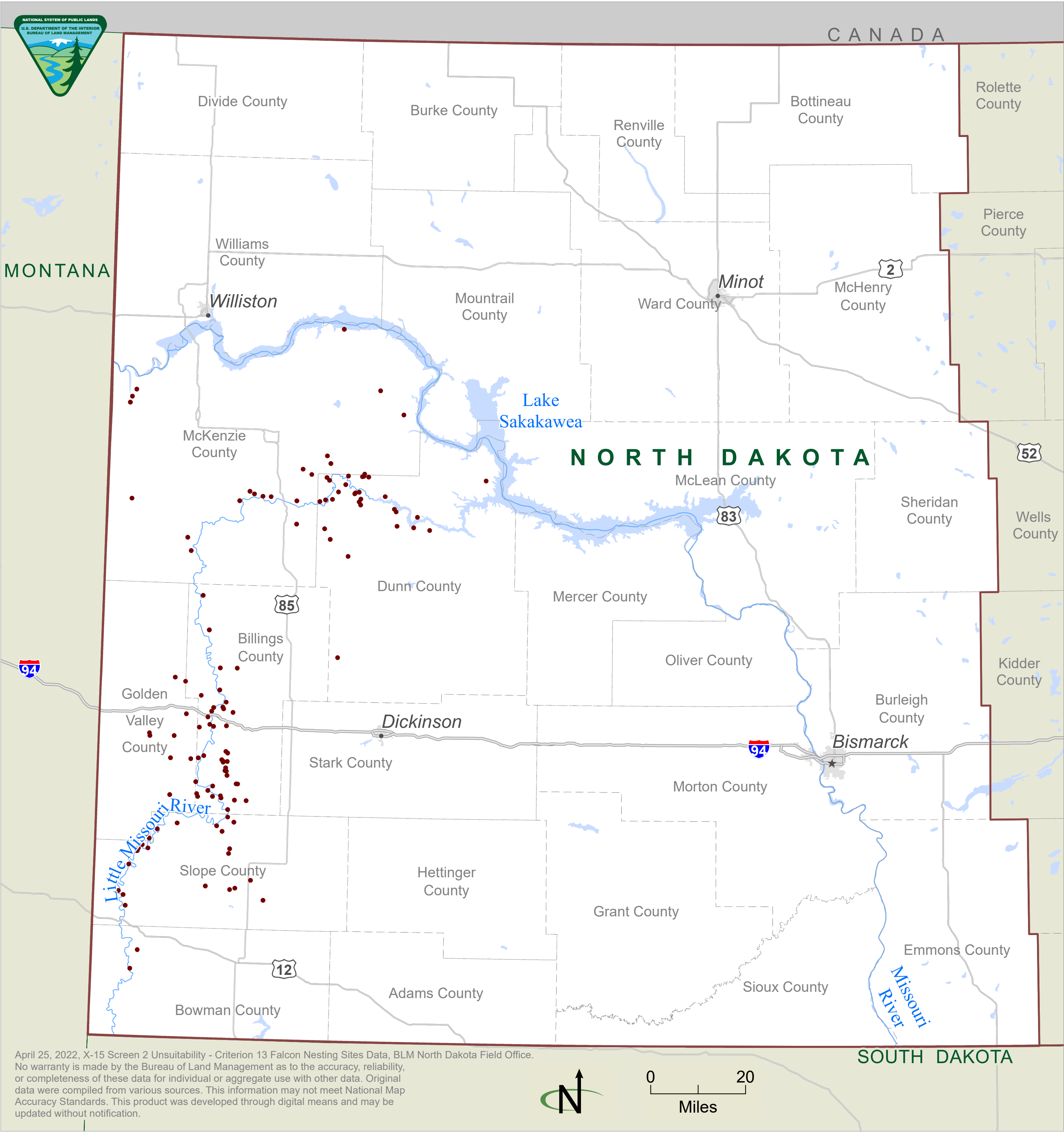
Map F-13
Screen 2 Unsuitability - Criterion 11 Bald and Golden Eagle Nests Data

- North Dakota RMP planning area, western half
- Golden Eagle Nests
- Bald Eagle Nests



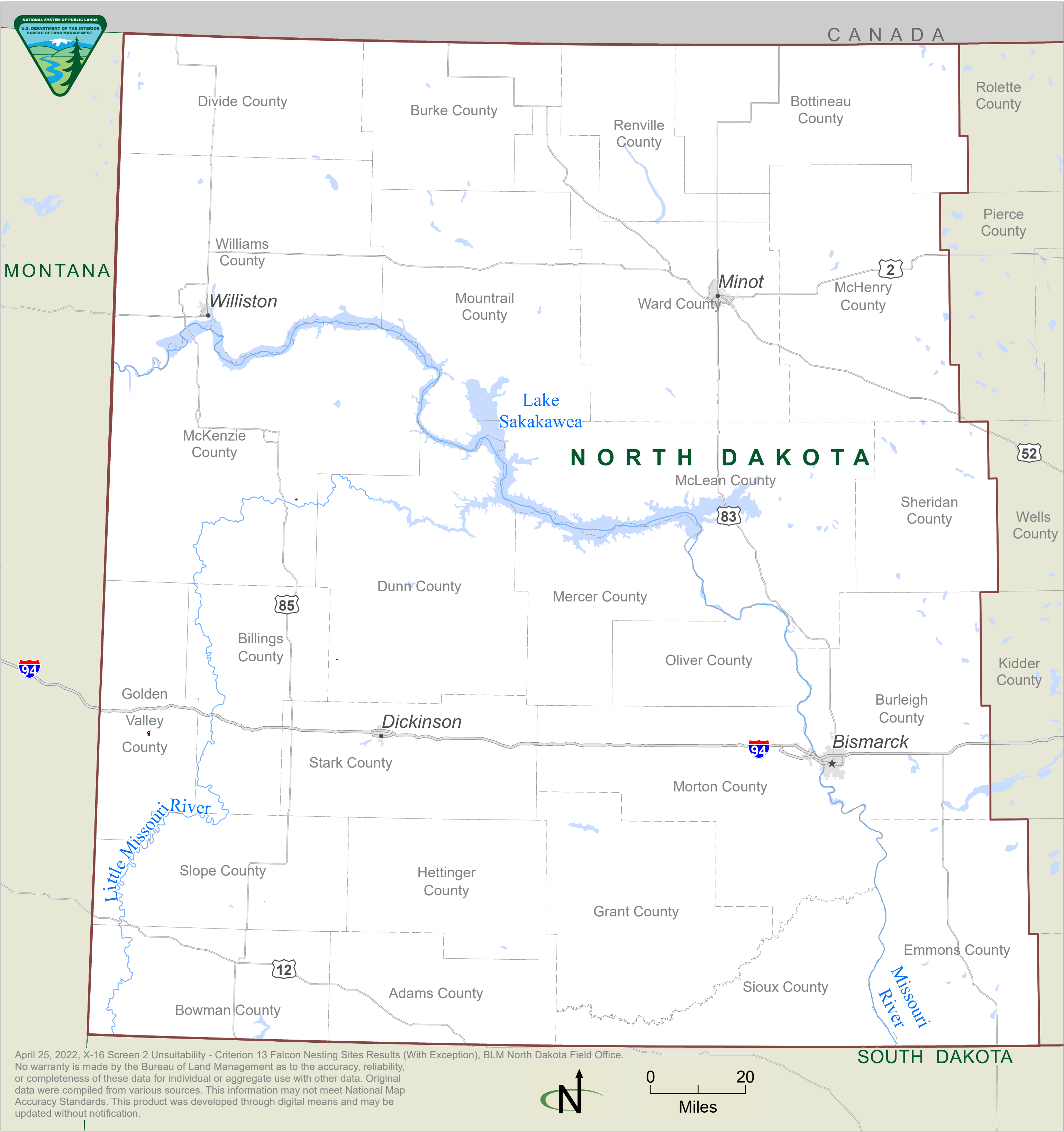
Map F-14
Screen 2 Unsuitability - Criterion 11 Bald and Golden Eagle Nests Results (With Exception)

-  North Dakota RMP planning area, western half
-  Golden Eagle Nests
-  Bald Eagle Nests



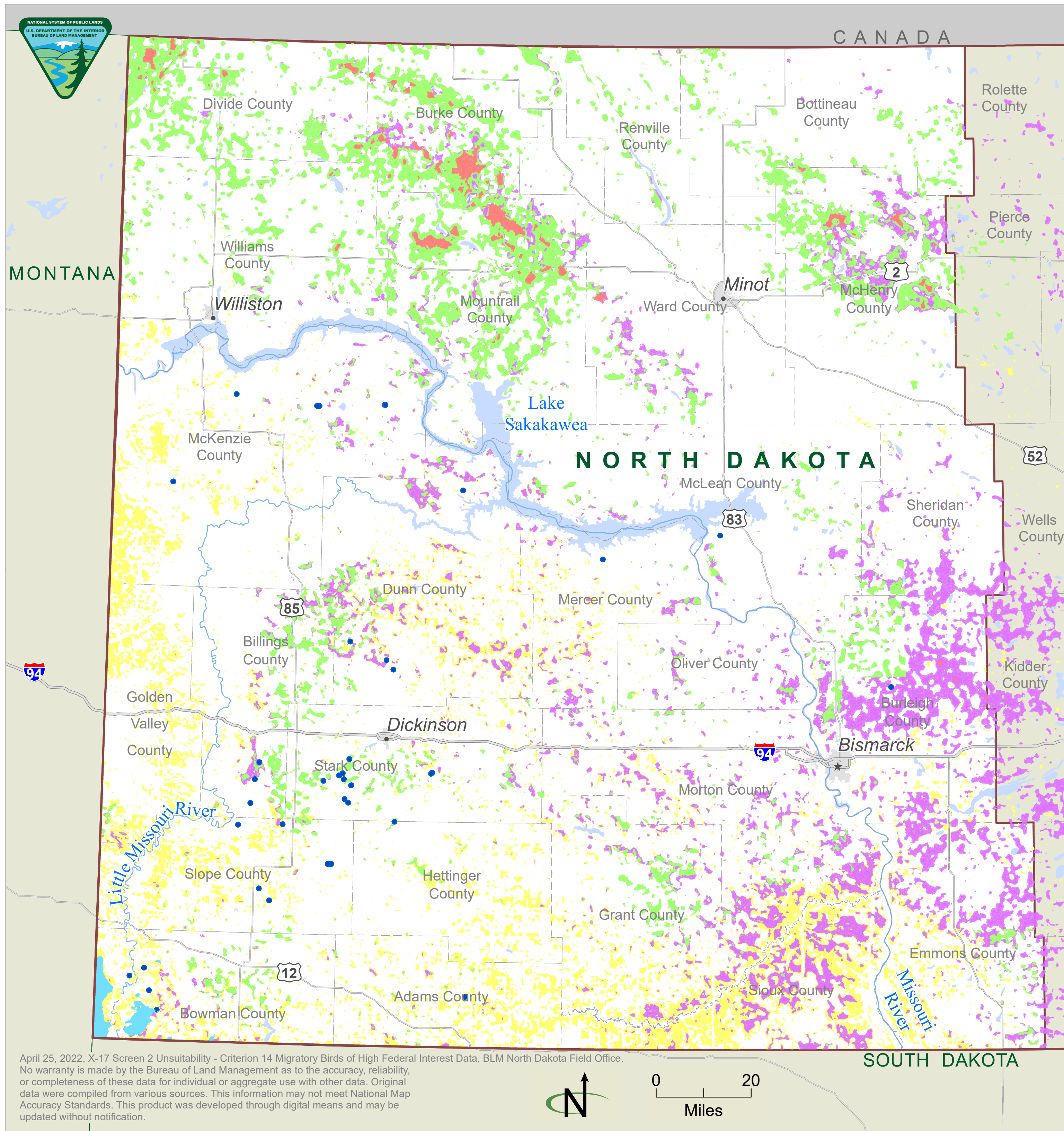
Map F-15
Screen 2 Unsuitability - Criterion 13 Falcon Nesting Sites Data

-  North Dakota RMP planning area, western half
-  Falcon Nests (Buffered)



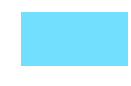
Map F-16
Screen 2 Unsuitability - Criterion 13 Falcon Nesting Sites Results (With Exception)

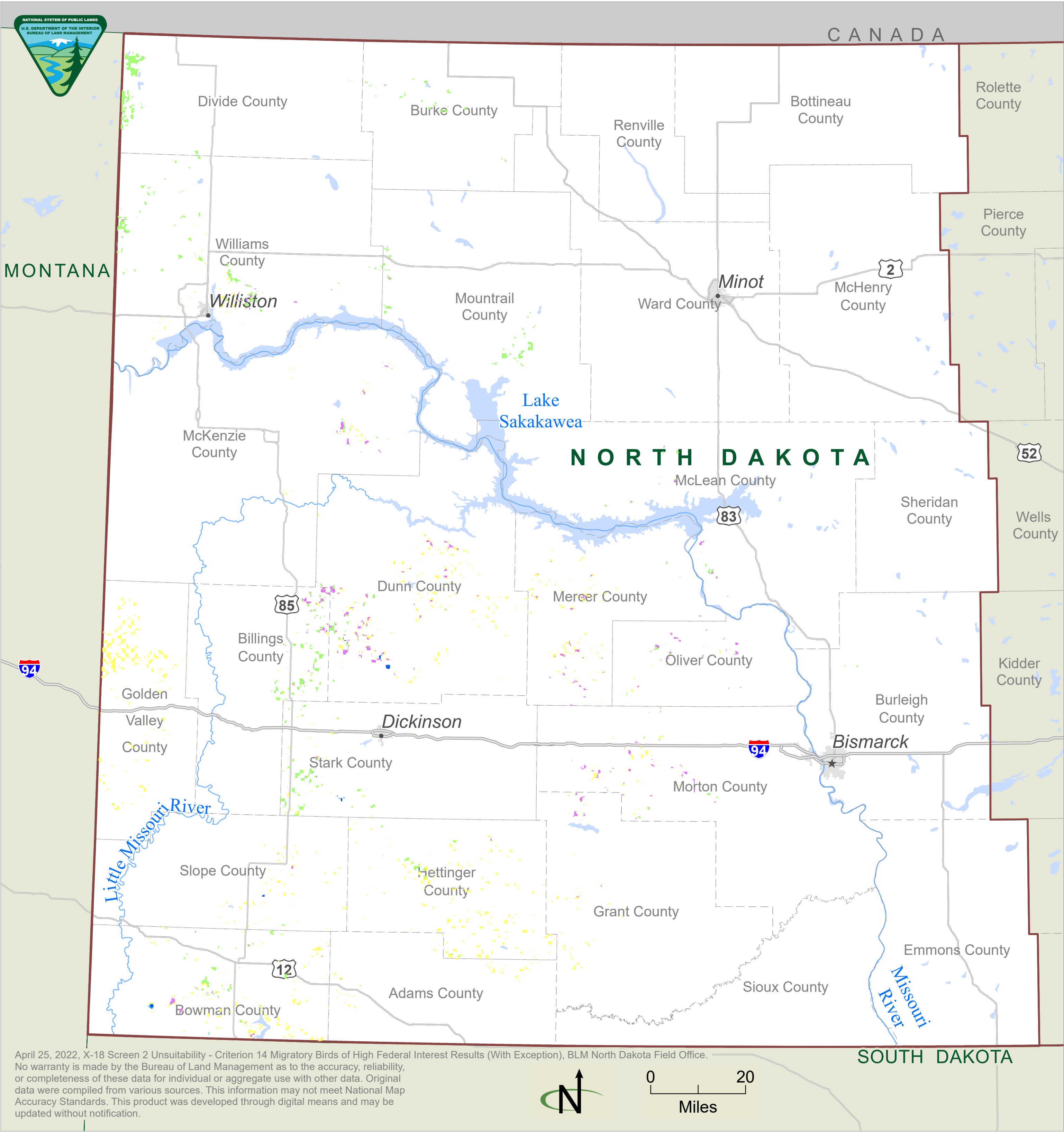
- North Dakota RMP planning area, western half
- Falcon Nests (Buffered)



Map F-17

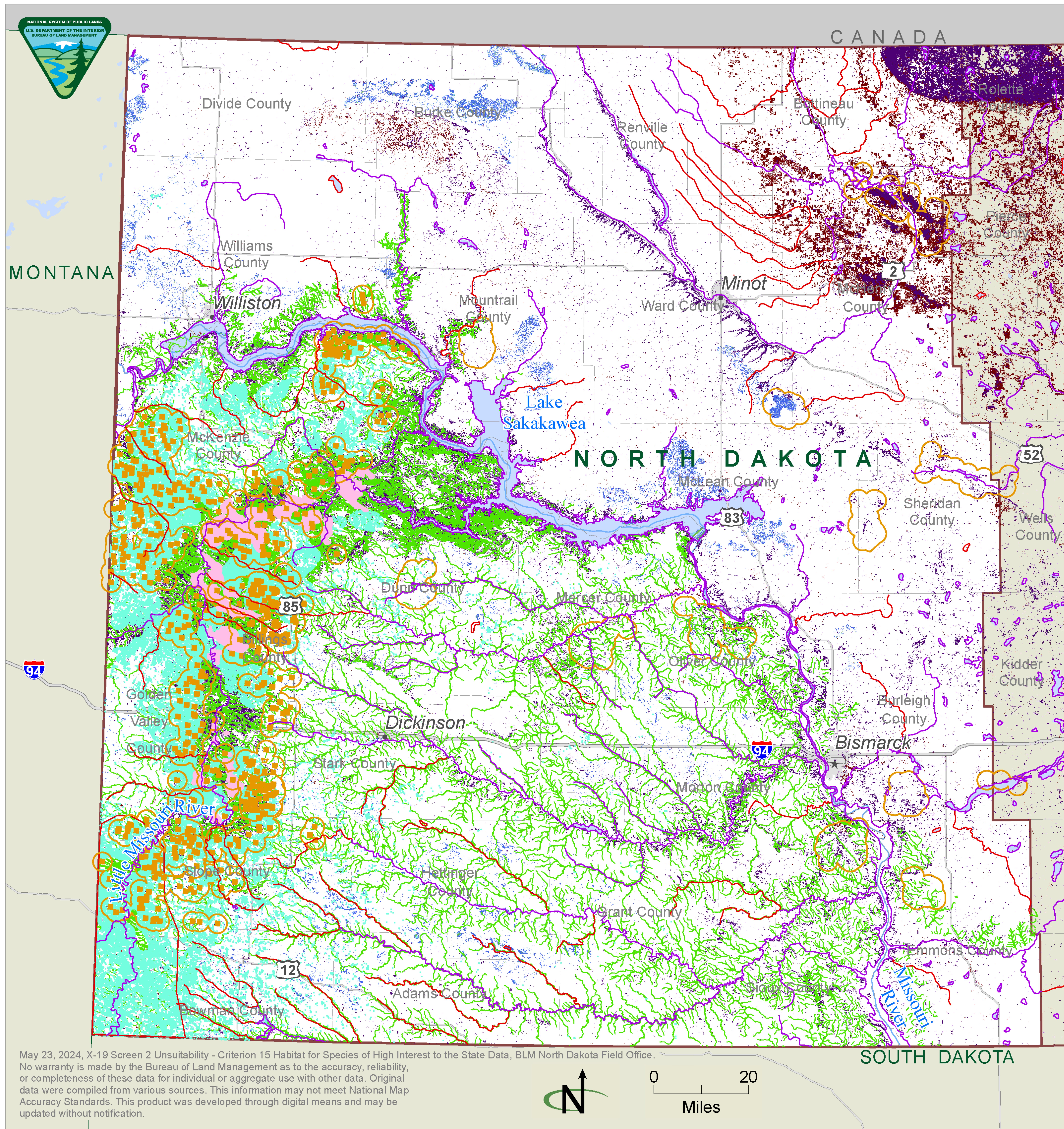
Screen 2 Unsuitability - Criterion 14 Migratory Birds of High Federal Interest Data

- | | | | |
|--|--|---|------------------------------------|
|  | North Dakota RMP planning area, western half |  | Chestnut-collared Longspur Habitat |
|  | Ferruginous Hawk Nests |  | Sprague's Pipit Habitat |
|  | Lark Bunting Habitat |  | Grasshopper Sparrow Habitat |
|  | Bairds Sparrow Habitat | | |



Map F-18
Screen 2 Unsuitability - Criterion 14 Migratory Birds of High Federal Interest Results (With Exception)

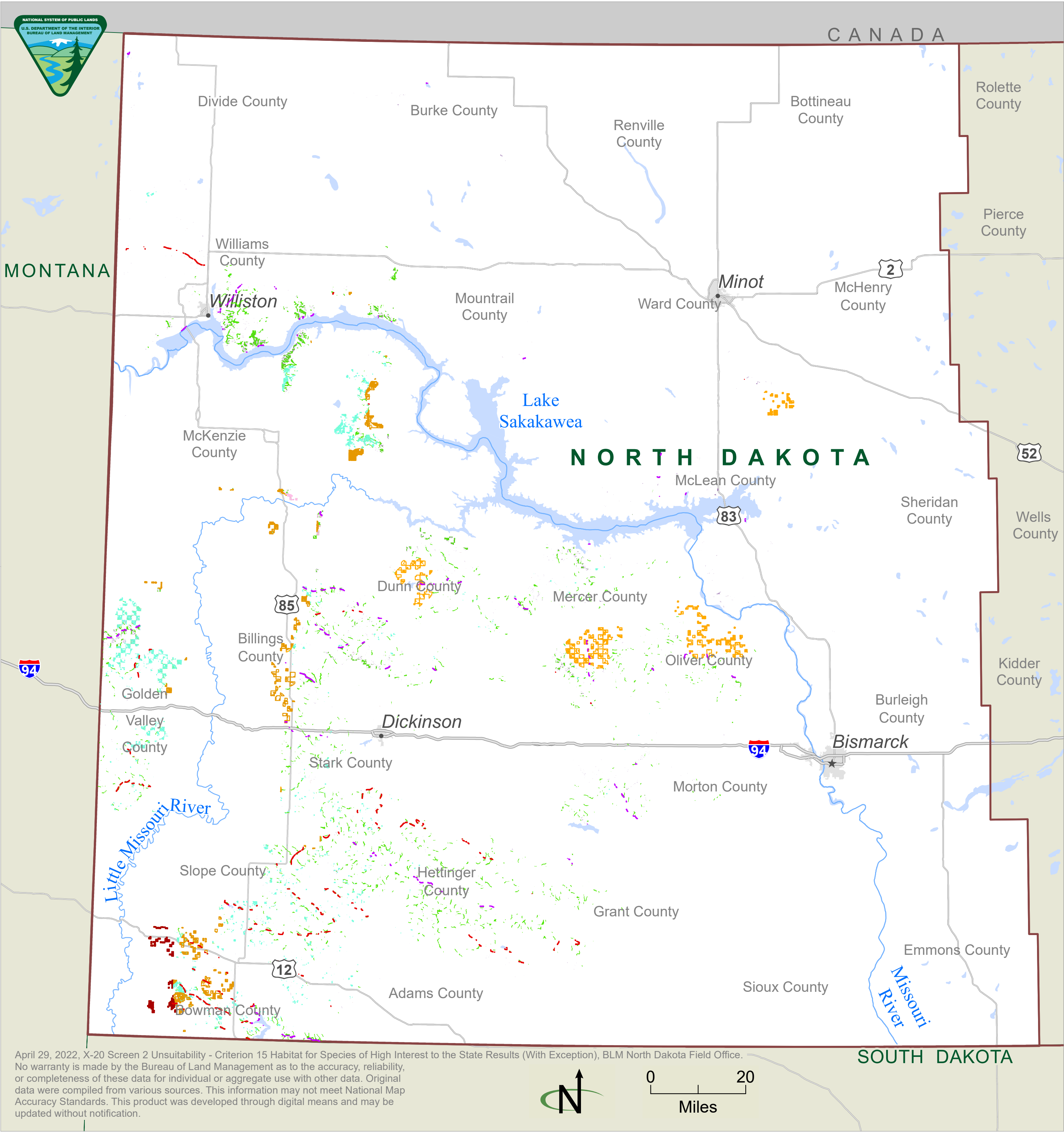
- | | |
|---|--|
|  North Dakota RMP planning area, western half |  Chestnut-collared Longspur Habitat |
|  Ferruginous Hawk Nests |  Sprague's Pipit Habitat |
|  Lark Bunting Habitat |  Grasshopper Sparrow Habitat |
|  Bairds Sparrow Habitat | |



Map F-19

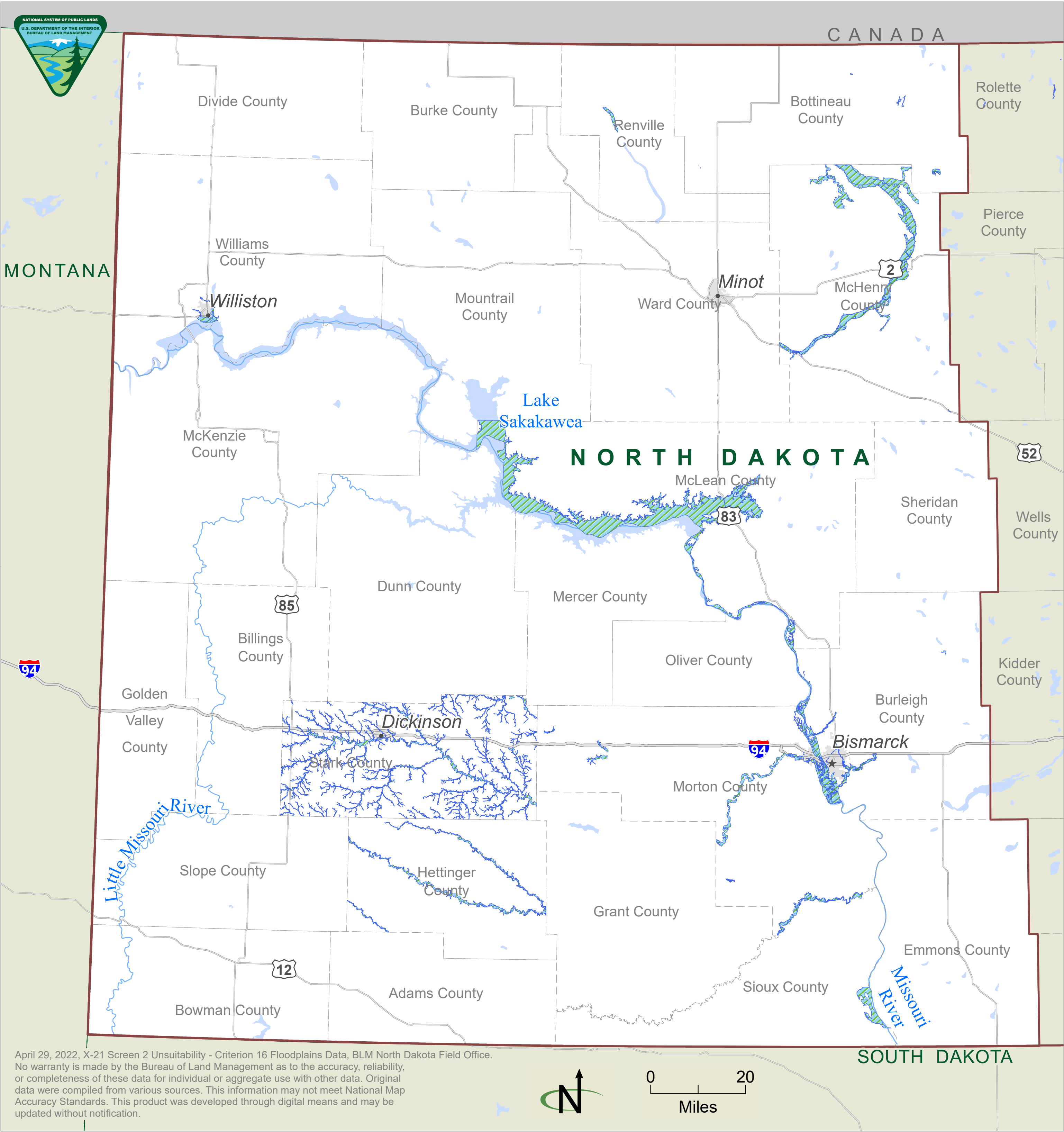
Screen 2 Unsuitability - Criterion 15 Habitat for Species of High Interest to the State Data

- | | |
|---|--|
|  North Dakota RMP planning area, western half |  Big Horn Sheep Critical Habitat |
|  Intermittent Streams |  Pronghorn Fawning and Foraging Range |
|  Perennial Streams |  Mule Deer Fawning and Foraging Range |
|  Greater Sage-grouse Priority Habitat Mgmt. Areas |  Woody Draws |
|  Sharp-tailed Grouse Leks (Buffered) |  Tall Grass Prairie |
| |  Wetlands |

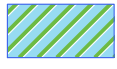


Map F-20
Screen 2 Unsuitability - Criterion 15 Habitat for Species of High Interest to the State Results (With Exception)

- | | |
|--|--------------------------------------|
| North Dakota RMP planning area, western half | Big Horn Sheep Critical Habitat |
| Perennial Streams (Buffered) | Pronghorn Fawning and Foraging Range |
| Intermittent Streams (Buffered) | Mule Deer Fawning and Foraging Range |
| Greater Sage-grouse Priority Habitat Mgmt. Areas | Tallgrass Prairie |
| Sharp-tailed Grouse Leks | Woody Draws |
| | Wetlands |

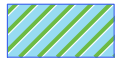


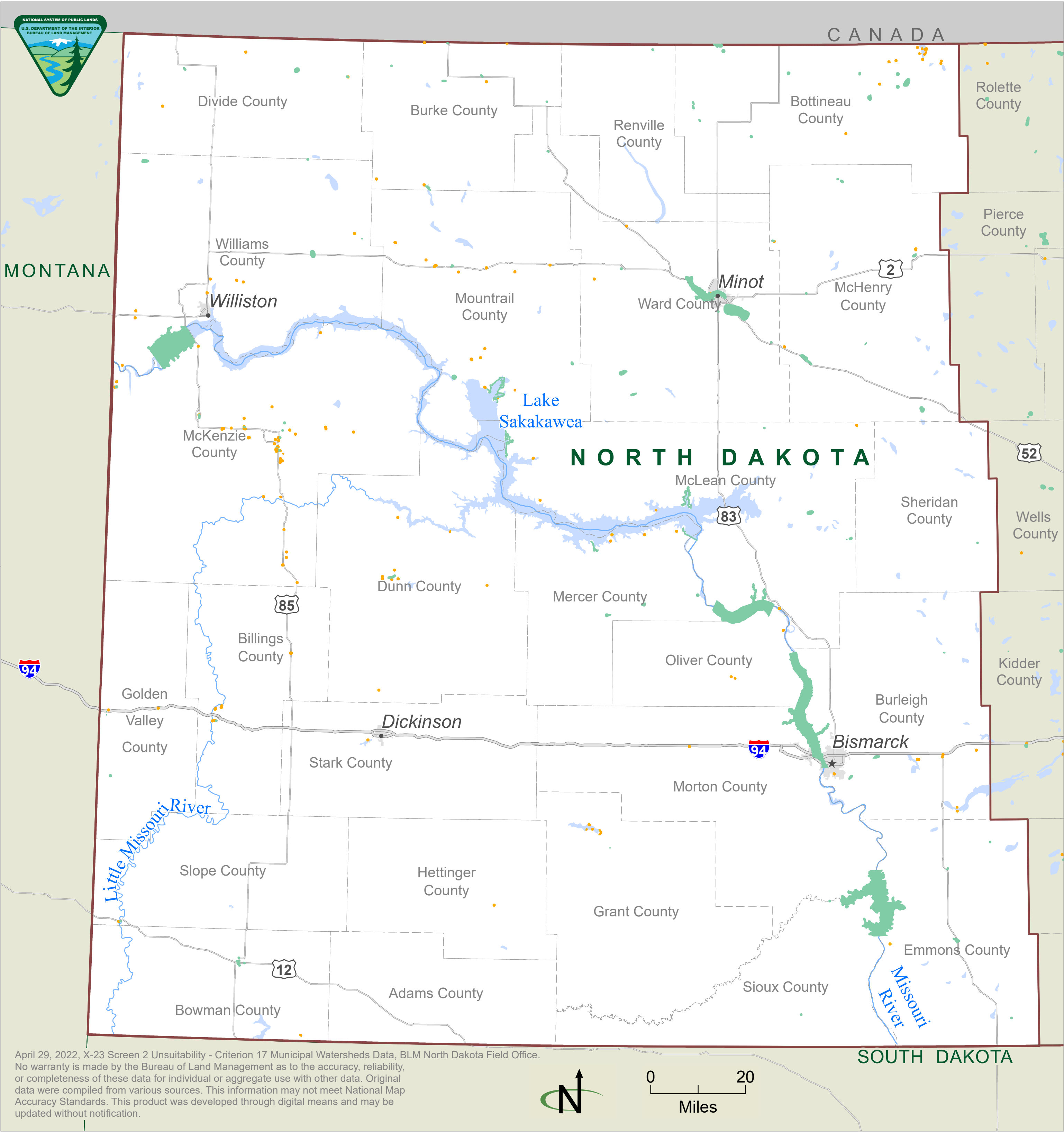
Map F-21
Screen 2 Unsuitability - Criterion 16 Floodplains Data

-  North Dakota RMP planning area, western half
-  Floodplains



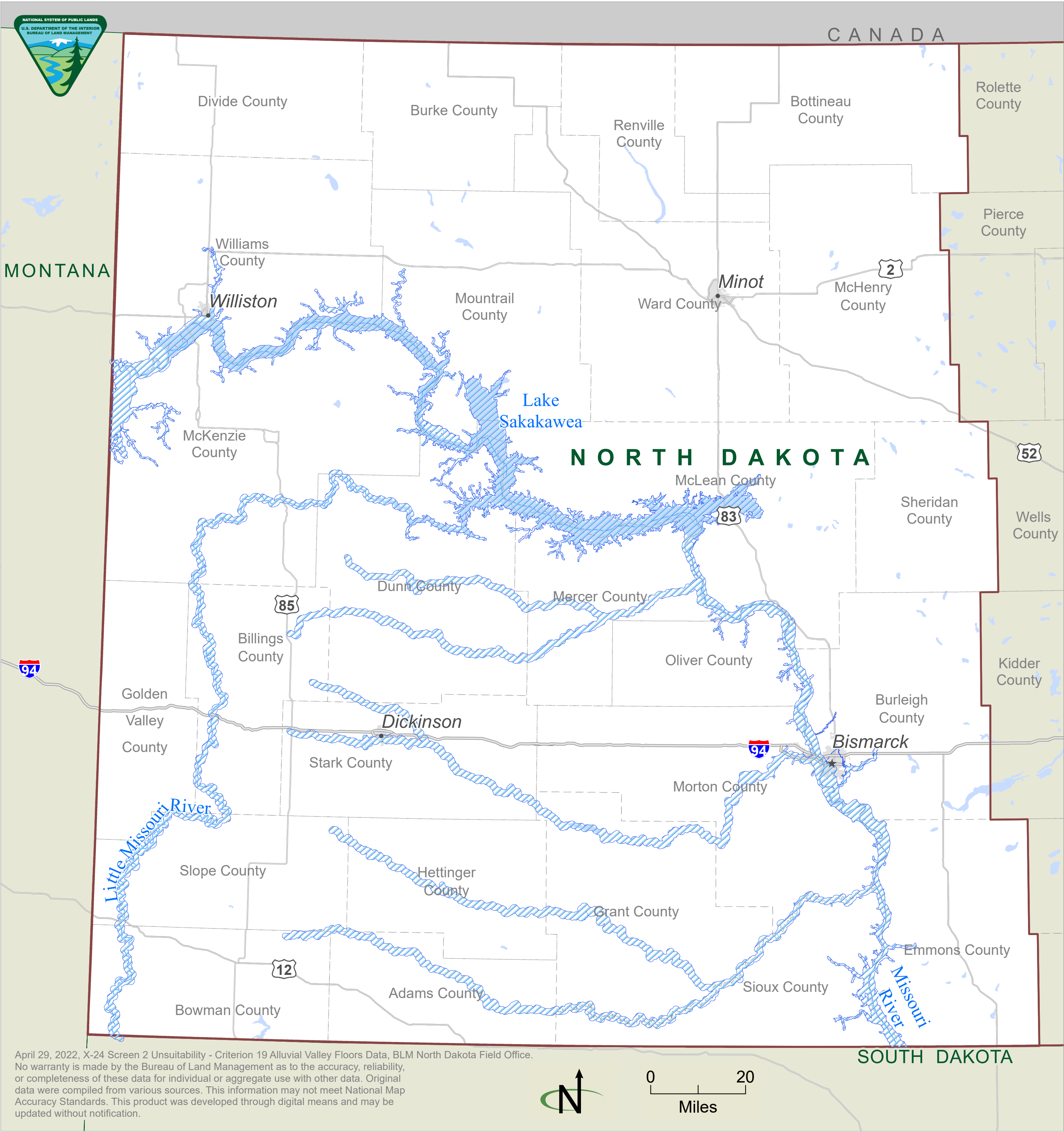
Map F-22
Screen 2 Unsuitability - Criterion 16 Floodplains Results (Without Exception)

-  North Dakota RMP planning area, western half
-  Floodplains



Map F-23
Screen 2 Unsuitability - Criterion 17 Municipal Watersheds Data

- North Dakota RMP planning area, western half
- Source Water Protection Areas (Community)
- Source Water Protection Areas (Non Community)



Map F-24
Screen 2 Unsuitability - Criterion 19 Alluvial Valley Floors Data

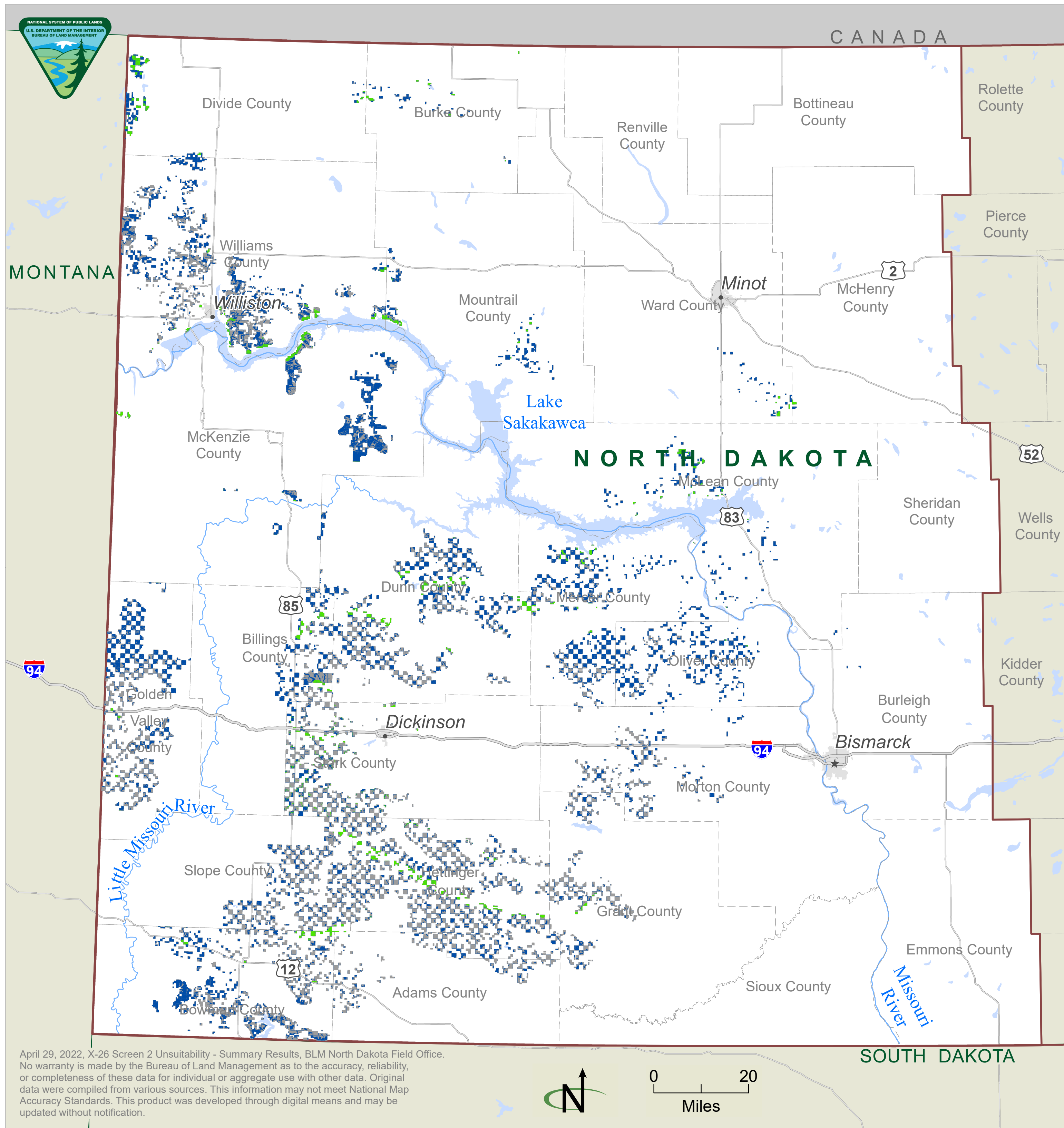
-  North Dakota RMP planning area, western half
-  Alluvial Valley Floors



Map F-25

Screen 2 Unsuitability - Criterion 19 Alluvial Valley Floors Results (Without Exception)

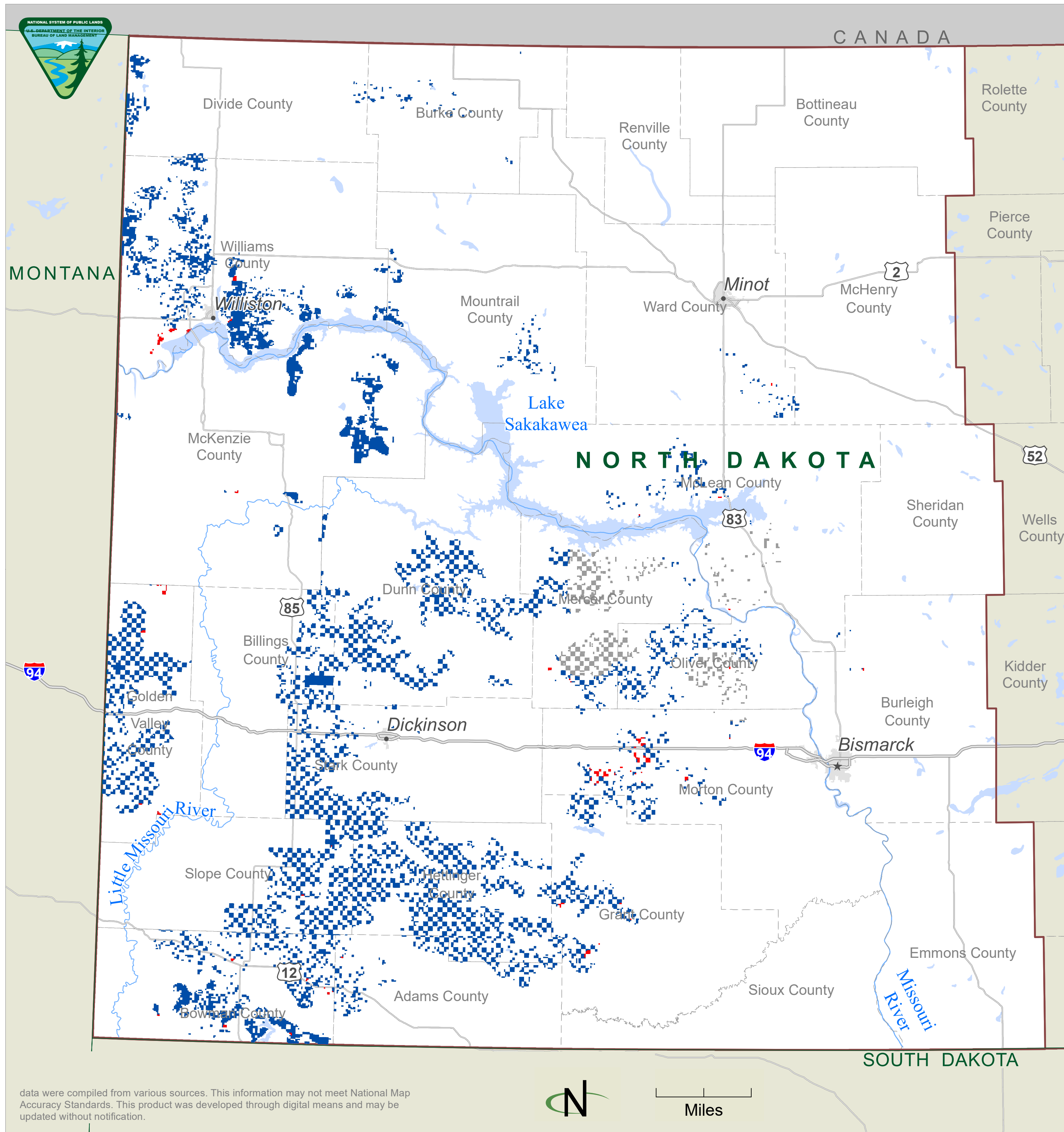
- North Dakota RMP planning area, western half
- Alluvial Valley Floors



Map F-26

Screen 2 Unsuitability - Summary Results

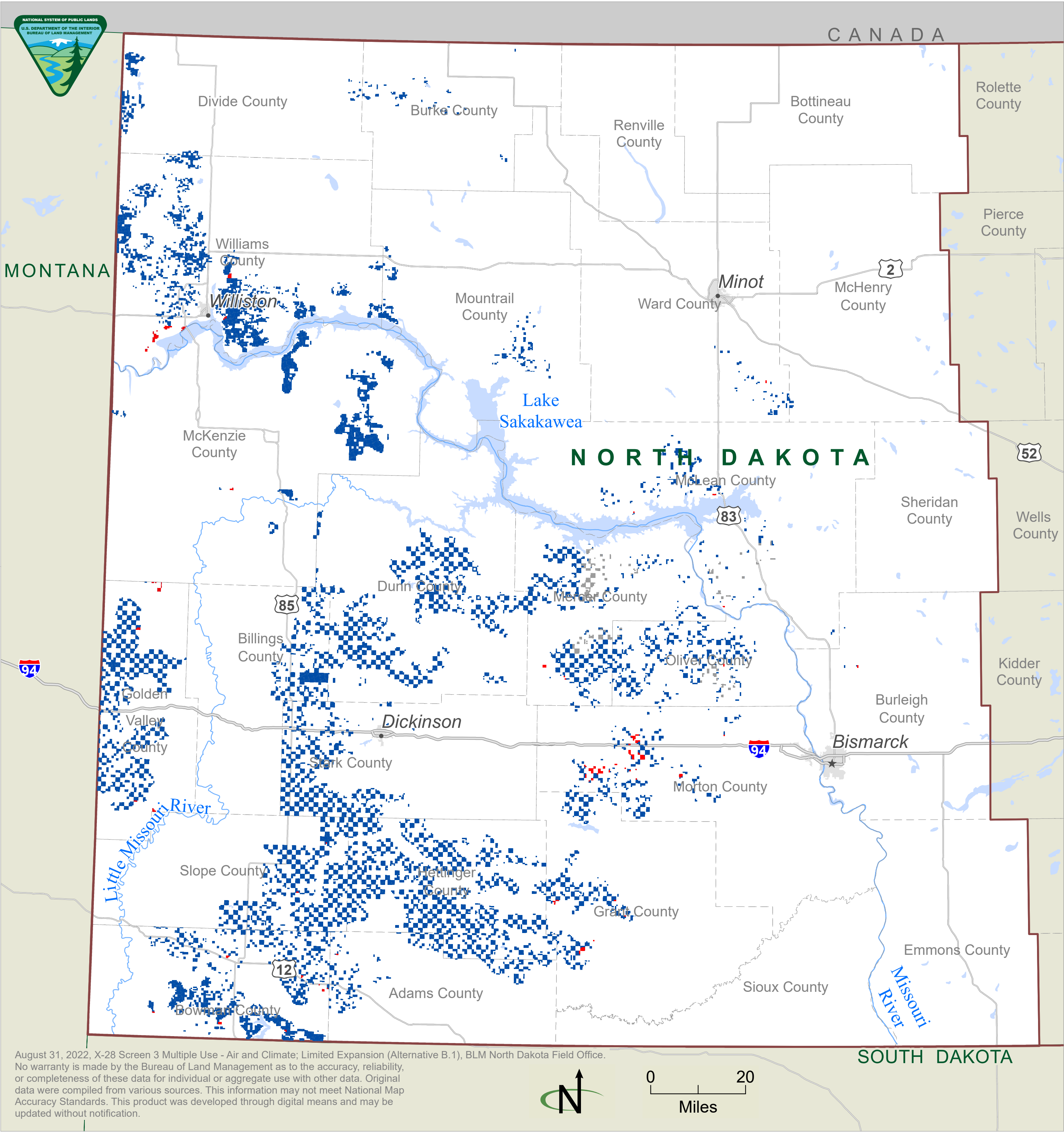
- North Dakota RMP planning area, western half
- Unsuitability without Exception
- Unsuitability with Exception
- Coal Decision Area within Coal Potential



Map F-27

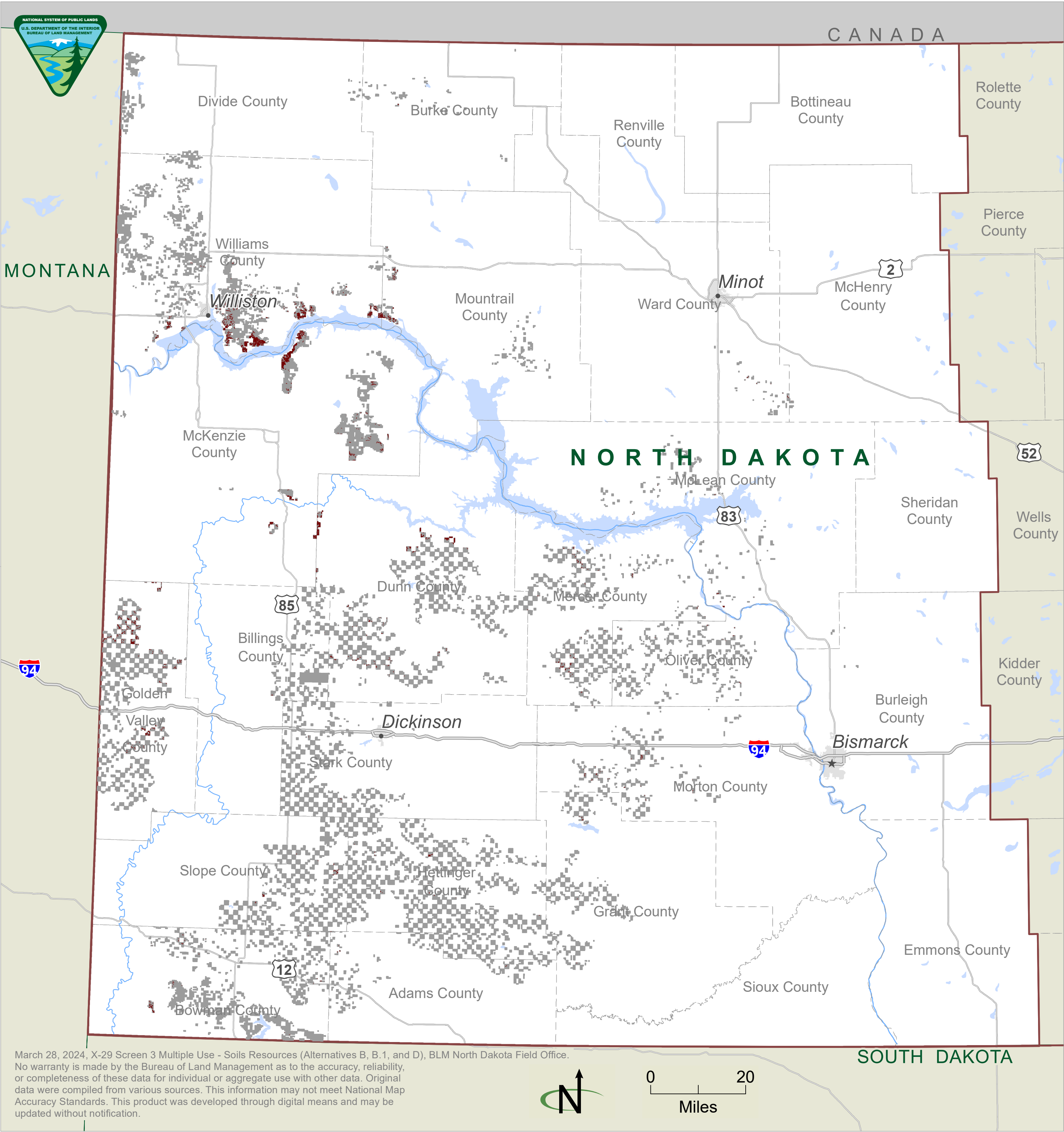
Screen 3 Multiple Use - Air and Climate; Existing Infrastructure (Alternatives B and D)

- North Dakota RMP planning area, western half
- Leonardite Potential
- Outside Mine Permit Boundary 4-Mile Development Area
- Coal Decision Area within Coal Potential

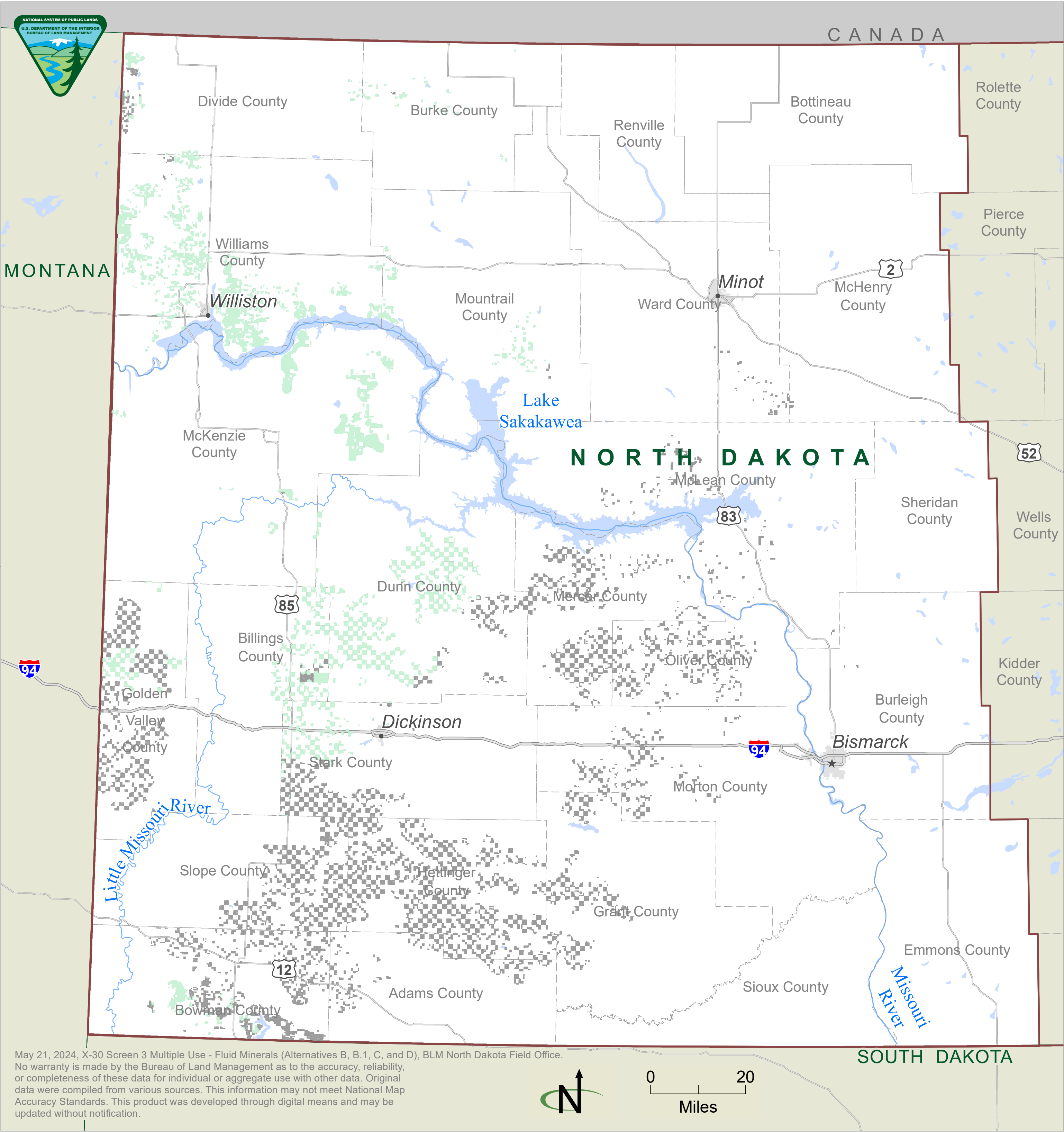


Map F-28
Screen 3 Multiple Use - Air and Climate; Limited Expansion (Alternative B.1)

- North Dakota RMP planning area, western half
- Leonardite Potential
- Outside Mine Permit Boundary
- Coal Decision Area within Coal Potential



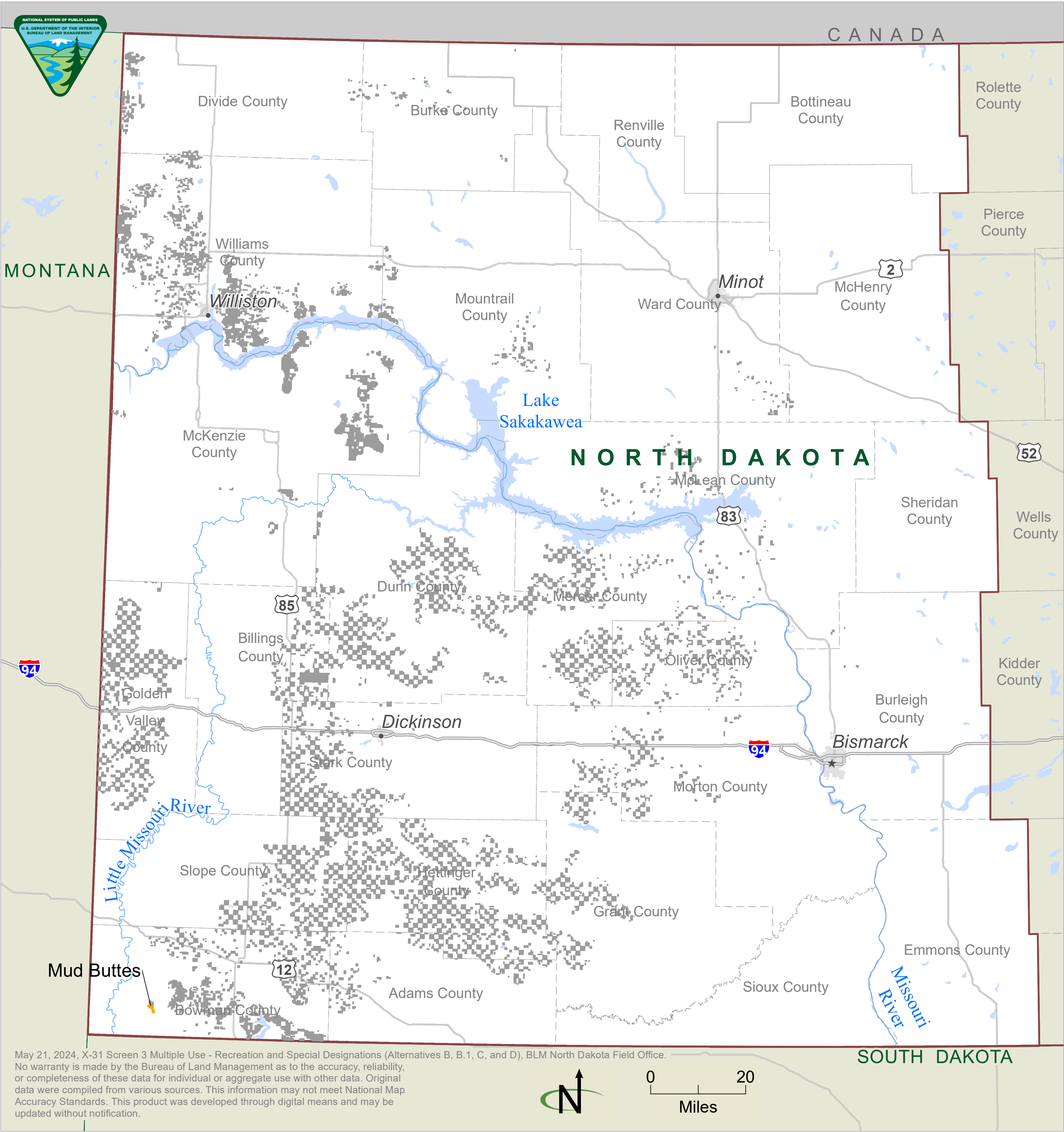
Map F-29
Screen 3 Multiple Use - Soils Resources (Alternatives B, B.1, and D)



Map F-30

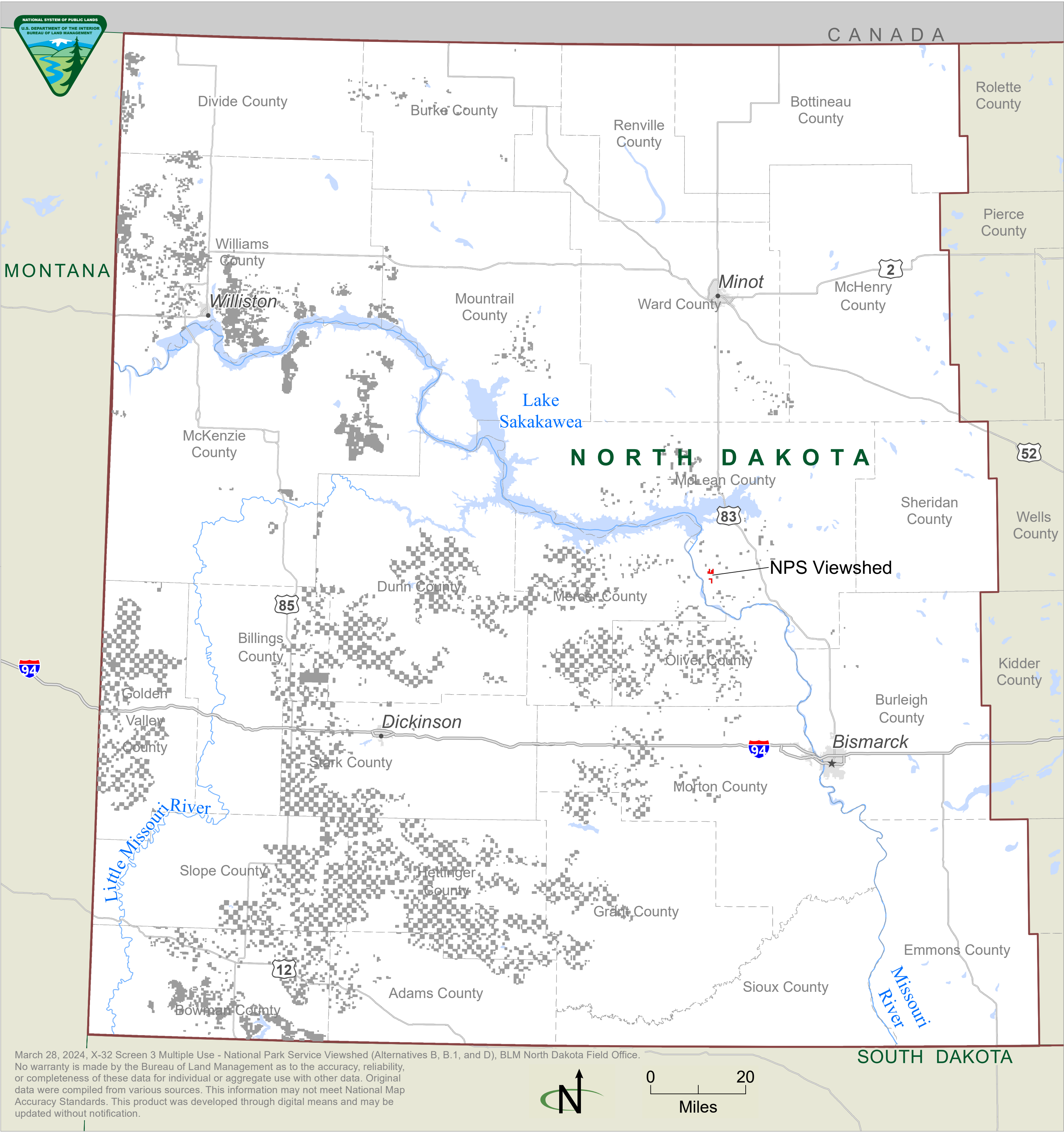
Screen 3 Multiple Use - Fluid Minerals (Alternatives B, B.1, C, and D)

- North Dakota RMP planning area, western half
- Active Oil & Gas Fields and Wells
- Coal Decision Area within Coal Potential



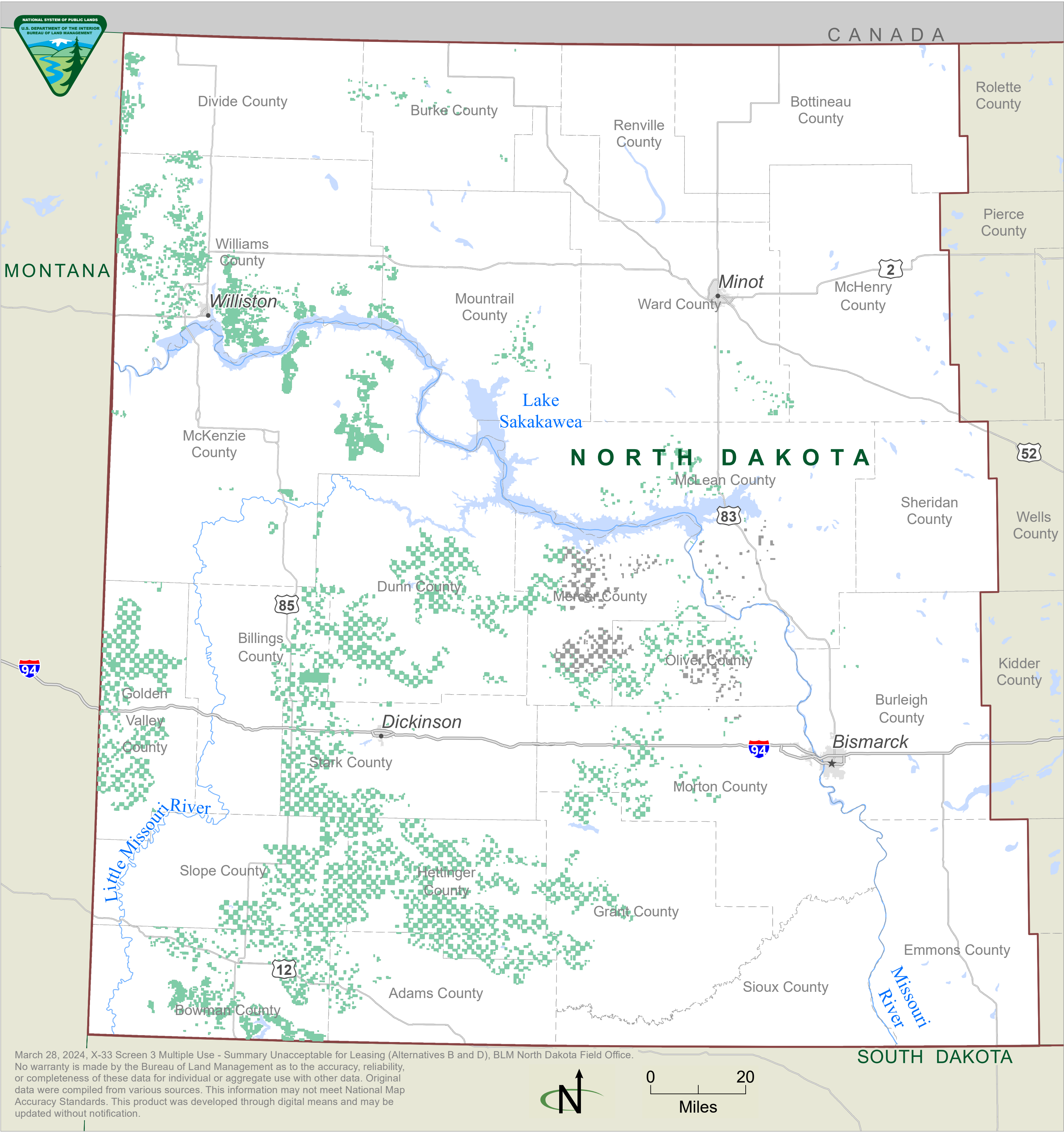
Map F-31
Screen 3 Multiple Use - Recreation and Special Designations (Alternatives B, B.1, C, and D)

-  North Dakota RMP planning area, western half
-  Mud Buttes ACEC
-  Coal Decision Area within Coal Potential



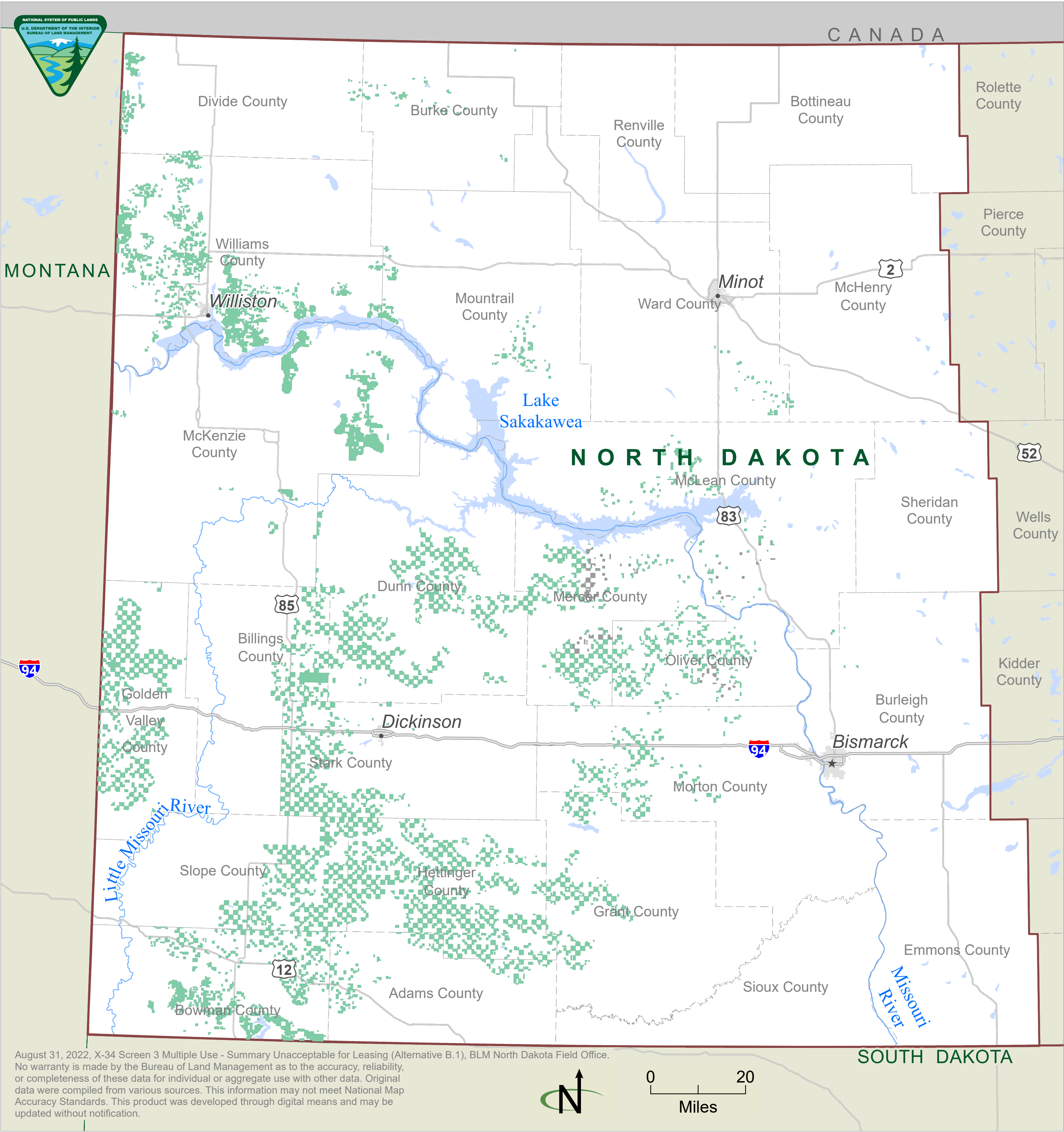
Map F-32
Screen 3 Multiple Use – National Park Service Viewshed (Alternatives B, B.1, and D)

- North Dakota RMP planning area, western half
- NPS Knife River Indian Village Viewshed
- Coal Decision Area within Coal Potential



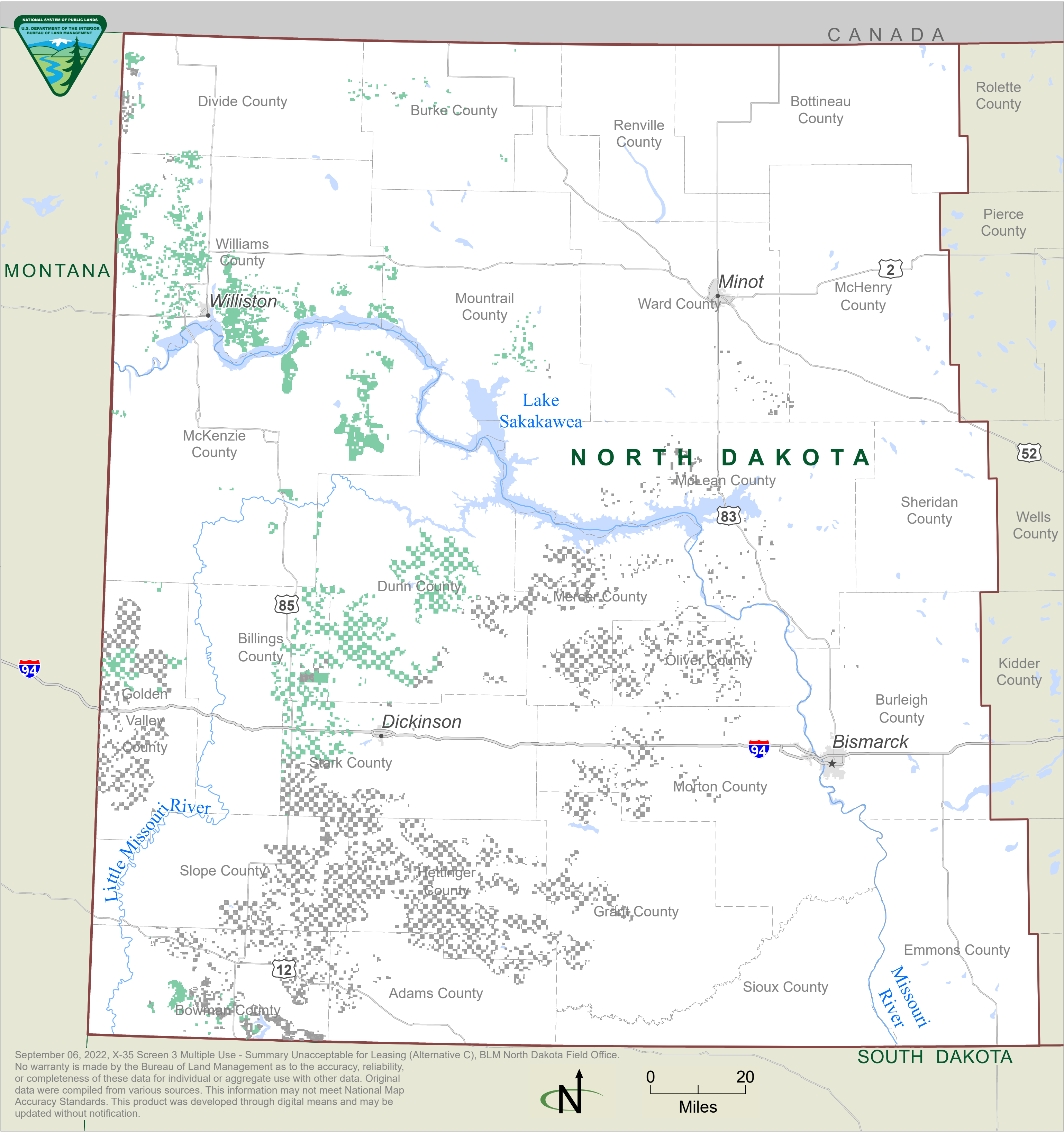
Map F-33
Screen 3 Multiple Use - Summary Unacceptable for Leasing (Alternatives B and D)

-  North Dakota RMP planning area, western half
-  Alternative B Screen 3 Unacceptable for Leasing
-  Coal Decision Area within Coal Potential



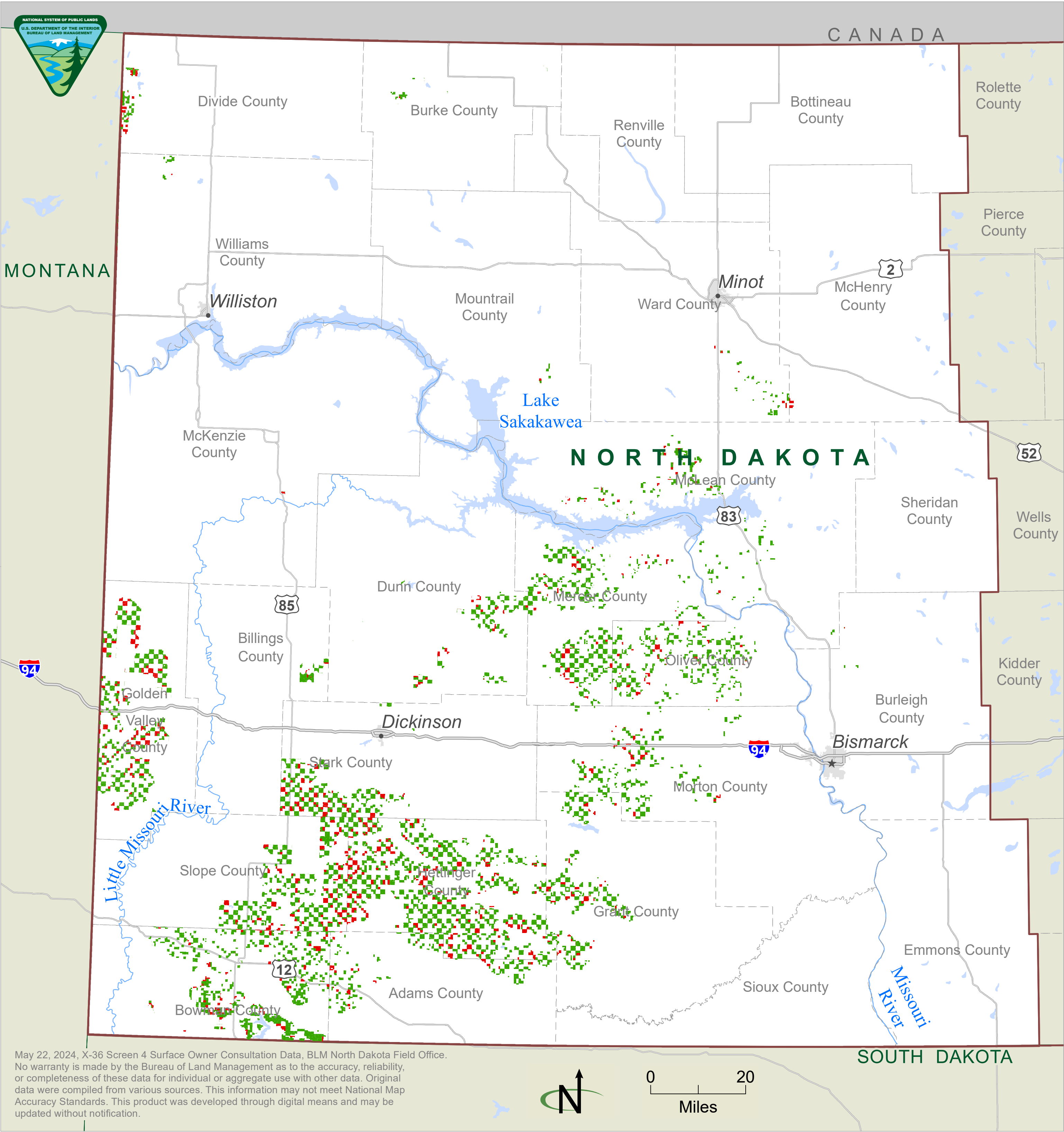
Map F-34

Screen 3 Multiple Use - Summary Unacceptable for Leasing (Alternative B.1)



Map F-35
Screen 3 Multiple Use - Summary Unacceptable for Leasing (Alternative C)

-  North Dakota RMP planning area, western half
-  Alternative C Screen 3 Unacceptable for Leasing
-  Coal Decision Area within Coal Potential

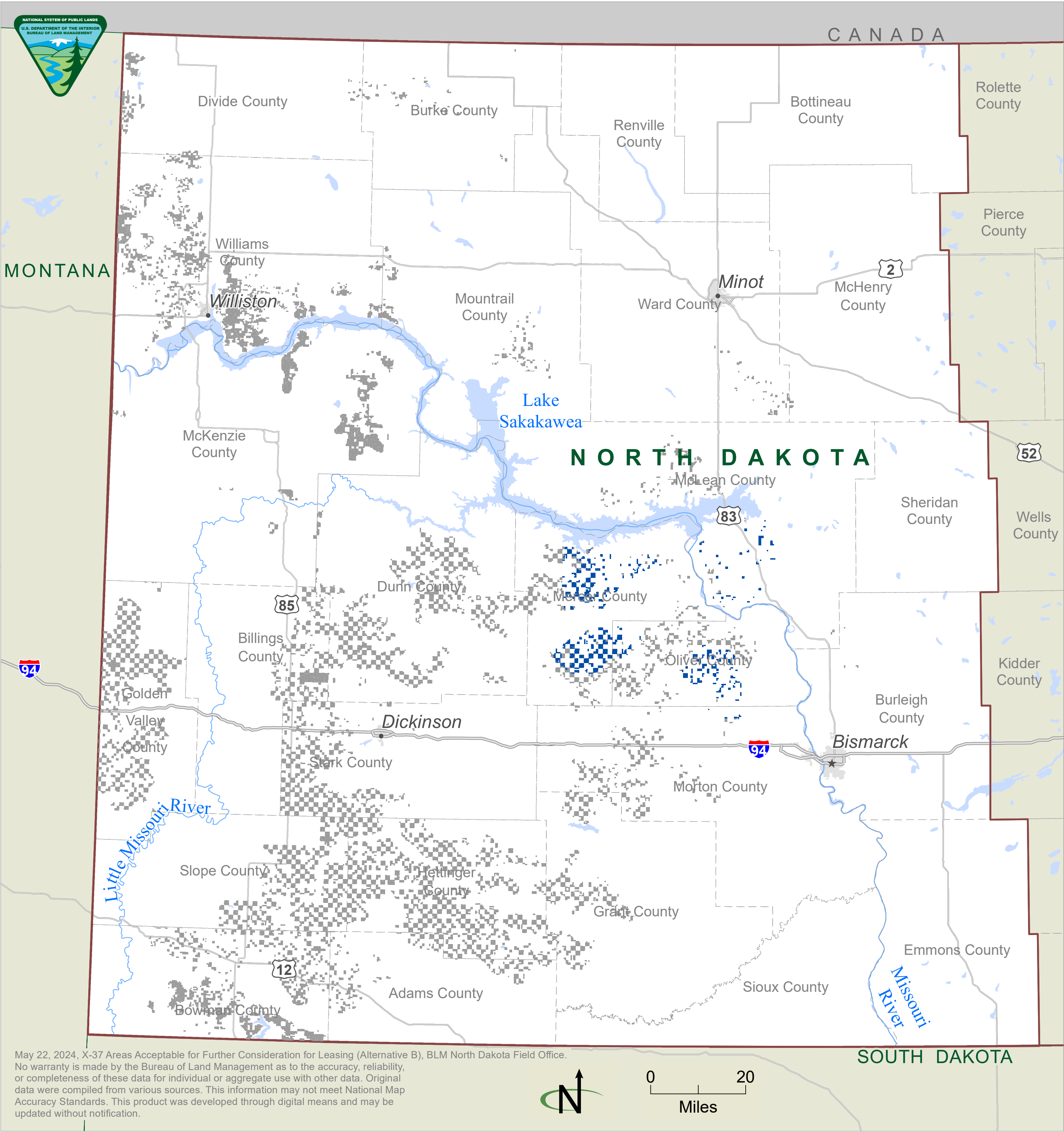


Map F-36
Screen 4 Surface Owner Consultation Data

North Dakota RMP planning area, western half

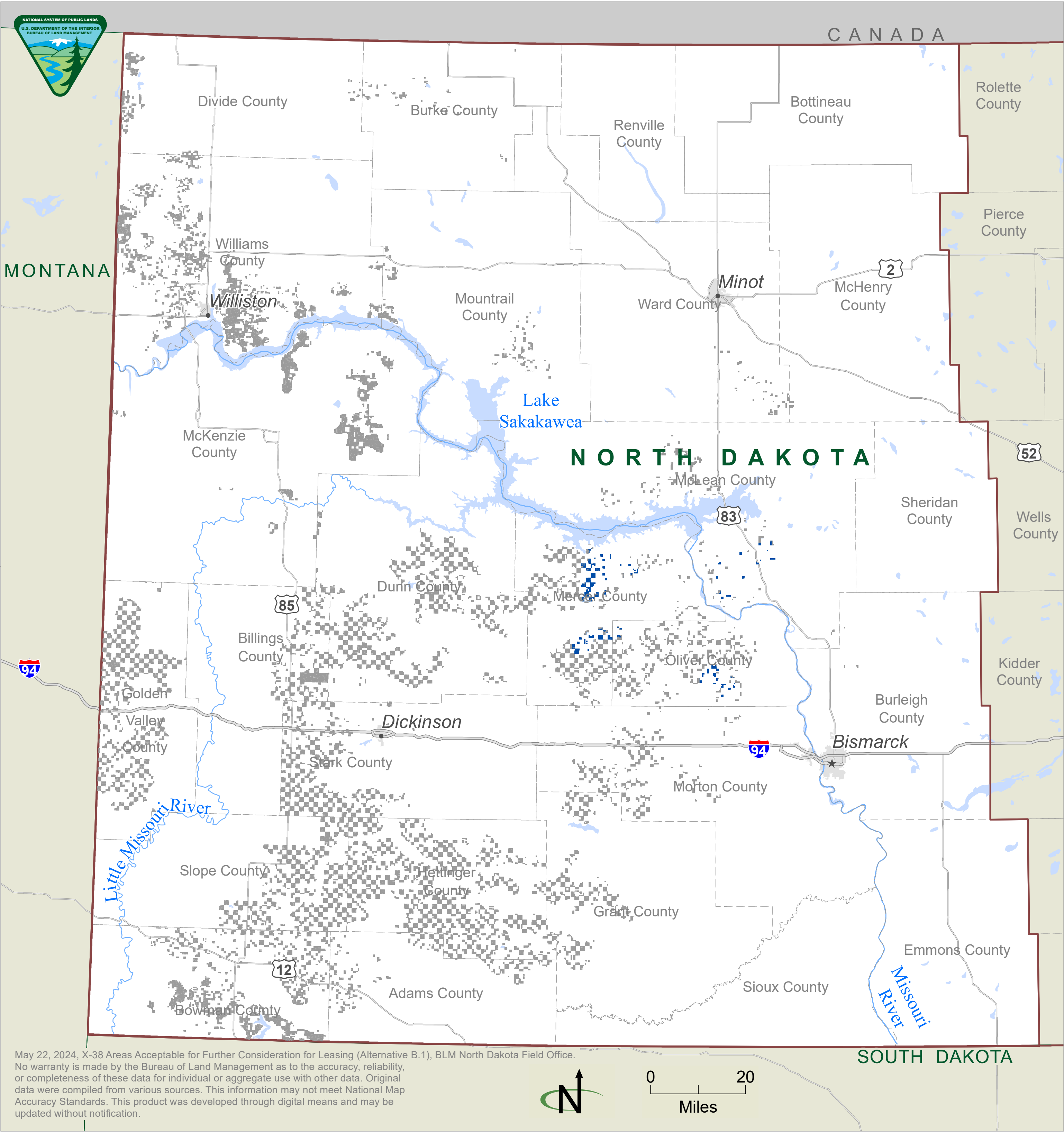
Surface Ownership Consultation

- Preference Against
- Other



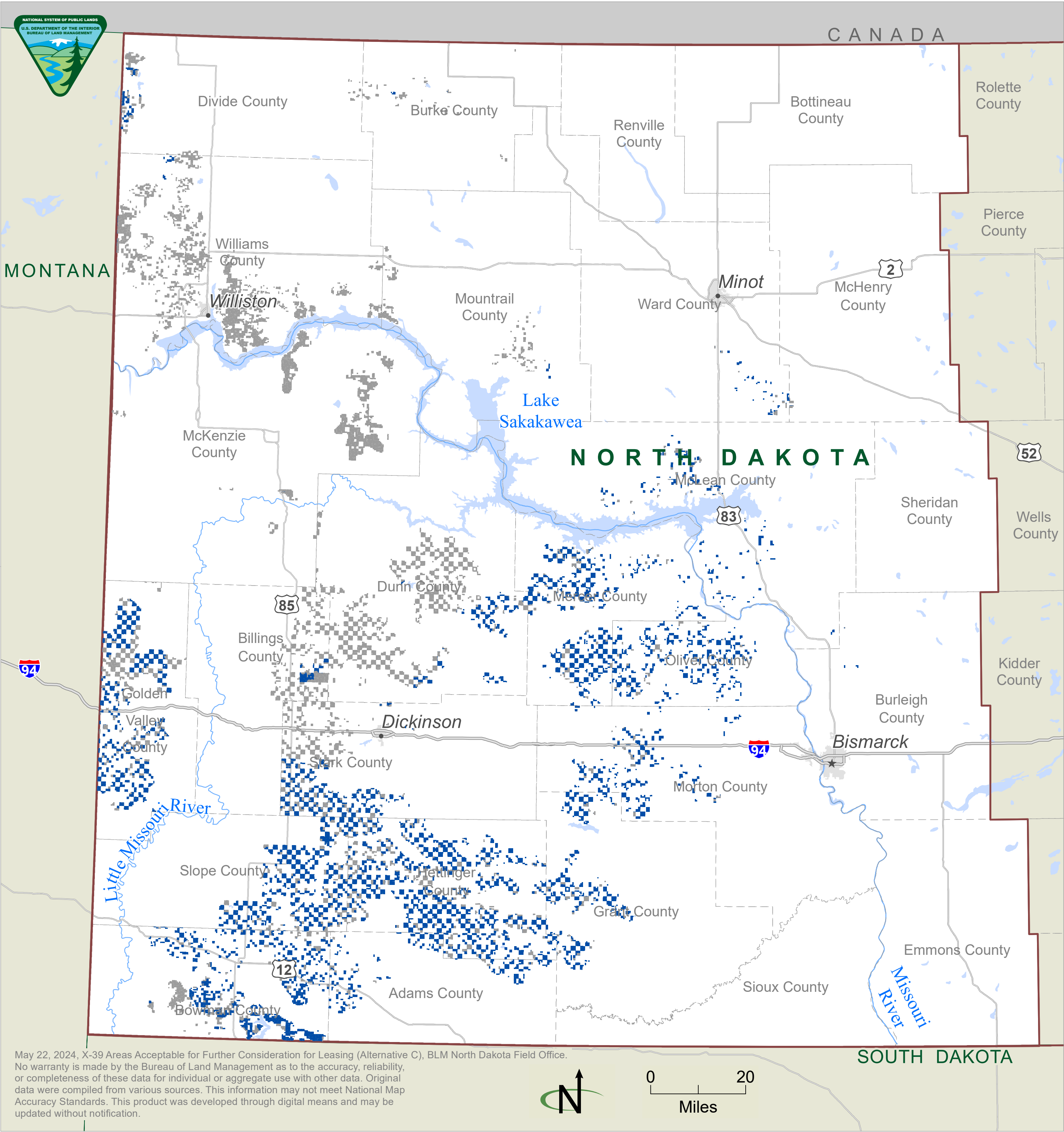
Map F-37
Areas Acceptable for Further Consideration for Leasing (Alternative B)

-  North Dakota RMP planning area, western half
-  Areas Acceptable for Further Consideration (Alternative B)
-  Coal Decision Area within Coal Potential



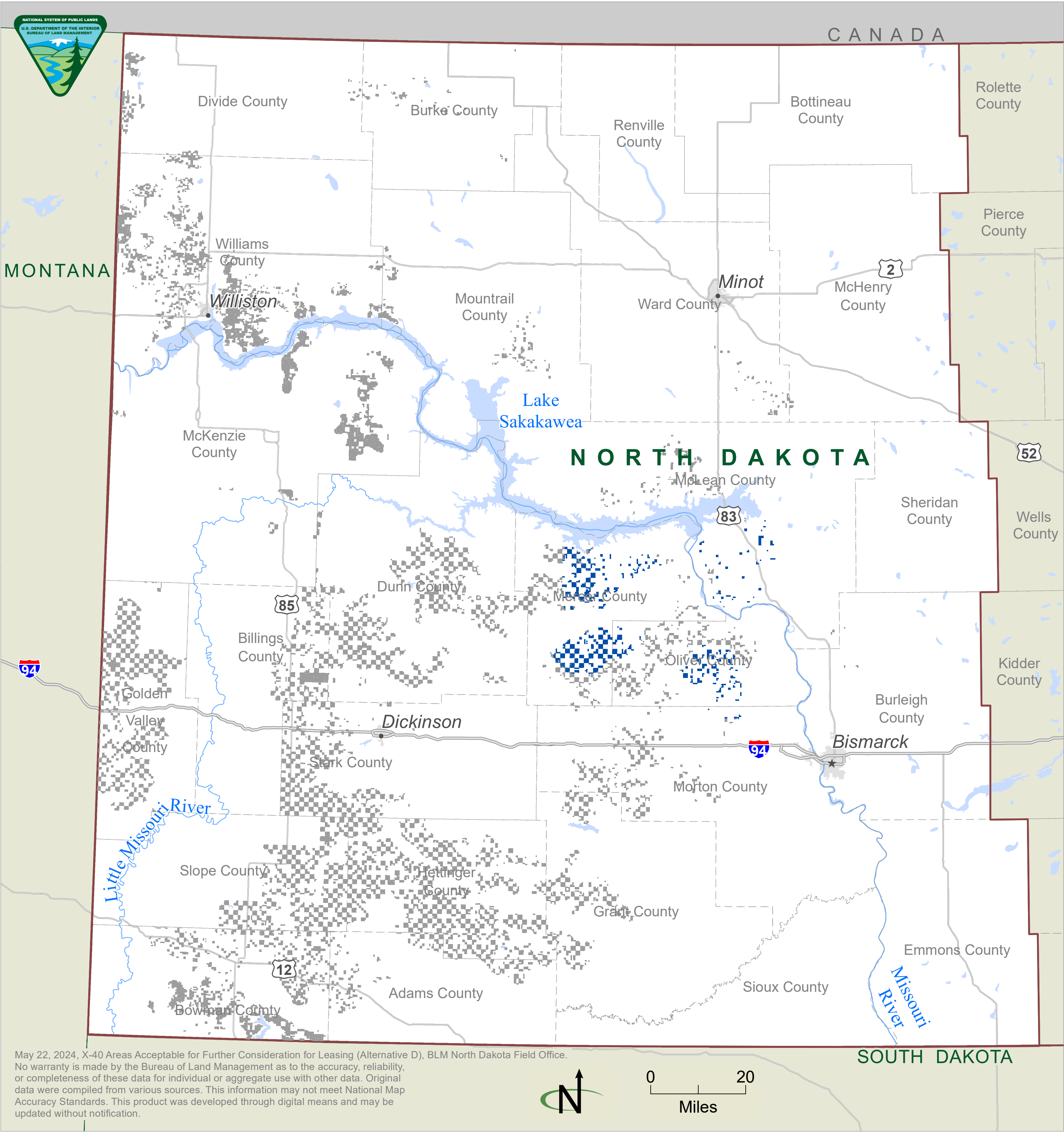
Map F-38
Areas Acceptable for Further Consideration for Leasing (Alternative B.1)

-  North Dakota RMP planning area, western half
-  Areas Acceptable for Further Consideration (Alternative B.1)
-  Coal Decision Area within Coal Potential

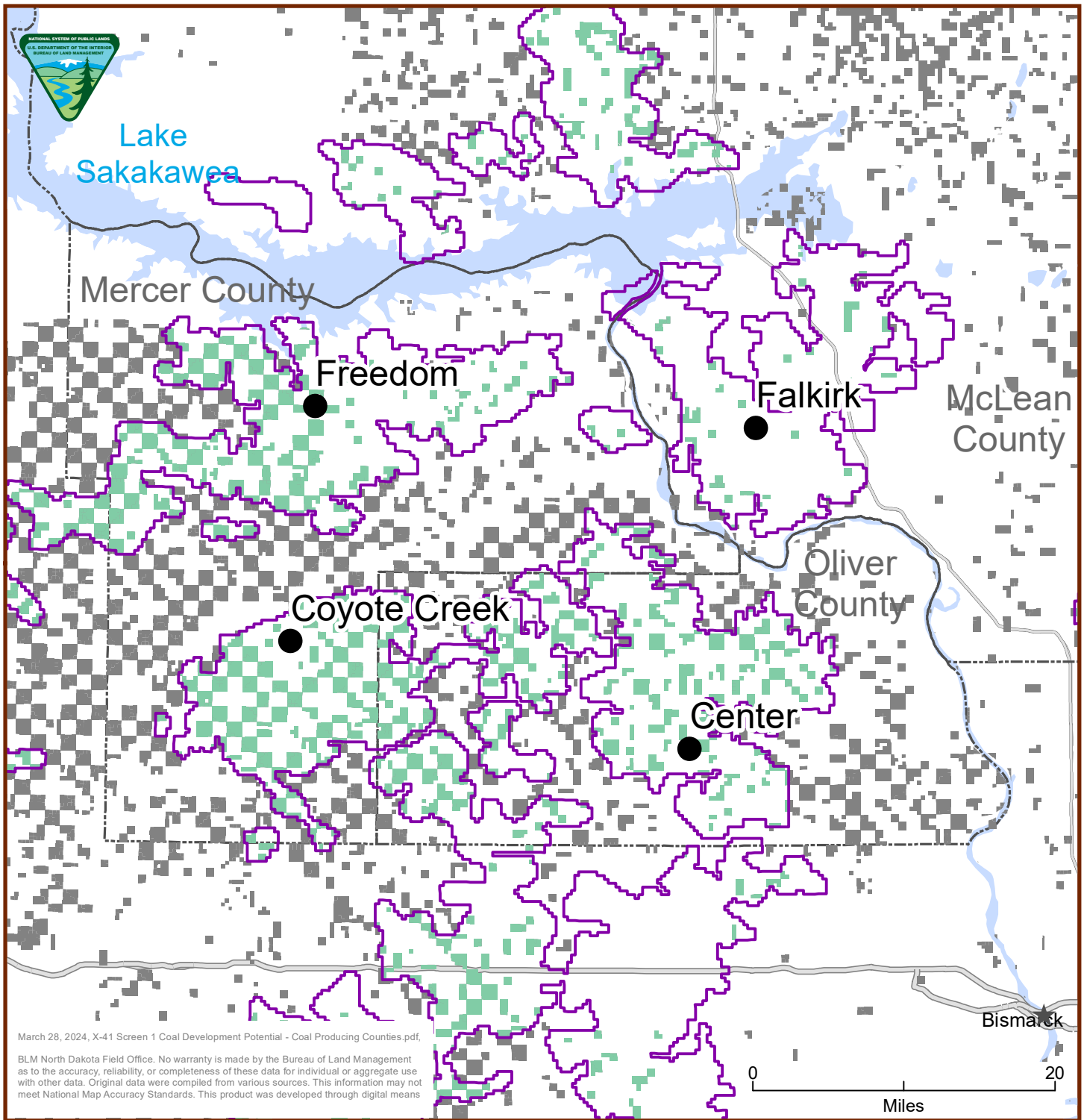


Map F-39
Areas Acceptable for Further Consideration for Leasing (Alternative C)

-  North Dakota RMP planning area, western half
-  Areas Acceptable for Further Consideration (Alternative C)
-  Coal Decision Area within Coal Potential

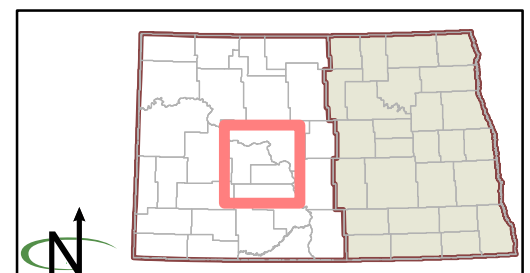


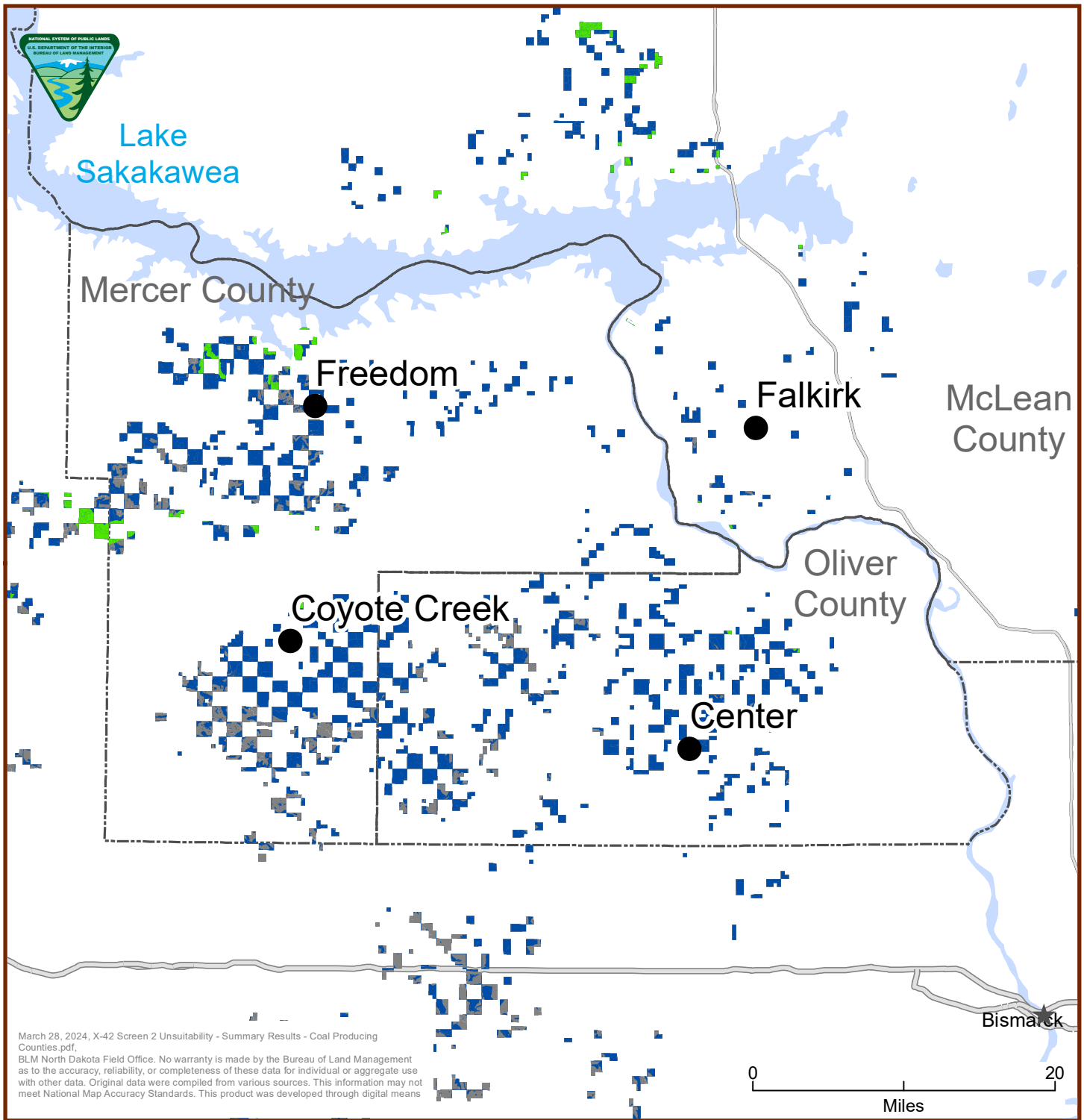
Map F-40
Areas Acceptable for Further Consideration for Leasing (Alternative D)



Map F-41
Screen 1 Coal Development Potential - Coal Producing Counties

- Coal Mine
- ▭ Coal Potential
- ▭ Coal Decision Area within Coal Potential
- ▭ Coal Decision Area

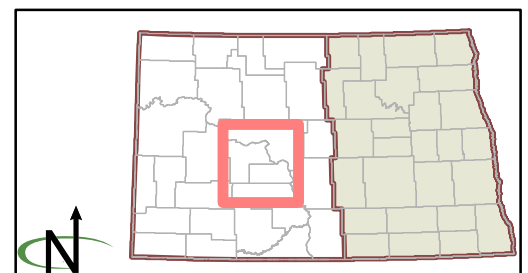


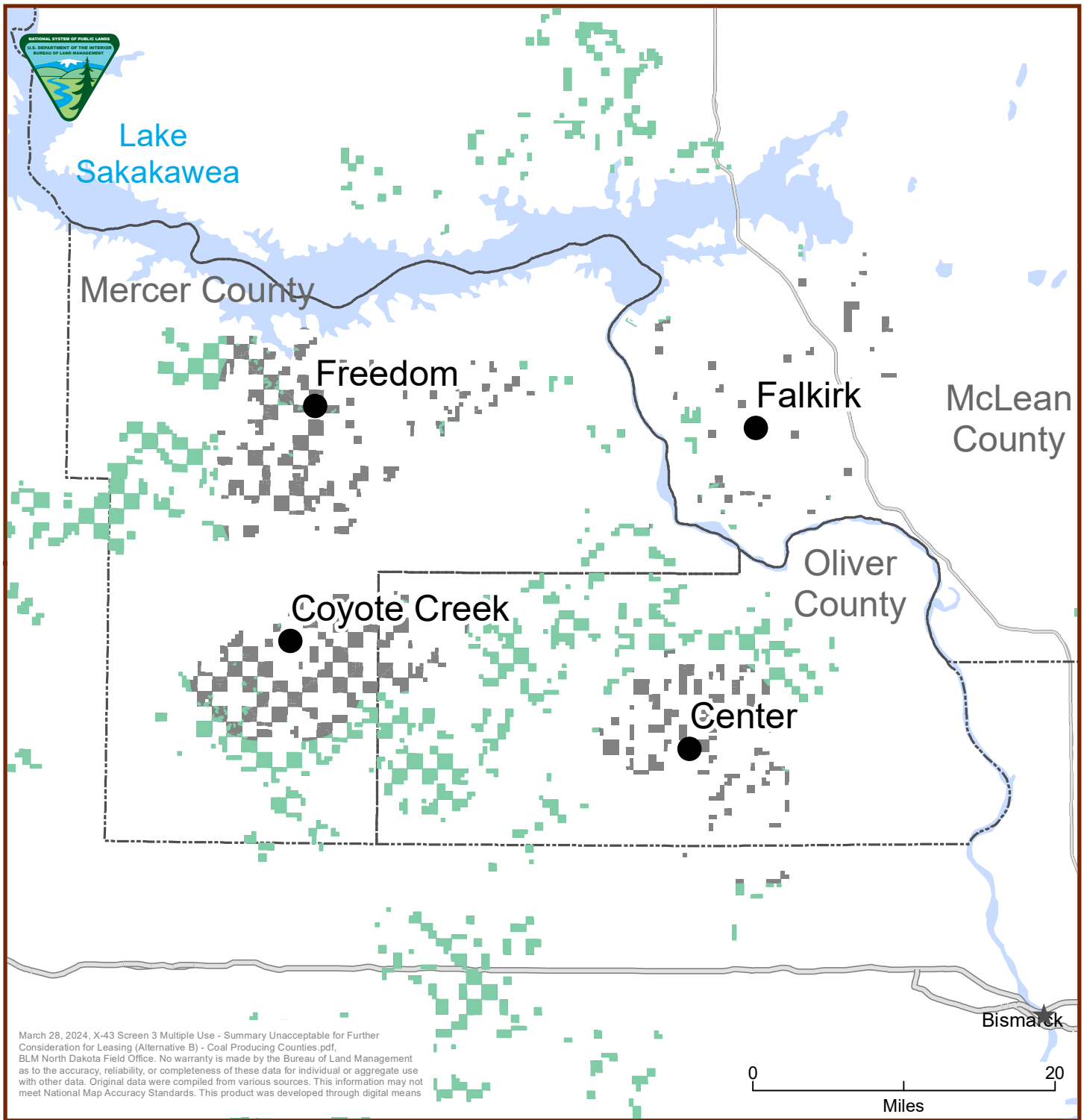


Map F-42

Screen 2 Unsuitability - Summary Results - Coal Producing Counties

- Coal Mine
- Unsuitability without Exception
- Unsuitability with Exception
- Coal Decision Area within Coal Potential

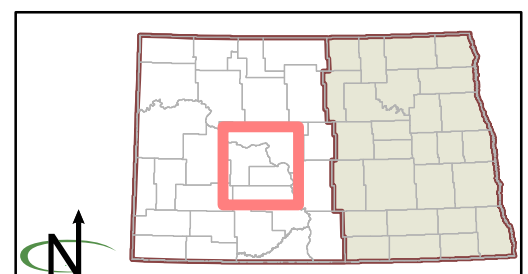


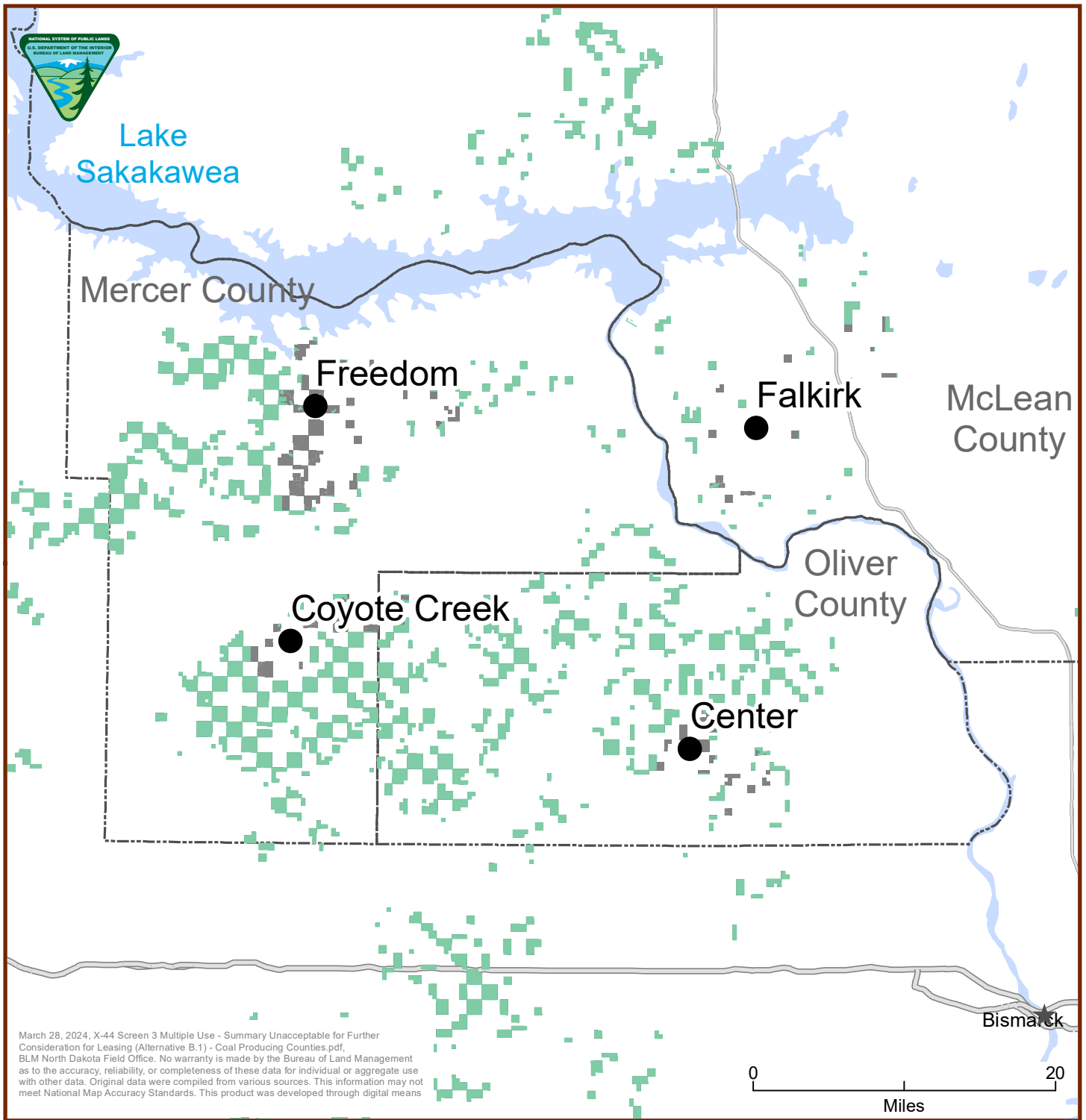


Map F-43

Screen 3 Multiple Use - Summary Unacceptable for Further Consideration for Leasing (Alternative B) - Coal Producing Counties

- Coal Mine
- Alternative B Screen 3 Unacceptable for Leasing
- Coal Decision Area within Coal Potential

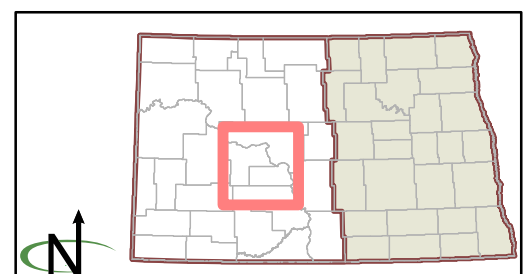


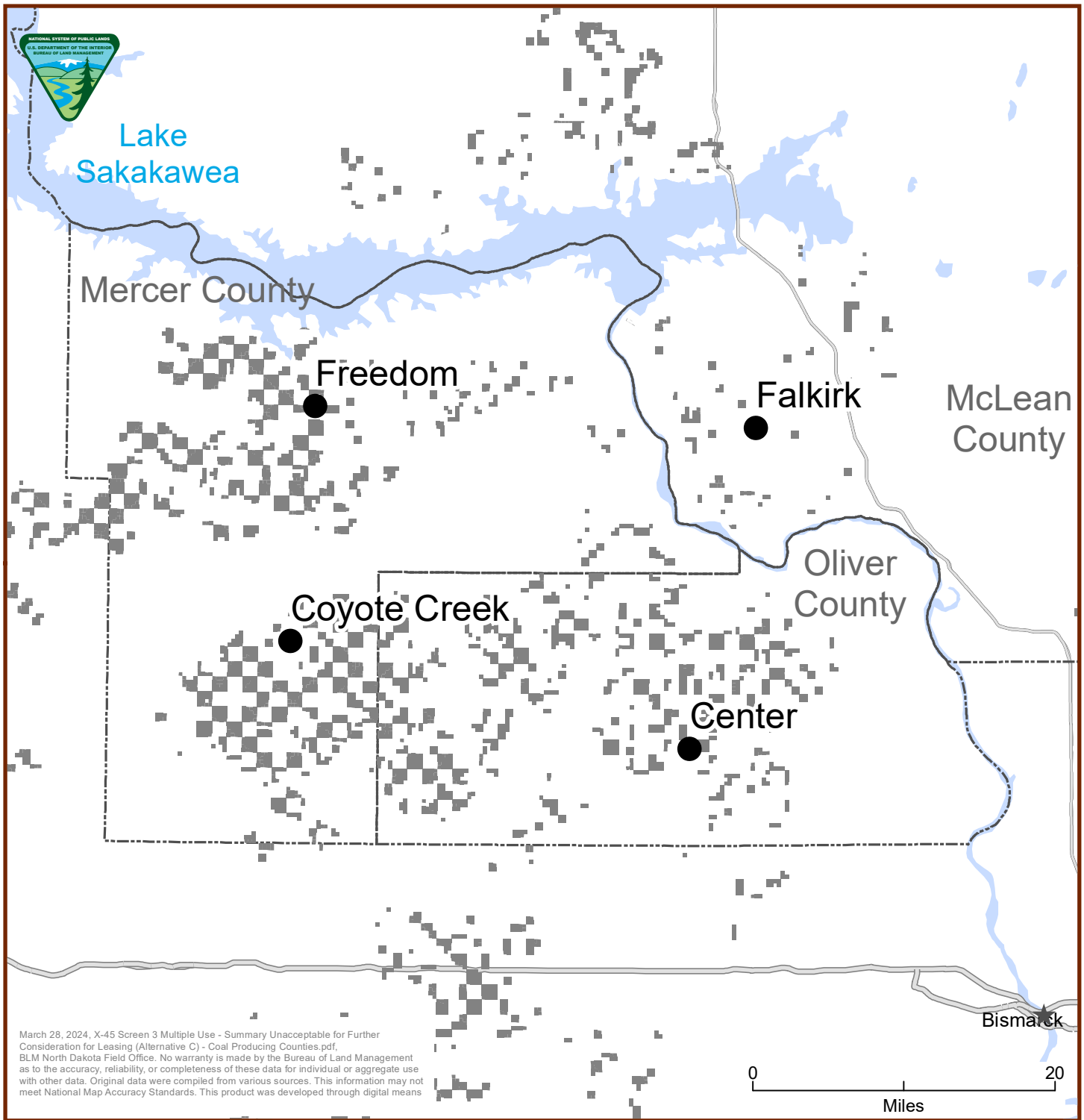


Map F-44

Screen 3 Multiple Use - Summary Unacceptable for Further Consideration for Leasing (Alternative B.1) - Coal Producing Counties

- Coal Mine
- Alternative B.1 Screen 3 Unacceptable for Leasing
- Coal Decision Area within Coal Potential

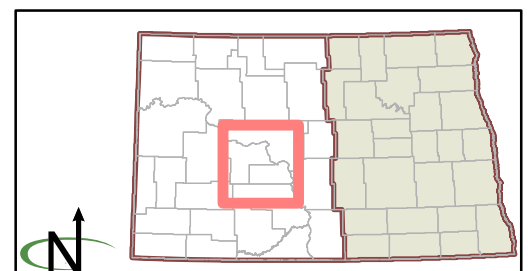


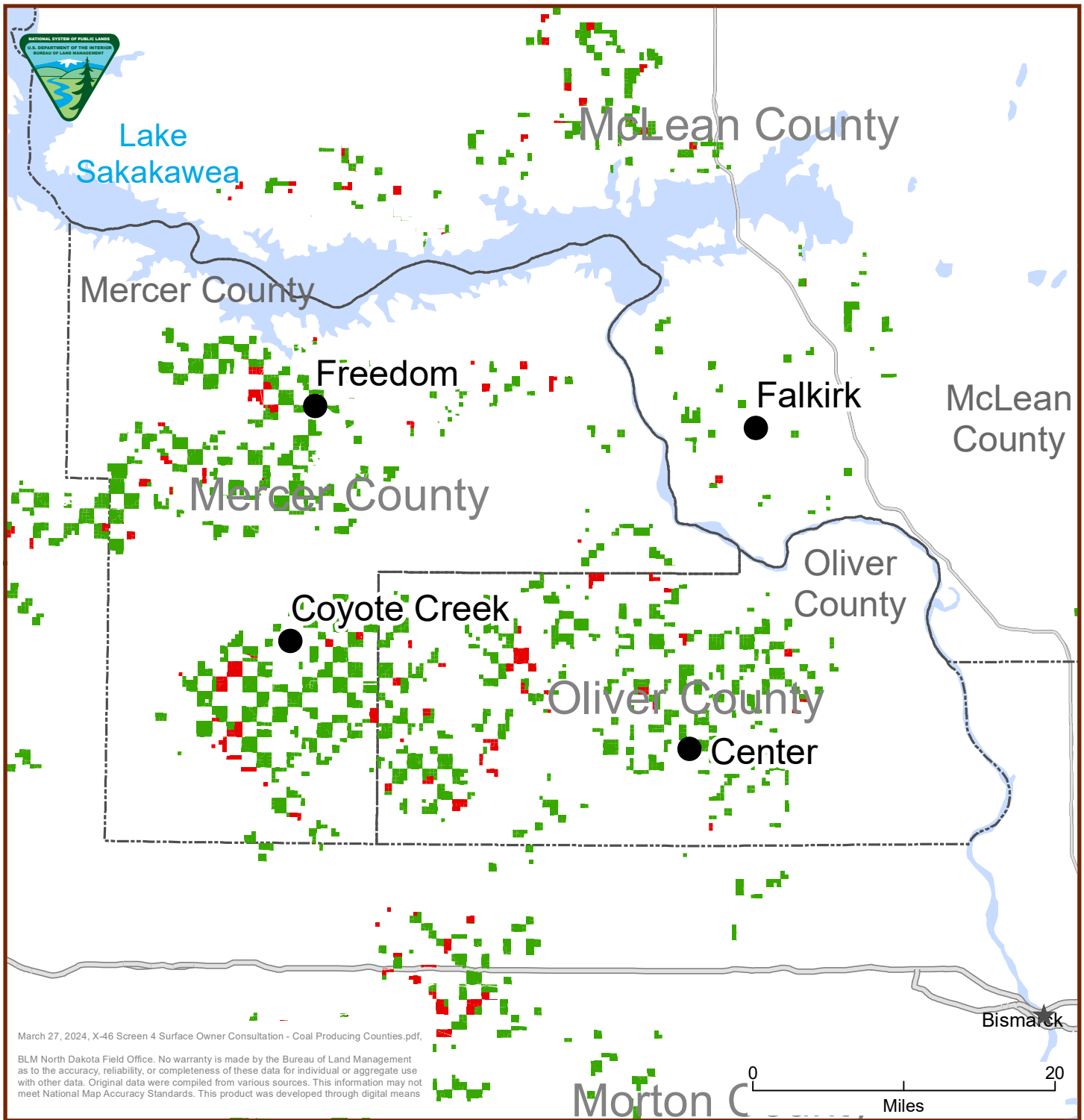


Map F-45

Screen 3 Multiple Use - Cumulative Unacceptable for Further Consideration for Leasing (Alternative C) - Coal Producing Counties

- Coal Mine
- Alternative C Screen 3 Unacceptable for Leasing (None)
- Coal Decision Area within Coal Potential





Map F-46

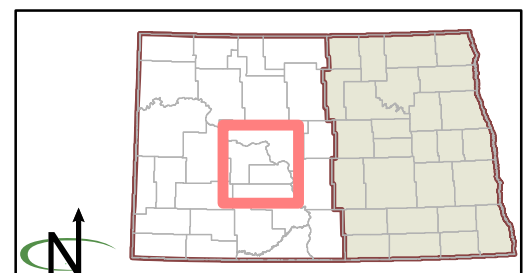
Screen 4 Surface Owner Consultation - Coal Producing Counties

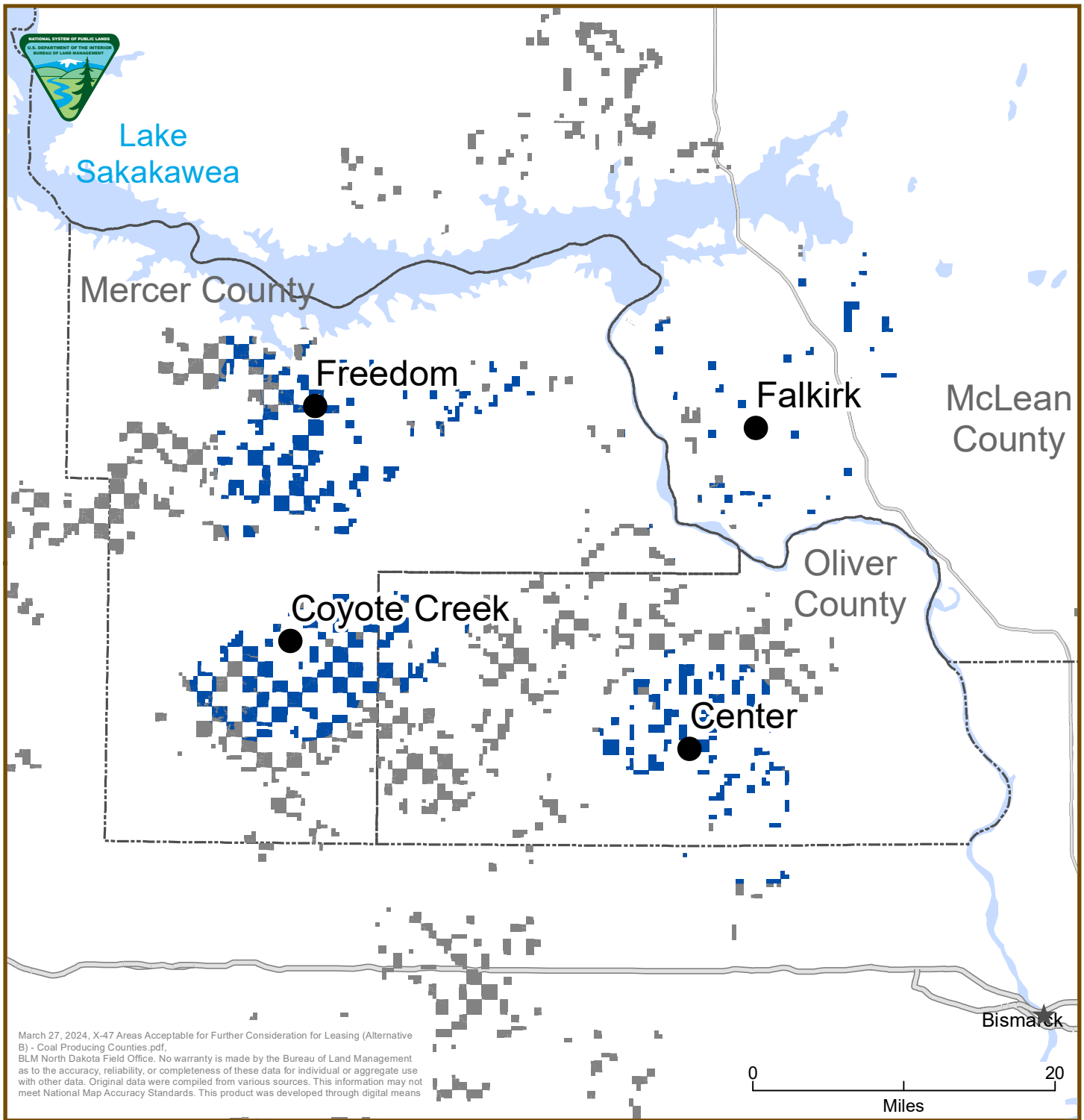
● Coal Mine

Surface Ownership Consultation

■ Preference Against

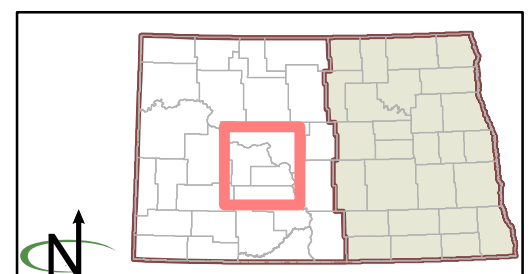
■ Other

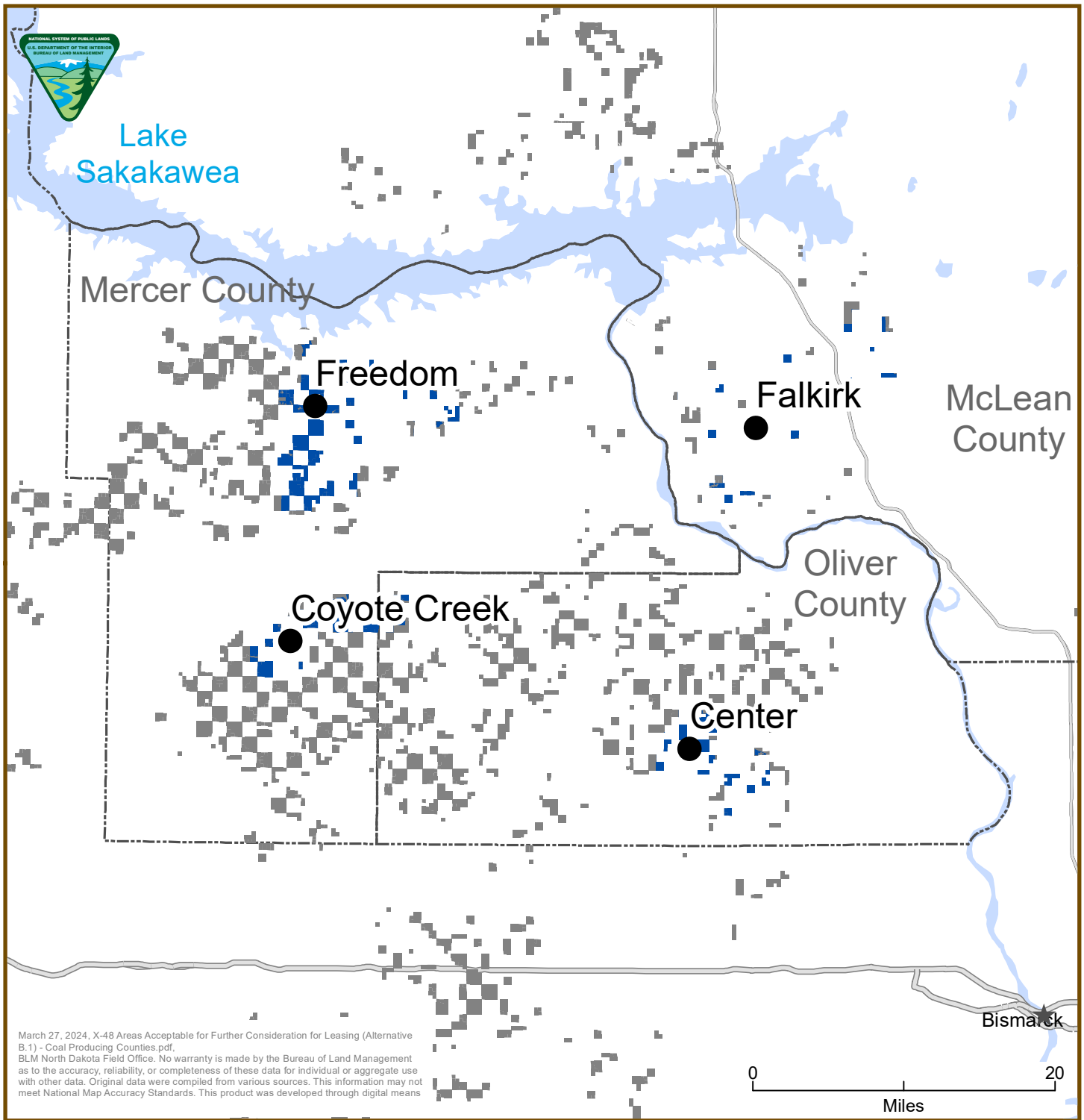




Map F-47
Areas Acceptable for Further Consideration for Leasing
(Alternative B) - Coal Producing Counties

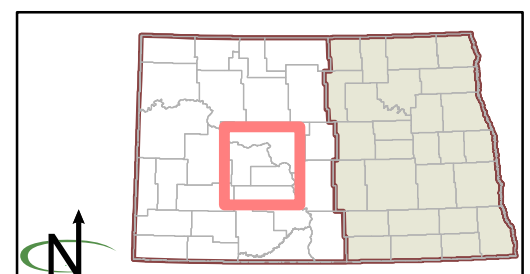
- Coal Mine
- Areas Acceptable for Further Consideration (Alternative B)
- Coal Decision Area within Coal Potential

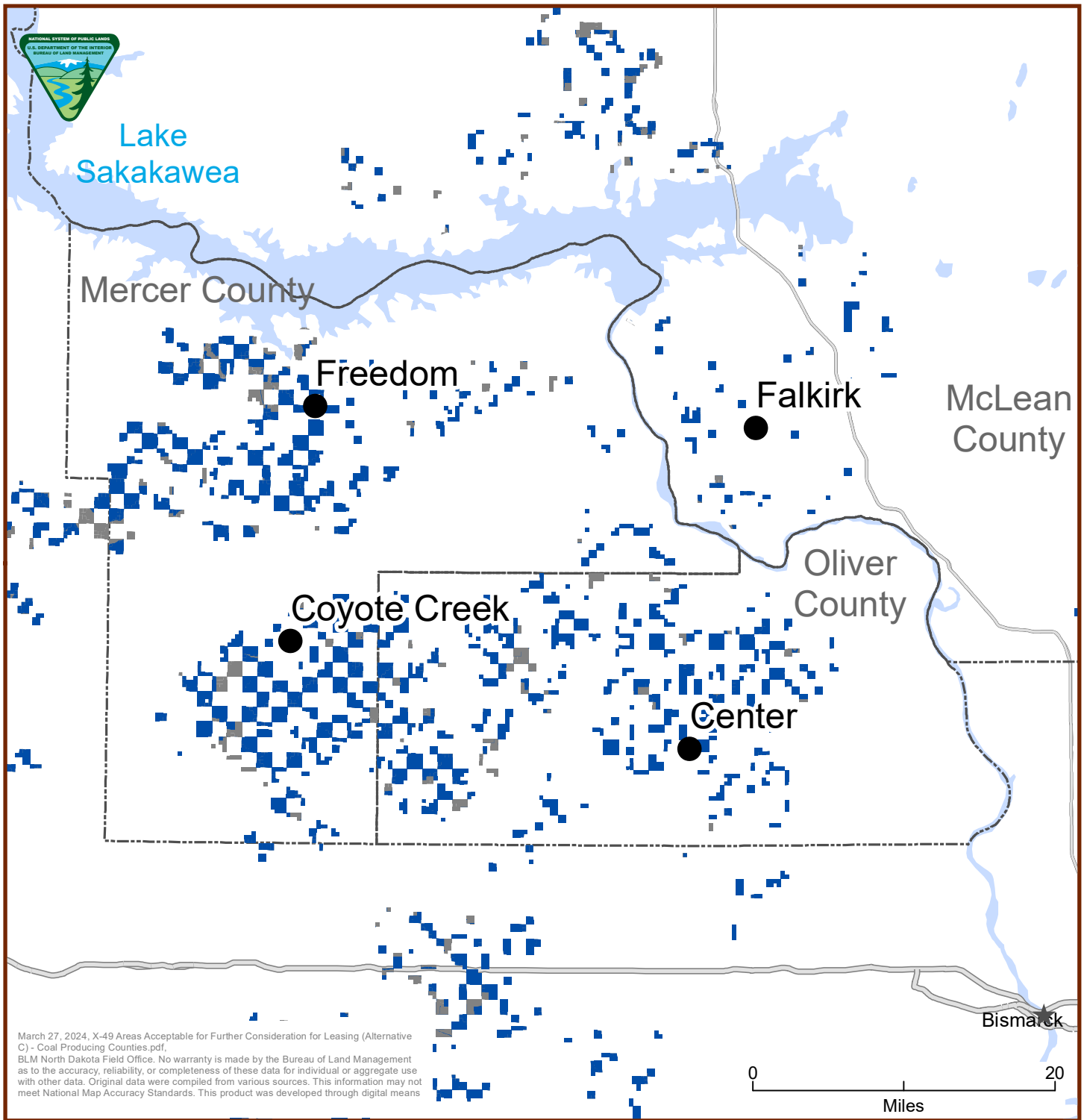




Map F-48
Areas Acceptable for Further Consideration for Leasing
(Alternative B.1) - Coal Producing Counties

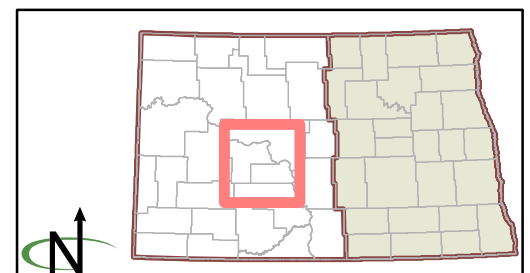
- Coal Mine
- Areas Acceptable for Further Consideration (Alternative B.1)
- Coal Decision Area within Coal Potential

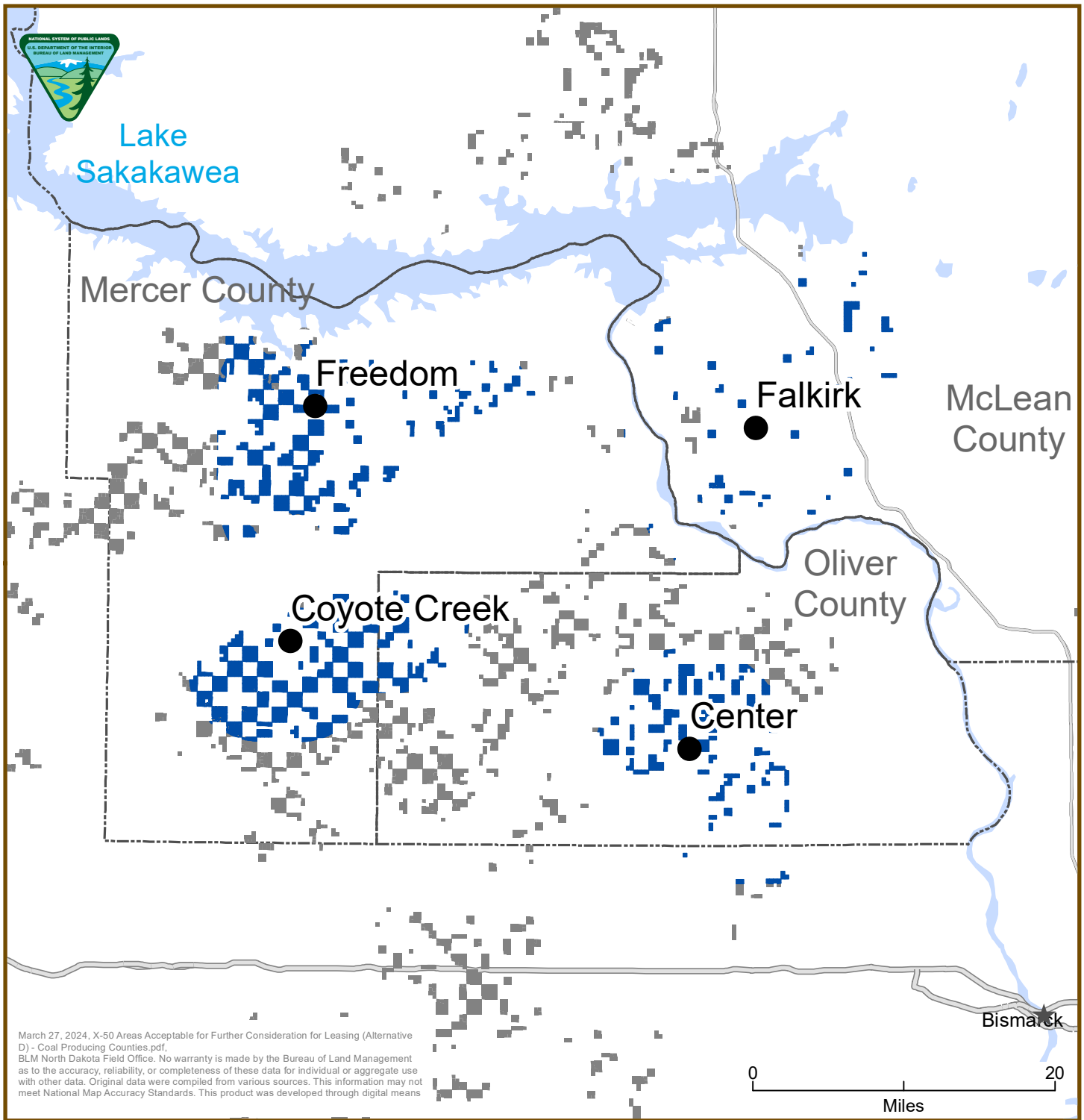




Map F-49
Areas Acceptable for Further Consideration for Leasing
(Alternative C) - Coal Producing Counties

- Coal Mine
- Areas Acceptable for Further Consideration (Alternative C)
- Coal Decision Area within Coal Potential

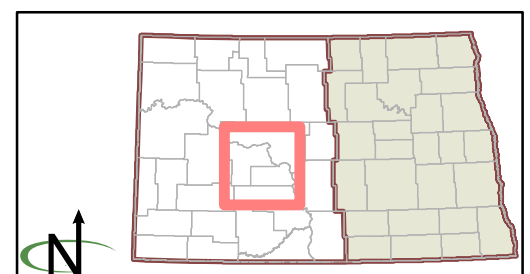




Map F-50

Areas Acceptable for Further Consideration for Leasing (Alternative D) - Coal Producing Counties

- Coal Mine
- Areas Acceptable for Further Consideration (Alternative D)
- Coal Decision Area within Coal Potential



Attachment 2

Sample Private Landowner Letter

This page intentionally left blank.



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

North Dakota Field Office
99 23rd Avenue West, Suite A
Dickinson, North Dakota 58601
<http://www.blm.gov/montana-dakotas>



110008

July 9, 2020

Subject: Surface Owner Consultation, Coal Screen 4 -North Dakota Field Office Resource Management Plan Revision and Environmental Impact Statement

Dear Surface Owner:

The United States Department of the Interior, Bureau of Land Management (BLM), North Dakota Field Office (NDFO) is in the early stages of pre-planning and data collection for a Resource Management Plan (RMP) revision and we are contacting you to ask your preference for surface coal mining on your lands. The NDFO RMP revision is expected to begin this summer and will direct the management of BLM-administered lands and federal minerals in North Dakota for the foreseeable future. In anticipation of this effort, the BLM is required to conduct coal screening in accordance with the Code of Federal Regulations (CFR), 43 CFR 3420.1-4.

Pursuant to 43 CFR 3420.1-4(e)(4)(i), the BLM is providing you official notification that, based on available data, the BLM has identified your private surface lands, which overlie federal coal deposits, as lands determined to have coal developmental potential. The BLM has identified the legal land descriptions of these lands on page 2 of this letter for your review. The BLM is required to solicit a preference for surface mining from every qualified surface owner for lands we are considering making available for consideration for leasing. This notification provides you the opportunity to submit your preference.

Please respond by completing and returning the surface owner response form (page 3) using the enclosed postage paid envelope **no later than August 9, 2020**. Some or all of the coal mineral deposits beneath your surface lands may not be subject to leasing, as a result of the findings from the first three coal screens. However, the BLM requests that you provide your input for all lands described in this letter in case of future regulatory or statutory changes. If you are not the "qualified surface owner," please respond by completing and returning the back side of the response form (page 4).

Please note that lands considered will be analyzed to determine if they are acceptable for further consideration for coal leasing or unacceptable for further consideration for coal leasing. There are no current plans to lease the subject coal, rather leasing would require a company to obtain your consent prior to submitting an application to the BLM. Leasing decisions therefore are not being made at this time. Leasing decisions would occur in the future if an application is submitted to the BLM and would be subject to additional National Environmental Policy Act (NEPA) review.

If you have questions, please call 701-227-7778

Sincerely,

Loren C. Wickstrom
North Dakota Field Manager

SURFACE OWNER RESPONSE FORM

ID number- A10006

Return no later than August 9, 2020 using the self-addressed, stamped envelope provided.

Dear BLM Field Manager:

In response to your letter soliciting each qualified surface owner's "preference in favor of" or "preference against" mining federally owned coal deposits underlying split estate by other than underground mining techniques (surface coal mining) within the North Dakota planning area, I submit the following written response **as the legal qualified surface owner**, as defined by 43 CFR 3000.0-5 (gg) (1) and (2):

Note: if you are **NOT** the legal qualified surface owner please skip to the back of this page.

☐

After reading and considering the provided references, I submit that I have **a preference in favor of** mining coal deposits underlying my surface estate by other than underground mining techniques (surface coal mining).

☐

After reading and considering the provided references, I submit that I have **a preference against** mining coal deposits underlying my surface estate by other than underground mining techniques (surface coal mining).

☐

After reading and considering the provided references, I submit that I am **undecided** on my preference in regard to mining coal deposits underlying my surface estate by other than underground mining techniques (surface coal mining).

Sincerely,

Signature

Date

Your Name (printed)

SURFACE OWNER RESPONSE FORM

ID number- A10006

Return no later than August 9, 2020 using the self-addressed, stamped envelope provided.

Dear BLM Field Manager:

In response to your letter soliciting each qualified surface owner's "preference in favor of" or "preference against" mining federally owned coal deposits underlying split estate by other than underground mining techniques (surface coal mining) within the North Dakota planning area, I am notifying you that, as defined by 43 CFR 3000.0-5(gg) (1) and (2):

☐

I am **NOT** the "legal qualified surface owner"

Qualified Surface Owner Information, if available:

Below, I have provided the name and address of the qualified surface owner:

Name:

Address:

Your Name (printed)

FREQUENTLY ASKED QUESTIONS

1. What are you doing and why?

The current BLM North Dakota Field Office Resource Management Plan (RMP), which covers the entire state of North Dakota, was completed in 1988. Land use plans are periodically revised to better manage the current conditions within the planning area. Part of the RMP process requires the BLM to analyze which Federal minerals are available for leasing. For coal, this is done by applying the four coal screens listed below:

1. Screen 1 – Coal Development Potential – Based on United States Geological Survey and in some cases coal company data the BLM identified areas that have potential coal deposits. The parcels identified in this letter are part of those with potential coal deposits.
2. Screen 2 – Unsuitability Criteria – This screen will identify certain areas within the coal potential area as being unsuitable for leasing if they fall into one of the 20 unsuitability categories.
3. Screen 3 – Multiple-Use Tradeoffs – Some coal deposits will be eliminated from consideration in this screen to protect other resources that are locally, regionally, or nationally important or unique.
4. Screen 4 – Surface Owner Opposition – This screen is why you are receiving a letter from the BLM requesting your preference to mining federally owned coal deposits underlying split estate by other than underground mining techniques.

2. Why do you own my minerals? Do I own my minerals?

Using GIS (a mapping program) analysis and based on best available data at least a portion of your parcel(s) identified in this letter have federal coal minerals. These minerals were most likely reserved when the land was homesteaded. You can look up more information regarding the land by visiting glorecords.blm.gov/. Copies of the original land patents can be found by clicking on “Land Patents” and searching for the parcel by land description or using the second tab to search by location using a map. The master title plats can be found by clicking on “Land Status Records” and performing a similar search to find the parcel of land.

3. How does this affect me?

This step does not have an impact on you or your lands. We are asking your opinion to be considered in the coal screen process which will determine what lands may be made available for further consideration for leasing. Written surface owner consent would be needed to lease the lands and the North Dakota Public Service Commission would also need surface owner consent to issue a permit to mine. No lands are being leased for coal during the RMP process.

4. Does this mean my land will be developed?

No. Land use planning will determine if lands are available for consideration. Written surface owner consent is needed to lease the lands and the North Dakota Public Service Commission will need surface owner consent to issue a permit to mine. You will be involved if anyone is interested in leasing and developing your land.

5. What comes next?

In July-August, we expect to publish a Notice of Intent (NOI). The NOI will formally initiate a Public Scoping period and will include three public meetings. Unless otherwise requested, your address will be added to the project mailing list to receive notification of public meetings and the availability of draft documents for public review and comment. Additionally, updated information will be posted on the BLM e-Planning website at: go.usa.gov/xv8Ar.

DEFINITIONS AND REGULATION

Coal deposits mean all Federally owned coal deposits, except those held in trust for Indians.

Federal lands mean lands owned by the United States, without reference to how the lands were acquired or what Federal agency administers the lands, including surface estate, mineral estate and coal estate, but excluding lands held by the United States in trust for Indians, Aleuts or Eskimos.

Qualified surface owner means the natural person or persons (or corporation, the majority stock of which is held by a person or persons otherwise meeting the requirements of this section) who:

- (1) Hold(s) legal or equitable title to the surface of split estate lands;
- (2) Have their principal place of residence on the land, or personally conduct farming or ranching operations upon a farm or ranch unit to be affected by surface mining operations; or receive directly a significant portion of their income, if any, from such farming and ranching operations; and
- (3) Have met the conditions of paragraphs (1) and (2) of this section for a period of at least 3 years, except for persons who gave written consent less than 3 years after they met the requirements of both paragraphs (gg) (1) and (2) of this section. In computing the three-year period the authorized officer shall include periods during which title was owned by a relative of such person by blood or marriage if, during such periods, the relative would have met the requirements of this section.

Split estate means land in which the ownership of the surface is held by persons, including governmental bodies, other than the Federal government and the ownership of underlying coal is, in whole or in part, reserved to the Federal government.

Surface coal mining (also referred to as: “other than underground mining techniques”) operations means activities conducted on the surface of lands in connection with a surface coal mine or surface operations and surface impacts incident to an underground mine, as defined in section 701(28) of the Surface Mining Control and Reclamation Act (30 U.S.C. 1291(28)).

43 CFR 3420.0-2 - Objectives.

The objectives of these regulations are to establish policies and procedures for considering development of coal deposits through a leasing system involving land use planning and environmental assessment or environmental impact statement processes; to promote the timely and orderly development of publicly owned coal resources; to ensure that coal deposits are leased at their fair market value; and to ensure that coal deposits are developed in consultation, cooperation and coordination with the public, state and local governments, Indian tribes and involved Federal agencies.

43 CFR 3420.1-4 - General requirements for land use planning.

(a) The Secretary may not hold a lease sale under this part unless the lands containing the coal deposits are included in a comprehensive land use plan or land use analysis. The land use plan or land use analysis will be conducted with public notice and opportunity for participation at the points specified in § 1610.2(f) of this title. The sale must be compatible with, and subject to, any relevant stipulations, guidelines, and standards set out in that plan or analysis.

(b)

- (1) The Bureau of Land Management shall prepare comprehensive land use plans and land use analyses for lands it administers in conformance with 43 CFR part 1600.
- (2) The Department of Agriculture or any other Federal agency with surface management authority over lands subject to leasing shall prepare comprehensive land use plans or land use analyses for lands it administers.

DEFINITIONS & REGULATION (Continued)

- (3) The Secretary may lease in any area where it is found either that there is no Federal interest in the surface or that the coal deposits in an area are insufficient to justify the costs of a Federal land use plan upon completion of a land use analysis in accordance with this section and 43 CFR part 1600.
- (c) In an area of Federal lands not covered by a completed comprehensive land use plan or scheduled for comprehensive land use planning, a member of the public may request the appropriate Bureau of Land Management State Office to prepare a land use analysis for coal related uses of the land as provided for in this group.
- (d) A comprehensive land use plan or land use analysis shall contain an estimate of the amount of coal recoverable by either surface or underground mining operations or both.
- (e) The major land use planning decision concerning the coal resource shall be the identification of areas acceptable for further consideration for leasing which shall be identified by the screening procedures listed below:
 - (1) Only those areas that have development potential may be identified as acceptable for further consideration for leasing. The Bureau of Land Management shall estimate coal development potential for the surface management agency. Coal companies, State and local governments and the general public are encouraged to submit information to the Bureau of Land Management at any time in connection with such development potential determinations. Coal companies, State and local governments and members of the general public may also submit non-confidential coal geology and economic data during the inventory phase of planning to the surface management agency conducting the land use planning. Where such information is determined to indicate development potential for an area, the area may be included in the land use planning for evaluation for coal leasing.
 - (2) The Bureau of Land Management or the surface managing agency conducting the land use planning shall, using the unsuitability criteria and procedures set out in subpart 3461 of this title, review Federal lands to assess where there are areas unsuitable for all or certain stipulated methods of mining. The unsuitability assessment shall be consistent with any decision of the Office of Surface Mining Reclamation and Enforcement to designate lands unsuitable or to terminate a designation in response to a petition.
 - (3) Multiple land use decisions shall be made which may eliminate additional coal deposits from further consideration for leasing to protect other resource values and land uses that are locally, regionally or nationally important or unique and that are not included in the unsuitability criteria discussed in paragraph (e) of this section. Such values and uses include, but are not limited to, those identified in section 522(a)(3) of the Surface Mining Reclamation and Control Act of 1977 and as defined in 30 CFR 762.5. In making these multiple use decisions, the Bureau of Land Management or the surface management agency conducting the land use planning shall place particular emphasis on protecting the following: Air and water quality; wetlands, riparian areas and sole-source aquifers; the Federal lands which, if leased, would adversely impact units of the National Park System, the National Wildlife Refuge System, the National System of Trails, and the National Wild and Scenic Rivers System.
 - (4)
 - (i) **While preparing a comprehensive land use plan or land use analysis, the Bureau of Land Management shall consult with all surface owners who meet the criteria in paragraphs (gg) (1) and (2) of § 3400.0-5 of this title, and whose lands overlie coal**

DEFINITIONS & REGULATION (Continued)

deposits, to determine preference for or against mining by other than underground mining techniques.

- (ii) For the purposes of this paragraph, any surface owner who has previously granted written consent to any party to mine by other than underground mining techniques shall be deemed to have expressed a preference in favor of mining. Where a significant number of surface owners in an area have expressed a preference against mining those deposits by other than underground mining techniques, that area shall be considered acceptable for further consideration only for development by underground mining techniques. In addition, the area may be considered acceptable for further consideration for leasing for development by other than underground techniques if there are no acceptable alternative areas available to meet the regional leasing level.
 - (iii) An area eliminated from further consideration by this subsection may be considered acceptable for further consideration for leasing for mining by other than underground mining techniques if:
 - (A) The number of surface owners who have expressed their preference against mining by other than underground techniques is reduced below a significant number because such surface owners have given written consent for such mining or have transferred ownership to unqualified surface owners; and
 - (B) The land use plan is amended accordingly.
- (f) In its review of cumulative impacts of coal development, the regional coal team shall consider any threshold analysis performed during land-use planning as required by § 1610.4-4 of this title and shall apply this analysis, where appropriate, to the region as a whole.

This page intentionally left blank.

Appendix G

Land Tenure Adjustment Categories

This page intentionally left blank.

TABLE OF CONTENTS

Appendix

Page

APPENDIX G. LAND TENURE ADJUSTMENT CATEGORIES.....	G-1
G.1 Alternative A.....	G-1
G.1.1 Retention Criteria.....	G-1
G.1.2 Disposal Criteria	G-1
G.1.3 Selection Criteria	G-2
G.1.4 Site-Specific Evaluation Criteria	G-2
G.2 Alternatives B, C, and D	G-4
G.2.1 Category 1 (Retention).....	G-4
G.2.2 Category 2 (Retention-Limited Disposal).....	G-4
G.2.3 Category 3 (Disposal)	G-4
G.2.4 Criteria for Landownership Adjustments.....	G-5
G.2.5 Further Guidance for Lands Available for Disposal	G-6
G.2.6 Legal Descriptions of Lands Available for Disposal	G-7

This page intentionally left blank.

Appendix G. Land Tenure Adjustment Categories

G.1 ALTERNATIVE A

This section describes the general guidance for the land pattern adjustment program and specific criteria used to assess the manageability and resource values of individual tracts under current management (Alternative A). This is documented in Appendix D of the 1987 Proposed RMP/Final EIS for North Dakota.

G.1.1 Retention Criteria

Manageable lands containing the following values would be retained:

- Wetlands and riparian areas determined to come under the definition of Executive Order 11990
- Areas of national economic significance, such as designated mineral resource areas, where the disposal of the surface would interfere with the logical development of the mineral estate
- Areas where management is cost effective or lands containing other important characteristics and public values that can best be managed in public ownership by the BLM, including but not limited to:
 - Strategic tracts along rivers, streams, lakes, ponds, springs, and trails
 - Important hunting or fishing areas
 - Recreation sites and areas
- Lands with a combination of broad multiple-use values
- Areas where future plans would lead to further consolidation and improvement of land patterns and reduce the costs of management
- Public lands withdrawn by the BLM for which the purpose of the withdrawal remains valid and the BLM can manage resource uses concurrently
- Public lands that provide public access and contain previously mentioned public values that, when considered together, warrant their retention

G.1.2 Disposal Criteria

Disposal decisions would be made in the public interest based upon the following criteria:

- Lands specifically identified through land use plans for sale, exchange, transfer, or Recreation and Public Purposes Act applications
- Lands of limited public value
- Widely scattered parcels that are difficult for the BLM to manage with anything beyond minimal custodial administration
- Lands with high public values managed better by other federal agencies, or state or local government
- Lands that would service important public objectives (such as community expansion) if outside of BLM administration

- Lands where disposal would aid in aggregating or repositioning other public lands or public land resource values in retention areas to facilitate national, state, and local objectives
- Lands with long-term unauthorized use problems, and that are not required for specific public purposes
- Lands where disposal would increase the range of economic opportunities provided to the general public
- Lands in which the highest value or most appropriate long-term use is agriculture, or commercial or industrial development
- Lands involved in BLM/Forest Service jurisdictional transfer and ongoing exchanges

G.1.3 Selection Criteria

All acquisition proposals would be evaluated to determine if the selected lands would:

- Facilitate access to areas retained for long-term public use
- Enhance congressionally designated areas, rivers, or trails
- Facilitate national, state, and local BLM priorities or mission statement needs
- Facilitate implementation and/or be consistent with BLM land use and activity plans
- Stabilize or enhance local economies or values
- Meet long-term public land management goals
- Be of sufficient size to improve use of adjoining public lands or, if isolated, large enough to allow the identified potential public land use
- Allow more diverse use, more intensive use, or a change in uses to better fulfill the BLM's mission
- Maintain or enhance important and recognized public land values; especially noteworthy are identified, designated, special, or high interest areas, or values identified in state comprehensive outdoor recreation plans.
- Enhance the opportunity for new or emerging public land uses or values
- Contribute to a wide spectrum of uses or a large number of public land users
- Facilitate management practices, uses, scale of operations, or degrees of management intensity that are viable under economic program efficiency standards
- Secure significant water-related land interests for the public. These interests include lakeshore, riverfront, stream, pond, or spring sites.

G.1.4 Site-Specific Evaluation Criteria

All proposed disposal and acquisition actions would be subject to a detailed environmental analysis prior to a final decision. In addition to meeting the general objectives and criteria presented above, each disposal or acquisition would be measured against the site-specific criteria presented below. The criteria include both manageability and resource quality factors. The criteria are grouped according to the relative importance an individual criterion would have in the decision-making process.

High Relative Weight

- Lands are in close proximity (i.e., within 150 miles) to the North Dakota Field Office.
- Lands are in close proximity (i.e., within 25 miles) to known retention lands.

- Parcels or contiguous parcels are large enough to manage effectively (320 acres or larger).
- The potential exists for intensive management through activity planning (e.g., allotment or habitat management plan and watershed management plan).
- There is a willing party for sale or exchange.
- There is the potential for unauthorized use to continue undetected given present funding and staffing (negative factor).
- There is a lack of management opportunities due to the movement of river channels and periodic flooding (negative factor).
- Lands contain high-quality riparian vegetation, which could be destroyed if transferred from public ownership.
- Lands are located along the Little Missouri River, the Missouri River, or a major tributary.
- Lands contain threatened or endangered wildlife species habitat.
- Rare plant and animal populations and exemplary natural communities of high interest to the state are present.
- Lands provide legal access to other public use areas.
- Lands contain noxious weeds (negative factor).

Moderate Relative Weight

- Lands are located in a 100-year floodplain.
- Lands contain wetlands that serve as groundwater recharge areas and have the potential to be drained, if disposed.
- Lands have a high potential for mineral materials development.
- Lands are located within a coal study area or coal lease.
- Lands contain high-quality woody vegetation, which could be lost if disposed.
- Lands contain high-quality native prairie, which could be lost if disposed.
- Lands serve as high-value wildlife habitat because of surrounding agriculturally disturbed lands.
- Lands possess value for the reduction of sediment or other pollutants, which could be lost if disposed.
- Lands contain cultural resources eligible or potentially eligible for the NRHP.
- Lands contain vertebrate fossils of significant scientific interest.
- Lands are located less than 50 miles from a city with a population greater than 500 people.
- Lands have legal access.
- Lands have legal and physical access.

Low Relative Weight

- Lands are presently leased or there is an opportunity to issue a grazing lease.
- There is an opportunity to eliminate all public lands in the county (negative factor).
- Lands contain authorized range improvements.
- Lands are inundated by water (negative factor).

G.2 ALTERNATIVES B, C, AND D

This section describes the general guidance for the land pattern adjustment program and specific criteria used to assess the manageability and resource values of individual tracts under Alternatives B, C, and D.

G.2.1 Category 1 (Retention)

- Lands with high resource values
- Areas such as ACECs, lands acquired with funding from the Land and Water Conservation Fund, and other congressionally designated areas
- Acquisition of lands or interest in lands would receive priority if located within and/or adjacent to BLM managed lands in Category 1 provided lands meet one or more of the criteria in Land Ownership Adjustment Criteria. (See below for criteria)
- Lands within Category 1 would not be transferred from BLM management by any method for the life of the plan; however, with the exception of lands acquired with funds from the Land and Water Conservation Fund, transfers to other public agencies would be considered where improved management efficiency would result.

G.2.2 Category 2 (Retention-Limited Disposal)

- Lands are generally for retention in public ownership.
- Lands would not be available for sale under FLPMA.
- Lands could be exchanged for lands or interest in lands when in the public interest and when resulting in a net resource value gain.
- Parcels may be identified for transfer under the Recreation and Public Purposes Act. Such recreation or public purpose use could be considered on a case-by-case basis. Examples include parcels for schools or other public administration, parks or recreation areas, or historic preservation.
- Lands could be considered for an airport purpose under the Airport and Airway Improvement Act, or for public agency jurisdictional transfer.
- Lands may contain significant resource values protected by law or policy, and any disposal action is contingent upon prior review and approval. If action cannot be taken to adequately mitigate impacts from disposal of those lands, the parcels would be retained. Exchanges and other conveyances of land containing special status species plants or wildlife habitat would be permitted only when would result in a net conservation gain.
- Acquisition of lands or interest in lands located within or adjacent to BLM-administered lands in Category 2 would be considered in accordance with the landownership adjustment criteria (see below for criteria).
- Where improved management efficiency would result, transfers to other public agencies would be considered.

G.2.3 Category 3 (Disposal)

- Lands are identified for disposal through any method, including sale.
- These lands are generally surrounded by private land with no legal access, or the BLM has selected them for disposal due to management issues.
- Disposal of lands by exchange would have priority over disposal by sale.

- In addition, parcels may be identified for transfer under the Recreation and Public Purposes Act. Such recreation or public purpose use could be considered on a case-by-case basis. Examples include parcels for schools or other public administration, parks or recreation areas, or historic preservation.
- Lands could be considered for an airport purpose under the Airport and Airway Improvement Act, or for public agency jurisdictional transfer on a case- by case basis.
- Where improved management efficiencies would result, transfers to other public agencies would be considered.

G.2.4 Criteria for Landownership Adjustments

Areas of National Significance

- Areas that have national environmental significance, including wilderness, wilderness study areas, and former wilderness studied for protective management
- ACECs
- Areas that have national cultural and recreational significance, including lands nominated or eligible for the National Register of Historic Places or designated as National Scenic and Historic Trails
- Areas that have important wildlife features, such as greater sage-grouse priority habitat management areas and general habitat management areas, threatened and endangered species habitat, prime fisheries habitat, big game seasonal habitat, waterfowl and upland game bird habitat, and habitat for sensitive species, including raptors and other nongame species
- Areas that have important watershed features, such as strategic tracts along rivers, streams, lakes, ponds, and springs

Areas Important to BLM Programs

- Areas that have important recreational and cultural features, such as hunting and fishing sites, and areas that contribute significantly to the interpretive potential of cultural resources already in public ownership
- Tracts of public land that are consolidated enough to make management of their resources cost effective, and that have physical and legal access
- Areas that provide access to other public lands with high resource values (including, but not limited to, recreation such as hunting, biking, and fishing)
- Access generally should allow for public use but, at the least, should allow administrative access to manage the resources.
- Areas usually contain a combination of multiple use values and have characteristics that facilitate BLM priorities on the national, state, and local level.
- Areas may have improvements that represent public investments; be encumbered by Recreation and Public Purposes Act leases, withdrawals, etc.; or be managed by cooperative agreements with other agencies.

Areas Important to the Economy

These areas include tracts having mineral potential, forestlands, rangelands and others that contribute to the stability of the local economy by virtue of federal ownership and the preservation of working lands.

Other Criteria

Federal minerals underlying nonfederal surface land would generally be retained in federal ownership. However, an exchange of this type of mineral estate may be considered on a case-by-case basis if found to be in the public interest. The sale of this type of mineral interest under Section 209(b) of FLPMA could be considered only if the requirements of this same section were met. Conversely, the acquisition of patented mining claims would also be addressed on a case-by-case basis.

G.2.5 Further Guidance for Lands Available for Disposal

The BLM develops most RMPs to guide management of land over 20 or more years. The Secretary of the Interior's policy is, generally, not to dispose of public lands. However, for long-term planning purposes, the situation may arise, especially in areas where public land tracts are isolated and difficult to manage, where it is useful for the BLM to identify these areas as suitable for leaving public ownership. Any decision regarding whether to dispose of a particular parcel under any particular authority, for instance by sale under Section 203 of FLPMA; exchange under Section 206 of FLPMA; or patent under the Recreation and Public Purposes Act of 1926, as amended, would require site-specific consideration and analysis. This would include, but not be limited to, considerations of access, popular recreational uses, the existence of cultural resources or habitat for species, and whether such a parcel, isolated from the rest of the public lands, might be better suited for nonfederal ownership.

Section 203 of the FLPMA specifies that the BLM may only sell a tract of public land under Section 203 if the tract is identified as a result of land use planning, pursuant to Section 202 of the FLPMA, as meeting one or more of the disposal criteria listed in Section 203. The RMP determination that a particular tract meets one or more of the criteria for disposal through sale does not necessarily mean the BLM would sell or dispose of the land by another means. Rather, the process for disposing of public lands under FLPMA Section 203 (Sales) or Section 206 (Exchanges), or any other authority, is a lengthy multi-decisional process requiring a comprehensive site-specific analysis, and cadastral, cultural, and other resource surveys, when necessary, prior to the sale or disposition of a tract of public land.

The BLM bases the determination whether a tract meets one or more of the Section 203 disposal criteria on its ongoing inventory of all public lands and their resources conducted pursuant to Section 201 of the FLPMA. The requirement under Section 203 that this determination be made through land use planning is consistent with the Section 202 requirement to manage public lands under land use plans, which represent a broader scope, longer-term approach to management of public lands in an entire planning area. They take into account a wide variety of possible uses of the public lands.

The management of lands and minerals returned to BLM administration through withdrawal revocation or title reversions (for example R&PP or Cemetery Act) will be managed in the same manner as comparable surrounding public lands. Disposal of lands returned to BLM administration through withdrawal revocation or expiration and title reversion will be addressed on a case-by-case basis.

In preparation for this land use planning initiative, the BLM conducted an inventory of the public land in the planning area to determine whether there are any tracts that meet one or more of the FLPMA Section 203 criteria for disposal out of federal ownership:

1. Such tract, because of its location or other characteristics, is difficult and uneconomic to manage as part of the public lands, and is not suitable for management by another federal department or agency; or

2. Such tract was acquired for a specific purpose and the tract is no longer required for that or any other federal purpose; or
3. Disposal of such tract would serve important public objectives, including but not limited to, expansion of communities and economic development, which cannot be achieved prudently or feasibly on land other than public land and which outweigh other public objectives and values, including, but not limited to, recreation and scenic values, which would be served by maintaining such tract in federal ownership.

G.2.6 Legal Descriptions of Lands Available for Disposal

The lands identified below meet Criteria 1 of Section 203 of FLPMA, described above, for disposal through sale. Additional environmental review may be needed to confirm the absence of sensitive resources that may warrant the parcel being retained in federal ownership.

T. 153 N., R. 75 W.,
sec. 25, NE1/4SW1/4.

T. 155 N., R. 76 W.,
sec. 10, NE1/4SW1/4.

T. 155 N., R. 77 W.,
sec. 9, NW1/4SE1/4.

T. 152 N., R. 77 W.,
sec. 23, SW1/4NE1/4

T. 148 N., R. 78 W.,
sec. 23, SW1/4NE1/4.

T. 150 N., R. 79 W.,
sec. 26, SE1/4NW1/4.

T. 151 N., R. 84 W.,
sec. 29, NE1/4SW1/4.

T. 159 N., R. 87 W.,
sec. 32, NE1/4SW1/4.

T. 156 N., R. 88 W.,
sec. 17, SW1/4NE1/4.

T. 156 N., R. 89 W.,
sec. 3, SE1/4NW1/4.

T. 142 N., R. 90 W.,
sec. 4, NE1/4SW1/4.

T. 154 N., R. 91 W.,
sec. 4, SW1/4NE1/4.

T. 155 N., R. 91 W.,
sec. 7, NW1/4SE1/4.

T. 154 N., R. 94 W.,
sec. 10, NE1/4SW1/4.

T. 155 N., R. 94 W.,
sec. 15, SW1/4NE1/4.

T. 154 N., R. 97 W.,
sec. 17, SW1/4NE1/4.

T. 156 N., R. 102 W.,
 sec. 14, NE1/4SW1/4 and NW1/4SE1/4.
T. 153 N., R. 103 W.,
 sec. 27, NE1/4SW1/4.
T. 142 N., R. 103 W.,
 sec. 32, SE1/4NW1/4.

Appendix H

Recreation Management Areas

This page intentionally left blank.

TABLE OF CONTENTS

Appendix

Page

APPENDIX H. RECREATION MANAGEMENT AREAS	H-1
---	-----

TABLES

Page

H-1	Schnell Ranch Special Recreation Management Area (Alternatives B and D, West Zone RMZ)	H-1
H-2	Schnell Ranch Special Recreation Management Area (Alternatives B and D: East Zone RMZ)	H-4
H-3	Figure Four Backcountry Conservation Area	H-6
H-4	Lost Bridge Backcountry Conservation Area	H-7

MAPS

Page

H-1	Alternatives B and D, Recreation Management Areas, Schnell Ranch Special Recreation Management Area.....	H-9
H-2	Alternatives B and D, Recreation Management Areas, Figure Four Backcountry Conservation Area	H-10
H-3	Alternatives B and D, Recreation Management Areas, Lost Bridge Backcountry Conservation Area	H-11
H-4	Alternative C, Recreation Management Areas, Schnell Ranch Special Recreation Management Area.....	H-12
H-5	Alternative C, Recreation Management Areas, Figure Four Backcountry Conservation Area.....	H-13
H-6	Alternative C, Recreation Management Areas, Lost Bridge Backcountry Conservation Area.....	H-14

This page intentionally left blank.

Appendix H. Recreation Management Areas

Table H-1
Schnell Ranch Special Recreation Management Area
(Alternatives B and D, West Zone RMZ)

Objective: Manage the Schnell Ranch SRMA for a variety of both developed and dispersed non-motorized recreation opportunities.

Map H-1, Alternatives B and D, Recreation Management Areas, Schnell Ranch Special Recreation Management Area and

Map H-4, Alternative C, Recreation Management Areas, Schnell Ranch Special Recreation Management Area

		Alternative A (No Action) No SRMA	Alternatives B and D Designate SRMA with RMZs	Alternative C Designate SRMA without RMZs
<i>Targeted Activities</i>		Not applicable	Camping, hiking, bicycling, horseback riding, hunting, fishing, and wildlife viewing.	Same as Alternative B
<i>Targeted Experiences</i>		Not applicable	• Low density, day use, non-motorized, community backyard recreation • Enjoying access to close-to-home outdoor amenities. • Enjoying social interactions and family togetherness. • Enjoying participation in outdoor activities. • Getting physical exercise.	Same as Alternative B.
<i>Targeted Benefits</i>		Not applicable	• Enhanced ability for visitors to find areas providing recreation experiences and benefits. • Developing improved community cooperation and involvement with site maintenance.	Same as Alternative B.
Recreation Setting Characteristics				
<i>Physical</i>	<i>Remoteness</i>	Not applicable	Front Country	Front Country
	<i>Naturalness</i>	Not applicable	Front Country	Front Country
	<i>Facilities</i>	Not applicable	Middle Country	Middle Country
<i>Social</i>	<i>Contacts</i>	Not applicable	Back Country	Back Country
	<i>Group Size</i>	Not applicable	Back Country	Back Country
	<i>Evidence of Use</i>	Not applicable	Middle Country	Middle Country

		Alternative A (No Action) No SRMA	Alternatives B and D Designate SRMA with RMZs	Alternative C Designate SRMA without RMZs
<i>Operational</i>	<i>Access</i>	Not applicable	Back Country	Back Country
	<i>Visitor Services</i>	Not applicable	Back Country	Back Country
	<i>Management Controls</i>	Not applicable	Middle Country	Middle Country
Allocations				
<i>Rights-of-Way</i>		Not applicable	Avoidance for new subsurface ROWs. Exclusion for new surface ROWs.	Same as Alternative B.
<i>Realty</i>		Not applicable	Acquire lands through exchange, purchase, or donation to enhance recreational opportunities and outcomes. Manage acquired lands within or adjacent to the SRMA as part of the SRMA.	Same as Alternative B.
<i>R&PP</i>		Not applicable	Authorize targeted/ prescribed grazing for resource benefit through an R&PP lease.	Authorize prescribed grazing under an R&PP lease or free-use grazing permit under 43 CFR 4100; targeted grazing to reduce wildfire risk authorized under 4190.1.
<i>VRM</i>		Not applicable	Class III.	Same as Alternative B.
<i>Leasable Minerals: Fluids</i>		Not applicable	N/A (<i>no federal fluid minerals present</i>).	Same as Alternative B.
<i>Leasable Minerals: Coal</i>		Not applicable	Unacceptable for leasing (<i>not within coal potential</i>).	Same as Alternative B.
<i>Leasable Minerals: Nonenergy Solids</i>		Not applicable	Closed.	Same as Alternative B.
<i>Locatable Minerals</i>		Not applicable	Alternative B – Recommend withdrawal from locatable mineral entry. Alternative D – Not recommended for withdrawal from locatable mineral entry.	Not recommended for withdrawal from locatable mineral entry
<i>Mineral Materials</i>		Not applicable	Closed.	Same as Alternative B.
<i>Facility Development</i>		Not applicable	Expand trail system and develop facilities (e.g., picnic shelters) to support visitation levels.	Same as Alternative B.
<i>Camping Restrictions</i>		Not applicable	N/A (<i>Standard restrictions</i>).	Same as Alternative B.
<i>Special Recreation Permits</i>		Not applicable	Issue SRPs that are beneficial or neutral to SRMA objectives.	Same as Alternative B.
<i>Travel Management</i>		Not applicable	Closed (except campground road).	Same as Alternative B.

	Alternative A (No Action) No SRMA	Alternatives B and D Designate SRMA with RMZs	Alternative C Designate SRMA without RMZs
<i>Livestock Grazing</i>	Not applicable	Unavailable for standard term livestock grazing leases. Prescribed grazing may be authorized through non-standard, free use, or temporary nonrenewable leasing for the benefit of other resources and not as a commodity use.	Same as Alternative B.
<i>Forestry</i>	Not applicable	Permit the collection of dead and downed wood where beneficial or neutral to SRMA objectives.	Same as Alternative B.

Table H-2
Schnell Ranch Special Recreation Management Area
(Alternatives B and D: East Zone RMZ)

Objective: Manage the Schnell Ranch SRMA for a variety of both developed and dispersed non-motorized recreation opportunities.

Map H-1, Alternatives B and D, Recreation Management Areas, Schnell Ranch Special Recreation Management Area and

Map H-4, Alternative C, Recreation Management Areas, Schnell Ranch Special Recreation Management Area

		Alternative A (No Action) No SRMA	Alternatives B and D Designate SRMA with RMZs	Alternative C Designate SRMA without RMZs
<i>Targeted Activities</i>		Not applicable	Camping, hiking, bicycling, horseback riding, hunting, fishing, and wildlife viewing.	Same as Alternative B.
<i>Targeted Experiences</i>		Not applicable	• Low density, day use, non-motorized, community back-forty recreation. • Enjoying access to close-to-home outdoor amenities. • Enjoying exploration. • Enjoying social interactions and family togetherness. • Enjoying participation in outdoor activities. • Getting physical exercise.	Same as Alternative B.
<i>Targeted Benefits</i>		Not applicable	• Enhanced ability for visitors to find areas providing recreation experiences and benefits. • Experiencing greater self-reliance. • Developing improved community cooperation and involvement with site maintenance.	Same as Alternative B.
Recreation Setting Characteristics				
<i>Physical</i>	<i>Remoteness</i>	Not applicable	Middle Country	Middle Country
	<i>Naturalness</i>	Not applicable	Back Country	Back Country
	<i>Facilities</i>	Not applicable	Back Country	Back Country
<i>Social</i>	<i>Contacts</i>	Not applicable	Back Country	Back Country
	<i>Group Size</i>	Not applicable	Back Country	Back Country
	<i>Evidence of Use</i>	Not applicable	Back Country	Back Country
<i>Operational</i>	<i>Access</i>	Not applicable	Back Country	Back Country
	<i>Visitor Services</i>	Not applicable	Back Country	Back Country
	<i>Management Controls</i>	Not applicable	Back Country	Back Country

	Alternative A (No Action) No SRMA	Alternatives B and D Designate SRMA with RMZs	Alternative C Designate SRMA without RMZs
Allocations			
<i>Rights-of-Way</i>	Not applicable	ROW Exclusion.	Avoidance for new subsurface ROWs Exclusion for new surface ROWs.
<i>Realty</i>	Not applicable	Acquire lands through exchange, purchase, or donation to enhance recreational opportunities and outcomes. Manage acquired lands within or adjacent to the SRMA as part of the SRMA.	Same as Alternative B.
<i>R&PP</i>	Not applicable	Authorize targeted/ prescribed grazing for resource benefit through an R&PP lease.	Authorize prescribed grazing under an R&PP lease or free-use grazing permit under 43 CFR 4100; targeted grazing to reduce wildfire risk authorized under 4190.1.
<i>VRM</i>	Not applicable	Class II.	Same as Alternative B.
<i>Leasable Minerals: Fluids</i>	Not applicable	N/A (<i>no federal fluid minerals present</i>).	Same as Alternative B.
<i>Leasable Minerals: Coal</i>	Not applicable	Unacceptable for leasing (<i>not within coal potential</i>).	Same as Alternative B.
<i>Leasable Minerals: Nonenergy Solids</i>	Not applicable	Closed.	Same as Alternative B.
<i>Locatable Minerals</i>	Not applicable	Alternative B – Recommend withdrawal from locatable mineral entry. Alternative D – Not recommended for withdrawal from locatable mineral entry.	Not recommended for withdrawal from locatable mineral entry.
<i>Mineral Materials</i>	Not applicable	Closed.	Same as Alternative B.
<i>Facility Development</i>	Not applicable	- Limited facilities. - Expand trail system to support visitation levels.	Same as Alternative B.
<i>Special Recreation Permits</i>	Not applicable	Issue SRPs that are beneficial or neutral to SRMA objectives.	Same as Alternative B.
<i>Travel Management</i>	Not applicable	Closed.	Same as Alternative B.
<i>Livestock Grazing</i>	Not applicable	Unavailable for standard term livestock grazing leases. Prescribed grazing may be authorized through non-standard, free use, or temporary nonrenewable leasing for the benefit of other resources and not as a commodity use.	Same as Alternative B.
<i>Forestry</i>	Not applicable	Permit the collection of dead and downed wood where beneficial or neutral to SRMA objectives.	Same as Alternative B.

Table H-3
Figure Four Backcountry Conservation Area

Objective: Manage the Figure Four Backcountry Conservation Area for as an intact landscape to provide visitors a primitive recreation experience with a focus on big game hunting and the associated wildlife habitat.

Map H-2, Alternatives B and D, Recreation Management Areas, Figure Four Backcountry Conservation Area

Map H-5, Alternative C, Recreation Management Areas, Figure Four Backcountry Conservation Area

		Alternative A (No Action) No BCA	Alternatives B and D <i>Designate Figure Four</i>	Alternative C <i>Designate Figure Four (Reduced Acreage)</i>
<i>Targeted Activities</i>		Not applicable	Manage for primitive recreation in support of hunting.	Same as Alternative B.
Recreation Setting Characteristics				
<i>Physical</i>	<i>Remoteness</i>	Not applicable	Back Country	Same as Alternative B.
	<i>Naturalness</i>	Not applicable	Middle Country	Same as Alternative B.
	<i>Facilities</i>	Not applicable	Primitive	Same as Alternative B.
<i>Social</i>	<i>Contacts</i>	Not applicable	Primitive	Same as Alternative B.
	<i>Group Size</i>	Not applicable	Primitive	Same as Alternative B.
	<i>Evidence of Use</i>	Not applicable	Back Country	Same as Alternative B.
<i>Operational</i>	<i>Access</i>	Not applicable	Back Country	Same as Alternative B.
	<i>Visitor Services</i>	Not applicable	Primitive	Same as Alternative B.
	<i>Management Controls</i>	Not applicable	Primitive	Same as Alternative B.
Allocations				
<i>Rights-of-Way</i>		Not applicable	ROW avoidance for all ROWs.	Same as Alternative B.
<i>Realty</i>		Not applicable	Improve public access and expand recreational opportunities by acquiring lands or access easements. Manage lands acquired adjacent to the BCA as part of the BCA.	Same as Alternative B.
<i>VRM</i>		Not applicable	VRM Class II.	Same as Alternative B.
<i>Leasable Minerals: Fluids</i>		Not applicable	NSO (<i>note: partially leased</i>).	Same as Alternative B.
<i>Leasable Minerals: Coal</i>		Not applicable	Unacceptable for leasing (<i>not within coal potential</i>).	Same as Alternative B.
<i>Leasable Minerals: Nonenergy Solids</i>		Not applicable	Closed.	Same as Alternative B.
<i>Locatable Minerals</i>		Not applicable	Not recommended for withdrawal from locatable mineral entry.	Same as Alternative B.

	Alternative A (No Action) No BCA	Alternatives B and D Designate Figure Four	Alternative C Designate Figure Four (Reduced Acreage)
<i>Mineral Materials</i>	Not applicable	Closed.	Same as Alternative B.
<i>Camping Restrictions</i>	Not applicable	N/A (<i>Standard restrictions</i>).	Same as Alternative B.
<i>Special Recreation Permits</i>	Not applicable	Issue SRPs that are beneficial or neutral to SRMA objectives.	Same as Alternative B.
<i>Travel Management</i>	Not applicable	Limited.	Same as Alternative B.

**Table H-4
Lost Bridge Backcountry Conservation Area**

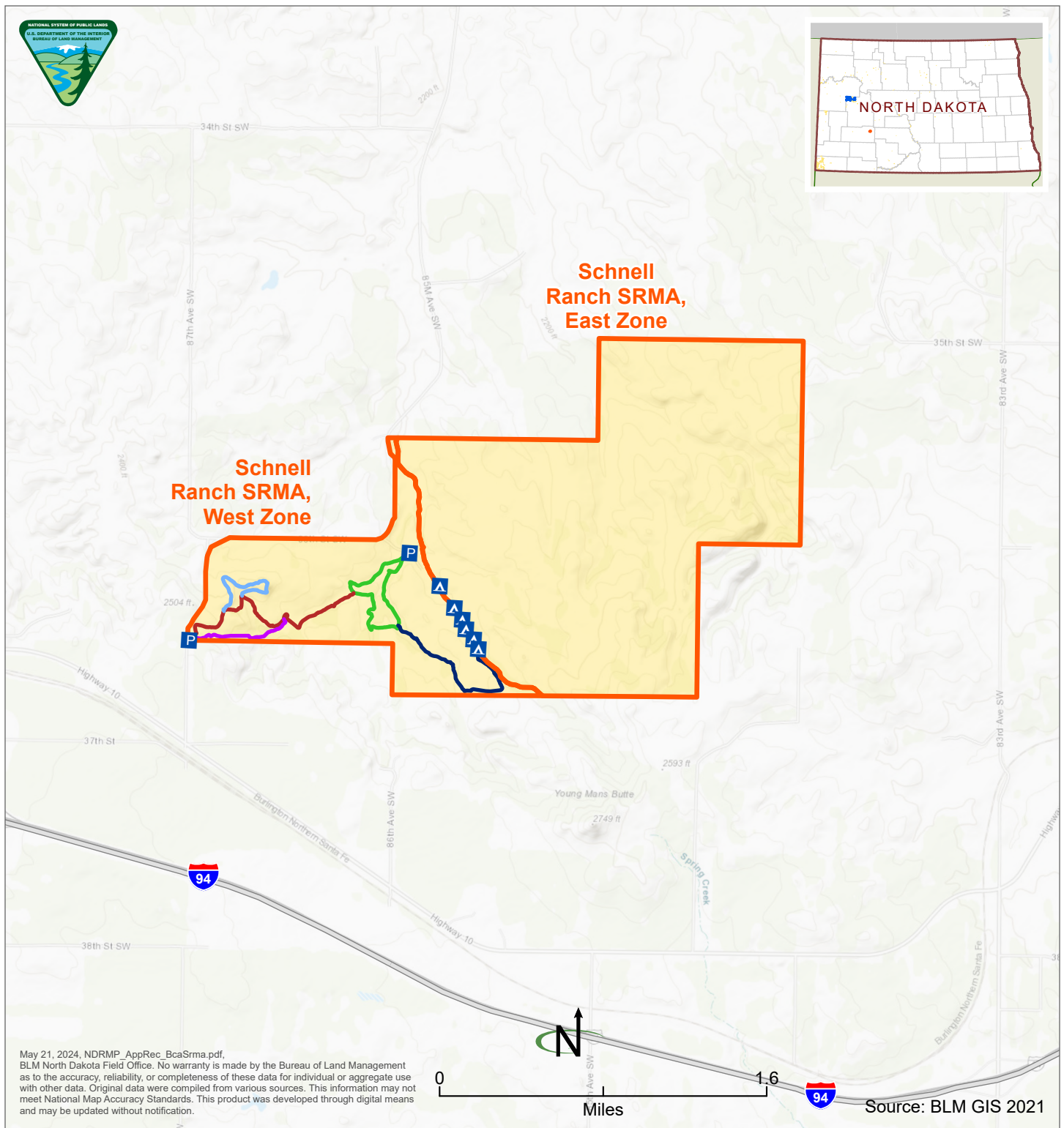
Objective: Manage the Lost Bridge Backcountry Conservation Area for as an intact landscape to provide visitors a primitive recreation experience with a focus on big game hunting and the associated wildlife habitat.

Map H-3, Alternatives B and D, Recreation Management Areas, Lost Bridge Backcountry Conservation Area

Map H-6, Alternative C, Recreation Management Areas, Lost Bridge Backcountry Conservation Area

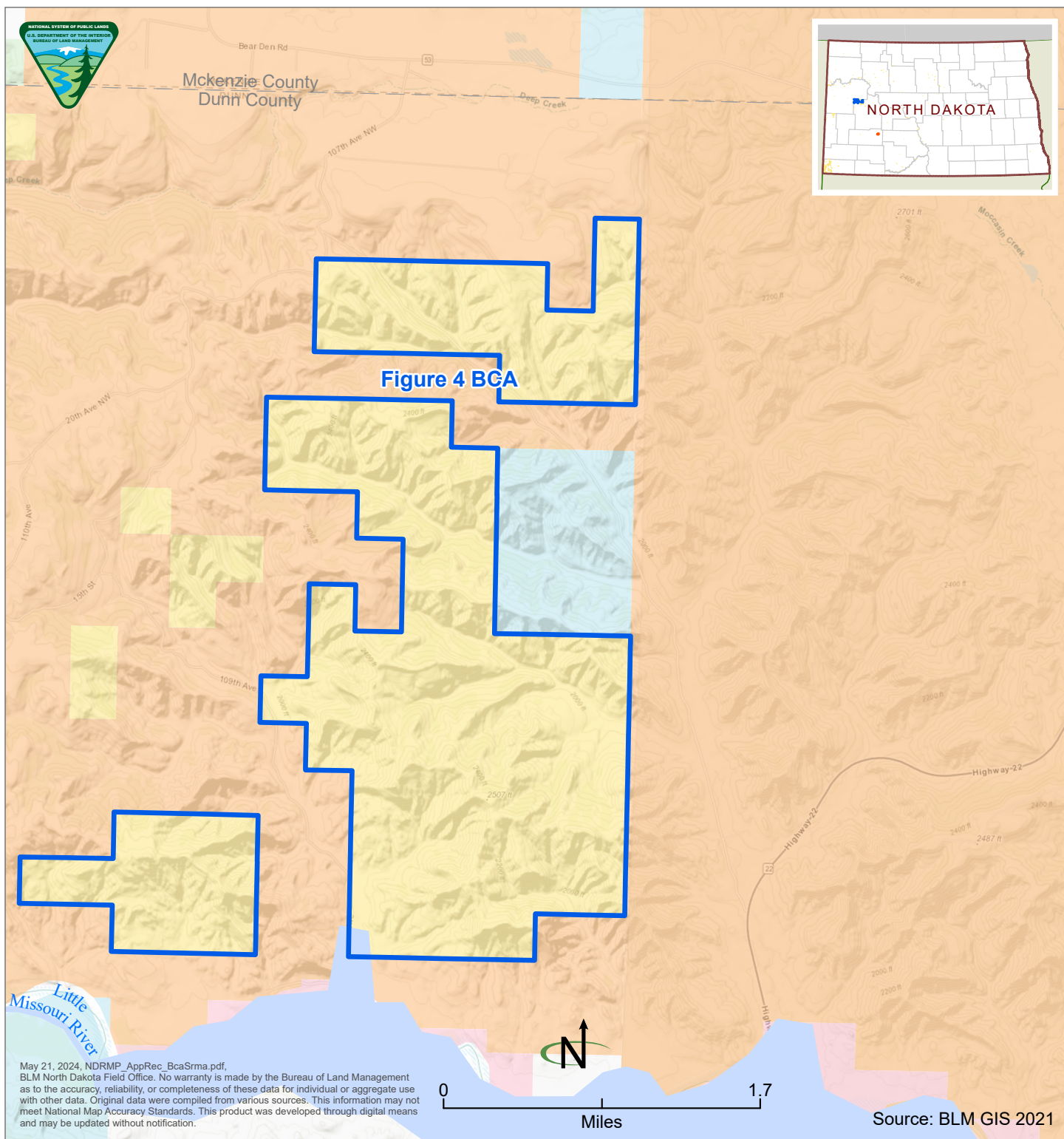
		Alternative A (No Action) No BCA	Alternatives B and D Designate Lost Bridge	Alternative C Designate Lost Bridge (Reduced Acreage)
<i>Targeted Activities</i>		Not applicable	Manage for primitive recreation in support of hunting.	Same as Alternative B.
Recreation Setting Characteristics				
<i>Physical</i>	<i>Remoteness</i>	Not applicable	Back Country	Same as Alternative B.
	<i>Naturalness</i>	Not applicable	Middle Country	Same as Alternative B.
	<i>Facilities</i>	Not applicable	Primitive	Same as Alternative B.
<i>Social</i>	<i>Contacts</i>	Not applicable	Primitive	Same as Alternative B.
	<i>Group Size</i>	Not applicable	Primitive	Same as Alternative B.
	<i>Evidence of Use</i>	Not applicable	Back Country	Same as Alternative B.
<i>Operational</i>	<i>Access</i>	Not applicable	Back Country	Same as Alternative B.
	<i>Visitor Services</i>	Not applicable	Primitive	Same as Alternative B.
	<i>Management Controls</i>	Not applicable	Primitive	Same as Alternative B.

	Alternative A (No Action) No BCA	Alternatives B and D Designate Lost Bridge	Alternative C Designate Lost Bridge (Reduced Acreage)
Allocations			
<i>Rights-of-Way</i>	Not applicable	ROW avoidance for all ROWs.	Same as Alternative B.
<i>Realty</i>	Not applicable	Improve public access and expand recreational opportunities by acquiring lands or access easements. Manage lands acquired adjacent to the BCA as part of the BCA.	Same as Alternative B.
<i>VRM</i>	Not applicable	VRM Class II.	Same as Alternative B.
<i>Leasable Minerals: Fluids</i>	Not applicable	NSO (<i>note: already leased</i>).	Same as Alternative B.
<i>Leasable Minerals: Coal</i>	Not applicable	Unacceptable for leasing (<i>not within coal potential</i>).	Same as Alternative B.
<i>Leasable Minerals: Nonenergy Solids</i>	Not applicable	Closed.	Same as Alternative B.
<i>Locatable Minerals</i>	Not applicable	Not recommended for withdrawal from locatable mineral entry.	Same as Alternative B.
<i>Mineral Materials</i>	Not applicable	Closed.	Same as Alternative B.
<i>Camping Restrictions</i>	Not applicable	N/A (<i>Standard restrictions</i>).	Same as Alternative B.
<i>Special Recreation Permits</i>	Not applicable	Issue SRPs that are beneficial or neutral to SRMA objectives.	Same as Alternative B.
<i>Travel Management</i>	Not applicable	Limited.	Same as Alternative B.



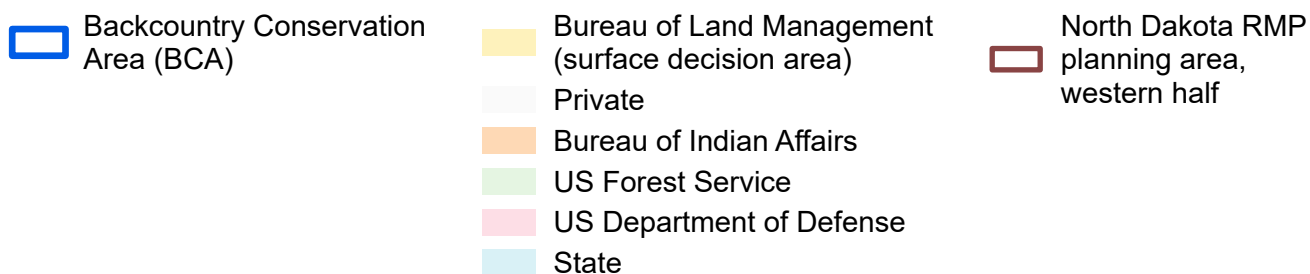
Map H-1 Alternatives B and D, Recreation Management Areas, Schnell Ranch SRMA

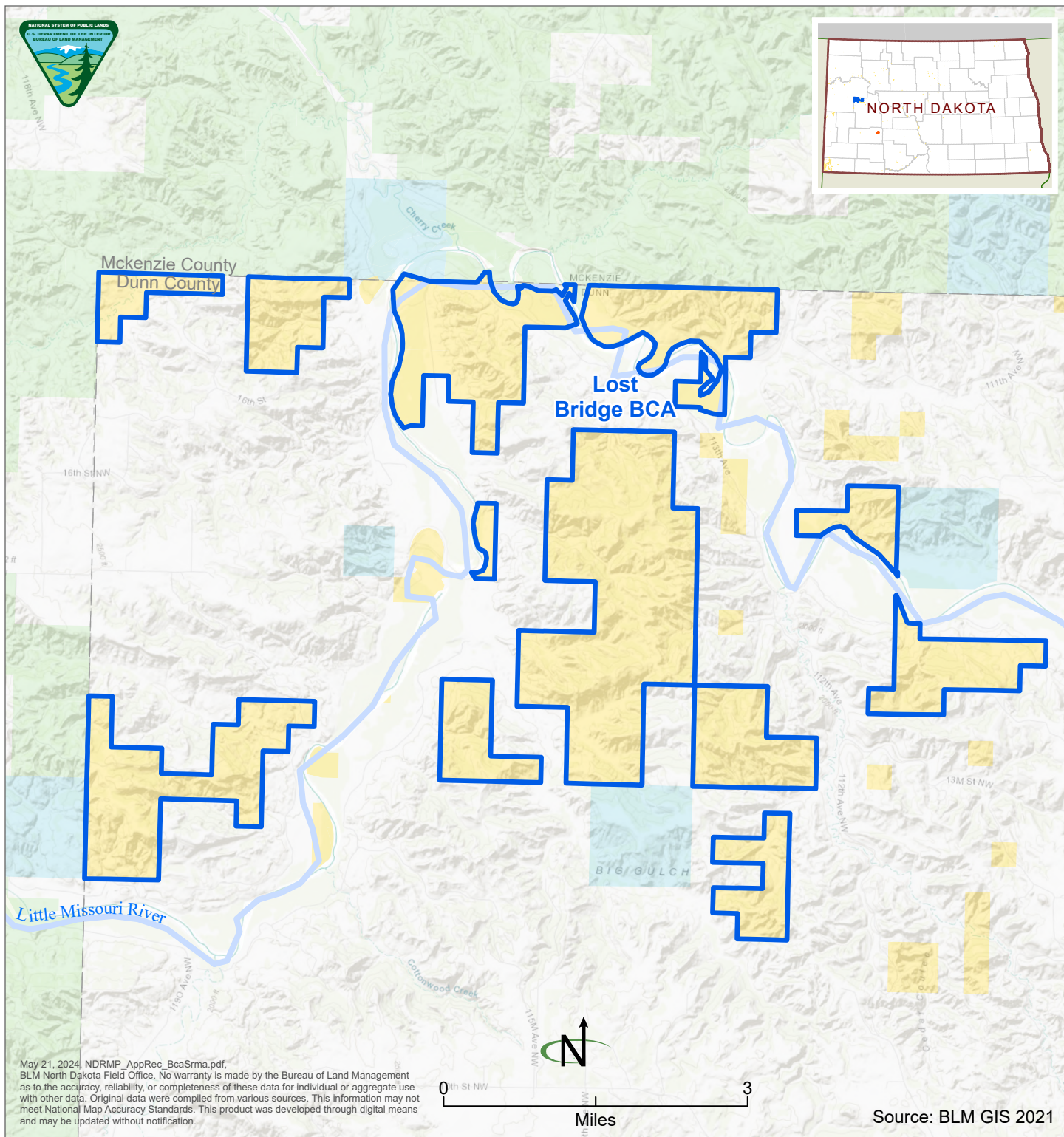
- | | | |
|---|---|--|
| Special Recreation Management Area (SRMA) | Parking or camping facility | North Dakota RMP planning area, western half |
| Bur Oak Nature Loop | Bureau of Land Management (surface decision area) | |
| Campground Trail | Private | |
| Grassland Trail | | |
| Hilltop Trail | | |
| Woodland Trail | | |



Map H-2

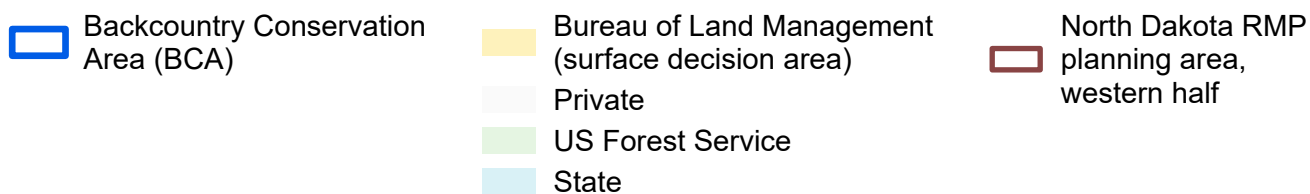
Alternatives B and D, Recreation Management Areas, Figure 4 BCA

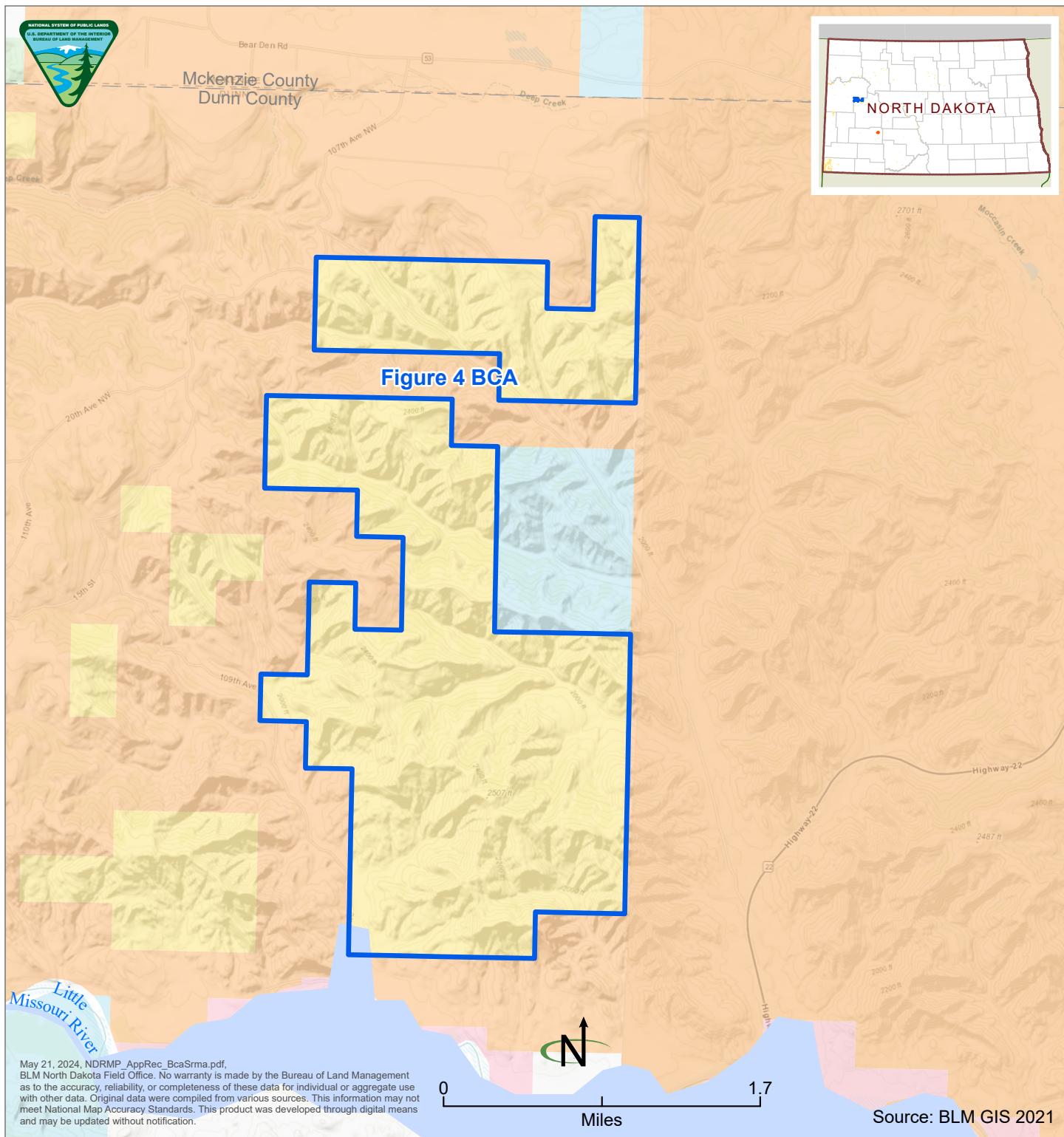




Map H-3

Alternatives B and D, Recreation Management Areas, Lost Bridge BCA





Map H-5

Alternative C, Recreation Management Areas, Figure 4 BCA

 Backcountry Conservation Area (BCA)

 Bureau of Land Management (surface decision area)

 Private

 Bureau of Indian Affairs

 US Forest Service

 US Department of Defense

 State

 North Dakota RMP planning area, western half

Appendix I

Approach to the Environmental Analysis

This page intentionally left blank.

TABLE OF CONTENTS

Appendix

Page

APPENDIX I. APPROACH TO THE ENVIRONMENTAL ANALYSIS.....		I-1
I.1	Introduction.....	I-1
I.2	Direct and Indirect Impacts.....	I-1
I.3	Cumulative Impacts	I-2
I.3.1	Method	I-2
I.3.2	Past, Present, and Reasonably Foreseeable Future Actions.....	I-3
I.3.3	Actions Not Included in the Cumulative Analysis	I-6
I.4	Resource Methodology, Indicators, and Assumptions.....	I-6
I.4.1	Air Quality and Climate.....	I-7
I.4.2	Soil Resources.....	I-10
I.4.3	Water Resources	I-11
I.4.4	Vegetation Communities	I-12
I.4.5	Wildlife	I-14
I.4.6	Fish and Aquatic Species.....	I-15
I.4.7	Wildland Fire Ecology and Management	I-16
I.4.8	Cultural Resources	I-17
I.4.9	Paleontological Resources	I-19
I.4.10	Visual Resources.....	I-21
I.4.11	Lands and Realty	I-22
I.4.12	Energy and Minerals.....	I-23
I.4.13	Recreation	I-25
I.4.14	Livestock Grazing.....	I-26
I.4.15	Areas of Critical Environmental Concern.....	I-27
I.4.16	Wild and Scenic Rivers.....	I-28
I.4.17	National Scenic and Historic Trails	I-29
I.4.18	Social and Economic Conditions	I-30
I.4.19	Environmental Justice.....	I-33
I.4.20	Tribal Interests	I-35
I.4.21	Public Health and Safety.....	I-37
I.5	References.....	I-38

TABLE

Page

I-1	Past, Present, and Reasonably Foreseeable Future Actions Considered in the Cumulative Effects Analysis.....	I-4
-----	---	-----

This page intentionally left blank.

Appendix I. Approach to the Environmental Analysis

I.1 INTRODUCTION

This appendix presents the background for and approach to identifying the environmental, social, and economic impacts on the human and natural environment that are predicted to result from implementing the alternatives presented in **Chapter 2**. The goals, objectives, and actions described in **Chapter 2** by alternative are plan-level decisions and do not result in direct, on-the-ground changes. Plan-level decisions establish allocations that identify the uses that are allowed, restricted, or prohibited on BLM-administered lands and federal mineral estate. These allocations set the stage to guide future land management actions and subsequent site-specific or implementation decisions and the corresponding resource use levels.

Based on the allocations in each of the alternatives, the BLM identified reasonably foreseeable development scenarios or estimated the level of activities that are predicted to occur on an average annual basis on BLM-administered lands and federal mineral estate. This was done to provide context for the environmental analysis of each of the alternatives. Some estimated use levels, such as animal unit months, are identified in the descriptions of the alternatives; some, such as fuels treatments, are estimated based on past activity levels; and some, such as oil and gas, are based on anticipated demand for a particular resource.

Because the alternatives provide a broad management framework, the exact location, timing, and level of development or resource extraction are not known and cannot be accurately predicted. The actual levels of activities may be more than or less than the levels estimated for analysis purposes; however, the estimated levels allow the BLM to analyze and display the relative differences among the alternatives.

Impact analyses and conclusions are based on interdisciplinary team knowledge of the resources and the planning area, information provided by experts in the BLM, monitoring data and information contained in pertinent literature, and professional judgment. The baseline used for the impact analysis is the current condition or situation, as described in the *Affected Environment* section of **Chapter 3**.

The methodology for the impact assessment conforms to the guidance found in the following sections of the Council on Environmental Quality regulations for implementing the National Environmental Policy Act (NEPA): 40 Code of Federal Regulations (CFR) 1502.24 (Methodology and Scientific Accuracy), 40 CFR 1508.7 (Cumulative Impact), and 40 CFR 1508.8 (Effects). The Council on Environmental Quality regulations require that agencies “rigorously explore and objectively evaluate” the impact of all alternatives.

I.2 DIRECT AND INDIRECT IMPACTS

Direct and indirect impacts are considered in **Chapter 3**:

Direct Effects—Effects that are caused by the proposed action and occur at the same time and place. Examples of direct effects are filling of wetlands through the placement of gravel pads, and direct mortality of wildlife or vegetation.

Indirect Effects—Effects that are caused by the proposed action and are later in time or farther removed in distance but are still reasonably foreseeable. Indirect effects “may include growth

inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.” Indirect effects are caused by the proposed action, but do not occur at the same time or place as the direct effects.

Potential effects are quantified where possible using GIS and other applications; in the absence of quantitative data, best professional judgment prevailed. Impacts are sometimes described using ranges of potential impacts or in qualitative terms. The standard definitions for terms used in the analysis are as follows, unless otherwise stated:

Context—Describes the area or location (site-specific, local, planning area-wide, or regional) in which the potential impact would occur. Site-specific impacts would occur at the location of the action, local impacts would occur in the decision area, planning area-wide impacts would affect most or all of the planning area, and regional impacts would extend beyond the planning area boundaries.

Duration—Describes the length of time an effect would occur, either short term or long term. The temporal scale of effects is defined for each resource in **Section I.4**, below.

Intensity—Impacts are discussed using quantitative data where possible.

I.3 CUMULATIVE IMPACTS

The cumulative impact analysis considers impacts of a proposed action and its alternatives that may not be consequential when considered individually; however, when they are combined with impacts of other actions, they may be consequential.

The purpose of the cumulative impacts analysis is to determine if the impacts of the actions considered in this EIS, together with other past, present, and reasonably foreseeable future actions, could interact or accumulate over time and space, either through repetition or combined with other impacts, and under what circumstances and to what degree they might accumulate.

Additional requirements of other regulatory agencies would further reduce any cumulative impacts.

I.3.1 Method

The method used for cumulative impacts analysis in the North Dakota RMP/EIS consists of the following steps:

- Identify issues, characteristics, and trends in the affected environment that are relevant to assessing cumulative effects of the action alternatives. This includes discussions on lingering effects from past activities that demonstrate how they have contributed to the baseline condition for each resource. This information is summarized in **Chapter 3**.
- Define the spatial (geographic) and temporal (time) frame for the analysis. This timeframe may vary between resources depending on the historical data available and the relevance of past events to the current baseline.
- Identify past, present, and reasonably foreseeable future actions (RFFAs) from human activities that could have additive or synergistic effects. Summarize past and present actions within the

defined temporal and spatial time frames, and identify any RFFAs that could have additive, countervailing, or synergistic effects on identified resources.

- Use a specific method to screen all of the direct and indirect effects, when combined with the effects of external actions, to capture those synergistic and incremental effects that are potentially cumulative in nature. Both adverse and beneficial effects of external factors are assessed and then evaluated in combination with the direct and indirect effects for each alternative on the various resources to determine if there are cumulative effects.
- Evaluate the impact of the potential cumulative effects and assess the relative contribution of the action alternatives to cumulative effects.
- Discuss rationale for determining the impact rating, citing evidence from the peer-reviewed literature, and quantitative information where available. When confronted with incomplete or unavailable information, ensure compliance with 40 CFR 1502.22.

The analysis also considers the interaction among the impacts of the alternatives with the impacts of various past, present, and RFFAs, as follows:

- Additive—the impacts of actions add together to make up the cumulative impact
- Countervailing—the impacts balance or mitigate the impacts of other actions
- Synergistic—the impact of the actions together is greater than the sum of their individual impacts

In the North Dakota RMP/EIS, both the temporal and geographic scope of the cumulative impact analysis could vary according to the resource under consideration. Generally, the appropriate timeframe for cumulative impacts analysis spans from the 1970s through full realization of the reasonably foreseeable development (RFD) scenarios (BLM 2022a, 2022b, 2022c), which is anticipated to occur over the life of the plan. Climate change may require a larger temporal scale to see measurable changes. The geographic scope generally encompasses the planning area and beyond for some resources (e.g., air resources). Details associated with the impact indicators, geographic scope, and analysis assumptions for each resource are found in **Section I.4**, below.

I.3.2 Past, Present, and Reasonably Foreseeable Future Actions

Relevant past and present actions are those that have influenced the current condition of the resource. For the purposes of this RMP/EIS, past and present actions are human-controlled events. Past actions were identified using agency documentation, NEPA analyses, reports and resource studies, peer-reviewed literature, and best professional judgment.

The term RFFA is used in concert with the CEQ definitions of indirect and cumulative effects, but the term itself is not defined further. Most regulations that refer to “reasonably foreseeable” do not define the meaning of the words, but do provide guidance on the term. Typically, RFFAs are based on such documents as plans, permit applications, and fiscal appropriations. RFFAs considered in the cumulative effects analysis consist of projects, actions, or developments that can be projected, with a reasonable degree of confidence, to occur over the life of the plan.

Recent environmental reports, surveys, research plans, NEPA compliance documents, and other source documents were evaluated to identify these actions. RFFAs were assessed to determine if they were speculative and would occur within the analytical timeframe of the North Dakota RMP/EIS. Projects and activities considered in the cumulative effects analysis are summarized in **Table I-1**.

Table I-1
Past, Present, and Reasonably Foreseeable Future Actions Considered in the Cumulative Effects Analysis

Human Actions that Contribute to Cumulative Impacts	
Energy and minerals development	Over the next 20 years, approximately 43,000 new production and support wells and 56,000 acres of new disturbance is expected across the planning area. The BLM anticipates an average of 1,323 spills annually, spilling an average of 15,946 barrels of oil and 2,488,616 gallons of produced water and brine¹. No locatable mineral development in the planning area is occurring at the time of writing, so future development is not projected. No nonenergy leasable mineral development in the planning area is occurring at the time of writing, so future development is not projected. Mineral materials authorizations would, on average, affect 40 acres of federal estate (BLM surface or split-estate) and produce approximately 452,000 cubic yards of commodity and approximately 72,000 cubic yards of overburden each year throughout the planning period. In addition to the production of federal coal, it is anticipated that 420.15million tons of nonfederal coal would be developed through 2040. This is approximately 3.5 times more than the anticipated 120.11million tons of federal coal production in the same period. Surface disturbance related to the development of federal coal is anticipated to be approximately 9,434 acres through the end of 2040, except for under Alternative B.1 under which 7,766 acres of surface disturbance would occur through the end of 2040. Additional surface disturbance would occur from nonfederal coal production.
Water use	Based on the projected number of new wells from 2020 through 2040, an estimated 987,000 acre-feet (322 billion gallons) of water is expected to be required for drilling and fracturing new wells in the planning area.

¹ Spill data averaged from 2011 – 2020.

Human Actions that Contribute to Cumulative Impacts	
Lands and realty	Federal agencies within the planning area will continue manage their lands according to their policies and management documents, such as the Theodore Roosevelt National Park Superintendent's Compendium (NPS 2021). Local and Tribal governments will continue to prepare and update land use planning documents, such as the 2012 Bowman County Comprehensive Plan (Bowman County 2012). Tribal governments in the planning area explore land purchases to expand business development and will continue to do so. Federally recognized Tribes will continue to put more of their lands in trust. Current roads are filling the needs of the oil and gas companies. However, any new oil and gas wells may include a new road to the location. There is one current 230-kilovolt line in the planning area, totaling approximately 13 acres. There are no existing transmission lines greater than 230 kilovolts. There is one potential proposal totaling approximately 15 acres for a transmission line greater than 230 kilovolts (BLM 2015a). The BLM anticipates approximately 3-4 new ROW authorizations accounting for 41 acres of disturbance annually.²
Renewable energy	Commercial wind developments have been constructed on private lands in the eastern and central parts of North Dakota, and there has been recent development of wind farms in the western part of the state; however, there has been no interest in developing wind farms on any BLM-administered lands in North Dakota.
Vegetation management	Fuels treatments that include mechanical, biological, and chemical treatments and prescribed fire to reduce hazardous fuels and undesirable vegetation were used in the past on BLM-administered land and private rangelands in the planning area. These treatments, and maintenance of these vegetation treatments, will likely continue on BLM-administered and private lands. In addition, manual, biological, chemical, and mechanical treatments of noxious weeds and invasive plants are likely to continue in the foreseeable future. <i>Specific Vegetation Treatments</i> There is a potential conifer encroachment reduction project on BLM-administered lands within the southern portion of the Greater Sage-Grouse Priority Habitat Management Area (PHMA) core area. The project would not include prescribed fire. On private lands within Bowman and Slope Counties, the following has been accomplished since 2010 through the Natural Resources Conservation Service's Sage Grouse Initiative: • 41 contracts that cover 73,993 acres have been written to improve Greater Sage-Grouse habitat (13 contracts have been completed in the 3 years of the initiative and 28 are currently active). • 2,308 acres of cover crops have been planted to provide brood habitat for Greater Sage-Grouse chicks. • 1,305 acres have been planted with permanent vegetation to increase nesting habitat and cover or improve brood-rearing habitat. • 4,909 acres of native sagebrush habitat have been improved through prescribed grazing management for wildlife habitat management. • Many supporting practices, such as fence and water developments, have been installed to facilitate range management.

² Averaged based on ROW authorized between 2012 – 2021.

Human Actions that Contribute to Cumulative Impacts	
Livestock grazing	Future trends in grazing depend on environmental factors, such as water availability and demand; therefore, it is unknown if grazing in the planning area will continue or change. Most grazing in the planning area is expected to continue to be on private lands. Rangeland health evaluations on BLM-administered lands will continue. There is one range improvement planned, a 7-mile pipeline on BLM-administered lands in the Big Gumbo area.
Recreation and visitor use	There are a multitude of recreational opportunities in the North Dakota planning area. Many activities take place on lands not administered by the BLM, including state parks, other federal lands, state- or federally managed reservoirs, and other destinations. Recreation use is anticipated to continue according to past trends.
Cultural and paleontological resources	The discovery and subsequent inventory of historic properties continues to increase with continued mineral and energy development. Paleontological resources are protected under federal law. Qualitative observation indicates that the condition has remained stable for paleontological resources that are protected from actions that the BLM permits.
Wildlife and special status species habitat management	Managing to protect habitat and rehabilitate general fish and wildlife and special status species is ongoing and will continue. The 2015 Greater Sage-Grouse Approved RMP Amendment (BLM 2015a) identifies 32,900 surface acres of PHMA and 80 acres of General Habitat Management Area (GHMA) designations, all of which are in Bowman County. The Northwestern Plains Rapid Ecoregional Assessment provides the BLM information that supports regional planning and analysis for managing ecological resources. The assessment also considers baseline ecological conditions, evaluates current risks from drivers of ecosystem change, and predicts the capacity for evaluating future risks. The 2015 North Dakota State Wildlife Action Plan (NDGFD 2015), which guides the process of preserving the state's fish and wildlife resources, will continue to be implemented for the foreseeable future.

I.3.3 Actions Not Included in the Cumulative Analysis

Developments for which a solid proposal has not been submitted or which seem unlikely to occur within the foreseeable future are considered speculative. These may include projects that are discussed in the public arena but are not currently authorized by law, or for which there is no current proposal before an authorizing agency. Speculative developments are not considered reasonably foreseeable and are not evaluated as part of the cumulative impacts analysis.

I.4 RESOURCE METHODOLOGY, INDICATORS, AND ASSUMPTIONS

For organizational purposes, **Chapter 3** is divided into sections by subject area (such as water resources, wildlife, and recreation) from the land use planning handbook, BLM Handbook H-1601-1. Though they are described and analyzed in discrete sections, these subjects are dynamic and interrelated. A change in one resource can have cascading or synergistic impacts on other resources. For example, erosion affects water quality, which in turn affects fish populations, which can have implications on other human outcomes, such as health and sociocultural systems. As a result, there is some overlap among the resource sections in **Chapter 3**, and the impacts described in one section may depend on the analysis from another section.

During the writing process, resource specialists shared data and discussed interrelated aspects of the analyses to better capture the interrelated nature of environmental resources. The indicators, analysis areas,

and assumptions used for each resource analysis are detailed below. The impact analyses for direct, indirect, and cumulative impacts for all resources are found in **Chapter 3**.

I.4.1 Air Quality and Climate

Methodology

Photochemical modeling was performed to assess air quality and AQRV impacts in the analysis area for a specified set of future activity levels for federal oil and gas development, federal coal mining and tribal oil and gas development, and other emission sources such non-federal oil and gas development, non-federal coal mining, coal-burning electric generating utilities (EGUs), other coal combustion sources, other anthropogenic (human-caused) sources such as oil and gas refining/combustion and mobile sources, natural sources including fires, and distant emission sources that impact North Dakota. The modeling was performed with the Comprehensive Air Quality Model with Extensions (CAMx) that is widely used by regulatory agencies. The modeling utilized and built upon the 2014/2028 modeling database from the Western Regional Air Partnership (WRAP) Western Air Quality Study regional haze modeling (WRAP/WAQS) (WRAP 2021). Accordingly, the ND RMP photochemical modeling uses year 2014 meteorological fields and natural emissions, and emissions for circa 2028 using the oil and gas emissions inventories constructed for the WRAP/WAQS and supplemental oil and gas data on mineral ownership from BLM. All criteria pollutants except lead (namely ozone, nitrogen dioxide, carbon monoxide, particulate matter smaller than 2.5 microns or PM_{2.5}, and particulate matter smaller than 10 microns or PM₁₀) and related precursors were modeled; lead is expected to be emitted in very small quantities from BLM-authorized activities and is unlikely to affect current compliance status or adversely impact air quality. Hydrogen sulfide (H₂S), which has a North Dakota State standard only (no federal standard), was not evaluated and modeled because its emissions are expected to be negligible. Oil and gas activities that would be authorized by the BLM under this RMP would occur within the Bakken formation, which is known to have very low sulfur content. Detailed information on the photochemical modeling is provided in *Air Quality Technical Support Document* (AQTSD; Ramboll 2024).

Within this RMP, the BLM may authorize available Federal lands for oil and gas leasing and coal development, which may result in future drilling, flaring, or mining and related actions causing criteria and hazardous air pollutant emissions that could adversely impact air quality and AQRVs. Other BLM-authorized actions in the planning area, such as vegetation management, may also result in emissions. Emission sources due to oil and gas development assessed in the RMP include exploration and production phase well site equipment, such as drill rigs, hydraulic fracturing engines, artificial lift engines, casinghead gas venting and flaring, oil tanks, fugitive components, pneumatic controllers, liquids unloading, flares, and combustors, as well as midstream compressor engine and gas plant-related sources such as compressor engines, fugitive components, tanks, and dehydrators. Emission sources assessed due to coal mining include non-road equipment, blasting, stationary sources, fugitive dust emissions from earth moving, coal processing and vehicle travel on unpaved roads. The indirect (downstream) effects of oil and gas development and coal mining were also assessed in the RMP. Downstream effects are the emissions from the combustion of oil and gas and coal that is produced over the life of the RMP. Together, the modeled results provide an assessment of the cumulative impacts as well as the contributions from federal sources to cumulative impacts.

The photochemical modeling tracks the respective contributions of emissions from the following source groups: existing (i.e., pre-2020) federal oil and gas development in North Dakota, new (2020 onwards) federal oil and gas development in North Dakota, federal coal development in North Dakota, existing and

new tribal oil and gas development, coal-fired EGUs in the WRAP states, other coal combustion facilities in the WRAP states such as cement plants and iron ore processing, non-federal oil and gas development, non-federal coal mining, other anthropogenic sources, and natural emissions (including fires, biogenic emissions, and others). Impacts due to these groups were assessed in the analysis area with focus on the North Dakota planning area and federal Class I and other areas of interest. Modeled criteria pollutant impacts were compared to NAAQS and North Dakota Ambient Air Quality Standards (NDAAQS). Visibility changes were evaluated, and nitrogen and sulfur deposition were assessed relative to critical load thresholds. Results from a prior near-field modeling analysis from the Fort Berthold Programmatic Environmental Assessment (BIA 2017) were incorporated by reference to provide a measure of potential criteria air pollutant impacts from a hypothetical example oil and gas development as well as hazardous air pollutant impacts relative to short-term, chronic, and carcinogenic thresholds.

The analysis of environmental consequences under each alternative leveraged the photochemical modeling discussed above but applied the actual projected activity levels (production and well counts for oil and gas and production forecast for coal) under each alternative. Potential impacts on ambient air concentrations, acidic deposition, and visibility in the analysis area were assessed based on these emissions and the results from the photochemical modeling. Emissions were also estimated for other BLM activities such as lands and realty right-of-way, livestock grazing, mineral materials, and prescribed fires; the emission sources evaluated for these activities included on-road vehicles, off-road equipment, prescribed fire smoke, enteric fermentation, and dust generating activities.

GHG emissions of carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O) were quantified for oil and gas production, coal mining, oil and gas combustion, coal combustion and transportation, and the other BLM activities discussed above. Carbon dioxide equivalents (CO₂e) were calculated using 100-year global warming potentials (GWPs) from the IPCC Fourth Assessment Report (AR4) (IPCC 2007), 100-year GWPs from the IPCC Sixth Assessment Report (AR6) (IPCC 2021), and the 20-year GWPs from the IPCC AR6 (IPCC 2021). The methods used to quantify GHG emissions from each activity are described in the AQTSD (Ramboll 2024, Section 3).

Impact Analysis Area

- Direct/Indirect
 - Air Quality (including air quality related values):
 - State of North Dakota and the area within approximately 62 miles (100 kilometers) of the state boundary.
 - In the analysis, the maximum impacts to the NAAQS are assessed in this analysis area, and in particular North Dakota, and reported accordingly. Additionally, the assessment considers potential impacts to lands in the analysis area with special air quality protections under federal law. These include national parks and wilderness areas designated as mandatory Federal Class I areas under the federal Clean Air Act (CAA) and other areas re-designated as Class I at the request of a state or Indian Tribe. Tribal Class I areas are authorized in CAA Section 164(c) (EPA 2013). Federal Class I areas are listed in 40 CFR 81.400–81.437 and tribal Class I areas are listed by the National Park Service (NPS 2018). Federal and tribal Class I areas in the analysis area (Lostwood Wilderness, Theodore Roosevelt National Park (NP), Medicine Lake Wilderness and Fort Peck Indian Reservation) are assessed in this along with the Fort Berthold Indian

Reservation. The Fort Berthold Indian Reservation is included because it has a federal implementation plan that regulates emissions from oil and gas production facilities on reservation lands (40 CFR 49.4161–49.4168).

- Climate
 - Because climate change is a global problem, the analysis area for greenhouse gases cannot be restricted to one region. For the purposes of the RMP/EIS, the greenhouse gas/climate change analysis area is focused on North Dakota and the United States, but worldwide data are also used in the greenhouse gas analysis.
- Cumulative
 - Same as the Direct/Indirect analysis area for air quality and climate

Impact Analysis Temporal Scale

- Air Quality (including air quality related values): Short-term effects would occur over the period of hours to days. Long-term effects would last a year or more.
- Climate: The temporal scale is both 20 years and 100 years to represent the differing effects from shorter- and longer-lived GHGs based on their 20-year and 100-year GWPs.

Impact Analysis Assumptions

- Air Quality
 - The photochemical modeling represents a future year (circa 2028) projection for a specific set of activity levels and not any of the specific alternatives. A separate emissions assessment was performed based on the RMP RFD under each alternative.
 - Only 1 year of photochemical modeling is performed, with the meteorology representative of 2014. One year of modeling also means that metrics for the NAAQS are approximate for those pollutants that are based on observations of multi-year values.
 - It is assumed that 86 percent of casinghead gas produced from oil wells will be sent to pipeline, 5 percent will be used onsite, and 9 percent will be flared. The summation of gas sent to pipeline and gas used onsite is consistent with NDIC Order 24665 (Policy/Guidance, Version 112018) post-November 1, 2020, gas capture goal of 91 percent.
 - Close to 100 percent of oil tanks are assumed to be controlled via flares. Consistent with the WRAP oil and gas emission inventory, it is assumed that capture efficiency is 100 percent for tank controls and that tanks achieve a uniform 98 percent control efficiency. Data was not available to estimate the fraction of emissions from oil tanks that are either not captured or which are controlled at an efficiency less than 98 percent due to flare downtime, flare malfunction, or for other reasons.
 - Historical coal mining emissions intensities (i.e., ton of pollutant per ton of coal) are representative of future emission intensities and coal mining emissions scale linearly with production.
- Climate
 - The GHG impact analysis is performed both for the peak year of new BLM federal CO₂e emissions (2040, based on the 20-year global warming potentials) as well for the life of the plan emissions

- Social cost of greenhouse gases analysis is based on the Interagency Working Group Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide: Interim Estimates under Executive Order 13990 (February 2021).

Impact Analysis Indicators

The impact indicators for air quality are:

- Criteria pollutant impacts (in units of parts per billion, parts per million, or micrograms per cubic meter) relative to NAAQS and NDAAQS
- Air Quality Related Values (AQRV) of visibility (units of delta deciviews) and nitrogen and sulfur deposition (units of kilograms per hectare per year) relative to AQRV thresholds
- Hazardous air pollutant impacts in micrograms per cubic meter relative to short-term, chronic, and carcinogenic thresholds

The impact indicators for climate are:

- GHG emissions are compared to the following scales for context:
 - Percent of total BLM emissions, US emissions, and global emissions
 - Emissions from home energy used for 1 year
 - Emissions from railcars' worth of coal burned
 - Emissions from gallons of gasoline consumed
 - Emissions avoided by wind turbines running 1 year
 - Carbon sequestered by acres of US forest in 1 year
- Social cost of GHGs

I.4.2 Soil Resources

Methodology

This analysis uses GIS acreage calculations for the occurrence of each indicator (excluding soil condition on prime farmlands) on areas of BLM-administered surface or subsurface land intersected with potential BLM management activities under each alternative. The acres were used as a comparison tool to estimate the magnitude of impacts that would likely occur for each soil indicator. When acres could not be determined, a qualitative approach was used.

Impact Analysis Area

- Direct/Indirect from minerals
 - Coal decision area
 - Fluid mineral decision area
 - Other mineral decision area
- Direct/Indirect from all resources other than minerals
 - BLM-administered surface decision area
- Cumulative
 - Planning area

Impact Analysis Temporal Scale

- Short-term impacts on soils are temporary changes to indicators that occur from months up to 5 years after an impact, such as decreased soil productivity. Long-term impacts on soils are permanent changes to indicators that last longer than 5 years after an impact, such as erosion.

Impact Analysis Assumptions

- As slope increases, the potential for erosion increases, and the risk of soil instability following disturbance increases, particularly if cover, structure, or permeability has been altered (NRCS 2001).
- Surface-disturbing activities, including vegetation projects, prescribed fire, and mechanical fuels treatment projects; livestock grazing; recreation; and mining have greater impacts where soils have higher erodibility.
- Biological soil crusts are present on a variety of soil types across North Dakota. They protect soils from wind and water erosion by providing cover and reducing runoff. Once disturbed, recovery of biological crusts can take decades or longer to reestablish (Belnap et al. 2001).
- Soils on BLM-administered lands will be managed to maintain productivity and soil physical, chemical, and biological properties by implementing best management practices, such as site-specific mitigation and monitoring measures that prevent or reduce surface disturbance and salt accumulation in soil.
- Restoration activities will be consistent with soil resource capabilities.

Impact Analysis Indicators

- Acres of steep slopes (slopes greater than 25 percent for solid mineral leasing under Alternative B and otherwise greater than 30 percent)
- Acres of sensitive soils, including saline soils
- Acres of badlands and rock outcrops
- Changes to soil condition on prime farmlands

I.4.3 Water Resources***Methodology***

This analysis uses GIS acreage calculations for the occurrence of each indicator on areas of BLM-administered surface or subsurface land intersected with potential BLM management activities under each alternative. The acres or stream miles were used as a comparison tool to estimate the magnitude of potential impacts that may occur for each indicator. When acres or miles could not be determined, a qualitative approach was used.

Impact Analysis Area

- Direct/Indirect from minerals
 - Coal decision area
 - Fluid mineral decision area
 - Other mineral decision area

- Direct/Indirect from all resources other than minerals
 - BLM-administered surface decision area
- Cumulative
 - Planning area

Impact Analysis Temporal Scale

- Impacts that occur during or within the first 5 years of implementing an action are considered short term. Long-term impacts are those that may occur for an extended period after implementing the action beyond the first 5 years and perhaps over the life of the RMP.

Impact Analysis Assumptions

- The degree of effect attributed to any one disturbance or series of disturbances will be influenced by several factors, including proximity to drainages and groundwater wells, location in the watershed, time and degree of disturbance, reclamation potential of the affected area, vegetation, precipitation, and mitigating actions applied to the disturbance.
- Riparian conditions and water quality are directly related, and improvements to riparian/wetland conditions will tend to improve water quality; conversely, detrimental effects on the riparian/wetlands could degrade water quality.
- Water quality, quantity, and stream stability data are not available for most waterbodies in the planning area. This makes interpreting trends difficult, if not impossible. However, many streams and lakes within the planning area are undisturbed and have no anthropogenic impacts on water quantity, water quality, and stream stability; therefore, it is assumed that these waterbodies are trending in a positive direction.
- Aquifers with shallower depths to water are more susceptible to contamination. Mineral development is the primary BLM-authorized activity with a potential to impact shallow groundwater quality and quantity. Locations in the planning area with depths to groundwater of less than 100 feet, or unconfined aquifers, are the most likely to be impacted by mineral development. Unconfined aquifers or aquifers with water table elevations of 100 feet below ground surface are more vulnerable to leaks and/or spills of contaminants at the surface. However, groundwater at greater depths is vulnerable to mine dewatering, casing failure, contamination resulting from enhanced hydraulic conductivity caused by hydraulic fracturing and drilling, and contamination caused by chemicals utilized in the hydraulic fracturing and drilling processes.

Impact Analysis Indicators

- Locations or areas of the planning area that are open, closed, or open with use stipulations to activities and potential development that may affect water quality, quantity, or stream stability
- Qualitative discussion of trends that may affect water quality, quantity, or stream stability associated with the effects of climate change from temperature increases, precipitation, runoff, and fires

I.4.4 Vegetation Communities

Methodology

This analysis focuses on those management alternatives or actions that have the potential for physical disturbance of vegetation and rangelands, forests and woodlands, and potential special status plant habitat;

loss of habitat; spread of noxious weeds and invasive plants; and loss or disturbance of riparian and wetland areas or their functioning condition in the planning area. This analysis also describes the effects of BLM management actions intended to reduce such impacts. Specific development-related impacts cannot be quantified because no specific projects are proposed. Impacts can only be described qualitatively, both because resource and impact data are unavailable, and because project details are unknown. Alternatives are compared in terms of acres open or closed to various resource extraction or other reasonably foreseeable future activities. This analysis uses GIS acreage calculations for the occurrence of each indicator (where quantifiable) on areas of BLM-administered surface or subsurface land intersected with potential BLM management activities under each alternative, including coal leasing, locatable minerals, mineral materials, fluid mineral leasing (including stipulations), ROWs, and livestock grazing. When acres could not be determined, a qualitative approach was used.

This analysis focuses on the potential for introduction of noxious weeds and invasive plants, as well as possible effects on special status plant species or plant communities of limited extent, particularly tallgrass prairie and woody draw communities. The BLM Special Status Species lists are revised every several years. Because the list is expected to change over the life of the RMP, special status plant species are addressed broadly without specific references to individual species. Instead, the BLM has identified potential special status plant habitat for which acres are provided. The term “vegetation” is used to describe both general vegetation and special status plants, unless otherwise noted.

Impact Analysis Area

- Direct/Indirect from minerals
 - Coal decision area
 - Fluid mineral decision area
 - Other mineral decision area
- Direct/Indirect from all resources other than minerals
 - BLM-administered surface decision area
- Cumulative
 - Planning area

Impact Analysis Temporal Scale

- Short-term effects are anticipated to begin and end within the first 5 years after the action is implemented. Long-term effects would last beyond 5 years.

Impact Analysis Assumptions

- Any activity or disturbance that directly affects vegetation cover or plant communities may in turn affect plant communities of limited extent or special status plant species, and/or increase risk of introduction and spread of noxious weeds and invasive plants. Each potentially disturbing activity is considered in relation to vegetation cover, plant communities of limited extent, special status plant species, and noxious weeds and invasive plants.
- Impacts on special status plants may be more intense than those on nonsensitive vegetation because population viability is already uncertain for special status plants.
- The BLM will not partner with local counties or agencies to treat noxious weeds and invasive plants on BLM-administered lands, with the exception of the Schnell Recreation Area. While stipulations

are included for mineral, ROWs, and other developments, the BLM will not have the capacity to monitor all activities for compliance with noxious weed and invasive plant prevention measures.

- The amount of land that is open or closed to certain resource uses, such as ROW or mineral development, is not necessarily indicative of the number of acres of vegetation that would be directly disturbed; however, for the purposes of this analysis, acres open and closed to certain uses are used as a proxy for comparison between alternatives.

Impact Analysis Indicators

- Potential for the removal or fragmentation of native plant communities or loss of pollinators' habitat
- Potential for the introduction or spread of noxious weeds or invasive plants
- Acres of tallgrass prairie, woody draws, and special status plant habitat affected by management actions and allocations
- Changes in the ability to meet or move towards proper functioning condition in wetlands and riparian areas

I.4.5 Wildlife

Methodology

In this section, the term “wildlife” as used includes general wildlife, game species, and special status wildlife. Impacts on particular groups or species are described where appropriate. Impacts are quantified where possible in terms of acres of habitat affected by an alternative. This analysis uses GIS acreage calculations for the occurrence of each indicator (where quantifiable) on areas of BLM-administered surface or subsurface land intersected with potential BLM management activities under each alternative, including coal leasing, locatable minerals, mineral materials, fluid mineral leasing (including stipulations), ROWs, and livestock grazing. Due to the large size of the planning area, the nature of planning-level decisions, and site-specific variation in wildlife conditions, a quantifiable analysis of effects on specific habitat elements and population outcomes is not possible. Therefore, a qualitative analysis is used to describe the degree to which acres of wildlife habitat would be impacted by management actions and allocations.

Impact Analysis Area

- Direct/Indirect from minerals
 - Coal decision area
 - Fluid mineral decision area
 - Other mineral decision area
- Direct/Indirect from all resources other than minerals
 - BLM-administered surface decision area
- Cumulative
 - Planning area

Impact Analysis Temporal Scale

- Short-term effects are anticipated to begin and end within the first 5 years after the action is implemented. Long-term effects would last beyond 5 years.

Impact Analysis Assumptions

- For many actions, impacts can only be described qualitatively, either because resource and impact data are unavailable, or because project details are uncertain or unknown.
- Persistence and recovery of wildlife, including special status species, is closely related to the availability and quality of habitat that species are associated with. Therefore, the better the quality and amount of terrestrial and aquatic vegetation communities available, the more supported associated wildlife populations will be. See **Chapter 3, Section 3.2.4, Vegetation**, for analysis on the vegetation communities that provide wildlife habitat.
- RMP management decisions are planning-level guidance and do not result in direct impacts on wildlife species. Planning-level guidance can direct, guide, or recommend actions to take at site-specific-levels for landscape management. Further site-specific analysis and direction may occur as needed to protect wildlife, including special status species.
- The amount of land that is open or closed to certain resource uses, such as ROW or mineral development, is not necessarily indicative of the number of acres of habitat that will be directly disturbed; however, for the purposes of this analysis, acres open and closed to certain uses are used as a proxy for comparison between alternatives.
- Impacts on special status wildlife may be more intense than those on nonsensitive wildlife because population viability is already uncertain for special status wildlife.
- BLM will continue to use the most up-to-date species distribution information.

Impact Analysis Indicators

- The potential for loss, modification, or fragmentation of wildlife habitat
- The potential for disturbance, displacement, injury, or mortality of individual wildlife
- Acres of wildlife habitat affected by management actions and allocations

I.4.6 Fish and Aquatic Species***Methodology***

The health of fisheries is tied to the overall health and functional capabilities of riparian and wetland resources and watershed health. Any activities that affect the ecological condition of the watershed and its vegetative cover directly or indirectly affect the aquatic environment. As riparian systems adjust in response to the removal of vegetation or changes in hydrologic conditions, the availability of habitats required to fulfill the life history requirements of fish populations may be affected. Impacts on particular groups or species are described where appropriate. Impacts are quantified where possible in terms of acres of habitat affected by an alternative. This analysis uses GIS acreage calculations for the occurrence of each indicator (where quantifiable) on areas of BLM-administered surface or subsurface land intersected with potential BLM management activities under each alternative, including coal leasing, locatable minerals, mineral materials, fluid mineral leasing (including stipulations), ROWs, livestock grazing, and wild and scenic rivers suitability. Due to the large size of the planning area, the nature of planning-level decisions, and site-specific variation in aquatic conditions, a quantifiable analysis of effects on specific habitat elements and population outcomes is not possible. Therefore, a qualitative analysis is used to describe the degree to which acres of aquatic habitat would be impacted by management actions and allocations.

Impact Analysis Area

- Direct/Indirect from minerals
 - Coal decision area
 - Fluid mineral decision area
 - Other mineral decision area
- Direct/Indirect from all resources other than minerals
 - BLM-administered surface decision area
- Cumulative
 - Planning area

Impact Analysis Temporal Scale

- Short-term effects are anticipated to begin and end within the first 5 years after the action is implemented. Long-term effects would last beyond 5 years.

Impact Analysis Assumptions

- Persistence and recovery of fish and aquatic species, including special status species, are related to the availability and quality of aquatic habitat that the species are associated with. Therefore, a greater quality and quantity of aquatic habitat is better able to support fish and aquatic species populations.
- For many actions, impacts can only be described qualitatively because resource and impact data are unavailable, or project details are uncertain or unknown.
- RMP management decisions are planning-level guidance and do not result in direct impacts on aquatic species. Further site-specific analysis and direction may occur as needed to protect fish and aquatic species, including special status species.

Impact Analysis Indicators

- Potential for aquatic habitat loss and alteration
- The potential for disturbance, displacement, injury, or mortality of fish and aquatic species
- Acres of fish and aquatic species habitat overlapping with resource use activity

I.4.7 Wildland Fire Ecology and Management***Methodology***

A qualitative approach was used to analyze impacts on wildland fire, based on an understanding of the current conditions in the decision area. A quantitative approach was not undertaken, given the uncertainty in the exact location and number of acres that would be impacted by proposed management. Impacts on wildland fire management generally result from activities that affect fire intensity, frequency, and suppression efforts. Indirect impacts tend to occur over the long term and involve changes to vegetation structure that in turn impact wildfire size, frequency, severity, intensity, and management.

Impact Analysis Area

- Direct/Indirect
 - BLM-administered surface decision area

- Cumulative
 - Planning area

Impact Analysis Temporal Scale

- Short-term effects are anticipated to begin and end within the first 5 years after the action is implemented. Long-term effects would last beyond 5 years.

Impact Analysis Assumptions

- Areas treated to reduce fuels have reduced departure from historical fire regimes due to the treatments altering the structure and composition of vegetation or fuel loads and moving vegetation toward desired conditions.
- Because vegetation is one of the most important factors affecting fire regimes, management actions that result in changes to existing vegetation will result in changes to fire regimes. See **Chapter 3, Section 3.2.4, Vegetation**, for impacts on vegetation communities.
- Actual acres treated under each alternative will depend upon resource availability, NEPA analysis, weather conditions, socio-political influences, funding, or other unpredictable factors.
- Management under all alternatives will not directly change the sources of wildfire ignitions.

Impact Analysis Indicator

- Potential for changes to fire regimes

I.4.8 Cultural Resources

Methodology

Impact analysis and conclusions are based on interdisciplinary team knowledge of the planning area and existing literature and previous surveys, as described in the North Dakota RMP/EIS Analysis of the Management Situation (AMS; BLM 2020). Potential effects on cultural resources are quantified where possible. This analysis uses GIS acreage calculations for the occurrence of each indicator (where quantifiable) on areas of BLM-administered surface or subsurface land intersected with potential BLM management activities under each alternative, including coal leasing, locatable minerals, mineral materials, fluid mineral leasing (including stipulations), and ROWs. In the absence of quantitative data, qualitative effects are presented based on professional judgement. For this impact analysis, specific impacts on cultural resources are discussed as impacts on historic properties. Historic properties are those cultural resources listed in, or eligible for inclusion in, the National Register of Historic Places (NRHP). The NRHP defines historic properties as districts, sites, buildings, structures, and objects significant in American history, archaeology, engineering, and culture (BLM 2020b).

Impact Analysis Area

- Direct/Indirect from minerals
 - Coal decision area
 - Fluid mineral decision area
 - Other mineral decision area
- Direct/Indirect from all resources other than minerals
 - BLM-administered surface decision area

- Cumulative
 - Planning area

Impact Analysis Temporal Scale

- Short-term effects are anticipated to begin and end within the first 5 years after the action is implemented. Long-term effects would last beyond 5 years.

Impact Analysis Assumptions

- Impacts on historic properties occur when there is damage to or loss of the historical integrity of the resource, which, per National Register Bulletin 15 includes location, design, setting, materials, workmanship, feeling, and association, and the eligibility to the NRHP under Criteria A, B, C, or D is affected adversely (NPS 1995). The integrity of archaeological sites in particular is often related to the physical condition of the property. It is affected to the extent that important spatial patterning of artifacts, cultural features, or other important elements are lost, mixed, or otherwise compromised by natural or cultural processes (BLM 2020b).
- Under all alternatives, continuing to adhere to the existing laws, such as the National Historic Preservation Act (NHPA); to Executive Orders (EOs), such as EO 13007; and to cultural resource policies (e.g., BLM manuals and handbooks) will protect historic properties or sacred sites. Additionally, continued consultation and cooperation with the State Historic Preservation Office and Native American Tribes will allow information on cultural properties and cultural landscapes to continue to be compiled, allowing better future management and protections of these sensitive areas.
- At the implementation phase, all surface-disturbing activities could require cultural resource inventories/surveys of affected sites before the initiation of surface-disturbing activities.³
- Surface-disturbing activities could affect some cultural resources, especially buried cultural resources, because they are difficult to locate through surface inventory/surveys.
- The setting and feeling for historic properties are sometimes of particular importance to how the property is eligible to the NRHP and will be included in the consideration of potential impacts on cultural resources.
- NRHP criteria are applied to evaluate significance, and NRHP eligibility will guide the management of cultural resources. Avoidance is the preferred mitigation choice for historic properties. Where historic properties are present and where impacts on them are unavoidable, those impacts will need to be resolved—typically through data recovery or interpretive or educational efforts.
- The BLM will consult with appropriate Tribes, according to guidance set forth in BLM Manual 1780 and Handbook H-1780-1, and relevant authorities listed therein. The BLM will do this to identify and address potential resource concerns likely to affect the access or availability of

³ This generally requires a Class III intensive field inventory of the affected area to identify and record significant cultural resources or historic properties within the area of potential effect. These efforts provide information for the development of prescriptive mitigation of impacts through avoidance or other measures where necessary, and minimize or eliminate the potential for unmitigated impacts on cultural resources. In areas with a high potential for buried resources, construction monitoring, remote sensing, geoarchaeological modeling of buried site potential, and open trench inspection are some of the methods used to discover and protect cultural resources not apparent from surface inventories.

resources or locations important to traditional lifeways, including subsistence, economic, ritual, and religious resources and locations.

Impact Analysis Indicators

- The primary indicator for cultural resources is whether there is a loss of those characteristics that may qualify the property for listing on the NRHP or would diminish the cultural value of areas important to the general population, Native Americans, or other traditional communities (BLM 2020b)
- The extent or acres of surface-disturbing activities and their potential for affecting known or unknown cultural resources
- Increased access to, or activity in, areas where resources are present or anticipated; vandalism or unauthorized collecting can destroy a cultural resource in a single incident, and public access to areas with cultural resources can increase the risk of vandalism or unauthorized collection
- The extent or acres to which an action changes the potential for erosion or other natural processes that could affect cultural resources; natural processes, such as erosion or weathering, will degrade the integrity of many types of cultural resources over time; human visitation, recreation, vehicle use, livestock grazing, wildland fire, trampling, and other activities can increase the rate of deterioration through natural processes
- The extent to which measures that withdraw land or restrict surface development to protect resources can provide direct and indirect protection of cultural resources from disturbance and from incompatible and unauthorized activities
- Acres or instances of known properties under each of the six use categories for cultural properties (number and acreage of historic properties under the NSO stipulation/size of visual impact buffer in miles)

I.4.9 Paleontological Resources

Methodology

Impact analysis and conclusions are based on interdisciplinary team knowledge of the planning area and existing literature and previous surveys, as described in the North Dakota RMP/EIS AMS (BLM 2020b). Potential effects on paleontological resources are quantified where possible. This analysis uses GIS acreage calculations for the occurrence of each indicator (where quantifiable) on areas of BLM-administered surface or subsurface land intersected with potential BLM management activities under each alternative, including coal leasing, fluid mineral leasing (including stipulations), and ACECs. In the absence of quantitative data, qualitative effects are presented based on professional judgement.

Impact Analysis Area

- Direct/Indirect
 - All parts of the planning area where ground-disturbing activities would be permitted on BLM-administered land, including split-estate (e.g., private or Tribal)
- Cumulative
 - Planning area

Impact Analysis Temporal Scale

- Short-term effects are anticipated to begin and end within the first 5 years after the action is implemented. Long-term effects would last beyond 5 years.

Impact Analysis Assumptions

- Under all alternatives, continuing to adhere to the existing laws, such as the Paleontological Resources Preservation Act, and BLM paleontological resource policies (e.g., BLM manuals and handbooks) will protect paleontological resources. While there would be no direct impacts from the goals, objectives, and allocations noted in the alternatives, there may be direct impacts associated with some management actions. Direct impacts from the alternatives can be described as increasing the risk or likelihood of resource impacts. Indirect impacts are those that would result from implementing the planning decisions at a later time.
- The planning area for the RMP includes fossil-bearing geologic units, surface and near-surface exposures or known and/or recorded fossil localities that may contain specimens of scientific interest.
- Paleontological resources are considered fragile and nonrenewable, so direct impacts are considered permanent. BLM policy is to manage paleontological resources for scientific, educational, and recreational values and to protect these resources from adverse impacts.
- Paleontological resources are part of the surface estate. If the BLM is going to approve an action involving the mineral estate that may affect the paleontological resources, the action should be conditioned with appropriate paleontological mitigation recommendations to protect the interests of the surface owner. Generally, the surface owner may elect to waive these recommendations.
- Paleontological resources will continue to be fully considered in management decisions. Actions that could affect paleontological resources will be assessed, which will help determine the necessary mitigation steps to be taken. The assessment involves the determination of the Potential Fossil Yield Classification (PFYC) rank of the rock units involved, compilation of known paleontological resources in the area, and consideration of potential effects based on the nature of the action. In PFYC Classes 3 to 5, the assessment almost always requires an on-the-ground evaluation by a professional paleontologist.
- Based on the information developed in the AMS (BLM 2020b), a mitigation plan will be developed to protect paleontological resources. Measures might include resource avoidance, pre-disturbance salvage of resources, professional monitoring during construction, and stipulations to stop work if resources are discovered. Other fluid mineral leasing stipulations could be designed to protect paleontological resources from effects of oil and gas surface-disturbing activities and to help preserve opportunities for scientific, educational, and recreational uses of these resources.
- The application of best management practices (BMPs) and mitigation measures for surface-disturbing activities would likely reduce effects on paleontological resources associated with authorized land uses or activities. Examples are mineral development, range improvements, recreation, and road, pipeline, and power line construction. BMPs and mitigation would reduce or eliminate potential adverse effects on paleontological resources. Stipulations for fluid mineral leasing would restrict surface-disturbing activities, which would reduce the likelihood of disturbance, where applicable.

Impact Analysis Indicators

- Physical damage or destruction of fossils or the fossil-bearing rock units
- Increased access or activity where fossils may be present, increasing the risk of vandalism, unauthorized collection, or inadvertent damage or loss

I.4.10 Visual Resources***Methodology***

The BLM uses visual resource inventory (VRI) classes to identify the relative importance of different landscapes in the area. Potential impacts on visual resources are assessed by comparing the VRI class to the Visual Resource Management (VRM) class assigned for an area for each alternative, as discussed in Chapter 3.

Impact Analysis Area

- Direct/Indirect from minerals
 - Coal decision area
 - Fluid mineral decision area
 - Other mineral decision area
- Direct/Indirect from all resources other than minerals
 - BLM-administered surface decision area
- Cumulative
 - Planning area

Impact Analysis Temporal Scale

- Short-term effects are anticipated to begin and end within the first 5 years after the action is implemented. Long-term effects would last beyond 5 years.

Impact Analysis Assumptions

- Visual resources in the planning area will become more sensitive to visual change; in other words, they will increase in value over time.
- Visual resources will become increasingly important to residents of and visitors to the area.
- Residents of and visitors to the planning area are sensitive to changes in visual quality and to the overall scenic quality of the area that contributes to living conditions and the visitor experience.
- Activities that cause the most contrast and are the most noticeable to the viewer will have the greatest impact on scenic quality.
- As the number of acres of disturbance increase, the amount of impacts on visual resources will also increase.
- The more protection that is associated with the management of other resources and special designations, the greater the benefit to the visual resources of the surrounding viewsheds.
- The more protection that is associated with the management of other resources and special designations, the greater the benefit to the visual resources of the surrounding viewsheds.
- The BLM VRM system visual resource contrast rating process (BLM Handbook H-8431-1) will be used for site-specific actions. This does not apply to the No Action Alternative.

- For the No Action Alternative, all BLM-administered surface lands are managed as VRM Class III to compare it against the action alternatives.
- The application of BMPs and project design, avoidance, or mitigation measures for surface-disturbing activities would likely reduce, but not eliminate, effects on visual resources associated with authorized land uses or activities such as road, pipeline, or power line construction; mineral development; range improvements; and recreational activities. BMPs and project design, avoidance, or mitigation measures would reduce or eliminate the removal or alteration of vegetation communities, which are components of the visual setting. The BLM will require a reclamation plan for all surface-disturbing activities across all alternatives. This will stabilize disturbed areas in the short term and stabilize the landscape setting in the long term.

Impact Analysis Indicators

A proposed VRM class would allow changes to the landscape that could alter its character enough that future visual resource inventories would result in a reclassification; for example, if an area currently managed for VRM Class IV has VRI Class II lands, then the level of change allowed by VRM Class IV could alter the landscape to the point that future visual resource inventories could result in reclassifying the area to VRI Class III or IV.

I.4.11 Lands and Realty

Methodology

The nature and types of potential effects on lands and realty from proposed actions under each alternative are based on:

1. Numerical data gathered during the planning process
2. BLM interdisciplinary team knowledge of the resource
3. Input provided during the public scoping process

Where possible, this analysis uses quantitative data to describe effects on lands and realty from other resources and resource use programs. This analysis uses GIS acreage calculations for the occurrence of each indicator (where quantifiable) on areas of BLM-administered surface or subsurface land. When acres could not be determined, a qualitative approach was used. Qualitative information is also used to support quantitatively based analysis or where numerical data do not exist.

Impact Analysis Area

- Direct/Indirect from minerals
 - Coal decision area
 - Fluid mineral decision area
 - Other mineral decision area
- Direct/Indirect from all resources other than minerals
 - BLM-administered surface decision area
- Cumulative
 - Planning area

Impact Analysis Temporal Scale

- Short-term effects are anticipated to begin and end within the first 5 years after the action is implemented. Long-term effects would last beyond 5 years.

Impact Analysis Assumptions

- The ROW program is the most active portion of the lands and realty program in terms of authorizations processed. The BLM has authorized 148 ROWs covering 1,280 acres in the decision area. Approximately 8 to 10 ROW actions are processed annually.
- The number of ROW applications that the BLM processes annually is likely to increase because of the demand for new ROWs associated with nearby oil and gas development.
- The RMP revision will not affect existing ROWs or other valid existing rights.
- The BLM processes ROW applications on a case-by-case basis.
- There are no utility corridors in the planning area, and none are proposed.
- The BLM does not currently administer any leases, permits, or easements. However, the BLM could administer them in the future.

Impact Analysis Indicators

- Acres of ROW exclusion and ROW avoidance
- Areas identified for retention; acres identified for sale, exchange, or conveyance; and acres identified for retention-limited disposal
- For withdrawals, the acres available for withdrawal

I.4.12 Energy and Minerals***Methodology***

The potential effects on leasable, locatable, and mineral material resources from management actions for other resource and resource use programs are presented. Energy and mineral resource baseline information in the *Affected Environment* portion of **Chapter 3** was reviewed for current understanding of known resources and to determine the condition of the resources. Also, all laws pertinent to determining effects on mineral resources (e.g., Mineral Leasing Act of 1920 and amendments, Energy Policy Act of 2005, Federal Onshore Oil and Gas Leasing Reform Act of 1987, 1872 Mining Law, and Mineral Material Sales Act of 1947) were considered and included in criteria for determining effects. The RFD scenarios for oil and gas development (BLM 2022a), coal development (BLM 2022b), and mineral materials (BLM 2022c) were also used in the minerals analysis. This known information was overlain with the actions found under each alternative in **Chapter 2**, and conclusions were drawn based on an understanding of how these types of actions may affect known and potentially discoverable resources.

Impact Analysis Area

- Direct/Indirect
 - Coal decision area, RFD analysis area of three coal-producing counties
 - Fluid mineral decision area, RFD analysis area
 - Locatable, mineral material, and nonenergy leasable mineral decision area

- Cumulative
 - Planning area, with consideration of regional, national, and potentially international energy and mineral markets

Impact Analysis Temporal Scale

- Short-term effects are anticipated to begin and end within the first 5 years after the action is implemented. Long-term effects would last beyond 5 years.

Impact Analysis Assumptions

- Commodity prices for oil, gas, and coal are the primary drivers for increases or decreases in the level of development of those resources.
- BLM fluid mineral estate is predominantly in the form of small, isolated parcels. Because of this, operators typically avoid locating wells and facilities on BLM-administered surface lands due to the additional permitting required. Instead, operators locate surface development on private lands and develop federal mineral estate using horizontal drilling, a form of development referred to as fee/fee/federal. In some fee/fee/federal instances, off-site surface impacts that cannot be regulated by the BLM may occur. As a result, surface use, occupancy, and timing stipulations on BLM-administered surface lands often do not have a significant impact on the development of federal minerals in the planning area. An operator developing a fee-fee-federal well would not be affected by the existence of NSO, CSU, or TL stipulations on overlying surface estate.
- Mineral materials development is dependent on local market demand.
- Mineral development will continue associated with current and pending leases.
- Lands recommended for withdrawal would be withdrawn from locatable mineral entry as a separate action that is likely but not guaranteed to occur.
- Lands not open to locatable mineral entry because they are acquired lands without a valid opening order would have an opening order issued under all action alternatives.
- There is no reasonably foreseeable locatable mineral development. However, there has been past interest in uranium mining in the NDFO. Rare earth minerals are also present with some interest in development. Analysis is provided in the event that there is demand for locatable minerals in the future.
- There is no history of development of these nonenergy leasable minerals in the planning area and no known economically viable deposits exist at this time. Additionally, there is no reasonably foreseeable nonenergy leasable mineral development during the planning period. Any changes to allocations for non-energy leasable management under the Alternatives considered is due to the management for other resources. Analysis is provided in the event that there is demand nonenergy leasable minerals in the future.
- Coal Alternative A acceptable and unacceptable acres were taken from the 1988 Final EIS, Appendix B, for Alternative C; and the 1988 Desk Guide, Appendix A. Coal Alternative A screens are not available in GIS for use in analysis.
- The development of a new coal mine will not occur during the planning period.
- After 2021, the Center, Coyote Creek, Falkirk, and Freedom mines will account for all future production of private, state, and Federal coal resources.

- The mines will produce and deliver coal to their existing coal supply contract customers. If a supply contract ends, it is assumed the coal production at the mine would either decrease or end and would not be reallocated elsewhere.
- Coal production at the mining operations and the coal supply requirements at the powerplants are not expected to vary significantly over the planning period.
- The mines will continue to use existing coal mining production technologies.
- The future annual production rate of Federal coal resources as a component of Federal and non-federal coal production will generally increase during the planning period as mines advance into recently leased Federal tracts.
- Under Alternatives A, B, and C the two pending Federal coal leasing actions at the Falkirk and Freedom mines will be authorized.
- Under Alternative B.1 only the portion of the two pending Federal coal leasing actions at the Falkirk and Freedom mines that lies inside the mine permit boundaries will be leased.

Impact Analysis Indicators

- Acres closed to fluid mineral leasing
- Acres open to fluid mineral leasing, subject to no surface occupancy (NSO)
- Acres open to fluid mineral leasing, subject to controlled surface use (CSU)
- Acres open to fluid mineral leasing, subject to timing limitations (TL)
- Acres open to fluid mineral leasing, subject to standard terms and conditions (STC)
- Acres screened as unacceptable to coal leasing
- Acres acceptable to coal leasing
- Acres closed to mineral material disposal
- Acres open to mineral material disposal
- Acres open to mineral material disposal with stipulations
- Acres withdrawn or recommended for withdrawal from locatable mineral entry
- Acres closed to the leasing of nonenergy leasable minerals

I.4.13 Recreation

Methodology

Impact analysis and conclusions are based on interdisciplinary team knowledge of the planning area and review of literature. Effects are quantified where possible, and, in the absence of quantitative data, qualitative effects are presented based on professional judgment.

Impact Analysis Area

- Direct/Indirect from minerals
 - Coal decision area
 - Fluid mineral decision area
 - Other mineral decision area
- Direct/Indirect from all resources other than minerals
 - BLM-administered surface decision area

- Cumulative
 - Planning area

Impact Analysis Temporal Scale

- Short-term effects are anticipated to begin and end within the first 5 years after the action is implemented. Long-term effects would last beyond 5 years.

Impact Analysis Assumptions

- Current recreation in the planning area will continue.
- The potential for user interactions between all types of users will increase with increasing recreation use.
- Managing the following resources will have negligible or no impact on recreation: air, lands and realty, and livestock grazing. This is because the proposed management under any alternative would not change recreation opportunities on BLM-administered lands in the planning area.
- Management of such resources as soils, water, vegetation (including riparian and wetland areas), wildlife, wildland fire ecology, cultural and paleontological resources, visual resources, and minerals, includes the application of stipulations and other restrictions intended to limit ground disturbance and associated impacts on those resources. Moreover, comprehensive trails and travel management and special designations and management areas could also have implications for recreational opportunities in the planning area.

Impact Analysis Indicators

- Impediments to defined recreation activities and the associated qualities and conditions
- Management actions that result in long-term elimination or reduction of basic recreation and visitor services and resource stewardship needs
- Change in the availability, or area of availability, of types of recreation opportunities

I.4.14 Livestock Grazing***Methodology***

Impacts on livestock, rangeland forage, and livestock grazing operations on all grazing allotments within the BLM-administered surface decision area over the life of the RMP are considered. RMP-level resource management and the associated impacts on livestock grazing are analyzed, but allotment-level and site-specific changes to livestock management, such as changes to stocking rate or season of use, are not analyzed. This analysis uses GIS acreage calculations for the occurrence of each indicator (where quantifiable) on areas of BLM-administered surface or subsurface land intersected with potential BLM management activities under each alternative, including coal leasing, locatable minerals, mineral materials, fluid mineral leasing (including stipulations), and ROWs. When acres could not be determined, a qualitative approach was used. Flexible implementation of grazing management is needed to respond to on-the-ground changes in resource conditions and changes in climatic extremes. Under all alternatives, grazing would continue to be managed in a manner that supports and meets rangeland health standards, while providing opportunities to graze livestock in a manner that supports the local economy.

Impact Analysis Area

- Direct/Indirect
 - BLM-administered surface decision area
- Cumulative
 - Planning area

Impact Analysis Temporal Scale

- Short-term effects are anticipated to begin and end within the first 5 years after the action is implemented. Long-term effects would last beyond 5 years.

Impact Analysis Assumptions

- With proper management, the impacts of livestock grazing are insignificant in comparison to the natural resilience of ecosystems. Thus, for the purpose of this analysis, livestock grazing is not considered a surface-disturbing activity.
- Livestock will be managed so that range conditions move toward desired conditions.
- Grazing allotments will remain open if there continues to be demand. If a permittee is willing to relinquish their grazing preference for an allotment, the allotment could move to vacant status and the permit could be terminated. The decision to change the existing status of an allotment and terminate a permit may be based on the demand for permitted use and utilization of forage or the dedication of the land to another purpose.
- There may be minor, but acceptable, discrepancies between the actual acres of allotments within the decision area and the GIS layers used to determine the extent of those allotments.
- Unauthorized use of rangeland will be minimal to nonexistent.
- Surface-disturbing activities for campgrounds and recreation sites will remove all vegetation for livestock grazing.
- It will take up to two growing seasons after a prescribed burn for vegetation to rehabilitate to a level that grazing could resume.

Impact Analysis Indicators

- Increases or decreases in surface acres available for livestock grazing
- Increases or decreases in forage available to livestock
- Motorized and nonmotorized recreation activities that may disturb livestock or reduce forage
- Reduction in water resources for livestock grazing operations

I.4.15 Areas of Critical Environmental Concern***Methodology***

Direct effects on Areas of Critical Environmental Concern (ACECs) are considered to be those that either impair or enhance the values for which the ACEC was proposed for designation. As such, relevance and importance criteria were analyzed for the proposed Mud Buttes ACEC. The BLM also analyzed effects on relevant and important values from either the ACEC designation or, where the ACEC is not proposed for designation, the management actions for other resources. All effects discussed are direct, though some may not occur immediately after implementation of management actions. The proposed Mud Buttes ACEC was overlaid and compared in GIS with other resources and uses that could impact or prevent irreparable damage

to relevant ACEC values, including important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes. Overlaid resources and uses included coal leasing in areas that the coal RFD anticipates would be developed, areas where casual collection of invertebrate and plant fossils would be allowed, locatable minerals, mineral materials, fluid mineral leasing (including stipulations), ROWs, and OHV use.

Impact Analysis Area

- Direct/Indirect/Cumulative
 - The 960 acres of BLM-administered land within the proposed Mud Buttes ACEC.

Impact Analysis Temporal Scale

- Short-term effects are anticipated to begin and end within the first 5 years after the action is implemented. Long-term effects would last beyond 5 years.

Impact Analysis Assumptions

- Although management actions for most resources and uses have decision area-wide application, ACEC management prescriptions apply only to those lands within the proposed Mud Buttes ACEC.

Impact Analysis Indicators

- Acres of BLM-administered land subject to management actions that would impact or prevent irreparable damage to relevant ACEC values, including important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes

I.4.16 Wild and Scenic Rivers

Methodology

The wild and scenic rivers analysis was prepared in accordance with BLM Manual 6400 (Wild and Scenic Rivers – Policy and Program Direction for Identification, Evaluation, Planning, and Management) using information from overlapping GIS datasets compiled by the BLM during the preparation of the Wild and Scenic River Eligibility Report (see BLM 2021c), which included:

- GIS data for perennial and intermittent streams from the US Geological Survey National Hydrography Dataset
- Nationwide Rivers Inventory List
- BLM-published planning documents

River segments identified as eligible for inclusion in the National Wild and Scenic Rivers System were overlaid and compared in GIS with other resources and uses that could affect the segments' outstandingly remarkable values (ORVs) or tentative classification. Overlaid resources and uses included visual resources, ROWs, and the pallid sturgeon protection actions listed in **Chapter 2** (e.g., NSO, mineral material disposal, and nonenergy solid mineral leasing closures). Text was then prepared to summarize the potential impacts of each resource and use on the eligible segments, which includes reaches along the Little Missouri River, Missouri River, and the Yellowstone River in North Dakota.

Impact Analysis Area

- Direct/Indirect
 - Within 0.5-mile of either side of the ordinary high-water mark of eligible river segments
- Cumulative
 - Planning area

Impact Analysis Temporal Scale

- Short-term effects are anticipated to begin and end within the first 5 years after the action is implemented. Long-term effects would last beyond 5 years.

Impact Analysis Assumptions

- The BLM will not permit any actions that affect the free-flowing nature, ORVs, or tentative classification of any eligible or suitable segments, or result in the reduction of water quality to the extent that it no longer supports the ORVs. There would be no direct impacts from other resources within eligible or suitable segments. Recognizing that, the analysis of impacts on eligible and suitable segments includes an evaluation of where management actions might be inconsistent with the tentative classification given to each segment, and potential impacts on its ORVs or free-flowing nature.

Impact Analysis Indicators

- For segments determined eligible or suitable for inclusion in the National Wild and Scenic Rivers System, any potential change to the ORVs or free-flowing nature of the river segment or corridor area from its current state, as described in the Wild and Scenic River Eligibility Report (BLM 2021b)
- For segments determined eligible or suitable for inclusion in the National Wild and Scenic Rivers System, any potential change to the tentative classification (i.e., wild, scenic, or recreational), as described in the Wild and Scenic River Eligibility Report (BLM 2021b)

I.4.17 National Scenic and Historic Trails***Methodology***

Impacts on National Scenic and Historic Trails from proposed management actions on other resources and resource uses are based on interdisciplinary team knowledge of the planning area and review of literature. Effects are quantified where possible, and, in the absence of quantitative data, qualitative effects are presented based on professional judgment. National trail baseline information was reviewed for current understanding of known resources and to determine the condition of the resources. Also, all laws pertinent to determining effects on national trails (e.g., National Trails System Act) are included in the criteria for determining effects. This known information was overlain with the actions found under each alternative in **Chapter 2**, and conclusions were drawn based on an understanding of how these types of actions may affect known and potentially discoverable resources. This analysis uses GIS acreage calculations for the occurrence of each indicator (where quantifiable) on areas of BLM-administered surface or subsurface land intersected with potential BLM management activities under each alternative, including mineral materials, fluid mineral leasing (including stipulations), and VRM.

Impact Analysis Area

- Direct/Indirect
 - Within 0.5-mile of either side of the trail centerlines
- Cumulative
 - Planning area

Impact Analysis Temporal Scale

- Short-term effects are anticipated to begin and end within the first 5 years after the action is implemented. Long-term effects would last beyond 5 years.

Impact Analysis Assumptions

- National Trails and related sites are protected in accordance with federal laws, BLM regulations and policy, and interagency or partnership agreements.
- The BLM looks favorably at opportunities to cooperate with private landowners to minimize or eliminate disturbance to National Trails.
- The BLM is not the administering agency for the National Trails in the planning area; both the Lewis and Clark National Historic Trail and the North Country National Scenic Trail are administered by the US Department of the Interior, National Park Service. The BLM will coordinate with the administering agency to implement the comprehensive plans for the trails.

Impact Analysis Indicators***Lewis and Clark National Historic Trail***

- A change in the level of disturbance that would result in the loss of integrity or destruction of physical remnants of a trail, including ruts, swales, and associated sites or artifacts, whether that loss results from erosion due to increased use, looting, or vandalism, which in turn results in a loss of archaeological information

North Country National Scenic Trail

- A change in scenic quality of the BLM-administered lands through which the trail passes

I.4.18 Social and Economic Conditions***Methodology***

To calculate the economic contribution of forecasted federal coal and fluid mineral production in the socioeconomic analysis area, an input-output model, Impact Analysis for Planning Model (IMPLAN), was used to estimate the economic activity supported by forecasted production levels. Input-output models (e.g., IMPLAN) are static models that measure output in an economy at a point in time. The model is used to describe an economy at a single point in time, introduce a change to the economy, and evaluate the economy after it has responded to the change. Static models do not describe how an economy moves from one equilibrium to the next, and they assume there are no changes in wage rates, input prices, economic linkages, and property values.

The IMPLAN model was used to gather response coefficients, which are ratios that measure how employment, labor income, and output respond to a one job change in the industrial sector. By applying

response coefficients to direct employment, the level of economic activity supported by forecasted coal production can be estimated.

The IMPLAN model estimates the effects of changes in employment on economic indicators that follow from direct, indirect, and induced impacts. For this analysis, direct effects can be described as the direct jobs and incomes associated with federal coal and fluid mineral production. Indirect effects are the economic changes associated with backward-linked industries, such as the purchases made by suppliers to coal production in the planning area. Induced effects are the economic changes resulting from household spending from changes in household income. Taken together, these combined economic effects describe the contribution from changes in the level of coal and fluid mineral production over the 20-year planning horizon. Effects are described in terms of output, income, and jobs.

The economic analysis area selected for modeling effects from oil and gas activities consists of the 26 counties in the socioeconomic study area identified in the AMS (BLM 2020b) and was determined based on the location of existing and potential new oil and gas wells and the economic ties to neighboring counties. Model inputs were constructed based on RFD scenario values for production by alternative and by year, as well as estimated numbers of wells drilled by alternative and by year (see BLM 2022). Data is presented for RFD forecasts for development levels from 2021-2040. Additionally, industry estimates for average well drilling and production costs obtained from the US Energy Information Agency (EIA) were applied to RFD scenario estimates to determine average annual regional contributions. For production values, the model made use of weighted averages of gross revenue based on published EIA reference case estimates for crude oil well-head and natural gas prices.

The economic analysis area selected for modeling effects from coal-related activities was determined based on locations of existing mines and economic ties to neighboring counties within nearby metropolitan statistical areas (MSAs). The planning area contains three counties where coal production currently occurs (McLean, Mercer, and Oliver). Additionally, as best practices for IMPLAN modeling require the use of contiguous counties, two other counties from the adjacent Bismarck MSA (Morton and Burleigh) were also included.

Model inputs to IMPLAN regional input-output modeling for coal were based on estimated direct average annual jobs. Job numbers were derived from an employment to production ratio based on published historical employment and production data for coal mines in the planning area, as available from the Mine Health Safety Administration (MSHA) for 2016-2022. This employment per ton baseline ratio was then applied to RFD estimates for future production to obtain an estimate for direct annual jobs. Coal mines in the analysis area are mine-to-mouth mines where coal produced directly supplies a power-plant. As a result, jobs and production are anticipated to be less impacted by market variability than other mines with other end uses, including export.

For the analysis, data year 2018 was selected in IMPLAN. Data is presented in \$2024 dollar years. Monetary transfers in the form of taxes or fees were excluded from the IMPLAN analysis; however, these transfer payments are discussed under *Impacts on Tax Revenue from Fluid Mineral and Coal Production* in **Chapter 3, Section 3.5.1**.

Impact Analysis Area

- Direct/Indirect
 - The general socioeconomic impact analysis area encompasses the following 26 counties: Adams, Billings, Bottineau, Bowman, Burke, Burleigh, Divide, Dunn, Emmons, Golden Valley, Grant, Hettinger, McHenry, McKenzie, McLean, Mercer, Morton, Mountrail, Oliver, Renville, Sheridan, Sioux, Slope, Stark, Ward, and Williams. The geographic extent of the analysis area represents the counties that contain BLM-administered surface lands and minerals in the area of western North Dakota that represents the most active mineral and energy development in the state.
 - The oil and gas economic analysis area is determined based on the location of existing and potential new oil and gas wells and the economic ties to neighboring counties (i.e., counties with federal decision space and any neighboring counties included in MSAs for these counties). For the coal economic analysis area, the area is determined based on locations of existing mines (McLean, Mercer, and Oliver Counties) and potential for mine expansion and economic ties to neighboring counties (i.e., MSAs).
- Cumulative
 - Same as Direct/Indirect

Impact Analysis Temporal Scale

- Short-term effects are anticipated to begin and end within the first 5 years after the action is implemented. Long-term effects would last beyond 5 years.

Impact Analysis Assumptions

- The quantitative analysis of fluid mineral-related socioeconomic impacts by alternative is based on the RFD scenario values for production by alternative by year and the number of wells by alternative drilled per year as is shown in the baseline RFD scenario data (see BLM 2022). Costs for drilling oil and gas wells are assumed to be the same. Given the history of oil development in the Bakken region, it is assumed that a 100 percent well completion rate will occur in the planning area.
- The quantitative analysis of coal-related socioeconomic impacts by alternative is based on estimated production levels per job (calculated based on average production and employment levels for currently operating mines from 2016-2022, updated from 2016-2020 as provided in the DEIS). Coal production output per worker (i.e., jobs per ton of coal produced) is assumed to hold constant for the entire planning period.

Impact Analysis Indicators

- Employment supported by federal fluid mineral production and development and coal production
- Labor income supported by federal fluid mineral production and development and coal production
- Value added by federal fluid mineral production and development and coal production
- Tax revenue collected by federal, state, and county governments from federal fluid mineral and coal production
- Quality of life factors, such as public services, property values, traffic, crime, and other changes to the social environment

I.4.19 Environmental Justice

Methodology

Executive Order 12898 requires each federal agency to “make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental impacts of its programs, policies, and activities on minority populations and low-income populations” (Executive Order 12898, 59 *Federal Register* 7629, 1994).

Environmental justice refers to the fair treatment and meaningful involvement of people of all races, cultures, and incomes with respect to the development, implementation, and enforcement of environmental laws, regulations, programs, and policies. It focuses on environmental hazards and human health to avoid disproportionately high and adverse human health or environmental impacts on minority and low-income populations; consequently, analyzing environmental justice impacts requires two steps: 1) an initial screening to identify the presence of minority, low-income, and Tribal populations; and 2) identifying any impacts that disproportionately affect these populations, as compared with non-minority and middle- and upper-income populations.

Counties were identified under step (1) above based on CEQ 1997 and guidance provided in BLM IM 2022-059, Environmental Justice Implementation (BLM 2022b). US Census Bureau data were used to determine whether the populations in each county met at least one of the following criteria:

The minority population in the affected area exceeds 50 percent or is meaningfully greater than the minority population percentage in the general population or other relevant geographic unit. For this analysis, “meaningfully greater” is defined as more than 110 percent of the minority population in the reference population of the state of North Dakota.

Low-income populations are defined as populations with 50 percent or more of the population in the affected area with individuals with income below 200 percent of the poverty level, or with a percent of individuals with income below 200 percent of the poverty level equal to or higher than that of the reference population (the state of North Dakota).

Federally recognized Tribes automatically qualify as environmental justice populations. In addition, for the purposes of this analysis, tribal environmental justice populations are considered present when the percentage of tribal individuals in county is greater than or equal to 50 percent or greater than or equal to the percentage of tribal individuals in the reference area (the state of North Dakota). Tribal individuals are defined as those who identify as American Indian and Alaska Native alone or in combination with one or more races.

Based on the percentage of the population identified as one or more racial or ethnic minority, Dunn, McKenzie, Mountrail, Sioux, and Williams Counties qualify as having minority populations that meet the criteria to be considered environmental justice populations. When Native American populations were specifically examined, Dunn, McKenzie, McLean, Mountrail, and Sioux Counties meet the criteria to be considered environmental justice populations. Based on an examination of low-income statistics, Adams, Emmons, Grant, Hettinger, McKenzie, Mercer, Mountrail, Oliver, Sheridan, Sioux, and Slope Counties were identified as having populations meeting criteria to be considered low-income populations. Thus, Adams, Dunn, Emmons, Grant, Hettinger, McKenzie, McLean, Mercer, Mountrail, Oliver, Sioux,

McKenzie, Mountrail, Sheridan, Sioux, Slope, Ward, and Williams counties are considered environmental justice populations for the purpose of this analysis.

The second step, identifying disproportionately adverse impacts, is completed using additional Council on Environmental Quality guidance and BLM IM 2022-059 (BLM 2022b), which states the following when considering if an impact is disproportionately high and adverse:

“Disproportionately high and adverse human health effects: When determining whether human health effects are disproportionately high and adverse, agencies are to consider the following three factors to the extent practicable:

- a) Whether the health effects, which may be measured in risks and rates, are significant (as employed by NEPA), or above generally accepted norms. Adverse health effects may include bodily impairment, infirmity, illness, or death; and
- b) Whether the risk or rate of hazard exposure by a minority population, low-income population, or Indian Tribe to an environmental hazard is significant (as employed by NEPA) and appreciably exceeds or is likely to appreciably exceed the risk or rate to the general population or other appropriate comparison group; and
- c) Whether health effects occur in a minority population, low-income population, or Indian Tribe affected by cumulative or multiple adverse exposures from environmental hazards.

Disproportionately high and adverse environmental effects: When determining whether environmental effects are disproportionately high and adverse, agencies are to consider the following three factors to the extent practicable:

- a) Whether there is or will be an impact on the natural or physical environment that significantly (as employed by NEPA) and adversely affects a minority population, low-income population, or Indian Tribe. Such effects may include ecological, cultural, human health, economic, or social impacts on minority communities, low-income communities, or Indian Tribes when those impacts are interrelated to impacts on the natural or physical environment; and
- b) Whether environmental effects are significant (as employed by NEPA) and are or may be having an adverse impact on minority populations, low-income populations, or Indian Tribes that appreciably exceeds or is likely to appreciably exceed those on the general population or other appropriate comparison group; and
- c) Whether the environmental effects occur or would occur in a minority population, low-income population, or Indian Tribe affected by cumulative or multiple adverse exposures from environmental hazards.”

Impact Analysis Area

- Direct/Indirect
 - The environmental justice analysis area includes the same 26 counties with BLM administered lands and/or minerals: Adams, Billings, Bottineau, Bowman, Burke, Burleigh, Divide, Dunn, Emmons, Golden Valley, Grant, Hettinger, McHenry, McKenzie, McLean, Mercer, Morton, Mountrail, Oliver, Renville, Sheridan, Sioux, Slope, Stark, Ward, and Williams. The geographic extent of the study area represents the counties that contain BLM-administered

surface lands and minerals in the area of western North Dakota that represents the most active mineral and energy development in the state. For the environmental justice section, details are included for select census tracts in which county level data indicates an environmental justice population.

- Cumulative
 - Same as Direct/Indirect

Impact Analysis Temporal Scale

- Short-term effects are anticipated to begin and end within the first 5 years after the action is implemented. Long-term effects would last beyond 5 years.

Impact Analysis Indicators

- Changes in income or employment in low-income or minority populations or Tribes
- Impediments to economic development in low-income or minority communities or Tribes
- Disproportionate potential for human health and safety impacts on low-income or minority communities or Tribes

I.4.20 Tribal Interests

Methodology

Impact analysis and conclusions are based on interdisciplinary team knowledge of the planning area, the BLM's prior and ongoing consultation with federally recognized Tribes with a cultural affiliation in the area, and existing literature, as described in the *Treaty and Tribal Interests* section of the AMS (BLM 2020b). Potential effects on Tribal interests are quantified where possible, and, in the absence of quantitative data, qualitative effects are presented based on professional judgement.

The BLM consults regularly with Tribes on specific projects and resource management planning, beginning with notification and, if requested, including follow-up coordination, meetings, and consultation. Regular meetings are held with the Three Affiliated Tribes (Mandan, Hidatsa, and Arikara Nation) of the Fort Berthold Indian Reservation on mineral issues affecting the reservation (BLM 2020b).

Tribal rights and interests are difficult to assess. This is because each Tribe is unique, and there is a wide variety of natural and cultural uses, traditional or economic values, and physical locations that may be present. The impacts on areas and resources of Tribal interest and the severity of those impacts depend on the perspective and context of the Tribe, affected communities, or individuals. In other words, impacts are highly subjective and dependent on what is economically, environmentally, culturally, or spiritually important to affected Tribes and individuals. This highlights the importance of BLM's responsibility to ensure that meaningful consultation and coordination concerning Tribal treaty rights and trust resources are conducted on a government-to-government basis to protect Tribal resources and rights.

Impact Analysis Area

- Direct/Indirect from minerals
 - Coal decision area
 - Fluid mineral decision area
 - Other mineral decision area
- Direct/Indirect from all resources other than minerals
 - BLM-administered surface decision area
- Cumulative
 - Planning area

Impact Analysis Temporal Scale

- Short-term effects are anticipated to begin and end within the first 5 years after the action is implemented. Long-term effects would last beyond 5 years.

Impact Analysis Assumptions

- The BLM has the responsibility to ensure that meaningful consultation and coordination concerning Tribal treaty rights and trust resources are conducted on a government-to-government basis with federally recognized Tribes. Under the federal government's trust responsibilities to Tribes, the BLM and other federal agencies have an obligation to exercise statutory and other legal authorities in a manner that protects Tribal resources and rights.
- Indian trust assets are legal interests held by the federal government for federally recognized Indian Tribes or nations or for individual Indians. Native American economic rights and uses include using the mineral resources and Indian trust surface lands in the planning area.
- The extent of current Tribal practices and trends involving natural resource use and spiritual and religious ceremonies in the planning area is not known. Consultation with Tribes for traditional, religious, and economic concerns regarding projects and resource management planning continues as a means of addressing resource and land use issues involving Tribal interests, including mineral development on reservation lands.
- Treaties are negotiated contracts made pursuant to the US Constitution and are considered the "supreme law of the land." They take precedence over any conflicting state laws because of the supremacy clause of the Constitution (Article 6, Clause 2). Treaty rights are not gifts or grants from the United States but are bargained for concessions. These rights are grants-of-rights from the Tribes, rather than to the Tribes. The reciprocal obligations assumed by the federal government and Indian Tribes constitute the chief source of present-day federal Indian law. The United States and represented agencies, including the BLM, have a special trust relationship with Indian Tribes in part because of these treaties (BLM 2020b).
- American Indian Tribes historically used numerous places in the planning area for habitation, natural resources foraging, hunting subsistence, and spiritual and religious ceremonies. Practices that continue today include Tribal groups visiting rock art sites, burial areas, and traditional camp and ceremonial sites, as well as gathering plants and minerals.
- The boundaries of these resources and impact areas are often difficult to assess. They are typically identified through confidential government-to-government consultation when federal agencies undertake rulemaking and planning activities and must comply with NEPA and Section 106 of the

NHPA. Cultural resources important to Native Americans that meet the criteria for eligibility for listing on the NRHP are referred to as traditional cultural properties. For Tribes, maintaining confidentiality and customs regarding traditional knowledge may take precedence over publicly identifying and evaluating these resources, unless they are in imminent danger of damage or destruction. In some cases, the potential concerns can be at the landscape scale where the visual setting is considered essential or where major landforms and locations have defined place names and are described in the oral traditions (BLM 2020b).

- Protecting cultural resources and some vegetation communities, which may have special significance in Indigenous communities, across alternatives would provide protections to traditional use areas and tribally important areas and resources. **Chapter 3** provides an in-depth analysis of effects on vegetation communities, including those that may be important to Native American cultures.

Impact Analysis Indicators

- Changes to the amount of oil and gas development in the planning area, places, resources, uses, and values on BLM-administered land that are important to the Tribe or Tribal members, or both.
- Changes to air, water, or other natural resource quality due to changes in normal operational discharges of hazardous chemicals or due to unintentional hazardous releases. See also **Section I.4.1**, Air Quality and Climate and **Section I.4.19**, Environmental Justice.

I.4.21 Public Health and Safety

Methodology

The nature and types of potential effects on public health and safety from proposed actions under each alternative are based on BLM interdisciplinary team knowledge of the planning area. Where possible, the analysis uses quantitative data to describe effects on public health and safety from other resources and resource use programs. This analysis uses GIS acreage calculations for the occurrence of each indicator (where quantifiable) on areas of BLM-administered surface or subsurface land. When acres could not be determined, a qualitative approach was used.

Impact Analysis Area

- Direct/Indirect from minerals
 - Coal decision area
 - Fluid mineral decision area
 - Other mineral decision area
- Direct/Indirect from all resources other than minerals
 - BLM-administered surface decision area
- Cumulative
 - Planning area

Impact Analysis Temporal Scale

- Short-term effects are anticipated to begin and end within the first 5 years after the action is implemented. Long-term effects would last beyond 5 years.

Impact Analysis Assumptions

- Public health and safety issues would receive priority consideration in the management of BLM-administered lands.
- Potential for risk to visitor safety would increase with increasing numbers of BLM-administered land users.
- Activities and resources available in and around the planning area would continue to be important to the health and safety of current and future residents.
- All new hazardous materials and waste sites would be identified and characterized.
- Resource development activities would identify any possible generation of hazardous waste.
- No substantial new hazardous materials uses and waste generation would occur within the planning area.
- The BLM would respond to hazardous materials releases in coordination and conjunction with other authorized Federal, State, and local government organizations, responsible parties, and land owners. Emergency cleanup actions would be implemented on sites posing a substantial threat to the public and the environment.

Impact Analysis Indicators

- Increase in oil and gas development
- Qualitative discussion of exposure to hazards that are associated with the effects of climate change

I.5 REFERENCES

- Belnap, J., J. H. Kaltenecker, R. Rosentreter, J. Williams, S. Leonard, and D. Eldridge. 2001. Biological Soil Crusts: Ecology and Management. Bureau of Land Management Technical Reference 1730-2. National Science and Technology Center, Denver, Colorado.
- BIA (Bureau of Indian Affairs). 2017. Mitigated Programmatic Environmental Assessment. Oil and Gas Development on Trust Lands and Minerals. Fort Berthold Indian Reservation. United States Department of the Interior. Bureau of Indian Affairs. Great Plains Regional Office. Aberdeen, South Dakota. May.
- BLM (US Department of the Interior, Bureau of Land Management). 2015a. 2015 North Dakota Greater Sage-Grouse Approved Resource Management Plan Amendment. North Dakota Field Office. Dickinson, North Dakota. September 2015.
- _____. 2020b. Analysis of the Management Situation. North Dakota Field Office. Dickinson, North Dakota. July 2020.
- _____. 2021b. Wild and Scenic River Eligibility Report. North Dakota Field Office, Dickinson, North Dakota. August 2021.
- _____. 2022a. Bureau of Land Management North Dakota Field Office, Reasonably Foreseeable Development Scenario for Oil and Gas Development. North Dakota Field Office, Dickinson, North Dakota. May 2022. Bowman County. 2012. Bowman County Comprehensive Plan. Adopted April 3, 2012. Internet website: <https://bowmannd.com/wp-content/uploads/2020/09/Bowman-County-Comp-Plan.pdf>

- _____. 2022b. Bureau of Land Management North Dakota Field Office Reasonably Foreseeable Development Scenario for Coal Development. North Dakota Field Office, Dickinson, North Dakota.
- _____. 2022c. Bureau of Land Management North Dakota Field Office Reasonably Foreseeable Development Scenario for Minerals Material Development North Dakota Field Office, Dickinson, North Dakota.
- EPA. 2013. Guidance for Indian Tribes Seeking Class I Redesignation of Indian Country Pursuant to Section 164(c) of the Clean Air Act. August 29. Internet website: <https://www.epa.gov/sites/default/files/2016-08/documents/guidancetribesclassiredesignationcaa.pdf>
- IPCC (International Panel on Climate Change). 2014. Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II, III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. IPCC, Geneva, Switzerland.
- NDGFD (North Dakota Game and Fish Department) 2015. North Dakota State Wildlife Action Plan. Electronic PDF: https://gf.nd.gov/sites/default/files/publications/swap-2015_0.pdf. Internet website: <https://gf.nd.gov/publications/599>
- NPS (National Park Service). 1995. National Register Bulletin 15: How to Apply the National Register Criteria for Evaluation. Internet website: https://www.nps.gov/subjects/nationalregister/upload/NRB-15_web508.pdf
- _____. 2018. Class I Areas on Native American Tribal Lands. US Department of the Interior, National Park Service. Internet website: <https://www.nps.gov/subjects/air/tribalclass1.htm>.
- _____. 2021. Theodore Roosevelt National Park Superintendent's Compendium of Designations, Closures, Permit Requirements and Other Restrictions Imposed Under Discretionary Authority. Internet website: <https://www.nps.gov/thro/learn/management/upload/THRO-Compendium-2021-version-6-2.pdf>
- NRCS (United States Department of Agriculture, Natural Resources Conservation Service). 2001. Soil Quality Information Sheet: Rangeland Soil Quality—Water Erosion. Internet website: <https://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/resource/>.
- WRAP (Western Regional Air Partnership). 2021. Regional Haze Planning Work Group. Internet website: <https://www.wrapair2.org/RHPWG.aspx>.

This page intentionally left blank.

Appendix J

Vegetation and Wildlife Species Tables

This page intentionally left blank.

TABLE OF CONTENTS

Appendix

Page

APPENDIX J. VEGETATION AND WILDLIFE SPECIES TABLES	J-1
J.1 Introduction.....	J-1

TABLES

Page

J-1	Total Sensitive Species Count	J-1
J-2	BLM Montana/Dakotas Species Occurrence by Field Office 2020.....	J-2
J-3	Endangered Species Act Federally Listed Species and Designated Critical Habitat	J-13
J-4	Bureau of Land Management Sensitive Species	J-14
J-5	North Dakota Special Status Plant Habitats.....	J-17
J-6	Priority Native Plant Species for Seed Collection	J-19

This page intentionally left blank.

Appendix J. Vegetation and Wildlife Species Tables

J.1 INTRODUCTION

Table J-1 Identifies the BLM sensitive species that occur within the North Dakota planning area. **Table J-2** shows BLM sensitive species for all field offices in the Montana/Dakotas. A field office listed in the table indicates that a species is considered a BLM Sensitive Species for that field office. A species may occur in additional field offices but is not considered Sensitive for that field office unless it is listed in the table.

Table J-1
Total Sensitive Species Count

Sensitive Species Count	Number
Amphibians	0
Birds	21
Fish	4
Invertebrates	1
Mammals	3
Reptiles	4
Plants	12
Total	45

Source: BLM 2020b

Table J-2
BLM Montana/Dakotas Species Occurrence by Field Office 2020

Common Name	Scientific Name	Field Offices
AMPHIBIANS		
Great Plains Toad	<i>Anaxyrus cognatus</i>	Billings, Glasgow, Havre, Lewistown, Malta, Miles City, South Dakota, Upper Missouri River Breaks
Northern Leopard Frog	<i>Lithobates pipiens</i>	Butte, Dillon, Missoula
Western Toad	<i>Anaxyrus boreas</i>	Butte, Dillon, Lewistown, Missoula
BIRDS		
American Bittern	<i>Botaurus lentiginosus</i>	Billings, Butte, Dillon, Glasgow, Havre, Lewistown, Malta, Miles City, Missoula, North Dakota, South Dakota, Upper Missouri River Breaks
Baird's Sparrow	<i>Centronyx bairdii</i>	Billings, Butte, Glasgow, Havre, Lewistown, Malta, Miles City, North Dakota, South Dakota, Upper Missouri River Breaks
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Billings, Butte, Dillon, Glasgow, Havre, Lewistown, Malta, Miles City, Missoula, North Dakota, South Dakota, Upper Missouri River Breaks
Black Tern	<i>Chilodoniass niger</i>	Billings, Butte, Dillon, Glasgow, Havre, Lewistown, Malta, Miles City, Missoula, North Dakota, South Dakota, Upper Missouri River Breaks
Black-backed Woodpecker	<i>Picoides arcticus</i>	Billings, Butte, Glasgow, Havre, Lewistown, Miles City, Missoula, North Dakota, South Dakota
Black-Billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	Billings, Glasgow, Havre, Lewistown, Malta, Miles City, North Dakota, Upper Missouri River Breaks
Blue-Gray Gnatcatcher	<i>Polioptila caerulea</i>	Billings, South Dakota
Brewer's Sparrow	<i>Spizella breweri</i>	Billings, Butte, Dillon, Glasgow, Havre, Lewistown, Malta, Miles City, Missoula, South Dakota, Upper Missouri River Breaks
Burrowing Owl	<i>Athene cunicularia</i>	Billings, Butte, Dillon, Glasgow, Havre, Lewistown, Malta, Miles City, North Dakota, South Dakota, Upper Missouri River Breaks

Common Name	Scientific Name	Field Offices
Caspian Tern	<i>Hydroprogne caspia</i>	Butte, Dillon, Glasgow, Havre, Lewistown, Malta, Miles City, South Dakota, Upper Missouri River Breaks
Chestnut-collared Longspur	<i>Calcarius ornatus</i>	Billings, Butte, Dillon, Glasgow, Havre, Lewistown, Malta, Miles City, North Dakota, South Dakota, Upper Missouri River Breaks
Common Tern	<i>Sterna hirundo</i>	Billings, Butte, Dillon, Glasgow, Havre, Lewistown, Malta, Miles City, South Dakota, Upper Missouri River Breaks
Ferruginous Hawk	<i>Buteo regalis</i>	Billings, Butte, Dillon, Glasgow, Havre, Lewistown, Malta, Miles City, North Dakota, South Dakota, Upper Missouri River Breaks
Flammulated Owl	<i>Psioscops flammeolus</i>	Butte, Dillon, Havre, Lewistown, Missoula
Forster's Tern	<i>Sterna forsteri</i>	Billings, Butte, Dillon, Glasgow, Havre, Lewistown, Malta, South Dakota, Upper Missouri River Breaks
Franklin's Gull	<i>Leucophocus pipixcan</i>	Billings, Butte, Dillon, Glasgow, Havre, Lewistown, Malta, Miles City, North Dakota, South Dakota
Golden Eagle	<i>Aquila chrysaetos</i>	Billings, Butte, Dillon, Glasgow, Havre, Lewistown, Malta, Miles City, Missoula, North Dakota, South Dakota, Upper Missouri River Breaks
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	North Dakota
Great Gray Owl	<i>Strix nebulosa</i>	Billings, Butte, Dillon, Havre, Missoula
Greater Sage-grouse	<i>Centrocercus urophasianus</i>	Billings, Dillon, Glasgow, Havre, Lewistown, Malta, Miles City, North Dakota, South Dakota, Upper Missouri River Breaks
Horned Grebe	<i>Podiceps auritus</i>	Glasgow, Havre, Malta, Missoula, North Dakota, Upper Missouri River Breaks
Lewis's Woodpecker	<i>Melanerpes lewis</i>	Billings, Butte, Dillon, Missoula
Loggerhead Shrike	<i>Lanius ludovicianus</i>	Billings, Butte, Dillon, Glasgow, Havre, Lewistown, Malta, Miles City, Missoula, North Dakota, South Dakota, Upper Missouri River Breaks
Long-billed Curlew	<i>Numenius americanus</i>	Billings, Butte, Dillon, Glasgow, Havre, Lewistown, Malta, Miles City, Missoula, North Dakota, South Dakota, Upper Missouri River Breaks

Common Name	Scientific Name	Field Offices
Marbled Godwit	<i>Limosa fedoa</i>	North Dakota
McCown's Longspur	<i>Rhychophanes mccownii</i>	Billings, Butte, Dillon, Glasgow, Havre, Lewistown, Malta, Miles City, South Dakota, Upper Missouri River Breaks
Mountain Plover	<i>Charadrius montanus</i>	Billings, Butte, Dillon, Glasgow, Havre, Lewistown, Malta, Miles City, South Dakota, Upper Missouri River Breaks
Peregrine Falcon	<i>Falco peregrinus</i>	Billings, Butte, Dillon, Glasgow, Havre, Lewistown, Malta, Miles City, Missoula, North Dakota, South Dakota, Upper Missouri River Breaks
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	Billings, Glasgow, Havre, Lewistown, Malta, Miles City, North Dakota, South Dakota, Upper Missouri River Breaks
Sagebrush Sparrow	<i>Artemisiospiza nevadensis</i>	Billings, Butte, Dillon, Lewistown, South Dakota
Sage Thrasher	<i>Oreoscoptes montanus</i>	Billings, Butte, Dillon, Glasgow, Havre, Lewistown, Malta, Miles City, South Dakota, Upper Missouri River Breaks
Sprague's Pipit	<i>Anthus spragueii</i>	Billings, Butte, Dillon, Glasgow, Havre, Lewistown, Malta, Miles City, North Dakota, South Dakota, Upper Missouri River Breaks
Trumpeter Swan	<i>Cygnus buccinator</i>	Butte, Dillon, Missoula, South Dakota
Veery	<i>Catharus fuscescens</i>	Billings, Butte, Dillon, Glasgow, Havre, Lewistown, Malta, Miles City, South Dakota, Upper Missouri River Breaks
White-faced Ibis	<i>Plegadis chihi</i>	Billings, Butte, Dillon, Glasgow, Havre, Lewistown, Malta, Miles City, South Dakota, Upper Missouri River Breaks
Yellow Rail	<i>Coturnicops noveboracensis</i>	Glasgow, North Dakota

Common Name	Scientific Name	Field Offices
FISH		
Arctic Grayling (native fluvial population)	<i>Thymallus arcticus montanus</i>	Butte, Dillon
Iowa Darter	<i>Etheostoma exile</i>	Glasgow, Havre, Malta, Miles City, North Dakota, South Dakota
Northern Redbelly x Finescale dace	<i>Chrosomus eos x Chrosomus neogaeus</i>	Glasgow, Havre, Lewistown, Malta, Upper Missouri River Breaks
Paddlefish	<i>Polyodon spathula</i>	Glasgow, Havre, Lewistown, Malta, Miles City, North Dakota, Upper Missouri River Breaks
Northern Pearl dace	<i>Margariscus nachtriebi</i>	Glasgow, Havre, Malta
Sauger	<i>Sander canadensis</i>	Billings, Glasgow, Havre, Lewistown, Malta, Miles City, North Dakota, South Dakota, Upper Missouri River Breaks
Sturgeon chub	<i>Macrhybopsis gelida</i>	Glasgow, Havre, Lewistown, Malta, Miles City, North Dakota, South Dakota, Upper Missouri River Breaks
Westslope cutthroat trout	<i>Oncorhynchus clarkii lewisi</i>	Butte, Dillon, Glasgow, Lewistown, Missoula
Yellowstone cutthroat trout	<i>Oncorhynchus clarkii bouvieri</i>	Billings, Butte
INVERTEBRATES		
A Mayfly	<i>Raptoheptagenia cruentata</i>	Miles City
Regal Fritillary	<i>Speyeria idalia</i>	South Dakota
Western Bumble Bee	<i>Bombus occidentalis</i>	Billings, Butte, Dillon, Glasgow, Havre, Lewistown, Malta, Miles City, Missoula, North Dakota, South Dakota, Upper Missouri River Breaks
Western Pearlshell	<i>Margaritifera falcata</i>	Butte, Dillon, Missoula

Common Name	Scientific Name	Field Offices
MAMMALS		
Black-tailed Prairie Dog	<i>Cynomys ludovicianus</i>	Billings, Butte, Glasgow, Havre, Lewistown, Malta, Miles City, North Dakota, South Dakota, Upper Missouri River Breaks
Eastern Red Bat	<i>Lasiurus borealis</i>	Billings, Glasgow, Havre, Lewistown, Malta, Miles City, Upper Missouri River Breaks
Fisher	<i>Pekania pennanti</i>	Butte, Missoula
Fringed Myotis	<i>Myotis thysanodes</i>	Billings, Butte, Dillon, Glasgow, Havre, Lewistown, Malta, Miles City, Missoula, South Dakota, Upper Missouri River Breaks
Gray Wolf	<i>Canis lupus</i>	Billings, Butte, Dillon, Glasgow, Havre, Lewistown, Malta, Missoula, South Dakota
Hoary Bat	<i>Lasiurus cinereus</i>	Billings, Butte, Dillon, Glasgow, Havre, Lewistown, Malta, Miles City, Missoula, Upper Missouri River Breaks
Pallid Bat	<i>Antrozous pallidus</i>	Billings, Havre, Lewistown, Malta
Pygmy Rabbit	<i>Brachylagus idahoensis</i>	Butte, Dillon
Spotted Bat	<i>Euderma maculatum</i>	Billings, Butte, Dillon, Havre, Lewistown, Malta, Miles City, Upper Missouri River Breaks
Swift Fox	<i>Vulpes velox</i>	Billings, Glasgow, Havre, Lewistown, Malta, Miles City, North Dakota, South Dakota, Upper Missouri River Breaks
Townsend's Big-eared Bat	<i>Corynorhinus townsendii</i>	Billings, Butte, Dillon, Glasgow, Havre, Lewistown, Malta, Miles City, Missoula, North Dakota, South Dakota, Upper Missouri River Breaks
White-tailed Prairie Dog	<i>Cynomys leucurus</i>	Billings
Wolverine	<i>Gulo</i>	Butte, Dillon, Lewistown, Missoula

Common Name	Scientific Name	Field Offices
REPTILES		
Greater Short-horned Lizard	<i>Phrynosoma hernandesi</i>	Billings, Glasgow, Havre, Lewistown, Malta, Miles City, North Dakota, South Dakota, Upper Missouri River Breaks
Western Milk Snake	<i>Lampropeltis gentilis</i>	Billings, Glasgow, Lewistown, Malta, Miles City, South Dakota, Upper Missouri River Breaks
Snapping Turtle	<i>Chelydra serpentina</i>	Billings, Miles City, North Dakota
Spiny Softshell	<i>Apalone spinifera</i>	Billings, Havre, Lewistown, Malta, Miles City, South Dakota, Upper Missouri River Breaks
Plains Hog-nosed Snake	<i>Heterodon nasicus</i>	Billings, Glasgow, Havre, Lewistown, Malta, Miles City, North Dakota, Upper Missouri River Breaks
Smooth Green Snake	<i>Opheodrys vernalis</i>	Miles City, North Dakota
PLANTS		
Cusick's Horse-mint	<i>Agastache cusickii</i>	Dillon
Sidecluster Milkweed	<i>Asclepias lanuginosa</i>	North Dakota
Rattlepod	<i>Astragalus americanus</i>	South Dakota
Painted Milkvetch	<i>Astragalus ceramicus</i> var. <i>apus</i>	Dillon
Bitterroot Milkvetch	<i>Astragalus scaphoides</i>	Dillon

Common Name	Scientific Name	Field Offices
Railhead Milkvetch	<i>Astragalus terminalis</i>	Dillon
Sapphire Rockcress	<i>Boechea fecunda</i> (<i>Arabis fecunda</i>)	Butte
Peculiar Moonwort	<i>Botrychium paradoxum</i>	Butte, Missoula
American Thorowax	<i>Bupleurum americanum</i>	South Dakota
Idaho Sedge	<i>Carex idahoa</i>	Butte, Dillon
Slender-lobed Clematis	<i>Clematis columbiana</i> var. <i>tenuiloba</i>	North Dakota
Fendler Cat's-eye	<i>Cryptantha fendleri</i>	Dillon
Torrey's Cryptantha	<i>Cryptantha torreyana</i>	North Dakota
Lesser Yellow Lady's Slipper	<i>Cypripedium parviflorum</i>	North Dakota
Taproot Fleabane	<i>Erigeron radicans</i>	North Dakota
Railroad Canyon Wild Buckwheat	<i>Eriogonum soliceps</i>	Butte, Dillon
Visher's Buckwheat	<i>Eriogonum visherii</i>	Miles City, North Dakota, South Dakota

Common Name	Scientific Name	Field Offices
Fendler's Spurge	<i>Euphorbia fendleri</i>	South Dakota
Tulip Gentain	<i>Eustoma exaltatum</i>	South Dakota
Great Plains Stickseed	<i>Lappula cenchrusoides</i>	North Dakota
Prairie Pinweed	<i>Lechea stricta</i>	North Dakota
Common Starlily	<i>Leucocrinum montanum</i>	North Dakota
Broad-lipped Twayblade	<i>Listera convallarioides</i>	South Dakota
Taper-tip Desert-parsley	<i>Lomatium attenuatum</i>	Dillon, Missoula
Nuttall Desert-parsley	<i>Lomatium nuttallii</i>	Miles City, South Dakota
Hairy Woodrush	<i>Luzula acuminata</i>	South Dakota
Small-flowered Woodrush	<i>Luzula parviflora</i>	South Dakota
Bristly Clubmoss	<i>Lycopodium annotinum</i>	South Dakota
Ground Cedar	<i>Lycopodium complanatum</i>	South Dakota
Oniongrass	<i>Melica bulbosa</i>	South Dakota

Common Name	Scientific Name	Field Offices
Streamside Bluebells	<i>Mertensia ciliata</i>	South Dakota
Western Saxifrage	<i>Micranthes occidentalis</i> (<i>Saxifraga occidentalis</i>)	South Dakota
Nodding Silver-puffs	<i>Microseris nutans</i>	South Dakota
One-flower Wintergreen	<i>Moneses uniflora</i> (<i>Pyrola uniflora</i>)	South Dakota
Yellow Evening Primrose	<i>Oenothera flava</i>	South Dakota
One-flowered Broomrape	<i>Orobanche uniflora</i>	South Dakota
Meadow Lousewort	<i>Pedicularis crenulata</i>	Dillon
Cary Penstemon	<i>Penstemon caryi</i>	Billings
Lemhi Beardtongue	<i>Penstemon lemhiensis</i>	Butte, Dillon
Shining Penstemon	<i>Penstemon nitidus</i>	South Dakota
Sunbright	<i>Phemeranthus parviflorus</i> (<i>Talinum parviflorum</i>)	North Dakota
Payson's Bladderpod	<i>Physaria carinata</i>	Billings, Dillon, Missoula
Pryor Mt. Bladderpod	<i>Physaria lesicii</i>	Billings

Common Name	Scientific Name	Field Offices
Thick-leaf Bladderpod	<i>Physaria pachyphylla</i>	Billings
Beautiful Bladderpod	<i>Physaria pulchella</i>	Dillon, Missoula
White-bark Pine	<i>Pinus albicaulis</i>	Billings, Butte, Dillon, Havre, Lewistown, Missoula
Northern White Orchid	<i>Platanthera dilatata</i>	South Dakota
Round-leaved Orchid	<i>Platanthera orbiculata</i>	South Dakota
Spiny Skeletonweed	<i>Pleiacanthus spinosus</i> = <i>Stephanomeria spinosa</i> = <i>Lygodesmia spinosa</i>	Billings, Butte, Dillon
Narrowpoint Knotweed	<i>Polygonum leptocarpum</i>	North Dakota
Alkali Primrose	<i>Primula alcalina</i>	Dillon
Beartooth Large-flowered Goldenweed	<i>Pyrrocoma carthamoides</i> var. <i>subsquarrosa</i>	Billings
Heartleaf Buttercup	<i>Ranunculus cardiophyllus</i>	North Dakota
Shining Willow	<i>Salix lucida</i>	South Dakota
Shoshonea	<i>Shoshonea pulvinata</i>	Billings
Hooker's Townsend-daisy	<i>Townsendia hookeri</i>	South Dakota

Common Name	Scientific Name	Field Offices
Sand Puffs	<i>Tripterocalyx micranthus</i>	South Dakota
Mountain Huckleberry	<i>Vaccinium membranaceum</i>	South Dakota

Source: BLM 2020b

Table J-3 presents the Endangered Species Act-listed threatened or endangered species and designated critical habitat that may occur in the planning area.

Table J-3
Endangered Species Act Federally Listed Species and Designated Critical Habitat

Common Name	Scientific Name	Listing Status	Critical Habitat Designation (Yes/No)
BIRDS			
Piping Plover	<i>Charadrius melodus</i>	Threatened	Yes
Red Knot	<i>Calidris canutus</i>	Threatened	No
Whooping Crane	<i>Grus americana</i>	Endangered	No
FISH			
Pallid Sturgeon	<i>Scaphirhynchus albus</i>	Endangered	No
INVERTEBRATES			
Dakota Skipper	<i>Hesperia dacotae</i>	Threatened	Yes
Monarch Butterfly	<i>Danaus plexippus</i>	Candidate	No
Poweshiek Skipperling	<i>Oarisma poweshiek</i>	Endangered	Yes
Rusty Patched Bumble Bee	<i>Bombus affinis</i>	Endangered	No
MAMMALS			
Black Footed Ferret	<i>Mustela nigripes</i>	Endangered	No
Gray Wolf	<i>Canis lupus</i>	Threatened/Under Review	No
Grizzly Bear	<i>Ursus arctos</i>	Threatened (GYE & NCDE)	No
Northern Long-Eared Bat (Northern Myotis)	<i>Myotis septentrionalis</i>	Endangered	No
PLANTS			
Western Prairie Fringed Orchid	<i>Platanthera praeclara</i>	Threatened	No

Source: BLM 2020b

Notes:

- 1) (GYE) = Greater Yellowstone Ecosystem and (NCDE) = Northern Continental Divide Ecosystem.
- 2) (MBTA) = Denotes species protected under the Migratory Bird Treaty Act
- 3) (BGEPA) = Denotes species protected under the Bald and Golden Eagle Protection Act
- 4) (BCC) = Birds of Conservation Concern. Identifies species of migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act (ESA) of 1973.
- 5) BCRs = Bird Conservation Regions are ecologically distinct regions in North America with similar bird communities, habitats, and resource management issues.

Table J-4 presents the list of BLM sensitive species and indicates whether any are also federal candidate species, federally delisted, or proposed for Endangered Species Act listing.

Table J-4
Bureau of Land Management Sensitive Species

Common Name	Scientific Name	Federal Candidate	Federally Delisted	Federally Proposed
BIRDS				
American Bittern (MBTA) (BCC) BCR Regions 11 & 17	<i>Botaurus lentiginosus</i>	No	No	No
Bairds Sparrow (MBTA) (BCC) BCR Regions 11 & 17	<i>Centronyx bairdii</i>	No	No	No
Bald Eagle (BGEPA) (BCC) BCR Regions 10, 11 & 17	<i>Haliaeetus leucocephalus</i>	No	No	No
Black Tern (MBTA) (BCC) BCR Region 11	<i>Chilodoniass niger</i>	No	No	No
Black-backed Woodpecker (MBTA)	<i>Picoides arcticus</i>	No	No	No
Black-billed Cuckoo (MBTA) (BCC) BCR Regions 11 & 17	<i>Coccyzus erythrophthalmus</i>	No	No	No
Burrowing Owl (MBTA) (BCC) BCR Region 17	<i>Athene cunicularia</i>	No	No	No
Chestnut –collared Longspur (MBTA) (BCC) BCR Regions 11 & 17	<i>Calcarius ornatus</i>	No	No	No
Ferruginous Hawk (MBTA) (BCC) BCR Regions 10 & 17	<i>Buteo regalis</i>	No	No	No
Flammulated Owl (MBTA) (BCC) BCR Region 10	<i>Psioscops flammeolus</i>	No	No	No
Franklin's Gull (MBTA)	<i>Leucophocus pipixcan</i>	No	No	No
Golden Eagle (BGEPA) (BCC) BCR Region 17	<i>Aquila chrysaetos</i>	No	No	No
Grasshopper sparrow (MBTA) BCC, Regions 11 and 17	<i>Ammodramus savannarum</i>	No	No	No
Greater Sage-Grouse	<i>Centrocerus urophasianus</i>	No	No	No
Horned Grebe (MBTA) (BCC) BCR Regions 11 & 17	<i>Podiceps auritus</i>	No	No	No

Common Name	Scientific Name	Federal Candidate	Federally Delisted	Federally Proposed
BIRDS (continued)				
Loggerhead Shrike (MBTA) (BCC) BCR Regions 10 & 17	<i>Lanius ludovicianus</i>	No	No	No
Long-billed Curlew (MBTA) (BCC) BCR Regions 10, 11 & 17	<i>Numenius americanus</i>	No	No	No
Marbled Godwit (MBTA) (BCC) BCR Regions 11 & 17	<i>Limosa fedoa</i>	No	No	No
Peregrine Falcon (MBTA) (BCC) BCR Regions 10, 11 & 17	<i>Falco peregrinus</i>	No	No	No
Red-headed Woodpecker (MBTA) (BCC) BCR Regions 11 & 17	<i>Melanerpes erythrocephalus</i>	No	No	No
Sprague's Pipit (MBTA) (BCC) BCR Regions 11 & 17	<i>Anthus spragueii</i>	No	No	No
Yellow Rail (MBTA) (BCC) BCR Regions 11 & 17	<i>Coturnicops noveboracensis</i>	No	No	No
FISH				
Iowa Darter	<i>Etheostoma exile</i>	No	No	No
Paddlefish	<i>Polyodon spathula</i>	No	No	No
Sauger	<i>Sander canadensis</i>	No	No	No
Sturgeon Chub	<i>Macrhybopsis gelida</i>	No	No	No
INVERTEBRATES				
Western Bumble Bee	<i>Bombus occidentalis</i>	No	No	No
MAMMALS				
Black-tailed Prairie Dog	<i>Cynomys ludovicianus</i>	No	No	No
Swift Fox	<i>Vulpes velox</i>	No	No	No
Townsend's Big-eared Bat	<i>Corynorhinus townsendii</i>	No	No	No
REPTILES				
Greater Short-horned Lizard	<i>Phrynosoma hernandesi</i>	No	No	No
Snapping Turtle	<i>Chelydra serpentina</i>	No	No	No
Plains Hog-nosed Snake	<i>Heterodon nasicus</i>	No	No	No
Smooth Green Snake	<i>Opheodrys vernalis</i>	No	No	No
PLANTS				
NORTH DAKOTA				
Sidecluster Milkweed	<i>Asclepias lanuginosa</i>	No	No	No
Slender-lobed Clematis	<i>Clematis columbiana</i> var. <i>tenuiloba</i>	No	No	No
Torrey's Cryptantha	<i>Cryptantha torreyana</i>	No	No	No
Lesser Yellow Lady's Slipper	<i>Cypripedium parviflorum</i>	No	No	No
Taproot Fleabane	<i>Erigeron radicans</i>	No	No	No
Visher's Buckwheat	<i>Eriogonum visherii</i>	No	No	No
Great Plains Stickseed	<i>Lappula cenchrusoides</i>	No	No	No

Common Name	Scientific Name	Federal Candidate	Federally Delisted	Federally Proposed
NORTH DAKOTA (continued)				
Prairie Pinweed	<i>Lechea stricta</i>	No	No	No
Common Starlily	<i>Leucocrinum montanum</i>	No	No	No
Sunbright	<i>Phemeranthus parviflorus</i> (<i>Talinum parviflorum</i>)	No	No	No
Narrowpoint Knotweed	<i>Polygonum leptocarpum</i>	No	No	No
Heartleaf Buttercup	<i>Ranunculus cardiophyllus</i>	No	No	No

Source: BLM 2020b

Note: Plant names in () are the State of Montana recognized name for the species. All other names are the federally accepted names from [USDA Plants](#).

Table Acronyms: (GYE) = Greater Yellowstone Ecosystem, (NCDE) = Northern Continental Divide Ecosystem, (MBTA) = Denotes species protected under the Migratory Bird Treaty Act, (BGEPA) = Denotes species protected under the Bald and Golden Eagle Protection Act, (BCC) = Birds of Conservation Concern. Identifies species of migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act (ESA) of 1973, BCRs = Bird Conservation Regions are ecologically distinct regions in North America with similar bird communities, habitats, and resource management issues.

Table J-5 presents the list of North Dakota special status plants, their associated habitats, and whether they occur on slopes greater than 30 percent.

Table J-5
North Dakota Special Status Plant Habitats

Common Name	Scientific Name	Habitat Type	Habitat on slopes >30%
Sidecluster Milkweed	<i>Asclepias lanuginosa</i>	Dry; woods, prairies; in rocky soil. Wisconsin Flora	Yes
Slender-lobed Clematis	<i>Clematis columbiana</i> var. <i>tenuiloba</i>	Rock faces and peaks, typically in exposed areas or thin pine woodlands (FNA 1997).	Yes
Torrey's Cryptantha	<i>Cryptantha torreyana</i>	Sparsely vegetated soil, talus of woodlands, open forest, grasslands, sagebrush steppe, often in partial shade around the base of trees; plains, valleys, montane (Lesica et al. 2012)	Yes
Lesser Yellow Lady's Slipper	<i>Cypripedium parviflorum</i>	Fens, damp mossy woods, seepage areas, and moist forest-meadow ecotones in the valley to lower montane zones	No
Taproot Fleabane	<i>Erigeron radicans</i>	Dry, rocky sites in the alpine and subalpine; commonly on limestone	Yes
Visher's Buckwheat	<i>Eriogonum visherii</i>	Harsh and erosive environments where competition is limited and succession is slow (Schmoller 1993)	Yes
Great Plains Stickseed	<i>Lappula cenchrusoides</i>	Dry soils in open areas (The Great Plains Flora Association 1986)	No
Prairie Pinweed	<i>Lechea stricta</i>	Woods, prairies, shores; in sandy soil Wisconsin Flora	
Common Starlily	<i>Leucocrinum montanum</i>	Grasslands; plains, valleys (Lesica et al. 2012)	No
Sunbright	<i>Phemeranthus parviflorus</i> (<i>Talinum parviflorum</i>)	Dry woodland, grassland, chaparral, scrub, canyon washes, mountain slopes and ledges, sandy, usually rocky soil, outcrops; 0-2,700 m (FNA 2001) Bare sandy or sandy clay soils	Yes
Narrowpoint Knotweed	<i>Polygonum leptocarpum</i>	Grasslands, roadsides, ephemeral wetlands; plains, valleys (Lesica et al. 2012)	No
Heartleaf Buttercup	<i>Ranunculus cardiophyllus</i>	Moist meadows and grasslands often associated with wetlands in the foothill zone	No

Sources: The Great Plains Flora Association. 1986. Flora of the Great Plains. R. L. McGregor and T. M. Barkley (eds). University Press of Kansas.

FNA (Flora of North America). 1997. Flora of North America, North of Mexico; Volume 3: Magnoliophyta: Magnoliidae and Hamamelidae. Flora of North America Editorial Committee (eds). Oxford University Press.

FNA (Flora of North America). 2001. Flora of North America, North of Mexico; Volume 4: Magnoliophyta: Caryophyllidae, part 1. Flora of North America Editorial Committee (eds). Oxford University Press.

Lesica, P. 2012. Montana Vascular Plants. M. Lavin and P. F. Stickney (contributors). Botanical Research Institute of Texas Press. Fort Worth, Texas.

Schmoller, David A. 1993. Status Survey for *Eriogonum visherii*. USDA Forest Service - Region 2, Nebraska National Forest, Wall, South Dakota.

This page intentionally left blank.

Table J-6 presents the list of priority native plant species for seed collection. It includes characteristics of these species, such as lifeform, seed classification, and applicable ecoregion.

Table J-6
Priority Native Plant Species for Seed Collection

Lifeform Type	Certification	Scientific Name (and Example species)	Common Name	* Seed Classification	Minimum PLS Rating	Wyoming Basin and NW Great Plains Eco-Regions (Wyoming, Montana, North Dakota, South Dakota, Collect Y or N)	Northwestern Glaciated Plains Eco-Region (Montana, North Dakota, Collect Y or N)	Seed Transfer Zones within an Ecoregion: Provisional (P), Provisional Mojave (PM), Empirical (E)
Grass	SI	<i>Acnatherum hymenoides</i>	Indian Ricegrass	NPVG	0.76	Y	N	M1H2L3 (E)
Grass	SI	<i>Achnatherum hymenoides</i>	Indian Ricegrass	NPVG	0.76	N	Y	0-5 Deg. F. / 6-12 (P)
Grass	SI	<i>Achnatherum hymenoides</i>	Indian Ricegrass	NPVG	0.76	Y	N	5-10 Deg. F. / 3-6 (P)
Grass	SI	<i>Achnatherum hymenoides</i>	Indian Ricegrass	NPVG	0.76	Y	Y	5-10 Deg. F. / 6-12 (P)
Grass	SI	<i>Achnatherum hymenoides</i>	Indian Ricegrass	NPVG	0.76	Y	Y	10 - 15 Deg. F. / 3 - 6 (P)
Grass	SI	<i>Achnatherum hymenoides</i>	Indian Ricegrass	NPVG	0.76	Y	Y	10 - 15 Deg. F. / 6-12 (P)
Grass	SI	<i>Andropogon gerardii</i>	Big Bluestem	NPVG	0.5	N	Y	0-5 Deg. F. / 3-6 (P)
Grass	SI	<i>Andropogon gerardii</i>	Big Bluestem	NPVG	0.5	Y	Y	0-5 Deg. F. /6-12 (P)
Grass	SI	<i>Andropogon gerardii</i>	Big Bluestem	NPVG	0.5	Y	Y	5-10 Deg. F. /6-12 (P)
Grass	SI	<i>Bouteloua curtipendula</i>	Sideoats Grama	NPVG	0.48	N	Y	0-5 Deg. F. / 6-12 (P)
Grass	SI	<i>Bouteloua curtipendula</i>	Sideoats Grama	NPVG	0.48	Y	N	5-10 Deg. F. / 3-6 (P)
Grass	SI	<i>Bouteloua curtipendula</i>	Sideoats Grama	NPVG	0.48	Y	Y	5-10 Deg. F. / 6-12 (P)
Grass	SI	<i>Bouteloua curtipendula</i>	Sideoats Grama	NPVG	0.48	Y	Y	10 - 15 Deg. F. / 3 - 6 (P)
Grass	SI	<i>Bouteloua curtipendula</i>	Sideoats Grama	NPVG	0.48	Y	Y	10 - 15 Deg. F. / 6-12 (P)
Grass	SI	<i>Bouteloua gracilis</i>	Blue Grama	NPVG	0.48	N	Y	0-5 Deg. F. / 6-12 (P)
Grass	SI	<i>Bouteloua gracilis</i>	Blue Grama	NPVG	0.48	Y	N	5-10 Deg. F. / 3-6 (P)
Grass	SI	<i>Bouteloua gracilis</i>	Blue Grama	NPVG	0.48	Y	Y	5-10 Deg. F. / 6-12 (P)
Grass	SI	<i>Bouteloua gracilis</i>	Blue Grama	NPVG	0.48	Y	Y	10 - 15 Deg. F. / 3 - 6 (P)
Grass	SI	<i>Bouteloua gracilis</i>	Blue Grama	NPVG	0.48	Y	Y	10 - 15 Deg. F. / 6-12 (P)
Grass	SI	<i>Distichlis spicata</i>	Inland Saltgrass	NPVG	0.68	N	Y	0-5 Deg. F. / 6-12 (P)
Grass	SI	<i>Distichlis spicata</i>	Inland Saltgrass	NPVG	0.68	Y	N	5-10 Deg. F. / 3-6 (P)
Grass	SI	<i>Distichlis spicata</i>	Inland Saltgrass	NPVG	0.68	Y	Y	5-10 Deg. F. / 6-12 (P)
Grass	SI	<i>Distichlis spicata</i>	Inland Saltgrass	NPVG	0.68	Y	Y	10 - 15 Deg. F. / 3 - 6 (P)
Grass	SI	<i>Distichlis spicata</i>	Inland Saltgrass	NPVG	0.68	Y	Y	10 - 15 Deg. F. / 6-12 (P)
Grass	SI	<i>Elymus elymoides</i>	Squirrel Tail	NPVG	0.68	N	Y	0-5 Deg. F. / 6-12 (P)
Grass	SI	<i>Elymus elymoides</i>	Squirrel Tail	NPVG	0.68	Y	N	5-10 Deg. F. / 3-6 (P)
Grass	SI	<i>Elymus elymoides</i>	Squirrel Tail	NPVG	0.68	Y	Y	5-10 Deg. F. / 6-12 (P)
Grass	SI	<i>Elymus elymoides</i>	Squirrel Tail	NPVG	0.68	Y	Y	10 - 15 Deg. F. / 6-12
Grass	SI	<i>Elymus elymoides</i>	Squirrel Tail	NPVG	0.68	Y	Y	10 - 15 Deg. F./ 3 - 6 (P)
Grass	SI	<i>Elymus glaucus</i>	Blue Wildrye	NPVG	0.68	Y	N	10-15 Deg. F. / 6-12 (P)
Grass	SI	<i>Elymus glaucus</i>	Blue Wildrye	NPVG	0.68	Y	N	5-10 Deg. F. / 6-12 (P)
Grass	SI	<i>Elymus glaucus</i>	Blue Wildrye	NPVG	0.68	Y	N	10-15 Deg. F. / 3-6 (P)
Grass	SI	<i>Elymus trachycaulus</i>	Slender Wheatgrass	NPVG	0.77	Y	Y	10-15 Deg. F. / 3-6 (P)
Grass	SI	<i>Elymus trachycaulus</i>	Slender Wheatgrass	NPVG	0.77	Y	Y	5-10 Deg. F. / 6-12 (P)
Grass	SI	<i>Elymus trachycaulus</i>	Slender Wheatgrass	NPVG	0.77	Y	Y	10-15 Deg. F./6-12 (P)
Grass	SI	<i>Festuca idahoensis</i>	Idaho Fescue	NPVG	0.77	Y	N	10-15 Deg. F. /6-12 (P)
Grass	SI	<i>Festuca idahoensis</i>	Idaho Fescue	NPVG	0.77	Y	N	5-10 Deg. F. /6-12 (P)
Grass	SI	<i>Festuca idahoensis</i>	Idaho Fescue	NPVG	0.77	Y	N	10-15 Deg. F. /3-6 (P)
Grass	SI	<i>Hesperostipa comata</i>	Needle and Thread Grass	NPVG	0.56	Y	Y	10-15 Deg. F. / 6-12 (P)

Lifeform Type	Certification	Scientific Name (and Example species)	Common Name	* Seed Classification	Minimum PLS Rating	Wyoming Basin and NW Great Plains Eco-Regions (Wyoming, Montana, North Dakota, South Dakota, Collect Y or N)	Northwestern Glaciated Plains Eco-Region (Montana, North Dakota, Collect Y or N)	Seed Transfer Zones within an Ecoregion: Provisional (P), Provisional Mojave (PM), Empirical (E)
Grass	SI	<i>Hesperostipa comata</i>	Needle and Thread Grass	NPVG	0.56	Y	Y	10-15 Deg. F. / 3-6 (P)
Grass	SI	<i>Hesperostipa comata</i>	Needle and Thread Grass	NPVG	0.56	Y	Y	5-10 Deg. F. / 6-12 (P)
Grass	SI	<i>Hesperostipa comata</i>	Needle and Thread Grass	NPVG	0.56	Y	Y	0-5 Deg. F. / 6-12 (P)
Grass	SI	<i>Koeleria macrantha</i>	June Grass	NPVG	0.72	N	Y	0-5 Deg. F. / 6-12 (P)
Grass	SI	<i>Koeleria macrantha</i>	June Grass	NPVG	0.72	Y	N	5-10 Deg. F. / 3-6 (P)
Grass	SI	<i>Koeleria macrantha</i>	June Grass	NPVG	0.72	Y	Y	5-10 Deg. F. / 6-12 (P)
Grass	SI	<i>Koeleria macrantha</i>	June Grass	NPVG	0.72	Y	Y	10 - 15 Deg. F. / 3 - 6 (P)
Grass	SI	<i>Koeleria macrantha</i>	June Grass	NPVG	0.72	Y	Y	10 - 15 Deg. F. / 6-12 (P)
Grass	SI	<i>Muhlenbergia cuspidata</i>	Plains Muhly	NPVG	0.68	Y	Y	0-5 Deg. F. / 6-12 (P)
Grass	SI	<i>Muhlenbergia cuspidata</i>	Plains Muhly	NPVG	0.68	Y	Y	5-10 Deg. F. / 6-12 (P)
Grass	SI	<i>Muhlenbergia cuspidata</i>	Plains Muhly	NPVG	0.68	Y	Y	10-15 Deg. F. / 6-12 (P)
Grass	SI	<i>Nassella viridula</i>	Green Needlegrass	NVPG	0.45	N	Y	0-5 Deg. F. / 3-6 (P)
Grass	SI	<i>Nassella viridula</i>	Green Needlegrass	NPVG	0.45	Y	Y	0-5 Deg. F. / 6-12 (P)
Grass	SI	<i>Nassella viridula</i>	Green Needlegrass	NPVG	0.45	Y	N	5-10 Deg. F. / 3-6 (P)
Grass	SI	<i>Nassella viridula</i>	Green Needlegrass	NVPG	0.45	Y	Y	5-10 Deg. F. / 6-12 (P)
Grass	SI	<i>Nassella viridula</i>	Green Needlegrass	NVPG	0.45	Y	Y	10-15 Deg. F. / 3-6 (P)
Grass	SI	<i>Nassella viridula</i>	Green Needlegrass	NVPG	0.45	Y	Y	10-15 Deg. F. / 6-12 (P)
Grass	SI	<i>Pascopyrum smithii</i>	Western Wheatgrass	NPVG	0.77	Y	N	5-10 Deg. F. / 3-6 (P)
Grass	SI	<i>Pascopyrum smithii</i>	Western Wheatgrass	NPVG	0.77	Y	Y	5-10 Deg. F. / 6-12 (P)
Grass	SI	<i>Pascopyrum smithii</i>	Western Wheatgrass	NPVG	0.77	Y	Y	10-15 Deg. F /6-12 (P)
Grass	SI	<i>Poa secunda</i>	Sandberg Bluegrass	NPVG	0.72	N	Y	0-5 Deg. F. / 6-12 (P)
Grass	SI	<i>Poa secunda</i>	Sandberg Bluegrass	NPVG	0.72	Y	N	5-10 Deg. F. / 3-6 (P)
Grass	SI	<i>Poa secunda</i>	Sandberg Bluegrass	NPVG	0.72	Y	Y	5-10 Deg. F. / 6-12 (P)
Grass	SI	<i>Poa secunda</i>	Sandberg Bluegrass	NPVG	0.72	Y	Y	10 - 15 Deg. F. / 3 - 6 (P)
Grass	SI	<i>Poa secunda</i>	Sandberg Bluegrass	NPVG	0.72	Y	Y	10 - 15 Deg. F. / 6-12 (P)
Grass	SI	<i>Pseudoroegneria spicata</i>	Bluebunch Wheatgrass	NPVG	0.77	N	Y	0-5 Deg. F. / 6-12 (P)
Grass	SI	<i>Pseudoroegneria spicata</i>	Bluebunch Wheatgrass	NPVG	0.77	Y	N	5-10 Deg. F. / 3-6 (P)
Grass	SI	<i>Pseudoroegneria spicata</i>	Bluebunch Wheatgrass	NPVG	0.77	Y	Y	5-10 Deg. F. / 6-12 (P)

Lifeform Type	Certification	Scientific Name (and Example species)	Common Name	* Seed Classification	Minimum PLS Rating	Wyoming Basin and NW Great Plains Eco-Regions (Wyoming, Montana, North Dakota, South Dakota, Collect Y or N)	Northwestern Glaciated Plains Eco-Region (Montana, North Dakota, Collect Y or N)	Seed Transfer Zones within an Ecoregion: Provisional (P), Provisional Mojave (PM), Empirical (E)
Grass	SI	<i>Pseudoroegneria spicata</i>	Bluebunch Wheatgrass	NPVG	0.77	Y	Y	10 - 15 Deg. F. / 3 - 6 (P)
Grass	SI	<i>Pseudoroegneria spicata</i>	Bluebunch Wheatgrass	NPVG	0.77	Y	Y	10 - 15 Deg. F. / 6-12 (P)
Grass	SI	<i>Puccinellia nuttalliana</i>	Nuttall's alkaligrass	NPVG	0.4	N	Y	0-5 Deg. F. / 6-12 (P)
Grass	SI	<i>Puccinellia nuttalliana</i>	Nuttall's alkaligrass	NPVG	0.4	Y	N	5-10 Deg. F. / 3-6 (P)
Grass	SI	<i>Puccinellia nuttalliana</i>	Nuttall's alkaligrass	NPVG	0.4	Y	Y	5-10 Deg. F. / 6-12 (P)
Grass	SI	<i>Puccinellia nuttalliana</i>	Nuttall's alkaligrass	NPVG	0.4	Y	Y	10 - 15 Deg. F. / 3 - 6 (P)
Grass	SI	<i>Puccinellia nuttalliana</i>	Nuttall's alkaligrass	NPVG	0.4	Y	Y	10 - 15 Deg. F. / 6-12 (P)
Grass	SI	<i>Schizachyrium scoparium</i>	Little Bluestem	NPVG	0.6	Y	Y	10-15 Deg. F. / 6-12 (P)
Grass	SI	<i>Schizachyrium scoparium</i>	Little Bluestem	NPVG	0.6	Y	Y	10-15 Deg. F. / 3-6 (P)
Grass	SI	<i>Schizachyrium scoparium</i>	Little Bluestem	NPVG	0.6	Y	Y	5-10 Deg. F./6-12 (P)
Grass	SI	<i>Schizachyrium scoparium</i>	Little Bluestem	NPVG	0.6	Y	Y	0-5 Deg. F./6-12 (P)
Grass	SI	<i>Spartina gracilis</i>	Alkali Cordgrass	NPVG	0.4	N	Y	0-5 Deg. F. / 6-12 (P)
Grass	SI	<i>Spartina gracilis</i>	Alkali Cordgrass	NPVG	0.4	Y	N	5-10 Deg. F. / 3-6 (P)
Grass	SI	<i>Spartina gracilis</i>	Alkali Cordgrass	NPVG	0.4	Y	Y	5-10 Deg. F. / 6-12 (P)
Grass	SI	<i>Spartina gracilis</i>	Alkali Cordgrass	NPVG	0.4	Y	Y	10 - 15 Deg. F. / 3 - 6 (P)
Grass	SI	<i>Spartina gracilis</i>	Alkali Cordgrass	NPVG	0.4	Y	Y	10 - 15 Deg. F. / 6-12 (P)
Grass	SI	<i>Spartina petinata</i>	Prairie Cordgrass	NPVG	0.4	N	Y	0-5 Deg. F. / 6-12 (P)
Grass	SI	<i>Spartina petinata</i>	Prairie Cordgrass	NPVG	0.4	Y	N	5-10 Deg. F. / 3-6 (P)
Grass	SI	<i>Spartina petinata</i>	Prairie Cordgrass	NPVG	0.4	Y	Y	5-10 Deg. F. / 6-12 (P)
Grass	SI	<i>Spartina petinata</i>	Prairie Cordgrass	NPVG	0.4	Y	Y	10 - 15 Deg. F. / 3 - 6 (P)
Grass	SI	<i>Spartina petinata</i>	Prairie Cordgrass	NPVG	0.4	Y	Y	10 - 15 Deg. F. / 6-12 (P)
Grass	SI	<i>Sporobolus airoides</i>	Alkali Sacaton	NPVG	0.68	N	Y	0-5 Deg. F. / 6-12 (P)
Grass	SI	<i>Sporobolus airoides</i>	Alkali Sacaton	NPVG	0.68	Y	N	5-10 Deg. F. / 3-6 (P)
Grass	SI	<i>Sporobolus airoides</i>	Alkali Sacaton	NPVG	0.68	Y	Y	5-10 Deg. F. / 6-12 (P)
Grass	SI	<i>Sporobolus airoides</i>	Alkali Sacaton	NPVG	0.68	Y	Y	10 - 15 Deg. F. / 3 - 6 (P)
Grass	SI	<i>Sporobolus airoides</i>	Alkali Sacaton	NPVG	0.68	Y	Y	10 - 15 Deg. F. / 6-12 (P)
Grass	SI	<i>Sporobolus cryptandrus</i>	Sand Dropseed	NPVG	0.81	Y	Y	10-15 Deg. F. / 6-12 (P)
Grass	SI	<i>Sporobolus cryptandrus</i>	Sand Dropseed	NPVG	0.81	Y	Y	5-10 Deg. F. / 6-12 (P)
Grass	SI	<i>Sporobolus cryptandrus</i>	Sand Dropseed	NPVG	0.81	N	Y	0-5 Deg. F. / 6-12 (P)
Forbs	SI	<i>Asclepias speciosa</i>	Showy Milweed	NPVG	0.72	N	N	
Forbs	SI	<i>Achillea millefolium occidentale</i>	Western Yarrow	NPVG	0.81	Y	Y	10-15 Deg. F./6-12 (P)
Forbs	SI	<i>Achillea millefolium occidentale</i>	Western Yarrow	NPVG	0.81	Y	Y	5-10 Deg. F. / 6-12 (P)
Forbs	SI	<i>Achillea millefolium occidentale</i>	Western Yarrow	NPVG	0.81	Y	Y	10-15 Deg. F. / 3-6 (P)
Forbs	SI	<i>Achillea millefolium occidentale</i>	Western Yarrow	NPVG	0.81	Y	N	5-10 Deg. F. / 3-6 (P)
Forbs	SI	<i>Achillea millefolium occidentale</i>	Western Yarrow	NPVG	0.81	N	Y	0-5 Deg. F. / 6-12 (P)
Forbs	S1	<i>Agoseris</i> (A. <i>glauca</i> , A. <i>grandiflora</i>)	Agoseris	NPVG	0.68	Y	Y	10-15 Deg. F./6-12 (P)
Forbs	S2	<i>Agoseris</i> (A. <i>glauca</i> , A. <i>grandiflora</i>)	Agoseris	NPVG	0.68	Y	Y	5-10 Deg. F. / 6-12 (P)
Forbs	S3	<i>Agoseris</i> (A. <i>glauca</i> , A. <i>grandiflora</i>)	Agoseris	NPVG	0.68	Y	Y	10-15 Deg. F. / 3-6 (P)
Forbs	S2	<i>Agoseris</i> (A. <i>glauca</i> , A. <i>grandiflora</i>)	Agoseris	NPVG	0.68	Y	N	5-10 Deg. F. / 3-6 (P)
Forbs	S3	<i>Agoseris</i> (A. <i>glauca</i> , A. <i>grandiflora</i>)	Agoseris	NPVG	0.68	N	Y	0-5 Deg. F. / 6-12 (P)
Forbs	SI	<i>Astragalus</i> (A. <i>agrestis</i> , A. <i>drummondii</i> , A. <i>gracilis</i> , A. <i>tenellus</i>)	Milkvetch	NPVG	0.66	Y	Y	10-15 Deg. F./6-12 (P)

Lifeform Type	Certification	Scientific Name (and Example species)	Common Name	* Seed Classification	Minimum PLS Rating	Wyoming Basin and NW Great Plains Eco-Regions (Wyoming, Montana, North Dakota, South Dakota, Collect Y or N)	Northwestern Glaciated Plains Eco-Region (Montana, North Dakota, Collect Y or N)	Seed Transfer Zones within an Ecoregion: Provisional (P), Provisional Mojave (PM), Empirical (E)
Forbs	SI	<i>Astragalus</i> (A. agrestis, A. drummondii, A. gracilis, A. tenellus)	Milkvetch	NPVG	0.66	Y	Y	5-10 Deg. F. / 6-12 (P)
Forbs	SI	<i>Astragalus</i> (A. agrestis, A. drummondii, A. gracilis, A. tenellus)	Milkvetch	NPVG	0.66	Y	Y	10-15 Deg. F. / 3-6 (P)
Forbs	SI	<i>Astragalus</i> (A. agrestis, A. drummondii, A. gracilis, A. tenellus)	Milkvetch	NPVG	0.66	Y	N	5-10 Deg. F. / 3-6 (P)
Forbs	SI	<i>Astragalus</i> (A. agrestis, A. drummondii, A. gracilis, A. tenellus)	Milkvetch	NPVG	0.66	N	Y	0-5 Deg. F. / 6-12 (P)
Forbs	SI	<i>Asclepias</i> (A. speciosa, A. viridiflora)	Milkweed	NPVG	0.72	Y	Y	10-15 Deg. F./6-12 (P)
Forbs	SI	<i>Asclepias</i> (A. speciosa, A. viridiflora)	Milkweed	NPVG	0.72	Y	Y	5-10 Deg. F. / 6-12 (P)
Forbs	SI	<i>Asclepias</i> (A. speciosa, A. viridiflora)	Milkweed	NPVG	0.72	Y	Y	10-15 Deg. F. / 3-6 (P)
Forbs	SI	<i>Asclepias</i> (A. speciosa, A. viridiflora)	Milkweed	NPVG	0.72	Y	N	5-10 Deg. F. / 3-6 (P)
Forbs	SI	<i>Asclepias</i> (A. speciosa, A. viridiflora)	Milkweed	NPVG	0.72	N	Y	0-5 Deg. F. / 6-12 (P)
Forbs	SI	<i>Balsamorhiza</i> (B. saggitata, B. incana)	Balsamroot	NPVG	0.68	Y	Y	10-15 Deg. F./6-12 (P)
Forbs	SI	<i>Balsamorhiza</i> (B. saggitata, B. incana)	Balsamroot	NPVG	0.68	Y	Y	5-10 Deg. F. / 6-12 (P)
Forbs	SI	<i>Balsamorhiza</i> (B. saggitata, B. incana)	Balsamroot	NPVG	0.68	Y	Y	10-15 Deg. F. / 3-6 (P)
Forbs	SI	<i>Balsamorhiza</i> (B. saggitata, B. incana)	Balsamroot	NPVG	0.68	Y	N	5-10 Deg. F. / 3-6 (P)
Forbs	SI	<i>Balsamorhiza</i> (B. saggitata, B. incana)	Balsamroot	NPVG	0.68	N	Y	0-5 Deg. F. / 6-12 (P)
Forbs	SI	<i>Chaenactis douglasii</i>	Dusty maidens	NPVG	0.68	Y	Y	5-10 Deg. F. / 6-12 (P)
Forbs	SI	<i>Chaenactis douglasii</i>	Dusty maidens	NPVG	0.68	Y	N	5-10 Deg. F. / 3-6 (P)
Forbs	SI	<i>Chaenactis douglasii</i>	Dusty maidens	NPVG	0.68	Y	Y	10-15 Deg. F. / 3-6 (P)
Forbs	SI	<i>Chaenactis douglasii</i>	Dusty maidens	NPVG	0.68	Y	Y	10-15 Deg. F. /6-12 (P)
Forbs	SI	<i>Cleome serrulata</i>	Rocky Mountain bee plant	NPVG	0.76	Y	Y	10-15 Deg. F./6-12 (P)
Forbs	SI	<i>Cleome serrulata</i>	Rocky Mountain bee plant	NPVG	0.76	Y	Y	5-10 Deg. F. / 6-12 (P)
Forbs	SI	<i>Cleome serrulata</i>	Rocky Mountain bee plant	NPVG	0.76	Y	Y	10-15 Deg. F. / 3-6 (P)
Forbs	SI	<i>Cleome serrulata</i>	Rocky Mountain bee plant	NPVG	0.76	Y	N	5-10 Deg. F. / 3-6 (P)
Forbs	SI	<i>Cleome serrulata</i>	Rocky Mountain bee plant	NPVG	0.76	N	Y	0-5 Deg. F. / 6-12 (P)
Forbs	SI	<i>Crepis</i> (C. acuminata, C. occidentalis, C. atribarba)	Mt. dandelion	NPVG	0.63	N	Y	0-5 Deg. F. / 6-12 (P)
Forbs	SI	<i>Crepis</i> (C. acuminata, C. occidentalis, C. atribarba)	Mt. dandelion	NPVG	0.63	N	Y	0-5 Deg. F. / 3-6 (P)
Forbs	SI	<i>Crepis</i> (C. acuminata, C. occidentalis, C. atribarba)	Mt. dandelion	NPVG	0.63	Y	Y	5-10 Deg. F. / 6-12 (P)
Forbs	SI	<i>Crepis</i> (C. acuminata, C. occidentalis, C. atribarba)	Mt. dandelion	NPVG	0.63	Y	Y	10-15 Deg. F. /6-12 (P)
Forbs	SI	<i>Crepis</i> (C. acuminata, C. occidentalis, C. atribarba)	Mt. dandelion	NPVG	0.63	Y	Y	10 - 15 Deg. F. / 3-6 (P)
Forbs	SI	<i>Dalea candida</i>	White Prairie Clover	NPVG	0.76	N	Y	0-5 Deg. F. / 6-12 (P)
Forbs	SI	<i>Dalea candida</i>	White Prairie Clover	NPVG	0.76	Y	N	5-10 Deg. F. / 3-6 (P)
Forbs	SI	<i>Dalea candida</i>	White Prairie Clover	NPVG	0.76	Y	Y	5-10 Deg. F. / 6-12 (P)

Lifeform Type	Certification	Scientific Name (and Example species)	Common Name	* Seed Classification	Minimum PLS Rating	Wyoming Basin and NW Great Plains Eco-Regions (Wyoming, Montana, North Dakota, South Dakota, Collect Y or N)	Northwestern Glaciated Plains Eco-Region (Montana, North Dakota, Collect Y or N)	Seed Transfer Zones within an Ecoregion: Provisional (P), Provisional Mojave (PM), Empirical (E)
Forbs	SI	<i>Dalea candida</i>	White Prairie Clover	NPVG	0.76	Y	Y	10-15 Deg. F. / 3-6 (P)
Forbs	SI	<i>Dalea candida</i>	White Prairie Clover	NPVG	0.76	Y	Y	10-15 Deg. F / 6-12 (P)
Forbs	SI	<i>Dalea purpurea</i>	Purple Prairie Clover	NPVG	0.76	N	Y	0-5 Deg. F. / 6-12 (P)
Forbs	SI	<i>Dalea purpurea</i>	Purple Prairie Clover	NPVG	0.76	Y	N	5-10 Deg. F. / 3-6 (P)
Forbs	SI	<i>Dalea purpurea</i>	Purple Prairie Clover	NPVG	0.76	Y	Y	5-10 Deg. F. / 6-12 (P)
Forbs	SI	<i>Dalea purpurea</i>	Purple Prairie Clover	NPVG	0.76	Y	Y	10-15 Deg. F. / 3-6 (P)
Forbs	SI	<i>Dalea purpurea</i>	Purple Prairie Clover	NPVG	0.76	Y	Y	10-15 Deg. F / 6-12 (P)
Forbs	SI	<i>Eriogonum</i> (E. heracleoides, E. ovalifolium, E. umbellatum, E. niveum)	Buckwheat	NPVG	0.64	Y	N	5-10 Deg. F. / 3-6 (P)
Forbs	SI	<i>Eriogonum</i> (E. heracleoides, E. ovalifolium, E. umbellatum, E. niveum)	Buckwheat	NPVG	0.64	Y	N	5-10 Deg. F. / 6-12 (P)
Forbs	SI	<i>Eriogonum</i> (E. heracleoides, E. ovalifolium, E. umbellatum, E. niveum)	Buckwheat	NPVG	0.64	Y	N	10-15 Deg. F. / 3-6 (P)
Forbs	SI	<i>Eriogonum</i> (E. heracleoides, E. ovalifolium, E. umbellatum, E. niveum)	Buckwheat	NPVG	0.64	Y	N	10-15 Deg. F. /6-12 (P)
Forbs	SI	<i>Eriophyllum lanatum</i>	Wooly sunflower	NPVG	0.48	Y	N	5-10 Deg. F. / 6-12 (P)
Forbs	SI	<i>Eriophyllum lanatum</i>	Wooly sunflower	NPVG	0.48	Y	N	10-15 Deg. F. / 3-6 (P)
Forbs	SI	<i>Eriophyllum lanatum</i>	Wooly sunflower	NPVG	0.48	Y	N	10-15 Deg. F / 6-12 (P)
Forbs	SI	<i>Gaillardia aristata</i>	Blanket flower	NPVG	0.76	N	Y	0-5 Deg. F. / 6-12 (P)
Forbs	SI	<i>Gaillardia aristata</i>	Blanket flower	NPVG	0.76	Y	N	5-10 Deg. F. / 3-6 (P)
Forbs	SI	<i>Gaillardia aristata</i>	Blanket flower	NPVG	0.76	Y	Y	5-10 Deg. F. / 6-12 (P)
Forbs	SI	<i>Gaillardia aristata</i>	Blanket flower	NPVG	0.76	Y	Y	10-15 Deg. F. / 3-6 (P)
Forbs	SI	<i>Gaillardia aristata</i>	Blanket flower	NPVG	0.76	Y	Y	10-15 Deg. F. / 6-12 (P)
Forbs	SI	<i>Helianthus petiolaris</i>	Prairie Sunflower	NPVG	0.81	N	Y	0-5 Deg. F. / 6-12 (P)
Forbs	SI	<i>Helianthus petiolaris</i>	Prairie Sunflower	NPVG	0.81	Y	N	5-10 Deg. F. / 3-6 (P)
Forbs	SI	<i>Helianthus petiolaris</i>	Prairie Sunflower	NPVG	0.81	Y	Y	5-10 Deg. F. / 6-12 (P)
Forbs	SI	<i>Helianthus petiolaris</i>	Prairie Sunflower	NPVG	0.81	Y	Y	10-15 Deg. F. / 3-6 (P)
Forbs	SI	<i>Helianthus petiolaris</i>	Prairie Sunflower	NPVG	0.81	Y	Y	10-15 Deg. F. / 6-12 (P)
Forbs	SI	<i>Heterotheca villosa</i>	Hairy False Goldenaster	NPVG	0.76	N	Y	0-5 Deg. F. / 6-12 (P)
Forbs	SI	<i>Heterotheca villosa</i>	Hairy False Goldenaster	NPVG	0.76	Y	N	5-10 Deg. F. / 3-6 (P)
Forbs	SI	<i>Heterotheca villosa</i>	Hairy False Goldenaster	NPVG	0.76	Y	Y	5-10 Deg. F. / 6-12 (P)
Forbs	SI	<i>Heterotheca villosa</i>	Hairy False Goldenaster	NPVG	0.76	Y	Y	10-15 Deg. F. / 3-6 (P)
Forbs	SI	<i>Heterotheca villosa</i>	Hairy False Goldenaster	NPVG	0.76	Y	Y	10-15 Deg. F. / 6-12 (P)
Forbs	SI	<i>Ipomopsis aggregata</i>	Ipomopsis	NPVG	0.72	N	Y	0-5 Deg. F. / 6-12 (P)
Forbs	SI	<i>Ipomopsis aggregata</i>	Ipomopsis	NPVG	0.72	Y	N	5-10 Deg. F. / 3-6 (P)
Forbs	SI	<i>Ipomopsis aggregata</i>	Ipomopsis	NPVG	0.72	Y	Y	5-10 Deg. F. / 6-12 (P)
Forbs	SI	<i>Ipomopsis aggregata</i>	Ipomopsis	NPVG	0.72	Y	Y	10-15 Deg. F. / 3-6 (P)

Lifeform Type	Certification	Scientific Name (and Example species)	Common Name	* Seed Classification	Minimum PLS Rating	Wyoming Basin and NW Great Plains Eco-Regions (Wyoming, Montana, North Dakota, South Dakota, Collect Y or N)	Northwestern Glaciated Plains Eco-Region (Montana, North Dakota, Collect Y or N)	Seed Transfer Zones within an Ecoregion: Provisional (P), Provisional Mojave (PM), Empirical (E)
Forbs	SI	<i>Ipomopsis aggregata</i>	Ipomopsis	NPVG	0.72	Y	Y	10-15 Deg. F. / 6-12 (P)
Forbs	SI	<i>Liatris punctata</i>	Dotted Blazing star	NPVG	0.5	N	Y	0-5 Deg. F. / 6-12 (P)
Forbs	SI	<i>Liatris punctata</i>	Dotted Blazing star	NPVG	0.5	Y	N	5-10 Deg. F. / 3-6 (P)
Forbs	SI	<i>Liatris punctata</i>	Dotted Blazing star	NPVG	0.5	Y	Y	5-10 Deg. F. / 6-12 (P)
Forbs	SI	<i>Liatris punctata</i>	Dotted Blazing star	NPVG	0.5	Y	Y	10-15 Deg. F. / 3-6 (P)
Forbs	SI	<i>Liatris punctata</i>	Dotted Blazing star	NPVG	0.5	Y	Y	10-15 Deg. F. / 6-12 (P)
Forbs	SI	<i>Linum lewsi</i>	Lewis flax	NPVG	0.77	N	Y	0-5 Deg. F. / 6-12 (P)
Forbs	SI	<i>Linum lewsi</i>	Lewis flax	NPVG	0.77	Y	N	5-10 Deg. F. / 3-6 (P)
Forbs	SI	<i>Linum lewsi</i>	Lewis flax	NPVG	0.77	Y	Y	5-10 Deg. F. / 6-12 (P)
Forbs	SI	<i>Linum lewsi</i>	Lewis flax	NPVG	0.77	Y	Y	10-15 Deg. F. / 3-6 (P)
Forbs	SI	<i>Linum lewsi</i>	Lewis flax	NPVG	0.77	Y	Y	10-15 Deg. F. / 6-12 (P)
Forbs	SI	<i>Lomatium</i> (L. dissectum, L. foeniculaceum, L. macrocarpum, L. triteratum)	Desert parsley	NPVG	0.64	N	Y	0-5 Deg. F. / 6-12 (P)
Forbs	SI	<i>Lomatium</i> (L. dissectum, L. foeniculaceum, L. macrocarpum, L. triteratum)	Desert parsley	NPVG	0.64	Y	N	5-10 Deg. F. / 3-6 (P)
Forbs	SI	<i>Lomatium</i> (L. dissectum, L. foeniculaceum, L. macrocarpum, L. triteratum)	Desert parsley	NPVG	0.64	Y	Y	5-10 Deg. F. / 6-12 (P)
Forbs	SI	<i>Lomatium</i> (L. dissectum, L. foeniculaceum, L. macrocarpum, L. triteratum)	Desert parsley	NPVG	0.64	Y	Y	10-15 Deg. F. / 3-6 (P)
Forbs	SI	<i>Lomatium</i> (L. dissectum, L. foeniculaceum, L. macrocarpum, L. triteratum)	Desert parsley	NPVG	0.64	Y	Y	10-15 Deg. F. / 6-12 (P)
Forbs	SI	<i>Lupinus</i> (L. polyphyllus, L. pusillus, L. wyethii)	Lupinus	NPVG	0.72	N	Y	0-5 Deg. F. / 6-12 (P)
Forbs	SI	<i>Lupinus</i> (L. polyphyllus, L. pusillus, L. wyethii)	Lupinus	NPVG	0.72	Y	N	5-10 Deg. F. / 3-6 (P)
Forbs	SI	<i>Lupinus</i> (L. polyphyllus, L. pusillus, L. wyethii)	Lupinus	NPVG	0.72	Y	Y	5-10 Deg. F. / 6-12 (P)
Forbs	SI	<i>Lupinus</i> (L. polyphyllus, L. pusillus, L. wyethii)	Lupinus	NPVG	0.72	Y	Y	10-15 Deg. F. / 3-6 (P)
Forbs	SI	<i>Lupinus</i> (L. polyphyllus, L. pusillus, L. wyethii)	Lupinus	NPVG	0.72	Y	Y	10-15 Deg. F. / 6-12 (P)
Forbs	SI	<i>Machaeranthera canescens</i> (syn. Dieteria)	Hoary aster	NPVG	0.68	Y	Y	10-15 Deg. F. / 6-12 (P)
Forbs	SI	<i>Machaeranthera canescens</i> (syn. Dieteria)	Hoary aster	NPVG	0.68	N	Y	0-5 Deg. F. / 6-12 (P)
Forbs	SI	<i>Machaeranthera canescens</i> (syn. Dieteria)	Hoary aster	NPVG	0.68	Y	N	5-10 Deg. F. / 3-6 (P)
Forbs	SI	<i>Machaeranthera canescens</i> (syn. Dieteria)	Hoary aster	NPVG	0.68	Y	Y	5-10 Deg. F. / 6-12 (P)
Forbs	SI	<i>Machaeranthera canescens</i> (syn. Dieteria)	Hoary aster	NPVG	0.68	Y	Y	10-15 Deg. F. / 3-6 (P)
Forbs	SI	<i>Machaeranthera tanacetifolia</i>	Slender Goldenweed	NPVG	0.68	Y	N	5-10 Deg. F. / 6-12 (P)
Forbs	SI	<i>Machaeranthera tanacetifolia</i>	Slender Goldenweed	NPVG	0.68	Y	N	10-15 Deg. F. / 3-6 (P)
Forbs	SI	<i>Machaeranthera tanacetifolia</i>	Slender Goldenweed	NPVG	0.68	Y	N	10-15 Deg. F. / 6-12 (P)
Forbs	SI	<i>Microseris nutans</i>	Silverpuffs	NPVG	0.68	Y	N	5-10 Deg. F. / 6-12 (P)
Forbs	SI	<i>Microseris nutans</i>	Silverpuffs	NPVG	0.68	Y	N	10-15 Deg. F. / 6-12 (P)
Forbs	SI	<i>Pediomelum</i> (P. argophyllum, P. esculentum)	Indian Breadroot	NPVG	0.5	N	Y	0-5 Deg. F. / 6-12 (P)
Forbs	SI	<i>Pediomelum</i> (P. argophyllum, P. esculentum)	Indian Breadroot	NPVG	0.8	Y	Y	5-10 Deg. F. / 6-12 (P)
Forbs	SI	<i>Pediomelum</i> (P. argophyllum, P. esculentum)	Indian Breadroot	NPVG	0.8	Y	Y	10-15 Deg. F. / 3-6 (P)
Forbs	SI	<i>Pediomelum</i> (P. argophyllum, P. esculentum)	Indian Breadroot	NPVG	0.8	Y	Y	10-15 Deg. F. / 6-12 (P)
Forbs	SI	<i>Phacelia</i> (P. hastata, P. linearis, P. sericea)	Phacelia	NPVG	0.5	N	Y	0-5 Deg. F. / 6-12 (P)
Forbs	SI	<i>Phacelia</i> (P. hastata, P. linearis, P. sericea)	Phacelia	NPVG	0.5	Y	N	5-10 Deg. F. / 3-6 (P)
Forbs	SI	<i>Phacelia</i> (P. hastata, P. linearis, P. sericea)	Phacelia	NPVG	0.5	Y	Y	5-10 Deg. F. / 6-12 (P)
Forbs	SI	<i>Phacelia</i> (P. hastata, P. linearis, P. sericea)	Phacelia	NPVG	0.5	Y	N	10-15 Deg. F. / 3-6 (P)
Forbs	SI	<i>Phacelia</i> (P. hastata, P. linearis, P. sericea)	Phacelia	NPVG	0.5	Y	Y	10-15 Deg. F. / 6-12 (P)
Forbs	SI	<i>Psoraleidium</i> (P. lanceolatum, P. tenuiflorum)	Scurfpea	NPVG	0.8	N	Y	0-5 Deg. F. / 6-12 (P)

Lifeform Type	Certification	Scientific Name (and Example species)	Common Name	* Seed Classification	Minimum PLS Rating	Wyoming Basin and NW Great Plains Eco-Regions (Wyoming, Montana, North Dakota, South Dakota, Collect Y or N)	Northwestern Glaciated Plains Eco-Region (Montana, North Dakota, Collect Y or N)	Seed Transfer Zones within an Ecoregion: Provisional (P), Provisional Mojave (PM), Empirical (E)
Forbs	SI	<i>Psoraleidium (P. lanceolatum, P. tenuiflorum)</i>	Scurfpea	NPVG	0.8	Y	Y	5-10 Deg. F. / 6-12 (P)
Forbs	SI	<i>Psoraleidium (P. lanceolatum, P. tenuiflorum)</i>	Scurfpea	NPVG	0.8	Y	Y	10-15 Deg. F. / 3-6 (P)
Forbs	SI	<i>Psoraleidium (P. lanceolatum, P. tenuiflorum)</i>	Scurfpea	NPVG	0.8	Y	Y	10-15 Deg. F. / 6-12 (P)
Forbs	SI	<i>Penstemon (P. albidus, P. eriantherus, P. nitidus, P. procerus)</i>	Penstemon	NPVG	0.72	N	Y	0-5 Deg. F. / 6-12 (P)
Forbs	SI	<i>Penstemon (P. albidus, P. eriantherus, P. nitidus, P. procerus)</i>	Penstemon	NPVG	0.72	Y	N	5-10 Deg. F. / 3-6 (P)
Forbs	SI	<i>Penstemon (P. albidus, P. eriantherus, P. nitidus, P. procerus)</i>	Penstemon	NPVG	0.72	Y	Y	5-10 Deg. F. / 6-12 (P)
Forbs	SI	<i>Penstemon (P. albidus, P. eriantherus, P. nitidus, P. procerus)</i>	Penstemon	NPVG	0.72	Y	Y	10-15 Deg. F. / 3-6 (P)
Forbs	SI	<i>Penstemon (P. albidus, P. eriantherus, P. nitidus, P. procerus)</i>	Penstemon	NPVG	0.72	Y	Y	10-15 Deg. F. / 6-12 (P)
Forbs	SI	<i>Ratibida columnifera</i>	Upright Prairie Coneflower	NPVG	0.72	N	Y	0-5 Deg. F. / 6-12 (P)
Forbs	SI	<i>Ratibida columnifera</i>	Upright Prairie Coneflower	NPVG	0.72	Y	N	5-10 Deg. F. / 3-6 (P)
Forbs	SI	<i>Ratibida columnifera</i>	Upright Prairie Coneflower	NPVG	0.72	Y	Y	5-10 Deg. F. / 6-12 (P)
Forbs	SI	<i>Ratibida columnifera</i>	Upright Prairie Coneflower	NPVG	0.72	Y	Y	10-15 Deg. F. / 3-6 (P)
Forbs	SI	<i>Ratibida columnifera</i>	Upright Prairie Coneflower	NPVG	0.72	Y	Y	10-15 Deg. F. / 6-12 (P)
Forbs	SI	<i>Sphaeralcea coccinea</i>	Scarlet Globemallow	NPVG	0.68	N	Y	0-5 Deg. F. / 6-12 (P)
Forbs	SI	<i>Sphaeralcea coccinea</i>	Scarlet Globemallow	NPVG	0.68	Y	N	5-10 Deg. F. / 3-6 (P)
Forbs	SI	<i>Sphaeralcea coccinea</i>	Scarlet Globemallow	NPVG	0.68	Y	Y	5-10 Deg. F. / 6-12 (P)
Forbs	SI	<i>Sphaeralcea coccinea</i>	Scarlet Globemallow	NPVG	0.68	Y	Y	10-15 Deg. F. / 3-6 (P)
Forbs	SI	<i>Sphaeralcea coccinea</i>	Scarlet Globemallow	NPVG	0.68	Y	Y	10-15 Deg. F. / 6-12 (P)
Forbs	SI	<i>Symphotrichium [Aster] (S. ascendens, S. ericoides, S. falcatum, S. foliaceum S. spathulatum)</i>	Aster	NPVG	0.48	N	Y	0-5 Deg. F. / 6-12 (P)
Forbs	SI	<i>Symphotrichium [Aster] (S. ascendens, S. ericoides, S. falcatum, S. foliaceum S. spathulatum)</i>	Aster	NPVG	0.48	Y	N	5-10 Deg. F. / 3-6 (P)
Forbs	SI	<i>Symphotrichium [Aster] (S. ascendens, S. ericoides, S. falcatum, S. foliaceum S. spathulatum)</i>	Aster	NPVG	0.48	Y	Y	5-10 Deg. F. / 6-12 (P)
Forbs	SI	<i>Symphotrichium [Aster] (S. ascendens, S. ericoides, S. falcatum, S. foliaceum S. spathulatum)</i>	Aster	NPVG	0.48	Y	Y	10-15 Deg. F. / 3-6 (P)
Forbs	SI	<i>Symphotrichium [Aster] (S. ascendens, S. ericoides, S. falcatum, S. foliaceum S. spathulatum)</i>	Aster	NPVG	0.48	Y	Y	10-15 Deg. F. / 6-12 (P)
Forbs	SI	<i>Vicia americana</i>	Vetch	NPVG	0.81	N	Y	0-5 Deg. F. / 6-12 (P)
Forbs	SI	<i>Vicia americana</i>	Vetch	NPVG	0.81	Y	N	5-10 Deg. F. / 3-6 (P)

Lifeform Type	Certification	Scientific Name (and Example species)	Common Name	* Seed Classification	Minimum PLS Rating	Wyoming Basin and NW Great Plains Eco-Regions (Wyoming, Montana, North Dakota, South Dakota, Collect Y or N)	Northwestern Glaciated Plains Eco-Region (Montana, North Dakota, Collect Y or N)	Seed Transfer Zones within an Ecoregion: Provisional (P), Provisional Mojave (PM), Empirical (E)
Forbs	SI	<i>Vicia americana</i>	Vetch	NPVG	0.81	Y	Y	5-10 Deg. F. / 6-12 (P)
Forbs	SI	<i>Vicia americana</i>	Vetch	NPVG	0.81	Y	Y	10-15 Deg. F. / 3-6 (P)
Forbs	SI	<i>Vicia americana</i>	Vetch	NPVG	0.81	Y	Y	10-15 Deg. F. / 6-12 (P)
Forbs	SI	<i>Wyethia (W. amplexicaulis, W. helianthodites)</i>	Mules ears	NPVG	0.72	Y	N	5-10 Deg. F. / 3-6 (P)
Forbs	SI	<i>Wyethia (W. amplexicaulis, W. helianthodites)</i>	Mules ears	NPVG	0.72	Y	N	5-10 Deg. F. / 6-12 (P)
Forbs	SI	<i>Wyethia (W. amplexicaulis, W. helianthodites)</i>	Mules ears	NPVG	0.72	Y	N	10-15 Deg. F. / 3-6 (P)
Forbs	SI	<i>Wyethia (W. amplexicaulis, W. helianthodites)</i>	Mules ears	NPVG	0.72	Y	N	10-15 Deg. F. / 6-12 (P)

Appendix K

Split Estate Lands

This page intentionally left blank.

Appendix K. Split-Estate Lands

The North Dakota Resource Management Plan (RMP) planning area includes the entire state of North Dakota, regardless of jurisdiction. The Bureau of Land Management (BLM) manages approximately 4 million acres of subsurface mineral estate in the planning area, which covers just under 10 percent of the total surface lands of the state of North Dakota (45.3 million acres). The focus in the North Dakota RMP planning area is on mineral management on split-estate lands. Split-estate lands are lands where mineral rights were separated from the surface ownership and retained by the federal government (i.e., the surface land rights are privately owned, and the subsurface mineral rights are federally owned). The majority of this split-estate land was patented under the Stock Raising Homestead Act of December 29, 1916, as amended (43 United States Code [USC] Section 299). BLM split estate may not be 100% federal minerals. In such cases, if BLM is not the majority holder, the agency cannot prohibit development of the mineral.

Split estate is largely a legacy of the Stock Raising Homestead Act passed by Congress and signed into law by President Woodrow Wilson in 1916. This law allowed a settler to claim 640 acres of non-irrigable land that had been designated by the Secretary of the Interior as “stock raising” land. At a time when mineral exploration was beginning to escalate, the federal government opted to maintain the mineral rights to the land claimed under that 1916 law.

The actual language found on a Stock Raising Homestead Act patent for this mineral reservation is: “Excepting and reserving, however, to the United States all coal and other minerals in the lands so entered and patented, together with the right to prospect for, mine, and remove the same pursuant to the provisions and limitation of the Act of December 29, 1916 (39 Stat., 862).

The term “other minerals” includes, but is not limited to: leasable minerals (oil, gas, helium, geothermal, phosphate, sodium, and potassium), locatable minerals (gold, silver, copper, gypsum, and bentonite), and mineral materials (including sand, gravel, scoria, pumice, and stone). In 1982, the Supreme Court affirmed the SRHA mineral reservation definition and further defined it to include substances that:

1. are mineral in character,
2. are inorganic,
3. can be taken from the soil,
4. can be used for commercial purposes,
5. were not intended to be included in the surface estate,
6. have a separate value,
7. are not necessarily metalliferous, and
8. may not necessarily have a definite chemical composition.

The BLM has the authority to condition and regulate federally authorized leases, specifically oil and gas, on split-estate lands and the policy and guidance used to accomplish this.

The BLM is mandated by the Federal Land Policy and Management Act (FLPMA) of 1976, Section 202, to develop, maintain, and revise land use plans on public lands, where appropriate, using and observing the principles of multiple use and sustained yield. Section 103(e) of FLPMA defines public lands as any lands and interest in lands owned by the United States. The mineral estate is an interest owned by the United

States. The BLM has an obligation to address this interest in their planning documents (43 Code of Federal Regulations 1610.0-7(b)).

Through the years, two areas of concern have consistently arisen from this split-estate land issue: Does the BLM have the statutory authority to regulate how private surface owners use their property, and does the BLM have the authority to condition and regulate a federal mineral development, such as federal oil and gas leases. These two concerns have been addressed in the resolution of two RMP protests in 1988 on split-estate lands (North Dakota RMP and Little Snake RMP) and two Washington Solicitor's Opinions (April 1 and 4, 1988). The conclusion states:

In summary, while the BLM does not have the legal authority in split estate situations to regulate how a surface owner manages his or her property, the agency does have the statutory authority to take reasonable measures to avoid or minimize adverse environmental impacts that may result from federally authorized mineral lease activity.

Per Permanent Instruction Memorandum 2018-014, the BLM's authority is limited on fee/fee/fed locations. This limitation includes not applying RMP conformance where the project does not sit on the federal lease. The BLM does still review for impacts compliance to federal law, including the ESA and NHPA. An example of the authority the BLM does have is summarized in the January 7, 1992, Interior Board of Land Appeals (IBLA) Decision (122 IBLA 36, Glen Morgan, January 7, 1992), which states that "The operator of an oil and gas lease is responsible for reclamation of land leased for oil and gas purposes, even after the expiration of the lease and even where the surface estate is privately owned. Such reclamation includes the restoration of any area within the lease boundaries disturbed by lease operations to the condition in which it was found prior to the surface-disturbing activities." Another key point presented in this IBLA decision referenced the reservation of mineral reserves under Section 9 of the Stock Raising Homestead Act. This section states that the United States reserves the "right to prospect for, mine, and remove the [reserved minerals]," which encompasses "all purposes reasonable incident to the mining or removal of the coal or other minerals" (43 USC Section 299, 1988). As long interpreted by the United States Department of the Interior, such purposes include reclamation of the surface of the impacted land after mining is complete and the minerals are removed. The examples presented have largely related to fluid minerals; however, these cases are also relevant to the federal mineral interest in solid minerals developments on split estate.

The Stock Raising Homestead Act is not the only authority creating split-estate lands. Each authority may direct management of reserved minerals differently. Coordination with field offices is recommended to help in identifying, and before developing, any split-estate lands. Below is a list of most split-estate authorities:

- Acts of March 3, 1909, June 22, 1910, July 17, 1914, and March 4, 1933
- Stock-Raising Homestead Act of December 29, 1916 (39 Stat. 862; 43 USC 291, 292)
- Small Tract Acts of June 1, 1938 (52 Stat. 609), as amended by the Act of June 8, 1954 (68 Stat. 239; 43 USC 682a)
- Federal Land Policy and Management Act of October 21, 1976 (43 USC 1701)

For more information see the following link:

[Leasing and Development of Split Estate | Bureau of Land Management \(blm.gov\)](https://www.blm.gov/leasing-and-development-of-split-estate)

Appendix L

Evaluation of Proposed Areas of Critical Environmental Concern

This page intentionally left blank.

TABLE OF CONTENTS

Appendix

Page

APPENDIX L. EVALUATION OF PROPOSED AREAS OF CRITICAL ENVIRONMENTAL CONCERN..... L-1

L.1	Summary and Introduction	L-1
L.1.1	Summary	L-1
L.1.2	Introduction.....	L-1
L.2	Requirements for ACEC Designation.....	L-1
L.2.1	Relevance.....	L-2
L.2.2	Importance	L-2
L.2.3	Special Management Attention.....	L-2
L.2.4	Evaluation Process.....	L-2
L.3	Mud Buttes Proposed ACEC	L-3

TABLES

Page

L-1	Summary of Proposed ACEC in the Planning Area Determined to Meet the Relevance and Importance Criteria	L-4
-----	--	-----

FIGURES

Page

L-1	Vicinity – Mud Buttes Proposed Area of Critical Environmental Concern.....	L-5
-----	--	-----

ACRONYMS AND ABBREVIATIONS

Full Phrase

ACEC	Area of Critical Environmental Concern
BLM	United States Department of the Interior, Bureau of Land Management
CFR	Code of Federal Regulations
EIS	environmental impact statement
FLPMA	Federal Land Policy and Management Act
K-Pg	Cretaceous-Paleogene
RMP	resource management plan
USC	United States Code

Appendix L. Evaluation of Proposed Areas of Critical Environmental Concern

L.1 SUMMARY AND INTRODUCTION

L.1.1 Summary

As part of the United States Department of the Interior, Bureau of Land Management (BLM), North Dakota Resource Management Plan (RMP) revision, the Interdisciplinary Teams analyzed whether proposed Areas of Critical Environmental Concern (ACECs) met the relevance and importance criteria. The Interdisciplinary Team analyzed one ACEC and found that the Mud Buttes area met the relevance and importance criteria, for a total of 960 acres (see **Appendix A**). The area was found to meet both the relevance and importance criteria and will be identified as a potential ACEC fully considered for designation and management in the RMP (BLM Manual 1613.21).

L.1.2 Introduction

As part of the process for developing the North Dakota RMP revision, the Interdisciplinary Teams reviewed all BLM-managed lands in the planning area to determine whether any areas should be considered for designation as ACECs. The Federal Land Policy and Management Act (FLPMA) requires that priority shall be given to the designation and protection of ACECs. ACECs are defined in FLPMA Section 103(a) (43 United States Code [USC] 1702) and in 43 CFR 1601.0-5(a) as “areas within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards.” The following analysis and the resultant findings for ACEC relevance and importance criteria has been performed pursuant to FLPMA Section 202(c)(3) (43 USC 1712), 43 CFR 1610.7-2, and BLM Manual 1613, *Areas of Critical Environmental Concern*.

L.2 REQUIREMENTS FOR ACEC DESIGNATION

To be eligible for designation as an ACEC, an area must meet the relevance and importance criteria described in 43 CFR 1610.7-2 and BLM Manual 1613, and it must require special management. ACECs that met both the relevance and importance criteria were carried forward and further analyzed in the Draft RMP/EIS. Relevance and importance are defined as follows:

Relevance—There shall be present a significant historic, cultural, or scenic value, a fish or wildlife resource or other natural system or process, or natural hazard.

Importance—The above-described value, resource, system, process, or hazard shall have substantial significance and value, which generally requires qualities of more than local significance and special worth, consequence, meaning, distinctiveness, or cause for concern. A natural hazard can be important if it is a significant threat to life or property.

L.2.1 Relevance

An area meets the relevance criterion if it contains one or more of the following:

- A significant historic, cultural, or scenic value (including but not limited to rare or sensitive archeological resources and religious or cultural resources important to Native Americans).
- A fish and wildlife resource (including but not limited to habitat for endangered, sensitive, or threatened species or habitat essential for maintaining species diversity).
- A natural process or system (including but not limited to endangered, sensitive, or threatened plant species; rare, endemic, or relic plants or plant communities that are terrestrial, aquatic, or riparian; or rare geological features).
- Natural hazards (including but not limited to areas of avalanche, dangerous flooding, landslides, unstable soils, seismic activity, or dangerous cliffs). A hazard caused by human action might meet the relevance criteria if it is determined through the resource management planning process to have become part of a natural process.

L.2.2 Importance

An area meets the importance criterion if it meets one or more of the following:

- Has more than locally significant qualities that give it special worth, consequence, meaning, distinctiveness, or cause for concern, especially compared to any similar resource.
- Has qualities or circumstances that make it fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change.
- Has been recognized as warranting protection to satisfy national priority concerns or to carry out the mandates of FLPMA.
- Has qualities that warrant highlighting to satisfy public or management concerns about safety and public welfare.
- Poses a significant threat to human life and safety or to property.

L.2.3 Special Management Attention

Special management attention refers to “management prescriptions developed during preparation of an RMP or amendment expressly to protect the important and relevant values of an area from the potential effects of actions permitted by the RMP, including proposed actions deemed to be in conformance with the terms, conditions, and decisions of the RMP” (BLM Manual 1613.12). Thus, these are management measures that would not be necessary and prescribed if the relevant and important values were not present.

A management prescription is considered special if it is unique in the area involved and includes terms and conditions specifically to protect the values found in the area.

L.2.4 Evaluation Process

In compiling a list of areas to be analyzed in this report, the BLM Interdisciplinary Team followed the guidance set forth in BLM Manual 1613 and considered:

- Areas recommended for ACEC consideration (internal and external nominations)

- Areas identified through inventory and monitoring
- Adjacent designations of other federal and state agencies

ACECs may be nominated by BLM staff, other agencies, or members of the public at any time. During the RMP revision scoping process, the BLM solicited nominations and comments from the public and other agencies.

L.3 MUD BUTTES PROPOSED ACEC

Nominator: North Dakota Geological Survey

Rationale for nomination provided by the nominator: The Cretaceous-Paleogene (K-Pg) boundary in the Mud Buttes area is one of the best-preserved examples of this geological feature in North America and is one of the easiest K-Pg boundary sections to recognize and study in the field. Elsewhere in the region, identification of the K-Pg boundary often requires additional laboratory testing to confirm its exact placement. Numerous scientific studies on the Cretaceous extinction event have been conducted by institutions from across the country in the Mud Buttes region and similar studies will likely continue to take place so long as the boundary section remains intact and accessible in this location.

Area nominated: The 960-acre Mud Buttes Proposed ACEC is located in southwestern North Dakota in Bowman County within T. 130 N., R. 105 W. and T. 129 N., R. 105. W. (see **Table L-1** and **Figure L-1**).

Additional rationale for nomination provided by the BLM: The Mud Buttes area of Bowman County, North Dakota has been a focus of paleontological research for several decades. The research informs us about the extinction of dinosaurs and the ecological recovery afterward. The rock exposed in the area is called the Hell Creek Formation. The Hell Creek is exposed across central and southeastern Montana and into both North and South Dakota. The Hell Creek was deposited along the western shore of the Late Cretaceous Interior Seaway in a complex series of low elevation rivers, estuaries, and marshes. Terrestrial animals and plants, as well as semiaquatic and fully aquatic animals, are well preserved in the Hell Creek.

Near the top of the Hell Creek and the overlying Ludlow Formation is the “impact layer”—the result of a very large asteroid that impacted the earth 66 million years ago. The impact created a huge crater near the modern Yucatan Peninsula and threw millions of tons of rock and dust into the atmosphere, which rained down over the entire earth. This layer, which can be traced around the world, is what geologists call an isochron, a layer created around the globe with a single event. There are several characteristics of this layer that allow it to be identified, such as the presence of shocked quartz crystals and high levels of the element iridium. This impact layer is easily identifiable at Mud Buttes.

Additionally, a phenomenal collection of fossil plants has come from Mud Buttes. Almost 90 separate species of plants, and several thousand specimens, have been collected. Sharks, crocodilians, champsosaurus (croc-like reptile), dinosaurs, and mammals are also common. So, the diversity of animal and plant fossils, as well as the boundary impact layer that marked the extinction of dinosaurs, make Mud Buttes uniquely significant in North Dakota.

Table L-1
Summary of Proposed ACEC in the Planning Area Determined to Meet the Relevance and Importance Criteria

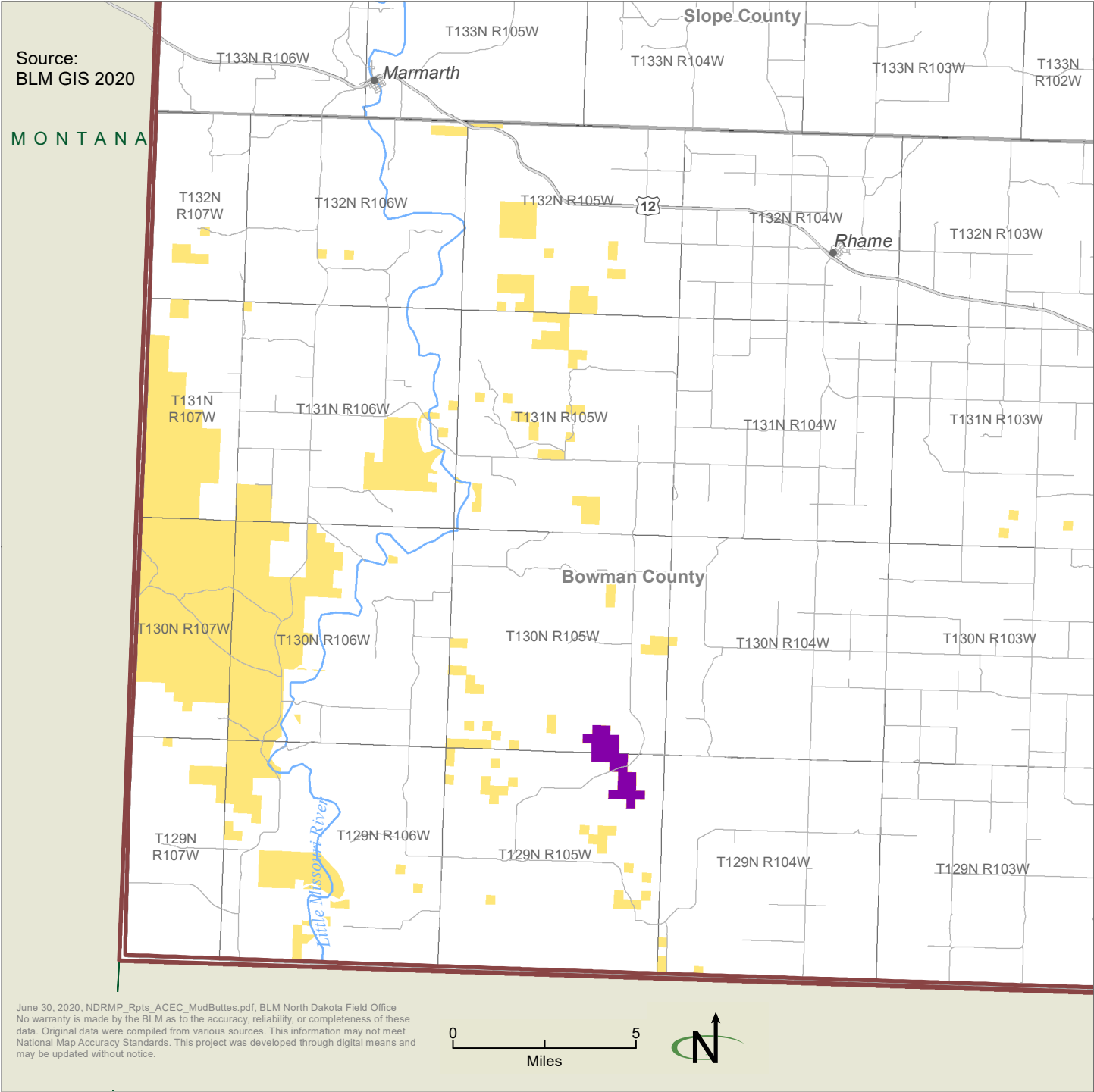
Name of Proposed ACEC	Proposed Internal or External	Values Assessed	Relevance Criteria	Importance Criteria
Mud Buttes	External	Natural Process/ System	The K-Pg boundary section in the Mud Buttes area meets the relevance requirement by virtue of being a rare geological feature.	The K-Pg boundary section in the Mud Buttes area meets the importance requirement in that it has qualities or circumstances that make it fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change.
-	-	Historic/cultural: Paleontological values	Rare fossils, particularly plant fossils, in the Mud Buttes area.	Rare fossils have been found in the Mud Buttes area that have not been identified anywhere else.

Potential management actions in Alternatives B, C, and D for the proposed Mud Buttes ACEC include:

- Manage paleontological resources in order to protect them and make them accessible to appropriate research and public enjoyment.
- Continue to inventory for paleontological resources and evaluate their significance for protection, conservation, research, or interpretation.
- Protect known paleontological resources from destruction or degradation. This also applies to fossils collected from the area stored in museum collections.
- Manage uses to prevent unnecessary damage to paleontological resources.
- Facilitate appropriate paleontological research to improve understanding of fossil resources.
- Increase public education and appreciation of paleontological resources through interpretation and dissemination of research.
- Manage uses to prevent damage to unique geological features and geomorphologic features (small-scale expressions of geological processes) and to minimize activities in high-hazard areas.
- Only allow motorized access under permit, including research permits.
- Use reciprocal access as a tool to secure access across private lands to conduct research within the ACEC.



Figure L-1
Vicinity Mud Buttes Proposed Area of Critical Environmental Concern



 Mud Buttes ACEC nomination

 Bureau of Land Management
(surface decision area)

 North Dakota RMP planning area

This page intentionally left blank.