Date of Posting: August 14, 2025

Name of Permittee: NorthWestern Energy

Facility Name: Dry Creek Field Station 056

Physical Site Location (Address): Section 34, Township 6 South, Range 21 East, Carbon County

Sent via email: michael.cashell@northwestern.com

RE: Department Decision on MAQP Application #2784-07; Energy Development Project

The Montana Department of Environmental Quality (DEQ) has issued a Decision, with conditions, on Montana Air Quality Permit (MAQP) application #2784-07 for the above-named permittee.

The project constitutes an "energy development project," as defined by § 75-2-103(9), Montana Code Annotated (MCA). Pursuant to the applicable requirements of § 75-2-213(1)(a), MCA, the request for hearing must be filed within 30 days after DEQ renders its decision. The Decision may be appealed to the Board of Environmental Review (Board). Any request for a hearing must be filed by September 15, 2025. This permit shall become final and effective on August 30, 2025, unless the Board orders a stay on the permit.

Procedures for Appeal: The applicant or a person who has provided DEQ with comments during the formal public comment period, and who is directly and adversely affected by DEQ's Decision, may request a hearing before the Board. The request for a hearing is limited to the issues raised in those comment. The appeal must be filed before the final date stated above. The request for a hearing must contain an affidavit setting forth the grounds for the request. The hearing will be held under the provisions of the Montana Administrative Procedures Act. Submit requests for a hearing to: Chairman, Board of Environmental Review, P.O. Box 200901, Helena, Montana 59620 or the Board Secretary: DEQBERSecretary@mt.gov.

Conditions: See attached Decision on MAQP #2784-07.

For DEQ,

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MONTANA AIR QUALITY PERMIT

Issued To: NorthWestern Energy
Dry Creek Compressor Station 056
40 East Broadway
Butte, Montana 59701

MAQP: #2784-07
Application Complete: 06/20/2025
Preliminary Determination Issued: 07/29/2025
DEQ's Decision Issued: 08/14/2025
Permit Final: 08/30/2025

A Montana Air Quality Permit (MAQP), with conditions, is hereby granted to the NorthWestern Energy (NWE), pursuant to Sections 75-2-204 and 211 of the Montana Code Annotated (MCA), as amended, and the Administrative Rules of Montana (ARM) 17.8.740, *et seq.*, as amended, for the following:

Section I: Permitted Facilities

A. Plant Location

NWE owns and operates a natural gas compressor station and associated equipment located in the SE¼ of the SW¼ of Section 34, Township 6 South, Range 21 East, Carbon County. This facility is known as the Dry Creek Field Station 056. A complete list of the permitted equipment can be found in Section I.A of the Permit Analysis.

B. Current Permit Action

On June 20, 2025, DEQ received an application from NWE for modification of MAQP #2784-06 to add two 1,500 horsepower (hp) Caterpillar four-stroke natural gas fired compressor engines, add one additional 105-hp emergency backup generator and add one dehydrator reboiler. In addition, NWE is requesting to remove the mechanical refrigeration unit, and replace the 900,000 British thermal units per hour (Btu/hr) dehydrator reboiler with a 350,000 Btu/hr dehydrator reboiler.

Further, under the current permit action NWE is requesting enforceable annual emissions limits for oxides of nitrogen (NO_x) and carbon monoxide (CO) applicable to the existing 660 hp Ingersoll-Rand and 800 hp White Superior compressor engines. The combined annual limits for NOx would be 70 tons per year (tpy) and CO would be 85 tpy. These enforceable limits would achieve a reduction in allowable emissions to a level below the Title V operating permit threshold, thereby achieving Title V "synthetic minor" pursuant to ARM 17.8.1204(3)(d). Following the establishment of enforceable NOx and CO emission limits for the subject engines, NWE intends to request revocation of their existing Title V Operating Permit #OP2784-12.

Section II: Limitations and Conditions

A. Operational Requirements

1. Emissions from the 660 horsepower (hp) Ingersoll Rand (EU001) compressor engine shall not exceed the following (ARM 17.8.749 and ARM 17.8.1204(3)(d)):

Oxides of Nitrogen (NO_x)	12.40 pounds per hour (lb/hr)
Carbon Monoxide (CO)	20.87 lb/hr
Volatile Organic Compounds (VOC)	0.17 lb/hr

2. Emissions from the 800-hp White Superior 8G825/W64 (EU002) compressor engine shall not exceed the following (ARM 17.8.749 and ARM 17.8.1204(3)(d)):

NO_x	1.77 lb/hr
CO	3.53 lb/hr
VOC	0.20 lb/hr

3. Emissions from each of the two 1500-hp Caterpillar G3516J (EU003 & EU004) compressor engines shall not exceed the following (ARM 17.8.749):

NO_X	0.5 grams per brake horsepower-hour (g/bhp-hr)
CO	0.2 g/bhp-hr
VOC	0.3 g/bhp-hr

4. NWE shall install, operate and maintain a non-selective catalytic reduction (NSCR) on EU002 within the parameters recommended by the equipment manufacturer (ARM 17.8.749 and ARM 17.8.1204(3)(d)).

5. NWE shall limit the total annual NOx emissions from EU001 and EU002 to 70 tons per year (tpy) based on a rolling 12-calendar-month total (ARM 17.8.1204(3)(d)).

6. NWE shall limit the total annual CO emissions from EU001 and EU002 to 85 tpy based on a rolling 12-calendar-month total (ARM 17.8.1204(3)(d)).

7. NWE shall comply with all applicable standards and limitations, and the reporting, record-keeping, and notification requirements contained in 40 CFR 60, Subpart KKK for the Joule-Thompson Refrigeration Unit (ARM 17.8.340 and 40 CFR 60, Subpart KKK).

8. NWE may not cause or authorize emissions to be discharged into the outdoor atmosphere from any sources installed on or before November 23, 1968, that exhibit an opacity of 40% or greater averaged over 6 consecutive minutes (ARM 17.8.304).

9. NWE may not cause or authorize emissions to be discharged into the outdoor atmosphere from any sources installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes (ARM 17.8.304).

10. NWE shall not cause or authorize emissions to be discharged into the atmosphere from haul roads, access roads, parking lots, or the general plant property without taking reasonable precautions to control emissions of airborne particulate matter (ARM 17.8.308).

11. NWE shall treat all unpaved portions of the access roads, parking lots, and general plant area with water and/or chemical dust suppressant as necessary to maintain compliance with the reasonable precautions limitation in Section II.A.7 (ARM 17.8.749).

12. NWE shall not cause or authorize to be discharged into the atmosphere from the Smart Ash Burner any visible emissions that exhibit an opacity of 10% or greater averaged over 6 consecutive minutes (ARM 17.8.752).

13. NWE shall not incinerate any material other than oil-soaked rags, oil adsorbents, and filters in the Smart Ash Burner. Hazardous waste may not be incinerated in the Smart Ash Burner (ARM 17.8.749).

14. NWE shall limit the operating hours of the new and existing emergency backup generators (EU011, EU009) to 500 hours per unit per calendar year (ARM 17.8.749).

B. Emission Testing Requirements

1. Within one year of the issuance of MAQP #2784-07, EU001 shall be initially tested for NO_X and CO, concurrently, to demonstrate compliance with emissions limits in Section II.A.1 and the requirements of Section II.A.5 and Section II.A.6 (ARM 17.8.105, ARM 17.8.749, and ARM 17.8.1204(3)(d)).

   Additional concurrent testing for NOx and CO shall occur every 4 years thereafter or according to another testing/monitoring schedule as may be approved by DEQ (ARM 17.8.105, ARM 17.8.749, and ARM 17.8.1204(3)(d)).

2. Within 180 days after installation of the NSCR equipment required by MAQP #2784-07, EU002 shall be initially tested for NO_X and CO, concurrently, to demonstrate compliance with the emission limits in Section II.A.2 and the requirements of Section II.A.5 and Section II.A.6 (ARM 17.8.105, ARM 17.8.749, and ARM 17.8.1204(3)(d)).

   Additional concurrent NOx and CO testing shall be conducted within 12-months following the initial compliance source test and every 4 years thereafter or according to another testing/monitoring schedule as may be approved by DEQ (ARM 17.8.105, ARM 17.8.749, and ARM 17.8.1204(3)(d)).

3. EU003 and EU004 shall be initially tested for NO_X, CO, and VOC, concurrently, to demonstrate compliance with the emissions limits in Section II.A.3. Testing shall occur within 180 days after equipment commencement (ARM 17.8.105 and ARM 17.8.749).

4. Following the date of the initial source testing of EU003 and EU004 to demonstrate compliance with Section II.A.3, compliance with the applicable emission limits shall be demonstrated via source testing for NOx, CO, and VOCs, concurrently, within 8,760 operating hours or 3 years, whichever comes first. Source testing shall follow the applicable methods defined in 40 CFR 60 Subpart JJJJ, or equivalent methods as approved in writing by DEQ (ARM 17.8.105, ARM 17.8.749, ARM 17.8.340, and 40 CFR 60 Subpart JJJJ).

5. All compliance source tests shall be conducted in accordance with the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106).

6. DEQ may require further testing (ARM 17.8.105).

C. Operational Reporting Requirements:

1. NWE shall supply DEQ with annual production information for all emission points, as required by DEQ in the annual emission inventory request. The request will include, but is not limited to, all sources of emissions identified in the emission inventory contained in the permit analysis.

   Production information shall be gathered on a calendar-year basis and submitted to DEQ by the date required in the emission inventory request. Information shall be in the units required by DEQ. This information may be used for calculating operating fees, based on actual emissions from the facility, and/or to verify compliance with permit limitations (ARM 17.8.505).

2. NWE shall notify DEQ of any construction or improvement project conducted, pursuant to ARM 17.8.745, that would include the addition of a new emissions unit, change in control equipment, stack height, stack diameter, stack flow, stack gas temperature, source location, or fuel specifications, or would result in an increase in source capacity above its permitted operation. The notice must be submitted to DEQ, in writing, 10 days prior to startup or use of the proposed de minimis change, or as soon as reasonably practicable in the event of an unanticipated circumstance causing the de minimis change and must include the information requested in ARM 17.8.745(l)(d) (ARM 17.8.745).

3. NWE shall document, by month, the hours of operation of EU001. By the 25th day of each month, NWE shall total the hours of operation of EU001 for the previous month. The monthly information will be used to verify compliance with the rolling 12-month limitation in Sections II.A.5. and 6. Emissions shall be totaled by multiplying the run hours by the average NO_X emission rate achieved during the most recent emissions compliance test. The information for each of the previous months shall be submitted along with the annual emission inventory (ARM 17.8.749 and ARM 17.8.1204(3)(d)).

4. NWE shall document, by month, the hours of operation of EU002. By the 25th day of each month, NWE shall total the hours of operation of EU002 for the previous month. The monthly information will be used to verify compliance with the rolling 12-month limitations in Sections II.A.5. and 6. Emissions shall be totaled by multiplying the run hours by the average NO_X and CO emission rates achieved during the most recent emissions compliance test. The information for each of the previous months shall be submitted along with the annual emission inventory (ARM 17.8.749 and ARM 17.8.1204(3)(d)).

5. NWE shall annually certify that its emissions are less than those that would require the source to obtain an air quality operating permit as required by ARM 17.8.1204(3)(b). The annual certification shall comply with the certification requirements of ARM 17.8.1207. The annual certification shall be submitted along with the annual emissions inventory information (ARM 17.8.749 and ARM 17.8.1204).

Section III: General Conditions

A. Inspection – NWE shall allow DEQ's representatives access to the source at all reasonable times for the purpose of making inspections or surveys, collecting samples, obtaining data, auditing any monitoring equipment such as continuous emissions monitoring systems (CEMS) or continuous emissions rate monitoring systems (CERMS), or observing any monitoring or testing, and otherwise conducting all necessary functions related to this permit.

B. Waiver – The permit and the terms, conditions, and matters stated herein shall be deemed accepted if NWE fails to appeal as indicated below.

C. Compliance with Statutes and Regulations – Nothing in this permit shall be construed as relieving the NWE of the responsibility for complying with any applicable federal or Montana statute, rule or standard, except as specifically provided in ARM 17.8.740, *et seq.* (ARM 17.8.756).

D. Enforcement – Violations of limitations, conditions and requirements contained herein may constitute grounds for permit revocation, penalties or other enforcement as specified in Section 75-2-401, *et seq*., MCA.

E. Appeals – Any person or persons jointly or severally adversely affected by DEQ's decision may request, within 15 days after DEQ renders its decision, upon affidavit setting forth the grounds therefore, a hearing before the Board of Environmental Review (Board). A hearing shall be held under the provisions of the Montana Administrative Procedures Act. The filing of a request for a hearing does not stay DEQ's decision, unless the Board issues a stay upon receipt of a petition and a finding that a stay is appropriate under Section 75-2-211(11)(b), MCA. The issuance of a stay on a permit by the Board postpones the effective date of DEQ's decision until conclusion of the hearing and issuance of a final decision by the Board. If a stay is not issued by the Board, DEQ's decision on the application is final 16 days after DEQ's decision is made.

F. Permit Inspection – As required by ARM 17.8.755, Inspection of Permit, a copy of the air quality permit shall be made available for inspection by Department personnel at the location of the permitted source.

G. Permit Fee – Pursuant to Section 75-2-220, MCA, failure to pay the annual operation fee by NWE may be grounds for revocation of this permit, as required by that section and rules adopted thereunder by the Board.

H. Duration of Permit – Construction or installation must begin or contractual obligations entered into that would constitute substantial loss within 3 years of permit issuance and proceed with due diligence until the project is complete or the permit shall expire (ARM 17.8.762).

Montana Air Quality Permit Analysis
NorthWestern Energy
MAQP #2784-06

I. Introduction/Process Description

NorthWestern Energy (NWE) owns and operates a natural gas compressor station located within the SE¼ of the SW¼ of Section 34, Township 6 South, Range 21 East, in Carbon County.

A. Permitted Equipment

NWE Dry Creek Compressor Station includes, but is not limited to, the following emitting units:

Source #	Title V I.D. #	NorthWestern Internal I.D.	Year Installed	Make	Model	Size
01	EU001	Engine #01	1966	Ingersoll Rand	62-KVG	660-hp
02	EU002	Engine #02	1971	White Superior	8G825/ W64	800-hp
03	EU003	Engine #03	TBD	Caterpillar	G3516J	1,500-hp
04	EU004	Engine #04	TBD	Caterpillar	G3516J	1,500-hp
05	EU005	Engine #05	pre-1968	Solar	Saturn	1,100-hp
Source #	Title V I.D. #	NorthWestern Internal I.D.	Description			
06	EU006	Dehydrator	750 MBtu/hr Triethylene Glycol Dehydrator and Glycol Vent Emissions			
07	EU007	Refrigeration Unit	Joule-Thompson Refrigeration Unit			
08	EU008	Fuel Storage Tanks	Fuel Storage Tanks			
09	EU009	Backup Generator	Existing Emergency Backup Generator			
10	EU010	Incinerator	Model 100 SmartAsh Burner installed 1998			
11	EU011	Backup Generator	New Emergency Backup Generator 105-hp (to be installed)			
12	IEU001	Reboiler	0.256 MMBtu/hr Dehydrator Reboiler			
13	IEU002	Reboiler	0.350 MMBtu/hr Dehydrator Reboiler			
14	IEU003	Reboiler	0.750 MMBtu/hr ALCO Dehydrator Reboiler			
15	IEU004	Building Heaters	All Building Heaters - <1 MMBtu/hr			
16	EU005	Process Valves	Process Valves			

hp – Horsepower
MBtu/hr – Thousand British Thermal Units per Hour
MMBtu – Million British Thermal Units

B. Source Description

The Ingersoll Rand 62-KVG compressor engine was installed at the Dry Creek Field compressor station in 1966, the White Superior 8G825/W62 compressor engine was installed in 1971, Two 1500-hp Caterpillar G3516J Engine are to be installed, and NWE installed a Solar Saturn 1100 horsepower (hp) compressor turbine in 2001.

The storage units are used primarily to inject natural gas into the storage field during the off season to replace gas withdrawn by natural feed during the previous heating season. The storage units can be used to withdraw from storage or in transmission service; however, this is rarely done. During withdrawal from storage, the gas is first dehydrated using the glycol contactor vessel(s) and then stripped of heavy-end hydrocarbons by passing through a Joule-Thompson type refrigeration plant before entering the transmission line at approximately 500 to 700 pounds per square inch, gauge pressure (psig).

The production compressors withdraw natural gas from local production wells and increase the gas pressure before entering the mechanical refrigeration plant, which removes both water and heavy-end hydrocarbons. The production gas stream then either enters the pipeline to be transmitted west or enters the inlet of the storage compressors for injection into the storage field. Discharge pressures on the production compressors may range from 350 to 700 psig. Emissions from both the mechanical refrigeration unit and the Joule-Thompson type refrigeration unit are assumed to be negligible because they are both completely enclosed systems and are contained under pressure.

The complex also has two other purposes. The first is to pump the field gas up to the required pressure in the natural gas transmission system. Compression of the gas is accomplished using the compressors described above. Three heaters provide heat to the various station facilities.

The second purpose of the complex is to "dry" the gas as it is being processed. The gas contains some moisture, which must be removed from the system prior to being sent into the transmission system. This is accomplished with a dehydrator, also commonly called a reboiler or glycol unit.

The gas is treated with a glycol solution, which absorbs the water in the gas stream. The glycol solution is then heated to about 300°F to drive off the water and return the glycol. The heat necessary for this activity is generated by burning natural gas in the dehydrator reboiler. These units will have heat inputs ranging from approximately 175 to 1,000 MBtu/hr. The reboilers are small by industrial standards, having a size approximately equivalent to a typical natural gas-fired small office heating system.

C. Permit History

On July 14, 1993, Montana Power Company (MPC) was issued **MAQP #2784-00** for the operation of their natural gas processing plant and associated equipment, located in the SE¼ of the SW¼ of Section 34, Township 6 South, Range 5 East, Carbon County near Red Lodge, Montana. The facility was identified as the Dry Creek Field, Station 056-1 through 4.

Most of the Dry Creek Field was an existing source (it was operating at the same location prior to March 16, 1979) and a Best Available Control Technology (BACT) determination was not required. However, the Joule-Thompson refrigeration unit was a new or modified source since it was installed in 1985. Therefore, a BACT analysis was required for the Joule-Thompson refrigeration unit.

The Joule-Thompson refrigeration unit at this facility is used to separate the heavy-end hydrocarbons from the gas storage field. The unit is completely enclosed and there should be no emissions from the unit during operation. In addition, the flanges and connections are state of the art, further preventing any loss of product from the unit. This Joule-Thompson refrigeration unit is subject to the New Source Performance Standards (NSPS) stated in 40 CFR 60, Subpart KKK because it meets the definition of a natural gas processing plant and was installed after January 20, 1984. Some of the NSPS requirements are monthly monitoring of applicable equipment to detect leaks, additional reporting and recordkeeping requirements, notification requirements, etc. The Montana Department of Environmental Quality (Department) determined that BACT for this source was the proper operation of the Joule-Thompson refrigeration unit to maintain compliance with all standards and limitations, and the reporting, recordkeeping, and notification requirements as set forth in 40 CFR 60, Subpart KKK.

On March 7, 1994, **MAQP #2784-01** was issued to the Dry Creek Field Station. This modification was requested because the Department revised the emission limitation units from grams per brake horsepower–hour (g/bhp-hr) to pounds per hour (lb/hr). The revision was due to varying parameters such as engine's revolution per minute (RPM), operating load (bhp), ambient air temperature, gas temperature, site, elevation, fuel gas quality, air/fuel ratio (AFR), field gas conditions, etc. Rather than limiting the engines to a g/bhp-hr limit, an hourly emission limit allowed some needed operational flexibility. Also, to clarify NO_x mass emission calculations, NO_x emission limitations were identified as nitrogen dioxide (NO_2).

On November 6, 1998, **MAQP #2784-02** was issued to MPC. A Smart Ash Incinerator was added to the Dry Creek Station as part of this permit action. Furthermore, General Condition F was removed from the language that was contained in Permit #2784-01 and the rule references were updated. MPC requested to add the Smart Ash Burner to the facility to incinerate oil-soaked rags, oil adsorbents, and filters. Also, the rule references in the permit were updated. MPC requested to add the Smart Ash Burner to the facility to incinerate oil-soaked rags, oil absorbents, and filters. Also, the rule references in the permit were updated.

On August 24, 2000, MPC requested a modification of MAQP #2784-02. MPC requested to add an 1100-hp Solar Saturn turbine-driven compressor to the Dry Creek facility. After issuance of the Preliminary Determination (PD), the Department determined that informational testing was necessary to ensure that the 1100-hp Solar Saturn turbine-driven compressor could operate within the emission levels specified in the emission inventory; and thus, to ensure that the Dry Creek facility was a minor source of emissions in regard to the New Source Review Program. **MAQP #2784-03** replaced MAQP #2784-02.

On November 23, 2001, MPC notified the Department of a pending merger of MPC

with and into Montana Power, L.C.C. (MPC LCC). Due to questions regarding the length of time the new company name would be valid, the Department decided to wait on the name change for the permit. On October 18, 2002, the Department received a request to change the permit from MPC LLC to NorthWestern Corporation. This permit action changed the name on this permit from Montana Power Company to NorthWestern Corporation. **MAQP #2784-04** replaced MAQP #2784-03**.**

On February 7, 2008, NWE requested that the Department change the name on their permit from NorthWestern Corporation to NWE. MAQP #2784-05 was also updated to reflect the current permit language and rule references used by the Department. **MAQP #2784-05** replaced MAQP #2784-04.

On November 18, 2019, NWE notified the Department of the transfer of ownership of the two Ajax engines at the Dry Creek Field, Station 056 from NWE to Big Sky Energy, LLC and requested that all conditions related to the two Ajax engines be removed from NWE's air quality permit. The two engines are an Ajax DPC-300 and an Ajax DPC-360. All applicable permit conditions for the two Ajax engines have been transferred to MAQP #5237-00. **MAQP #2784-06** replaces MAQP #2784-05.

D. Current Permit Action

On June 20, 2025, DEQ received an application from NWE for modification of MAQP #2784-06 to add two 1,500 horsepower (hp) Caterpillar four-stroke natural gas fired compressor engines, add one additional 105-hp emergency backup generator and add one dehydrator reboiler. In addition, NWE is requesting to remove the mechanical refrigeration unit, and replace the 900,000 British thermal units per hour (Btu/hr) dehydrator reboiler with a 350,000 Btu/hr dehydrator reboiler.

Further, under the current permit action NWE is requesting enforceable annual emissions limits for oxides of nitrogen (NO_X) and carbon monoxide (CO) applicable to the existing 660 hp Ingersoll-Rand and 800 hp White Superior compressor engines. The combined annual limits for NOx would be 70 tons per year (tpy) and CO would be 85 tpy. These enforceable limits would achieve a reduction in allowable emissions to a level below the Title V operating permit threshold, thereby achieving Title V "synthetic minor" status pursuant to ARM 17.8.1204(3)(d). Following the establishment of enforceable NOx and CO emission limits for the subject engines, NWE intends to request revocation of their existing Title V Operating Permit #OP2784-12. **MAQP #2784-07** replaces MAQP #2784-06.

E. Response to Comments

Person/Group Commenting	Permit Reference	Comment	DEQ Response
Bison Engineering (on behalf of NWE)	Section II.A.14	Vague wording could mean limited to 500 hrs combined	Thank you for the comment. The wording has been changed for clarification
	Permit Analysis I.A	Abbreviation for MMBtu should be "Million British thermal units" and not "per hour"	Thank you for the comment. Error has been corrected
	Permit Analysis II.D.1	Incorrectly states no permit fee is required	Thank you for the comment. Language has been updated to cite the appropriate permit modification fee
	Permit Analysis II.D.5	Incorrectly state no public notice affidavit is required	Thank you for the comment. Language has been updated to identify the required public notice and affidavit of publication
	Permit Analysis III. EI Table	Add the 0.83 tpy of CO and 0.01 tpy HAPs from EU011 to Total Emissions	Thank you for the comment. The affected emission totals have been updated
	Draft EA Proposed Action	Incorrectly states "and this action would add an additional compressor engine to the existing MAQP."	Thank you for the comment. The language has been updated to: "and this action would add two additional compressor engines to the existing MAQP."
	Draft EA 2. Direct Impacts	Has NEW instead of NWE	Thank you for the comment. Error has been corrected

F. Additional Information

Additional information, such as applicable rules and regulations, BACT determinations, air quality impacts, and environmental assessments, is included in the analysis associated with each change to the permit.

II. Applicable Rules and Regulations

The following are partial explanations of some applicable rules and regulations that apply to the facility. The complete rules are stated in the Administrative Rules of Montana (ARM) and are available upon request from DEQ. Upon request, DEQ will provide references for location of complete copies of all applicable rules and regulations or copies where appropriate.

A. ARM 17.8, Subchapter 1 - General Provisions, including, but not limited to:

1. ARM 17.8.101 Definitions. This rule includes a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.

2. ARM 17.8.105 Testing Requirements. Any person or persons responsible for the emission of any air contaminant into the outdoor atmosphere shall, upon written request of DEQ, provide the facilities and necessary equipment (including instruments and sensing devices) and shall conduct tests, emission or ambient, for such periods of time as may be necessary using methods approved by DEQ.

3. ARM 17.8.106 Source Testing Protocol. The requirements of this rule apply to any emission source testing conducted by DEQ, any source, or other entity as required by any rule in this chapter, or any permit or order issued pursuant to this chapter, or the provisions of the Clean Air Act of Montana, 75-2-101, *et seq*., Montana Code Annotated (MCA).

   NWE shall comply with all requirements contained in the Montana Source Test Protocol and Procedures Manual, including, but not limited to, using the proper test methods and supplying the required reports. A copy of the Montana Source Test Protocol and Procedures Manual is available from DEQ upon request.

4. ARM 17.8.110 Malfunctions. DEQ must be notified promptly by telephone whenever a malfunction occurs that can be expected to create emissions in excess of any applicable emission limitation or to continue for a period greater than 4 hours.

5. ARM 17.8.111 Circumvention. (1) No person shall cause or permit the installation or use of any device or any means that, without resulting in reduction of the total amount of air contaminant emitted, conceals or dilutes an emission of air contaminant that would otherwise violate an air pollution control regulation. (2) No equipment that may produce emissions shall be operated or maintained in such a manner as to create a public nuisance.

B. ARM 17.8, Subchapter 2 - Ambient Air Quality, including, but not limited to:

1. ARM 17.8.204 Ambient Air Monitoring
2. ARM 17.8.210 Ambient Air Quality Standards for Sulfur Dioxide
3. ARM 17.8.211 Ambient Air Quality Standards for Nitrogen Dioxide
4. ARM 17.8.212 Ambient Air Quality Standards for Carbon Monoxide
5. ARM 17.8.213 Ambient Air Quality Standard for Ozone
6. ARM 17.8.214 Ambient Air Quality Standard for Hydrogen Sulfide
7. ARM 17.8.220 Ambient Air Quality Standard for Settled Particulate Matter
8. ARM 17.8.221 Ambient Air Quality Standard for Visibility
9. ARM 17.8.222 Ambient Air Quality Standard for Lead
10. ARM 17.8.223 Ambient Air Quality Standard for PM_{10}
11. ARM 17.8.230 Fluoride in Forage

C. ARM 17.8, Subchapter 3 - Emission Standards, including, but not limited to:

1. ARM 17.8.304 Visible Air Contaminants. This rule requires that no person may cause or authorize emissions to be discharged into the outdoor atmosphere from any source installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes.

2. ARM 17.8.308 Particulate Matter, Airborne. (1) This rule requires an opacity limitation of less than 20% for all fugitive emission sources and that reasonable precautions be taken to control emissions of airborne particulate matter. (2) Under this rule, NWE shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter.

3. ARM 17.8.309 Particulate Matter, Fuel Burning Equipment. This rule requires that no person shall cause, allow, or permit to be discharged into the atmosphere particulate matter caused by the combustion of fuel in excess of the amount determined by this rule.

4. ARM 17.8.310 Particulate Matter, Industrial Process. This rule requires that no person shall cause, allow, or permit to be discharged into the atmosphere particulate matter in excess of the amount set forth in this rule.

5. ARM 17.8.322 Sulfur Oxide Emissions--Sulfur in Fuel. This rule requires that no person shall burn liquid, solid, or gaseous fuel in excess of the amount set forth in this rule.

6. ARM 17.8.324 Hydrocarbon Emissions--Petroleum Products. (3) No person shall load or permit the loading of gasoline into any stationary tank with a capacity of 250 gallons or more from any tank truck or trailer, except through a permanent submerged fill pipe, unless such tank is equipped with a vapor loss control device as described in (1) of this rule.

7. ARM 17.8.340 Standard of Performance for New Stationary Sources. The owner and operator of any stationary source or modification, as defined and applied in 40 CFR Part 60, shall comply with the standards and provisions of 40 CFR Part 60.

   a. 40 CFR 60, Subpart A, General Provisions. Apply to all equipment or facilities subject to an NSPS subpart as listed below:

   b. 40 CFR 60, Subpart JJJJ Standards of Performance for Stationary Spark Ignition Internal Combustion Engines. The 1,500 horsepower engines are subject to this subpart.

   c. The Joules-Thompson refrigeration unit, which removes heavy-end hydrocarbons, meets the definition of a natural gas processing plant in 40 CFR Part 60, therefore, the NWE Dry Creek Field Compressor Station is subject to 40 CFR 60, Subpart KKK, Standards of Performance for Equipment Leaks of VOC Onshore Natural Gas Processing Plants.

8. ARM 17.8.342 Emission Standards for Hazardous Air Pollutants for Source Categories. The owner or operator of any affected source, as defined and applied in 40 CFR Part 63, shall comply with the requirements of 40 CFR Part 63, as applicable.

a. 40 CFR 63, Subpart A – General Provisions apply to all equipment or facilities subject to a NESHAPs Subpart as listed below.

b. 40 CFR 63, Subpart ZZZZ - National Emissions Standards for Hazardous Air Pollutants (HAPs) for Stationary Reciprocating Internal Combustion Engines (RICE). An owner or operator of a stationary reciprocating internal combustion engine (RICE) at a major or area source of HAP emissions is subject to this rule except if the stationary RICE is being tested at a stationary RICE test cell/stand. An area source of HAP emissions is a source that is not a major source. The RICE equipment to be used under MAQP #2784-06 are subject to this subpart because they are stationary RICE operating at an area source of HAP emissions.

D. ARM 17.8, Subchapter 5 - Air Quality Permit Application, Operation and Open Burning Fees, including, but not limited to:

1. ARM 17.8.504 Air Quality Permit Application Fees. NWE shall submit an air quality permit application fee concurrent with the submittal of an air quality permit application. A permit application is incomplete until the proper application fee is paid to DEQ. The appropriate permit fee of $500 for a MAQP modification was paid on May 12, 2025.

2. ARM 17.8.505 Air Quality Operation Fees. An annual air quality operation fee must, as a condition of continued operation, be submitted to DEQ by each source of air contaminants holding an air quality permit (excluding an open burning permit) issued by DEQ. The air quality operation fee is based on the actual or estimated actual amount of air pollutants emitted during the previous calendar year.

An air quality operation fee is separate and distinct from an air quality permit application fee. The annual assessment and collection of the air quality operation fee, described above, shall take place on a calendar-year basis. DEQ may insert into any final permit issued after the effective date of these rules, such conditions as may be necessary to require the payment of an air quality operation fee on a calendar-year basis, including provisions that prorate the required fee amount.

E. ARM 17.8, Subchapter 7 - Permit, Construction and Operation of Air Contaminant Sources, including, but not limited to:

1. ARM 17.8.740 Definitions. This rule is a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.

2. ARM 17.8.743 Montana Air Quality Permits--When Required. This rule requires a person to obtain an air quality permit or permit modification to construct, modify, or use any air contaminant sources that have the potential to emit (PTE) greater than 25 tons per year of any pollutant. NWE has the potential to emit more than 25 tons per year of NO_X, CO, and volatile organic compounds (VOC); therefore, a permit is required.

3. ARM 17.8.744 Montana Air Quality Permits--General Exclusions. This rule identifies the activities that are not subject to the Montana Air Quality Permit program.

4. ARM 17.8.745 Montana Air Quality Permits--Exclusion for De Minimis Changes. This rule identifies the de minimis changes at permitted facilities that do not require a permit under the Montana Air Quality Permit Program.

5. ARM 17.8.748 New or Modified Emitting Units--Permit Application Requirements. (1) This rule requires that a permit application be submitted prior to installation, modification, or use of a source. NWE was not required to submit a permit application for the current permit action. (7) This rule requires that the applicant notify the public by means of legal publication in a newspaper of general circulation in the area affected by the application for a permit. An affidavit of publication of public notice was submitted as required and submitted on May 15, 2025.

6. ARM 17.8.749 Conditions for Issuance or Denial of Permit. This rule requires that the permits issued by DEQ must authorize the construction and operation of the facility or emitting unit subject to the conditions in the permit and the requirements of this subchapter. This rule also requires that the permit must contain any conditions necessary to assure compliance with the Federal Clean Air Act (FCAA), the Clean Air Act of Montana, and rules adopted under those acts.

7. ARM 17.8.752 Emission Control Requirements. This rule requires a source to install the maximum air pollution control capability that is technically practicable and economically feasible, except that BACT shall be utilized. The required BACT analysis is included in Section III of this permit analysis.

8. ARM 17.8.755 Inspection of Permit. This rule requires that air quality permits shall be made available for inspection by DEQ at the location of the source.

9. ARM 17.8.756 Compliance with Other Requirements. This rule states that nothing in the permit shall be construed as relieving NWE of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.740, et seq.

10. ARM 17.8.759 Review of Permit Applications. This rule describes DEQ's responsibilities for processing permit applications and making permit decisions on those permit applications that do not require the preparation of an environmental impact statement.

11. ARM 17.8.762 Duration of Permit. An air quality permit shall be valid until revoked or modified, as provided in this subchapter, except that a permit issued prior to construction of a new or modified source may contain a condition providing that the permit will expire unless construction is commenced within the time specified in the permit, which in no event may be less than 1 year after the permit is issued.

12. ARM 17.8.763 Revocation of Permit. An air quality permit may be revoked upon written request of the permittee, or for violations of any requirement of the Clean Air Act of Montana, rules adopted under the Clean Air Act of Montana, the FCAA, rules adopted under the FCAA, or any applicable requirement contained in the Montana State Implementation Plan (SIP).

13. ARM 17.8.764 Administrative Amendment to Permit. An air quality permit may be amended for changes in any applicable rules and standards adopted by the Board of Environmental Review (Board) or changed conditions of operation at a source or stack that do not result in an increase of emissions as a result of those changed conditions. The owner or operator of a facility may not increase the facility's emissions beyond permit limits unless the increase meets the criteria in ARM 17.8.745 for a de minimis change not requiring a permit, or unless the owner or operator applies for and receives another permit in accordance with ARM 17.8.748, ARM 17.8.749, ARM 17.8.752, ARM 17.8.755, and ARM 17.8.756, and with all applicable requirements in ARM Title 17, Chapter 8, Subchapters 8, 9, and 10.

14. ARM 17.8.765 Transfer of Permit. This rule states that an air quality permit may be transferred from one person to another if written notice of intent to transfer, including the names of the transferor and the transferee, is sent to DEQ.

F. ARM 17.8, Subchapter 8 - Prevention of Significant Deterioration of Air Quality, including, but not limited to:

1. ARM 17.8.801 Definitions. This rule is a list of applicable definitions used in this subchapter.

2. ARM 17.8.818 Review of Major Stationary Sources and Major Modifications--Source Applicability and Exemptions. The requirements contained in ARM 17.8.819 through ARM 17.8.827 shall apply to any major stationary source and any major modification, with respect to each pollutant subject to regulation under the Federal Clean Air Act (FCAA) that it would emit, except as this subchapter would otherwise allow.

   This facility is not a major stationary source because this facility is not a listed source and the facility's PTE is below 250 tons per year of any pollutant (excluding fugitive emissions).

G. ARM 17.8, Subchapter 12 - Operating Permit Program Applicability, including, but not limited to:

1. ARM 17.8.1201 Definitions. (23) Major Source under Section 7412 of the FCAA is defined as any stationary source having:

   a. PTE > 100 tons/year of any pollutant.

   b. PTE > 10 tons/year of any one hazardous air pollutant (HAP), or PTE > 25 tons/year of a combination of all HAPs, or lesser quantity as DEQ may establish by rule.

c. PTE > 70 tons/year of particulate matter with an aerodynamic diameter of 10 microns or less (PM_{10}) in a serious PM_{10} nonattainment area.

2. ARM 17.8.1204 Air Quality Operating Permit Program Applicability. Title V of the FCAA Amendments of 1990 requires that all sources, as defined in ARM 17.8.1204 (1), obtain a Title V Operating Permit. In reviewing and issuing MAQP #2784-06 for the NWE Dry Creek Field, Station 056, the following conclusions were made:

a. The facility's PTE is > 100 tons/year for NO_X.

b. The facility's PTE is < 10 tons/year of any single hazardous air pollutant (HAP) and < 25 tons/year of all HAPs.

c. This source is not located in a serious PM_{10} nonattainment area.

d. This facility is subject to 40 CFR 60, Subpart KKK.

e. This facility is subject to current NESHAP standards (40 CFR 63, Subparts A and ZZZZ).

f. This source is not a Title IV affected source or a solid waste combustion unit.

g. This source is not an EPA designated Title V source.

h. As allowed by ARM 17.8.1204(3), DEQ may exempt a source from the requirement to obtain an air quality operating permit by establishing federally enforceable limitations which limit that source's potential to emit.

i. In applying for an exemption under this section, the owner or operator of the source shall certify to DEQ that the source's potential to emit, does not require the source to obtain an air quality operating permit.
ii. Any source that obtains a federally enforceable limit on potential to emit shall annually certify that its actual emissions are less than those that would require the source to obtain an air quality operating permit.

NWE has taken federally enforceable permit limits to keep potential emissions below major source permitting thresholds. Therefore, the facility is a synthetic minor source and thus a Title V operating permit is not required.

DEQ determined that the source testing and annual reporting requirements contained in the permit are sufficient to satisfy this requirement.

3. ARM 17.8.1207 Certification of Truth, Accuracy, and Completeness.
NWE shall annually certify that its actual emissions are less than those that would require the source to obtain an air quality operating permit as required by ARM 17.8.1204 (3)(b). The annual certification shall comply with requirements of ARM

17.8.1207. The annual certification shall be submitted along with the annual emission inventory information.

H. Montana Code Annotated (MCA) 75-2-103, definitions, provides in part as follows:

1. "Incinerator" means any single or multiple chambered combustion device that burns combustible material, alone or with a supplemental fuel or catalytic combustion assistance, primarily for the purpose of removal, destruction, disposal, or volume reduction of all or any portion of the input material.

2. "Solid waste" means all putrescible and nonputrescible solid, semisolid, liquid, or gaseous wastes, including, but not limited to...air pollution control facilities.

I. MCA 75-2-215, Solid or hazardous waste incineration - additional permit requirements:

1. MCA 75-2-215 requires air quality permits for all new commercial solid waste incinerators. NWE therefore incorporated the Smart Ash Burner into air quality Permit #2784-02.

2. MCA 75-2-215 requires the applicant to provide, to DEQ's satisfaction, a characterization and estimate of emissions and ambient concentrations of air pollutants, including hazardous air pollutants, from the incineration of solid waste. DEQ determined that the information submitted in Permit #2784-02 is sufficient to fulfill this requirement.

3. MCA 75-2-215 requires that DEQ reach a determination that the projected emissions and ambient concentrations constitute a negligible risk to public health, safety and welfare. Bison Engineering, Inc. (Bison) submitted a health risk assessment on behalf of NWE. Based on the results of the emission inventory, modeling, and the health risk assessment submitted by Bison, DEQ has determined that NWE's proposal complies with this requirement.

4. MCA 75-2-215 requires the application of pollution control equipment or procedures that meet or BACT. DEQ has determined that the proposed incinerator constitutes BACT.

III. BACT Determination

A BACT determination is required for each new or modified source. NWE shall install on the new or modified source the maximum air pollution control capability, which is technically practicable and economically feasible, except that BACT shall be utilized.

A BACT analysis was submitted by NWE in permit application #2784-07, addressing some available methods of controlling criteria pollutants emissions from the two proposed 1500-hp Caterpillar G3516J (EU003 & EU004) compressor engines. DEQ reviewed these methods, as well as previous BACT determinations. The BACT analysis follows the traditional 1990 draft New Source Review (NSR) five step BACT methodology. The analysis will be presented using the following steps for each pollutant and emitting unit.

Step 1: Identify All Available Control Technologies

Step 2: Eliminate Technically Infeasible Control Options
Step 3: Rank Remaining Control Technologies by Control Effectiveness
Step 4: Evaluate Most Effective Controls and Document Results
Step 5: Select BACT

Caterpillar 1,500hp Four-stroke Lean Burn Engine

NO_X Evaluation

Step 1 – Identify All Available NOx Control Technologies

NO_X emissions from lean-burn engines with inherently low NO_X emission rates can be further reduced with selective catalytic reduction (SCR) units. NO_X emissions from rich-burn, four-stroke compressor engines are typically controlled using NSCR and/or AFR controllers to control both CO and NO_X emission rates. As discussed above, this BACT analysis considers control strategies for lean-burn compressor engines only.

AFR controllers are assumed to be required as part of all add-on pollution control options. Engines with only AFR controllers were not analyzed as control options for NOx. The following provides a list of available NO_X control options for lean-burn compressor engines:

- Lean-burn engine without controls;
- Lean-burn engine with SCR and AFR;

Lean-Burn Engine with No Add-on Controls

Lean-burn engines are designed to operate with excess oxygen, which means a lean fuel mixture. Lean-burn engines with no add-on controls have inherently low NOx emissions. The lean-burn engine uses a pre-combustion chamber to enclose and ignite a lean mixture of air and fuel. The resulting ignition front fires into the larger main cylinder that contains a much leaner fuel mixture. Staging the combustion allows for burning a leaner fuel mixture that results in lowering of peak flame temperatures. Lower combustion temperature assures lower NOx concentrations in the exhaust gas stream; however, excess air in the fuel/air mixture can result in increased CO emissions.

Lean-Burn Engine with SCR and AFR Controllers

As stated earlier, SCR is only applicable to lean-burn engines because of the required oxygen content of the exhaust stream. SCR can typically reduce NOx emissions by 80 to 90%. An AFR controller will ensure that the engine operates at the appropriate air-to-fuel ratio resulting in more stable control of the SCR unit. A NOx reduction rate of 90% has been assumed for the purposes of this BACT analysis.

An SCR unit selectively reduces NOx emissions by injecting either liquid anhydrous ammonia or aqueous ammonium hydroxide into the exhaust gas stream prior to the gas stream reaching the catalyst. The catalyst is typically made from noble metals, base metal oxides such as vanadium and titanium, and zeolite-based material. NO_X, NH_3, and O_2 react on the surface of the catalyst to form N_2 and H_2. For an SCR unit to operate properly, the exhaust gas must be within a particular range (typically between 450°F and 850°F). The

catalyst that is utilized dictates the temperature range. The specified exhaust temperature at the engine outlet is 792°F so addition of SCR without reheating the flue gas is considered feasible.

Exhaust gas temperatures greater than the upper limit will pass the NOx and NH_3 through the catalyst prior to the reaction. NH_3 emissions, called ammonia slip, are a key consideration when specifying an SCR unit. One disadvantage of using SCR in this installation is that the compressor engines typically operate at variable loads, thereby creating technical difficulties for SCR operation such as periods of ammonia slip or periods of insufficient ammonia injection. In spite of these potential issues, SCR is considered a feasible NOx control technology for this application.

Step 2 - Eliminate Technically Infeasible NOx Control Options

NSCR can be used to oxidize NO_X and form N_2. To achieve maximum performance, 80% to 90%reduction of NO_X concentration, the engine must burn a rich fuel mixture, causing the lean-burn engine to operate less efficiently. Therefore, NSCR is not a viable control option to control NO_X emissions from a lean-burn engine.

SCR applied to lean-burn compressor engines is considered technically infeasible because of the potential adverse environmental impacts from ammonia slip due to the typical load fluctuation that is required for compressor engines. NSCR applied to a lean-burn engine is also technically infeasible because the NSCR needs a rich fuel-to-air ratio to operate effectively.

Step 3 - Rank Control Technologies by NO_X Control Effectiveness

The table below lists the NO_X control technologies and emission rates for the various NOx control options. No feasible add-on NO_X controls were identified for the proposed compressor engines.

Ranked NO_X Control Technology Effectiveness

Control Technology	NO_X Reduction (% control)	NO_X Emission Rate (g/bhp-hr)
SCR and AFR	90	0.05
Lean-Burn Without Controls	0	0.5

Step 4 - Evaluate Most Effective Controls and Document Results

The estimated costs of the remaining technologies are estimated in this step of the BACT process, based on EPA reference materials. Calculated values are reported to three significant figures, and costs are reported to the nearest $100. Since the cost information is from previous years, the costs have been advanced to the comparable amount in 2025 dollars using the website called usinflationcalculator.com.

Selective Catalytic Reduction (SCR)

The SCR process is based on the chemical reduction of the NOx molecule in which a metal-based catalyst with activated sites is employed to increase the rate of the reduction reaction.

The reference for SCR control efficiency and cost is the SCR chapter (Chapter 2) of the EPA Cost Manual for NOx, revised in April 2019. The reference can be found in the US EPA webpage titled Cost Reports and Guidance for Air Pollution Regulations. The EPA website also contains an EXCEL workbook to implement the control cost guidance, but it was not used because it is not set up for natural gas-fired engines.

Theoretically, SCR systems can be designed for NOx removal efficiencies near 100 percent. In practice, commercial coal-, oil-, and natural gas–fired SCR systems are often designed to meet control targets of over 90%. However, the reduction may be less than 90% when SCR follows other NOx controls such as low- NOx burner (LNB). For this BACT analysis, the NOx control efficiency (ηNOx) is assumed to be 90%.

The NOx removal efficiency for this BACT analysis is applied to the inlet NOx concentration of 0.5 g/bkW/hr, which results in an emission rate of 1.23 lb/hr and 5.40 tpy. The NOx emission rate of 1.23 lb/hr divided by the engine heat input rate of 12.0 MMBtu/hr gives an NOx_{in} value of 0.103 lb/MMBtu.

NOx removed/yr = 5.40 tpy * 90% = 4.86 tpy
NOx removed/hr = 1.23 lb/hr * 90% = 1.11 lb/hr

The manufacturer's specified exhaust temperature at the engine outlet is 792°F. No additional costs for heating the flue gas ins included in the SCR BACT analysis.

The estimated costs of the remaining technologies are estimated in this step of the BACT process, based on EPA reference materials. Calculated values are reported to three significant figures, and costs are reported to the nearest $100. Since the cost information is from previous years, the costs have advanced to the comparable amount in 2025 dollars using the website called usinflationcalculator.com.

Section 2.4.1.3 of the SCR Control Cost Manual includes cost calculation methodology for coal-fired industrial boilers. The coal cost information is used to approximate the SCR costs for a natural gas engine. Equation 2.47 calculates the total capital investment for SCR boiler (TCI) as 1.3 times the sum of the SCR_{COST}, air pre-heater costs, reagent preparation cost, and balance of plant costs. The air pre-heater cost is unique to coal installations and is not included. The TCI equation includes a factor of 1.3 to estimate engineering and construction management costs, installation, labor adjustment for the SCR, and contractor profit and fees.

$TCI = 1.3 * (SCR_{COST} + RPC + BPC)$

SCR cost (SCR_{COST}) is estimated using equation 2.48 of the SCR reference. The capital costs for the SCR base unit include costs for the inlet ductwork, the reactor, and the required bypass equipment. The SCR cost includes an elevation factor of 1.18 due to the elevation of the site. It also includes a retrofit factor (RF) which is 0.8 for new construction.
The SCR costs are calculated as shown below, with the cost multiplier constant in the equation adjusted to 2025 dollars. The NOx Removal Factor (NRF) is η_{NOX} /80.

$SCR_{COST} = 310{,}000 * (\eta_{NOX}/80)^{0.2} * (0.1 * QB)^{0.92} * ELEVF * RF$
$SCR_{COST} = 310{,}000 * (0.9/80)^{0.2} * (0.1 * 12.0)^{0.92} * 1.18 * 0.8 = \$141{,}062$

The reagent preparation cost (RPC) is calculated based on equation 2.49 of the SCR reference, where QB is the maximum heat rate input to the engine of 12 MMBtu/hr.

$RPC = 564{,}000 * ((NOx_{in} * Q_B) * \eta_{NOX})^{0.25} * RF$
$RPC = 564{,}000 * ((0.103 * 12.0)*0.90)^{0.25} * 0.8 = \$463{,}377$

The balance of plant costs (BPC) includes cost items such as ID and booster fans, piping, and auxiliary power modifications necessary for the SCR unit. The BPC are calculated based on equation 2.51 as follows:

$BPC = 529{,}000 * (0.1 \times QB \times CoalF)^{0.42} * ELEVF * RF$

CoalF is the coal factor, which is set at 1 for non-coal fuel.

$BPC = 529{,}000 \times (0.1 \times 12.0 \times 1)^{0.42} \times 1.18 \times 0.8 = \$539{,}118$
$TCI = 1.3 * (\$141{,}062 + \$463{,}377 + \$539{,}118) = \$1{,}486{,}624$

The capital costs are annualized based on a 20-year return period and an 8% interest rate as shown below.

$\$1{,}486{,}624 * (.08)/(1-(1.08\text{-}20)) = \$151{,}487/yr$

SCR Direct Annual Cost

Direct annual costs (DAC) consist of annual maintenance costs, annual reagent cost, annual electricity cost and annual catalyst replacement cost. Annual maintenance labor is estimated to be 0.5% of the TCI, according to the SCR reference. For this analysis, the annual maintenance cost is $7,433.

Based on equation 2.35 of the SCR reference, the rate of reagent consumption or mass flow rate of the reagent, $M_{REAGENT}$, generally expressed as pounds per hour (lb/hr), can be calculated as follows:
$M_{REAGENT} = NOxin * QB * \eta_{NOX} * SRF * M_{REAGENT} / M_{NOx}$
$M_{REAGENT} = [0.103$ lb/MMBtu * 12.0 MMBtu/hr * 1.05 (SRF) * 17.03 / 46.01 = 0.480 lb/hr

The stoichiometric ratio factor (SRF) indicates the actual amount of reagent needed in SCR to achieve the targeted NOx reduction. Typical SRF values are higher than theoretical values due to the complexity of the reactions involving the catalyst and limited mixing. According to the SCR reference, the value for *SRF* in a typical SCR system, using ammonia as reagent, is approximately 1.05.

The mass flowrate of 19% aqueous reagent solution (Msol) is calculated using equation 1.19 as follows:
Msol = 0.480 lb/hr ÷ 19% = 2.53 lb/hour

The density of the 19% aqueous ammonia reagent solution is 58 lb/ft^3, and the volume of aqueous ammonia reagent required is calculated as follows:

2.53 lb/hr ÷ 58 lb/ft3 * 7.48 gallon/ft3 = 0.326 gallons per hour

When operating 8,760 hours per year, a total of 11.1 tons or 2,856 gallons of 19% aqueous ammonia would be required. For costing purposes, the cost information was obtained from the example problem for a utility boiler in Section 2.5 of the EPA SCR control cost reference. The cost of 29% ammonia solution was $0.293/gallon in 2016, which is $0.38/gallon in 2025 dollars. The cost of $0.38/gallon is used for this cost estimate. This value is assumed to include transportation. The estimated annual cost of ammonia reagent is:

2,856 gallons/yr * $0.38/gallon = $1,085/yr

The electrical power consumption of SCR on an engine, P, in kW, is estimated using equation 2.61 of the SCR reference.

$$P = 0.1 * QB * (1{,}000) * (0.0056) * (CoalF * HRF)^{0.43}$$
$$= 0.1 * 12.0 \text{ MMBtu/hr} * (1{,}000) * (0.0056) * (1 * 1)^{0.43}$$
$$= 6.72 \text{ kWh}$$

The CoalF factor is substituted with 1 for non-coal fuels. HRF is the heat rate factor, which is equal to the NPHR/10. In this example, the HRF is equal to 1.

NPHR is the net plant heat rate, which is based on 7,987 Btu/bhp-hr * 1.34 bhp-hr * bkWhr, which equals 10.7 MMBtu/MWh.

The annual cost of electricity is estimated using equation 1.43:

Annual electricity cost = P * cost of electricity ($0.127/kWh) * 8760 hr/yr
= $7,476/yr

SCR Reactor Calculations are used to determine the catalyst volume (Volcatalyst). The SCR reference shows that the volume of catalyst, with all the adjustment factors, is roughly 4.4 ft3/(MMBtu/hr). For the proposed engine with Qb of 12.0 MMBtu/hr, the estimated catalyst value is 52.8 ft3 or 1.50 m^3.

$CC_{replace}$ is the cost of catalyst replacement, in dollars per cubic meter ($/$m^3$). Based on the example problem for a utility boiler in Section 2.5 of the SCR reference, the catalyst cost, in 2016 dollars was $8,000/$m^3$. The value converted to 2025 dollars is $10,500/$m^3$. According to the SCR reference, the cost for catalyst replacement in all the SCR reactors for a given boiler can be estimated with a simplified annual catalyst replacement methodology.

The replacement cost is estimated by assuming that one third of the total catalyst is replaced every year.

$CC_{replace}$ = 1.50 m^3/yr * $10,500/$m^3$ = $15,750/3 years = $5,250/yr
In summary, the direct annual costs of installing and operating SCR on the proposed boiler are estimated to be:
DAC = $7,483/yr - maintenance
+ $1,085/yr - reagent
+ $7,476/yr for SCR electricity
+ $5,150/yr for catalyst replacement

= $21,244/yr

SCR Total Annual Costs

Total annual costs (TAC) consist of direct annual costs, capital recovery costs and indirect costs (not included), and byproduct recovery credits (not applicable). In summary, the total annual cost of installing and operating SNCR on proposed engines is estimated to be:

TAC = $21,244/yr + $151,487/yr
= $172,731/yr

The cost per ton of NOx removed is the TAC divided by the tons of NOx removed each year.

Cost per ton removed = $172,731/yr ÷ 4.86 tons/year
= $35,541 per ton of NOx removed

Step 5 – Select NO_X BACT

The lean-burn engine NOx BACT analysis above shows that the proposed design emission rate of the engine, without controls, is comparable to BACT NOx emission limits for sources listed in Table 5.1. The only feasible add-on control is SCR. The calculated cost per ton of NOx removed is $35,541/ton for SCR. This excessive cost of add-on NOx controls represents an economic hardship for the facility, with little environmental benefit.

NWE proposes a NOx emission limit of 0.5 g/bhp-hr for a lean-burn engine based on the manufacturer information. A lean-burn engine with no add-on NOx controls is used frequently in the natural gas compression industry. The proposed BACT control device and emission limit conform to BACT determinations made recently by DEQ for lean-burn, natural gas-fired compressor engines.

In addition to cost calculations, the BACT analysis also considers any adverse environmental impacts from the available control technology. As stated above, during SCR operation, it is possible for NOx and ammonia (NH_3) to pass through the catalyst prior to the reaction. NH3 emissions, called ammonia slip, are a key consideration when specifying a SCR unit. One disadvantage of using SCR in this installation is that the compressor engines typically operate at variable loads, thereby creating technical difficulties for SCR operation such as periods of ammonia slip or periods of insufficient ammonia injection.

The proposed engines are designed for low- NOx emissions without addon controls. The proposed emission rate is consistent with the lowest BACT determination for the same class of boilers in the RLBC in the last 10 years. NWE has concluded that the boiler, as designed, constitutes BACT.

CO Analysis

Step 1 - Identify All Control Technologies

Potential CO emissions from the lean-burn engines will be controlled using oxidation catalysts as an add-on control. Other technologies were also considered, although ultimately dropped from the analysis. Catalytic oxidation cannot be applied to lean-burn engines because of the inherently low oxygen concentrations of the exhaust stream. Excess oxygen is needed by the catalytic oxidizers to efficiently oxidize CO to CO_2. NSCR and/or AFR controllers can be used to reduce CO and NOx emission rates from rich burn engines but not lean-burn engines. Because the proposed engines will use lean-burn technology, NSCR will not be considered further for the control of CO.

The following is a list of available CO control options:

-Lean-burn engines without controls;
-Lean-burn engines with catalytic oxidation and AFR

Lean-Burn Engines Without Add-on Controls

The proposed compressor engines are designed as lean-burn engines, with a target exhaust oxygen content of 9.5%. Lean-burn engines use a pre-combustion chamber to enclose and ignite a rich mixture of air and fuel. The resulting ignition front-fires into the larger main cylinder that contains a much leaner fuel mixture. Staging the combustion allows for burning a leaner fuel mixture that results in lowering of peak flame temperatures. Lower combustion temperature assures lower NOx concentrations in the exhaust gas stream. However, excess air in the fuel/air mixture can result in increased CO emissions. Lean-burn engines with no add-on controls typically have relatively high CO emission rates.

Lean-Burn Engine with Add-on Catalytic Oxidation

CO emissions can be reduced using catalytic oxidation as an add-on control. Catalytic oxidation is a post-combustion technology that can be applied to oxidize CO emissions from lean-burn engines. In a catalytic oxidation system, CO passes over a catalyst, usually a noble metal, which oxidizes CO into CO_2 at efficiencies of 70% to 90%. Oxidation catalysts are only applicable to lean-burn engines because a high oxygen concentration is needed for the catalyst to oxidize the CO to CO_2.

Step 2 - Eliminate Technically Infeasible Control Options

NSCR applied to a lean-burn engine for CO and NOx control is technically infeasible because the NSCR needs a rich fuel-to-air ratio to operate effectively.

Step 3 - Rank Remaining Control Technologies by Control Effectiveness

The table below lists the CO control technologies and expected CO emission rates for the various CO control options. The lean-burn control option includes both CO catalyst and AFR controllers. These control options were analyzed together in recognition of current practice in applying emission controls to compressor engines. Ranking of the control technologies was based on an emission rate in term of grams per brake horsepower-hour (g/bhp-hr). Ranking

the control technologies in this manner provides an even comparison between engines and delivers a top-rated control technology that will result in the lowest level of emissions.

Ranked CO Control Technology Effectiveness

Control Technology	CO Reduction (% control)	CO Emission Rate (g/bhp-hr)
Lean-Burn with CO Catalyst and AFR	90	0.2
Lean-Burn Without Controls	0	2.0

Step 4 - Evaluate Most Effective Controls and Document Results

A lean-burn engine with a CO catalyst and AFR controller has the highest level of controls for CO emissions. The use of a lean-burn engine with a CO catalyst and AFR controller has been determined to be economically feasible with little potential for adverse environmental and energy impacts. Because this option offers the lowest emission rate of the feasible control technology options, no further analysis is necessary.

Step 5 – Select CO BACT

NWE proposes to install oxidation catalyst technology on the new compressor engines, with a permitted CO emission limit of 0.2 g/bhp-hr. Lean-burn engines with an oxidation catalysts are frequently used in the natural gas compression industry as shown by the BACT determinations identified by the RBLC. The proposed BACT limit complies with the CO limit in 40 CFR 60, Subpart JJJJ of 2.0 g/bhp-hr.

VOC Analysis

A top-down BACT analysis is not necessary because the same control strategies for CO emissions from lean-burn engines can be applied to VOC emissions with similar reduction efficiencies (see CO BACT analysis and determination above). NWE proposes the installation and operation of catalytic oxidation for the proposed engines, which is expected to result in a 70% VOC reduction. The BACT analysis is based on 70% reduction for both VOC and formaldehyde. Although the values provided by the vendor show higher emissions reduction rates for VOC, the basis of these calculations is not certain. The VOC emission rate from the specified reciprocal internal combustion engine (RICE) is already low due to the lean-burn design.

VOC emissions have a variety of components. The Caterpillar engine data for the G3516J has the following exhaust emissions values for VOCs:

Non-methane hydrocarbons (NMHC) = 0.69 g/hp-hr (0.93 g/bkW-hr)
Non-methane non-ethane HC (NMNEHC) = 0.46 g/hp-hr (0.62 g/bkW-hr)
Formaldehyde (HCHO) = 0.35 g/hp-hr (0.47 g/bkW-hr)

The 40 CFR 60, Subpart JJJJ VOC limit of 0.7 g/bhp-hr excludes HCHO, but all other determinations of VOC include HCHO. The standard VOC representation is NMHC, which excludes methane but not ethane. Because of the way the data is presented, it implies that the HCHO is not included in the NMHC emission rate. Therefore, the uncontrolled emission rate has been determined as follows:

Total VOC e.f = 0.69 g/hp-hr + 0.35 g/hp-hr = 1.04 g/hp-hr
Total VOC emissions = 1.04 g/hp-hr ÷ 453.6 g/lb * 1,500 hp * 8760 hr/yr ÷ 2000 lb/ton = 15 tpy per engine

The control efficiency used in this analysis for both VOC and formaldehyde is 70%. The controlled emissions are determined as follows:

Total VOC e.f. = (1-0.70) * (0.69 g/hp-hr + 0.35 g/hp-hr) = 0.312 g/hp-hr
Total VOC emissions = 0.312 g/hp-hr ÷ 453.6 g/lb * 1,500 hp * 8760 hr/yr ÷ 2000 lb/ton = 4.52 tpy per engine

BACT for VOC emissions from the proposed lean-burn engines is an add-on oxidation catalyst with an AFR controller. The proposed control device and emission limit conform to BACT determinations made recently by DEQ for lean-burn, natural gas-fired compressor engines.

Ranked VOC Control Technology Effectiveness

Control Technology	VOC Reduction (% control)	VOC Emission Rate (g/bhp-hr)
Lean-Burn with CO Catalyst and AFR	70	0.31
Lean-Burn Without Controls	0	1.04

SO_2 Analysis

Step 1: Identify available control technologies.

The RBLC database was reviewed for all technologies utilized for SO_2 control from internal combustion engines as either BACT or Lowest Achievable Emission Rate (LAER), identifying the following control technologies:

- Good combustion practices
- Use of low-sulfur fuels

Baseline emissions from the proposed unit, based on the maximum sulfur content allowed in the available fuel source are very low. The low SO_2 concentration makes effectively implementing add-on control technologies challenging, as demonstrated by the limited control technologies found in the RBLC database search. The absence of other control technologies from the RBLC database, and particularly from LAER determinations, is an indicator that no additional SO_2 control technologies have been successfully demonstrated. NWE is unaware of any demonstrated add-on control technologies available for reducing sulfur emissions from pipeline quality natural gas fueled engines.

Steps 2-4 – Technical Feasibility, Control Ranking, Energy, Environmental and Economic Considerations

Both control technologies presented above are considered technically feasible, and are not excluded due to energy, environmental or economic considerations. As such, a detailed analysis of BACT steps 2-4 is not warranted.

Step 5 – Select SO_2 BACT

BACT for the 1,500 hp lean burn natural gas engines is the use of good combustion practices and pipeline quality natural gas, a low sulfur fuel available and appropriate for the proposed engines.

$PM_{10}/PM_{2.5}$ Analysis

Step 1: Identify available control technologies.

The RBLC database was reviewed for all technologies utilized for PM control from internal combustion engines as either BACT or LAER, identifying the following control technologies:

- Good combustion practices
- Use of low-sulfur fuels
- Diesel particulate filter

Baseline PM emissions from the proposed unit are based on AP-42 combustion factors for natural gas combustion and are very low when compared to combustion of liquid and solid fuels. The low PM concentration and gas combustion particle sizing makes effectively implementing add-on control technologies challenging, as supported by the limited control technologies found in the RBLC database search. The absence of other control technologies from the RBLC database, and particularly from LAER determinations, is an indicator that no additional PM control technologies have been successfully demonstrated for internal combustion engines.

Step 2 - Eliminate technically infeasible options.

The particulate composition profile of diesel-fueled engines differs from natural gas fueled engines. Diesel engine particulate emissions are dominated by heavier soot particles, while natural gas engines have minimal soot, and a smaller particle composition. While similar technology exists for gasoline fueled engines, we found no examples of proven effectiveness and commercial availability for particulate control of natural gas fueled engines.

The differences in particle composition and sizing make a technology transfer of diesel particulate traps on natural gas combustion engines technically infeasible, supported by the absence of particulate trap as BACT and LAER for natural gas fueled engines.

The use of good combustion practices and use of low-sulfur fuels are readily implemented in lean-burn natural gas-fueled engines and are determined to be technically feasible in this application.

Steps 3-4 – Control Ranking, Energy, Environmental and Economic Considerations

The remaining control technologies presented above are considered technically feasible, and are not excluded due to energy, environmental or economic considerations. As such, a detailed analysis of BACT Steps 3-4 is not warranted.

Step 5 – Select $PM_{10}/PM_{2.5}$ BACT

BACT for the 1,500 hp lean burn natural gas engines is the use of good combustion practices and use of pipeline quality natural gas, a low sulfur fuel available and appropriate for the proposed engines.

IV. Emission Inventory

Emitting Unit ID	Description	$PM_{2.5}$ (TPY)	PM_{10} (TPY)	SO_2 (TPY)	NO_X (TPY)	VOC (TPY)	CO (TPY)	HAPs (TPY)
EU001	660-hp Ingersoll Rand 4-Stoke Rich Burn Engine	0.37	0.37	0.01	70.00	0.56	85.00	0.73
EU002	800-hp White Superior 4-Stoke Rich Burn Engine	0.58	0.58	0.02		1.53		1.13
EU003*	1,500-hr Caterpillar 4-Stroke Lean Burn Engine	0.52	0.52	0.03	5.40	4.52	2.90	2.29
EU004*	1,500-hr Caterpillar 4-Stroke Lean Burn Engine	0.52	0.52	0.03	5.40	4.52	2.90	2.29
EU005	1,100-hp Solar Saturn Turbine-driven Compressor Engine	0.00	0.00	0.00	13.10	0.09	3.36	0.27
EU006	750 MBtu/hr Triethylene Glycol Dehydrator and Glycol Vent Emissions	0.00	0.00	0.00	0.00	21.90	0.00	4.40
EU007[1]	Joule-Thompson Refrigeration Unit	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EU008	Fuel Storage Tanks	--	--	--	--	3.00	--	0.10
EU009	Emergency Backup Generator	0.01	0.01	0.00	0.87	0.01	1.47	0.02
EU010	Smart Act Burner	0.06	0.06	1.91	0.33	0.00	0.03	--
EU011*	Emergency Backup Generator	0.00	0.00	0.00	0.49	0.01	0.83	0.01
IEU01	0.256 MMBtu/hr Dehydrator Reboiler	0.01	0.01	0.00	0.11	0.01	0.09	0.09
IEU02*	0.350 MMBtu/hr Dehydrator Reboiler	0.01	0.01	0.00	0.15	0.01	0.13	0.12
IEU03	0.750 MMBtu/hr Dehydrator Reboiler	0.02	0.02	0.00	0.32	0.02	0.27	0.25
IEU04	All Building Heaters - < 1 MMBtu/hr	0.03	0.03	0.00	0.43	0.02	0.36	0.34
IEU05	Process Valves	--	--	--	--	0.24	--	0.01
Total		**2.14**	**2.14**	**2.01**	**96.62**	**36.44**	**97.58**	**12.03**

* -- New Units

[1] per permit #2784-06, Section I.B. page 2 "Emissions from both the mechanical refrigeration unit and the Joule-Thompson type refrigeration unit are assumed to be negligible because they are both completely enclosed systems and are contained under pressure." As the Mechanical Refrigeration Unit has been removed, this note only applies to the Joule-Thompson Refrigeration Unit.

NorthWestern Energy
Dry Creek Compressor Station
Emission Inventory - Permit Modification
EU002 - 800 hp White Superior 4-Stroke Rich Burn Compressor Engine

Heat Input =	6.8	MMBtu/hr	(Calculated)
Maximum Heating Capacity =	0.0085	MMBtu/bhp-hr	(Manufacturer Specs)
Horsepower =	800	bhp	(Manufacturer Specs)
Conversions:	8760	hrs/yr	
	2000	lbs/ton	
	453.592	g/lb	

Pollutant	Emission Factor	Units	Emission Factor Reference	Emissions (lbs/hr)	Emissions (tons/yr)
PM (includes PM-10 & PM_{cond})	1.94E-02	lbs/MMBtu	AP-42 Table 3.2-3 (7/00)	0.13	0.58
NOx	1.00	g/bhp-hr	Catalyst Manufacturer Data	1.76	7.73
CO	2.00	g/bhp-hr	Catalyst Manufacturer Data	3.53	15.45
VOC	2.96E-02	lbs/MMBtu	AP-42 Table 3.2-3 (7/00)	0.20	0.88
SO_2	5.88E-04	lbs/MMBtu	AP-42 Table 3.2-3 (7/00)	4.00E-03	0.02

Sample Calculation:
PM Emissions (lbs/hr)= (Emission Factor, lb/MMBtu) x (Heat Input, MMBtu/hr)
PM Emissions (lbs/hr)= (0.019 lbs/MMBtu) x (6.8 MMBtu/hr) = 0.132 lbs/hr
PM Emissions (tons/yr)= (0.132 lbs/hr) x (8760 hrs/yr) / (2000 lbs/ton) = 0.578 tons/yr

Hazardous Air Pollutants (HAPs)

Pollutant	CAS No.	Emission Factor (lb/MMBtu)	Units	Emission Factor Reference	Potential Emissions Each Engine (ton/yr)
Acetaldehyde	75-07-0	2.79E-03	lb/MMBtu	AP-42 Table 3.2-3 (07/00)	0.08
Acrolein	107-02-8	2.63E-03	lb/MMBtu		0.08
Benzene	71-43-2	1.58E-03	lb/MMBtu		0.05
Biphenyl	92-52-4		lb/MMBtu		0.00
1,3-Butadiene	106-99-0	6.63E-04	lb/MMBtu		0.02
Carbon Tetrachloride	56-23-5	1.77E-05	lb/MMBtu		0.00
Chlorobenzene	108-90-7	1.29E-05	lb/MMBtu		0.00
Chloroform	67-66-3	1.37E-05	lb/MMBtu		0.00
1,3-Dichloropropene	542-75-6	1.27E-05	lb/MMBtu		0.00
Ethylbenzene	100-41-4	2.48E-05	lb/MMBtu		0.00
Chloroethane	75-00-3		lb/MMBtu		0.00
Ethylene Dibromide	106-93-4	2.13E-05	lb/MMBtu		0.00
1,2-Dichloroethane	107-06-2	1.13E-05	lb/MMBtu		0.00
1,1-Dichloroethane	75-34-3	1.13E-05	lb/MMBtu		0.00
Formaldehyde	50-00-0	2.05E-02	lb/MMBtu		0.61
Methanol	67-56-1	3.06E-03	lb/MMBtu		0.09
Methylene Chloride	75-09-2	4.12E-05	lb/MMBtu		0.00
Naphthalene	91-20-3	9.71E-05	lb/MMBtu		0.00
Phenol	684-93-5		lb/MMBtu		0.00
Toluene	87-86-5	5.58E-04	lb/MMBtu		0.02
Vinyl Chloride	108-95-2	7.18E-06	lb/MMBtu		0.00
Xylene	106-50-3	1.95E-04	lb/MMBtu		0.01
1,2-Dichloropropane	78-87-5	1.30E-05	lb/MMBtu		0.00
Styrene	100-42-5	1.19E-05	lb/MMBtu		0.00
1,1,2,2-Tetrachloroethane	79-34-5	2.53E-05	lb/MMBtu		0.00
1,1,2-Trichloroethane	79-00-5	1.53E-05	lb/MMBtu		0.00
2,2,4-Trimethylpentane	540-84-1		lb/MMBtu		0.00
PAH	---	1.41E-04	lb/MMBtu		0.00
Benzo(b)fluoranthene	205-99-2		lb/MMBtu		0.00
Chrysene	218-01-9		lb/MMBtu		0.00
Acenaphthene	83-32-9		lb/MMBtu		0.00
Acenaphthylene	208-96-8		lb/MMBtu		0.00
Benzo(g,h,i)perylene	191-24-2		lb/MMBtu		0.00
Fluoranthene	206-44-0		lb/MMBtu		0.00
Fluorene	86-73-7		lb/MMBtu		0.00
Phenanthrene	85-01-8		lb/MMBtu		0.00
Pyrene	129-00-0		lb/MMBtu		0.00
Arsenic	7440-38-2	2.0E-04	lb/MMscf	AP-42 Table 1.4-4 (07/98)	0.01
Beryllium	7440-41-7	1.2E-05	lb/MMscf		0.00
Cadmium	7440-43-9	1.1E-03	lb/MMscf		0.03
Chromium	7440-47-3	1.4E-03	lb/MMscf		0.04
Cobalt	7440-48-4	8.4E-05	lb/MMscf		0.00
Manganese	7439-96-5	3.8E-04	lb/MMscf		0.01
Mercury	7439-97-6	2.6E-04	lb/MMscf		0.01
Nickel	7440-02-0	2.1E-03	lb/MMscf		0.06
Selenium	7782-49-2	2.4E-05	lb/MMscf		0.00
				Totals	1.13

NorthWestern Energy
Dry Creek Compressor Station
Emission Inventory - Permit Modification
EU003 - 1500 hp Caterpillar 4-Stroke Lean Burn Compressor Engine
EU004 - 1500 hp Caterpillar 4-Stroke Lean Burn Compressor Engine

Heat Input =	11.9805	MMBtu/hr	(Calculated)
Maximum Heating Capacity =	0.007987	MMBtu/bhp-hr	(Manufacturer Specs)
Horsepower =	1500	bhp	(Manufacturer Specs)
Conversions:	8760	hrs/yr	
	2000	lbs/ton	
	453.592	g/lb	
	1.341	hp/kW	

				Per Engine	
Pollutant	Emission Factor	Units	Emission Factor Reference	Emissions (lbs/hr)	Emissions (tons/yr)
PM (includes PM-10 & PM_{cond})	9.99E-03	lbs/MMBtu	AP-42 Table 3.2-2 (7/00)	0.12	0.52
NOx	0.50	g/bkW-hr	Manufacturer Data	1.23	5.40
CO	0.20	g/bhp-hr	Catalyst Manufacturer Data	0.66	2.90
VOC, total*	0.312	g/bhp-hr	Controlled NMCH and HCHO	1.03	4.52
SO_2	5.88E-04	lbs/MMBtu	AP-42 Table 3.2-2 (7/00)	7.04E-03	0.03

* See derivation in Section 5 of the application.

Sample Calculation:
PM Emissions (lbs/hr)= (Emission Factor, lb/MMBtu) x (Heat Input, MMBtu/hr)
PM Emissions (lbs/hr)= (0.01 lbs/MMBtu) x (11.9805 MMBtu/hr) = 0.12 lbs/hr
PM Emissions (tons/yr)= (0.12 lbs/hr) x (8760 hrs/yr) / (2000 lbs/ton) = 0.524 tons/yr

Hazardous Air Pollutants (HAPs)

Pollutant	CAS No.	Emission Factor (lb/MMBtu)	Units	Emission Factor Reference	Potential Emissions Each Engine (ton/yr)
Acetaldehyde[1]	75-07-0	2.52E-03	lb/MMBtu		0.13
Acrolein[1]	107-02-8	1.55E-03	lb/MMBtu		0.08
Benzene	71-43-2	4.40E-04	lb/MMBtu		0.02
Biphenyl	92-52-4	2.12E-04	lb/MMBtu		0.01
1,3-Butadiene	106-99-0	2.67E-04	lb/MMBtu		0.01
Carbon Tetrachloride	56-23-5	3.67E-05	lb/MMBtu	AP-42	0.00
Chlorobenzene	108-90-7	3.04E-05	lb/MMBtu	Table 3.2-2	0.00
Chloroform	67-66-3	2.85E-05	lb/MMBtu	(07/00)	0.00
1,3-Dichloropropene	542-75-6	2.64E-05	lb/MMBtu		0.00
Ethylbenzene	100-41-4	3.97E-05	lb/MMBtu		0.00
Chloroethane	75-00-3	1.87E-06	lb/MMBtu		0.00
Ethylene Dibromide	106-93-4	4.43E-05	lb/MMBtu		0.00
1,2-Dichloroethane	107-06-2	2.36E-05	lb/MMBtu		0.00
1,1-Dichloroethane	75-34-3	2.36E-05	lb/MMBtu		0.00
Formaldehyde[1]	50-00-0	1.42E-01	g/bkW-hr	Manufacturer	1.53
Methanol	67-56-1	2.50E-03	lb/MMBtu		0.13
Methylene Chloride	75-09-2	2.00E-05	lb/MMBtu		0.00
Naphthalene	91-20-3	7.44E-05	lb/MMBtu		0.00
Phenol	684-93-5	2.40E-05	lb/MMBtu		0.00
Toluene	87-86-5	4.08E-04	lb/MMBtu		0.02
Vinyl Chloride	108-95-2	1.49E-05	lb/MMBtu		0.00
Xylene	106-50-3	1.84E-04	lb/MMBtu		0.01
1,2-Dichloropropane	78-87-5	2.69E-05	lb/MMBtu		0.00
Styrene	100-42-5	2.36E-05	lb/MMBtu		0.00
1,1,2,2-Tetrachloroethane	79-34-5	4.00E-05	lb/MMBtu	AP-42	0.00
1,1,2-Trichloroethane	79-00-5	3.18E-05	lb/MMBtu	Table 3.2-2	0.00
2,2,4-Trimethylpentane	540-84-1	2.50E-04	lb/MMBtu	(07/00)	0.01
PAH	---	2.69E-05	lb/MMBtu		0.00
Benzo(b)fluoranthene	205-99-2	1.66E-07	lb/MMBtu		0.00
Chrysene	218-01-9	6.93E-07	lb/MMBtu		0.00
Acenaphthene	83-32-9	1.25E-06	lb/MMBtu		0.00
Acenaphthylene	208-96-8	5.53E-06	lb/MMBtu		0.00
Benzo(g,h,i)perylene	191-24-2	4.14E-07	lb/MMBtu		0.00
Fluoranthene	206-44-0	1.11E-06	lb/MMBtu		0.00
Fluorene	86-73-7	5.67E-06	lb/MMBtu		0.00
Phenanthrene	85-01-8	1.04E-05	lb/MMBtu		0.00
Pyrene	129-00-0	1.36E-06	lb/MMBtu		0.00
Arsenic	7440-38-2	2.0E-04	lb/MMscf		0.01
Beryllium	7440-41-7	1.2E-05	lb/MMscf		0.00
Cadmium	7440-43-9	1.1E-03	lb/MMscf		0.06
Chromium	7440-47-3	1.4E-03	lb/MMscf	AP-42	0.07
Cobalt	7440-48-4	8.4E-05	lb/MMscf	Table 1.4-4	0.00
Manganese	7439-96-5	3.8E-04	lb/MMscf	(07/98)	0.02
Mercury	7439-97-6	2.6E-04	lb/MMscf		0.01
Nickel	7440-02-0	2.1E-03	lb/MMscf		0.11
Selenium	7782-49-2	2.4E-05	lb/MMscf		0.00
				Totals	2.29

[1]Oxidation catalyst calculated reduction taken into account on Emission Factor

NorthWestern Energy
Dry Creek Compressor Station
Emission Inventory - Permit Modification
EU011 - 105 hp Emergency Backup Generator

Heat Input =	0.8925	MMBtu/hr	(Calculated)
Maximum Heating Capacity =	0.0085	MMBtu/bhp-hr	(Manufacturer Specs)
Horsepower =	105	bhp	(Manufacturer Specs)
Fuel Heating Value=	1000	MMBtu/MMscf	(Manufacturer Specs)
Fuel Usage =	0.0009	MMscf/hr	
Conversions:	500	hrs/yr	
	2000	lbs/ton	

Pollutant	Emission Factor	Units	Emission Factor Reference	Emissions (lbs/hr)	Emissions (tons/yr)
PM (includes PM-10 & PM_{cond})	1.94E-02	lbs/MMBtu	AP-42 Table 3.2-3 (7/00)	0.02	0.004
NOx	2.21	lbs/MMBtu	AP-42 Table 3.2-3 (7/00)	1.97	0.493
CO	3.72	lbs/MMBtu	AP-42 Table 3.2-3 (7/00)	3.32	0.830
VOC	2.96E-02	lbs/MMBtu	AP-42 Table 3.2-3 (7/00)	0.03	0.007
SO_2	5.88E-04	lbs/MMBtu	AP-42 Table 3.2-3 (7/00)	5.25E-04	0.000

Sample Calculation:
PM Emissions (lbs/hr)= (Emission Factor, lb/MMBtu) x (Heat Input, MMBtu/hr)
PM Emissions (lbs/hr)= (0.02 lbs/MMBtu) x (0.8925 MMBtu/hr) = 0.02 lbs/hr
PM Emissions (tons/yr)= (0.02 lbs/hr) x (500 hrs/yr) / (2000 lbs/ton) = 0.004 tons/yr

Hazardous Air Pollutants (HAPs)

Pollutant	CAS No.	Emission Factor (lb/MMBtu)	Units	Emission Factor Reference	Potential Emissions Each Engine (ton/yr)
Acetaldehyde	75-07-0	2.79E-03	lb/MMBtu		0.00
Acrolein	107-02-8	2.63E-03	lb/MMBtu		0.00
Benzene	71-43-2	1.58E-03	lb/MMBtu		0.00
Biphenyl	92-52-4		lb/MMBtu		0.00
1,3-Butadiene	106-99-0	6.63E-04	lb/MMBtu		0.00
Carbon Tetrachloride	56-23-5	1.77E-05	lb/MMBtu		0.00
Chlorobenzene	108-90-7	1.29E-05	lb/MMBtu		0.00
Chloroform	67-66-3	1.37E-05	lb/MMBtu		0.00
1,3-Dichloropropene	542-75-6	1.27E-05	lb/MMBtu		0.00
Ethylbenzene	100-41-4	2.48E-05	lb/MMBtu		0.00
Chloroethane	75-00-3		lb/MMBtu		0.00
Ethylene Dibromide	106-93-4	2.13E-05	lb/MMBtu		0.00
1,2-Dichloroethane	107-06-2	1.13E-05	lb/MMBtu		0.00
1,1-Dichloroethane	75-34-3	1.13E-05	lb/MMBtu		0.00
Formaldehyde	50-00-0	2.05E-02	lb/MMBtu		0.00
Methanol	67-56-1	3.06E-03	lb/MMBtu		0.00
Methylene Chloride	75-09-2	4.12E-05	lb/MMBtu	AP-42	0.00
Naphthalene	91-20-3	9.71E-05	lb/MMBtu	Table 3.2-3	0.00
Phenol	684-93-5		lb/MMBtu	(07/00)	0.00
Toluene	87-86-5	5.58E-04	lb/MMBtu		0.00
Vinyl Chloride	108-95-2	7.18E-06	lb/MMBtu		0.00
Xylene	106-50-3	1.95E-04	lb/MMBtu		0.00
1,2-Dichloropropane	78-87-5	1.30E-05	lb/MMBtu		0.00
Styrene	100-42-5	1.19E-05	lb/MMBtu		0.00
1,1,2,2-Tetrachloroethane	79-34-5	2.53E-05	lb/MMBtu		0.00
1,1,2-Trichloroethane	79-00-5	1.53E-05	lb/MMBtu		0.00
2,2,4-Trimethylpentane	540-84-1		lb/MMBtu		0.00
PAH	---	1.41E-04	lb/MMBtu		0.00
Benzo(b)fluoranthene	205-99-2		lb/MMBtu		0.00
Chrysene	218-01-9		lb/MMBtu		0.00
Acenaphthene	83-32-9		lb/MMBtu		0.00
Acenaphthylene	208-96-8		lb/MMBtu		0.00
Benzo(g,h,i)perylene	191-24-2		lb/MMBtu		0.00
Fluoranthene	206-44-0		lb/MMBtu		0.00
Fluorene	86-73-7		lb/MMBtu		0.00
Phenanthrene	85-01-8		lb/MMBtu		0.00
Pyrene	129-00-0		lb/MMBtu		0.00
Arsenic	7440-38-2	2.0E-04	lb/MMscf		0.00
Beryllium	7440-41-7	1.2E-05	lb/MMscf		0.00
Cadmium	7440-43-9	1.1E-03	lb/MMscf		0.00
Chromium	7440-47-3	1.4E-03	lb/MMscf	AP-42	0.00
Cobalt	7440-48-4	8.4E-05	lb/MMscf	Table 1.4-4	0.00
Manganese	7439-96-5	3.8E-04	lb/MMscf	(07/98)	0.00
Mercury	7439-97-6	2.6E-04	lb/MMscf		0.00
Nickel	7440-02-0	2.1E-03	lb/MMscf		0.00
Selenium	7782-49-2	2.4E-05	lb/MMscf		0.00
				Totals	0.01

NorthWestern Energy
Dry Creek Compressor Station
Emission Inventory - Permit Modification
IEU02 - 0.350 MMBtu/hr Dehydrator Reboiler

Fuel Usage =	3.01	MMscf/yr	
Horsepower =	N/A	hp	
Hours of Operation =	8,760	hr/yr	
Max. Fuel Combution Rate =	0.350	MMBtu/hr	(Manufacturer Specs)
Fuel Heating Value=	1,020	MMBtu/MMscf	
Conversions:	453.592	grams/lb	
	2000	lbs/ton	

Pollutant	Emission Factor	Units	Emission Factor Reference	Emissions (lbs/hr)	Emissions (ton/year)
PM	7.60	lbs/MMScf	AP-42 Table 1.4-2 (07/98)	2.61E-03	0.011
NOx	100.00	lbs/MMScf	AP-42 Table 1.4-1 (07/98)	3.43E-02	0.150
CO	84.00	lbs/MMScf	AP-42 Table 1.4-1 (07/98)	2.88E-02	0.126
VOC	5.50	lbs/MMScf	AP-42 Table 1.4-2 (07/98)	1.89E-03	0.008
SO_2	0.60	lbs/MMScf	AP-42 Table 1.4-2 (07/98)	2.06E-04	0.001

Sample Calculation:
Emissions (lbs/hr)= (Emission Factor, lb/MMScf) / (Fuel Heating Value, MMBtu/MMscf) x (Heat Input, MMBtu/hr)
PM Emissions (lbs/hr)= (7.6 lbs/MMScf)/(1020 MMBtu/MMscf) x (0.35 MMBtu/hr)
PM Emissions (lbs/hr)= 0.0026 lbs/hr

Emissions (ton/yr)= (Emissions, lbs/hr) x (Hours of Operation) / (2000 lbs/ton)
PM Emissions (ton/yr)= (0.0026 lbs/hr) x (8760 hrs) / (2000 lbs/ton)
PM Emissions (ton/yr)= 0.0114 ton/yr

Hazardous Air Pollutants (HAPs)

Pollutant	CAS No.	Emission Factor (lb/MMBtu)	Units	Emission Factor Reference	Potential Emissions Each Engine (ton/yr)
Acetaldehyde	75-07-0	8.36E-03	lb/MMBtu		0.01
Acrolein	107-02-8	5.14E-03	lb/MMBtu		0.01
Benzene	71-43-2	4.40E-04	lb/MMBtu		0.00
Biphenyl	92-52-4	2.12E-04	lb/MMBtu		0.00
1,3-Butadiene	106-99-0	2.67E-04	lb/MMBtu		0.00
Carbon Tetrachloride	56-23-5	3.67E-05	lb/MMBtu		0.00
Chlorobenzene	108-90-7	3.04E-05	lb/MMBtu		0.00
Chloroform	67-66-3	2.85E-05	lb/MMBtu		0.00
1,3-Dichloropropene	542-75-6	2.64E-05	lb/MMBtu		0.00
Ethylbenzene	100-41-4	3.97E-05	lb/MMBtu		0.00
Chloroethane	75-00-3	1.87E-06	lb/MMBtu		0.00
Ethylene Dibromide	106-93-4	4.43E-05	lb/MMBtu		0.00
1,2-Dichloroethane	107-06-2	2.36E-05	lb/MMBtu		0.00
1,1-Dichloroethane	75-34-3	2.36E-05	lb/MMBtu		0.00
Formaldehyde	50-00-0	5.28E-02	lb/MMBtu		0.08
Methanol	67-56-1	2.50E-03	lb/MMBtu		0.00
Methylene Chloride	75-09-2	2.00E-05	lb/MMBtu	AP-42	0.00
Naphthalene	91-20-3	7.44E-05	lb/MMBtu	Table 3.2-2	0.00
Phenol	684-93-5	2.40E-05	lb/MMBtu	(07/00)	0.00
Toluene	87-86-5	4.08E-04	lb/MMBtu		0.00
Vinyl Chloride	108-95-2	1.49E-05	lb/MMBtu		0.00
Xylene	106-50-3	1.84E-04	lb/MMBtu		0.00
1,2-Dichloropropane	78-87-5	2.69E-05	lb/MMBtu		0.00
Styrene	100-42-5	2.36E-05	lb/MMBtu		0.00
1,1,2,2-Tetrachloroethane	79-34-5	4.00E-05	lb/MMBtu		0.00
1,1,2-Trichloroethane	79-00-5	3.18E-05	lb/MMBtu		0.00
2,2,4-Trimethylpentane	540-84-1	2.50E-04	lb/MMBtu		0.00
PAH	---	2.69E-05	lb/MMBtu		0.00
Benzo(b)fluoranthene	205-99-2	1.66E-07	lb/MMBtu		0.00
Chrysene	218-01-9	6.93E-07	lb/MMBtu		0.00
Acenaphthene	83-32-9	1.25E-06	lb/MMBtu		0.00
Acenaphthylene	208-96-8	5.53E-06	lb/MMBtu		0.00
Benzo(g,h,i)perylene	191-24-2	4.14E-07	lb/MMBtu		0.00
Fluoranthene	206-44-0	1.11E-06	lb/MMBtu		0.00
Fluorene	86-73-7	5.67E-06	lb/MMBtu		0.00
Phenanthrene	85-01-8	1.04E-05	lb/MMBtu		0.00
Pyrene	129-00-0	1.36E-06	lb/MMBtu		0.00
Arsenic	7440-38-2	2.0E-04	lb/MMscf		0.00
Beryllium	7440-41-7	1.2E-05	lb/MMscf		0.00
Cadmium	7440-43-9	1.1E-03	lb/MMscf		0.00
Chromium	7440-47-3	1.4E-03	lb/MMscf	AP-42	0.00
Cobalt	7440-48-4	8.4E-05	lb/MMscf	Table 1.4-4	0.00
Manganese	7439-96-5	3.8E-04	lb/MMscf	(07/98)	0.00
Mercury	7439-97-6	2.6E-04	lb/MMscf		0.00
Nickel	7440-02-0	2.1E-03	lb/MMscf		0.00
Selenium	7782-49-2	2.4E-05	lb/MMscf		0.00
				Totals	0.12

V. Existing Air Quality and Monitoring Requirements

The affected area is attainment or unclassified for all applicable national ambient air quality standards or NAAQS. NWE previously conducted ambient air quality modeling for all compressor stations in and near Glacier, Toole, Liberty, and Pondera Counties using two EPA guideline models: ISC2 and COMPLEX. The meteorological data used was taken from the Great Falls Airport National Weather Service station. The modeling submitted assumed approximately 278.5 tons per year of NO_x and 278.5 tons per year of CO. This modeling did not show violations of the annual or hourly ambient standards. The modeling analysis demonstrated that this facility would not cause or contribute to a violation or exceedance of any state or federal ambient standard. No additional modeling is required because NO_x emissions from the facility are 30 tons per year less than those initially modeled for NO_x and nearly 200 tons per year for CO. Since the modeling demonstrated compliance with all applicable ambient standards, no ambient monitoring is necessary for the current permit action.

ISCT3 modeling was used to determine the ambient annual concentrations of HAPs resulting from the Smart Ash Burner. Upper air and surface air data from the National Weather Service for Great Falls (1991) were used to assist in determining the impacts. The results satisfied the conditions of MCA 75-2-215 and ARM 17.8.748. Further information can be found in Permit Application #2784-02. Air modeling was not required for the current permit action because the change reflects an administrative change.

VI. Health Risk Assessment

A health risk assessment was conducted by Bison on behalf of NWE's Dry Creek Field station to demonstrate that the Smart Ash Burner would comply with the negligible risk requirement of MCA 75-2-215. The results from the assessment can be found in MAQP Application #2784-02.

VII. Taking or Damaging Implication Analysis

As required by 2-10-105, MCA, DEQ conducted the following private property taking and damaging assessment.

YES	NO	
X		1. Does the action pertain to land or water management or environmental regulation affecting private real property or water rights?
	X	2. Does the action result in either a permanent or indefinite physical occupation of private property?
	X	3. Does the action deny a fundamental attribute of ownership? (ex.: right to exclude others, disposal of property)
	X	4. Does the action deprive the owner of all economically viable uses of the property?
	X	5. Does the action require a property owner to dedicate a portion of property or to grant an easement? [If no, go to (6)].
		5a. Is there a reasonable, specific connection between the government requirement and legitimate state interests?
		5b. Is the government requirement roughly proportional to the impact of the proposed use of the property?

YES	NO	
	X	6. Does the action have a severe impact on the value of the property? (consider economic impact, investment-backed expectations, character of government action)
	X	7. Does the action damage the property by causing some physical disturbance with respect to the property in excess of that sustained by the public generally?
	X	7a. Is the impact of government action direct, peculiar, and significant?
	X	7b. Has government action resulted in the property becoming practically inaccessible, waterlogged or flooded?
	X	7c. Has government action lowered property values by more than 30% and necessitated the physical taking of adjacent property or property across a public way from the property in question?
	X	Takings or damaging implications? (Taking or damaging implications exist if YES is checked in response to question 1 and also to any one or more of the following questions: 2, 3, 4, 6, 7a, 7b, 7c; or if NO is checked in response to questions 5a or 5b; the shaded areas)

The proposed project would take place on private land. DEQ has determined that the permit conditions are reasonably necessary to ensure compliance with applicable requirements under the Montana Clean Air Act. Therefore, DEQ's approval of MAQP #2784-07 would not have private property-taking or damaging implications.

VIII. Environmental Assessment

An Environmental Assessment was completed for this modification, see attached.

FINAL ENVIRONMENTAL ASSESSMENT

August 14, 2025

Air Quality Permitting Services Section
Air Quality Bureau
Air, Energy and Mining Division
Montana Department of Environmental Quality

PROJECT/SITE NAME: Dry Creek Field, Station 056

APPLICANT/COMPANY NAME: NorthWestern Energy

Montana Air Quality Permit #2784-07

LOCATION: SE¼ of the SW¼ of Section 34, Township 6 South, Range 21 East

COUNTY: Carbon

PROPERTY OWNERSHIP: FEDERAL **STATE** **PRIVATE ✕**

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OVERVIEW OF PROPOSED ACTION

Authorizing Action

Pursuant to the Montana Environmental Policy Act (MEPA), Montana agencies are required to prepare an environmental review for state actions that may have an impact on the Montana environment. The Proposed Action is a state action that may have an impact on the Montana environment; therefore, the Montana Department of Environmental Quality (DEQ) must prepare an environmental review. This EA will examine the proposed action and alternatives to the proposed action and disclose potential and proximate impacts that may result from the proposed and alternative actions. DEQ will determine the need for additional environmental review based on consideration of the criteria set forth in Administrative Rules of Montana (ARM) 17.4.608.

Description of DEQ Regulatory Oversight

DEQ implements the Clean Air Act of Montana, overseeing the development of sources of regulated pollutants and associated facilities. DEQ has authority to analyze proposed emitting units subject to rule established in ARM 17.8.743.

Proposed Action

NorthWestern Energy (NWE) has applied for a Montana Air Quality Permit (MAQP) under the Clean Air Act of Montana, § 75-2-101, et. *seq*. The MAQP regulates a natural gas compressor station, and this action would add two additional compressor engines to the existing MAQP. DEQ may not approve a proposed project contained in an application for an air quality permit unless the project complies with the requirements set forth in the CAA of Montana and the administrative rules adopted thereunder, ARMs 17.8.101 et. seq. The proposed action would be located on privately owned land, in Carbon County, Montana. All information included in this EA is derived from the permit application, discussions with the applicant, analysis of aerial photography, topographic maps, and other research tools.

Table 1. Summary of Proposed Action

General Overview	This permitting action would approve two new 1500 horsepower natural gas compressor engines, one emergency backup diesel-fired generator, and replace a 900,000 British thermal units per hour dehydrator reboiler with a 350,000 British thermal units per hour dehydrator reboiler. Enforceable annual emissions limits for NOx and CO have also been established to achieve Title V synthetic minor status and avoid the requirement for a Title V operating permit.
Duration & Hours of Operation	***Construction:*** Approximately one month ***Operation:*** Continuous operation depending upon compressor station throughput.
Estimated Disturbance	A new building structure would be required with approximate dimensions of 50 feet by 70 feet to house the new compressor engines and compressors. The aerial view of this compressor station pad shows undisturbed area of approximately 180 feet by 200 feet.
Construction Equipment	The following equipment would be utilized: Small cranes and other industrial vehicles used to lift and locate the compressor engines and related infrastructure.

Personnel Onsite	***Construction:*** A small number of construction personnel would be required to complete the construction project. ***Operation:*** No new permanent employees would be anticipated as the facility is normally unstaffed.
Location and Analysis Area	***Location****: T*he facility location is 45.259444°N Latitude, -109.123056°W Longitude. Section 34, Township 6 South, Range 21 East ***Analysis Area****:* The area being analyzed as part of this environmental review includes the immediate project area (Figure 1), as well as neighboring lands surrounding the analysis area, as reasonably appropriate for the impacts being considered.

Table 2. The applicant is required to comply with all applicable local, county, state, and federal requirements pertaining to the following resource areas.

Air Quality	The applicant proposes to add two new compressor engines, one emergency backup generator, replace a dehydrator boiler, and establish Title V synthetic minor emissions limits for NO_X and CO.
Water Quality	This permitting action would not affect water quality. NWE is required to comply with the applicable local, county, state and federal requirements pertaining to water quality.
Erosion Control and Sediment Transport	This permitting action would not affect erosion control and sediment transport once construction on has been completed. NWE is required to comply with the applicable local, county, state and federal requirements pertaining to erosion control and sediment transport during and after construction.
Solid Waste	This permitting action would not affect solid waste in the area. NWE is required to comply with the applicable local, county, state and federal requirements pertaining to solid waste.
Cultural Resources	This permitting action would not affect cultural resources. NWE is required to comply with the applicable local, county, state and federal requirements pertaining to cultural resources.
Hazardous Substances	This permitting action would not contribute to the need to manage any hazardous substances. NWE is required to comply with the applicable local, county, state and federal requirements pertaining to hazardous substances.
Reclamation	This permitting action would not require any reclamation.

Table 3. Cumulative Impacts

Past Actions	There are no recent similar permitting actions at this site. The last air quality permitting action removed two existing engines that were transferred to a different owner operator.
Present Actions	This permitting action regulates two new compressor engines added to an existing permitted facility. The new compressor engines are subject to a regulatory review, including a Best Available Control Technology (BACT) analysis and determination.

Related Future Actions	DEQ is not aware of any future related projects for this facility. Any future projects would be subject to a new permit application.

Purpose, Need, and Benefits

DEQ's purpose in conducting this environmental review is to act upon NWE's application for modification of an existing MAQP to compress natural gas for further processing. DEQ's action on the permit application is governed by § 75-2-201, et seq., Montana Code Annotated (MCA) and the Administrative Rules of Montana (ARM) 17.8.740, et seq.

See Figures 1 and 2 below for the Dry Creek Field Station 056 project location.

Figure 1. General Location of the Proposed Project

Figure 2. Proposed Project Map

Other Governmental Agencies and Programs with Jurisdiction

The proposed action would be located on private land. All applicable local, state, and federal rules must be adhered to, which may include other local, state, federal, or tribal agency jurisdiction. Other governmental agencies which may have overlapped, or additional jurisdiction include but may not be limited to: Montana Board of Oil and Gas and Montana Public Service Commissions.

EVALUATION OF AFFECTED ENVIRONMENT AND IMPACT BY RESOURCE

The impacts analysis will identify and evaluate the proximate direct and secondary impacts to the PHYSICAL ENVIRONMENT AND POPULATION IN THE AREA TO BE AFFECTED BY THE PROPOSED PROJECT. *Direct impacts* occur at the same time and place as the action that causes the impact. *Secondary impacts* are a further impact to Montana's environment that may be stimulated, induced by, or otherwise result from a direct impact of the action (ARM 17.4.603(18)). Where impacts would occur, the impacts will be described in this analysis. When the analysis discloses environmental impacts, these are proximate impacts pursuant to 75-1-201(1)(b)(iv)(A), MCA.

Cumulative impacts are the collective impacts on Montana's environment within the borders of Montana of the Proposed Action when considered in conjunction with other past and present actions related to the Proposed Action by location and generic type. Related future actions must also be considered when these actions are under concurrent consideration by any state agency through pre-impact statement studies, separate impact statement evaluation, or permit processing procedures (ARM 17.4.603(7)). The project identified in Table 1 was analyzed as part of the cumulative impacts assessment for each resource subject to review, pursuant to MEPA (75-1-101, et. *seq*).

The duration of the proposed action is quantified as follows:

- **Construction Impacts (short-term):** These are impacts to the environment that would occur during the construction period, including the specific range of time.

- **Operation Impacts (long-term)**: These are impacts to the environment during the operational period of the proposed action, including the anticipated range of operational time.

The intensity of the impacts is measured using the following:

- **No impact**: There would be no change from current conditions.

- **Negligible**: An adverse or beneficial effect would occur but would be at the lowest levels of detection.

- **Minor**: The effect would be noticeable but would be relatively small and would not affect the function or integrity of the resource.

- **Moderate**: The effect would be easily identifiable and would change the function or integrity of the resource.

- **Major**: The effect would alter the resource.

1. Geology and Soil Quality, Stability and Moisture

This section includes the following resource areas, as required in ARM 17.4.609: Geology; Soil Quality, Stability, and Moisture

Affected Environment

The NWE parcel area soil survey is characterized as Toluca clay loam 4-8 percent slopes. The compressor station is not first-time disturbance for the ground surface. The area where the new compressor engines will be installed is approximately 180 feet by 200 feet of undisturbed area of the site. The new compressors and building would be located on the existing industrial site owned by NWE. The area surrounding the NWE parcel is primarily livestock pasture. The nearest perennial stream is North Dry Creek which flows to the south and east of the compressor station facility.

Direct Impacts

This permitting action would be considered a new disturbance within an existing industrial site. The aerial view of the proposed pad shows an undisturbed area of approximately 180 feet by 200 feet covered by grasses and sage brush. A new building would house the new compressors, and concrete peers would support external piping. Therefore, minor long term direct impacts to geology, soil quality, stability and moisture would be expected because the area was previously undisturbed.

Secondary Impacts

Short term and long term minor secondary impacts to geology, stability, and moisture would be expected because the affected area will be disturbed during construction when graded and graveled.

Cumulative Impacts

Minor cumulative impacts to geology, stability, and moisture would be expected because the proposed action would disturb new ground thereby contributing to ground disturbing impacts already realized by previous permitting actions. The proposed action would also contribute to impacts from any future actions that may occur at the affected site.

2. Water Quality, Quantity, And Distribution

This section includes the following resource areas, as required in ARM 17.4.609: Water Quality, Quantity and Distribution

Affected Environment

The NWE facility is located approximately 7.2 miles northeast of the city of Red Lodge and directly east by approximately 4.8 miles from U.S. Highway 212. The nearest perennial stream is North Dry Creek which flows southeast of the compressor station facility.

Direct Impacts

The construction phase of the proposed project would require ground disturbance and water resources would be used for the control of fugitive dust from construction activities. Given the ephemeral nature of area water resources, it is likely NWE would source water for fugitive dust control from external resources.

No fragile or unique water resources or values are present in the area affected by the proposed project. No direct impacts to water quality and quantity, which are resources of significant statewide and societal importance, would be expected from this permitting action.

Secondary Impacts

During operations, discharges would not be released to ground or surface water because of the proposed project. Further, as permitted, the proposed project would not be expected to cause or contribute to a violation of the applicable secondary NAAQS. See permit analysis for more detailed information regarding air quality impacts. Secondary NAAQS provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, water resources, and buildings. Therefore, no secondary impacts to water quality would be expected because of the proposed project. No new water resources would be required for normal operations of the affected new equipment. No secondary impacts to water quantity, quantity, and distribution would be expected because of the proposed action.

Cumulative Impacts

No major long term cumulative impacts to water quality, quantity, and distribution are anticipated because of the proposed action. Prior actions at the affected site have not resulted in adverse impacts to local water resources. Further, DEQ is unaware of any related actions under concurrent consideration by any state agency through preimpact statement studies, separate impact statement evaluation, or permit processing procedures.

3. Air Quality

This section includes the following resource areas, as required in ARM 17.4.609: Air Quality

Affected Environment

Existing sources of air pollution in the area are limited and generally include fugitive dust associated with high wind events and exposed ground, vehicle travel on unpaved roads (fugitive dust), vehicle exhaust emissions, various agricultural practices (vehicle exhaust emissions and fugitive dust) and emissions from dispersed oil and gas facilities in the affected area (fugitive dust, natural gas flaring, engine exhaust emissions). No significant point-sources of air pollution exist in the area affected by the proposed project. NWE must comply with all laws and regulations relating to air, such as the Federal Clean Air Act, National Ambient Air Quality Standards set by the Environmental Protection Agency (EPA), and the Clean Air Act of Montana.

Direct Impacts

The construction phase of the proposed project would require ground disturbance for establishing a pad for placement of the proposed engines and construction of the compressor engine housing. The use of water resources and reasonable precautions are required for the control of fugitive dust from construction activities and use of existing unpaved roads associated with the established industrial site. Expected emissions from operation of the facility are calculated and presented in the Permit Analysis Section within the Emission Inventory. Emission limits and other conditions deemed necessary to comply with the federal and Montana clean air acts have been incorporated into the permit and, as controlled, the proposed action would not be expected to cause or contribute to a NAAQS violation in the affected area. Any direct impacts would be short-term and negligible.

Air quality standards, set by the federal government and DEQ are enforced by the AQB and

allow for pollutants at the levels permitted within the MAQP. Emissions from the proposed action include particulate matter (PM) species, oxides of nitrogen (NO_X), carbon monoxide (CO), sulfur dioxide (SO_2), volatile organic compounds (VOCs), Hazardous Air Pollutants (HAPs), and GHG emissions.

Air pollution control equipment must be operated at the maximum design for which it is intended (ARM 17.8.752(2)). Limitations would be placed on allowable emissions for the new emission sources. As part of the air quality permit application, NWE submitted a Best Available Control Technology (BACT) analysis for each new or modified emitting unit. BACT limits were reviewed by DEQ and incorporated into MAQP #2784-07 as federally enforceable conditions. These permit limits regulate NO_X, CO, SO_2, VOCs, PM, and HAPs emissions through controls and ongoing compliance demonstrations, as determined by DEQ and incorporated into MAQP #2748-07.

Air quality standards are regulated by the federal Clean Air Act, 42 U.S.C. 7401 et seq. and CAA, § 75-2-201 et., seq. MCA, and are implemented and enforced by DEQ's AQB. As stated above, NWE is required to comply with all applicable state and federal laws. Short- and long-term, minor air quality impacts would be expected because of the proposed action.

Secondary Impacts

Impacts to air quality from the operation of the NWE facility are restricted by MAQP #2784-07. Pursuant to ARM 17.8.749, DEQ cannot issue an air quality permit that would violate any provisions of the federal or Montana clean air acts; therefore, any secondary impacts to air quality would be short- and long-term and minor.

The use of existing unpaved roads to access the proposed facility would occur and would be expected to generate fugitive dust. However, NWE would be subject to reasonable precautions requirements for the control of fugitive dust from vehicle travel on unpaved roads. Further, operation of the permitted equipment would result in the emission of regulated airborne pollutants including NO_X, CO, SO_2, VOCs, PM, and HAPs. As permitted, the proposed project would not be expected to cause or contribute to a violation of the applicable primary or secondary NAAQS. See permit analysis for more detailed information regarding air quality impacts. Primary NAAQS provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary NAAQS provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. Therefore, any secondary impacts would be long-term, consistent with existing impacts in the affected area, and minor.

Cumulative Impacts

Cumulative impacts to air quality from the operation of the NWE facility are appropriately restricted by MAQP #2784-07; therefore, any impacts to air quality would be long-term and minor. There is one stationary source that shares the plot of land and is leased to Big Sky Energy MAQP #5237-01 that contributes to air quality impacts in the affected area. DEQ is unaware of any other existing related actions or future actions under concurrent consideration by any state agency through preimpact statement studies, separate impact statement evaluation, or permit processing procedures.

4. Vegetation Cover, Quantity, and Quality

This section includes the following resource areas, as required in ARM 17.4.609: Vegetation Cover, Quantity and Quality

Affected Environment

DEQ conducted research using the Montana Natural Heritage Program (MTNHP) website and ran a query titled "Environmental Summary Report" dated July 21, 2025. The MTNHP query identified the following plant Species of Concern (SOC) located within or near the affected facility: Beaked Spikerush, Wyoming Thistle, Double Bladderpod, Platte Cinquefoil, High Northern Buttercup, Yellow Beeplant, Slim-pod Venus'-looking-glass, and Hayden's Rimmed Navel Lichen.

According to MTNHP, *Species of Concern* are native taxa that are at-risk due to declining population trends, threats to their habitats, restricted distribution, and/or other factors. Designation as a Montana Species of Concern or Potential Species of Concern is based on the Montana Status Rank and is not a statutory or regulatory classification. Rather, these designations provide information that helps resource managers make proactive decisions regarding species conservation and data collection priorities.

The proposed action would be located within an already established industrial site. The polygon area analyzed using the MTNHP website produces an area inherently larger than the specific disturbance area, so some additional species may be reported that are not necessarily present in the affected area, but nearby.

Direct Impacts

Direct impacts are informed by information, including information from MTNHP, as cited above, that DEQ had available at the time of draft EA preparation and information provided by the applicant. The permit application provided an analysis of aerial photography, proposed site map, and nearby site details to support EA development. Because the proposed action would occur within the boundary of an existing industrial property and some new disturbance would be necessary for installation of the proposed engines, any impacts to vegetation cover, quantity and quality would be minor and long-term.

Secondary Impacts

Once constructed, no additional ground and vegetation disturbance would be expected because of the proposed action. Operation of the permitted equipment, however, would result in the emission of regulated airborne pollutants including NO_X, CO, SO_2, VOCs, PM, and HAPs. As permitted, the proposed project would not be expected to cause or contribute to a violation of the applicable secondary NAAQS. See permit analysis for more detailed information regarding air quality impacts. Secondary NAAQS provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. Therefore, any secondary impacts would be long-term, consistent with existing impacts in the affected area, and minor.

Cumulative Impacts

Long term, minor cumulative impacts to vegetation cover, quality and quantity would be expected because the new compressor engines are located on land that has already been

disturbed by permitted industrial activities within the existing NWE facility property.

5. Terrestrial, Avian, and Aquatic Life and Habitats

This section includes the following resource areas, as required in ARM 17.4.609: Terrestrial and Aquatic Life and Habitats; Unique, Endangered, Fragile, or Limited Environmental Resources

Affected Environment

The affected area is represented by pasture, agricultural crops, intermittent oil and gas wells and residential properties. DEQ conducted research using the MTNHP website and ran a query titled "Environmental Summary Report" dated July 21, 2025. The report identified the following animal Species of Concern (SOC) with observations within or near the affected site: Great Blue Heron, Sage Thrasher, Greater Short-horned Lizard, Pallid Bat, Brewer's Sparrow, Western Milksnake, Little Brown Myotis, Long-eared Myotis, Merriam's Shrew, Sharp-tailed Grouse, Plains Hog-nosed Snake, Ferruginous Hawk, Silver-haired Bat, Townsend's Big-eared Bat, White-tailed Prairie Dog, Loggerhead Shrike, Long-legged Myotis, Suckley's Cuckoo, Bumble Bee, Fringed Myotis, Harlequin Duck, Lewis's Woodpecker, Northern Leopard Frog, Eastern Red Bat, Green-tailed Towhee, Red-headed Woodpecker, and Sprague's Pipit.

According to MTNHP, *Species of Concern* are native taxa that are at-risk due to declining population trends, threats to their habitats, restricted distribution, and/or other factors. Designation as a Montana Species of Concern or Potential Species of Concern is based on the Montana Status Rank and is not a statutory or regulatory classification. Rather, these designations provide information that helps resource managers make proactive decisions regarding species conservation and data collection priorities. The polygon area analyzed using the MTNHP website produces an area inherently larger than the specific disturbance area, so some of the identified species are not necessarily present within the compressor station property, but nearby, especially considering the existing industrial nature of the affected area.

Direct Impacts

Because the affected area constitutes an existing industrial site, any potential impacts to terrestrial, avian and aquatic life and habitats would be long term, negligible to minor, and consistent with existing impacts.

Secondary Impacts

Once constructed, no additional ground disturbance would be expected because of the proposed action. Operation of the permitted equipment, however, would result in the emission of regulated airborne pollutants including NO_X, CO, SO_2, VOCs, PM, and HAPs. As permitted, the proposed project would not be expected to cause or contribute to a violation of the applicable secondary NAAQS. See permit analysis for more detailed information regarding air quality impacts. Secondary NAAQS provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. Therefore, any secondary impacts would be long-term, consistent with existing impacts in the affected area, and minor.

Cumulative Impacts

The proposed new compressor engines are located on land that has already been disturbed by industrial activities and are occurring facility property.

6. Unique, Endangered, Fragile, or Limited Environmental Resources

This section includes the following resource areas, as required in ARM 17.4.609: Unique, Endangered, Fragile, or Limited Environmental Resources.

Affected Environment

As described in Section(s) 4 and 5 above, DEQ conducted a search using the MTNHP webpage. The search used a polygon that overlapped the site and produced the list of species of concern identified in Section 5.

The MTNHP search did not identify the Greater Sage Grouse as a species of concern that has been observed within or near the affected site. Despite a lack of observation within or near the affected site, DEQ recognizes that the site location is within a core area of habitat for the Greater Sage Grouse as defined by Executive Order No. 12-2015. As the application for this project was received after the executive order effective date of January 1, 2016, the proposed project is subject to review under the Executive Order. As required under the executive order, the prosed project was reviewed by the Montana Sage Grouse Oversight Team (MSGOT) and that information was submitted by the applicant to DEQ.

NWE opted to make a contribution to the Stewardship Account, as allowed by the Stewardship Act, instead of developing a permittee-responsible package to offset potential impacts. A total payment of $3,840.63 was assessed for the permitted action. Funds were deposited by NWE on March 24, 2025, to the Stewardship account. The MSGOT awards these funds through the Stewardship Account grant process to conserve habitat and sage grouse populations in southeast Montana.

Direct Impacts

Any potential impacts to sage grouse habitat would be long term and minor to moderate, because the proposed action would require new disturbance during construction of the proposed project. However, because the proposed action would occur within an existing industrial site, it is unlikely sage grouse would occupy or use the site for all or part of their life cycle.

Secondary Impacts

Any secondary impacts to sage grouse habitat would be long term and minor based on the proximity to the nearest lek, which is located over four miles to the away to the southeast. Further, because the proposed action would be consistent with existing industrial operations within the affected area, it is unlikely sage grouse would occupy the affected habitat.

Cumulative Impacts

Any cumulative impacts to sage grouse habitat would be long term and negligible because the affected area has already been disturbed by industrial activities. Therefore, any cumulative impacts would be consistent with existing impacts. Further, because the proposed action would be consistent with existing industrial operations within the affected area, it is unlikely sage grouse would occupy the affected habitat.

7. Historical and Archaeological Sites

This section includes the following resource areas, as required in ARM 17.4.609: Historical and Archaeological Sites

Affected Environment

The Montana State Historic Preservation Office (SHPO) was contacted to conduct a file search for historical and archaeological sites within Section 34, Township 6 South, Range 21 East, in Carbon, County, Montana. SHPO provided a letter dated July 22, 2025, stating there have been no previously recorded cultural sites within the designated search location. According to SHPO, any structure over fifty years of age is considered historic and is potentially eligible for listing on the National Register of Historic Places. If any structures are within the Area of Potential Effect, and are over fifty years old, SHPO recommends that they be recorded, and a determination of their eligibility be made prior to any disturbance taking place. It is SHPO's position that the absence of cultural properties in the area does not mean that they do not exist, but rather may reflect the absence of any previous cultural resource inventory in the area, as the records indicated none.

However, should structures need to be altered, or if cultural materials are inadvertently discovered during this proposed action, SHPO requests their office be contacted for further investigation. Because the proposed action would occur within an existing industrial site, it is unlikely any cultural resources exist in the affected area.

Direct Impacts

No previously recorded historical or archaeological sites have been identified within the project area. If historical or archaeological resources are unexpectedly discovered during project implementation, NWE must cease implementation, and contact SHPO and any affected Tribal Historic Preservation Offices or THPOs for further evaluation. Therefore, no adverse direct impacts would be expected because of the proposed project.

Secondary Impacts

No previously recorded historical or archaeological sites have been identified within the project area. If historical or archaeological resources are unexpectedly discovered during project implementation, NWE must cease implementation, and contact SHPO and any affected THPOs for further evaluation. Therefore, no adverse secondary impacts would be expected because of the proposed project.

Cumulative Impacts

No previously recorded historical or archaeological sites have been identified within the project area. If historical or archaeological resources are unexpectedly discovered during project implementation, NWE must cease implementation, and contact SHPO and any affected THPOs for further evaluation. Therefore, no adverse cumulative impacts would be expected because of the proposed project.

8. Aesthetics

This section includes the following resource areas, as required in ARM 17.4.609: Aesthetics

Affected Environment

The affected area is represented by pasture, agricultural crops, intermittent oil and gas wells and residential properties surrounded by sagebrush and grass. The closest structure, including residential homes, is approximately 0.6 miles away from the facility. The proposed action would occur on private land.

Direct Impacts

The affected area consists primarily of existing pastureland, agricultural crops, intermittent oil and gas wells and residential properties surrounded by sagebrush and grass. Construction of the proposed facility would require new land disturbance. During construction, a minor increase in noise would be expected, but would be temporary, as it would return to typical noise levels following the completion of the installation of the new engines. The compressor station will operate continuously, 24 hours a day. The NWE profile would not change with this permitting action as the new engines would be installed and operated within an existing industrial site owned by NWE. Therefore, any direct impacts would be short-term, consistent with existing impacts, and negligible to minor.

Secondary Impacts

Any secondary impacts would be long-term, consistent with existing impacts, and minor because the affected area constitutes an existing industrial site and the proposed action would include the addition of a new building to house the proposed new compressor engines.

Cumulative Impacts

Long-term, consistent and minor impacts would occur with the addition of the new building to house the compressor engine, which would change in the appearance of the property. This is not considered first time disturbance as the property has already been disturbed by industrial activities because the site is an existing compressor station.

9. Demands on Environmental Resources of Land, Water, Air, or Energy

This section includes the following resource areas, as required in ARM 17.4.609: Demands on Environmental Resources of Land, Water, Air, or Energy

Affected Environment

The site is located on private land. See Sections 2, 3, and 4 of this EA for details regarding land, water, and air impacts.

Direct Impacts

There would be a minor increase in demand for the environmental resources of land, air, and energy for these actions. As discussed previously, any direct impacts to air quality from construction of the proposed project would be minor and would not be expected to cause or contribute to a violation of the primary or secondary NAAQS. There would be minor impacts on energy as the heavy equipment necessary to construct the pad and engine housing would consume fuel. However, any increase in local fuel use for construction-related activities would be temporary.

The proposed project would require additional land disturbance. However, because the proposed action would occur within an existing industrial site, any impacts would be short-term, consistent with existing impacts, and minor. No water would be required for the proposed action. Therefore, any direct impacts would be short-term and minor.

Secondary Impacts

As discussed previously, any secondary impacts to air quality from operation of the proposed new compressor engines would be long-term and minor and would not be expected to cause or contribute to a violation of the primary or secondary NAAQS. There would be minor impacts on energy as the proposed project would compress natural gas for sale. Any increase in local fuel production would be long-term, minor and beneficial. Further, the proposed engines would combust gas collected on site. Therefore, no secondary impacts to local fuel resources would be expected because of the proposed project. The proposed project would require a small amount of land disturbance. However, the affected land is located within an existing industrial site; therefore, the nature of the affected area would not change because of the proposed action. No impacts to water resources would be expected because of the proposed paction.

Cumulative Impacts

Minor cumulative impacts to demands on land, water, air, and energy are anticipated as a result of this permitting action. Minor cumulative impacts are anticipated with the addition of the new compressor engine in terms of land, air, and energy, as this causes an increase demand on all of those areas.

10. Impacts on Other Environmental Resources

This section includes the following resource areas, as required in ARM 17.4.609: Impacts on Other Environmental Resources

Affected Environment

This site is currently an existing compressor station with multiple emitting units onsite.

Direct Impacts

No other environmental resources have been identified in the area beyond those discussed above. Hence, there is no impact to other environmental resources.

Secondary Impacts

No secondary impacts to other environmental resources are anticipated as a result of the proposed permitting action. No secondary impacts are anticipated as a result of the proposed permitting action due to the current industrial nature of the facility. The proposed action would not be expected to cause or contribute to a NAAQS violation. Secondary NAAQS provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

Cumulative Impacts

No cumulative impacts to other environmental resources are anticipated as a result of the proposed permitting action because the proposed action would occur within an existing industrial site.

11. Human Health and Safety

This section includes the following resource areas, as required in ARM 17.4.609: Impacts on Human Health and Safety

Affected Environment

The applicant would be required to adhere to all applicable state and federal safety laws. The Occupational Safety and Health Administration (OSHA) has developed rules and guidelines to reduce the risks associated with this type of labor. Few, if any, members of the public would be in immediate proximity to the project during construction or operations.

Direct Impacts

Construction of the proposed project would require temporary staff to operate heavy equipment, which would increase the likelihood of impacts to the health and safety of affected staff. However, staff would be expected to use safe working practices subject to oversight by the Occupational Safety and Health Administration or OSHA. Therefore, any direct impacts to human health and safety would be short-term, consistent with existing potential impacts from operations at the industrial site, and negligible to minor.

Secondary Impacts

Any secondary impacts to human health and safety would be long-term, consistent with existing impacts, and negligible. Operation of the permitted equipment would result in the emission of regulated airborne pollutants including NO_X, CO, SO_2, VOCs, PM, and HAPs. As permitted, the proposed project would not be expected to cause or contribute to a violation of the applicable primary or secondary NAAQS. See permit analysis for more detailed information regarding air quality impacts. Primary NAAQS provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly.

Cumulative Impacts

Any cumulative impacts to human health and safety because of the proposed action would be long-term, consistent with existing impacts, and minor due to the existing industrial nature of the facility and the inherent risks associated with industrial operations.

12. Industrial, Commercial, and Agricultural Activities and Production

This section includes the following resource areas, as required in ARM 17.4.609: Impacts on Human Health and Safety

Affected Environment

This site is privately owned land by NWE, and the property is an existing industrial site.

Direct Impacts

Construction of the proposed project would require a temporary and limited increase in local industrial activity. Any impacts would be short-term, consistent with existing impacts in the affected area, and negligible.

Secondary Impacts

Long-term, minor secondary impacts to industrial, commercial, and agricultural activities and production are anticipated as a result of the proposed permitting action because the

proposed action would add equipment to the existing industrial site, which would require maintenance and safety checks Further, the increased compressor station throughput would be expected to increase gas production at area gas wells.

Cumulative Impacts

Any cumulative impacts would be long-term and minor as the property has been previously disturbed for the installation and operation of the current compressor station operation and would continue to operate as a compressor station with the addition of the new engines and associated increased industrial capacity (i.e., gas production for sale).

13. Quantity and Distribution of Employment

This section includes the following resource areas, as required in ARM 17.4.609: Impacts on Quantity and Distribution of Employment

Affected Environment

The existing compressor station is staffed intermittently, as needed.

Direct Impacts

Construction of the proposed project, which is expected to last one to two months, would require a few temporary, contracted employees. Therefore, any direct impacts would be short-term, consistent with existing impacts, and negligible.

Secondary Impacts

Following construction, no new permanent employees would be expected because the proposed project would be staffed by existing NWE employees. The proposed action would not be expected to impact the overall distribution of employment as the proposed action would not require new staffing for normal operations.

Cumulative Impacts

The proposed action would be expected to have a negligible cumulative impact on the overall distribution of employment as the facility would rely on no new staff for normal operation. Therefore, there would be negligible cumulative impacts.

14. Local and State Tax Base and Tax Revenue

This section includes the following resource areas, as required in ARM 17.4.609: Impacts on Local and State Tax Base and Tax Revenue

Affected Environment

Local, state, and federal governments would be responsible for appraising the property, setting tax rates, collecting taxes from affected companies, employees, and/or landowners benefiting from this operation.

Direct Impacts

During construction, temporary employees would likely purchase local goods and services resulting in minor beneficial impacts to local tax revenues. TAny impacts would be short-term and minor.

Secondary Impacts

NWE would be responsible for accommodation of taxes associated with the operation of the modified facility. Minor secondary impacts to local and state tax base and tax revenues are anticipated as a result of the proposed permitting action.

Cumulative Impacts

NWE would be responsible for accommodation of taxes associated with the operation of the modified facility. Minor secondary impacts to local and state tax base and tax revenues are anticipated as a result of the proposed permitting action.

15.Demand for Government Services

This section includes the following resource areas, as required in ARM 17.4.609: Impacts on Demands for Government Services

Affected Environment

The area surrounding the NWE site consists of agriculture, livestock pasture, and other similar oil and gas operations.

Direct Impacts

The air quality permit has been prepared by DEQ air quality permitting staff as part of their day-to-day, regular responsibilities. Therefore, any direct impacts to demands for government services would be short-term, consistent with existing impacts, and minor. Compliance review and assistance oversight by DEQ AQB would be conducted in concert with other area activities when in the vicinity of the proposed project. Therefore, any direct impacts would be long-term and negligible to minor, mainly through increased regulatory oversight by DEQ.

Secondary Impacts

Initial and ongoing compliance inspections of facility operations would be accomplished by DEQ Air Quality Staff as part of their typical, regular duties and required to ensure the facility is operating within the limits and conditions listed in the air quality permit. Therefore, any secondary impacts to demands for government services would be long-term, consistent with existing impacts, and minor.

Cumulative Impacts

The air quality permit has been prepared by DEQ air quality permitting staff as part of their day-to-day, regular responsibilities. Following construction of the proposed facility, initial and ongoing compliance inspections of facility operations would be accomplished by state government employees as part of their typical, regular duties and required to ensure the facility is operating within the limits and conditions listed in the air quality permit. Therefore, any cumulative impacts to demands for government services would be long-term, consistent with existing impacts, and negligible. Minor cumulative impacts are anticipated on government services with the proposed action and a minimal increase in impact would occur from the permitting and compliance needs associated with this permitted facility.

16.Locally Adopted Environmental Plans and Goals

This section includes the following resource areas, as required in ARM 17.4.609: Impacts on Locally Adopted Environmental Plans and Goals

Affected Environment

A review was conducted on July 22, 2025, to identify any locally adopted environmental plans or goals. No documents were found on the Carbon County public website at https://carbonmt.gov/. The infrastructure at the Dry Creek Field Station 056 is located in a remote area and does not indicate a shift in the types of industrial activities occuring in Carbon County.

Direct Impacts

This facility is located on private property, and cadastral layers reflect ownership by NWE. Since no planning documents were identified for Carbon County, DEQ relied on a MTNHP and SHPO data search and review, which did not indicate the activity would create any conflicts with inventoried resources.

Secondary Impacts

Because no environmental plans or goals were identified for Carbon County, it is expected that any secondary impacts from further development of the Dry Creek Field Station 056 would be consistent with existing growth policy and planning goals of the affected area. Therefore, negligible to minor secondary impacts would be expected because of the proposed project.

Cumulative Impacts

Because no environmental plans or goals were identified for Carbon County, it is expected that any secondary impacts from further development of the Dry Creek Field Station 056 would be consistent with existing growth policy and planning goals of the affected area. Therefore, negligible to minor cumulative impacts would be expected because of the proposed project.

17. Access to and Quality of Recreational and Wilderness Activities

This section includes the following resource areas, as required in ARM 17.4.609: Impacts on Access to and Quality of Recreation and Wilderness Activities

Affected Environment

The Dry Creek compressor station site is located approximately 4 miles northeast of the city of Red Lodge, Montana and approximately 2 miles directly east of U.S. Highway 212. The station is located 10 miles northeast from the Absaroka-Beartooth Wilderness in a limited access remote area surrounded by livestock pasture.

Direct Impacts

There would be no impacts to access to or quality of wilderness activities as the compressor station is not located close enough to the affected Absaroka-Beartooth Wilderness Area to result in direct impacts. The addition of the proposed compressor engines would not be expected to impact recreational activities because the affected area constitutes an existing industrial site that is not used for recreational purposes. Therefore, no direct impacts to access to and quality of wilderness and recreational activities would be expected because of the proposed project.

Secondary Impacts

No wilderness areas are located adjacent to the affected area. The nearest designated wilderness area is the Absaroka-Beartooth Wilderness area located approximately 10 miles

southwest of the compressor station. Therefore, no secondary impacts to access to and quality of wilderness activities would be expected. No secondary impacts to access and quality of recreational and wilderness activities are anticipated as a result of the proposed permitting action which is wholly contained within the boundary of the parcel.

Cumulative Impacts

No wilderness areas are located nearby or accessed through the affected area. Therefore, no cumulative impacts to access to and quality of wilderness activities would be expected because of the proposed project. No cumulative impacts to access and quality of recreational and wilderness activities are anticipated as a result of the proposed permitting action which is wholly contained within the boundary of the NWE property.

18. Density and Distribution of Population and Housing

This section includes the following resource areas, as required in ARM 17.4.609: Impacts on Density and Distribution of Population and Housing

Direct Impacts

The proposed action would be expected to have a minor increase in temporary construction-related employment in the area due to the pad preparation, building erection and installation of the proposed compressor engines. Because any temporary staff needed for construction related activities would likely use existing temporary housing resources, no impacts to housing in the affected area would be expected during construction of the proposed project. Some minor direct impacts to density and distribution of population would be expected because temporary constraction staff would be required. However, any direct impacts would be short-term, consistent with existing impacts at the existing industrial site, and negligible.

Secondary Impacts

NWE would not be expected to hire additional employees to operate the modified Dry Creek compressor station, instead relying on existing NWE staff for ongoing operation of the modified industrial. Therefore, no secondary impacts to the density and distribution of population and housing would be expected because of the proposed action.

Cumulative Impacts

NWE would not be expected to hire additional employees to operate the existing Dry Creek compressor station, instead relying on existing NWE staff for ongoing operation of the modified industrial. This permitting action would be expected to have a minor increase in temporary construction-related employment in the area due to the pad preparation, building erection and compressor engines installation. No cumulative impacts for additional housing would be expected. Therefore, negligible cumulative impacts to density and distribution of population and housing are anticipated because of the proposed action.

19. Social Structures and Mores

This section includes the following resource areas, as required in ARM 17.4.609: Impacts on Social Structures and Mores

Affected Environment

DEQ is not aware of any Native American cultural concerns that would be affected by the proposed action. Based on the information provided by the applicant, it is not anticipated that this project would disrupt traditional lifestyles or communities. The existing nature of the area affected by the proposed project is industrial and that would not change because of the proposed project.

Direct Impacts

The proposed action is located within an existing industrial site; therefore, no changes to or disruption of native or traditional lifestyles would be expected because of the proposed project and no impacts to local customs and behaviors would be expected because of the proposed project.

Secondary Impacts

No secondary impacts to social structures and mores would be expected because of the proposed action because the affected area is an existing industrial site and would remain an industrial site because of the proposed action.

Cumulative Impacts

No cumulative impacts to social structures and mores would be expected because of the proposed action. Any cumulative impacts would be consistent with the existing industrial nature of the affected area.

20. Cultural Uniqueness and Diversity

This section includes the following resource areas, as required in ARM 17.4.609: Impacts to Cultural Uniqueness and Diversity

Affected Environment

Based on the required information provided by NWE, DEQ is not aware of any unique qualities of the area that would be affected by the proposed action at the existing industrial facility.

Direct Impacts

NWE would not employ new permanent employees to accommodate the proposed action. The proposed project would not be expected to result in an increase or decrease in the local population as the construction would be short term and temporary. Therefore, no direct impacts to the existing cultural uniqueness and diversity of the affected population would be expected because of the proposed project.

Secondary Impacts

NWE would not employ new staff to accommodate the proposed action, and the proposed project would not be expected to result in an increase or decrease in the local population. Therefore, no secondary impacts to the existing cultural uniqueness and diversity of the affected population are anticipated as a result of the proposed action.

Cumulative Impacts

NWE would not employ new staff to accommodate operation for the proposed action, and the proposed project would not be expected to result in an increase or decrease in the local population. Therefore, no cumulative impacts to the existing cultural uniqueness and diversity of the affected population are anticipated as a result of the proposed action.

21. Private Property Impacts

The proposed action would take place on privately-owned land. The analysis below in response to the Private Property Assessment Act indicates no impact. DEQ does not plan to deny the application or impose conditions that would restrict the regulated person's use of private property so as to constitute a taking. Further, because the application was deemed complete, DEQ must take action on the permit pursuant to § 75-2-218(2), MCA. Therefore, DEQ does not have discretion to take the action in another way that would have less impact on private property—its action is bound by a statute. There are private residences in the nearby area of the proposed action. The closest occupied residence is located many miles from the project site.

22. Other Appropriate Social and Economic Circumstances

This section includes the following resource areas, as required in ARM 17.4.609: Impacts to Other Appropriate Social and Economic Circumstances

Affected Environment

The proposed action would allow NWE to install Two new compressor engine, one new emergency back-up generator, and replace a dehydrator reboiler.

Direct Impacts

DEQ is unaware of any other appropriate social and economic circumstances in the affected area that may be directly affected by the proposed project. Therefore, no direct impacts would be expected because of the proposed project.

Secondary Impacts

The proposed project would allow for the construction and operation of two new compressor engines at the existing Dry Creek station. Any impacts to air quality would be long-term and minor. See Ambient Air Quality Impacts in the permit analysis to MAQP #2784-07 for further information. DEQ is unaware of any other appropriate short-term social and economic circumstances in the affected area that may be affected by the proposed project.

Cumulative Impacts

DEQ is unaware of any other appropriate social and economic circumstances in the affected area that may be affected by the proposed project. Therefore, no cumulative impacts would be expected because of the proposed action.

23. Greenhouse Gas Assessment

Issuance of this permit would authorize NWE to install and operate two 1500-hp compressor engines and replace a dehydrator reboiler. It would also limit NOx and CO emissions to a level below the Title V operating permit threshold, making the Dry Creek compressor station a synthetic minor source for the purposes of Title V.

The analysis area for this resource is limited to the activities regulated by the issuance of MAQP #2784-07, which is construction and operation of two 1500-hp compressor engines and replace a dehydrator reboiler, an emergency backup generator, and replacement of an existing dehydrator reboiler. The amount of natural gas fuel utilized at this site may be impacted by a number of factors including seasonal weather impediments and equipment malfunctions. To account for these factors DEQ has calculated the range of emissions using a factor of has calculated the maximum amount of emissions using 8760 hours per year of operation for the compressor engines and dehydrator.

For the purpose of this analysis, DEQ has defined greenhouse gas emissions as the following gas species: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and many species of fluorinated compounds. The range of fluorinated compounds includes numerous chemicals which are used in many household and industrial products. Other pollutants can have some properties that also are similar to those mentioned above, but the EPA has clearly identified the species above as the primary GHGs. Water vapor is also technically a greenhouse gas, but its properties are controlled by the temperature and pressure within the atmosphere, and it is not considered an anthropogenic species.

The combustion of natural gas at the site would release GHGs, primarily CO_2, N_2O and much smaller concentrations of un-combusted fuel components including CH_4 and other volatile organic compounds (VOCs).

DEQ has calculated GHG emissions using the EPA Simplified GHG Calculator version June 2024, for the purpose of totaling GHG emissions. This tool totals CO_2, N_2O, and CH_4 and reports the total as CO_2 equivalent (CO_2e) in metric tons CO_2e emitted. The calculations in this tool are widely accepted to represent reliable calculation approaches for developing a GHG inventory. DEQ has determined EPA's Scope 1 GHG impacts as defined in the Inventory Guidance for Greenhouse Gas Emissions are appropriate under MEPA for this Proposed Action. Scope 1 emissions are defined as direct GHG emissions that occur from sources that are controlled or owned by the organization (EPA Center for Corporate Climate Leadership). DEQ's review of Scope 1 emissions is consistent with the agency not evaluating downstream effects of other types of impacts.

This review does not include an assessment of GHG impacts in quantitative economic terms, otherwise known as evaluating the social cost of carbon. DEQ instead calculates potential GHG emissions and provides a narrative description of GHG impacts. This approach is consistent with Montana Supreme Court caselaw and the agency's discussion of other impacts in this EA. *See Belk v. Mont. DEQ*, 2022 MT 38, ¶ 29.

GHG calculations for CH_4, N_2O, CO_2, and CO_2e use emission factors from the Mandatory Greenhouse Gas Reporting Rule, 40 CFR Part 98 - Table C-1, Table C-2, and Table A-1 (Global Warming Potential, GWP). The most recent version of this rule can be viewed on the e-CFR website.

Direct Impacts

GHG calculations for CH4, N_2O, CO_2, and CO2e use emission factors from the Mandatory Greenhouse Gas Reporting Rule, 40 CFR Part 98 - Table C-1, Table C-2, and Table A-1 (Global Warming Potential, GWP). The most recent version of this rule can be viewed on the e-CFR website.

GHG emissions from one replacement engine are 5,574 metric tons per year (MT/yr) CO2e and 163 MT/yr CO2e from the new dehydrator, so total GHG emissions from both new engines and the new dehydrator are 11,311 MT/yr CO2e. The future offset from removing the existing engines is not considered in this calculation.

Secondary Impacts

GHG emissions contribute to changes in atmospheric radiative forcing, resulting in climate change impacts. GHGs act to contain solar energy loss by trapping longer wave radiation emitted from the Earth's surface and act as a positive radiative forcing component (BLM 2021).

Per EPA's website "Climate Change Indicators", the lifetime of carbon dioxide cannot be represented with a single value because the gas is not destroyed over time. The gas instead moves between air, ocean, and land mediums with atmospheric carbon dioxide remaining in the atmosphere for thousands of years, due in part to the very slow process by which carbon is transferred to ocean sediments. Methane remains in the atmosphere for approximately 12 years. Nitrous oxide has the potential to remain in the atmosphere for about 109 years (EPA, Climate Change Indictors). The impacts of climate change throughout the Southeastern part of Montana include changes in flooding and drought, rising temperatures, and the spread of invasive species (BLM 2021).

Cumulative Impacts

Montana recently used the EPA State Inventory Tool (SIT) to develop a greenhouse gas inventory in conjunction with preparation of a possible grant application for the Community Planning Reduction Grant (CPRG) program. This tool was developed by EPA to help states develop their own greenhouse gas inventories and relies upon data already collected by the federal government through various agencies. The inventory specifically deals with CO_2, CH_4, and N_2O and reports the total as CO_2e in metric tons. The SIT consists of eleven Excel based modules with pre-populated data that can be used with default settings or in some cases, allows states to input their own data when the state believes their own data provides a higher level of quality and accuracy. Once each of the eleven modules is filled out, the data from each module is exported into a final "synthesis" module which summarizes all of the data into a single file. Within the synthesis file, several worksheets display the output data in a number of formats such as GHG emissions by sector and GHG emissions by type of greenhouse gas.

DEQ determined the use of the default data provides a reasonable representation of the greenhouse gas inventory for the various sectors of the state, and the estimated total annual greenhouse gas inventory by year. The SIT data from EPA is currently only updated through the year 2021, as it takes several years to validate and make new data available within revised modules. DEQ maintains a copy of the output results of the SIT.

DEQ has determined that the use of the default data provides a reasonable representation of the GHG inventory for all of the state sectors, and an estimated total annual GHG inventory by year. At present, Montana accounts for 47.77 million metric tons of CO_2e based on the EPA SIT for the year 2021. This project may contribute up to 11,311 metric tons per year of CO2e. The estimated emission of 0.011311 million metric tons of CO2e from this project would contribute 0.024% of Montana's annual CO2e emissions.

GHG emissions that would be emitted as a result of the proposed activities would add to GHG emissions from other sources. The No Action Alternative would contribute less than the Proposed Action Alternative of GHG emissions. The current land use of the area is industrial site.

Description of Alternatives

No Action Alternative: In addition to the proposed action, DEQ must also considered a "no action" alternative. The "no action" alternative would deny the approval of proposed permitting action. The applicant would lack the authority to conduct the proposed activity. Any potential impacts that would result from the proposed action would not occur. The no action alternative forms the baseline from which the impacts of the proposed action can be measured.

If the applicant demonstrates compliance with all applicable rules and regulations required for approval, the “no action” alternative would not be appropriate.

Other Reasonable Alternative(s):

In order to meet the project objective to permit the new compressor engine, the project has limited means to expand the compressor station site without adding engines. There currently are two smaller compressor engines on site and it may theoretically be possible to modify those engines for increased capacity but by selecting the proposed engine, the latest technologies are incorporated into the new engines allowing for lower emission factors. Therefore, the selection of the new engines over attempting to modify older existing engines would result in lower overall emission rates.

If the applicant demonstrates compliance with all applicable rules and regulations as required for approval, the “no action” alternative would not be appropriate. Pursuant to, § 75-1-201(4)(a), (MCA) DEQ “may not withhold, deny, or impose conditions on any permit or other authority to act based on” an environmental assessment.

Consultation

DEQ engaged in internal and external efforts to identify substantive issues and/or concerns related to the proposed project. Internal scoping consisted of internal review of the environmental assessment document by DEQ staff. External scoping efforts also included queries to the following websites/databases/personnel: Application for MAQP # 2784-07, EPA State Inventory Tool, the EPA GHG Calculator Tool, the Montana Natural Heritage Program Website, the State of Montana GIS Mapping Program, the Carbon County website, and the State Historical Preservation office.

Public Involvement

The public comment period for this permit action occurred from July 29, 2025, through August 13, 2025.

Significance of Potential Impacts and Need for Further Analysis

When determining whether the preparation of an environmental impact statement is needed, DEQ is required to consider the seven significance criteria set forth in ARM 17.4.608, which are as follows:

- The severity, duration, geographic extent, and frequency of the occurrence of the impact;
- The probability that the impact will occur if the proposed action occurs; or conversely, reasonable assurance in keeping with the potential severity of an impact that the impact will not occur;
- Growth-inducing or growth-inhibiting aspects of the impact, including the relationship or

contribution of the impact to cumulative impacts – identify the parameters of the proposed action;

- The quantity and quality of each environmental resource or value that would be affected, including the uniqueness and fragility of those resources and values;
- The importance to the state and to society of each environmental resource or value that would be affected;
- Any precedent that would be set as a result of an impact of the proposed action that would commit the department to future actions with significant impacts or a decision in principle about such future actions; and
- Potential conflict with local, state, or federal laws, requirements, or formal plans.

Conclusions and Findings

DEQ finds that this action results in minor impacts to air quality and GHG emissions in Carbon County, Montana.

The severity, duration, geographic extent and frequency of the occurrence of the impacts associated with the proposed air quality project would be limited. The proposed action would not result in first time disturbance at the Dry Creek Compressor Station.

As discussed in this EA, DEQ has not identified any significant impacts associated with the proposed actions for any environmental resource. DEQ does not believe that the proposed activities by the Applicant would have any growth-inducing or growth-inhibiting aspects, or contribution to cumulative impacts. The proposed site does not appear to contain known unique or fragile resources.

There would be negligible to minor impacts to view-shed aesthetics as the site is currently operating as a compressor station site. However, because the infrastructure would be installed within the footprint of the existing Dry Creek compressor station site, any impacts would be consistent with existing impacts.

Demands on the environmental resources of land, water, air, or energy would not be significant. Impacts to human health and safety would not be significant as access roads would be closed to the public and because the site is on Privately Owned Land. The public would not be allowed on the Dry Creek compressor station site.

As discussed in this EA, DEQ has not identified any significant adverse impacts on any environmental resource associated with the proposed activities.

Issuance of a Montana Air Quality Permit to the Applicant does not set any precedent that commits DEQ to future actions with significant impacts or a decision in principle about such future actions If the Applicant submits another modification or amendment, DEQ is not committed to issuing those revisions. DEQ would conduct an environmental review for any subsequent permit modifications sought by the Applicant that require environmental review. DEQ would make permitting decisions based on the criteria set forth in the Clean Air Act of Montana.

Issuance of the Permit to the Applicant does not set a precedent for DEQ's review of other applications for Permits, including the level of environmental review. The level of environmental review decision is made based on case-specific consideration of the criteria set forth in ARM 17.4.608.

Finally, DEQ does not believe that the proposed air quality permitting action would have any growth-

inducing or growth inhibiting impacts that would conflict with any local, state, or federal laws, requirements, or formal plans.

Based on a consideration of the criteria set forth in ARM 17.4.608, the proposed project is not predicted to significantly impact the quality of the human environment. Therefore, preparation of an EA is the appropriate level of environmental review pursuant to MEPA.

PREPARATION

Environmental Assessment and Significance Determination Prepared By:

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Environmental Assessment Reviewed By:

John Proulx, Air Quality Engineering Scientist

Eric Merchant, Air Quality Permitting Services Section Supervisor

Approved By:

Eric Merchant, Air Permitting Section Supervisor
Department of Environmental Quality

July 29, 2025
Date

REFERENCES

1. NWE Dry Creek Compressor station application for permit modification MAQP#2784-07 received May 7, 2025.

2. EPA GHG Calculator Tool https://www.epa.gov/statelocalenergy/state-inventory-and-projection-tool

3. EPA State Inventory Tool, https://www.epa.gov/statelocalenergy/state-inventory-and-projection-tool

4. 2021 BLM Specialist Report on Annual Greenhouse Gas Emissions and Climate Trends, https://www.blm.gov/

5. Bureau of Land Management (BLM) 2021. Specialist Report on Annual Greenhouse Gas Emissions and Climate Trends from Coal, Oil, and Gas Exploration and Development on the Federal Mineral Estate. Available at: https://www.blm.gov/content/ghg/2021/.

6. 2022 BLM https://www.blm.gov/content/ghg/?year=2022

7. SHPO – State Historical Preservation Office Investigation

8. Resource Information System Endangered Species Investigation, https://mtnhp.org

9. Carbon County Website, https://www.carbonmt.gov/

10. MT Sage Grouse Habitat Conservation Program, https://sagegrouse.mt.gov/