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Environmental Assessment

Quarter 2 2025
Oil and Gas Lease Parcel Sale
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The Bureau of Land Management's mission is to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

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1 Introduction

1.1 Summary of Proposed Project

This environmental assessment (EA) was prepared to examine the potential environmental impacts of the proposed action and alternative actions to support informed decision-making. This analysis is consistent with the purpose and goals of NEPA; the requirements of the Council on Environmental Quality's (CEQ) implementing NEPA regulations at 40 CFR Parts 1500-1508; longstanding federal judicial and regulatory interpretations; the Department of the Interior's NEPA regulations (43 CFR Part 46); and Administration priorities and policies including Secretary's Order No. 3399 requiring bureaus and offices to use "the same application or level of NEPA that would have been applied to a proposed action before the 2020 Rule went into effect."

This EA has been prepared to disclose and analyze the potential environmental consequences from leasing 11 nominated lease parcels encompassing approximately 4,266.06 Federal mineral acres located across the Montana/Dakotas (MT/DKs) in the Bureau of Land Management's North Dakota Field Office (NDFO) and Miles City Field Office (MCFO) and within the administrative boundaries of the United States Forest Service (USFS) Dakota Prairie Grasslands (DPG) McKenzie Ranger District. The parcels would be included as part of a competitive oil and gas lease sale tentatively scheduled to occur during April of 2025. The proposed parcels are in Roosevelt County in Montana and Billings and McKenzie counties in North Dakota. Refer to parcel maps in **Appendix C**.

The Bureau of Land Management (BLM) Montana/Dakotas State Office conducts Oil and Gas Federal mineral estate lease auctions for lands managed by the Federal Government, whether the surface is managed by the Department of the Interior (BLM or Bureau of Reclamation (BOR)), United States Forest Service (USFS), or other departments and agencies. These auctions also include split estate lands, where the BLM holds subsurface mineral rights, but a party other than the Federal Government owns the surface estate. The MT/DKs State Office has historically conducted four lease sales per year. The BLM's authority to conduct these lease sales is based on various laws including the Mineral Leasing Act of 1920, as amended, and the Federal Land Policy and Management Act of 1976. The Federal Onshore Oil and Gas Leasing Reform Act of 1987 Sec. 5102(a)(b)(1)(A) directs the BLM to conduct quarterly oil and gas lease sales in each state whenever eligible lands are available for leasing.

Members of the public file Expressions of Interest (EOI) to nominate parcels for leasing by the BLM. The BLM may also nominate a parcel if an existing well is draining Federal minerals or for other reasons. From these EOIs and BLM nominations, the MT/DKs State Office prepares a preliminary parcel list and provides them to the field offices for review. The BLM also reviews parcels located in designated greater sage-grouse habitat to guide development to lower conflict areas and protect important habitat consistent with conservation objectives in the 2015 Rocky Mountain Region Record of Decisions and the applicable Approved Resource Management Plans (ARMPs), a court order in the U.S. District Court for the District of Montana (case 4:18-cv-00069-BMM filed 5/22/20), and Montana/Dakotas Instruction Memorandum MT-2020-018. Montana/Dakotas BLM reviews the parcels, and evaluates:

1. If they are in areas open to leasing;
2. If new information has come to light which might change previous analyses conducted during the land use planning process;
3. Whether there are site specific resource concerns that warrant not leasing a particular parcel,
4. If there are special resource conditions of which potential bidders should be made aware; and,

5. Which stipulations should be identified and included as part of a lease.

If the decision is made to offer lease parcels, the Montana/Dakotas State Office would publish a Notice of Competitive Oil and Gas Lease Sale (Sale Notice) at least 60 days before the auction is held. The Sale Notice will identify applicable lease stipulations for each parcel.

The offering and subsequent issuance of oil and gas leases would not result in immediate ground disturbance. However, once a lease is sold the lessee maintains the right to occupy, explore for, and develop oil and gas resources from the lease consistent with the lease terms and conditions and upon approval of a site-specific permit by the BLM authorized officer. These lease operations can result in surface disturbance and other impacts.

In accordance with BLM Handbook H-1624-1 (“Planning for Fluid Mineral Resources” January 28, 2013), the Federal Government retains certain rights when issuing an oil and gas lease. While the BLM may not unilaterally add a new stipulation to an existing lease that it has already issued, the BLM can subject development of existing leases to reasonable conditions, as necessary, through the application of Conditions of Approval (COAs) at the time of permitting. The new constraints must be in conformance with the applicable land use plan and not conflict with rights granted to the holder under the lease. See 30 U.S.C. § 226(g); 43 CFR § 3101.1-2. See also *Yates Petroleum Corp.*, 176 IBLA 144 (2008); *National Wildlife Federation*, 169 IBLA 146, 164 (2006).

BLM Montana/Dakotas has prepared this Environmental Assessment for the Quarter 2, April 2025 oil and gas lease sale, which considers two alternatives:

- Alternative A: No Action
 - The nominated parcels would not be offered for lease as part of a competitive oil and gas lease sale.
- Alternative B: Proposed Action
 - The BLM would offer 11 nominated lease parcels encompassing approximately 4,266.06 Federal mineral acres as part of a competitive oil and gas lease sale in the BLM North Dakota Field Office and Miles City Field Office, and within the administrative boundary of the USFS DPG McKenzie Ranger District.

The BLM assigned lease stipulations to the parcels to address resources concerns. A Federal oil and gas lease would be issued for a 10-year period and would remain valid for as long thereafter as oil or gas is produced in paying quantities, required payments are made and lease operations are conducted in compliance with regulations and approved permits. If a lessee fails to produce oil and gas by the end of the initial 10-year period, does not make annual rental payments, or does not comply with the terms and conditions of the lease, the BLM will terminate the lease. The lessee can relinquish the lease. The oil and gas resources could be offered for sale at a future lease sale. Drilling of wells on a lease would not be permitted until the lessee or operator secures approval of a drilling permit and a surface use plan as specified in 43 CFR § 3162. This requires additional environmental reviews, by the BLM, at the time of application.

1.2 Purpose and Need

The purpose and need for this action are to respond to EOIs to lease parcels of land for oil and gas development as mandated by Federal laws, including the Mineral Leasing Act of 1920, as amended, Federal Land Policy and Management Act of 1976, and Federal Onshore Oil and Gas Leasing Reform Act of 1987.

Offering parcels for competitive oil and gas leasing provides opportunities for private individuals or companies to explore and develop federal oil and gas resources after receipt of necessary approvals, and to sell the oil and gas in public markets.

1.3 Decision to be Made

Based on this review and public comment, the BLM will determine whether to make lands available for leasing, and, if so, identify stipulations that would be included with specific lease parcels at the time of lease sale.

1.4 Land Use Plan Conformance

This Environmental Assessment (EA) is tiered to the information and analysis and conforms to the decisions contained in the North Dakota Resource Management Plan (ND RMP) of April 1988. This plan is the governing land use plans for their respective geographic areas. The lease parcels to potentially be offered for sale are within an area determined to be open to oil and gas leasing in the RMP. An electronic copy of these planning documents is available via the internet on the BLM e-Planning page:

<https://www.blm.gov/programs/planning-and-nepa/eplanning>.

The NDFO is in the process of revising the ND RMP 1988. The Proposed RMP Final EIS 2023 was available for a 30-Day Public Protest Period on August 9, 2024. The Reasonable Foreseeable Development Plan (RFD) from the Proposed ND RMP/EIS has been used to develop the RFD for this EA.

This EA is also tiered to the Dakota Prairie Grasslands Northern Great Plains Management Plans Revision Final Environmental Impact Statement for Oil and Gas Leasing (December 2020) and Record of Decision Oil and Gas Leasing USDA Forest Service Little Missouri National Grassland, Dakota Prairie Grasslands (December 2020) and the BLM Record of Decision Adopting USDA Forest Service Final Supplemental Environmental Impact Statement for Oil and Gas Leasing, Little Missouri National Grassland, Dakota Prairie Grasslands (DOI-BLM-MT-2021-0001-OTHER_NEPA). This conformance applies only to the parcels on USDA Forest Service managed surface located within the administrative boundaries of the USDA Forest Service Dakota Prairie Grasslands.

In an opinion and amended order on March 26, 2018, the U.S. District Court for the District of Montana found that the BLM violated NEPA in the Final EISs for the Buffalo and Miles City RMPs (*Western Organization of Resource Councils (WORC) et al. v. BLM, Case 4:16-cv-00021-BMM, filed 3/23/18*) with respect to consideration of the amount of coal made available for lease and consideration of climate change impacts. On July 31, 2018, the District Court issued an order directing the BLM to prepare a Supplemental EIS for the RMP, and to complete comprehensive environmental analysis in compliance with the Court's March 26, 2018, Order, and all existing procedural requirements under NEPA and the Administrative Procedures Act (APA) for any new or pending leases of coal, oil, or gas resources in the planning areas subject to the Buffalo RMP and the Miles City RMP. The BLM has prepared the April 2025 Oil and Gas Lease Sale EA in compliance with the terms of the WORC Order, NEPA, and the APA.

1.5 Relationship to Statutes, Regulations, Other NEPA Documents

The mandate of the BLM is derived from various laws, including the Mineral Leasing Act (MLA) and the Federal Land Policy and Management Act of 1976 (FLPMA), as amended, to promote the exploration and development of oil and gas on the public domain. Additionally, the Federal Onshore Oil and Gas Leasing Reform Act of 1987 states lease sales shall be held for each State where eligible lands are available at least quarterly and more frequently if the Secretary of the Interior determines such sales are necessary.

The Inflation Act (IRA) of 2022 introduced several changes that affect oil and gas leasing on Federal lands.

Section 50262 of the IRA updates the MLA, increasing onshore oil and gas royalty rates from 12.5 percent to 16.67 percent for newly issued leases, increasing onshore oil and gas leasing minimum bids from \$2 per acre to \$10 per acre, and increasing oil and gas rental rates from \$1.50 per acre for years 1-5 and \$2 for years 6-10 to \$3 per acre for years 1-2, \$5 for years 3-8, and \$15 for all years after. In addition, it introduced a fee for submitting expressions of interest for oil and gas leasing of \$5 per acre and eliminated noncompetitive leasing. Section 50265 establishes that the Secretary of the Interior may not issue a right-of-way for wind or solar energy development on Federal land unless a) an onshore lease sale has been held during the 120-day period ending on the date of the issuance of the right-of-way for wind or solar energy development; and b) the sum total of acres offered for lease in onshore lease sales during the 1-year period ending on the date of the issuance of the right-of-way for wind or solar energy development is not less than the lesser of 2,000,000 acres; and 50 percent of the acreage for which expressions of interest have been submitted for lease sales during that period.

Purchasers of oil and gas lease parcels are required to comply with all applicable Federal, State, and local laws and regulations, including obtaining all necessary permits prior to any lease development activities. Stipulations attached to the lease, restrictions deriving from specific, nondiscretionary statutes, and such reasonable measures may be required to minimize adverse impacts to other resource values (43 CFR§3101.1-2).

The regulations, policies, and plans utilized in preparing this EA include, but are not limited to the following:

- 43 CFR § 3100 – Oil and Gas Leasing
- BLM Manual 3120 – Competitive Leasing
- BLM Competitive Leasing Handbook (H-3120-1)
- Directional Drilling into Federal Mineral Estate from Well Pads on Non-Federal Locations (WO IM 2018-014)
- Impacts of the Inflation Reduction Act of 2022 (Pub. L. No. 117-169) to the Oil and Natural Gas Leasing Program (WO IM 2023-008)
- Oil and Gas Leasing – Land Use Planning and Lease Parcel Review (WO IM 2023-010)
- On June 16, 2023, Onshore Orders (OOs) #1, #2, #6, and #6 were codified into the Code of Federal Regulations (CFRs) as follows: OO#1: 43 CFR § 3171, OO#2: 43 CFR § 3172, OO#6: 43 § CFR 3176. OO#7: 43 § CFR 3177.
- Instruction Memorandums MT-2020-018, IM-2023-007, IM-2023-008

Evaluating Competitive Oil and Gas Lease Sale Parcels for Future Lease Sales (WO IM 2023-007): In accordance with Instruction Memorandum (IM) 2023-007, the BLM has evaluated the nominated lease parcels against five criteria to determine each parcel's leasing preference (**see Appendix J**). As a result, of the 11 nominated parcels, the leasing preference is classified as follows: eleven (11) low preference for leasing and zero (0) high preference for leasing based on one or more criteria (proximity to development, proximity to habitat, cultural resources, and development potential). Leasing development potential is based on information that is contained in the (MCFO ARMP/RMP 2015 and NDFO Proposed RMP Final EIS 2023) and classified as follows: zero (0) very high, three (3) high, eight (8) moderate, zero (0) low, and zero (0) very low.

The IM states that the BLM will close all EOIs that have remained pending for three or more years, and that the MT/DKs State Office will notify each EOI submitter of a planned closure; the notice will provide 30-days for the EOI submitter to express a continuing interest in the EOI(s) which would result in the EOI remaining active. There are no nominations that have been pending for three or more years on this lease sale.

Furthermore, none of the EOIs tied to the lands in this sale were submitted anonymously.

This EA was prepared to thoroughly examine the potential environmental impacts of the proposed action in order to support informed decision-making. This EA is consistent with the purpose and goals of NEPA; the requirements of the Council on Environmental Quality's (CEQ) implementing NEPA regulations at 40 CFR Parts 1500-1508; longstanding federal judicial and regulatory interpretations; the Department of the Interior's NEPA regulations (43 CFR Part 46); and Administration priorities and policies including Secretary's Order No. 3399 requiring bureaus and offices to use "the same application or level of NEPA that would have been applied to a proposed action before the 2020 Rule went into effect."

1.6 Issues Identified for Analysis

Analysis issues include resource issues that could potentially be affected by oil and gas leasing. The BLM focuses its analysis on "issues that are truly significant to the action in question, rather than amassing needless detail" (40 CFR § 1500.1(b)). The BLM identified site-specific resource concerns and lease stipulations for proposed parcels through a preliminary review process conducted prior to a 30-day public scoping period. After scoping was completed, the BLM identified issues of concern identified by the public, determined how to address those concerns in this EA, and reviewed and edited lease stipulations as necessary. The following resources/issues will be analyzed in detail in this EA:

1.6.1 Issue 1 – Air Resources

What types of emissions would be generated from subsequent oil and gas development of leased parcels? What quantity of air pollutants would be produced based on the assumptions for analysis? How would air pollutant emissions from subsequent development of leased parcels affect air quality?

- Indicator: Tons per well and tons per year of PM₁₀, PM_{2.5}, NO_x, SO₂, CO, VOCs, HAPs

How would air emissions from subsequent development of leased parcels affect visibility at Class I Airsheds?

- Indicator: Change in deciviews, which is a unit of measurement to quantify human perception of visibility. It is derived from the natural logarithm of atmospheric light extinction coefficient. One deciview is roughly the smallest change in visibility (haze) that is barely perceptible.

1.6.2 Issue 2 – Greenhouse Gases

How would future potential development of nominated lease parcels contribute to greenhouse gas (GHG) emissions and climate change?

- Indicator: Metric tonnes (t) or megatonnes (Mt), and social cost of GHGs (\$)

1.6.3 Issue 3 – Socioeconomic Conditions, Environmental Justice, and Human Health

How would the leasing and potential development of these parcels affect local economic activity and revenues for Federal, State, and local governments?

Would Environmental Justice populations be disproportionately adversely affected by the leasing of the proposed parcels?

- Indicator: Total revenue income and bonus bids over 10-year lease term
- Indicator: Disproportionate impacts from leasing parcels

- Indicator: Population groups of concern

Executive Order 12898 (Feb. 11, 1994), Federal Actions to Address Environmental Justice (hereby referred as EJ) in Minority and Low-Income Populations, provides that BLM shall identify and address disproportionately high and adverse human health or environmental effects on low- income populations, minority populations, or Indian tribes that may experience common conditions of environmental exposure or effects associated with a plan or project.

- Indicator: Opportunity for meaningful involvement

Meaningful public engagement focuses on empowering vulnerable and affected populations to participate in decisions that have the potential to affect their lives, regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

1.6.4 Issue 4 – Water Resources

What are the effects of potential oil and gas development, including hydraulic fracturing, on parcels that may be offered for lease on surface and groundwater quality and quantity?

- Indicator: Characterize the affected environment in the watersheds where parcels are proposed. Quantify estimated acres of surface disturbance and million gallons water used. Qualitatively assess effects to surface and groundwater resources from oil and gas development.

1.6.5 Issue 5 – Cultural Resources and National Historic Preservation Act

How would the leasing and potential development of these parcels affect cultural resources to include Native American Religious Concerns and National Historic Landmarks and Trails?

- Indicator: Characterize the affected environment in the landscape where the parcels are proposed. Quantify estimated acres of surface disturbance and duration of development.

1.7 Issues Identified but Eliminated from Further Analysis

The following resources/issues are not present and not considered in this EA: lands and realty conflicts, locatable and salable minerals, forest and woodland, cave and karst resources, wilderness study areas, ACECs, and national wild and scenic rivers. Other resource issues BLM considered but eliminated from further analysis due to environmental impacts previously analyzed through prior NEPA reviews and/or lease notices or stipulations that were applied to avoid and minimize impacts are discussed below:

Paleontology

The application of lease terms and the paleontological lease notices (Standard 16-3, LN 14-3, LN 14-12) at leasing provides protection to paleontological resources. The paleontological lease notice LN 14-3 is applied to all lease parcels, per this stipulation the lessee shall immediately bring to the attention of the Surface Management Agency any paleontological resources or any other objects of scientific interest discovered as a result of approved operations, such discoveries are to be left intact and undisturbed until directed further by the SMA. Additionally, LN 14-12 is applied to all lease parcels that are within or could contain geological units with a PFYC Class of 3 or higher. Leased lands that fall into this category could require professional assessment which may include a field survey prior to surface disturbance. The results of the assessment and survey by a BLM-permitted paleontologist will serve as the basis for a mitigation plan during development. If the inventory resulted in the identification of paleontological resources, mitigation measures such as avoidance, professional monitoring, development of an Unanticipated Resource Discovery Plan or salvage would be initiated by BLM and the operator. Within the administrative boundaries of the USFS Dakota

Prairie Grasslands LMG2020-LN-04 is applied to protect these resources.

Soils Resources and Vegetation

The Standard Lease Stipulation (Standard 16-3) has been applied to all parcels to mitigate any impacts associated with leasing or development of these parcels. Controlled Surface Use Stipulations (CSU 12-24) have also been applied to applicable parcels. At the time of exploration or development the APD surface use plan of operations will include design features and mitigation measures to reduce, avoid, or minimize potential impacts to soil and vegetative resources consistent with the RMP for the respective planning area. Within the administrative boundaries of the USFS Dakota Prairie Grasslands LMG2020-NSO-01 is applied to protect these resources. No surface occupancy stipulation, LMG2020-NSO-10, has been applied to certain USFS parcels protecting rare sensitive plant species with narrow ranges. Ensuring that the species do not become locally extirpated and to prevent a trend toward Federal listing under the Endangered Species Act.

Riparian – Wetland Habitats

The Standard Lease Stipulation (Standard 16-3) have been applied to all parcels to mitigate any impacts associated with leasing or development of these parcels. Stipulations CSU 12-25 and NSO 11-70 have been added to appropriate parcels to achieve the same objective. At the time of exploration of development, the APD surface use plan of operations will include design features and mitigation measures to reduce, avoid, or minimize impacts to riparian-wetland areas, consistent with the RMP for the respective planning area. Additionally, all stipulations related to setback distances from the edge of the wetlands, streams, and rivers will be adhered to and consistent with the RMP for the respective planning area. Within the administrative boundaries of the USFS Dakota Prairie Grasslands LMG2020-CSU-01, and LMG2020-LN-01 are applied to protect these resources.

Visual Resources

BLM is required to manage for visual resources on BLM owned surface lands. Each RMP contains Visual Resource Management (VRM) requirements and considerations specific for the geographical location to which they apply. VRM practices and standards will be implemented consistent with the respective RMP they are subject to. New oil and gas development would implement, as appropriate for the site, Best Management Practices (BMP's) to maintain visual qualities where possible. This includes, but would not be limited to, proper site selection, reduction of visibility, minimizing disturbance selecting color(s)/color schemes that blend with the background and reclaiming areas that are not in active use. Repetition of form, line, color, and texture when designing projects would reduce contrasts between landscape and development.

The application of Standard Lease Stipulation (Standard 16-3), Controlled Surface Use Stipulations (CSU 13-33), No Surface Occupancy (NSO 11-84), and Lease Notice (LN 14-14) would be sufficient at the leasing stage to notify operators that additional measures may be necessary to reduce visual impacts from potential future development (at the APD stage). This provides for the protection and conservation of the visual resources on public lands. BLM visual resource classifications are only applied to BLM surface. For non-federal surface lands where there are federal minerals (commonly referred to as split estate), BLM does not have the authority to manage for VRM. Within the administrative boundaries of the USFS Dakota Prairie Grasslands LMG2020-CSU-08, and LMG2020-NSO-17 are applied to protect these resources.

Recreation

The Standard Lease Stipulation (Standard 16-3) has been applied to all parcels and has been applied to some parcels to mitigate any impacts associated with leasing or development of these parcels. Additionally, CSU 12-34 has been applied to parcels to protect developed recreation areas and undeveloped recreation areas receiving concentrated public use. The leasing action would be considered in compliance with all relevant recreation regulations, protocols, and policies. Impacts on recreation from potential future exploration and development would be analyzed at the APD stage and included design features, and mitigation would be

integrated to avoid or minimize potential impacts to recreation consistent with the RMP for the respective planning area. Within the administrative boundaries of the USFS Dakota Prairie Grasslands LMG2020-NSO-17 is applied to protect these resources.

Wildlife:

Greater Sage-grouse: The BLM screened parcels to determine if any parcels would affect sage-grouse habitat. The result was that none of the parcels offered on this lease sale are within Greater Sage-grouse habitat.

Aquatic Species, Raptors, and Terrestrial Wildlife

The BLM screened parcels for sensitive species and species of concern and applied timing limit, controlled surface use, and no surface occupancy lease stipulations to avoid/minimize impacts to species. BLM Standard Stipulations 16-3 and HQ-TEs-1 contains sections for the safeguarding of endangered or threatened species. The North Dakota Game and Fish have requested no surface occupancy specifically for parcels ND-2025-04-0312, -0727, and -0728 because they are near a State managed Fishery. These parcels are USFS managed, and the agency has applied LMG2020-NSO-17 to protect the Little Missouri River Corridor. Within the administrative boundaries of the USFS Dakota Prairie Grasslands, LMG2020-LN-02, LMG2020-CSU-02, LMG2020-NSO-07, LMG2020-LN-02, and LMG2020-TL-01 are applied to protect these species and their habitat (Black-footed Ferret reintroduction habitat, Golden eagle, Merlin, and Ferruginous Hawk Nests, and Sharp-tailed Grouse display grounds). Pre-disturbance surveys would be required at the time of proposed lease development in accordance with standard terms and conditions of the lease. The surveys would analyze potential effects on game and nongame species habitat. Avoidance, minimization, and/or mitigation measures would also be determined at that time. The BLM has the authority under standard terms and conditions to attach COAs at the site-specific level to minimize significant adverse effects on resource values at the time operations are proposed.

Big Game

Montana Fish, Wildlife, and Parks and North Dakota Game and Fish have documented ungulate migration areas within their states; there is no doubt that the species are present, however without the identification or location of specific habitats of concern this environmental assessment will use current available data to identify habitats that may be affected by oil and gas lease sales. Should new data emerge during the Application for Permit to Drill (APD) phase, it will be incorporated to further refine our understanding of habitats and species that require protection.

The BLM and USFS placed various stipulations on parcels that provides a notification to a lessee that the BLM may require wildlife surveys at the APD stage, and that protective measures may be necessary. During the scoping period North Dakota Game and Fish has requested restricted development on portions of all parcels. It is noteworthy that all parcels involved in this North Dakota lease sale are under the management of the USFS, which has enforced No Surface Occupancy (NSO), Timing Limitations (TL), and Controlled Surface Use (CSU) stipulations for each parcel. Specifically, LMG2020-CSU-04 and LMG2020-TL-03 have been designated for parcels ND-2025-04-0312, -0727, and -0728, which are recognized as Bighorn Sheep Lambing Areas.

Additionally, the BLM and USFS have issued lease notices, indicating that wildlife surveys may be necessary at the APD stage, along with the potential for protective measures. Lease Notice 14-40 has been specifically applied to parcels MT-2025-04-0413 to protect potential big game winter range and migration corridors. This notice serves to inform lessees that site-specific requirements may be identified during the environmental review process, and that approvals could necessitate modifications to safeguard local and regional big-game populations. Importantly, these parcels do not intersect with crucial winter ranges for mule deer or pronghorn.

Pre-disturbance surveys will be mandated during the proposed lease development to evaluate potential impacts on both game and non-game species habitats. At that stage, avoidance, minimization, or mitigation strategies will be determined. The BLM retains the authority to impose Conditions of Approval (COAs) aimed at mitigating significant adverse effects on resource values during project proposals. Based on the current data, existing big game stipulations are considered sufficient to prevent and minimize impacts to these vital habitats.

Threatened and Endangered Species

The BLM screened parcels for sensitive species and species of concern and applied timing limit, controlled surface use, and no surface occupancy lease stipulations to avoid/minimize impacts to species. A scoping comment from the USFWS called for the protection of northern long-eared bat habitat. The BLM placed stipulation HQ-TES-1 (Endangered Species Act (ESA) Section 7 Consultation) on all parcels, which states that 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. Further, the BLM placed LN-14-20 and NSO 11-75 specifically for the protection of the threatened piping plover nesting habitat and NSO 11-78 to protect the habitat of the endangered pallid sturgeon on parcel MT-2025-04-0413. In addition to the stipulation HQ-TES-1, the USFWS would coordinate with the BLM North Dakota Field Office and Miles City Field Office to implement appropriate conservation measures for future site-specific development to ensure development is in compliance with the ESA.

Within the administrative boundaries of the USFS Dakota Prairie Grasslands LMG2020-LN-02 for Threatened and Endangered Species LMG2020-CSU-02 for the protection of black-footed ferret reintroduction habitat is also applied to protect these resources. These notices state that a biological evaluation of the leased lands may be required prior to surface disturbance to determine if endangered, threatened, proposed, candidate or sensitive plant or animal species or their habitat are present within the administrative boundaries of the DPG. The surveys would analyze potential effects on game and nongame species habitat. Avoidance, minimization, and/or mitigation measures would also be determined at that time. 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 U.S.C. § 1531 et seq., including completion of any required procedure for conference or consultation. The BLM completed a screen for threatened and endangered species and habitat presence in proposed parcels and identified applicable stipulations if the species or habitat may be present. Refer to **Table 1** below.

Piping Plover and Dakota Skipper

During the scoping process, commenters to include the USFWS indicated that McKenzie and Billings counties contain suitable habitat for and Dakota skipper (*Hesperia dacotae*). In addition to the stipulation HQ-TES-1, the USFWS would coordinate with the BLM North Dakota Field Office and USFS to implement appropriate conservation measures for future site-specific development to ensure development is in compliance with the ESA. There are other stipulations including the Standard 16-3 applied to the parcels known to contain moderate to high suitability habitat for Dakota Skipper. For parcel MT-2025-04-0413 the BLM placed LN 14-20 and NSO 11-75 specifically for the protection of the threatened piping plover nesting habitat. Applied stipulations can be found in Appendix A and would be enforced during the APD process to address the skipper and other species with surveys, monitoring, and timing limitations for ground disturbance. These activities often involve collaboration and coordination with agencies and can provide appropriate mitigation for the listed species.

Table 1. USFWS Listed Species and Habitat occurrence in proposed MT/Dakotas April 2025 Oil and Gas Lease Sale

Scientific Name	Common Name	Status	Species Present in Lease Parcels	Suitable Habitat Present	If species and/or habitat are present, identify stipulations that would avoid/minimize impacts to the species.
McKenzie County, ND					
<i>Calidris canutus rufa</i>	Rufa Red Knot	LT	Unknown	Unlikely	HQ-TES-1, LMG2020-LN-02, COA attached to the APD at project level
<i>Charadrius melodus</i>	Piping Plover	LT, CH	Unknown	Possible	HQ-TES-1, LMG2020-LN-02, COA attached to the APD at project level
<i>Danaus plexippus</i>	Monarch Butterfly	C	Unknown	Unlikely	HQ-TES-1, LMG2020-LN-02
<i>Grus americana</i>	Whooping Crane	LE	Unknown	Unlikely	HQ-TES-1, LMG2020-LN-02, COA attached to the APD at project level
<i>Herperia dacotae</i>	Dakota Skipper	LT	Likely	Possible	HQ-TES-1, LMG2020-LN-02
<i>Myotis septentrionalis</i>	Northern Long-eared Bat	LE	Likely	Possible	HQ-TES-1, LMG2020-LN-02, COA attached to the APD at project level
<i>Scaphirhynchus albus</i>	Pallid Sturgeon	LE	No	No	HQ-TES-1, LMG2020-LN-02
<i>Argynnis idalia occidentalis</i>	Western Regal Fritillary	P	Unknown	Unlikely	HQ-TES-1
Billings County, ND					
<i>Calidris canutus rufa</i>	Rufa Red Knot	LT	Unknown	Unlikely	HQ-TES-1, LMG2020-LN-02, COA attached to the APD at project level
<i>Myotis septentrionalis</i>	Northern Long-eared Bat	LE	Likely	Possible	HQ-TES-1, LMG2020-LN-02, COA attached to the APD at project level
<i>Grus americana</i>	Whooping Crane	LE	Unknown	Unlikely	HQ-TES-1, LMG2020-LN-02 COA attached to the APD at project level
<i>Danaus plexippus</i>	Monarch Butterfly	C	Unknown	Unlikely	HQ-TES-1, LMG2020-LN-02
<i>Charadrius melodus</i>	Piping Plover	LT, CH	Unknown	Unlikely	HQ-TES-1, LMG2020-LN-02, COA attached to the APD at project level
<i>Herperia dacotae</i>	Dakota Skipper	LT	Likely	Possible	HQ-TES-1, LMG2020-LN-02
<i>Argynnis idalia occidentalis</i>	Western Regal Fritillary	P	Unknown	Unlikely	HQ-TES-1
Roosevelt County, MT					
<i>Myotis septentrionalis</i>	Northern Long-eared Bat	LT	Unknown	Unlikely	HQ-TES-1, COA attached to the APD at project level
<i>Charadrius melodus</i>	Piping Plover	LT, CH	Unknown	Yes	HQ-TES-1, NSO 11-75
<i>Scaphirhynchus albus</i>	Pallid Sturgeon	LE	Unknown	Yes	HQ-TES-1, NSO 11-78
<i>Calidris canutus rufa</i>	Rufa Red Knot	LT	Unknown	Unlikely	HQ-TES-1, COA attached to the APD at project level
<i>Grus americana</i>	Whooping Crane	LE	Unknown	Unlikely	HQ-TES-1, COA attached to the APD at project level
<i>Argynnis idalia occidentalis</i>	Western Regal Fritillary	P	Unknown	Unlikely	HQ-TES-1
<i>Danaus plexippus</i>	Monarch Butterfly	C	Unknown	Unlikely	HQ-TES-1
C = Candidate PCH = Proposed Critical Habitat LT = Listed Threatened CH = Designated Critical Habitat LE = Listed Endangered P = Proposed XN = Experimental non-essential population					

2 Alternatives

This EA considers the effects of two alternatives: Alternative A – No Action and Alternative B – Proposed Action. The Proposed Action is based upon Expressions of Interest (EOIs) that were submitted to the BLM for the Quarter 2, April 2025 lease sale.

2.1 Alternative A – No Action Alternative

Under the No Action alternative, none of the EOIs to lease (parcel nominations) would be offered for sale. The No Action Alternative would exclude all parcels from the competitive oil and gas lease sale. No additional natural gas or crude oil would enter the public markets, and no royalties would accrue to the federal or state treasuries from the proposed parcel lands. The No Action Alternative would result in the continuation of the current land and resource uses on the lease parcels and would remain the same as the affected environment described in Chapter 3. Existing Federal leases for oil and gas properties would continue to generate rental income.

2.2 Alternative B - Proposed Action Alternative

The BLM would offer 11 lease parcels encompassing approximately 4,266.06 Federal mineral acres as part of a competitive oil and gas lease sale tentatively scheduled to occur on April 29, 2025, in conformance with the existing land use planning decisions.

- Dakota Prairie-Grasslands Administrative Boundary: Ten (10) parcels on USFS surface in Billings and McKenzie counties, North Dakota (4,263.68 acres).
- Bureau of Land Management – Miles City Field Office: One (1) parcel on BLM surface in Roosevelt County in Montana (2.382 acres).

A BLM and USFS interdisciplinary team reviewed all parcels and applied stipulations and lease notices designed to avoid or minimize impacts to resources. The broad definitions of No Surface Occupancy, Controlled Surface Use, and Lease Notices are listed here:

No Surface Occupancy Stipulations (NSO):

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. The NSO stipulation is a category of major constraints. Areas identified as NSO 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.

Controlled Surface Use Stipulations (CSU):

Controlled Surface Use is a category of moderate constraint stipulations that allows some use and occupancy of public land while protecting identified resources or values. Areas identified as CSU are open to fluid minerals leasing, but the stipulation allows the BLM to require special operation constraints.

Timing Limitation Stipulations (TL):

Areas identified for TL, a moderate constraint, are closed to fluid minerals exploration and development, surface-disturbing activities for periods that may exceed 60 days. This stipulation does not apply to operation and basic maintenance.

Lease Notices (LN)

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.

The application and definitions of all stipulations can be found in **Appendix A** and **B**.

Based upon calculations made in the Reasonably Foreseeable Development Scenarios, the BLM estimates that 8 new oil wells could be drilled in the North Dakota Field Office and 1 new oil well could be drilled in the Miles City Field Office from this lease sale. Refer to **Table 2** and **Appendix D**.

2.3 Alternatives Considered but not Analyzed in Detail

NEPA requires the BLM to consider a reasonable range of alternatives to the proposed action. In this EA, the BLM considers one Action alternative and the No Action alternative. The alternatives would lease, or not lease parcels based upon specific resource concerns identified during analysis. The BLM received scoping comments asking for alternatives that did not fall within the range of alternatives already analyzed in the EA, including:

- An alternative that protects groundwater.

The BLM frequently receives comments asking for an alternative that would protect usable groundwater, defined under the Safe Drinking Water Act as an aquifer with water that contains less than 10,000 mg/L (10,000 ppm) of total dissolved solids. However, a separate alternative to protect usable groundwater is not warranted because protection of groundwater would be required for any APD that is approved on a lease parcel. Authorization of proposed projects would require full compliance with local, state, and federal directives and stipulations that relate to surface and groundwater protection, and the BLM would deny any APD that proposes drilling and/or completion processes that are insufficient to protect usable water, as required by 43 CFR §3162.5-2(d). Any proposed drilling/completion activities would have to comply with 43 CFR §3160 regulations and not result in a violation of a Federal and/or State laws that prohibit degradation of surface or groundwater quality.

- An alternative that minimizes methane waste through both technology and regulatory authority.

Lease Notice 14-18 is applied to every BLM-administered parcel, which provides: 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. Application of the lease notice allows the BLM to mandate site-specific analysis of impacts to air resources at the APD stage, and to require project-specific control measures to protect air resources, including methane reduction technologies. As the BLM cannot write additional stipulations at the leasing stage, and methane reduction technologies may be required under LN 14-18, this alternative is therefore eliminated from further analysis.

2.4 General Information and Appendices

Appendix A provides a list of all the parcels by parcel number, and identifies the size, legal descriptions, and associated stipulations. **Appendix B** provides a description of Lease Stipulations and **Appendix C** identifies the location of each parcel.

Table 2 identifies the number of parcels that would be offered by field office and county, acres of federal minerals (public domain or acquired lands) and summarizes development potential and estimated acres of surface disturbance based upon a sale specific Reasonably Foreseeable Development (RFD) scenario (see **Appendix D**).

The terms and conditions of the standard federal lease and federal regulations would apply to the parcels offered for sale in the Proposed Action. Stipulations shown in **Appendix A** would be included with the identified parcel offered for sale. Standard operating procedures for oil and gas development include measures to protect the environment and resources such as groundwater, air, wildlife, cultural resource concerns, and others specified in the respective RMP or LUP for each planning area.

Lease stipulations would be attached to the parcels to address site specific concerns or new information not previously identified in the land use planning process. Once sold, the lease purchaser would have the right to use as much of the leased lands as is reasonably necessary to explore and drill for all the oil and gas within the lease boundaries, subject to the stipulations attached to the lease (43 CFR §3101.1-4).

Conditions of Approval (COAs) would be attached to permits issued to explore and develop the parcels to address site specific concerns or new information once an APD is analyzed in future NEPA documents.

Standard operating procedures, best management practices (BMPs), and COAs can change over time to meet RMP objectives, resource needs or land use compatibility.

A Federal oil and gas lease would be issued for a 10-year period and would remain valid for as long thereafter as oil or gas is produced in paying quantities, required payments are made and lease operations are conducted in compliance with regulations and approved permits. If a lessee fails to produce oil and gas by the end of the initial 10-year period, does not make annual rental payments, or does not comply with the terms and conditions of the lease, the BLM will terminate the lease. The lessee can relinquish the lease. The oil and gas resources could be offered for sale at a future lease sale.

Drilling of wells on a lease would not be permitted until the lessee or operator secures approval of a drilling permit and a surface use plan as specified in 43 CFR § 3162. This requires additional environmental reviews, by the BLM, at the time of application.

Upon cessation of lease operations, the BLM's regulations and the terms of the lease agreement require the lessee to plug the well(s) and abandon any facilities on the lease. The surface must be reclaimed to the satisfaction of the BLM authorized officer, in accordance with 43 CFR §3170 Onshore Oil and Gas Production.

Table 2. April 2025 Lease Sale: Parcels by County, Public Domain & Acquired Lands, Development Potential, and Estimated Surface Disturbance¹

County	Alternative B					Development Potential	Estimated # of Wells	Estimate Acres of Surface Disturbance (short/long term)
	# Parcels	BLM Surface	Non-Federal Surface (Split Estate)	USFS Surface	USACE Surface			
North Dakota Field Office								
Billings	3	0.00	0.00	3,261.30	0.00	0 - Low 8 - Moderate 2 - High 0 - Very High	8 oil	10.4 acres ST 10.4 acres LT
McKenzie	7	0.00	0.00	1,002.38	0.00			
Total	10	0.00	0.00	4,263.68	0.00			
Miles City Field Office								
Roosevelt	1	2.382	0.00	0.00	0.00	0 - Low 0 - Moderate 1 - High 0 - Very High	1 oil	3.0 acres ST 1.0 acres LT
Total	1	2.382	0.00	0.00	0.00			
Grand Total	11	4,266.062 acres				0 - Low 8 - Moderate 3 - High 0 - Very High	9 oil	13.4 acres ST 11.4 acres LT

¹Total number of wells estimated based on the RFD and rounded to the nearest whole number

3 Affected Environment and Environmental Consequences

This chapter describes the affected environment (i.e., the physical, biological, and socioeconomic values and resources) and environmental consequences to resources that could be affected by implementation of the proposed action. This analysis is tiered to the respective RMP for each geographic location of the nominated parcels, and the analysis of the reasonably foreseeable effects of oil and gas development contained in those RMPs are incorporated by reference into this analysis.

Each RMP determined which areas are available for oil and gas leasing and under what conditions those leases would be offered and sold. All the lease parcels included in the proposed action are within areas that are open to oil and gas leasing in their respective RMP.

The act of leasing parcels would not cause direct effects to resources because no surface disturbance would occur. The only direct effects of leasing are the creation of valid existing rights and impacts related to revenue generated by the lease sale receipts.

Future lease exploration and development activities proposed through individual APD submission would be subject to future BLM decision-making and NEPA analysis. Upon receipt of an Application for a Permit to Drill (APD), the BLM would initiate a site-specific NEPA analysis that considers the reasonably foreseeable effects of a specific action. At that time, detailed information about proposed wells and facilities would be provided for specific leases. In all potential exploration and development scenarios, the BLM would require the use of BMPs documented in “Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development” (USDOJ 2007), also known as the *Gold Book*, available online at <https://www.blm.gov/programs/energy-and-minerals/oil-and-gas/operations-and-production/the-gold-book>. The BLM could also identify Conditions of Approval (COAs), based on site-specific analysis that could include moving the well location, restrict timing of the project, or require other reasonable measures to minimize adverse impacts (43 CFR § 3101.1-2 Surface use rights; Lease Form 3100-11, Section 6) to protect sensitive resources, and to ensure compliance with laws, regulations, and land use plans.

BLM resource specialists prepared this EA to document the analysis of the lease parcels and recommended appropriate stipulations based upon professional knowledge of the areas involved, review of current databases, scientific literature, and file information. The analysis focuses on the resource impact indicator(s) identified

for each resource issue in Chapter 1.

At the time of this review, it is unknown whether a particular parcel will be sold, and a lease issued. It is also unknown when, where, or if future well sites, roads, and facilities might be proposed. Therefore, the types, magnitude and duration of potential impacts cannot be precisely quantified at this time and would vary according to many factors.

The BLM analyzed potential impacts from oil and gas development in the Final Environmental Impact Statement (FEIS) for the applicable ARMP based upon potential well densities discerned from the Reasonably Foreseeable Development (RFD) Scenario developed for the Field Office. The BLM utilized information from the RFD in the ARMP to estimate the number of possible oil and gas wells that could be drilled and produced on parcels in the Quarter 2, April 2025 sale. The sale specific RFD was used to analyze effects of the proposed action. Refer to **Appendix D** for a detailed description of the sale specific RFD.

3.1 General Setting

The analysis area varies by resource, and generally includes the 11 lease parcels of Federal minerals for oil and gas leasing, covering approximately 4,266.06 Federal mineral acres in Billings and McKenzie counties in North Dakota and Roosevelt County in Montana, as well as a larger area around the parcels to capture all reasonably foreseeable effects. The temporal scale of effects includes the 10-year period of a lease term, unless the lease is held by production, in which case the temporal scale is extended to the life of the producing well. If the lease parcels are developed, short-term impacts would be stabilized or mitigated rapidly (within two to five years). Long-term impacts are those that would substantially remain for more than five years.

Geologic Formations

Williston Basin (Roosevelt County in MT and McKenzie and Billings counties in ND)

Parcels proposed in Roosevelt, McKenzie and Billings counties are located within the Williston Basin unconventional Bakken/Three Forks development area. The Williston Basin parcels are surrounded by horizontal Bakken/Three Forks development wells which have also been predominantly drilled in the past 10 years. The Bakken/Three Forks is a true unconventional reservoir where the wells target organic rich shale intervals.

3.2 Methodology and Assumptions

Analysis of issues brought forward in this assessment was completed using reasonably foreseeable development (RFD) scenarios created for the proposed lease parcels. RFD scenarios for the proposed lease parcels were developed using the Minerals Appendices from the RMP for the North Dakota Field offices. The RMP contains the number of potential oil and gas wells that could be drilled and produced in the field office area, and this was used to analyze the potential number of wells drilled for the nominated lease parcels. These well numbers are only an estimate based on historical drilling, geologic data, resource expertise, and current development in the area.

3.3 Issue 1 – Air Resources

3.3.1 Affected Environment

The Environmental Protection Agency (EPA) established primary and secondary National Ambient Air Quality Standards (NAAQS) for six principal air pollutants (or criteria air pollutants) which may be harmful

to the public health and environment including carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM₁₀ and PM_{2.5}), sulfur dioxide (SO₂), and lead (Pb) ([NAAQS Table | US EPA](#)). Primary standards set limits to protect public health, including the health of at-risk populations with pre-existing heart or lung disease, children, and older adults. Secondary standards, on the other hand, set limits to protect public welfare, including visibility impairment and damage to animals, crops, vegetation, and buildings.

Determining compliance with the NAAQS can be evaluated using a variety of methods such as ambient air quality monitoring stations, air quality design values, air diffusion modeling, and/or photochemical grid modeling. Pollutant concentrations that are below the NAAQS are designated as attainment or unclassifiable, and air quality is generally considered to be good. Locations in which monitored pollutant concentrations are higher than the NAAQS are designated nonattainment, and air quality is generally considered unhealthy. For this proposed action, an approximate 50 kilometers (km) (31.1 miles) radius around the lease parcels were used to help assess regulatory compliance because the maximum distance recommended to predict compliance of the NAAQS using the preferred EPA air diffusion modeling software is 50 km. Any evaluation and discussion outside the 50 km radius around the parcels are provided as additional background information.

The EPA is the delegated authority, under the Clean Air Act (CAA), for individual states to complete various activities such as air quality permitting, compliance monitoring, and air quality monitoring. Similarly, Tribal governments have the authority to develop and implement air quality programs through the Tribal Authority Rule under the provisions of CAA. In Montana, the Department of Environmental Quality (MT DEQ) implements air quality permitting and compliance programs, registration programs, and conducts ambient air quality monitoring throughout the state (MT DEQ, 2024a). In North Dakota, the Department of Environmental Quality (ND DEQ) Division of Air Quality (DoAQ) is responsible air quality permitting and compliance, oil or gas well registrations, and ambient air quality monitoring (ND DoAQ, 2024). Both North Dakota and Montana have developed a network of ambient air quality monitoring sites to assess NAAQS compliance. **Table 3.** Criteria Pollutant Design Values-2021-2023 provides air pollutant concentrations measured at the ambient air quality sites located near or within the proposed lease areas using design values. The design value is the annual arithmetic mean concentrations, averaged over 3 years, and describes the air quality status of a given location relative to the NAAQS. Design values are used to designate and classify nonattainment areas, as well as assess progress towards meeting the NAAQS. For Montana and North Dakota, all lease parcels are in areas that are currently designated attainment or unclassifiable for each NAAQS. Counties without monitoring stations have an unclassifiable attainment status and are assumed to have good air quality with pollutant concentrations below the NAAQS. The Federal Land Manager (FLM) is responsible for defining Air Quality Related Values (AQRVs), including visual air quality (haze) and atmospheric deposition for an area, and establishing criteria to determine an adverse impact on the AQRVs. AQRVs are not threshold standards, but a FLM may identify levels of concern and provide recommendations to the permitting authority.

Table 3. Criteria Pollutant Design Values-2021-2023

Pollutant	Site Name/Monitor Location/County	Averaging Time	Design Value Concentration ⁽¹⁾	NAAQS	% NAAQS
PM _{2.5} (µg/m ³)	Sidney, MT (Richland County)	Annual	6.2	9	69%
PM _{2.5} (µg/m ³)	Lostwood Nwr, ND (Burke)	Annual	7.6	9	84%
PM _{2.5} (µg/m ³)	Trnp-Nu Waterford City, ND (McKenzie)	Annual	6.3	9	70%
PM _{2.5} (µg/m ³)	Lake Ilo, ND (Dunn)	Annual	7.1	9	79%
PM _{2.5} (µg/m ³)	Painted Canyon, ND (Billings)	Annual	6.1	9	68%
PM _{2.5} (µg/m ³)	Sidney, MT (Richland County)	24-hour	29	35	83%
PM _{2.5} (µg/m ³)	Lake Ilo, ND (Dunn)	24-hour	35	35	100%
PM _{2.5} (µg/m ³)	Trnp-Nu Waterford City, ND (McKenzie)	24-hour	33	35	94%
PM _{2.5} (µg/m ³)	Painted Canyon, ND (Billings)	24-hour	25	35	94%
O ₃ (ppm)	Sidney, MT (Richland County)	8-hour	0.063	0.070	90%
O ₃ (ppm)	Lake Ilo, ND (Dunn)	8-hour	0.063	0.070	90%
O ₃ (ppm)	Lostwood Nwr, ND (Burke)	8-hour	0.062	0.070	89%
O ₃ (ppm)	Trnp-Nu Waterford City, ND (McKenzie)	8-hour	0.062	0.070	89%
O ₃ (ppm)	Painted Canyon, ND (Billings)	8-hour	0.064	0.070	91%
NO ₂ (ppb)	Sidney, MT (Richland County)	1-hour	12	100	12%
NO ₂ (ppb)	Lake Ilo, ND (Dunn)	1-hour	14	100	14%
NO ₂ (ppb)	Trnp-Nu Waterford City, ND (McKenzie)	1-hour	9	100	9%
SO ₂ (ppb)	Sidney, MT (Richland County)	1-hour	6	75	8%
SO ₂ (ppb)	Lake Ilo, ND (Dunn)	1-hour	6	75	8%
SO ₂ (ppb)	Trnp-Nu Waterford City, ND (McKenzie)	1-hour	5	75	7%
SO ₂ (ppb)	Painted Canyon, ND (Billings)	1-hour	6	75	8%

Source: EPA Design Values [Air Quality Design Values | US EPA](#)
Source: MDEQ State of Montana Air Quality Annual Monitoring Network Plan, June 2024. [MTDEQ 2024 Network Plan](#)
(1) Dataset includes all values including flagged exceptional events.

Oil and gas development activities may impact ambient air concentrations of PM₁₀, PM_{2.5}, O₃, CO, NO_x, volatile organic compounds (VOC), hydrogen sulfide (H₂S), and SO₂. Particulate matter comes from a variety of sources such as construction activities, unpaved roads, cars, trucks, or other operations that burn fossil fuels. On the other hand, O₃ is not emitted directly into the air but created from pollutants such as NO_x and

VOC that chemically react in the presence of sunlight. In addition, other particles may form in the atmosphere because of complex reactions from SO₂ and NO_x. Along with oil and gas well operations, pollutants such as SO₂ and NO_x are also emitted from power plants and automobiles whereas sources of CO are mostly from cars, trucks, or machinery that burn fossil fuels. Similarly, SO₂ emissions from oil and gas well facilities may also be created from the combustion (e.g., flaring) of gas containing H₂S. Although there is not a Federal NAAQS for H₂S, Montana and North Dakota do have an ambient air quality standard for H₂S. In North Dakota, the standard was developed in response to elevated sulfur during petroleum production in the 1980s; however, emissions of H₂S have reduced over time as production from the older facilities declined. In addition, the Bakken Formation, which has been the focus of the most recent oil and gas activity in Montana and North Dakota, generally has low concentrations (if any) of H₂S compared to non-Bakken Formations. For Montana and North Dakota, the owner or operator of any oil or gas well production facility must install and maintain pollution controls necessary to ensure that emissions comply with both national and state ambient air quality standards.

EPA also regulates emissions of hazardous air pollutants (HAPs) which includes a list of 188 air toxics. EPA is required to develop regulations to control emissions for all industries that emit one or more listed HAPs in substantial quantities (EPA, 2024). Since 1990, EPA has issued regulations limiting emissions of air toxics from more than 174 categories of major industrial sources including crude oil and natural gas production sources. Because HAPs are released from oil and gas operations (including from well drilling, well completion, and operation), the EPA established technology-based emission standards to help control HAP emissions. HAPs associated with the oil and gas industry may include compounds such as formaldehyde, benzene, toluene, ethyl benzene, xylene, and normal-hexane (n-hexane). In 2016, New Source Performance Standards (NSPS) 40 CFR Part 60 Subpart OOOOa (Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced After September 18, 2015) created emission standards and compliance requirements for the control of VOC and SO₂ emissions from affected facilities.

Similarly, on December 2, 2023, the EPA announced a final rule that will reduce emissions of methane and other harmful air pollution from oil and natural gas operations from new, modified, and reconstructed sources. First, EPA finalized NSPS OOOOb regulating GHG (in the form of a limitation on emissions of methane) and VOCs emissions for the Crude Oil and Natural Gas source category pursuant to CAA section 111(b)(1)(B). Second, EPA finalized the presumptive standards in emission guidelines NSPS OOOOc to limit GHGs emissions (in the form of methane limitations) from designated facilities in the Crude Oil and Natural Gas source category. Third, EPA finalized requirements under the CAA section 111(d) for states to follow in developing, submitting, and implementing state plans to establish performance standards as well as finalized several related actions stemming from the joint resolution of Congress, adopted on June 30, 2021, under the congressional review act (CRA), disapproving the 2020 Policy Rule. Fourth, EPA finalized a protocol under the general provisions of 40 CFR part 60 related to optical gas imaging (OGI). On June 11, 2024, EPA issued an interim final rule to make technical corrections the final rule published in March 2024 and took comments on the interim final rule for 30 days after it was published in the Federal Register.

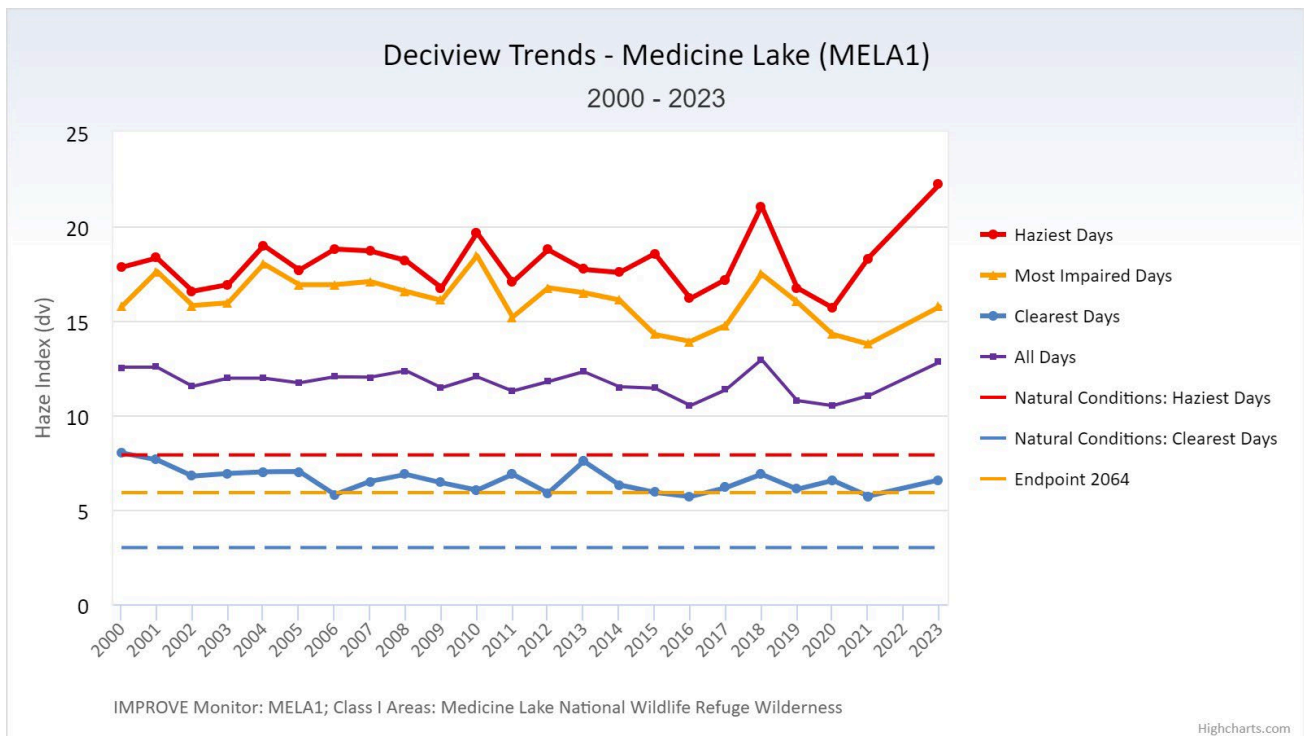
Furthermore, the EPA also developed a National Toxics Assessment Tool (AirToxScreen) ([2020 AirToxScreen | US EPA](#)) to evaluate impacts from existing HAP emissions across the nation. However, EPA AirToxScreen was not designed to assess specific risk values at local levels but best used as a tool to prioritize pollutants, emissions sources, and locations of interest for further investigation. Using the EPA AirToxScreen, the total cancer risk for Montana and North Dakota, was below the upper limit of acceptable lifetime risk of 100 in 1 million people to develop cancer, as described in 40 CFR § 300.430. For Roosevelt County in Montana, the total cancer risks were estimated to range from 10 to 20 in 1 million while in Billings County and McKenzie County in North Dakota, the total cancer risks were estimated to range between 10 to 60 in 1 million people. In addition, the noncancer hazard index for Montana and North Dakota were below 1.0, indicating that air toxics will not likely cause adverse noncancer health effects.

Similarly, the EPA Prevention of Significant Deterioration (PSD) program was designed to protect human health and environment by demonstrating that new emissions will not cause or contribute to a violation of any applicable NAAQS or PSD increments. A PSD increment is the amount of pollution allowed to increase to prevent air quality from deteriorating that would cause a violation of the NAAQS. The parcels in this lease sale could be located near and/or in Class I or Class II areas. Most areas throughout the United States are categorized as Class II which allow for some air quality deterioration under PSD. However, for Class I areas, PSD provides additional stringent air quality and visibility protection to national parks and national wilderness areas. Class I areas or other areas of potential interest nearest to the proposed parcels include Fort Peck Reservation (Approximately 24 miles) and Medicine Lake Wilderness Area (Approximately 29 miles), located in Montana while, in North Dakota, Class I areas or other areas of interest include the Theodore Roosevelt National Park (4 -14 miles), Lake Ilo Wildlife Refuge (Approximately 11-28 miles), Fort Berthold Reservation (0 miles), and Watford City (0 miles). Maps of the lease parcel locations are provided in Appendix C.

The Federal Land Manager (FLM) is responsible for defining Air Quality Related Values (AQRVs), including visual air quality (haze) and atmospheric deposition for an area. Atmospheric visibility is a measure of how far and how well an observer can see a distant and varied scene. The visual range is the greatest distance in miles that a person can see a large dark object viewed against the horizon sky. Light extinction or attenuation is a nonlinear measure of visibility and occurs in the atmosphere as a result of scattering and absorption. Pollutants from natural and anthropogenic sources contribute to haze by scattering and absorbing light. A deciview (dv) is a unit of measurement used to quantify human perception of visibility and is calculated from the natural logarithm of atmospheric light extinction. One (1) deciview is roughly the smallest change in visibility (haze) that is barely perceptible. Because visibility at any one location is highly variable throughout the year, visibility is characterized by three groupings: 1.) clearest 20% days, 2.) average 20% days, and 3.) haziest 20% days. Average visual range is 60 to 90 miles (100 to 150 kilometers) in many Class I areas in the western United States, equivalent to 9.6 to 13.6 deciview (dv), or about 50 to 70 percent of the visual range that would exist without anthropogenic air pollution from stationary and mobile sources (64 Fed. Reg. 35714).

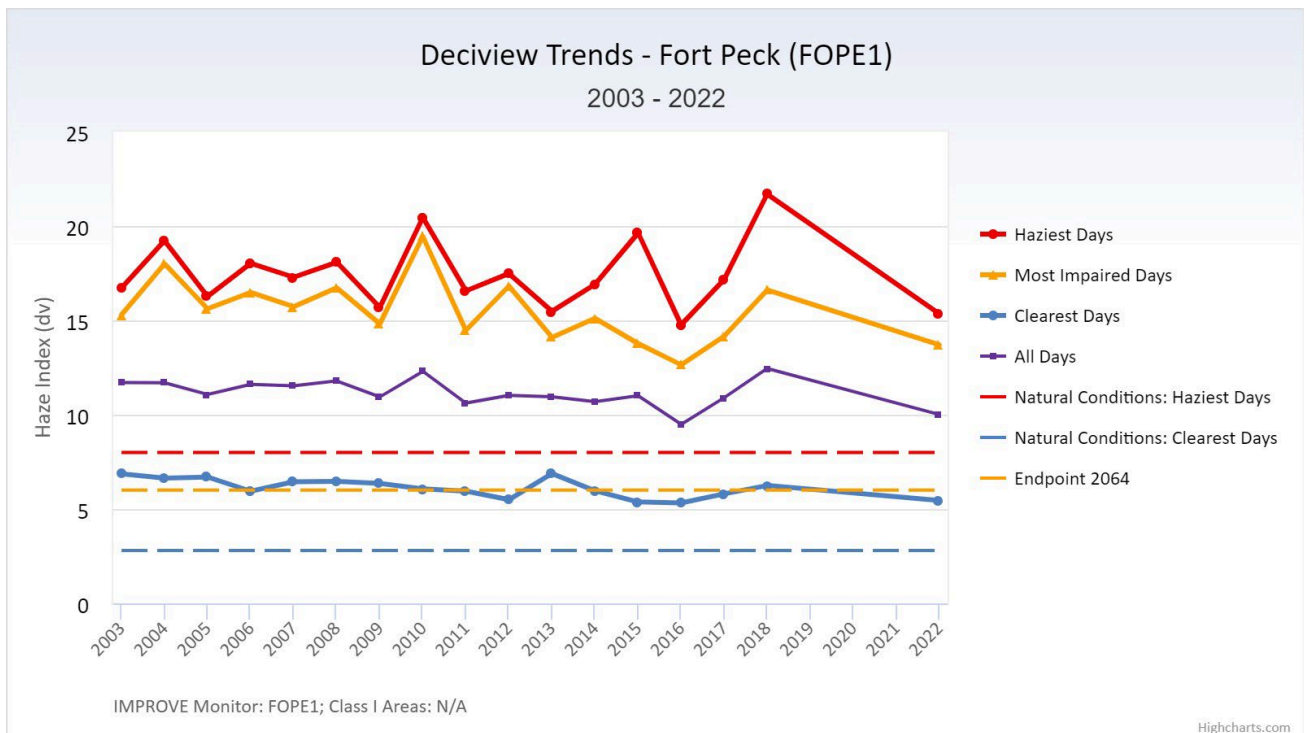
The Interagency Monitoring of Protected Visual Environments (IMPROVE) Program collects and identifies visibility and composition trends throughout the nation. **Figures 1-3** provide a graphical representation of annual visibility trends for the nearest IMPROVE monitoring sites to the proposed lease parcels. Based on the data, visibility trends do not appear to have changed significantly over the monitoring period; however, it does seem to reveal an improving trend for the clearest and most impaired days at the monitoring sites.

Figure 1. Medicine Lake (MELA1) - Visibility Trends at Medicine Lake National Park, Montana



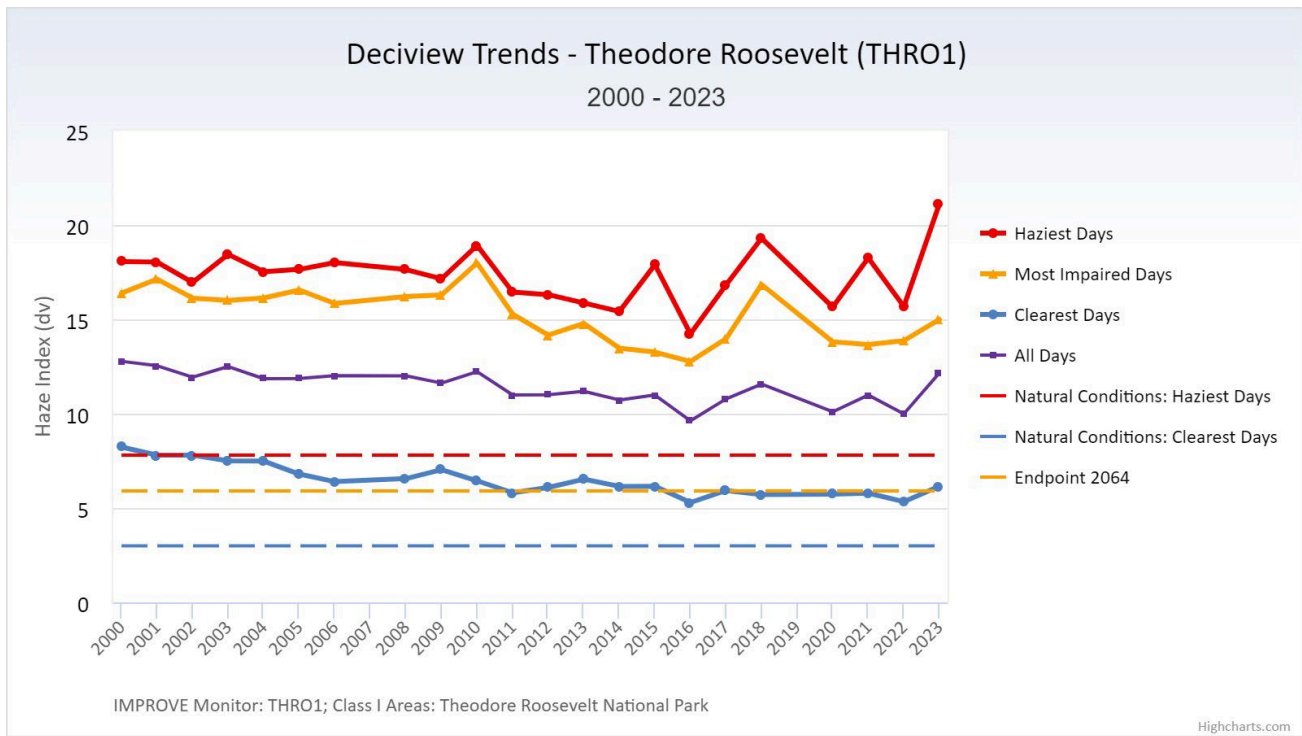
Source: Federal Land Manager Environmental Database, 2024

Figure 2. Fort Peck (FOPE1) - Visibility Trends at Fort Peck, Montana



Source: Federal Land Manager Environmental Database, 2024

Figure 3. Theodore Roosevelt (THRO1) - Visibility Trends at Theodore Roosevelt National Park, North Dakota



Source: Federal Land Manager Environmental Database, 2024

In addition to IMPROVE, the Western Regional Air Partnership (WRAP) Technical Support System (TSS) is an online portal that provides advanced data acquisition and analytical tools for the development of State and Tribal Implementation Plans to help track progress and improve visibility in Class I areas related to EPA’s Regional Haze Rule ([TSS Home \(colostate.edu\)](http://colostate.edu)). The TSS summarizes results and consolidates information about air quality monitoring; meteorological and receptor modeling data analyses; emissions inventories and models; and gridded air quality/visibility regional modeling simulations. The projected 2028 reasonable progress goal for the most impaired and clearest days for Medicine Lake Wilderness Area (MELA1), Fort Peck Reservation (FOPE1), Theodore Roosevelt National Park (THRO1), and Lostwood National Wildlife Refuge Wilderness (LOST1) are provided in **Figure 4, 5, and 6**. The figures illustrate the Uniform Rate of Progress (URP) Glidepath as defined by EPA guidance, compared to IMPROVE measurements for the period 2000-2018. The URP glidepath is constructed for the 20% most impaired days (MID) or clearest days using observations from the IMPROVE monitoring site. In general, the URP glidepath starts with the IMPROVE MID for the 2000-2004 5-year baseline and draws a straight line to estimated natural conditions in 2064. For clearest days, the goal is no degradation of visibility from the 2000-2004 5-year baseline, therefore glidepath for clearest days is a straight line from the 2000-2004 baseline to 2064. In the second regional haze planning period, 2064 natural conditions estimates are the same as the 15-year average of natural conditions on most impaired days or clearest days in each year 2000-2014. IMPROVE annual average values are presented as points and 5-year average values are presented as solid lines covering the periods 2000-2004 and 2014-2018.

Figure 4. Projected Reasonable Progress Goals – Medicine Lake Wilderness Area (MELA1), Montana



Figure 5. Projected Reasonable Progress Goals - Fort Peck Reservation (FOPE1), Montana

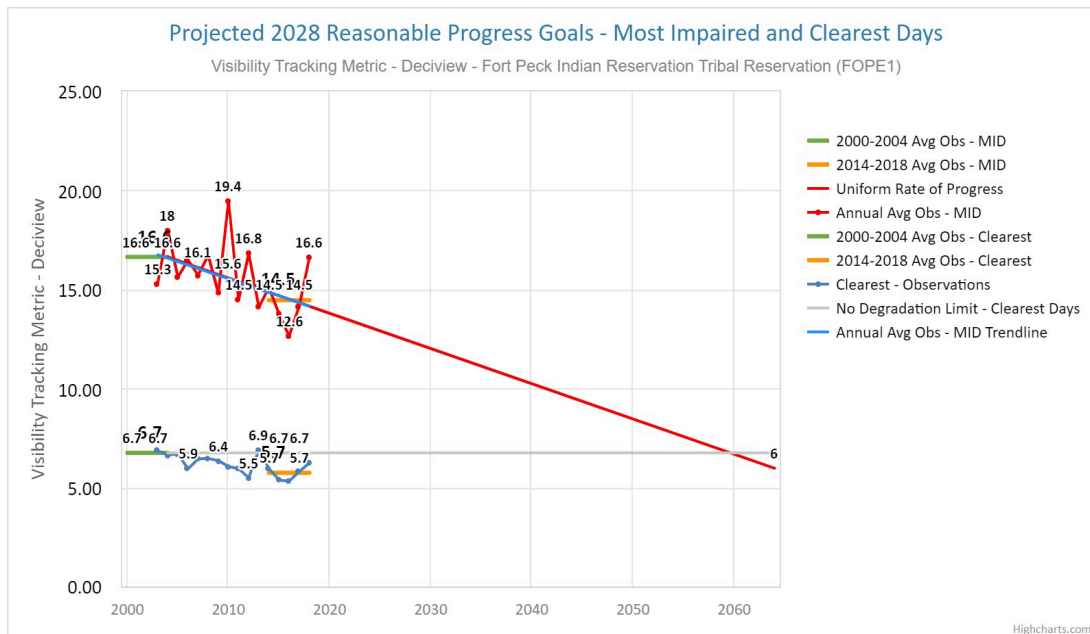


Figure 6. Projected Reasonable Progress Goals - Theodore Roosevelt National Part (THRO1), North Dakota



Unlike visibility, atmospheric deposition occurs when gaseous and particulate air pollutants are deposited on the ground, water bodies, or vegetation. The pollutants may be deposited as dust or transported from the atmosphere in the form of rain, fog, or snow. When air pollutants such as sulfur and nitrogen are deposited into ecosystems, acidification or enrichment of soils and surface waters may occur. Atmospheric nitrogen and sulfur deposition may affect water chemistry, resulting in impacts to aquatic vegetation, invertebrate communities, amphibians, and fish. Deposition can also cause chemical changes in soils that alter soil microorganisms, plants, and trees. Although nitrogen is an essential plant nutrient, excess nitrogen from atmospheric deposition can stress ecosystems by favoring some plant species and inhibiting the growth of others. Information on wet and dry deposition at Class I areas within the analysis area can be found at EPA’s Clean Air Status and Trends Network monitoring program at [Clean Air Status and Trends Network \(CASTNET\) | US EPA](#). The National Park Service air quality data collection and analysis efforts are also provided for a variety of sites across the country ([Air Quality in Parks - Air \(U.S. National Park Service\) \(nps.gov\)](#)). For example, the overall air quality at Theodore Roosevelt National Park is classified as “fair” with a relatively unchanging trend. Air quality conditions for visibility (10.1 dv) and O₃ (57.8 ppb) were described as “fair” with unchanging trends while conditions related to nitrogen deposition was also “fair” (2.6 kilograms per hectare per year (kg/ha/yr)) with an unchanging trend. However, sulfur and mercury deposition for the area was described as “good” with a relatively unchanging trend or no trend available.

In addition to oil and gas emissions sources, air quality and AQRVs are influenced by industrial sources, motor vehicles, agricultural practices, long-range emissions transport, and natural sources such as wildfire smoke. Oil and gas processing and refining facilities are permitted by local, state, tribal, and/or federal agencies, and report pollutant air emissions annually to the EPA. Each proposed new and modified facility is required to demonstrate compliance with NAAQS. The compliance requirements and air monitoring network throughout Montana and North Dakota help ensure that an area remains in compliance with the NAAQS. The criteria pollutant emissions from most oil and gas operations, including from lease sales, can be found in the EPA’s National Emission Inventory ([National Emission Inventory \(NEI\) | US EPA](#)). In addition, projections of regional air quality resulting from oil and gas development on BLM lands is documented in several BLM reports such the 2016 Montana/Dakotas State Office Photochemical Grid Modeling (PGM) Modeling Study Air Resources Impact Assessment–Final Report (BLM, 2016), BLM

Cumulative Hazardous Air Pollutants Modeling Final Report (BLM, 2023), North Dakota Field Office Draft Resource Management Plan (RMP) and Environmental Impact Statement (EIS) (BLM, 2023), and MCFO Proposed Resource Management Plan Amendment/Final Supplemental Environmental Impact Statement (SEIS) (BLM, 2024).

The MCFO and NDFO RMPs evaluated impacts to air quality from oil and gas development as well as projections of visibility within the region and assessed regional impacts to air quality from future oil and gas development on BLM administered mineral estate in Montana, North Dakota, and South Dakota. The MCFO RMP modelled cumulative impacts in the Montana were predicted to be below the NAAQS for NO₂ and SO₂ while cumulative impacts for O₃, PM_{2.5}, and PM₁₀ exceeded the NAAQS in isolated areas throughout the state, mostly from natural source group such as fires, biogenic emissions, windblown dust, and lightning NO_x. The contributions from federal oil and gas and federal coal development were less than 1 percent at the location of the exceedances. However, the NDFO RMP modeling study predicted impacts to visibility at Class I areas in eastern Montana and western North Dakota in which a portion of the predicted impacts can be attributed to future federal oil and gas development (more than 0.5 and 1.0 dv thresholds) at the Theodore Roosevelt, Fort Peck, and Medicine Lake Class I areas as well as predicted the potential for minor impacts attributed to atmospheric deposition of nitrogen compounds in the same region. The North Dakota RMP/EIS reported modeled air quality contributions of new federal oil and gas development (i.e., 2020 onward) including ambient air concentrations of selected criteria pollutants and AQRV contributions for acidic deposition, visibility change, and the ozone W126 index. Peak modeled cumulative values, percent contribution of new federal oil and gas development and time period of the peak value, and peak contribution were discussed. According to the North Dakota RMP, new federal oil and gas wells were expected to contribute between approximately 0.0 percent and 11 percent by pollutant to the maximum cumulative value across North Dakota. The largest fraction would be for hourly NO₂ in the Williston Basin caused primarily by NO_x emissions from drill rigs and off-road equipment. Class I areas would also experience some air quality impact from federal oil and gas development with the highest impacts observed at the Fort Berthold Indian Reservation. Predicted concentrations for all modeled contaminants were below the NAAQS; however, the peak cumulative modeled concentrations of 1-hour NO₂ and 24-hour PM₁₀ were close to the NAAQS. Therefore, potential impact would be addressed through appropriate lease notices and stipulations and/or near-field air modeling for proposed projects. Furthermore, modeled acute and chronic noncarcinogenic HAPs were below the Reference Exposure Levels (RELs) and the estimated incremental cancer risks were also below a one per one million for the carcinogenic HAPs benzene and formaldehyde.

Finally, as a result of the 2023 U.S. Court of Appeals for the Tenth Circuit (*Diné CARE II*) ruling, BLM completed the *Cumulative Hazardous Air Pollutants Modeling Final Report* to assess HAP emissions from BLM-authorized oil and gas development activities (Ramboll 2023a). The modeling effort was completed using the same emission inventories as the BLM Western US Photochemical Air Quality Modeling for 2032. The BLM's Western United States HAP photochemical modeling assessment was prepared to support BLM's analysis of cumulative oil and gas impacts from HAPs originating from oil and gas production in Colorado, Montana, New Mexico, North Dakota, South Dakota, Utah, and Wyoming on public health for existing federal, new federal, and non-federal oil and gas sources that includes six key HAPs (e.g., benzene, toluene, ethylbenzene, xylene, n-hexane, and formaldehyde) since they are common in the oil and gas sector and consistent with regulatory requirements described in the Environmental Protection Agency's New Source Performance Standards (NSPS).

Based on these previous modeling efforts, HAP emissions and concentrations as well as associated cancer risk, hazard index, and hazard quotient values for the modeling grid cell were used to develop an interactive web-based tool to provide potential effects on public health from oil and gas leasing and permitting decisions ([iART Toolkit \(blm.gov\)](https://blm.gov/iART-Toolkit)). Utilizing the web-based tool, the average long-term (annual) concentrations were assessed for cancer risk and noncancer effects from inhalation for the three oil and gas production source groups (e.g., existing federal, new federal, and total non-federal) comprising the geographic area corresponding to the lease sale including Roosevelt County in Montana and Billings and McKenzie County in

North Dakota (See **Table 4 and Table 5**). Total average lifetime cancer risk from the exposure to three HAPs (benzene, ethylbenzene, and formaldehyde) were calculated by summing the individual cancer risks for each pollutant. On the other hand, chronic noncancer hazards were assessed by calculating the individual hazard quotients (HQ) of each pollutant and the overall hazard index (HI). As shown in **Table 4 and 5**, total cumulative cancer risks were below 100 in 1 million while the noncancer hazard index for oil and gas production in each county was below one. The highest calculated potential cancer and noncancer impacts appear to be from nonfederal oil and gas well production for each county.

Table 4. Estimated Average Total Cancer Risk from Circa 2032 Oil and Gas Production.

County	Cancer Risk ⁽¹⁾ from Existing Federal Wells	Cancer Risk ⁽¹⁾ from New Federal Wells	Cancer Risk ⁽¹⁾ from Nonfederal Wells	Cancer Risk ⁽¹⁾ from Cumulative Oil and Gas Production	Adjusted Cancer Risk ⁽¹⁾⁽²⁾ From Cumulative Oil and Gas Production
Roosevelt	0.08	0.30	2.75	3.13	0.75
Billings	0.17	0.58	7.33	8.09	1.998
McKenzie	0.7918	2.48	39.27	42.54	6.26

(1) Total Average Cancer risk from emissions of benzene, ethylbenzene, and formaldehyde per million people.
(2) Adjusted residency risk based on residency factors by county: 16.7 years for Roosevelt County, 17.3 years for Billings County, and 10.3 years for McKenzie County).

Table 5. Estimated Average Noncancer Hazard Quotients and Hazard Index from Circa 2032 Oil and Gas Production

Source	Hazard Quotient (HQ)						Hazard Index (HI)
	Benzene	Toluene	Ethylbenzene	Xylene	n-Hexane	Formaldehyde	
Roosevelt County							
Existing Federal	0.00005	0.00000	0.00000	0.00002	0.00001	0.00050	0.00058
New Federal	0.00010	0.00000	0.00000	0.00002	0.00002	0.00214	0.00228
Non-Federal	0.00110	0.00001	0.00008	0.00035	0.00023	0.01909	0.02086
Cumulative	0.00126	0.00001	0.00009	0.00038	0.00026	0.02172	0.02373
Billings County							
Existing Federal	0.000069	0.000000	0.000005	0.000024	0.000012	0.001211	0.001321
New Federal	0.000201	0.000001	0.000012	0.000056	0.000033	0.004128	0.004433
Non-Federal	0.001762	0.000013	0.000119	0.000606	0.000376	0.053620	0.056510
Cumulative	0.002032	0.000015	0.000137	0.000686	0.000422	0.058960	0.062270
McKenzie County							
Existing Federal	0.00023	0.000002	0.00002	0.00008	0.00004	0.00569	0.0061
New Federal	0.00056	0.000003	0.00002	0.00013	0.00011	0.01828	0.0191
Non-Federal	0.00821	0.000058	0.00045	0.00231	0.00179	0.29050	0.3033
Cumulative	0.00900	0.000064	0.00050	0.00253	0.00195	0.31450	0.3285

3.3.2 Environmental Effects - No Action Alternative

Under the No Action Alternative, there would be no impact on air resources and greenhouse gas emissions compared to the proposed action. If the parcels are not available to be leased and potential development on the proposed parcels would not occur, then no increase in estimated emissions would be expected from potential oil and gas development. The No Action Alternative would result in the continuation of already-approved land uses and would not result in new impacts related to exploration of the proposed oil and gas lease parcels.

3.3.3 Environmental Effects - Proposed Action Alternative

As previously described, the effects from oil and gas development on air resources in Montana and North

Dakota have been analyzed and described in numerous documents such as the 2015 Miles City RMP (BLM, 2015), Montana/Dakotas (BLM-MT/DK) State Office Photochemical Grid Model (PGM) Modeling Study (BLM, 2016), North Dakota Field Office Draft RMP/EIS (BLM, 2023), and BLM Cumulative Hazardous Air Pollutants Modeling Final Report (BLM 2023), and MCFO SEIS (BLM 2024) .

Potential effects to air quality from the sale of lease parcels would only occur when the issued leases are developed and does not authorize or guarantee the number of wells described and analyzed in the EA. The drilling of wells on a lease parcel would not be permitted until the BLM approved an Application for Permit to Drill (APD). Any APDs received by BLM would be subject to site specific NEPA review; however, the EA would help inform the decision of the APD. In addition, there is a degree of uncertainty in estimating the amount of potential air emissions (including GHGs) for the EA. The oil properties, site geology, drilling and completion methodology, on-site equipment, project acreage, and construction plans are among several variables required to generate emissions estimates. Thus, the BLM may conduct additional air quality analysis during the APD process.

The analysis of air resources in this EA includes a discussion of short-term and long-term impact to air quality from potential oil and gas development on the lease parcels. Short-term impacts would occur from the construction of the well, well pad, access roads, pipelines, and other single occurrence activities. For example, motor vehicles would emit various pollutants such as CO, NO_x, HCs, and PM as well as increase fugitive dust through increase vehicle traffic and increase wind erosion in areas of soil disturbance while drill rig and fracturing operations would result in an increase in NO₂, CO, HAPs, VOCs, and SO₂ emissions. In addition, flaring or venting maybe necessary during drilling and well completion that would also result in increased emissions of pollutants such as NO₂, CO, VOC, and SO₂; however, the facilities must operate in compliance with all applicable federal and state air quality regulations and permits. Similarly, throughout the long-term operation of the facility, NO₂, CO, VOCs, and HAPs emissions would result from various equipment such storage tanks, pumps, separators, flares, and other equipment as well as road dust produced by vehicles servicing the facilities. Potential air emissions of PM₁₀, PM_{2.5}, NO_x, SO₂, CO, VOC, and HAPs for the lease sale are provided in **Table 6** and **Table 7** in which the construction and production emissions are listed separately. The construction process is short-term and would be completed within a few months while other intermittent emissions and production and maintenance emissions would occur throughout the life of the well. Calculations are based on typical development and production scenarios as estimated for the MCFO RMP air analysis. The calculations for pollutant emissions use the number of wells that may be developed within 10 years if the parcels were leased. EPA Tier 4 engine emission factors are used based on previous air emissions modeling using AERMOD indicating potential exceedance of the 1-hour NO₂ NAAQS, but non-Tier 4 engines could be used if current NO_x to NO₂ conversion factors and modeling demonstrate compliance with the NO₂ NAAQS.

Table 6. Estimated Air Pollutant Emissions from Well Development and Production

Activity	# of Wells (1)		PM10		PM2.5		NOx		SO2	
	Oil	Gas	Emission Factor (2) (tons/well)	Estimated Emissions (tons)	Emission Factor (2) (tons/well)	Estimated Emissions (tons)	Emission Factor (2) (tons/well)	Estimated Emissions (tons)	Emission Factor (2) (tons/well)	Estimated Emissions (tons)
Montana and North Dakota Field Office (3)										
Construction (short-term)	9	0	0.51	4.59	0.06	0.54	0.53	4.77	0.11	0.99
Operations (long-term)	9	0	0.08	0.72	0.03	0.27	0.36	3.24	0.0005	0.0045
Total Estimated Emissions:				5.31		0.81		8.01		0.995

1. Well numbers based on RFD for this lease sale.
2. Emission factors used in estimated emission calculations developed for 2015 MCFO RMP.
3. Emission factors are consistent across all counties.

Table 7. Estimated Air Pollutant Emissions from Well Development and Production

Activity	# of wells (1)		CO		VOC		HAPs	
	Oil	Gas	Emission Factor (2) (tons/well)	Estimated Emissions (tons)	Emission Factor (2) (tons/well)	Estimated Emissions (tons)	Emission Factor (2) (tons/well)	Estimated Emissions (tons)
Montana and North Dakota Field Office (3)								
Construction (short-term)	9	0	2.76	24.84	0.36	3.24	0.03	0.27
Operations (long-term)	9	0	1	9	0.95	8.55	0.08	0.72
Total Estimated Emissions:				33.84		11.79		0.99

1. Well numbers based on RFD for this lease sale.
2. Emission factors used in estimated emission calculations developed for 2015 MCFO RMP.
3. Emission factors are consistent across all counties.

3.3.4 Reasonably Foreseeable Actions

These leases are not expected to occur contemporaneously and represent only a small fraction of the potential development that was included in the various air quality modeling studies for the Montana and Dakotas. Therefore, this lease sale would be expected to have little to no impact on air quality, visibility, or atmospheric deposition in the area. Additional detailed information on air pollutant emissions can be found in a variety of documents such as the 2015 Miles City RMP (BLM, 2015), Montana/Dakotas (BLM-MT/DK) State Office Photochemical Grid Model (PGM) Modeling Study (BLM, 2016), MCFO SEIS (BLM 2024), North Dakota Field Office RMP/EIS (BLM, 2023), and BLM Cumulative Hazardous Air Pollutants Modeling Final Report (BLM 2023). For example, the 2015 MCFO RMP assessed visibility impacts from the exhaust from drill rig engines on Class I areas located approximately 1 km away predicted impacts on color difference and contrast to be less than thresholds used to identify impacts. The 2015 MCFO RMP further analyzed far-field visibility impacts on Class I areas using the CALPUFF dispersion model. The CALPUFF model predicted visibility impacts estimated to be below the 0.5 deciviews (Δdv) threshold included in guidance developed by the National Park Service, US Forest Service, and the U.S. Fish and Wildlife Service (FWS) (FLAG 2010). At each receptor and for each year, zero days were predicted to occur when the 98th percentile change in deciviews would equal or exceed 0.5. Predicted impacts were 9-26 percent of the 0.5 threshold, much below the requirement for further analysis. Based on the results of the 2015 MCFO RMP modeling, oil and gas development is not considered to directly contribute to regional haze or result in visibility impairment.

Similarly, the Air Quality Technical Support Documents for the Montana MCFO RMP and North Dakota RMP/EIS utilized photochemical grid modelling for the future year circa 2028. The MCFO RMP modelled cumulative impacts in the Montana were predicted to be below the NAAQS for NO₂ and SO₂ while cumulative impacts for O₃, PM_{2.5}, and PM₁₀ exceeded the NAAQS in isolated areas throughout the state, mostly from natural source group such as fires, biogenic emissions, windblown dust, and lightning NO_x but the contributions from federal oil and gas and federal coal development were less than 1 percent at the location of the exceedances. For North Dakota, the modeling results indicated that NAAQS or state ambient air quality standards would not be exceeded across North Dakota from the cumulative total of all sources modeled with federal oil and gas development contributing approximately up to 4% of O₃, 11% of NO₂, 2% of PM_{2.5}, 0.5% of PM₁₀ and 10% of SO₂. The largest cumulative concentrations for most pollutants would be impacted by either natural sources or anthropogenic sources other than federal oil and gas development and federal coal-related actions. However, oil and gas wells in North Dakota may be located near Class I areas in which elevated impacts were observed in visibility and deposition. For example, tribal oil and gas sources located within Fort Berthold Indian Reservation revealed potential adverse impacts on nitrogen deposition and visibility in the area. New federal oil and gas development has a maximum potential impact of 1 Δdv at the federal Class I areas (Lostwood Wilderness and Theodore Roosevelt NP) while the modeled maximum impact of the new federal oil and gas sector was greater than 1 Δdv for 24 days at Fort Berthold Indian Reservation, 1 day at Lostwood Wilderness, and 0 days at all other Class I areas. Additional detailed information on estimated air pollutant emissions can be found in the Montana and North Dakota RMP Air Resource Technical Support Documents. At the APD stage of the process, site specific information such as well pad location and construction equipment specifications will be available to further analyze and mitigate potential impacts.

3.3.5 Mitigation of Impacts

3.3.5.1 BLM Best Management Practices (BMPs)

The BLM encourages industry to incorporate and implement BMPs to reduce impacts to air quality by reducing emissions, surface disturbances, and dust from field production and operations. In addition, Lease Notice LN 14-18 would be applied to all parcels included in this proposed lease sale for conservation of air resources. The lease notice states, “*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.”

If NEPA review reveals air quality impacts, additional control measures may include:

- Use of a Tier 4 non-road diesel engine that meets EPA NOx emission standards or equivalent for each diesel-fueled non-road engine with greater than 200 horsepower design rating to be used during drilling or completion activities;
- Reduction in fugitive dust from roads and construction areas by using water, dust suppressants, surfacing, and other means;
- Develop strategies to minimize or eliminate venting using the most efficient means possible, using low or no bleed pneumatics, and promoting instrument air driven equipment, or equipment that is actuated by other means;
- Use of intelligent design and siting of dehydrators so that the number of distributed dehydrators can be reduced, and larger more efficient dehydrators can be used and promote designs that consider cost effective controls for dehydrator vents; and
- Capture for beneficial use or destruction of separated gas from the oil/condensate/produced water streams.

Similarly, one or more of the following measures could be imposed at the development/APD stage if NEPA review showed the potential for significant impacts to air quality:

- Emission control equipment with minimum 95 percent volatile organic compound (VOC) control efficiency;
- Low-emitting drill rig engines, such as Tier 4 diesel engines or natural gas or electric drill rig engines;
- Gas or electric turbines for compression rather than internal combustion engines;
- Replacement of older internal combustion engines with low-emitting engines that meet EPA New Source Performance Standards;
- Water or chemical suppressant application and reduced speed limits to control fugitive dust emissions;
- Multi-well pads to reduce surface disturbance and traffic;
- Replacement of diesel-fired pump jack engines with electrified engines;
- Reinjection of waste gas into no-producing wells or other underground formations;
- Infrared (FLIR) technology to detect fugitive VOC and methane emissions and repair leaking equipment quickly; and
- Additional technologies for reducing methane emissions as recommended by EPA’s natural gas STAR program.

3.4 Issue 2 – Greenhouse Gases

Future development of lease parcels under consideration could lead to emissions of carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O) which are the three most common greenhouse gases associated with oil and gas development. These GHG emissions would be emitted from activities occurring on the leased parcels, and from the consumption of any fluid minerals produced. However, the BLM cannot reasonably determine at the leasing stage whether, when, and in what manner a lease would be explored or developed. The uncertainty that exists at the time the BLM offers a lease for sale includes crucial factors that would affect actual GHG emissions and associated impacts, including but not limited to the future feasibility of developing the lease, well density, geological conditions, development type (vertical, directional, or horizontal), hydrocarbon characteristics, specific equipment used during construction, drilling, and production, abandonment operations, product transportation, and potential regulatory changes over the 10-year primary lease term. Actual development on a lease is likely to vary from what is analyzed in this EA and will be evaluated through a site-specific NEPA analysis when an operator submits an APD or plan of development to the BLM.

For the purposes of this analysis, the BLM has evaluated the potential effects of the proposed leasing action on climate change by estimating and analyzing potential GHG emissions from projected oil and gas development on the parcels proposed for leasing using estimates based on past oil and gas development and available information from existing development within the state. Further discussion of climate change science and predicted impacts, as well as the reasonably foreseeable and cumulative GHG emissions associated with BLM's oil and gas leasing actions and methodologies are included in the 2023 *BLM Specialist Report on Annual Greenhouse Gas Emissions and Climate Trends* (BLM, 2024) (Annual GHG Report). This report presents the estimated emissions of greenhouse gases attributable to development and consumption of fossil fuels produced on lands and mineral estate managed by the BLM. The Annual GHG Report is incorporated by reference as an integral part of this analysis and is available at <https://www.blm.gov/content/ghg/>.

3.4.1 Affected Environment

Climate change is a global process that is affected by the total of GHGs in the Earth's atmosphere. GHGs act to contain solar radiation emitted from the Earth's surface and act as a positive radiative forcing component. GHGs can have long atmospheric lifetimes, which allows them to become well mixed and uniformly distributed over the entirety of the Earth's surface no matter their point of origin. The buildup of these gases has contributed to the current changing state of the climate equilibrium towards warming. A discussion of past, current, and projected future climate change impacts is described in Chapters 4, 8, and 9 of the Annual GHG Report. These chapters describe currently observed climate impacts globally, nationally, and in each state, and present a range of projected impact scenarios depending on future GHG emission levels.

The incremental contribution to global GHGs from a single proposed land management action cannot be accurately translated into its potential effect on global climate change or any localized effects in the area specific to the action. Currently, global climate models are unable to forecast local or regional effects on resources resulting from a specific subset of emissions. However, there are general projections regarding potential impacts on natural resources and plant and animal species that may be attributed to climate change resulting from the accumulation of GHG emissions over time.

For the purposes of this EA, the projected emissions from the proposed action can be compared to modeled emissions that have been shown to have definitive or quantifiable impacts on the climate in order to provide context of their potential contribution to climate change. **Table 8** shows the total estimated GHG emissions from fossil fuels at the global, national, and state scales over the last six years. Emissions are shown in megatonnes (Mt) per year of carbon dioxide equivalent (CO₂e). Chapter 3 of the Annual GHG Report contains additional information on GHGs and an explanation of CO₂e. State and national energy-related CO₂ emissions

include emissions from fossil fuel use across all sectors (residential, commercial, industrial, transportation, and electricity generation) and are released at the location where the fossil fuels are consumed.

Additional information on current state, national, and global GHG emissions as well as the methodology and parameters for estimating emissions from BLM fossil fuel authorizations and cumulative GHG emissions is included in the Annual GHG Report (see Chapters 5,6, and 7).

Table 8. Global, U.S., North Dakota, and Montana GHG Emissions 2017 - 2022 (Mt CO₂/yr)

Scale	2017	2018	2019	2020	2021	2022
Global	---	---	50,200	47,800	50,100	50,600
U.S.	6,551.0	6,752.8	6,590.1	6,001.8	6,328.8	6,343.2
North Dakota	53	55.6	53.4	50.7	52.7	---
Montana	30.5	31.5	31.6	25.3	27.9	---

Source: Annual GHG Report, Chap. 5, Table 5-1 (Global and U.S.) and Table 5-2 (State).
Source: [State GHG Emissions and Removals | U.S. EPA.](#)
Mt (megatonne) = 1 million metric tons
NA = Not Available

3.4.2 Environmental Effects - No Action Alternative

Under the No Action Alternative, the BLM would not offer any of the nominated parcels in the lease sale. However, in the absence of a Land Use Plan Amendment closing the lands to leasing, they could be considered for inclusion in future lease sales. Although no new GHG emissions resulting from new Federal oil and gas development would occur under the No Action Alternative, the national and global demand for energy is not expected to differ regardless of BLM decision-making.

The BLM does not have a model to estimate energy market substitutions at a spatial resolution needed for this onshore production scenario. Reductions in oil and natural gas produced from Federal leases may be partially offset by non-Federal production (state and private) in the United States (in which case the indirect GHG emissions would be similar), or overseas, in which case the GHG emissions would likely be higher, to the extent environmental protection requirements for production are less vigorous, and the produced energy would need to be physically transported into the United States. There may also be substitution of other energy resources to meet energy demand. These substitution patterns will be different for oil and gas because oil is primarily used for transportation, while natural gas is primarily used for electricity production and manufacturing, and to a lesser degree by residential and commercial users (AEO, 2023). Coal and renewable energy sources are stronger substitutes for natural gas in electricity generation. The effect of substitution between different fuel sources on indirect GHG emissions depends on the replacement energy source. For example, coal is a relatively more carbon intense fuel than natural gas and hydroelectricity is the least carbon intense energy source (See Table 10-3 of the Annual GHG Report.) (BLM, 2023). In the transportation sector, alternatives to oil are likely to be less carbon intensive.

Finally, substitution across energy sources or oil and gas production from other locations may not fully meet the energy needs that would otherwise have been realized through production from these leases. Price effects may lower the market equilibrium quantity demanded for some fuel sources. This would lead to a reduction in indirect GHG emissions. These three effects are likely to occur in some combination under the no action alternative, but the relative contribution of each is unknown. Regardless, GHG emissions under the no action alternative are not expected to be zero.

3.4.3 Environmental Effects - Proposed Action Alternative

While the leasing action does not directly result in development that will generate GHG emissions, emissions

from potential future development of the leased parcels are reasonably foreseeable and can be estimated for the purposes of this analysis. There are four general phases of post-lease development that would generate GHG emissions: 1) well development (well site construction, well drilling, and well completion), 2) well production operations (extraction, separation, gathering), 3) mid-stream (refining, processing, storage, and transport/distribution), and 4) end-use (combustion or other uses) of the fuels produced. While well development and production operation emissions (phases 1 and 2) occur on-lease and the BLM has program authority over these activities, mid-stream and end-use emissions (phases 3 and 4) typically occur off-lease where the BLM has little or no program authority.

Emissions inventories at the leasing stage are imprecise as a result of uncertainties including the type of mineral development (oil, gas, or both), scale, and duration of potential development, types of equipment (drill rig engine tier rating, horsepower, fuel type), and the mitigation measures that a future operator may propose in their development plan. Because of these uncertainties, the BLM applies several assumptions to estimate emissions at the leasing stage. The number of estimated well numbers per parcel are based on State data for past lease development combined with per-well drilling, development, and operating emissions data from representative wells in the area. The amount of oil or gas that may be produced (if the offered parcels are developed) is unknown. For purposes of estimating production and end-use emissions, potential wells are assumed to produce oil and gas in similar amounts as existing nearby wells. While the BLM has no authority to direct or regulate the end-use of the products, for this analysis, the BLM assumes all produced oil or gas would be combusted (such as for domestic heating or energy production). The BLM acknowledges that there may be additional sources of GHG emissions along the distribution, storage, and processing chains (commonly referred to as midstream operations) associated with production from the lease parcels. These sources may include emissions of methane (a more potent GHG than CO₂ in the short term) from pipeline and equipment leaks, storage, and maintenance activities. These sources of emissions are highly speculative at the leasing stage, therefore, the BLM has chosen to assume that mid-stream emissions associated with lease parcels for this analysis would be similar to the national level emissions identified by the Department of Energy's National Energy Technology Laboratory (NETL, 2009) (NETL, 2019). Section 6.5 of the Annual GHG Report includes a more detailed discussion of the methodology for estimating midstream emissions.

The emission estimates calculated for this analysis were generated using the assumptions previously described above using the BLM Lease Sale Emissions Tool and lease development analysis. Emissions are presented for each of the four phases of post-lease development described above.

- Well development emissions occur over a short period and may include emissions from heavy equipment and vehicle exhaust, drill rig engines, completion equipment, pipe venting, and well treatments such as hydraulic fracturing.
- Well production operations, mid-stream, and end-use emissions occur over the entire production life of a well, which is assumed to be 30 years for this analysis based on the productive life of a typical oil/gas field.
- Production emissions may result from storage tank breathing and flashing, truck loading, pump engines, heaters and dehydrators, pneumatic instruments or controls, flaring, fugitives, and vehicle exhaust.
- Mid-stream emissions occur from the transport, refining, processing, storage, transmission, and distribution of produced oil and gas. Mid-stream emissions are estimated by multiplying the estimated ultimate recovery (EUR) of produced oil and gas with emissions factors from NETL life cycle analysis of U.S. oil and natural gas. Additional information on emission factors can be found in the Annual GHG Report (Chapter 6, Table 6-8 and 6-10).

- For the purposes of this analysis, end-use emissions are calculated assuming all produced oil and gas is combusted for energy use. End-use emissions are estimated by multiplying the EUR of produced oil and gas with emissions factors for combustion established by the EPA (Tables C-1 and C-2 to Subpart C of 40 CFR §98). Additional information on emission factors and EUR factors can be found in the Annual GHG Report (Chapter 6).

Tables 9 and 10 show the estimated maximum year and average year GHG emissions over the life of the lease for both 100-yr and 20-yr global warming potentials (GWP). Section 3.4 of the Annual GHG Report provides a detailed explanation of GWP.

Table 9. Estimated Direct and Indirect Emissions from Lease Parcels on an Annual and Life of Lease Basis (tonnes) – Montana.

Year	CO ₂	CH ₄	N ₂ O	CO ₂ e (100-yr)	CO ₂ e (20-yr)
Max Emissions, Year 6	35,830	16.89	0.300	36,415	37,305
Average Year	4,096	2.84	0.033	4,189	4,339
Life of Lease	122,867	85.33	1.000	125,683	130,180

Table 10. Estimated Direct and Indirect Emissions from Lease Parcels on an Annual and Life of Lease Basis (tonnes) – North Dakota.

Year	CO ₂	CH ₄	N ₂ O	CO ₂ e (100-yr)	CO ₂ e (20-yr)
Max Emissions, Year 7	186,700	148.56	1.414	191,513	199,342
Average Year	48,128	38.39	0.371	49,374	51,397
Life of Lease	1,780,744	1,420.45	13.735	1,826,823	1,901,681

Table 11 and 12 lists the estimated direct (well development and production operations) and indirect (mid-stream and end-use) GHG emissions in metric tonnes (t) for the subject leases over the average 30-year production life of the lease. In summary, potential GHG emissions from the Proposed Action could result in GHG emissions of approximately 2 MMt CO₂e over the life of the lease. Additional emissions detail is provided in Appendix Q.

Table 11. Estimated Life of Lease Emissions from Well Development, Well Production Operations, Mid-stream, and End-use (tonnes) – Montana.

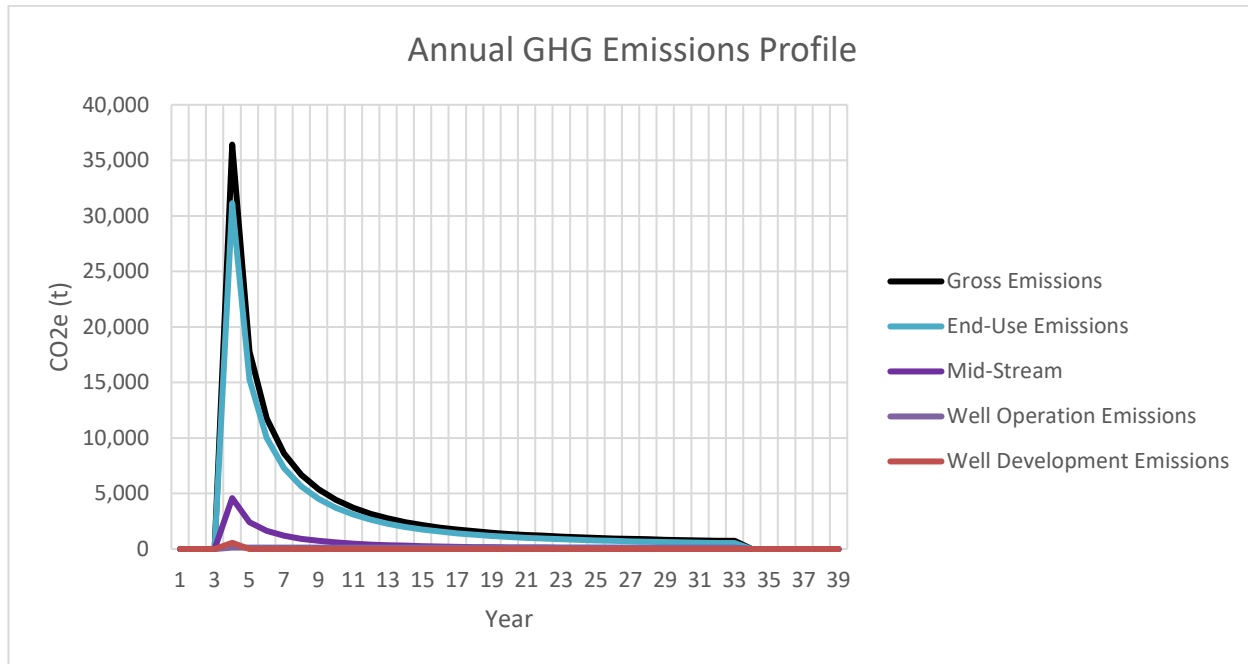
Activity	CO ₂	CH ₄	N ₂ O	CO ₂ e (100-yr)	CO ₂ e (20-yr)
Well Development	552	0.26	0.007	561	575
Well Production Operations	3,286	20.77	0.028	3,912	5,007
Mid-Stream	14,176	60.46	0.230	16,040	19,226
End-Use	104,854	3.84	0.736	105,169	105,372
Total (Life of Lease)	122,867	85.33	1.000	125,683	130,180
Source: BLM Lease Sale Emissions Tool					

Table 12. Estimated Life of Lease Emissions from Well Development, Well Production Operations, Mid-stream, and End-use (tonnes) – North Dakota.

Activity	CO ₂	CH ₄	N ₂ O	CO ₂ e (100-yr)	CO ₂ e (20-yr)
Well Development	4,415	2.09	0.052	4,491	4,602
Well Production Operations	26,287	166.15	0.224	31,299	40,055
Mid-Stream	214,540	1,198.46	3.419	251,188	314,347
End-Use	1,535,502	53.75	10.040	1,539,844	1,542,677
Total (Life of Lease)	1,780,744	1,420.45	13.735	1,826,823	1,901,681
Source: BLM Lease Sale Emissions Tool					

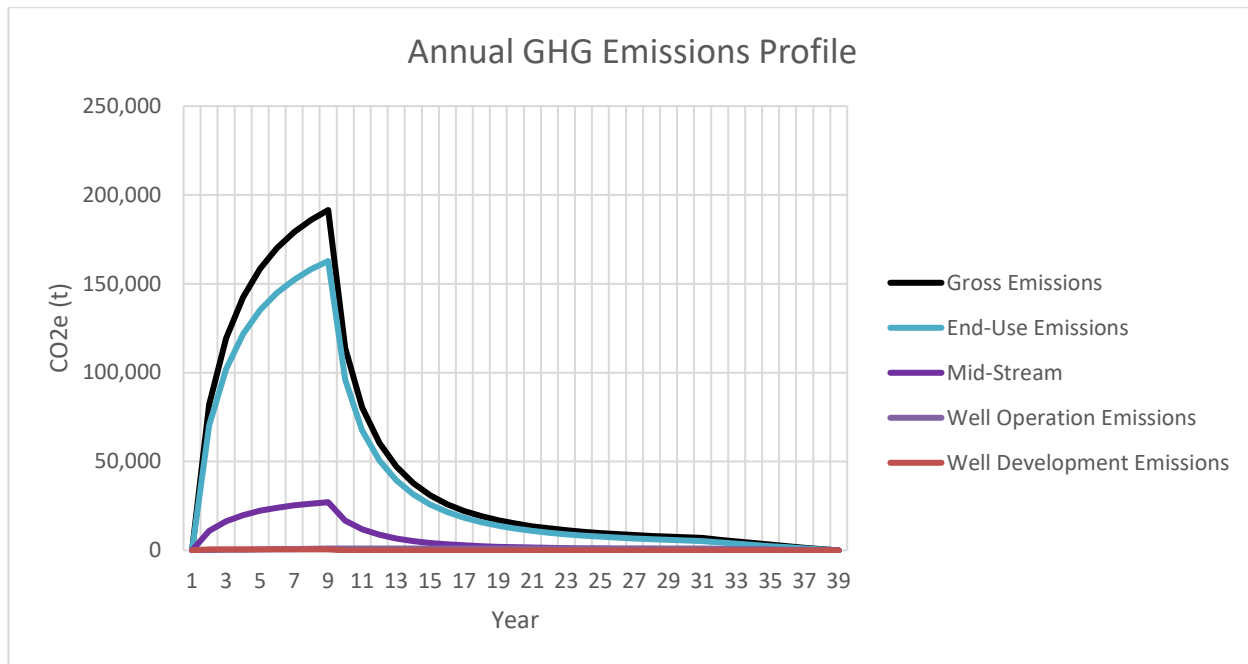
Because of declining production rates over time, GHG emissions vary annually over the production life of a well. **Figures 7 and 8** reveal the estimated GHG emissions profile over the production life of the proposed action including well development, well production operations, mid-stream, end-use, and gross (total of well development, well production, mid-stream, and end-use) emissions.

Figure 7. Montana - Estimated annual GHG emissions profile over the life of a lease.



Source: BLM Lease Sale Emissions Tool

Figure 8. North Dakota - Estimated annual GHG emissions profile over the life of a lease.



Source: BLM Lease Sale Emissions Tool

To put the estimated GHG emissions for this lease sale in a relatable context, potential emissions that could result from development of the lease parcels for this sale can be compared to other common activities that generate GHG emissions. The EPA GHG equivalency calculator (EPA, 2022) can be used to express the

potential average year GHG emissions on a scale relatable to everyday life (<https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>). For instance, the projected average annual GHG emissions from potential development of the subject lease are equivalent to 11,544 gasoline-fueled passenger vehicles driven for one year, or the emissions that could be avoided by operating 15 wind turbines as an alternative energy source or offset by the carbon sequestration of 44,084 acres of forest land.

Table 13 compares the estimated annual lease sale emissions to existing Federal fossil fuel (oil, gas, and coal) emissions, State, and U.S. total GHG emissions.

Table 13. Comparison of Lease Sale Emissions to Other Sources (Megatonnes)

Reference	Mt CO2e¹ (Per Year)
MT - Lease Emissions (Maximum Year)	0.036
ND - Lease Emissions (Maximum Year)	0.192
MT Onshore Federal (O&G)²	2.02
MT Onshore Federal (Oil, Gas and Coal)²	24.16
ND Onshore Federal (O&G)²	33.50
ND Onshore Federal (Oil, Gas and Coal)²	39.76
U.S. Onshore Federal (Oil & Gas)²	611.55
U.S. All³ Onshore and Offshore Federal (Oil & Gas)²	1027.51
U.S. Federal Onshore (Oil, Gas and Coal)³	1046.33
U.S. Total (Oil, Gas, & Coal)⁴	7,260.36

1 – Mt (megatonne) = 1 million metric tons. Estimates are based on 100-GWP values.

2 – Federal values come from the BLM Specialist Report on Annual Greenhouse Gas Emissions. Tables ES-1 and ES-2. U.S Federal-All includes offshore and onshore oil and gas production.

3 – All includes both onshore and offshore Federal oil & gas.

4 - U.S. Total is the total emissions from all the oil gas and coal produced in the U.S. This value may differ from EPA values based on foreign consumption.

3.4.4 Monetized Impacts from GHG Emissions

The “social cost of carbon,” “social cost of nitrous oxide,” and “social cost of methane”, also referred to as the “social cost of greenhouse gases” (SC-GHG), are estimates of the monetized damages associated with incremental increases in GHG emissions in a given year. This subsection provides estimates of the monetary value of changes in GHG emissions that could result from selecting each alternative. Such analysis should not

be construed to mean a cost determination is necessary to address potential impacts of GHGs associated with specific alternatives. While these numbers provide a monetized measure of the net harm to society from emissions, they do not constitute a complete cost-benefit analysis of management actions under considerations and do not present a direct comparison with other impacts discussed in this document. SC-GHG estimates are provided only as a useful measure of the benefits of GHG emissions reductions to inform agency decision-making.

The best currently available estimates of the SC-GHG for use in Department of Interior decision-making and/or analysis are those cited in the Environmental Protection Agency’s Final Rule of March 8, 2024, 89 Fed. Reg. 16820, 17018-20. These estimates reflect recent advances in the scientific literature on climate change and its economic impacts and incorporate recommendations made by the National Academies of Science, Engineering, and Medicine (National Academies 2017).¹ Technical documentation and additional supporting documents regarding these estimates are available on the EPA webpage².

The EPA’s SC-GHG estimates were developed using complex models which simulates how changes in GHG emissions may affect global temperatures, sea level rise, and other biophysical processes; how these changes may affect human health and infrastructure, as well as the supply of energy, food, and water; and monetize the market and nonmarket impacts associated with these effects. The modular approach employed by EPA to estimate the SC-GHG also includes a discounting module which discounts the stream of future net climate damages back to the year when the additional unit of emissions was released. EPA discounts the future costs of emissions to the emission year using three different near-term target rates (1.5%, 2.0%, and 2.5%) to reflect uncertainty over the starting rate (U.S. EPA 2023). A higher discount rate assumes that future benefits or costs are more heavily discounted than benefits or costs occurring in the present (i.e., future benefits or costs are a less significant factor in present-day decisions).

Table 14 present the SC-GHGs associated with estimated emissions described in Section 3.4.3 from future potential development of the lease parcels. These estimates represent the present value of future market and nonmarket costs associated with CO₂, CH₄, and N₂O emissions, discounted to 2024 by applying a constant discount rate equal to the near-term target rate to discount costs from the emissions year. Estimates are calculated using EPA’s Workbook and based on BLM’s estimates of emissions in each year and rounded to the nearest \$1 million.

Table 14. SC-GHGs Associated with Future Potential Development

	Social Cost of All GHG Emission Changes (millions, 2023\$)		
	2.5% near-term Ramsey discount rate	2.0% near-term Ramsey discount rate	1.5% near-term Ramsey discount rate
Development and Operations	\$0.59	\$0.94	\$1.61
Mid-Stream and End-Use	\$267.38	\$440.42	\$760.16
Total	\$267.97	\$441.36	\$761.77

¹ National Academies of Sciences, Engineering, and Medicine. 2017. *Valuing Climate Damages: Updating Estimation of the Social Cost of Carbon Dioxide*. National Academies Press.

² <https://www.epa.gov/environmental-economics/scghg>

3.4.5 Estimated GHG Emissions for Reasonably Foreseeable Environmental Trends and Planned Actions

The analysis of GHGs contained in the EA includes estimated emissions from the proposed leases. An assessment of GHG emissions from other BLM fossil fuel authorizations, including coal leasing and oil and gas leasing and development, is included in Chapter 7 of the BLM Specialist Report. The Annual GHG Report includes estimates of reasonably foreseeable GHG emissions related to BLM lease sales anticipated during the fiscal year, as well as the best estimate of emissions from ongoing production, and development of parcels sold in previous lease sales. It is, therefore, an estimate of cumulative GHG emissions from the BLM fossil fuel leasing program based on actual production and statistical trends as they are presently known.

The methodologies used in Annual GHG Report provide estimates of foreseeable short-term and projected long-term GHG emissions from activities across the BLM’s oil and gas program. The foreseeable short-term methodology includes a trends analysis of (1) leased federal lands that are held-by-production ³(2) approved applications for permit to drill (APDs), and (3) leased lands from competitive lease sales projected to occur over the next annual reporting cycle (12 months). The data is used to provide a 30-year life of lease projection of potential emissions from all Federal oil and gas activities and potential lease actions over the next 12 months. The projected long-term methodology uses oil and gas production forecasts from the Energy Information Administration (EIA) to estimate GHG emissions out to 2050 that could occur from past, present, and future development of Federal fluid minerals. For both methodologies, the emissions are calculated using life-cycle-assessment data and emission factors. These analyses are the basis for projecting GHG emissions from lease parcels that are likely to go into production during the analysis period of the Annual GHG Report and represent both a hard look at GHG emissions from oil and gas leasing and the best available estimate of reasonably foreseeable cumulative emissions related to any one lease sale or set of quarterly lease sales that could occur annually across the entire federal onshore mineral estate.

Table 15 presents the summation of the 30-year life-of-project emissions estimates for both the short and long-term as previously described for each state where federal mineral actions have been authorized. The differences between the short- and long-term emissions estimates can be thought of as an approximation of additional leasing that could occur on federal lands and does not take into consideration additional policies, technological advancements in production or end-use efficiency standards, or an accelerated economy-wide transition away from fossil fuel derived energy production. A detailed explanation of the short-term and long-term emissions estimate methodologies are provided in sections 6.6 and 6.7 of the Annual GHG Report.

Table 15. GHG Emissions from Past, Present, and Reasonably Foreseeable Federal Onshore Lease Development (Mt CO₂e)

State	Existing Wells (Report Year)	Existing Wells (Projected)	Approved APDs	New Leasing	Short-Term Totals	Long-Term Totals
AL	0.57	8.52	0.00	0.18	8.70	16.62
AK	1.27	18.90	20.82	43.96	83.67	36.10
AZ	0.00	0.00	0.00	0.00	0.00	0.00
AR	0.60	9.52	0.24	0.24	9.99	17.56
CA	5.10	70.48	4.75	2.17	77.41	140.49

³ [held-by-production](#) - A provision in an oil or natural gas property lease that allows the lessee to continue drilling activities on the property as long as it is economically producing a minimum amount of oil or gas. The held-by-production provision thereby extends the lessee's right to operate the property beyond the initial lease term.

State	Existing Wells (Report Year)	Existing Wells (Projected)	Approved APDs	New Leasing	Short-Term Totals	Long-Term Totals
CO	44.72	387.63	16.46	16.29	420.39	1,293.28
ID	0.00	0.00	0.00	0.29	0.30	0.00
IL	0.01	0.10	0.00	0.02	0.12	0.21
IN	0.00	0.00	0.00	0.02	0.02	0.00
KS	0.23	3.43	0.00	0.22	3.65	6.70
KY	0.01	0.07	0.00	0.03	0.10	0.22
LA	5.20	64.56	31.84	14.98	111.38	151.44
MD	0.00	0.00	0.00	0.00	0.00	0.00
MI	0.06	1.17	0.00	0.29	1.46	1.74
MS	0.11	1.50	0.38	0.38	2.25	3.06
MT	2.02	20.63	1.53	5.41	27.57	56.36
NE	0.01	0.21	0.00	0.03	0.24	0.39
NV	0.13	0.99	0.03	0.10	1.12	3.53
NM	399.96	2,844.84	729.98	113.24	3,688.06	11,218.30
NY	0.00	0.01	0.00	0.00	0.01	0.01
ND	33.50	280.74	29.58	6.63	316.95	933.79
OH	0.24	2.29	0.00	2.65	4.94	7.04
OK	1.34	13.21	1.42	1.18	15.81	38.41
OR	0.00	0.00	0.00	0.12	0.12	0.00
PA	0.00	0.05	0.00	0.67	0.72	0.11
SD	0.10	1.61	0.11	0.11	1.82	2.70
TN	0.00	0.00	0.00	0.00	0.00	0.00
TX	3.20	35.25	15.07	1.31	51.62	93.23
UT	12.93	161.65	14.42	29.97	206.04	369.79
VA	0.01	0.13	0.00	0.03	0.16	0.25
WV	0.00	0.06	0.00	0.59	0.64	0.12
WY	100.22	892.55	100.35	253.66	1,246.56	2,872.25
Total Onshore Federal	612	4,820	967	495	6,282	17,264

Source: BLM Annual GHG Report, Section 7

As detailed in the 2022 Annual GHG Report, which the BLM has incorporated by reference, the BLM also looked at other tools to inform its analysis, including the [Model for the Assessment of Greenhouse Gas Induced Climate Change \(MAGICC\)](#) (See Section 9.0 of the Annual GHG Report.). BLM conducted MAGICC runs evaluating potential contributions to global climate change and related values for two climate change projection scenarios. These two scenarios were chosen because they most closely approximate or frame the desired outcomes of the Paris Climate Accord and would also reflect the greatest contribution as a percent of BLM's authorized cumulative emissions relative to the global emissions levels contained in the

scenarios. IPCC's most optimistic scenario evaluates global CO₂ emissions cut to net zero around 2050. This is the only scenario that meets the Paris Agreement's goal of keeping global warming to around 1.5 degrees Celsius above pre-industrial temperatures. The second "middle of the road" scenario leaves global CO₂ emissions around current levels before starting to fall by 2050 but does not reach net-zero by 2100. In this scenario, temperatures rise 2.7 degrees C by the end of the century. The maximum BLM fossil fuel (oil, gas and coal) contribution to global temperature increases under these two scenarios is 0.015 C and 0.013 C, respectively.

The most recent short-term energy outlook (STEO) published by the EIA (<https://www.eia.gov/outlooks/steo/>) (EIA, 2023) predicts that the world's oil and gas supply and consumption will increase over the next 18-24 months. The latest STEO projections are useful for providing context for the cumulative discussion as the global forecast models used for the STEO are not dependent on whether the BLM issues onshore leases but are based on foreseeable short-term global supply and demand and include oil and gas development /operations on existing U.S. onshore leases. The most recent STEO includes the following projections for the next two years:

- U.S. liquid fuels consumption is projected to increase to 20.64 million barrels per day (b/d) in 2025 up from 20.33 million b/d in 2024
- U.S. crude oil production is expected to average 13.3 million b/d in 2024 and rise to 13.7 million b/d in 2025.
- U.S. natural gas consumption is expected to average 89.9 Bcf/d in 2024, decreasing slightly to 89.5 Bcf/d in 2025.
- U.S. LNG exports are expected to increase from 12 billion cubic feet/day (Bcf/d) in 2024 to 2024 and 14 Bcf/d in 2025.
- U.S. Coal production is expected to total 501 million short tons (MMst) in 2024 and 475 MMst in 2025 and remain at 16% of total U.S. electricity generation in 2024 and 2025 compared to 17% in 2023 driven by on-going retirement of coal-fired generating plants.
- Generation from renewable sources is forecast to increase from 950.03 billion kW/h in 2024 to 1062.18 billion kW/h in 2025.

Recent events, both domestically and internationally, have resulted in abrupt changes to the global oil and gas supply. EIA studies and recent U.S. analyses (associated with weather impacts, etc.) regarding short-term domestic supply disruptions and shortages or sudden increases in demand demonstrate that reducing domestic supply (in the near-term under the current supply and demand scenario) will likely lead to the import of more oil and natural gas from other countries, including countries with lower environmental and emission control standards than the United States (EIA, 2023). Recent global supply disruptions have also led to multiple releases from the U.S. Strategic Petroleum Reserve in order to meet consumer demand and curb price surges.

The EIA 2023 Annual Energy Outlook (<https://www.eia.gov/outlooks/aeo/>) projects energy consumption increases through 2050 as population and economic growth outweighs efficiency gains. As a result, U.S. production of natural gas and petroleum and liquids will rise amid growing demand for exports and industrial uses. U.S. natural gas production is expected to increase by 15% from 2022 to 2050. However, renewable energy will be the fastest-growing U.S. energy source through 2050. As electricity generation shifts to using more renewable sources, domestic natural gas consumption for electricity generation is expected to decrease by 2050 relative to 2022. As a result, energy-related CO₂ emissions are expected to fall 25% to 38% below 2005 level, depending on economic growth factors. Further discussion of past, present and projected global and state GHG emissions can be found in Chapter 5 of the Annual BLM GHG Report.

Executive Order 14008, "Tackling the Climate Crisis at Home and Abroad" (January 27, 2021), directs the executive branch to establish policies or rules that put the United States on a path to achieve carbon neutrality,

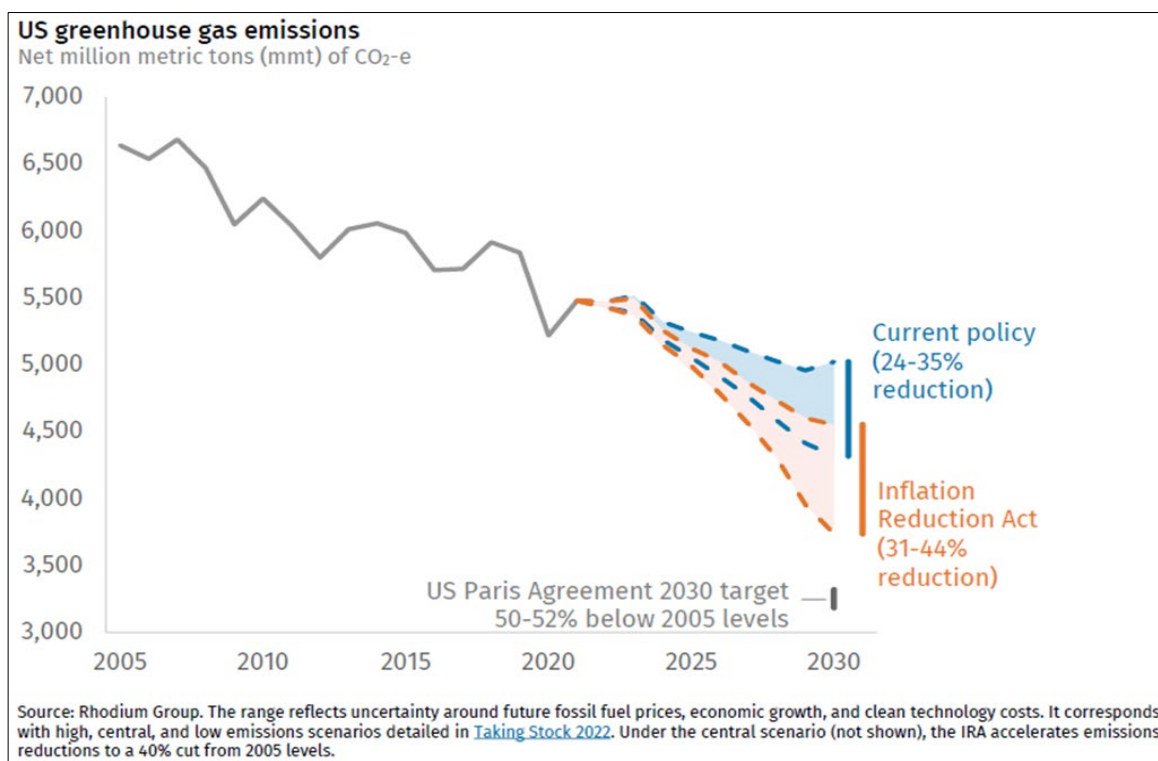
economywide, by no later than 2050. This goal is consistent with IPCC's recommendation to reduce net annual global CO emissions between 2020 and 2030 in order to reach carbon neutrality by mid-century. Federal agencies are still in the process of developing policies that align with a goal of carbon neutrality by 2050. In the short-term, the order has a stated goal of reducing economy wide GHG emissions by 50 to 52% relative to 2005 emissions levels no later than 2030.

Carbon budgets are an estimate of the amount of additional GHGs that could be emitted into the atmosphere over time to reach carbon neutrality while still limiting global temperatures to no more than 5°C or 2°C above preindustrial levels (See section 9.1 of the Annual GHG Report.). The IPCC Special Report on Global Warming of 1.5°C is the most widely accepted authority on the development of a carbon budget to meet the goals of the Paris Agreement. None of the global carbon budgets or pledges that countries have committed to stay within as part of the Paris Agreement are binding. At present, no national or Federal agency carbon budgets have been established, primarily due to the lack of consensus on how to allocate the global budget to each nation, and as such the global budgets that limit warming to 1.5 °C or 2.0 °C are not useful for BLM decision making, particularly at the lease sale stage, as it is unclear what portion of the budget applies to emissions occurring in the United States.

The Council on Environmental Quality (CEQ) discourages Federal agencies from comparing emissions from an action to global or domestic levels as "such comparisons and fractions also are not an appropriate method for characterizing the extent of a proposed action's and its alternatives' contributions to climate change because this approach does not reveal anything beyond the nature of the climate change challenge itself (CEQ, 2023). However, stakeholders and members of the public have requested that the BLM consider comparing the estimated Federal oil and gas emissions in the context of global carbon budgets. In the interest of public disclosure, Table 9-1 in the Annual GHG Report provides an estimate of the potential emissions associated with Federal fossil fuel authorizations in relation to IPCC carbon budgets. Total Federal fossil fuel authorizations including coal, natural gas and oil represents approximately 1.95 % of the remaining global carbon budget of 275 GtCO₂ needed to limit global warming to 1.5 C.

While continued fossil fuel authorizations will occur over the next decade to support energy demand and remain in compliance with the leasing mandates in the Inflation Reduction Act (IRA) passed in 2022, the U.S. Energy Information Administration International Energy Outlook expects renewable energy consumption to double between 2020 and 2050 and nearly equal liquid fuels consumption by 2050 (See **Figure 9**). The U.S. has committed to the expansion of renewable energy through infrastructure investments in clean energy transmission and grid upgrades include in the Bipartisan Infrastructure Investment and Jobs Act as well as clean energy investments and incentives included in the Inflation Reduction Act.

Figure 9. Projected Short-Term Emissions Reductions Associated with the IRA.



3.4.6 Mitigation Strategies

The relationship between GHG emissions and climate impacts is complex, but a project’s potential to contribute to climate change is reduced as its net emissions are reduced. When net emissions approach zero, the project has little or no contribution to climate change. Net-zero emissions can be achieved through a combination of controlling and offsetting emissions. Emission controls (e.g., vapor recovery devices, no-bleed pneumatics, leak detection and repair, etc.) can substantially limit the amount of GHGs emitted to the atmosphere, while offsets (e.g., sequestration, low carbon energy substitution, plugging abandoned or uneconomical wells, etc.) can remove GHGs from the atmosphere or reduce emissions in other areas. Chapter 10 of the Annual GHG Report provides a more detailed discussion of GHG mitigation strategies.

Several Federal agencies work in concert to implement climate change strategies and meet U.S. emissions reduction goals all while supporting U.S. oil and gas development and operations. The EPA is the Federal agency charged with regulation of air pollutants and establishing standards for protection of human health and the environment. The EPA has issued regulations that will reduce GHG emissions from any development related to the proposed leasing action such as the New Source Performance Standard for Crude Oil and Natural Gas Facilities (40 CFR 60, OOOOa); Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced After November 15, 2021 (40 CFR 60, OOOOb); NSPS OOOOc to limit GHGs emissions (in the form of methane limitations) from designated facilities in the Crude Oil and Natural Gas source category; and Waste Emissions Charge for Petroleum and Natural Gas Systems (40 CFR 99). These regulations impose emission limits, equipment design standards, and/or monitoring requirements on oil and gas facilities as well as a charge on methane emissions that exceed 25,000 metric tonnes of CO₂e for applicable petroleum and natural gas facilities currently required to report under the Greenhouse Gas Reporting Rule. A detailed discussion of existing regulations and Executive Orders that apply to BLM management of federal lands as well as current Federal and state regulations that apply to oil and gas development and production can be found in Chapter 2 of the

Annual GHG Report.

In addition to Federal regulations, states have also implemented air quality and greenhouse gas regulations for the oil and gas industry. The North Dakota Department of Mineral Resources - Oil and Gas Division, regulates the drilling and production of oil and gas including regulations that ban the venting of natural gas and require that vented casinghead gas be burned through a flare (North Dakota Administrative Code 43-02-03-45). The North Dakota Industrial Commission (NDIC) has jurisdiction over the volume of gas flared at a well site to conserve mineral resources and established Order No. 24665 for reducing gas flaring. The Order requires producers to submit a gas capture plan with every drilling permit application. The North Dakota Department of Environmental Quality–Division of Air Quality established registration and reporting requirement and emissions control requirements for oil and gas facilities under North Dakota Air Pollution Control Rules Chapter 33.1-15-20 as well as submerged fill and flare requirements in Chapter 33.1-15-07.

The majority of GHG emissions resulting from federal fossil fuel authorizations occur outside of the BLM’s authority and control. These emissions are referred to as indirect emissions and generally occur off-lease during the transport, distribution, refining, and end-use of the produced federal minerals. The BLM’s regulatory authority is limited to those activities authorized under the terms of the lease, which primarily occur in the “upstream” portions of natural gas and petroleum systems (i.e., the well-development and well-production phases). This decision authority is applicable when development is proposed on public lands and the BLM assesses the specific location, design, and plan of development. In carrying out its responsibilities under NEPA, the BLM has developed Best Management Practices (BMPs) designed to reduce emissions from field production and operations. BMPs may include limiting emissions from stationary combustion sources, mobile combustion sources, fugitive sources, and process emissions that may occur during development of the lease parcel. Analysis and approval of future development may include the application of BMPs within BLM’s authority, included as Conditions of Approval, to reduce or mitigate GHG emissions. Additional measures proposed at the project development stage may be incorporated as applicant-committed measures by the project proponent or added to necessary air quality permits. Additional information on mitigation strategies, including emissions controls and offset options, are provided in Chapter 10 of the Annual GHG Report.

3.5 Issue 3 – Socioeconomic Conditions, Environmental Justice, and Human Health

3.5.1 *Affected Environment*

Environmental Justice is an initiative that culminated with President Clinton’s February 11, 1994, Executive Order 12898 “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations” and an accompanying Presidential memorandum. Executive Order 12898 requires the analysis of disproportionately high and adverse human health effects and environmental effects on environmental justice populations. Environmental 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” (CEQ 1997 page 26) and that each Federal agency consider environmental justice to be part of its mission. Specific to the NEPA process, the EO requires that proposed projects are evaluated for “disproportionately high adverse human health and environmental effects on minority populations and low-income populations.

The Environmental Protection Agency (EPA 2016) guidelines for evaluating the potential environmental effects of projects require specific identification of minority populations when either (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis (CEQ 1997). Additionally, the EPA states that “A minority population

exists “if there is more than one minority group present and the minority percentage, as calculated by aggregating all minority persons, meets one of the above-stated thresholds” (CEQ 1997). For minority populations, the BLM generally defines “meaningfully greater” as 10 percent above the minority population size of the comparison geography. A potential low-income population is identified by the BLM if either 1) low-income populations of the area of analysis exceed 50% of the population, or 2) the low-income population is less than or equal to twice (200%) of the federal “poverty level”. Indigenous communities of concern are present if the percentage of the population identified as indigenous, including non-tribal-affiliated persons who identify as indigenous or a combination of indigenous and another ethnicity, is equal to or greater than that of the reference population(s) (see Federal Interagency Working Group on Environmental Justice and NEPA Committee 2016; BLM 2022).

The social and economic environment of the counties containing the parcels proposed are described in detail in their associated RMP and FEIS. BLM [IM 2022-059](#) (Environmental Justice Implementation) provides minimum requirements for elevating EJ under the National Environmental Policy Act (NEPA). Consistent with BLM IM 2033-059 and the guidance, principles, and practices provided within: 1) EJ is being considered and incorporated in the reviews of all proposed actions, 2) screening is performed to identify minority populations, low-income populations, and Tribes, 3) determinations are made in regard to actions and alternatives that could adversely and disproportionately impact minority populations, low income populations, and Tribes, 4) provide opportunities for meaningful involvement of minority populations, low-income populations, and Tribes in BLM decision-making processes that affect their lives, livelihoods, and health, and 5) examination of EJ during NEPA development, reviews, alternative assessment and potential mitigation measures as part of a land use planning process. This section provides updated estimates of environmental justice indicators within the study area, which includes all the counties containing the Federal parcels covered in this EA.

When evaluating potential EJ concerns under NEPA, one “may consider as a community either a group of individuals living in geographic proximity to one another, or a geographically dispersed/transient set of individuals (such as migrant workers or Native Americans), where either type of group experiences common conditions of environmental exposure or effect” (CEQ 1997). The reference areas are the states of North Dakota and Montana.

The BLM used the EPA’s EJ Screen tool, the headwaters Socioeconomic Profiling Tool (US DOC 2022), and the BLM Socioeconomic Profile (SEP) to collect data presented **Table 16**. Low-income, minority, and indigenous populations exist within the study area and may be disproportionately affected by project actions. Some populations identify as more than one environmental justice indicator and may warrant special attention, outreach, and meaningful involvement.

Table 16. Minority, Low-Income, and Total Populations

Headwaters Economic Profile System and BLM Socioeconomic Profile (SEC)** Data							EPA EJ Screen	
County	Pop. 2000 2022 % change	Race	Pop. By race	% of total pop by race	% total minority population **	% low-income**	% People of color ND average = 16% MT average = 16%	% Low-income ND average = 26% MT average= 32%
North Dakota								
McKenzie	5,722 13,908 +143.1%	W	11,236	79.8%	24.7%	32.3%	25%	32%
		B/AA	303	2.2%				
		AI	1,507	10.7%				
		A	78	0.6%				
		NH/OPI	0	0.0%				
		O	200	1.4%				
2+	757	5.4%						

		HoLH	1,488	10.6%				
Billings	876 1,018 -16.2%	W	827	98.6%	1.4%	20.0%	1%	20%
		B/AA	0	0.0%				
		AI	0	0.0%				
		A	0	0.0%				
		NH/OPI	0	0.0%				
		O	0	0.0%				
		2+	12	1.4%				
		HoLH	12	1.4%				
Montana								
Roosevelt	10,623 10,572 -0.5%	W	3,586	33.2%	67.6%	54.5%	68%	54%
		B/AA	35	0.3%				
		AI	6,298	58.3%				
		A	79	0.7%				
		NH/OPI	1	0.0%				
		O	39	0.4%				
		2+	761	7.0%				
		HoLH	396	3.7%				
W = White alone B/AA = Black or African American alone AI = American Indian alone A = Asian alone NH/OPI = Native Hawaiian or Other Pacific Is. Alone O = Some other race 2+ = 2 or more races HoLH = Hispanic or Latino Heritage **For the purposes of this analysis, SEP data does not include Hispanic or Latino Heritage in the percentage of total minority population. See Appendix O								

Source: <https://headwaterseconomics.org/apps/economic-profile-system/>, ejsscreen.epa.gov/mapper/, and headwaterseconomics.org/tools/blm-profiles/
 Accessed 11.5.2024.

The counties with proposed parcels in North Dakota have an estimated population of 14,926, Roosevelt County in Montana has an estimated population of 10,572, as shown on **Table 16** (Appendix L) for a combined estimated population of 25,498.

McKenzie County is the home for American Indian populations at 10.7% while North Dakota’s overall population of American Indian’s represents 4.7% of the total statewide population. Note, the Fort Berthold Reservation of the Three Affiliated Tribes takes in land within the boundary of McKenzie County. Similarly, 10.6% of McKenzie County’s population is Hispanic or Latino Heritage (any race), while the percentage of North Dakota’s overall population from this cohort is 4.3%. .6% Asian, 1.4% Other races, 5.4% of 2 or more races, and 2.2% Black or African American, contribute to a total minority percentage of 30.9% in McKenzie County. (Appendix O).

In Montana, Roosevelt County is home for American Indian populations that meet the criteria for Environmental Justice populations. In Roosevelt County 58.3% of the population is American Indian, while Montana’s overall population of American Indian’s represents 5.8% of the total statewide population. The Fort Peck Reservation is within the boundary of Roosevelt County. Roosevelt County has a Hispanic or Latino (any race) population that is 3.7%, while the percentage of Montana’s overall Hispanic or Latino population is 4.2%. (Appendix O).

Economic Conditions

The social and economic environment of the counties containing the parcels proposed are described in detail in their associated RMP and FEIS. This section focuses upon economic aspects related to the potential Federal oil and gas lease sales.

Mineral rights can be owned by private individuals, corporations, Indian tribes, or by local, State, or Federal Governments. Typically, companies specializing in the development and extraction of oil and gas lease the

mineral rights for a particular parcel from the owner of the mineral rights. Federal oil and gas leases are generally issued for 10 years unless drilling activities result in one or more producing wells.

Once production has begun on a federal lease, the lease is held by production and the lessee is required to make royalty payments to the Federal Government.

Table 17. Total and Average Annual Bonus Bid and Rental Payments for Existing Oil and Gas Leases on Non-Indian Federal Mineral Estates (2020-2024)

County	Bonus Bids ¹	Rents	Total	Average Annual
McKenzie, ND	\$18,139,869.9	176,070.82	\$18,315,940.72	\$4,578,985.18
Billings, ND	\$167,975.00	\$81,131.83	\$249,106.83	\$62,276.71
Roosevelt, MT	\$18,036.00	\$3,201.00	\$21,237.00	\$5,309.25
Grand Total	\$18,325,880.90	\$260,403.65	\$18,586,284.55	\$4,646,571.14

Source: ONRR data, <https://revenue.data.doi.gov/downloads/federal-revenue-by-location/> accessed 11/13/2024.

¹ Negative Bonus Bid values may be due to companies correcting errors in royalty, rental and bonus bid payments. If the correction takes place in a different year than the original payment, it appears as a negative entry in the total.

Table 17 provides information on rental and bonus bid revenue from existing oil and gas leases for the county that has parcels nominated for the proposed leasing action. Existing Federal oil and gas leases on Federal non-Indian properties located in these counties produced over \$260 thousand dollars in rental income and \$18 million dollars in bonus bids between 2020 and 2024. The leasing of these minerals supports local employment and income and generates public revenue for surrounding communities. The economic contributions of Federal fluid mineral leasing actions are largely influenced by the number of acres leased, and can be measured in terms of the jobs, income, and public revenue generated. Additional details on the economic contribution of Federal fluid minerals are discussed in the RMP and FEIS covering the location of the parcel.

Leasing mineral rights for the development of Federal minerals generates public revenue through the bonus bids paid at competitive lease auctions and annual rents collected on leased parcels not held by production. Nominated parcels approved for oil and gas leasing are offered by the BLM at a minimum bid rate of \$10 per acre at the competitive lease sale. In addition to bonus bids, lessees are required to pay rent annually until production begins on the leased parcel, or until the lease expires. These rent payments are equal to \$3.00 an acre for the first two years, \$5.00 an acre for years 3 through 8, and \$15.00 an acre for the years 9 and beyond (for a lease not held in production). The Federal oil and gas royalties on production from public domain minerals equal 16.7 percent of the value of production (43 CFR § 3103.3.1).

A portion of these Federal revenues are distributed to the State and counties where the parcels are located. The amount that is distributed is determined by the Federal authority under which the Federal minerals are being managed. Forty-nine percent of Federal revenue associated with oil and gas from public domain lands are distributed to the State. For example, in Montana, 25% of the rental and bonus bid revenues that the State receives are redistributed to the counties of production (Title 17-3-240, MCA). Twenty-five percent of bonus bid, and rental revenues associated with oil and gas development from Bankhead-Jones lands are distributed to counties where the parcels are located. Distribution of Federal royalties and leasing revenues to the State for oil and gas development on other Federal acquired lands differs based upon the authority associated with those lands. Generally, the revenue associated with oil and gas leasing and development that is received by the State and counties help fund traditional county functions such as enforcing laws, administering justice, collecting, and disbursing tax funds, providing for orderly elections, maintaining roads and highways, providing fire protection, and/or keeping records. Other county functions that may be funded include administering primary and secondary education and operating clinics/hospitals, county libraries, county airports, local landfills, and county health systems. In addition, on April 10, 2024, BLM published in the

Federal Register the final rule titled Waste Prevention, Production Subject to Royalties, and Resource Conservation which would replace the BLM's current requirements governing natural gas venting and flaring contained in NTL-4A. The rule became final on June 10, 2024, and will help curb waste from flaring, venting, and leaks as well as generate royalties for taxpayers, Tribes, and states ([Waste Prevention Rule | Bureau of Land Management \(blm.gov\)](#)). A preliminary injunction on the rule was issued on September 12, 2024, for the States of North Dakota, Montana, Texas, Wyoming, and Utah. pending the outcome of litigation.

Environmental Justice Populations

Based on **Table 16**, we can determine that McKenzie and Roosevelt counties have a percentage of low-income populations, the percentages are slightly higher than the state averages. The low-income, minority, and indigenous communities of potential concern within the analysis area constitute potential populations at risk for adverse health outcomes due to demographic or socioeconomic factors (Headwaters Economics 2024). The EPA has also concluded that the most severe harms from climate change fall disproportionately upon historically underserved communities (EPA 2021b). Aside from ethnicity and poverty status, other factors contributing to increased health risks for potential communities of concern in the analysis area include, but are not limited to, age, education, and employment.

While the determination of potential adverse and disproportionate historical effects from specific previous actions may initially be the assessment of the BLM, this assessment should not be assumed to be the position of specific, potentially affected communities of concern. The BLM realizes that additional adverse impacts may be identified by local communities as specific development locations and types that are proposed. Identified communities of potential concern would also be provided opportunities to identify any perceived adverse environmental and socioeconomic impacts at the time of site-specific analysis during the APD stage. This discussion addresses only the effects for the issues identified by the BLM during scoping and public comment periods of this specific lease sale. The BLM would continue to work with potentially affected communities of concern to identify and address additional environmental justice issues as they arise.

Potential Populations at Risk for Disproportionate Impacts in the Project Area

Per [headwaterseconomics.org](#), some populations are more likely to experience adverse social, health, and economic outcomes due to their race, age, gender, socioeconomic status, and other indicators, such as language proficiency. The North Dakota and Montana indicators analyzed, in addition to minority and low-income data presented previously, (see Appendix L, N, O) include educational attainment, language proficiency, households receiving public assistance, labor participation, housing affordability, potentially vulnerable households (elderly living alone, single female households, single female households with children), and potentially vulnerable people (noninstitutionalized and disabled or those without health insurance).

While low-income and minority indicators were analyzed to establish an environmental justice baseline for populations in the project area, impacts to these populations can be further exacerbated by other, concurrently present population risk indicators. For example, low-income populations are more likely to have inadequate housing, live and/or work in areas with greater exposure to environmental hazards, have an overall lack of access to resources that leads to poorer health outcomes and a lesser likelihood of having health insurance. Taking the example further, low-income households receiving public assistance may use a larger amount of their household budget to meet the basic necessities of life, including housing, food, and transportation. Housing affordability data is also a useful population indicator for potential disproportionate impacts, as housing affordability typically does not affect all

populations equally given variable ratios of monthly income vs. rent or mortgage costs in an area. Last, households with potentially vulnerable populations (including people over the age of 65, single females, and households with children under the age of 18) are more likely to live in poverty, experience food insecurity, tend to be less educated, and are typically disproportionately affected by heat-related illnesses and social isolation. (**Appendix M Populations at Risk**)

Table 18 shows us that potential populations at risk for some disproportionate impacts exist in Roosevelt, McKenzie, and Billings counties where risk indicator values are greater than respective state averages for educational attainment, labor participation, affordable housing, and potentially vulnerable households and people in nearly all counties within the project area. In McKenzie County the risk indicator values for Educational Attainment and Language Proficiency exceed North Dakota average of 6.5% and .7% respectively. All counties in the project area exceed the state average in the Supplemental Security Income category. The Labor Participation risk indicator values are greater than the state average in both Roosevelt and McKenzie counties within the project area. Regarding Housing Affordability Roosevelt and McKenzie counties values exceed the state average in their mortgage cost being greater than 30% of their household income. In the categories of single female households with children younger than 18 years old McKenzie and Roosevelt counties have values greater than the state average. Lastly, Potentially Vulnerable people without health insurance exceed the state average in McKenzie and Roosevelt counties. As previously mentioned, this information can be found in Appendix M.

Table 18. Potential Populations at Risk for Disproportionate Impacts in the Project Area

Potential Populations at Risk for Disproportionate Impacts in the Project Area				
	Educational Attainment	Language Proficiency	Households Receiving Public Assistance (SSI, Cash, SNAP)	Labor Participation
State Average	ND = 6.5% MT = 5.5%	ND = 0.7% MT = 0.3%	ND = 3.1%, 1.9%, 6.3% MT = 3.7%, 2.6%, 8.6%	ND = 14.0% MT = 18.5%
County				
McKenzie	7.3%	1.2%	3.2%, 1.5%, 2.7%	19.6%
Billings	4.8%	0.0%	3.4%, 0.0%, 0.0%	9.2%
Roosevelt	6.8%	0.1%	7.0%, 7.5%, 11.1%	41.7%
	Housing Affordability	Potentially vulnerable households (>65yo, sf,<18yo)	Potentially Vulnerable People (N + disabled, N+ no insurance)	
State Average	ND = 19.7%, 36.0% MT = 28.9%, 40.4%	ND = 11.8%, 7.5%, 5.5% MT = 13.4%, 7.8%, 5.1%	ND = 11.4%, 7.2% MT = 14.1%, 8.4%	
County				
McKenzie	24.6%, 26.5%	7.7%, 7.0%, 5.6%	9.8%, 15.7%	
Billings	18.5%, 10.8%	12.8%, 4.7%, 2.5%	7.7%, 5.5%	
Roosevelt	33.9%, 28.1%	13.1%, 14.9%, 9.4%	13.8%, 31.3%	
*Educational Attainment - % of the population that <i>has not</i> achieved a high school education or equivalent				
*Language Proficiency - % of people who speak English “not well”				
*Households Receiving Public Assistance – Social Securing Income, Cash assistance, Supplemental Nutrition Assistance Program				
*Labor Participation - % of the population that did <i>not</i> work				
*Housing Affordability – Mortgage > 30% of household income, and Rent > 30% of household income				
*Potentially vulnerable households – greater than 65 years old living alone, Single female households, households with children under the age of 18				
*Potentially vulnerable people – noninstitutionalized and disabled, noninstitutionalized without health insurance				

Source: See Appendix M. Data sources US Department of Commerce, 2022. Census Bureau, American Community Survey Office, Washington DC. <https://headwaterseconomics.org/apps/economic-profile-system/> Accessed 11.5.2024.

Human Health

Literature has indicated that there are many effects to human health associated with oil and gas development, particularly (but not exclusively) in areas that are proximal to high development. Some of these effects are:

- Reproductive harms including birth defects, low birth weight, preterm births, and miscarriages
 - McKenzie et. al (2014) analyzed the associates between density and proximity of natural gas wells within a 10-mile radius of a maternal residence. The study suggested that there was an association between density of and proximity to natural gas wells and increased birth defects.
 - Tran, et al (2021) monitored births to mothers in eight California counties between 2006 and 2015 where the individuals were exposed to hydraulic fracturing by at least one well within one kilometer of their residence during pregnancy. The study suggests that although hydraulic fracturing exposure may influence birth outcomes there are other factors involved including urban ambient air pollution that may affect the birth weight and size.
- Respiratory health effects including asthma, lung disease, and breathing difficulty
 - Outdoor air pollutants, including ozone, particulate matter, nitrogen dioxide, and sulfur dioxide, are recognized cause of asthma (Rasmussen et al. 2016).
- Possible disruption of the endocrine system
 - Kassotis, et al (2016) determined that the contamination of surface and groundwater was one source of Endocrine-disrupting chemicals to the human body via contamination of sources of drinking water, the other being air as the route of exposure for humans by means of inhalation exposure from surface spills and associated oil and gas infrastructure.
- Cancer (lung cancer and other types of cancer);
 - Carcinogens associated with oil and gas development include aromatic petroleum hydrocarbons (benzene, toluene, ethyl benzene, and xylenes (BTEX)) and diesel exhausts (Adgate et al 2014).
- Injuries
 - Motor vehicle injuries and fatalities, and other health and safety risks associated with increased vehicle traffic (and the air pollutants it emits) from oil and gas development;
 - The most common type of accident were traffic and single-vehicle rollovers (Adgate et. al 2014);
 - Fatalities from explosions, fires, spills, and leaks;
 - ...the fatality rate is 2.5 times the rate of the construction industry and 7x higher than the general industry rate from 2005 to 2009. Adgate et.al (2014)
- Trauma and psychological stress.
 - Malin (2020) indicates that stressors and mental health from the institutional mechanisms associated with fossil fuel development are associated with 1) uncertainty, due to inaccessible, untransparent information about environmental and public health risks and 2) powerlessness to meaningfully impact regulatory or zoning processes.
- Climate Change and Greenhouse Gases
 - Based on a 100-year global warming potential, future potential development of the nominated lease parcels is estimated to result in 57,565 metric tons of carbon

dioxide equivalent (CO₂e) from construction and operation and 3,312,760 metric tons of CO₂e from downstream GHG emissions.

3.5.2 Environmental Effects – No Action Alternative

Economic Effects—No Action Alternative

Under the No Action Alternative, none of the nominated parcels would be offered for sale and no Federal bonus bid or rental incomes would be received for the parcels awarded leases. Existing Federal leases for oil and gas properties would continue to generate rental income.

Environmental Justice and Human Health Effects – No Action Alternative

Under the No Action Alternative, none of the nominated parcels would be offered for sale and no additional disturbance or effects would result from the lack of sale. Under the No Action alternative, it is not anticipated that there would be any specific disproportionate adverse impacts to EJ populations living within the analysis area.

3.5.3 Environmental Effects – Proposed Action Alternative

Economic Effects – Proposed Action Alternative

Under Alternative B, the complete set of proposed parcels would be offered for sale. Those parcels that are successfully leased will generate Federal bonus bid revenue and annual rents, which will be collected on leased parcels not held by production. As described in **Economic Conditions**, these revenues are collected by the Federal government, which then distributes a portion of the revenues collected to the State and counties. The amount that is distributed is determined by the Federal authority under which the Federal minerals are being managed.

Economic Model

The bidding process for the Quarter 2, April 2025 lease sale are modeled to follow the minimum bonus bids (\$10 per acre) and rental prices^{4,5,6}. It is assumed that all the offered parcels successfully sell for these minimum values. This is a conservative assertion. It is assumed that the winning bidder for a lease parcel must pay the first-year rental fees and the bonus bid, and continue to pay all rental fees for the full 10 years of a lease. Over the past several years the inflation-adjusted average bonus bid per acre at MT/DK lease sales has ranged from \$6 to over \$200. Most sales included multiple parcels with winning bonus bids below the new minimum off \$10 per acre and it is unclear how many of these parcels would have been bid on and leased under the updated price schedule.

Table 19. Alt B – Estimated Federal Revenue Associated with the April 2025 Lease Sale

Field Office	County	# Parcels	Total Acres	Rental over 10 Years	Bonus Bid (Min. \$10.00/acre) ^{1,2}	Federal	State	County/Local	Total
North Dakota	Billings	3	3,261.3	\$215,246	\$32,613	\$126,408	\$91,708	\$29,743	\$247,859
	McKenzie	7	1,002.38	\$66,157	\$10,024	\$38,852	\$28,187	\$9,142	\$76,181
	FO/ND Total	10	4,263.68	\$281,403	\$42,637	\$165,260	\$119,895	\$38,885	\$324,040
Miles City	Roosevelt	1	2.382	\$157	\$23	\$92	\$67	\$22	\$181
	FO/MT Total	1	2.382	\$157	\$23	\$92	\$67	\$22	\$181
Total		11	4,266.06	\$281,560	\$42,660	\$165,352	\$119,962	\$38,907	\$324,221

⁴ \$3 per acre in years 1-2

⁵ \$5 per acre in years 3-8

⁶ \$15 per acre in years 9 and 10

In this analysis, Federal leasing revenue estimates (lease rent and bonus bids) are based upon the number of acres being offered. There are no guarantees that any of the parcels offered for lease will receive bids, and until the lease sale is conducted it is unknown which and how many of the offered parcels will be leased.

Due to energy market volatility and the dynamics of the oil and gas industry, the BLM cannot predict the exact economic effects of this leasing action. These effects are specific to which successfully leased parcels will be developed and which developed parcels will produce paying quantities of Federal fluid minerals.

Given this uncertainty, in this analysis revenue estimates are limited to the direct effects of leasing and are calculated under the following assumptions:

1. All of the proposed parcels will be sold.
2. Federal rental income will be collected during the full term of the leases (10 years).
3. All parcels are leased at the regulatory minimum bonus bid and rental rates.

The estimates based upon these assumptions are provided in **Table 19** Alternative B would generate bonus bids totaling \$42,660 and annual rental income totaling \$281,560. The total value of all rentals and bonus bids received over 10-year leases for all parcels would be \$324,220.

As noted above, Federal rental income and bonus bids from the lease sale described in Alternative B would be shared with the State and county where the parcel is located. During the term of these leases the Federal government would collect approximately \$165,000 in revenue while the state would collect and retain approximately \$120,000, and the local governments in the counties containing the parcels would share \$39,000 in rental and bonus bids.

Environmental Justice and Human Health Effects – Proposed Action Alternative

The reasonably foreseeable development (RFD) scenario for the proposed action is:

- 8 oil wells for all parcels nominated (See **Table 2** and **Appendix D**) for the North Dakota Field Office (McKenzie and Billings counties).
- 1 oil well for the parcel nominated for the Miles City Field Office (Roosevelt County).

Unique properties could exist near the proposed lease parcels. It is undetermined at this time if these properties are residences, and if so, if the residences are occupied as of the date of this analysis. For all parcels, an attempt to mitigate any disproportionately high and adverse human health and environmental effects of development near these residences is required through the application of 43 CFR 3101.12. The setback requirement from residences or occupied dwellings of 500 feet (152.4m) stems from 43 CFR 3101.12 Surface Use Rights, where the Authorized Officer may require reasonable measures to minimize adverse effects to other resource values, land uses, and uses not address in lease stipulations at the time operations are proposed. 43 CFR 3101.12, Surface Use Rights, and Lease Notice 14-25 allows the authorized officer to move the proposed operations as far as 2624 feet (800m) from the proposed action. This lease notice is also applicable to all related facilities. Additionally, Standard Lease Notice STD 16-3 specifies that development is generally restricted within a quarter mile of occupied dwellings and within 500 feet of riparian habitats and wetlands, perennial water sources (rivers, springs, water wells, etc.) and/or floodplains. Intensity of impact is likely dependent on the density of development and surrounding, proximal populations.

The likelihood of additional disproportionately high and/or adverse human health and environmental effects to the identified populations is quite low, based on the reasonably foreseeable development

scenarios for all parcels. Many of the human health issues identified above are associated with populations who live in close proximity to dense, long-term oil and natural gas development. The studies referenced analyzed rural populations that are comparable or larger than many of the largest cities in the state of North Dakota although the effects of living in close proximity to oil and natural gas development cannot be discounted, these scenarios may not be the case in this lease sale. Although the counties included in this sale have at-risk, low income, and minority populations (SEP data, **Table 16**), oil and natural gas development in these areas would affect only immediately proximal communities or residences for a short period of time to a likely smaller degree.

While the determination of potential adverse and disproportionate effects from specific actions may initially be the assessment of the BLM, this assessment should not be assumed to be the position of specific, potentially affected communities of concern. The BLM realizes that additional adverse impacts may be identified by local communities as specific development locations and types are proposed. Therefore, identified communities of concern would be provided opportunities to identify any perceived adverse environmental impacts at the time of site-specific analysis during the APD stage. As a result, this discussion assesses only the effects for the issues identified by the BLM. The BLM would continue to work with potentially affected communities of concern to identify and address additional EJ issues as they arise.

Potential adverse impacts associated with oil and gas developments can be different for different communities. As discussed previously, the populations displaying higher risk indicators (presented in **Table 18**) are more likely to experience adverse health outcomes due to the presence of these indicators including educational attainment, language proficiency, households receiving public assistance, labor participation, housing affordability, potentially vulnerable households, and potentially vulnerable people. Therefore, immediately proximal communities of potential concern may be more sensitive to the impacts from potential health and safety risks associated with future potential and proximal development of the lease parcels relative to immediately proximal non-EJ communities. Similarly, quality of life impacts could be greater for the residents or communities in close proximity to future potential development. As stated above, it is possible that there are unique properties near of the proposed lease parcels. It is undetermined if these properties are residences, and if so, if the residences are occupied as of the date of this analysis. It should be noted that the proposed lease parcels are located in remote rural areas.

Air quality, greenhouse gases, climate change, and water use and availability are all issues that could potentially disproportionately affect the populations identified in **Table 16** and **Table 18**. Fugitive dust and diesel exhaust emissions from construction would result in criteria pollutant, VOC, and HAP emissions in the short-term. These emissions would occur for 30-60 days and would most likely impact locations near where these activities occur. Air quality impacts and associated health impacts can disproportionately affect potential populations of concern in the analysis area who are already socially vulnerable and likely have greater difficulty accessing healthcare facilities, paying for medical treatment, and typically have a higher propensity for pre-existing health conditions (EPA 2021b). While any climate change-related effects from the future potential development of the parcels themselves would be minimal, climate change is the result of collective and global actions. Any climate change-related impact would be regional in nature but may still disproportionately affect individuals within potential communities of concern in the analysis area who are already vulnerable (EPA 2021b). While any climate change-related effects from the future potential development of the parcels themselves would be minimal, climate change is the result of collective and global actions. Any climate change-related impact would be regional in nature but may still disproportionately affect individuals within potential communities of concern in the analysis area who are already vulnerable (EPA 2021b).

Groundwater resources are also regional in nature and water withdrawals are not anticipated to affect domestic water sources (see section 3.6 for water resources discussion). Any impacts to local water

wells (for example, a spill that affects groundwater) could force residents to find other means of supplying water for domestic or agricultural use. Best Management Practices (BMPs) and Conditions of Approval (COAs) to an APD would be implemented to minimize this risk. Should a spill occur, the BLM would work with operators to immediately remediate spills in accordance with federal and state standards. See appendices A and B for applied stipulations.

Additional analysis of potential disproportionately adverse impacts, including to human health and safety, would be conducted at the time of proposed lease development. When evaluating placement of wells at the lease development stage, standard design features, standard terms, BMPs, and COAs applied at the time of APD approval could include additional measures to reduce health and safety effects on nearby communities of potential concern. Future potential development would also be subject to relevant rules and regulations (federal and state) regarding public health and safety.

3.6 Issue 4 – Water Resources

What are the direct, indirect, and cumulative effects of potential oil and gas development, including hydraulic fracturing, on parcels that may be offered for lease on surface and groundwater quality and quantity?

BLM MT/DKs developed a hydraulic fracturing (fracking) white paper that describes industry practices commonly associated with fracking, as well as regulations designed to protect water resources. This white paper is included as **Appendix F** to this EA, and the information is incorporated by reference into this water resources analysis.

Montana Department of Natural Resources and Conservation and North Dakota Office of the State Engineer & State Water Commission regulate the right to use surface and groundwater in their respective states. State laws require that water rights be established for all beneficial uses of water, including that used for oil well development (drilling and hydraulic fracturing). Depending on location, new water rights or changes to existing water rights may apply (http://dnrc.mt.gov/divisions/water/water-rights/docs/oil-gas/water_options_oil_development.pdf).

In addition, the states administer numerous water quality regulations including the Clean Water Act of 1977, the Water Resources Planning Act of 1962, the Pollution Prevention Act of 1990, and the Safe Drinking Water Act of 1977. The Antidegradation Policy in the Clean Water Act mandates the maintenance of the level of water quality that has been identified as being necessary to support the existing uses of a waterbody (40 CFR Section 131.12(a)). Waste water will be disposed of in accordance with state, local and federal regulations, including HB1409-38-11.2-07 (North Dakota) and ARM Rules 36.22.1005 & 36.22.1226 (Montana).

BLM surface and split estate parcels would be subject to management decisions contained in their applicable Land Use Plan or Resource Management Plan including the 1988 North Dakota RMP, 2023 North Dakota Proposed RMP FEIS, and 2015 Miles City RMP. This RMP designate areas open or closed to fluid mineral leasing and assigns standard terms and conditions as well as stipulations to conserve water resource values.

3.6.1 *Affected Environment*

Surface Landcover

The 11 lease parcels (4,266.06 acres) associated with the Quarter 2, April 2025 lease sale are located in McKenzie and Billings counties in North Dakota (10 parcels), and Roosevelt County in Montana (1 parcel).

McKenzie and Billings counties

Ten (10) USFS parcels (4,263.68 acres) in North Dakota are located in the Little Missouri National Grassland (LMG) that encompasses about 1.0 million acres in the western region of North Dakota. The LMG is divided into two ranger districts: the McKenzie District in the north and the Medora District in the south. The applicable lease parcels on the Quarter 2, April 2025 lease sale are located in the McKenzie District, and all are within the two Geographic Areas: the Badlands Geographic Area and Rolling Prairie Geographic area. The semi-arid continental climate of both geographic areas consist of erratic precipitation, but averages about 15 inches per year, with about half of that precipitation falling from May through July. Short but intense thunderstorms, sometimes accompanied by hail, are a frequent occurrence between April and September. Moisture deficits are critical during the summer months. Drought cycles are typical, some lasting as long as 10 to 15 years. Yearly temperatures range between -35°F to 100°F. Snowfall averages about 30 inches per year, but winds, averaging about 10 miles per hour, usually create deep accumulations in draws.

The topography of the Badlands Geographic area includes intricately dissected drainages and draws dropping from grassy ridgelines or butte-like hills and color-banded mounds typical of a badlands landscape. Large slumps and earth flows, typical of a highly erodible landscape, can also be identified. Small inclusions of rolling prairie are also typical of this geographic area. Multi-layered soils are extensively exposed as are soft rock or rock-like substances such as siltstones, clay stones, shale, and sandstones. Other erosion-resistant rocks, such as lignite seams and scoria, are also prevalent. “True” badlands, characterized by largely unvegetated slopes greater than 40 percent are found within this geographic area. Butte escarpments provide unique locations of biologic, geologic, cultural, and archaeological resources.

The topography of the Rolling Prairie Geographic area is characterized as nearly level to rolling hills with some inclusions of scattered buttes and badlands landscapes. The soils are quite well developed and stable and occur beneath a fairly consistent mosaic of grass cover. Butte escarpments provide unique locations of biologic, geologic, cultural, and archaeological resources. Elevations for both geographic areas range from about 1,800 feet above sea level near Lake Sakakawea to about 3,500 feet above sea level atop some of the more prominent buttes.

The desired landscape condition is to maintain the undeveloped character and scenic integrity of the badlands and maintain streams in properly functioning condition or in an upward trend. Long-term soil productivity and properly functioning water cycles are maintained. Properly functioning water cycles are characterized by high infiltration rates, low soil compaction, and minimal overland flows. Energy flow and nutrient cycling are functioning properly to maintain diverse, native plant and animal communities.

Roosevelt County

Roosevelt County borders North Dakota in northeastern Montana. Elevations ranges from 1,800 feet near the Yellowstone and Missouri Rivers to about 2,900 feet. The Missouri River is the southern border of Roosevelt County. Average temperature is 44°F, and precipitation averages 14 inches per year. Snowfall accumulates November through April and averages 24 inches.

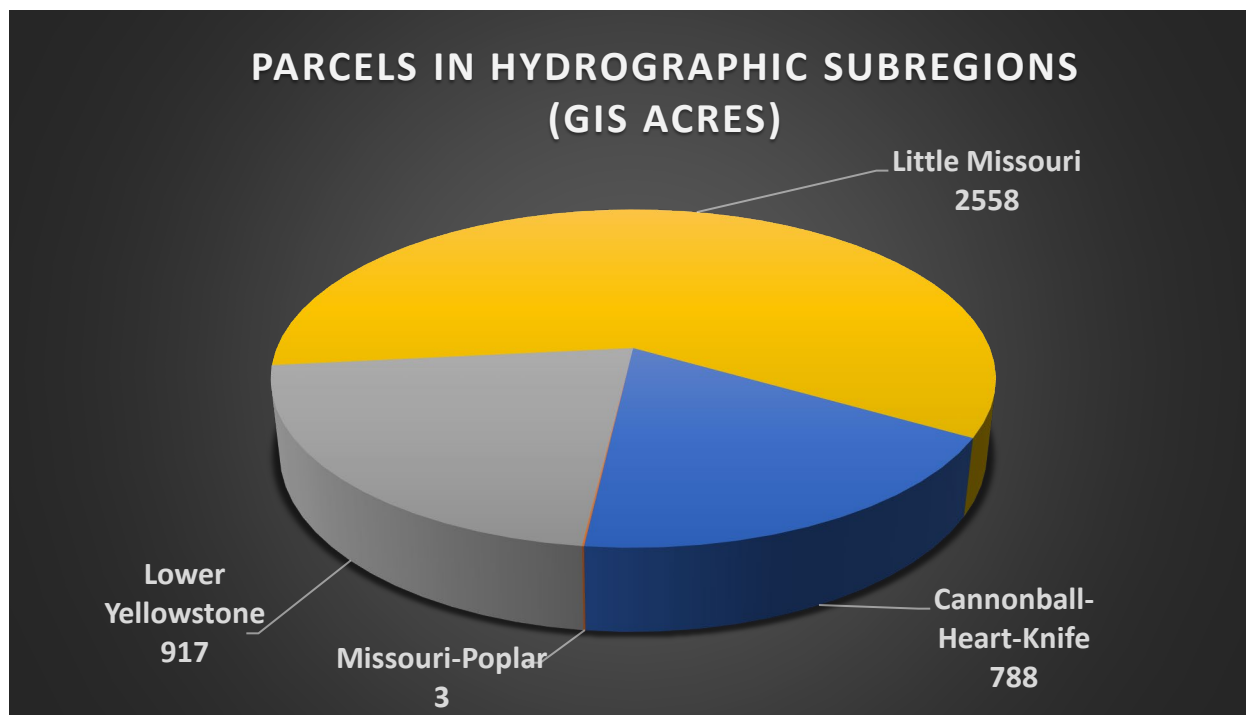
The land in this county can be described as Great Plains mixed-grass Prairie, as there are rolling hills intermittent with vast, wide, glaciated plains. Grasses that typically comprise this area include western wheatgrass, thickspike wheatgrass, green needlegrass, blue grama, and needle and thread. Forb diversity is typically high. In areas where sagebrush steppe borders the mixed grass prairie, common plant associations include Wyoming big sagebrush. Wooded draws are found closer to steep slopes or canyon bottoms and support deciduous trees like green ash and chokecherry. These wooded areas provide habitat for several bird species, small mammals, and deer.

Soils are generally smectitic, well drained, clayey or loamy. Many of the coarse textured soils have exposed caprock sandstone formations; These soils can be highly erodible, leading to badland-type landscapes that have highly eroded, rugged landforms with sparse vegetation.

Surface Water

Lease parcels associated with the Quarter 2, April 2025 lease sale are distributed throughout the hydrographic subregions (HUC-6) identified in **Figure 10** below. Of these subregions, 60% percent of the leasable area is located in the Little Missouri subregion, 21% percent is in the Lower Yellowstone subregion, 18% percent is in the Cannonball-Heart Knife subregion, and less than 1% is in the Missouri-Poplar subregion.

Figure 10: Distribution of Lease Parcels throughout the Hydrographic Subregions associated with the April 2025 lease sale. (Note: Subregions represent the 4-digit hydrologic unit codes associated with the USGS' Watershed Boundary Dataset, 2017)



Most of the consumptive water use in the region comes from surface water, which is especially critical for agricultural operations. According to the National Hydrography Dataset (NHD High_92V.210), the parcels contain approximately:

- 0 miles of perennial streams
- 14.3 miles of intermittent/ephemeral streams
- .8 miles of canals and ditches
- 0 acres of intermittent lakes/ponds
- 11 acres of perennial lakes/ponds
- 0 springs and seeps
- 0 acres of swamp/marsh

Numerous lease parcels in North Dakota and Montana MT-2025-04-0413, ND-2025-04-0728, 0727, and 0312 are within the confines of the Missouri River, or Little Missouri River. Access to mineral interests on this lease parcel will have to be accessed by directional or horizontal wells that are already commonly used in the

surrounding acreage. The remaining lease parcels are not within the 100-year floodplain as mapped by the FEMA flood hazard maps. All parcels are within areas defined as “Areas of Minimal Flood Hazard” or in areas that have not been mapped for flood hazards by FEMA. Mapping by FEMA is incomplete across the majority of these leases, especially in remote areas where impacts to life and property are limited (relative to areas with more substantial human development). Site specific assessments of flood hazard would be completed for any subsequent Surface Use Plan of Operations.

The BLM has identified project area surface waters, including streams, tributaries, lakes, and emergent wetlands; the lands are reflected in **Appendix P** in association with each parcel. Riverine systems include wetlands contained within a channel with the exception of those wetlands dominated by trees, shrubs, persistent emergent, emergent mosses, or lichens. Water is usually, but not always, flowing in the riverine systems. Emergent wetlands, scrub-shrub wetlands, and forested wetlands may occur adjacent to the riverine system. (FWS.gov)

Stressors and impairments

Streamflow in the area varies seasonally, with the largest flows commonly occurring in the spring or early summer. Water quality is often indirectly tied to streamflow, as it is largely dependent on the relative contributions of runoff and groundwater. Water quality affects the degree to which water can be used for a beneficial use and monitoring indicates that water quality in the region has been affected by a suite of factors; While the sources of water quality impairment vary considerably among waterbodies, nonpoint source pollution, nutrients, stream alteration, total suspended solids and metals are often listed as the primary causal factors, 2020; *North Dakota Integrated Section 305(b) Water Quality Assessment Report, 2018. Montana DEQ 2020 Final Water Quality Integrated Report.*

Groundwater and Consumptive Uses

Groundwater plays an important role in meeting regional demands for water and the type, source, and volume of water varies within and between hydrographic subregions. For example, while less than three percent of water diverted in Montana for beneficial uses in calendar year 2000 was from groundwater, 95 percent of the rural, self-supplied domestic systems operate on groundwater sources (Montana Department of Natural Resources, *Water Fact Sheet #4*). Local groundwater conditions within the vicinity of the lease parcels are highly variable and the quality and availability of groundwater varies greatly across the region. Residents commonly get their groundwater from aquifers consisting of unconsolidated, alluvial valley-fill materials, glacial outwash, consolidated sedimentary rock formations, and some coal beds.

Aquifers in Western Montana are typically in unconsolidated, alluvial valley-fill materials within intermontane valleys. These intermontane valley aquifers often yield relatively large quantities of high-quality water to relatively shallow water wells. Conversely, within the Northern Great Plains (eastern Montana & Western North/South Dakota), bedrock aquifers are often an important source of groundwater (especially in the non-glaciated zone). These aquifers generally support low-producing domestic and stock water wells that have relatively poor water quality from deep beneath the earth’s surface (100’s of feet).

Aquifers associated with preglacial alluvial channels, however, are also an important source of water, especially in the non-glaciated areas of the Northern Great Plains. Similarly, alluvial terrace deposits associated with modern streams often provide groundwater for nearby domestic, stock, and municipal uses, especially along the Yellowstone and other larger rivers in the region. In fact, across the lease area, groundwater stored in modern alluvial stream deposits often represents the most reliably productive aquifers. This is noteworthy, as unconfined aquifers are also among the most susceptible to contamination because they tend to lack confining layers that would otherwise slow/halt the transmission of contaminants from the surface and shallow subsurface directly into the aquifer.

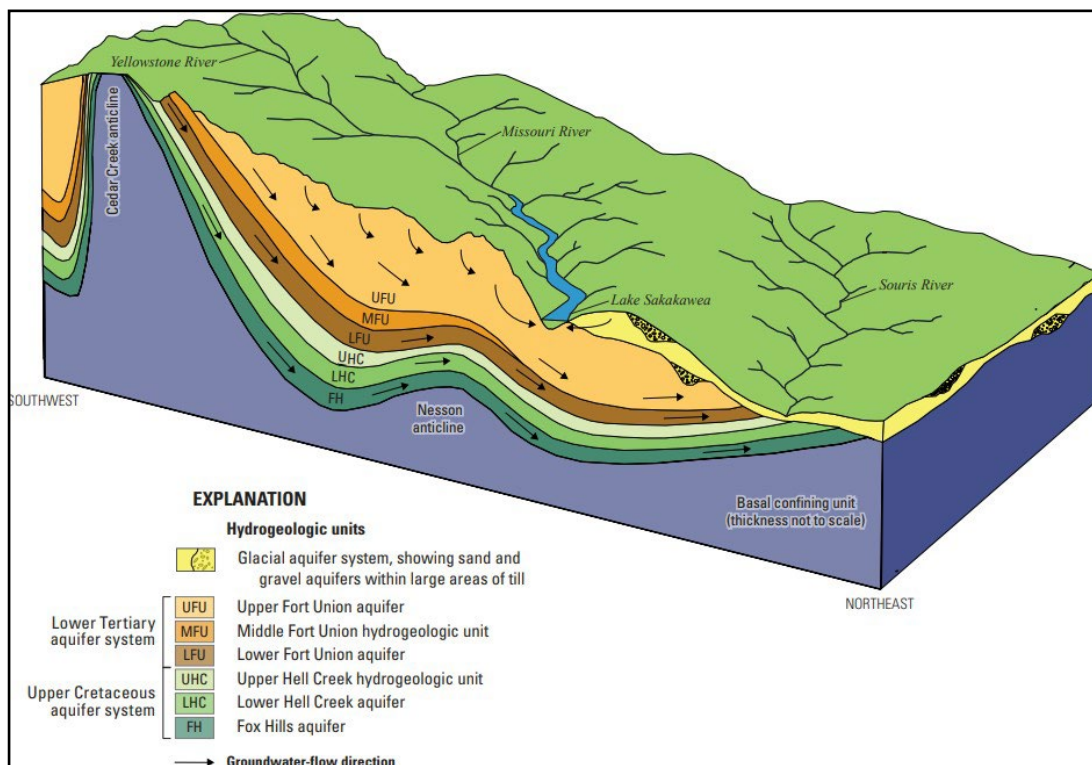
The Williston Basin aquifer is often divided into three units; the uppermost glacial till, lower Tertiary, and the

Upper Cretaceous. These three aquifer systems cover 91,000 square miles throughout the Williston Basin with a maximum thickness of 2,900 feet deep in the center and thinning towards the edge of the basin. It is underlaid by 800 – 3,000 feet of relatively impermeable marine shales that serve as the basal confining unit. The main components of recharge to groundwater are precipitation and infiltration from streams and reservoirs. Most groundwater discharge is to streams and reservoirs, groundwater pumping is a small part (less than 5 percent) but increasing withdrawals from 1960-2005 have caused groundwater levels to drop locally. (USGS Groundwater availability of the Williston Basin, 2018), (Potential effects of energy development on environmental resources of the Williston Basin in Montana, North Dakota, and South Dakota — Water resources: U.S. Geological Survey Scientific Investigations Report 2017–5070–C). (Potential effects of energy development on environmental resources of the Williston Basin in Montana, North Dakota, and South Dakota — Water resources: U.S. Geological Survey Scientific Investigations Report 2017–5070–C).

Most water used in hydraulic fracturing comes from surface water sources such as lakes, rivers, and municipal supplies. As of 2018 industrial water use which includes hydraulic stimulation made up 10.1% of all consumptive water use within North Dakota. North Dakota’s Office of the State Engineer is responsible for managing the State’s water resources as directed under Chapter 61-04 of North Dakota’s Century Code, and Article 89-03 of the State Administrative Code. Water intended for hydraulic stimulation requires a temporary water permit which necessitates a point of diversion review by a state hydrologist which is either granted or denied based on Chapter 61-04-06. Temporary water permits and reviews are publicly available under the ND.GOV website (https://www.swc.nd.gov/reg_approp/waterpermits/)

The amount of water used in hydraulic fracturing, particularly in shale gas formations, may appear substantial but is often small when compared to other water uses such as agriculture and municipal supply. Groundwater can be used to augment surface water supplies where it is available in sufficient quantities; however, in 2013 the North Dakota office of the State Engineer formalized a policy that restricted industrial uses from utilizing groundwater from the Fox Hills Aquifer. This policy had already been enforced on a case- by-case basis since the early 1980’s. (Wanek 2009; pg.90) This aquifer has sufficient hydraulic head to naturally flow to the surface without the use of pumps and ranchers have drilled approximately 500 wells into this aquifer to water livestock in the western part of North Dakota, allowing the watering of livestock in areas with no electrical infrastructure. The rate of decline of hydraulic head has decreased at 1.5-3ft per year since 1995 centered in McKenzie County North Dakota (Wanek 2009, Fischer 2013, Thamke et al 2018). In the next 100 years it is expected that the majority of these naturally flowing wells will cease to flow.

Figure 11. Groundwater aquifers and flow in the Williston Basin region (From Long et al., 2018)



The BLM frequently receives comments asking for an alternative that would protect usable groundwater, defined under the Safe Drinking Water Act as an aquifer with water that contains less than 10,000 mg/L (10,000 ppm) of total dissolved solids. However, a separate alternative to protect usable groundwater is not warranted because protection of groundwater would be required for any APD that is approved on a lease parcel. Authorization of proposed projects would require full compliance with local, state, and federal directives and stipulations that relate to surface and groundwater protection, and the BLM would deny any APD that proposes drilling and/or completion processes that are insufficient to protect of usable water, as required by 43 CFR § 3162.5-2(d). Any proposed drilling/completion activities would have to comply with Onshore Order No. 2, 43 CFR § 3160 regulations, and not result in a violation of a Federal and/or State laws that prohibit degradation of surface or groundwater quality.

All lease parcels for the Quarter 2, April 2025 lease sale parcels are within the Williston Basin development area.

Williston Basin

Parcels for the Quarter 2, April 2025 lease sale within Roosevelt, McKenzie, and Billings counties are part of the Williston Basin unconventional Bakken/Three Forks development area. The probable development scenario is continued horizontal well development within the Bakken and Three Forks formations.

Due to the large number of wells and increasing activity in this area; only well data after 2016 was used to display in the graph. Older data was considered and looked at but the amount of development and focus on the Bakken and Red River since 2010 has not changed and we don't foresee it to change in the immediate future. **Figure 12** shows a large number of wells at greater than 10,000ft measure depth. These are all horizontal Bakken Oil and Gas (OG), or Three Forks wells. There have also been wells drilled to ~5000ft that are used as saltwater disposal injection (SWD) wells into the Cretaceous sand intervals.

Figure 12. Graph of total depth of Oil and Gas wells within 5 miles of April 2025 North Dakota parcels colored by use. Saltwater disposal wells start at approximately 5000'ft or deeper. Wells 10,000ft or deeper are targeting the Bakken and Three Forks formations.

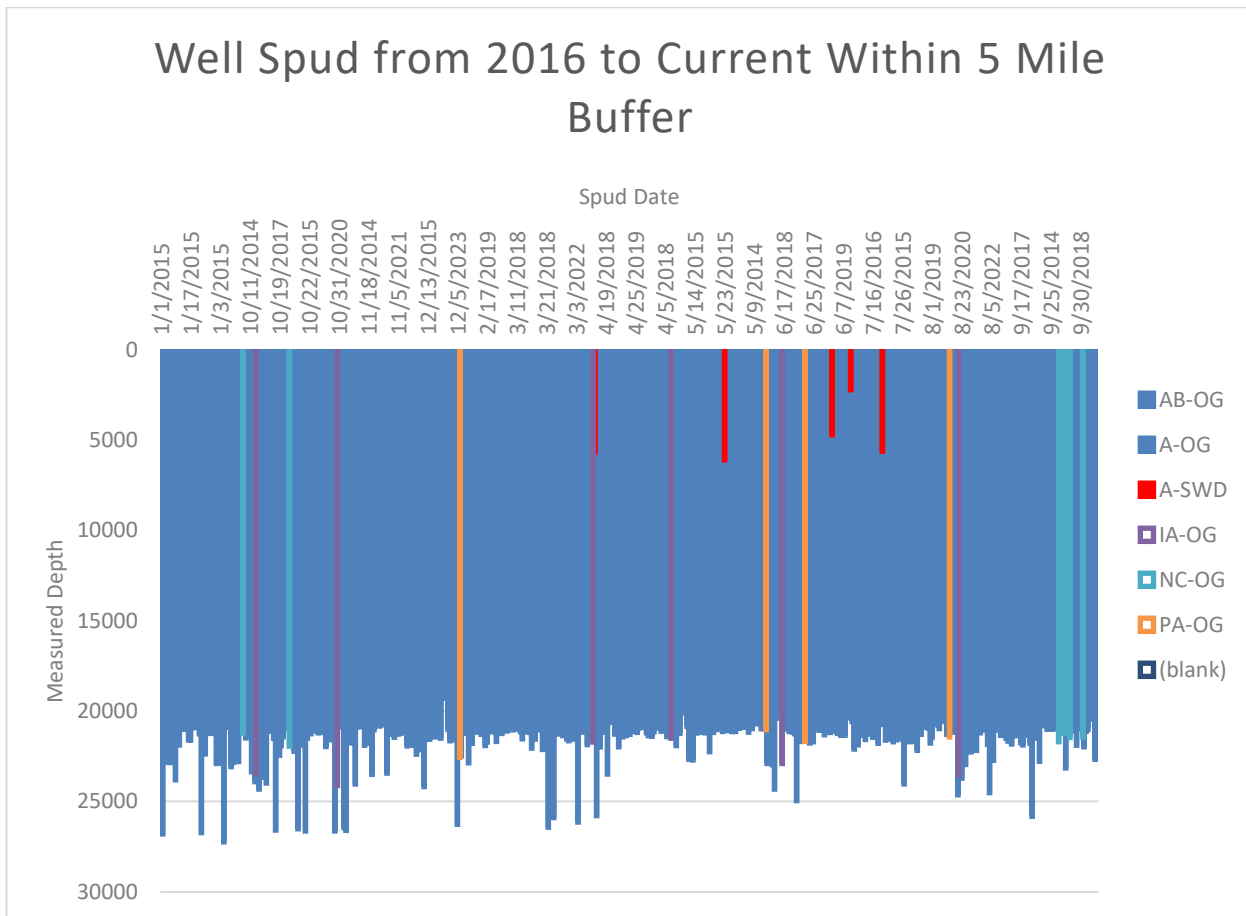
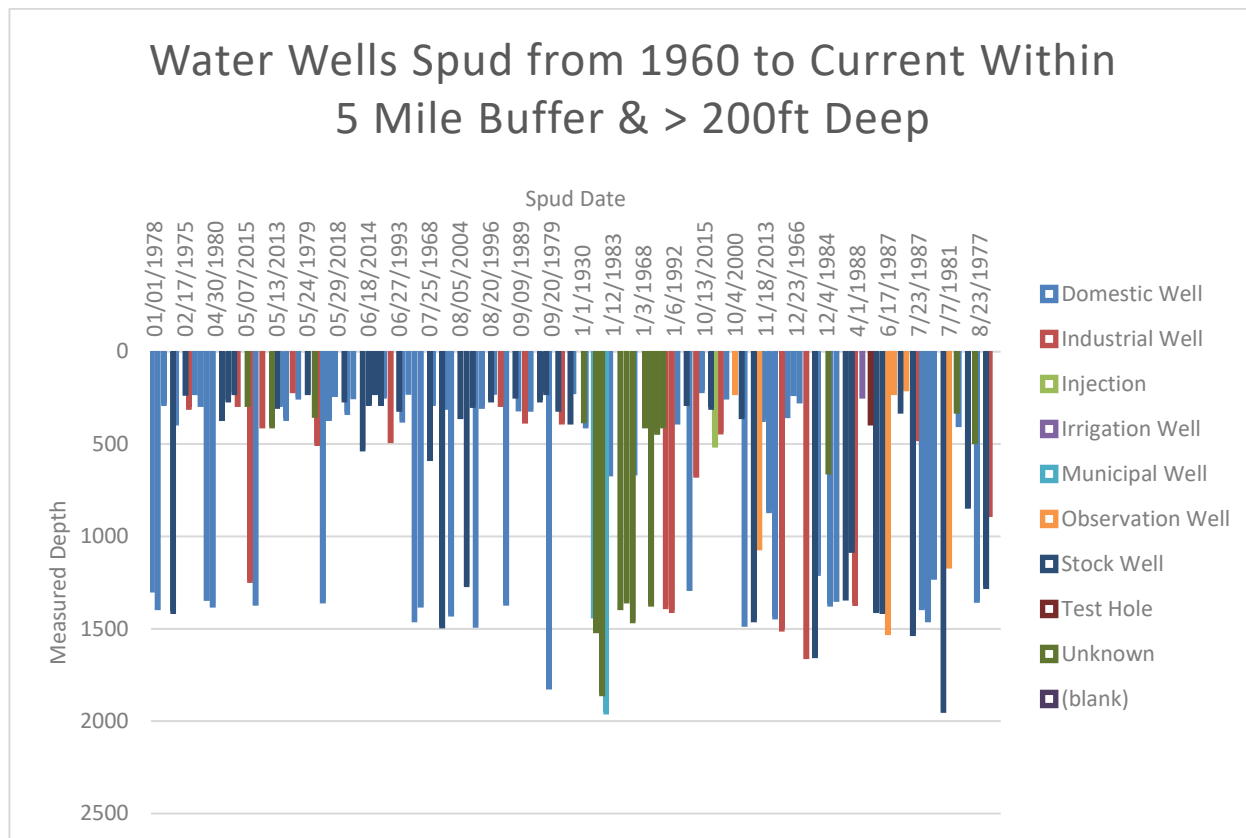


Figure 13 shows surrounding consumptive use groundwater wells that are 1000's of feet shallower than the horizontal well development in Williston Basin. Water wells within 5 miles of these lease parcels are all less than 2000ft deep.

Figure 13. Graph of total depth of water wells within 5 miles of April 2025 North Dakota lease parcels colored by use.



Field Development Summary

Lease parcels for the Quarter 2, April 2025 lease sale parcels within Roosevelt, Billings, and McKenzie counties are within the Williston Basin development area.

The probable development scenario for all parcels in the Quarter 2, April 2025 lease sale are horizontal unconventional wells into the Bakken, and Three Forks formations. This has been the predominate development scenario for the last 14 years and will likely continue. The Bakken and Three Forks formations are all greater than 10,000 feet deep while all the water wells used for consumptive use are shallower than 2,000 feet deep. Between the water wells and oil producing horizons are layers Cretaceous sands that are often used for the disposal of fluids utilizing saltwater disposal wells.

While there is sufficient vertical separation between existing groundwater wells and horizontal wells to make vertical fracture growth between the two zones highly unlikely, the higher permeability sands between the two zones makes the vertical propagation of hydraulic fluid past this zone even less likely. There is not a conflict between groundwater aquifers and horizontal well development due to hydraulic vertical fractures in this group of lease parcels.

3.6.2 Environmental Effects - No Action Alternative

There would be no impacts to groundwater or surface water resources from the No Action Alternative because no parcels would be offered for sale.

3.6.3 Environmental Effects - Proposed Action Alternative

Surface Water

Future oil and gas exploration and development of a lease parcel could affect surface water resources by causing the removal of vegetation, soil compaction, and soil disturbance in uplands within the watershed. The potential effects from this are accelerated erosion, increased overland flow, decreased infiltration, increased water temperature, channelization, and water quality degradation associated with increased sedimentation, turbidity, nutrients, metals, and other pollutants. Erosion potential can be further increased in the long term by soil compaction and low permeability surfacing (e.g., roads and well pads), which increases the energy and amount of overland flow by decreasing infiltration, and in turn changes flow characteristics, reduces groundwater recharge, and increases sedimentation and erosion. As acres of surface disturbance increase within a watershed, effects on water resources could correspondingly increase. However, due to the footprint of disturbance associated with the RFD (13.4 acres short term disturbance, and 11.4 acres long-term disturbance over 11 parcels), these potential impacts to water resources are expected to be minor. Furthermore, site specific effects would be more fully analyzed upon receipt of an APD and minimized through vegetation reestablishment and the application of BMPs and other conditions of approval to mitigate impacts of development.

Future oil and gas exploration and development of a lease parcel could also result in spills or produced fluids that could potentially affect surface and/or groundwater resources in the short and/or long term. These spills from oil and gas exploration/development have the potential to contaminate aquifers with salts, drilling fluids, fluids and gases from other formations, detergents, solvents, hydrocarbons, metals, naturally occurring radioactive materials, and nutrients; change vertical and horizontal aquifer permeability; and increase hydrologic communication with adjacent aquifers (EPA 2004).

From January 2023 through April 2024, ND Department of Environmental Quality reported 281 Oil/Gas Spill type incidents that were not contained, for example, an overflow of the facility boundaries or a leak from a facility pipeline. The Department reported another 753 incidents that were contained within the boundaries of the production or exploration facility during the same time period. The ND Department of Environmental Quality receives their data was from the Oil and Gas Division whenever Oilfield Environmental Incident Report is filed. All spills are reported; volumes from 3 gallons to >300 bbls are listed. Spill materials include fluids (diesel, oil, produced water, frac fluids, fresh water), solids (bentonite), and gases (propane). Not all spills may reach or impact a drinking water resource. For example, on 10/03/2021, 220 barrels of brine spilled onto a cultivated field 1,320 feet from the nearest water well. Actions were taken to recover the fluid, and it was removed for disposal. The incident report notes that the produced water pooled within the field and that the area had been flagged for monitoring. The area was excavated and follow up readings will be taken as necessary to determine if any other actions will be needed (incident 764). All of these incident reports are available online at: <https://northdakota.hazconnect.com/ListIncidentPublic.aspx>.

The size of the spill and site characteristics will influence whether a spill reaches a drinking water resource. Sandier soils and more permeable rock can increase the potential for spills to reach groundwater or migrate into surface water bodies. Spill prevention and response factors would be incorporated as COAs at the APD stage and may reduce the frequency and severity of impacts to surface water resources.

Some surface waters associated with the lease parcels are currently impaired from natural and anthropogenic features **Appendix H** and are discussed in the Affected Environment section. Fluid mineral development could additionally affect water resources during exploration, drilling, production, and/or abandonment. The magnitude of these impacts would depend largely on the specific activity, season, proximity to waterbodies, location in the watershed, density of development, hydrogeologic characteristics of the affected area, effectiveness of mitigation, time until reclamation success, and characteristics of any hydrologically connected aquifers. Adherence to applicable regulations (i.e., 43 CFR §3171 – §3177; wastewater disposal, water right, and water quality laws, etc.), as well as stipulations regarding steep slopes, erosive soils, streams, waterbodies, floodplains, and wetlands would minimize impacts that may be associated with future

development (see Appendix A and B).

Alterations in watershed hydrology outside of the no surface occupancy zones could affect the water resources in these systems relative to the size of the watershed in which the disturbance were to occur. Produced water from conventional oil and gas development could impact the quality of surface water and groundwater through impoundments, injection, and discharge. Left untreated, produced water discharge and infiltration, or leaking produced water disposal pits could reach stream channels via subsurface flow, which could decrease water quality. However, use of produced water/waste pits are rigorously regulated for use in the State of North Dakota and since 2012 pits as a form of disposal are seldom used and must be approved by the Director (North Dakota Century Code 38-12-02). Proper wastewater disposal methods, including siting and design of disposal pits in accordance with state and federal regulations, would minimize or avoid these impacts.

Groundwater

Potential effects to deeper aquifers may include cross-aquifer mixing through the wellbore or along fractures that extend between aquifers. All wells would be cased and cemented pursuant to North Dakota Department of Health (NDDH) rules, Montana Board of Oil and Gas (MBOGC) 36.22, Montana Code Annotated (MCA) Title 82, Montana Department of Environmental Quality (MDEQ), and 43 CFR § 3171, and 43 CFR § 3172. All wells also would be constructed according to relevant NDDH regulations to prevent cross-aquifer contamination. There would be minor potential for commingling of waters during well construction if proper well drilling procedures and completion techniques are employed. Refer to **Appendix F**, Fracking White Paper, and **Appendix F2** (Bakken) for further discussion.

BLM reviewed existing groundwater and oil/gas well data to identify any multiple use conflicts between groundwater use and petroleum development around the lease acreage that is scheduled to be made available for fluid minerals development in the Quarter 2, April 2025 lease auction. The large caveat to this assessment is that prior to lease sale, it cannot be guaranteed which geologic formation will be targeted in any one area. However, BLM can make an educated guess based on prior petroleum activity in the area.

BLM produced a series of maps for the proposed lease parcels showing the true vertical depth of surrounding oil and gas wells. There are points on each of these maps representing the location and depth of surrounding water wells. Refer to **Appendix G**. Furthermore, Underground injection control regulations would isolate injection zones from potentially useable aquifers, which would limit the potential for adverse impacts to surface or groundwater resources.

The use of any specific water source on a federally administered well requires review and analysis of the proposal through the NEPA process, which will be completed at the APD stage. The Gold Book, Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development (BLM and USFS 2007) would be followed, and site-specific mitigation measures, BMPs, design features, and reclamation standards would be implemented and monitored to minimize effects to water resources. All proposed actions must comply with local, state, and federal regulations, including North Dakota, and Montana water laws.

Water Quality

Offering the parcels for lease would have no direct impact to surface or groundwater resources. Any potential effects on water from the sale of lease parcels would occur at the time the leases are developed (at the APD stage) and could be both short and long-term. Potential indirect and cumulative impacts from oil and gas leasing on water resources are also discussed in the applicable ARMP and FEIS for each field office and incorporated here by reference.

Pursuant to CWA section 303(d)(1), 33 U.S.C. § 1313(d)(1), each state is further required to identify those waters that do not meet water quality standards—called the “303(d)(1) list.” The 303(d) list is short for a

state's list of impaired and threatened waters. States are required to submit their list for EPA approval every two years. For each water on the list, the state identifies the pollutant causing the impairment, when known. Natural impairment features include Nitrogen, total dissolved solids (TDS), mercury, and an increase or decrease in specific conductivity because of background soil characteristics. Anthropogenic features include highways, roads, bridges; dams and impoundments that impact hydrostructure flow; agriculture, which contributed nutrients (**Appendix H, P**) to a water body; grazing, which can introduce pathogens (E. Coli) and/or physical alterations to a water body; and crop production that can affect the salinity, TDS, and sulfate levels of a water body.

The BLM is required to comply with state water quality standards and utilizes BMPs and design features to avoid, minimize, or mitigate potential impacts that could contribute to water quality impairment; Therefore, the BLM has identified, through the EPA WATERS Geoviewer website, which parcels nominated for this lease sale have proximity to impaired water bodies (See **Appendix H**):

Parcels ND-2025-04-0728, 0727, and 0312 are within the Little Missouri River downstream of it's confluence with Cherry Creek. This river portion is recreation 303D impaired due to Escherichia coli bacteria, caused by lack of riparian buffer width and health, coupled with insufficient water flows and poor range management. (NRCS 2008).

Parcel MT-2025-04-0413 are within the Missouri river below the confluence with the poplar river. This river portion is 303D impaired due to both a flow regime modification and temperature caused by downstream hydro-structure flow modifications. (MDEQ 2021)

There are no state-designated source-water protection areas or municipal supply watersheds associated with the nominated parcels of this lease sale. There are no public supply water wells associated with the nominated parcels of this lease sale. There are no sensitive areas and no areas of critical environmental concern, or other valued areas where important aquatic resources may be impacted associated with the nominated parcels of this lease sale.

A Reasonably Foreseeable Development (RFD) scenario for oil and gas leasing at the plan level was analyzed in the RMP for the North Dakota field office, and Miles City field office. The BLM used the plan level RFD to develop an RFD for this lease sale, which is summarized in **Table 2**, and further described in **Appendix D**. The associated estimates of surface disturbance relate to the potential scope and magnitude of impacts to surface hydrology and are used to provide context in this EA. The RFD for this lease sale estimates surface disturbance over the 10-year leases associated with the Quarter 2, April 2025 lease sale as 11.4 acres of long term (LT) disturbance.

Produced water from conventional oil and gas development could impact the quality of surface water and groundwater through impoundments, injection, and discharge. Left untreated, produced water discharge and infiltration, or leaking produced water disposal pits could reach stream channels via subsurface flow, which could decrease water quality. Proper wastewater disposal methods, including siting and design of disposal pits in accordance with state and federal regulations, would minimize or avoid these impacts. Underground injection control regulations would isolate injection zones from potentially useable aquifers, which would limit the potential for adverse impacts to surface or groundwater resources.

Standard stipulation 16-3 requires the Agency to furnish data on any special areas, which may include domestic water supplies within 1,000 feet of parcels and stipulates that surface use or occupancy will be controlled to prevent damage to surface or other resources.

The use of any specific water source on a federally administered well requires review and analysis of the proposal through the NEPA process, which will be completed at the APD stage. The Gold Book, Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development (BLM and USFS 2007)

would be followed, and site-specific mitigation measures, BMPs, and reclamation standards would be implemented and monitored in order to minimize effects to water resources. All proposed actions must comply with local, state, and federal regulations, including Montana and North Dakota water laws.

Water Quantity

Oil and gas drilling operations could affect available quantities of surface water and groundwater. Hydraulic fracturing uses billions of gallons of water every year at the national and state scales however, when expressed relative to total water use or consumption, hydraulic fracturing generally accounts for only a small percentage, usually less than 1%. (USEPA, 2016, page 4-46, Haines 2017).

The BLM estimated future water consumption associated with the Quarter 2, April 2025 lease sale based on the sale specific RFD. The estimates were made with the following assumptions: (1) all wells ultimately put into production as a result of this lease sale utilize hydraulic fracturing, (2) the underlying factors used to estimate future development under the sale specific RFD scenario persist, and (3) actual water use per well is similar to the state median water use estimates as noted in **Appendix F**, Fracking White Paper. All estimates are approximate and could vary substantially based on site characteristics and other factors like the length of horizontal laterals and hydrocarbon extraction intensity.

- North Dakota: 4,263.68 lease acres = 8 projected wells. 8 wells * 5 million gallons/well = 40 million gallons
- Montana: 2.382 lease acres = 1 projected wells. 1 wells * 5 million gallons/well = 5 million gallons

If drilling technology improves and economic considerations increase the average lateral length of horizontal wells and hydrocarbon extraction intensity, future water use and wastewater production would likely correspondingly increase, as would the potential for adverse impacts to water resources.

While many areas within the lease sale are experiencing low or medium to high water stress and estimated water consumption associated with the RFD scenario is minor (relative to existing uses & available supply), some areas are experiencing high Baseline Water Stress. Areas with higher baseline water stress would be more likely to experience depletion of surface and groundwater resources and/or competition among users from additional future development than areas with lower baseline water stress.

The potential for impacts associated with future development depends on the combination of water withdrawals and water availability at a given withdrawal location, as well as factors such as wastewater disposal methods and amounts. For example, where water withdrawals are relatively low compared to water availability, adverse impacts are unlikely to occur. Where water withdrawals are relatively high compared to water availability, impacts are more likely. Areas reliant on declining groundwater are particularly vulnerable to more frequent and severe impacts from cumulative water withdrawals, including withdrawals for hydraulic fracturing. Among surface water sources, smaller streams are more vulnerable to frequent and severe impacts from withdrawals. Seasonal or long-term drought can also make impacts more frequent and severe for surface water and groundwater sources.

Water withdrawals could lead to reduced aquifer water levels, reduced streamflow (through direct withdrawals or drawdown of aquifers that are hydraulically connected to nearby streams or springs), altered hydroperiods, and impacts to water quality parameters associated with stream flow. Typically, produced water from conventional oil and gas wells would originate from a depth below useable aquifers or coal seams and would be unlikely to adversely affect freshwater resources.

Potential site-specific effects would be analyzed at the time of a receipt of an Application for a Permit to Drill. In the event of exploration or development, site-specific mitigation measures would be identified to avoid or

minimize potential impacts to water resources prior to land disturbance. Compliance with state regulations and implementation of BMPs, operator committed measures, design features, and COAs at the APD stage would help minimize the impacts of water withdrawals on surface and groundwater by ensuring that water rights are established for all beneficial uses of water, ensuring that water resources are not over-appropriated, and considering the impacts of water withdrawals to groundwater wells and hydraulically connected surface waters. A lessee/operator would be required to obtain valid water rights from the states prior to operation, which would help to minimize the potential for impacts to the hydrologic system, other water users, and related ecological processes. Additional information on water rights and the availability of water resources in the project area can be obtained at the local North Dakota State Water Commission (NDSWC) or Montana Department of Natural Resources (DNRC).

Application and implementation of lease stipulations

The applied lease stipulations provide guidance and parameters for the development of each lease. Lease stipulations described here and in Appendices A and B are specific for the protection of surface and groundwaters. Oil and gas lease stipulations are established for erosion control, soil, and water preservation specifically include: The BLM's Standard 16-3 stipulation which is an overarching, general stipulation applied to all of the leases being analyzed. Standard 16-3 includes sections for esthetics, erosion control, controlled or limited surface use, APDs, cultural and paleontological resources, and endangered and threatened species. (Post Van Der Burg 2022) The stipulations that specifically impact surface water (and soils) would include erosion control measures and controlled surface use (CSU).

During the commencement of the APD process the project and proposed location, to include all surface disturbing activity, is assessed for potential impacts to the site. Controlled surface use is utilized if the lease and proposed project location includes a special area with special values and require special attention for certain resources that includes surface water. There are specific setbacks in the Standard 16-3 stipulation for all waterbodies, rivers, streams, domestic water supplies and flood plains including 500 feet within the 25-year flood plain from reservoirs, lakes, and ponds and intermittent, ephemeral, or small perennial streams; 1,000 feet within the 100-year flood plain from larger perennial streams, rivers, and domestic water supplies. This stipulation allows for project placement to be strictly controlled and even excluded. Further, modifications can be made for those restrictions for the maintenance and operations of oil and gas wells.

Much like the BLM stipulations, other Surface Management Agencies (SMA), such as the USFS provide stipulations for parcels within their jurisdictional boundaries. In conjunction with the erosion control and setback authorities listed in the Standard 16-3, the USFS stipulations mitigate for erosion by prohibiting projects on slopes of greater than 40%. Stipulation LMG2020-NSO-01 states "Surface occupancy and use is prohibited on slopes greater than 40 percent to protect soil resources from loss of productivity, prevent erosion on steep slopes, soil mass movement, and resultant sedimentation". The application of this stipulation and the additional assessment of the lands at APD commencement mitigate any effects to surface waters that may be impacted by soil conditions and erosion.

Similar to the above stipulations, CSU 12-5 prohibits surface disturbance of riparian areas of wetlands, intermittent, ephemeral, or perennial streams and rivers, with the exception of essential road and utility crossings. NSO 11-33 (no surface occupancy), provides for no surface occupancy within 200 feet of wetlands, lakes, and ponds. As previously mentioned, these stipulations are applied during the lease process; enforcement of these authorities in the field and at the APD stage would require field observations and data review of the existing conditions and resources. This field review allows for the appropriate placement of well pads, roads, utilities, and ancillary facilities therefore mitigating any effects to surface waters as implied by the lease stipulation.

Comparable to Standard 16-3 the USFS stipulations LMG2020-CSU-01 and LMG2020-LN-01 give notice to potential lessees that proposed activities may contain lands with riparian ecosystems and that development in

that area could be highly restricted in order to preserve, restore, and enhance the values provided by floodplains and wetlands.

The DPG personnel apply and enforce their stipulations in an equivalent manner as the BLM by conducting field visits, completing data reviews of the existing conditions and resources, and coordinating with lessees to modify their proposed project to protect the resource.

The application and enactment of all SMA stipulations may be achieved through field (onsite) and data reviews of soil types, average rainfall, stormwater management, engineered drawings, GIS, etc. Specialists and interdisciplinary personnel commonly perform these reviews. Project constraints such as placement, timing, and design could be altered from the initial proposal based on these observations, reviews, and the known potential impacts that are typical of oil and gas development. Equally important are potential BMP's and design features that may be added. The modifications to the project, if approved, would be documented and part of any approval.

Cumulative Impacts

Given the limited disturbance estimated in the reasonably foreseeable development scenario (see **Table 2**), the potential for future development associated with the Quarter 2, April 2025 lease sale to contribute to the cumulative impacts of water resources is correspondingly limited and likely negligible (relative to other water uses and potential sources of contamination).

However, with more oil and gas wells being developed in proximity to fresh water, there is a potential for groundwater and surface water decline, as well as an increased possibility for nonpoint source pollution associated with ground disturbance to adversely affect water quality in receiving waterbodies. The vulnerability of the decline and related impacts to existing water users and environmental processes is directly associated with the water need, the quantity and quality of the groundwater, and the cumulative withdrawals and is likely correlated to existing and predicted Baseline Water Stress within the potentially affected basins. Water used to develop any of the proposed parcels could have a cumulative depletion effect, especially if other oil and gas development and regional water uses exceed recharge rates in the basins, potentially affecting surface flows and groundwater elevations. Such effects could be exacerbated during periods of drought. BMPs and design features to reduce runoff, erosion, and potentially associated nonpoint source pollution to downstream waterbodies would minimize cumulative effects to water quality.

Groundwater recharge rates can be extremely low, and groundwater pumping can exceed recharge rates in many areas of the country (Konikow, 2013). Cumulative drawdowns can affect surface waterbodies since groundwater can be the source of base flow in streams and alter groundwater quality by mobilizing chemicals from geologic sources, among other means (DeSimone et al., 2014).

Aquifers can be affected directly and indirectly by increasing the number of wells in an area. Direct impacts are a result of direct use of the groundwater. Indirect ramifications could result from declines in surface water resources (or vice versa) which could lead to increased groundwater withdrawals and net cumulative depletions of groundwater (Castle et al., 2014; Georgakakos et al., 2014; Konikow, 2013; Famiglietti et al., 2011).

It should be noted that cumulative impacts on water quality findings associated with hydraulic fracturing appear inconclusive at this time, but localized impacts to surface water quality associated with dense surface disturbance have been observed elsewhere. It has been observed that pumping can promote changes in reduction-oxidation (redox) conditions and thereby mobilize chemicals from geologic sources (DeSimone et al., 2014). Similar patterns of groundwater quality degradation associated with prolonged aquifer depletion (i.e., salinization and contamination) have also been observed. (U.S. Environmental Protection Agency; 2016a).

As studies are conducted and ramifications are analyzed they will be instrumental in developing better science to determine cumulative impacts to the environment. When the science of these studies is complete, they will be incorporated to the analysis of oil and gas lease sales to determine the best course of action according to the science

3.7 Issue 5 – Cultural Resources

How would the leasing and potential development of these parcels affect cultural resources to include Native American Religious Concerns, National Register Heritage Sites, and National Historic Landmarks and Trails?

The BLM conducted screening on parcels and gathered comments to assess potential impacts on cultural resources. Past lease sales have seen input from the National Park Service. Parcels that were identified as being in close proximity to the Lewis and Clark National Historic Trail (L&C NHT) administered by the National Park Service include MT-2025-04-0413. This trail, spanning about 3,700 miles from Wood River, Illinois, to the Columbia River mouth in Oregon, is overseen by the National Park Service (NPS) in collaboration with federal, state, and local agencies; tribal nations; nonprofit organizations; and private landowners. The L&C NHT follows the outbound and inbound routes of the 1803 to 1806 Lewis and Clark Expedition also known as the Corps of Discovery. In North Dakota's Missouri River valley, the L&C NHT splits into two paths at the Yellowstone and Missouri Rivers confluence. The L&C NHT commemorates the expedition's encounters and diverse cultures, emphasizing interactions with Native American tribes. (<https://www.nps.gov/lecl/learn/historyculture/index.htm>).

3.7.1 *Affected Environment*

Parcels in the project area that are in close proximity to the L&C NHT include MT-2025-04-0413. The trail in the project area consists of a water route that runs along the Missouri (Lake Sakakawea Reservoir) and Yellowstone Rivers and an auto tour route that is part of existing highways in North Dakota. The auto tour route, consists of State Highway 23, State Highway 200, State Highway 1804, State Highway 1806, State Highway 58, US Highway 85, US Highway 2, and Interstate 94. The landscape consists of the river valleys, associated tributaries, butte-like hills, badlands, and rolling hills. Contemporary and commercial development in the area includes hydroelectric dams, recreation areas, private cabin sites, agricultural infrastructure, and oil and gas infrastructure, and municipal infrastructure. The water route passes through the townships of New Town, ND, Four Bears Village, ND, and Williston, ND, Poplar, MT, Wolf Point, MT, Sidney, MT, Glendive, MT, Miles City, MT, and Forsyth, MT.. The trail also passes through two reservations in the project area: Fort Berthold Reservation and Trenton Indian Service Area in North Dakota and Fort Peck Reservation in Montana.

3.7.2 *Environmental Effects - No Action Alternative*

Under the No Action Alternative, the BLM would not offer any of the nominated parcels in this lease sale. However, in the absence of a Land Use Plan Amendment closing the lands to leasing, they could be considered for inclusion in future lease sales. If the parcels are not available to be leased and potential development on or near the proposed parcels would not occur, then no impacts to cultural resources would be expected from potential oil and gas development. The No Action Alternative would result in the continuation of already-approved land uses and would not result in new impacts related to exploration of the proposed oil and gas lease parcels.

3.7.3 *Environmental Effects - Proposed Action Alternative*

Under Alternative B, 11 parcels encompassing approximately 4,266.06 acres would be offered for sale. Those parcels that are successfully leased will generate Federal bonus bid revenue and annual rents, which will be collected on leased parcels not held by production. While the leasing action does not directly result in development that would generate surface disturbance, potential future development of the leased parcels are reasonably foreseeable and can be estimated for the purposes of this lease sale.

Due to horizontal directional drilling on fee land, federal and private mineral interests on lease parcels can be reached from a surface location near, but not on, federal property. Some of the parcel's surface is submerged by water. For this reason and per the BLM lease stipulations, USFS lease stipulations, and lease stipulations to include no surface occupancy, any proposed development scenario would likely come from a pre-existing pad off-lease.

There are many existing anthropogenic impacts such as municipalities, roads, reservoirs, etc. along much of the Lewis and Clark Trail. The BLM and USFS have applied stipulations to the lease parcels for the protection of the historic and cultural resources that include HQ-CR-1 and Standard 16-3 which would require the BLM to complete its obligations under NHPA and other authorities to include consultation with the NPS, and Standard 16-3 which requires the submission of an APD and potentially a site-specific cultural resource inventory prior to any proposed surface disturbance. Specifically, a Controlled Surface Use Stipulation (CSU 12-33), Lease Notices LN 14-2, LN14-14, LN 14-22, and a No Surface Occupancy Stipulation (NSO 11-83) have been applied to the applicable previously mentioned parcels to protect the trail resources.

At the time of development, the APD and proposed surface use plan of operations will include design features and mitigation measures to reduce, avoid, or minimize potential impacts to the historic and cultural resources based on results of the prerequisites of the stipulations.

Cultural resources and Native American Religious Concerns

Consultation, collaboration, and coordination for the identification of cultural resources and mitigation of disturbance or detrimental effects is robust and ongoing. The BLM has applied lease terms and stipulations to proposed parcels that include HQ-CR-1, Standard 16-3, LN 14-2, LN 14-14, LN 14-22, LN 14-33, and NSO 11-84 (see Appendix B for definitions). The result of the applying these stipulations at leasing provides protection to cultural resources. The BLM will not approve any ground disturbing activities that may affect such properties or resources until it completes its obligations associated with the stipulations that are applied to each respective parcel as well as applicable requirements of the National Historic Preservation Act and any other authorities. The BLM may require modification to exploration or development proposals to protect such properties or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized, or mitigated. Within the administrative boundaries of the USFS Dakota Prairie Grasslands, LMG2020-LN-03 is applied to protect these resources on parcels all of the parcels in North Dakota.

Native American Religious Concerns: Native American belief systems and traditional practices can vary widely across traditional tribal lands and require ongoing consultation and coordination to ensure that an action authorized by the BLM will not impede upon or impair practices or locations that are deemed as Traditional Cultural Properties or are otherwise important. The BLM applied HQ-CR-1 to all parcels that may have possible historic properties and/or resources protected under the National Historic Preservation Act (NHPA), American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O 13007, or other statutes and executive orders. The purchaser of a lease is entitled to develop the parcel consistent with lease stipulations and must have an approved Application for Permit to Drill (APD), including a plan of operations and a review and consideration of Native American religious concerns, before ground disturbing activities can begin. The BLM may require modification to exploration or development proposals

to protect unevaluated, eligible, or other such properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized, or mitigated.

Cumulative Effects

Given the limited disturbance estimated in the reasonably foreseeable development scenario (See Chapter 2, **Table 2**), the potential for future development associated with the Quarter 2, April 2025 lease sale to contribute to the cumulative impacts of cultural resources is correspondingly limited and likely negligible. The mitigation discussed for the L&C NHT is applied to the lease parcels and the likelihood of off-lease development negates any negative impacts to the L&C NHT as a result of leasing the listed parcels. Any off-lease development will be authorized by the BLM at the time of APD approval and will be administrated through BLM guidance, specifically BLM IM 2018-014.

As previously stated, Tribal consultation and coordination is ongoing for all BLM projects. Chapter 4 contains a summary of consultation and coordination for this analysis, as well as a list of all tribal entities, governments, and historic preservation officers contacted to participate in the writing of this EA. A single scoping comment was submitted by Tribal entities. The Northern Arapaho THPO assessed the likelihood of encountering religious and culturally significant sites as high. They requested to be informed and supplied with a cultural resource inventory report at the time an APD is submitted. A list of comments received during the comment period and BLM responses will be available in Appendix K. The stipulations applied to each lease parcel (specifically HQ-CR-1 and STD 16-3) and applicable laws prohibit surface disturbance on any lands that may have possible historic properties and/or protected resources. These resources include, but are not limited to: locations associated with the traditional beliefs of Native American groups about its origins, culture history, and nature of the world; a location where Native American religious practitioners have historically gone, and are known to go today to perform ceremonial activities in accordance with traditional cultural rules of practice; a location where an identifiable community has carried out economic, artistic, and other cultural practices important in maintaining its historical identity, or any other Traditional Cultural Property not described here. As such, with continued coordination and consultation and adherence to laws and regulations, any detrimental effects to Cultural and Native American Religions concerns could be fully mitigated.

4 Consultation and Coordination

4.1 Summary of Consultation and Coordination

The BLM coordinates with Montana Fish, Wildlife, and Parks (MTFWP), North Dakota Game and Fish (NDGF) and the U.S. Fish and Wildlife Service (USFWS) to identify wildlife concerns, protective measures, and apply stipulations and lease notices associated with oil and gas lease sales. While the BLM manages habitat on BLM lands, the state agencies are responsible for managing all wildlife species populations. The USFWS also manages some wildlife populations but only those federal trust species managed under mandates such as the Endangered Species Act, Migratory Bird Treaty Act, and the Bald and Golden Eagle Protection Act. The BLM mailed letters to MTFWP, NDGF, and USFWS informing them of scoping and EA comment periods. The BLM also communicated informally with NDGF. The NDGF and USFWS have submitted scoping comments and incorporated those in the EA where applicable.

The BLM consults with Native Americans under various statutes, regulations, and executive orders, including the American Indian Religious Freedom Act, the National Historic Preservation Act, the Native American Graves Protection and Repatriation Act, the National Environmental Policy Act, and Executive Order 13175-Consultation and Coordination with Indian Tribal Governments. The BLM notified consulting tribes of the oil and gas lease sale and invited them to identify any issues or concerns

that the BLM should consider in this EA.

The BLM coordinates with the USFS DPG McKenzie and Medora Ranger Districts to identify resource concerns and apply stipulations and lease notices to lease parcels proposed within the administrative boundary of the DPG McKenzie Ranger District. Refer to **Table 20** for the list of Tribes and Agencies contacted.

Table 20. Tribes and Agencies Contacted Table

Blackfeet Nation	THPO	John Murray
Blackfeet Tribe	Chairman	Illiff "Scott" Kip Sr.
Cheyenne River Sioux Tribe	THPO	Steve Vance
Cheyenne River Sioux Tribe	Tribal Chairman	Ryman LeBeau
Chippewa Cree Tribe	THPO	Jonathan Windy Boy
Chippewa Cree Tribe	Tribal Chairman	Harlan Gopher
Comanche Nation	Chairman	Mark Woommavovah
Comanche Nation	THPO	Martina Minthorn
Confederated Salish & Kootenai Tribes	Vice Chairman	Tom McDonald
Confederated Salish & Kootenai Tribes	Chairman	Mike Dolson
Confederated Salish & Kootenai Tribes	Tribal Preservation Specialist	Mike Durglo
Confederated Salish & Kootenai Tribes	Preservation, Dept Head	Kevin Askan
Confederated Tribe of the Umatilla Indian Reservation	Chairman	N. Kathryn Brigham
Confederated Tribe of the Umatilla Indian Reservation	THPO	Carey Miller
Confederated Tribes of the Colville Indian Reservation	Chairman	Jarred-Michael Erickson
Confederated Tribes of the Colville Indian Reservation	THPO	Guy Moura
Confederated Tribes of the Colville Indian Reservation	CBC	Milton Davis
Confederated Tribes of the Colville Indian Reservation	CBC	John Sirois
Confederated Tribes of the Colville Indian Reservation	CBC	Kiana Sam
Confederated Tribes of the Colville Indian Reservation	CBC	Darnell Sam
Crow Creek Sioux Tribe	Chairperson	Peter Lengkeek
Crow Creek Sioux Tribe	THPO	Merle Marks
Crow Tribe	Chairman	Frank White Clay
Crow Tribe	THPO	Aaron Brien
Eastern Shoshone Tribe	Chairman	John St. Claire
Eastern Shoshone Tribe	THPO	Josh Mann
Flandreau Santee Sioux Tribe	President	Anthony Reider
Flandreau Santee Sioux Tribe	THPO	Gerrie Kills A Hundred
Fort Peck Tribe	THPO	Dyan Youpee
Ft. Belknap Tribe	Acting THPO	Michael J. Black Wolf
Ft. Belknap Tribe	CAO	Delina Cuts The Rope
Ft. Belknap Tribe	Environmental Protection Manager	Ina Nez Perce
Ft. Belknap Tribe	President	Jeffery Stiffarm
Ft. Peck Tribes	Chairman	Justin Gray Hawk

Kiowa Nation	Chairman	Lawrence Spottedbird
Kiowa Nation	THPO(Acting)	Amanda Hill
Little Shell Chippewa Tribe	Chairman	Gerald Gray
Little Shell Chippewa Tribe	THPO	Dwayne Reid
Lower Brule Sioux Tribe	Chairman	Clyde Estes
Lower Brule Sioux Tribe	Cultural Resources	Boyd Gourneau
Lower Sioux Indian Community	President	Robert Larson
Lower Sioux Indian Community	THPO	Cheyenne St. John
Nez Perce Tribe	Chairman	Shannon Wheeler
Nez Perce Tribe	NAGPRA Coordinator	Robert Taylor
Nez Perce Tribe	THPO	Keith "Pat" Baird
Nez Perce Tribe	Tribal Archaeologist	Josiah Pinkham
Northern Arapaho Nation	Chairman	Lloyd Goggles
Northern Arapaho Nation	THPO	Crystal Cbearing
Northern Cheyenne Tribe	THPO	Teanna Limpy
Northern Cheyenne Tribe	President	Serena Wietherelt
Northern Plains Resource Council		Adam Haight
Oglala Sioux Tribe	President	Frank Star Comes Out
Oglala Sioux Tribe	Project Coordination	Justin Pourier
Rosebud Sioux Tribe	President	Scott Herman
Rosebud Sioux Tribe	THPO	Ione Quigley
Santee Sioux Tribe of Nebraska	Chairman	Alonzo Denney
Santee Sioux Tribe of Nebraska	THPO	Larry Thomas
Shoshone-Bannock Tribes Fort Hall Reservation	Chairman	Lee Juan Tayler
Shoshone-Bannock Tribes Fort Hall Reservation	Cultural Resources Director	Louise E. Dixey
Shoshone-Bannock Tribes Fort Hall Reservation	Environmental Program Manager	Christina Cuttler
Sisseton-Wahpeton Oyate Tribe	Chairman	J. Garret Renville
Sisseton-Wahpeton Oyate Tribe	THPO	Dianne Desrosiers
Spirit Lake Sioux Tribe	Chairman	Lonna Jackson Street
Spirit Lake Sioux Tribe	THPO	Kenny (KJ) Gray Water
Standing Rock Sioux Tribe	Chairperson	Janet Alkire
Standing Rock Sioux Tribe	THPO	Tyrel Iron Eyes
Three Affiliated Tribes	Chairman	Mark Fox
Three Affiliated Tribes	THPO	Allan Demaray
Turtle Mountain Band of Chippewa	Chairman	Jamie Azure
Turtle Mountain Band of Chippewa	THPO	Jeff Desjarlais Jr.
Yankton-Sioux Tribe	Chair person	Robert Flying Hawk
Yankton-Sioux Tribe	Project Coordination	Colton Archambeau
Army Corps of Engineers	Omaha District	
Center for Biological Diversity		Randi Spivak
Dept. of Env. Quality	Director	Sonja Nowakowski

Div of Ecological Services		Jodi Bush
DNRC MT board of O&G		Tom Richmond
DNRC-Eastern Land Office		Chris Pileski
Earthjustice	Rocky Mountain	
EPA Region 8 NEPA Program		Amelia Platt, Jody Ostendorf
Friends of the Earth		Nicole Ghio
Ft. Peck Army Corps of Engineers		Darin McMuriy
LCTHF	Executive Director	Lindy Hatcher
Lewis & Clark National Historic Trail		Denise Nelson
Little Missouri National Grassland		Cale Bickerdyke
Montana DNRC	Northern District Field Office	
Montana DNRC	Trust Land Management HQ	
Montana Environmental Information Center		Derf Johnson
Montana Historical Society		Dr. Mark Baumler
Montana Trout Unlimited		
MT Fish, Wildlife, and Parks		Deb O'Neill
MT Fish, Wildlife, and Parks		Deb O'Neill
MT Preservation Alliance		Chere Justio
MT Preservation Alliance		Chere Justio
National Wildlife Federation	Northern Rockies Proj. Office	
National Wildlife Federation	Northern Rockies Proj. Office	
ND Game and Fish		Patrick T. Isakson
North Blaine Cooperative State Gazing Distrcit		Cheryl Schuldt
North Dakota Dept of Trust Lands		
North Dakota Office		USFWS
North Dakota Petroleum Council	Regulatory Affairs	Eric Delzer
Public Lands Solutions		Jason Keith
South Dakota Dept. of Game, Fish and Parks		
State Historical Society of ND		Claudia Berg
Tetrattech		Randy English
The Wilderness Society		Ben Tettlebaum
Theodore Roosevelt Conservation Partnership		
Theodore Roosevelt National Park		Heidi Riddle
US Environ. Protection Agency Reg 8	Helena office	
USFS NPNHT Admin.		Sandi McFarland
USFS NPNHT CMP		Sandra Broncheau-McFarland
USFS NPNHT PAO		Roger M. Peterson
Western Energy Alliance		Esther Wagner
Western Env. Law Center		Morgan O'Grady

Wild Montana (Montana Wilderness Association)		Aubrey Bertram, Emily Cleveland
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4.2 Summary of Public Participation

Public scoping for this project was conducted through a 30-day scoping period from September 12 to October 15, 2024, as described in a Press Release issued by the Montana/Dakotas State Office, advertised on the BLM Montana/Dakotas State Office website, and posted online in the BLM NEPA e-Planning website. The BLM also mailed letters to local, state, and federal agencies, Tribal entities, and private surface owners informing them of the lease sale and seeking comments. The mailing list is included in the project record.

A 30-day public comment period will commence November 19 to December 20, 2024, as described in a Press Release issued by the Montana/Dakotas State Office, advertised on the BLM Montana/Dakotas State Office website, and posted online in the BLM NEPA e-Planning website. The BLM also mailed letters to local, state, and federal agencies, Tribal entities, and private surface owners informing them of the lease sale and seeking comments. The mailing list is included in the project record and can be viewed in **Table 20**.

4.2.1 Section 208 Report

In November 2021, the Department of the Interior released a Report on the Federal Oil and Gas Leasing Program (Report). The Report made specific recommendations to address documented deficiencies in the program to meet three programmatic goals:

- Providing a fair return to the American public and States from Federal management of public lands and waters, including for development of energy resources;
- Designing more responsible leasing and development processes that prioritize areas that are most suitable for development and ensure lessees and operators have the financial and technical capacity to comply with all applicable laws and regulations; and
- Creating a more transparent, inclusive, and just approach to leasing and permitting that provides meaningful opportunity for public engagement and Tribal consultation.

The Report also recommends: As an overarching policy, BLM should ensure that oil and gas is not prioritized over other land uses, consistent with BLM's mandate of multiple-use and sustained yield. The BLM should carefully consider what lands make the most sense to lease in terms of expected yields of oil and gas, prospects of earning a fair return for U.S. taxpayers, and conflicts with other uses, such as outdoor recreation and wildlife habitat. The BLM should always ensure it is considering the views of local communities, Tribes, businesses, State and local governments, and other stakeholders. While the leasing decisions for this lease sale result from the BLM's exercise of its discretion based on its analysis and review of the record, they are also consistent with the recommendations in the Report, as well as numerous reports issued by the Governmental Accountability Office and Congressional Budget Office, including: ensuring public participation and Tribal consultation, addressing conflicts with other resources, avoiding lands with low potential for oil and gas development, focusing leasing near existing development and ensuring a fair return to taxpayers.

This lease sale and NEPA process have included a 30-day scoping period, 30-day comment period on the environmental assessment (which was then extended by an additional 10 days) and 30-day protest period.

The BLM has also ensured applicable Tribal consultation is current. The BLM’s leasing decisions take into account comments received during this process and will further evaluate points raised in any protests received. As a result of public comments received on the sale and consistent with recommendations in the November 2021 report, Details of this review is included in **Appendix J**.

5 List of Preparers

Table 21. List of Preparers Table

Name	Title	Resource Area
Cale Bickerdyke	Mineral and Lands Supervisor, USFS	USFS DPG Coordination
Tyler Croft	Petroleum Engineer	Water Resources, Reasonably Foreseeable Development Scenario
Greg Liggett	Geologist (Paleontology)	Paleontology
Marcus Lorusso	GIS Specialist	GIS
Jessica McDermott	Geospatial Ecologist	Big Game, Greater Sage-grouse
Mark Peterson	Air Resources Specialist	Air Resources, GHG Emissions
Scott Rickard	Economist	Socioeconomics, Environmental Justice
Omar Goyzueta	Natural Resource Specialist	Coordination, Editor
Hattie Payne	Natural Resource Specialist	Project Lead and Coordination, Editor
David Wood	Wildlife Biologist	Wildlife, Listed Species (Greater Sage-grouse)
Karsyn Lamb	Economist	Environmental Justice and Human Health

6 Table of Issues and Resources Considered

Table 22. Issues and Resources Considered Table

Determination*	Issue	Rationale for Determination
NI	Access	No issues from act of leasing.
PI	Air Quality	Potential impacts; will be analyzed.
NP	Areas of Critical Environmental Concern	Not present per review of GIS data.
NP	Backcountry Conservation Areas	Not present per review of GIS data.
PI	Climate	Potential impacts; will be analyzed.
PI	Cultural Resources	Potential impacts; will be analyzed.
PI	Environmental Justice	Potential impacts; will be analyzed.
NP	Farmlands (Prime or Unique)	Not present per review of GIS data.
NI	Fire Management	No issues from act of leasing.
NI	Fish Habitat	No issues from act of leasing. Stipulation application will adequately mitigate potential impacts at APD stage.
NI	Floodplains	No issues from act of leasing. Stipulation application will adequately mitigate potential impacts at APD stage.
NI	Forests and Rangelands	No issues from act of leasing. Stipulation application will adequately mitigate potential impacts at APD stage.
NI	Forestry Resources and Woodland Products	No issues from act of leasing. Stipulation application will adequately mitigate potential impacts at APD stage.
PI	Greenhouse Gases and Climate	Potential impacts; will be analyzed.
PI	Human health and safety concerns	Potential impacts; will be analyzed.
NI	Invasive, Non-native Species	No issues from act of leasing. Stipulation application will adequately mitigate potential impacts at APD stage.
NI	Lands and Realty	The act of leasing is in accordance with current management plans and is consistent with current land use.
NP	Lands with Wilderness Characteristics	Not present per review of GIS data.
NI	Livestock Grazing Management	No issues from act of leasing.
NI	Migratory Birds	No issues from act of leasing. Stipulation application will adequately mitigate potential impacts at APD stage.
NI	Native American Religious Concerns	No issues from act of leasing. Stipulation application will adequately mitigate potential impacts at APD stage.
NI	Noise Resources	No issues from act of leasing. Stipulation application will adequately mitigate potential impacts at APD stage.
NI	Paleontological Resources	No issues from act of leasing. Stipulation application will adequately mitigate potential impacts at APD stage.

Determination*	Issue	Rationale for Determination
NI	Recreation Resources	No issues from act of leasing. Stipulation application will adequately mitigate potential impacts at APD stage.
NP	Sage Grouse Habitat	Potential impacts; will be analyzed.
PI	Socioeconomics	Potential impacts; will be analyzed.
NI	Soils	No issues from act of leasing. Stipulation application will adequately mitigate potential impacts at APD stage.
NI	Threatened, Endangered or Candidate Plant or Animal Species	No issues from act of leasing. Stipulation application will adequately mitigate potential impacts at APD stage.
NI	Vegetation	No issues from act of leasing. Stipulation application will adequately mitigate potential impacts at APD stage.
NI	Visual Resources	No issues from act of leasing. Stipulation application will adequately mitigate potential impacts at APD stage.
NI	Wastes, Hazardous or Solid	No issues from act of leasing. Stipulation application and regulatory requirements will adequately mitigate potential impacts at APD stage.
PI	Water	Potential impacts; will be analyzed.
NI	Wetlands/Riparian Zones	No issues from act of leasing. Stipulation application will adequately mitigate potential impacts at APD stage.
NP	Wild Horses and Burros	Not present per review of GIS data.
NI	Wild and Scenic Rivers	Not present per review of GIS data.
NP	Wilderness and Wilderness Study Areas	Not present per review of GIS data.
NI	Wildlife	Potential impacts; will be analyzed. No issues from act of leasing. Stipulation application will adequately mitigate potential impacts at APD stage.

*NP = not present in the area impacted by the proposed or alternative actions.

NI = present, but not affected to a degree that detailed analysis is required.

PI = present and may be impacted. Will be analyzed in affected environment and environmental effects. For consistency, the term 'effects' is used throughout the EA, but we use the term 'impacts' just in this table. (NOTE: PI does not necessarily mean effects are likely to be significant, only that there are effects to this issue, resource, or use. Significance will be determined through analysis and documented in a Finding of No Significant Impact or Environmental Impact Statement.)

7 Acronyms and Abbreviations

ACEC	Area of Critical Environmental Concern
AERMOD	American Meteorological Society / EPA Regulatory Model
APA	Administrative Procedures Act
APD	Application for Permit to Drill
AQRV	Air Quality Related Value
ARMP	Approved Resource Management Plan
ARPA	Archeological Resources Protection Act
ARTSD	Air Resource Technical Support Document
ATV	All-Terrain Vehicle
AUM	Animal Unit Month
BBCS	Bird and Bat Conservation Strategy
BCC	Birds of Conservation Concern
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BMP	Best Management Practice
BOR	Bureau of Reclamation
BTV	Blue-tongue Virus
CAA	Clean Air Act
CALPUFF	California Puff Model
CAP	Criteria Air Pollutant
CBNG	Coal Bed Natural Gas
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO ₂ eq	Carbon Dioxide Equivalent
COA	Condition of Approval
CSU	Controlled Surface Use
DEQ	Department of Environmental Quality
DM	Departmental Manual
DoAQ	Division of Air Quality
DPG	Dakota Prairie Grasslands
DR	Decision Record
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EOI	Expression of Interest
EOR	Enhanced Oil Recovery
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESD	Ecological Site Description
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FLIGHT	Facility Level Information on Greenhouse Gas Tool
FLIR	Forward Looking Infrared
FLPMA	Federal Land Policy Management Act of 1976, as amended
FONSI	Finding of No Significant Impact
FOOGLRA	Federal Onshore Oil and Gas Leasing Reform Act of 1987
GHG	Greenhouse Gas
GHMA	General Habitat Management Area

GIS	Geographic Information Systems
GWP	Global Warming Potential
HAP	Hazardous Air Pollutant
HD	Hunting District
HMA	Herd Management Area
HQT	Habitat Quantification Tool Technical Manual
IB	Information Bulletin
IBLA	Interior Board of Land Appeals
IDT	Interdisciplinary Team
IM	Instruction Memorandum
IMPROVE	Interagency Monitoring of Protected Visual Environments
IPCC	Intergovernmental Panel on Climate Change
KOP	Key Observation Point
LN	Lease Notice
LTA	Long-Term Averages
MAAT	Mean Annual Air Temperature
MACT	Maximum Achievable Control Technologies
MAF	Master Address File
MAP	Mean Annual Precipitation
MBOGC	Montana Board of Oil and Gas Conservation
MBTA	Migratory Bird Treaty Act of 1918
MCFO	Miles City Field Office
MDEQ	Montana Department of Environmental Quality
MDNRC	Montana Department of Natural Resources and Conservation
MFP	Management Framework Plan
MLA	Mineral Leasing Act
MMT	Million Metric Tons
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MSGOT	Montana Sage Grouse Oversight Team
MTDB	MAF/TIGER Database
MTFWP	MT Fish, Wildlife and Parks
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NDDH	North Dakota Department of Health
NDFO	North Dakota Field Office
NDGF	North Dakota Game and Fish
NDSWC	North Dakota State Water Commission
NEPA	National Environmental Policy Act
NHD	National Hydrography Dataset
NHPA	National Historic Preservation Act
NHT	National Historic Trails
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSO	No Surface Occupancy
NSPS	New Source Performance Standards
OHV	Off-Highway Vehicle
PEIS	Programmatic Environmental Impact Statement
PFC	Proper Functioning Condition
PGM	Photochemical Grid Modeling

PHMA	Priority Habitat Management Area
P.L.	Public Law
PM	Particulate Matter
PSD	Prevention of Significant Deterioration
RAC	Resource Advisory Council
RFD	Reasonably Foreseeable Development
RFFA	Reasonably Foreseeable Future Action
RHMA	Restoration Habitat Management Area
RMP	Resource Management Plan
RMPPA	Resource Management Plan Amendment
ROD	Record of Decision
ROW	Right-of-way
SEIS	Supplemental Environmental Impact Statement
SHPO	State Historic Preservation Office
SRP	Special Recreation Permit
T&E	Threatened and Endangered
TIGER	Topologically Integrated Geographic Encoding and Referencing
TL	Timing Limitation
TRNP	Theodore Roosevelt National Park
U.S.C.	United States Code
USDA	U.S. Department of Agriculture
USDOI	U.S. Department of the Interior
USFS	U.S. Department of Agriculture Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geologic Survey
VOC	Volatile Organic Compound
VRI	Visual Resource Inventory
VRM	Visual Resource Management
WEM	Waivers, Exceptions, or Modifications
WHB	Wild Horse and Burro
WO	Washington Office
WSA	Wilderness Study Area

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