March 15, 2019

Jay Skabo
Vice President Electrical Supply
Montana-Dakota Utilities Co. – Lewis & Clark Station
400 North Fourth Street
Bismarck, ND 58501

Sent electronically via e-mail to: Jay.skabo@mdu.com

Dear Mr. Skabo:

Montana Air Quality Permit #0691-05 is deemed final as of March 15, 2019, by the Department of Environmental Quality (Department). This permit is for a tangential coal-fired boiler for power generation. All conditions of the Department's Decision remain the same. Enclosed is a copy of your permit with the final date indicated.

For the Department,

Julie A. Merkel
Permitting Services Section Supervisor
Air Quality Bureau
(406) 444-3626

Ed Warner
Lead Engineer – Permitting Services Section
Air Quality Bureau
(406) 444-2467

JM:EW
Enclosure

Montana Department of Environmental Quality
Air, Energy & Mining Division

Montana Air Quality Permit #0691-05

Montana-Dakota Utilities – Lewis & Clark Station
400 North Fourth Street
Bismarck, North Dakota 58501

March 15, 2019

MONTANA AIR QUALITY PERMIT

Issued To: Montana-Dakota Utilities Co.
Lewis & Clark Station
400 N 4th Street
Bismarck, ND 58501

MAQP: #0691-05
Application Complete: 01/02/2019
Preliminary Determination Issued: 02/11/2019
Department's Decision Issued: 02/27/2019
Permit Final: 03/15/2019

A Montana Air Quality Permit (MAQP), with conditions, is hereby granted to Montana-Dakota Utilities Co. – Lewis & Clark Station (Montana-Dakota), pursuant to Sections 75-2-204 and 211 of the Montana Code Annotated (MCA), as amended, and Administrative Rules of Montana (ARM) 17.8.740, *et seq*., as amended, for the following:

SECTION I: Permitted Facilities

A. Plant Location

The Montana-Dakota facility is located in the SW 1/4 of Section 9, Township 22 N, Range 59 E in Richland County, Montana. A list of the permitted equipment is located in Section I.A of the permit analysis.

B. Current Permit Action

On January 2, 2019, the Department of Environmental Quality (Department) received a complete MAQP application in accordance with the requirements of ARM 17.8.771(9) to address the Best Available Control Technology (BACT) requirement for mercury emissions. ARM 17.8.771(9) requires that no later than 10 years after issuance of a permit containing a mercury emission limit under ARM 17.8.771(1)(b)(i), and every 10 years thereafter, the affected facility must file an application to establish a revised mercury emission limit. This application fulfills this requirement. Montana-Dakota proposed to retain the mercury emission limit of 1.5 pounds per trillion British thermal units (lb/TBtu) on a rolling 12-month average basis.

SECTION II: Conditions and Limitations

A. Emission Limitations

1. Montana-Dakota shall 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).

2. Montana-Dakota shall 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).

3. Montana-Dakota 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 (ARM 17.8.308).

4. Montana-Dakota shall treat all unpaved portions of the haul roads, access roads, parking lots, or general plant area with water and/or chemical dust suppressant as necessary to maintain compliance with the reasonable precautions limitation in Section II.A.4 (ARM 17.8.749)

5. Montana-Dakota shall limit mercury emissions from Unit 1 to an emission rate equal to or less than 1.5 pounds mercury per trillion British thermal units (lb/TBtu), calculated as a rolling 12-month average (ARM 17.8.771).

6. Montana-Dakota shall operate and maintain a mercury control system that oxidizes and sorbs emissions of mercury to achieve compliance with the mercury emissions limit in II.A.5. (ARM 17.8.771).

7. Montana-Dakota shall comply with all applicable standards and limitations, and the applicable operating, reporting, recordkeeping, and notification requirements contained in 40 CFR *Part 75 Continuous Emission Monitoring* (ARM 17.8.771).

8. Montana-Dakota shall not operate more than two 20V34SG Wärtsilä (Wärtsilä) natural gas RICE generator sets at any given time at the Lewis & Clark Station. Each of the engines shall be a of a lean burn four-stroke design, with a nominal gross output of approximately 9.3 megawatts (MW) (ARM 17.8.749).

9. Montana-Dakota shall limit gas consumption during normal operation of the two Wärtsilä natural gas RICE to a maximum of 530.8 MMscf per rolling 12-month period combined (ARM 17.8.752).

10. Emissions from the Wärtsilä RICE generator sets shall be controlled with a selective catalytic reduction (SCR) system using urea as the reaction agent, and an oxidation catalyst capable of maintaining the required emission limits in Sections II.A.11, II.A.12, II.A.13, and, II.A.15 during normal operation. (ARM 17.8.752).

11. Montana-Dakota shall limit Nitrogen Oxides (NO_x) emissions from each of the Wärtsilä natural gas RICE generator sets to an emissions rate equal to or less than 2.6 lb/hr during normal operation (ARM 17.8.752).

12. Montana-Dakota shall limit carbon monoxide (CO) emissions from each of the Wärtsilä natural gas RICE generator sets to an emissions rate equal to or less than 2.4 lb/hr during normal operation (ARM 17.8.752).

13. Montana-Dakota shall limit volatile organic compounds (VOC) emissions from each of the Wärtsilä natural gas RICE generator sets to an emissions rate equal to or less than 7.6 lb/hr during normal operation (ARM 17.8.752).

14. Montana-Dakota shall limit sulfur dioxide (SO_2) emissions from each of the Wärtsilä natural gas RICE generator sets to an emissions rate equal to or less than 0.37 lb/hr during normal operation (ARM 17.8.752).

15. Montana-Dakota shall limit particulate matter ($PM/PM_{10}/PM_{2.5}$) emissions from each of the Wärtsilä natural gas RICE generator sets to an emissions rate equal to or less than 2.27 lb/hr during normal operation (ARM 17.8.752).

16. Montana-Dakota shall limit the total start-up operation[1] (cold, warm and hot) of the two Wärtsilä natural gas RICE to a maximum of 500 hours per rolling 12-month period combined (ARM 17.8.752).

17. Montana-Dakota shall operate a natural gas line heating unit and natural gas HVAC units with a maximum combined heat input not to exceed 4.2 MMBtu/hr (ARM 17.8.749).

18. Montana-Dakota shall comply with all applicable standards and limitations, and the reporting, recordkeeping, and notification requirements contained in 40 CFR 60, Subpart JJJJ, *Standards of Performance for Stationary Spark Ignition Internal Combustion Engines* and 40 CFR 63, Subpart ZZZZ, *National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*, for any applicable natural gas fueled engine (ARM 17.8.340, 40 CFR 60, Subpart JJJJ, ARM 17.8.342, and 40 CFR 63, Subpart ZZZZ).

B. Testing Requirements

1. Enforcement of Section II.A.5, where applicable, shall be determined by utilizing data taken from a Mercury Emission Monitoring System (MEMS). The MEMS shall be comprised of equipment as required in 40 CFR 75.81(a) and defined in 40 CFR 72.2. The above does not relieve Montana-Dakota from meeting any applicable requirements of 40 CFR Part 75. Testing requirements shall be as specified in 40 CFR Part 75, Section II.B, and II.D of MAQP #0691-02 (ARM 17.8.771).

2. The two Wärtsilä natural gas RICE generator sets shall initially be tested for NO_x, CO, and VOC concurrently, and PM within 180 days of the initial start-up date of the generator engine, and the results submitted to the Department in order to demonstrate compliance with the emission limitations contained in Sections II.A.11, II.A.12, and, II.A.13 during normal operation. (ARM 17.8.105, ARM 17.8.749, and ARM 17.8.752).

3. After the initial source test, Montana-Dakota shall test each Wärtsilä natural gas RICE generator set for NO_x, CO and VOC concurrently, every 8,760 hours of operation or 3 years, whichever comes first or according to another testing/monitoring schedule as may be approved by the Department (ARM 17.8.105, ARM 17.8.340, ARM 17.8.749, and ARM 17.8.752).

[1] See Attachment 1 for definition of the term startup operation and clarification of when the limitation and its associated recordkeeping requirements apply.

4. All compliance source tests shall conform to the requirements of the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106).

5. The Department may require further testing (ARM 17.8.105).

C. Operational Reporting Requirements

1. Montana-Dakota shall supply the Department with annual production information for all emission points, as required by the Department 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 the Department by the date required in the emission inventory request. Information shall be in the units required by the Department. This information may be used to calculate operating fees, based on actual emissions from the facility, and/or to verify compliance with permit limitations (ARM 17.8.505).

2. Montana-Dakota shall notify the Department 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 the Department, 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. Montana-Dakota shall report to the Department within 30 days after the end of each calendar quarter, as described in Attachment 2 (ARM 17.8.749):

   a. The monthly average lb/TBtu mercury emission rate, for each month of the quarter;

   b. The 12-month rolling average lb/TBtu emission rate for each month of the reporting quarter; and

   c. Number of operating hours that the MEMS was unavailable or not operating within quality assurance limits (monitor downtime).

4. The first quarterly report must be received by the Department by April 30, 2010, but shall not include 12-month rolling averages. The first quarterly report to include 12-month rolling averages must be received by the Department by January 30, 2011.

5. Montana-Dakota shall document, by month, the gas consumption during normal operation of the two Wärtsilä natural gas RICE collected in the data acquisition system (DAS). By the 25th day of each month, Montana-Dakota shall total the hours of operation for the natural gas RICE for the previous month. The monthly information will be used to demonstrate compliance with the rolling 12-month limitation in Section II.A.9. The information for each of the previous months shall be submitted along with the annual emission inventory (ARM 17.8.749).

6. Montana-Dakota shall document, by month the hours of start-up operations (cold, warm and hot) of the two Wärtsilä natural gas RICE collected in the DAS. By the 25th day of each month, Montana-Dakota shall total the hours of start-up operation for the natural gas RICE for the previous month. The monthly information will be used to demonstrate compliance with the rolling 12-month limitation in Section II.A.16. The information for each of the previous months shall be submitted along with the annual emission inventory (ARM 17.8.749).

7. All records compiled in accordance with this permit must be maintained by Montana-Dakota as a permanent business record for at least 5 years following the date of the measurement, must be available at the plant site for inspection by the Department, and must be submitted to the Department upon request (ARM 17.8.749).

D. Mercury Emissions Monitoring Systems

A MEMS shall be installed, certified, and operating on the Unit 1 stack outlet on or before January 1, 2010. Said monitor shall comply with the applicable provisions of 40 CFR Part 75. The monitors shall also conform with requirements included in Attachment 2 (ARM 17.8.771).

SECTION III: General Conditions

A. Inspection – Montana-Dakota shall allow the Department'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 (continuous emissions monitoring system (CEMS), continuous emissions rate monitoring system (CERMS), or Mercury emissions monitoring system (MEMS)) 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 Montana-Dakota fails to appeal as indicated below.

C. Compliance with Statutes and Regulations – Nothing in this permit shall be construed as relieving Montana-Dakota 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 action as specified in Section 75-2-401, *et seq*., MCA.

E. Appeals – Any person or persons jointly or severally adversely affected by the Department's decision may request, within 15 days after the Department renders its decision, upon affidavit setting forth the grounds therefor, 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 the Department'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 the Department'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, the Department's decision on the application is final 16 days after the Department'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 the Department at the location of the source.

G. Permit Fee – Pursuant to Section 75-2-220, MCA, failure to pay the annual operation fee by Montana-Dakota 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).

Attachment 1
Clarification of Start-up Operations and Conditions

For peaking units, startup emissions are a more frequent occurrence than for baseload facilities. One reason engines such as the Wärtsilä RICE are chosen as peaking units is because the RICE have a fast startup profile. The Wärtsilä RICE can achieve full load within approximately 10 minutes and emission controlled load within approximately 30 minutes from a cold start. However, the fast startup of the RICE results in varying exhaust flow, non-stable temperature, and a range of emission and oxygen levels. The emission control performance and emissions estimates during startup are based on Wärtsilä estimates and laboratory data.

Montana-Dakota anticipates a maximum of 1000 startups per year for the two engines combined (equating to 500 startup events under cold start conditions). During startup, emissions controls (SCR and catalytic oxidation) are not up to temperature, and the full-load emissions limits are not applicable. Wärtsilä characterizes three types of startup for the RICE: cold, warm, and hot startups. Cold startups are described as starting up when the temperature of the SCR catalyst material inside the reactor is close to ambient temperature. These cold catalyst starts are generally expected when the engine has not operated in the previous 2-3 days. To fit in the framework of emissions, a cold start would be defined as starting up following a downtime of greater than 10 hours. A warm start would be defined as starting up following a downtime of between 6 and 10 hours. A hot start would be defined as starting up following a downtime of less than 6 hours. Shorter downtime periods are associated with shorter startup periods and lower emissions.

For the purposes of determining when to apply the startup emission rates, "startup operation" is defined as that period of time from initial start (engine ignition) until applied load and associated equipment, including post-combustion controls, achieve normal operation. Normal operation is achieved when the following criteria have been met:

(1) Exhaust gas temperature at the exit of the SCR reaches 330 degrees Celsius (°C)\626°F; and
(2) Urea injection has commenced.

The "startup operation" definition is intended to provide a consistent basis for defining when the engine is in "startup operation" and can be generally applied to all types of startups (i.e., cold, warm, and hot). The proposed operating parameters can be directly measured and recorded using the engine's data acquisition system (DAS).

Depending on the type of start, the emission control system will reach its full abatement efficiency within 10-30 minutes from the start. Wärtsilä has developed startup emissions for each type of startup. SO_2 emissions remain the same because they are based purely on fuel sulfur content.

To determine the emissions from startup, an average rate of emissions during startup operations was calculated assuming the same number of cold, warm, and hot startups. Multiplying that lb/hr value by the 500 hours per year in startup yields the annual startup emissions in tpy. Montana-Dakota will track the hours in startup in the DAS by recording the time from engine ignition to the exit gas temperature reaching 626°F and urea injection commencing (when normal operation begins).

Attachment 2
Mercury emissions monitoring system (MEMS)

MEMS

a. Montana-Dakota shall install, calibrate, certify, maintain, and operate a MEMS to monitor and record the rate of mercury emissions discharged into the atmosphere from all mercury emitting generating units (units) as defined in the Administrative Rules of Montana 17.8.740.

   (1) The MEMS shall be comprised of equipment as required in 40 CFR 75.81(a) and defined in 40 CFR 72.2.

   (2) The MEMS shall conform to all applicable requirements of 40 CFR Part 75.

   (3) The MEMS data will be used to demonstrate compliance with the emission limitations contained in Section II.A.4.

b. Montana-Dakota shall prepare, maintain and submit a written MEMS Monitoring Plan to the Department.

   (1) The monitoring plan shall contain sufficient information on the MEMS and the use of data derived from these systems to demonstrate that all the gaseous mercury stack emissions from each unit are monitored and reported.

   (2) Whenever Montana-Dakota makes a replacement, modification, or change in a MEMS or alternative monitoring system under 40 CFR 75 subpart E, including a change in the automated data acquisition and handling system (DAHS) or in the flue gas handling system, that affects information reported in the monitoring plan (e.g. a change to a serial number for a component of a monitoring system), then the owner or operator shall update the monitoring plan.

   (3) If any monitoring plan information requires an update pursuant to Section b.(2), submission of the written monitoring plan update shall be completed prior to or concurrent with the submittal of the quarterly report required in c. below for the quarter in which the update is required.

   (4) The initial submission of the Monitoring Plan to the Department shall include a copy of a written Quality Assurance/Quality Control (QA/QC) Plan as detailed in 40 CFR 75 Appendix B, Section 1. Subsequently, the QA/QC Plan need only be submitted to the Department when it is substantially revised. Substantial revisions can include items such as changes in QA/QC processes resulting from rule changes, modifications in the frequency or timing of QA/QC procedures, or the addition/deletion of equipment or procedures.

(5) The Monitoring Plan shall include, at a minimum, the following information:

(a) Facility summary including:

(i) A description of each mercury emitting generating unit at the facility.

(ii) Maximum and average loads (in megawatts (MW)) with fuels combusted and fuel flow rates at the maximum and average loads for each unit.

(iii) A description of each unit's air pollution control equipment and a description of the physical characteristics of each unit's stack.

(b) Mercury emission control summary including a description of control strategies, equipment, and design process rates.

(c) MEMS description, including:

(i) Identification and description of each monitoring component in the MEMS including manufacturer and model identifications; monitoring method descriptions; and normal operating scale and units descriptions. Descriptions of stack flow, diluent gas, and moisture monitors (if used) in the system must be described in addition to the mercury monitor or monitors.

(ii) A description of the normal operating process for each monitor including a description of all QA/QC checks

(iii) A description of the methods that will be employed to verify and maintain the accuracy and precision of the MEMS calibration equipment.

(iv) Identification and description of the DAHS, including major hardware and software components, conversion formulas, constants, factors, averaging processes, and missing data substitution procedures.

(v) A description of all initial certification and ongoing recertification tests and frequencies; as well as all accuracy auditing tests and frequencies.

(d) The Maximum Potential Concentration (MPC), Maximum Expected Concentration (MEC), span value, and range value as applicable and as defined in 40 CFR 75 Appendix A, 2.1.7.

(e) Examples of all data reports required in c. below.

c. Montana-Dakota shall submit written, Quarterly Mercury Monitoring Reports. The reports shall be received by the Department within 30 days following the end of each calendar quarter, and shall include, at a minimum, the following:

(1) Mercury emissions. The reports shall include:

(a) The 12-month rolling average pounds per trillion British thermal units (lb/TBtu) emission rate for each month of the reporting quarter. The rolling 12-month

basis is an average of the last 12 individual calendar monthly averages, with each monthly average calculated at the end of each calendar month;

(b) The monthly average lb/TBtu mercury emission rate for each month of the quarter;

(c) The total heat input to the boiler (in TBtu) for each 12-month rolling period of the quarter; and

(2) Mercury excess emissions. The report shall describe the magnitude of excess mercury emissions experienced during the quarter, including:

(a) The date and time of commencement and completion of each period of excess emissions. Periods of excess emissions shall be defined as those emissions calculated on a rolling 12-month basis which are greater than the limitation established in II.A.4.

(b) The nature and cause of each period of excess emissions and the corrective action taken or preventative measures adopted in response.

(c) If no periods of excess mercury emissions were experienced during the quarter, the report shall state that information.

(3) MEMS performance. The report shall describe:

(a) The number of operating hours that the MEMS was unavailable or not operating within quality assurance limits (monitor downtime) during the reporting quarter, broken down by the following categories:

- Monitor equipment malfunctions;
- Non-Monitor equipment malfunctions;
- Quality assurance calibration;
- Other known causes; and
- Unknown causes.

(b) The percentage of unit operating time that the MEMS was unavailable or not operating within quality assurance limits (monitor downtime) during the reporting quarter. The percentage of monitor downtime in each calendar quarter shall be calculated according to the following formula:

$$MEMSDowntime\% = \left(\frac{MEMSDownHours}{OpHours} \right) x100 \quad \text{where}$$

MEMSDowntime% =Percentage of unit operating hours classified as MEMS monitor downtime during the reporting quarter

MEMSDownHours =Total number of hours of MEMS monitor downtime during the reporting quarter

OpHours =Total number of hours the unit operated during the reporting quarter.

(c) For any reporting quarter in which monitor downtime exceeds 10%, a description of each time period during which the MEMS was inoperative or operating in a manner defined in 40 CFR Part 75 as "out of control." Each description must include the date, start and end times, total downtime (in hours), the reason for the system downtime, and any necessary corrective actions that were taken. In addition, the report shall describe the values used for any periods when missing data substitution was necessary as detailed in 40 CFR 75.30, *et seq*.

(4) The quarterly report shall include the results of any QA/QC audits, checks, or tests conducted to satisfy the requirements of 40 CFR Part 75 Appendices A, B or K.

(5) Compliance certification. Each quarterly report shall contain a certification statement signed by the facility's responsible official based on reasonable inquiry of those persons with primary responsibility for ensuring that all of the unit's emissions are correctly and fully monitored. The certification shall indicate:

(a) Whether the monitoring data submitted were recorded in accordance with the applicable requirements of 40 CFR Part 75 including the QA/QC procedures and specifications of that part and its appendices, and any such requirements, procedures and specifications of an applicable excepted or approved alternative monitoring method as represented in the approved Monitoring Plan.

(b) That for all hours where data are substituted in accordance with 40 CFR 75.38, the add-on mercury emission controls were operating within the range of parameters listed in the quality-assurance plan for the unit, and that the substitute values do not systematically underestimate mercury emissions.

(6) The format of each component of the quarterly report may be negotiated with the Department's representative to accommodate the capabilities and formats of the facility's DAHS.

(7) Each quarterly report must be received by the Department within 30 days following the end of each calendar reporting period (January-March, April-June, July-September, and October-December).

(8) The electronic data reporting detailed in 40 CFR Part 75 shall not be required unless Montana is able to receive and process data in an electronic format.

d. Montana-Dakota shall maintain a file of all measurements and performance testing results from the MEMS; all MEMS performance evaluations; all MEMS or monitoring device calibration checks and audits; and records of all adjustments and maintenance performed on these systems or devices recorded in a permanent form suitable for inspection. The file shall be retained on site for at least five years following the date of such measurements and reports. Montana-Dakota shall make these records available for inspection by the Department and shall supply these records to the Department upon request.

Montana Air Quality Permit (MAQP) Analysis
Montana Dakota Utilities Co. Lewis & Clark Station
MAQP #0691-05

I. Introduction/Process Description

Montana Dakota Utilities Co. Lewis & Clark Station (Montana-Dakota) owns and operates a tangential coal-fired boiler (Unit 1) capable of burning coal or natural gas and associated equipment for generation of electricity. The facility is located in the SW 1/4 of Section 9, Township 22 N, Range 59 E in Richland County, Montana.

A. Permitted Equipment

MAQP #0691-05 applies to

- A mercury emission control system which consists of:
  - An oxidizing agent injection (OAI) system to be operated in conjunction with an activated carbon injection (ACI) system; and,
  - A Mercury Emission Monitoring System (MEMS)
- Two 20V34SG Wärtsilä natural gas reciprocating internal combustion engine (RICE) generating sets
- An indirect fired fuel heater (gas line heater)
- Associated building heating, ventilating and air condition (HVAC) units

B. Source Description

Coal is shipped to Montana-Dakota, unloaded, stored in stockpiles, and delivered to plant storage silos by conveyor. Coal stored in storage silos at Montana-Dakota is conveyed to three coal feeders. The coal is fed to three pulverizers, from which the coal is carried to Unit 1 in a preheated stream of air. The boiler exhaust gas passes through air heaters for heat transfer and then through mechanical dust collectors (multi-cyclone) to capture the large particulate material. The flue gas is then directed to a wet scrubber for control of particulate matter (PM) and sulfur dioxide (SO_2). Solids collected from the multi-cyclone are pneumatically conveyed to an ash storage silo. The scrubber slurry is sluiced to a storage pond for settling and recycling of the sluice water.

The oxidizing agent injection system will be integrated either into Montana-Dakota's coal feeders or between the Unit 1 boiler and the wet scrubber. Delivery of the oxidizing agent will be by truck and storage will be indoors in totes or similar storage containers. The oxidizing agent will be pumped either to a dosing system at the coal feeders and applied to the coal by drip tubes, or to an injection system in the ductwork after the boiler and before the wet scrubber and sprayed into the exhaust gas stream.

The activated carbon injection system will be installed between the Unit 1 boiler and the wet scrubber. Activated carbon will be delivered by truck, pneumatically unloaded, and stored in a new activated carbon silo constructed on-site. The bin vent on the silo will be controlled by a fabric filter. The activated carbon will be injected pneumatically into lances for distribution within the exhaust gas stream.

The Montana-Dakota Lewis & Clark Station shall operate two Wärtsilä natural gas RICE generator sets as peaking units to provide Montana-Dakota with additional generating resources to help meet its customers peak load requirements as well as providing reliability support to the region as a result of the increased peak electric demand in the areas around the Bakken oilfields in Eastern Montana and Western North Dakota.

C. Permit History

On February 25, 2009, the Department of Environmental Quality (Department) issued **MAQP #0691-00**. Unit 1 and associated equipment are not required to have a MAQP as defined in ARM 17.8.743. Unit 1 was in operation before November 23, 1968, and has not undergone modification resulting in an increase of the potential to emit of more than 25 tons per year (tpy) of any regulated airborne pollutant. However, the facility is subject to mercury emission limitations under ARM 17.8.771. MAQP #0691-00 established a mercury emissions limit and associated operating requirements for the boiler in order to comply with ARM 17.8.771.

On March 27, 2009, the Department received a request from Montana-Dakota to amend Attachment 2 of MAQP #0691-00. Subsequent to the issuance of MAQP #0691-00, the Department determined that additional changes to Attachment 2 would be appropriate based on further consideration and internal discussion of Montana-Dakota's previous comments, as well as the Department's needs with respect to the mercury monitoring requirements in Attachment 2. Specifically, the permit action amended Attachment 2 to remove the requirements to report the total ounces of mercury (for both the reporting quarter and the calendar year to date) as well as the total heat input of the boiler for each month of the quarter and the calendar year to date. **MAQP #0691-01** replaced MAQP #0691-00.

On November 7, 2014, the Department received an application to modify MAQP #0691-01 to construct, operate and maintain two 20V34SG Wärtsilä natural gas RICE generator sets (with an engine horsepower (hp) rating of approximately 12,526 hp), an indirect fired fuel heater (1.2 MMBtu/hr natural gas line heater), and associated building heating, ventilating and air condition (HVAC) units, for the purpose of generating electricity at the Lewis & Clark Station. **MAQP #0691-02** replaced MAQP #0691-01.

On May 4, 2015, the Department received a request to administratively amend Montana-Dakota's MAQP #0691-02 to change the wording of the condition requiring that they install and operate an oxidizing agent injection (OAI) system and an activated carbon injection (ACI) system to achieve compliance with their mercury emissions limit. Montana-Dakota has had both of these systems installed and in operation since January 2010. During low load conditions, Montana-Dakota has noticed that the use of the OAI causes the ACI system to overcompensate because

of increased oxidized mercury in the flue gas. Montana-Dakota utilizes an ACI sorbent that also contains an oxidizing agent so the ACI system by itself provides both oxidizing and sorbing (also referred to as adsorption) of mercury. Since the ACI system they use is also acting as an OAI system and they believe that the ACI system alone will provide for optimized mercury control during low load conditions, Montana-Dakota requested that the wording of the applicable permit condition be changed to "Montana-Dakota shall operate and maintain a mercury control system that oxidizes and sorbs emissions of mercury to achieve compliance with the mercury emissions limit." Both the dedicated ACI and OAI systems will continue to be used as necessary such as during full load conditions. The proposed language maintains the requirement that Montana-Dakota utilize activated carbon injection as well as an oxidizing agent for mercury control and provides for some operational flexibility to optimize that control over the full range of load conditions. **MAQP #0691-03** replaced MAQP #0691-02.

On June 24, 2016, the Department received an application to modify MAQP #0691-03 in accordance with the requirements of ARM 17.8.771(9) to establish a revised mercury emission limit. ARM 17.8.771(9) requires that no later than 10 years after issuance of a permit establishing a mercury emission limit under ARM 17.8.771(1)(b)(i), and every 10 years thereafter, the affected facility must file an application to establish a revised mercury emission limit. Montana-Dakota received their initial MAQP establishing a mercury emissions limit for Unit 1 on February 25, 2009 and this application was intended to fulfill the ARM 17.8.771(9) requirement. The application included a review of mercury control information for other lignite units in the Unites States and the control system in place at Lewis & Clark Station. Montana-Dakota proposed to change the mercury emission limit from 1.5 pounds per trillion British thermal units (lb/TBtu) on a rolling 12-month average basis to 2.8 lb/TBtu on a rolling 12-month average basis.

ARM 17.8.771 and ARM 17.8.772 were established in 2006 and are collectively referred to as the Montana Mercury Rule. When these rules were crafted, mercury control technology was in the early development stages for electricity generating units and there was uncertainty that sources could reliably achieve the applicable mercury emission limits. The Montana Mercury Rule contemplated this uncertainty and included "soft landing" provisions for sources that failed to achieve the applicable mercury emission limit under normal operation, despite properly implementing a mercury control strategy that was approved according to the rule. These provisions offer an avenue to establish a less-stringent alternative mercury emission limit in association with a revised mercury control strategy. The revised mercury control strategy must demonstrate how compliance with ARM 17.8.771(1)(b) is projected to be achieved as soon as reasonably practicable but no later than 2018. The level of this alternative mercury emission limit has an upper bound as well as an expiration date of January 1, 2018. A lignite-combusting source which had been granted an alternative mercury emission limit could potentially seek a revised alternative mercury emission limit not to exceed 2.8 lb/TBtu on a rolling 12-month average basis effective after January 1, 2018 (ARM 17.8.771(8)(a)). The Montana-Dakota application sought to establish an alternative mercury emission limit at this level.

Due to the characteristics of the lignite coal, Montana-Dakota must rely on an aggressive application of the oxidizing agent calcium bromide ($CaBr_2$) to the coal feed prior to combustion. The $CaBr_2$ is highly corrosive and results in accelerated wear on the coal feeding equipment; primarily the air heater baskets, coal feeder pipes, and coal mills. Montana-Dakota must repair and replace these components on a much more frequent basis than before the mercury control system was operating. By achieving a mercury emission rate of 2.8 lb/TBtu on a rolling 12-month average basis rather than 1.5 lb/TBtu, Montana-Dakota could potentially reduce the rate of $CaBr_2$ application and reduce the rate of corrosion on the coal feeding equipment. The application indicated that compliance with the proposed 2.8 lb/TBtu on a rolling 12-month basis would also comply with the federal regulation 40 CFR 63, Subpart UUUUU – National Emissions Standard for Hazardous Air Pollutants: Coal and Oil-Fired Electric Utility Steam Generating Units, commonly referred to as the Mercury and Air Toxics Standard (MATS).

The Department determined that while the Montana Mercury Rule includes provisions for establishing an alternative mercury emission limit, it is dependent on the source not being able to reliably achieve the applicable limit found in ARM 17.8.771(1)(b) under normal operation. The Lewis & Clark Station has been achieving the applicable mercury emission limit in accordance with the rule and therefore did not meet the criteria for seeking an alternative mercury emission limit. The Department did not issue **MAQP #0691-04** and MAQP #0691-03 remained in place.

D. Current Permit Action

On January 2, 2019, the Department received a complete MAQP application in accordance with the requirements of ARM 17.8.771(9) to establish a revised mercury emission limit. ARM 17.8.771(9) requires that no later than 10 years after issuance of a permit containing a mercury emission limit under ARM 17.8.771(1)(b)(i), and every 10 years thereafter, the affected facility must file an application to establish a revised mercury emission limit. Montana-Dakota received their initial MAQP establishing a mercury emissions limit for Unit 1 on February 25, 2009 and this application was intended to fulfill the ARM 17.8.771(9) requirement. Montana-Dakota proposed to retain the mercury emission limit of 1.5 lb/TBtu on a rolling 12-month basis as the revised mercury emission limit. **MAQP #0691-05** replaces MAQP #0691-03.

E. Response to Public Comments

Person/Group Commenting	Permit Reference	Comment	Department Response
		No comments were received	

F. Additional Information

Additional information, such as applicable rules and regulations, Best Available Control Technology (BACT)/Reasonably Available Control Technology (RACT) 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 ARM and are available, upon request, from the Department. Upon request, the Department 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 the Department, 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 the Department.

3. ARM 17.8.106 Source Testing Protocol. The requirements of this rule apply to any emission source testing conducted by the Department, 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).

   Montana-Dakota shall comply with the 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 the Department upon request.

4. ARM 17.8.110 Malfunctions. (2) The Department 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 the following:

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}

Montana-Dakota must maintain compliance with the applicable ambient air quality standards.

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

1. ARM 17.8.304 Visible Air Contaminants. (1) This rule requires that no person may 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). (2) 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, Montana-Dakota 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 17.8.322 Sulfur Oxide Emissions--Sulfur in Fuel. (4) Commencing July 1, 1972, no person shall burn liquid or solid fuels containing sulfur in excess of 1 pound of sulfur per million Btu fired. (5) Commencing July 1, 1971, no person shall burn any gaseous fuel containing sulfur compounds in excess of 50 grains per 100 cubic feet of gaseous fuel, calculated as hydrogen sulfide at standard conditions. Montana-Dakota will utilize pipeline quality natural gas for operating its fuel burning equipment, which will meet this limitation.

7. 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.

8. ARM 17.8.340 Standard of Performance for New Stationary Sources and Emission Guidelines for Existing Sources. This rule incorporates, by reference, 40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS). Montana-Dakota is considered an NSPS affected facility under 40 CFR Part 60 and is subject to the requirements of the following subparts.

   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 contains NSPS requirements that apply to owners or operators of stationary spark ignition (SI) internal combustion engines (ICE) that commence construction, modification, or reconstruction after June 12, 2006, where the stationary ICE is manufactured after July 1, 2007, for engines greater than 500 bhp, or after January 1, 2008, for engines less than 500 bhp. Because the natural gas RICE were manufactured after July 1, 2007, this NSPS does apply.

9. ARM 17.8.342 Emission Standards for Hazardous Air Pollutants for Source Categories. The source, as defined and applied in 40 CFR Part 63, shall comply with the requirements of 40 CFR Part 63, as listed below:

   a. 40 CFR 63, Subpart A – General Provisions apply to all equipment or facilities subject to an a National Emission Standards for Hazardous Air Pollutants (NESHAP)Subpart as listed below:

   b. Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines. This rule establishes national emission limitations and operating limitations for hazardous air pollutants (HAP) emitted from stationary RICE located at major and area sources of HAP emissions. Affected sources include any existing, new or reconstructed stationary RICE located at a major or area source of HAP emissions. A stationary RICE is new if construction of the RICE commenced on or after June 12, 2006.

      Since the two four-stroke-lean burn natural gas stationary RICE generators at the Montana-Dakota Lewis & Clark station were constructed after June 12, 2006, the engines are considered new stationary RICE located at an area source of HAP emissions, and must meet the requirements specified by 40 CFR 63.6590(b)(3)(c) by meeting the requirements of 40 CFR 60 subpart JJJJ.

c. Subpart CCCCCC—National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities. This subpart establishes national emission limitations and management practices for hazardous air pollutants (HAP) emitted from the loading of gasoline storage tanks at gasoline dispensing facilities (GDF). This subpart also establishes requirements to demonstrate compliance with the emission limitations and management practices.

A GDF is any stationary facility which dispenses gasoline into the fuel tank of a motor vehicle, motor vehicle engine, nonroad vehicle, or nonroad engine, including a nonroad vehicle or nonroad engine used solely for competition. These facilities include, but are not limited to, facilities that dispense gasoline into on- and off-road, street, or highway motor vehicles, lawn equipment, boats, test engines, landscaping equipment, generators, pumps, and other gasoline-fueled engines and equipment. The 155 gallon gasoline tank (EU06) located at the Montana-Dakota Lewis & Clark facility is subject to this subpart.

D. ARM 17.8, Subchapter 4 – Stack Height and Dispersion Techniques, including, but not limited to:

1. ARM 17.8.401 Definitions. This rule includes a list of definitions used in this chapter, unless indicated otherwise in a specific subchapter.

2. ARM 17.8.402 Requirements. Montana-Dakota must demonstrate compliance with the ambient air quality standards with a stack height that does not exceed Good Engineering Practices (GEP). The proposed height of the new or modified stack for Montana-Dakota is below the allowable 65-meter GEP stack height.

E. 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. This rule requires that an applicant 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 the Department. Montana-Dakota submitted the appropriate permit application fee for this action.

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 the Department by each source of air contaminants holding an air quality permit (excluding an open burning permit) issued by the Department. 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. The Department 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.

F. 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 for any facility or emitting unit upon which construction commenced, or that was installed, before November 23, 1968, when that facility or emitting unit is modified after that date and the modification increases the potential to emit (PTE) by more than 25 tons per year of any airborne pollutant, other than lead, that is regulated under this chapter. Although Montana-Dakota was in operation before November 23, 1968 with a PTE less than 25 tons per year, an MAQP application was required pursuant to ARM 17.8.771 for mercury-emitting generating units. In addition, subsequent equipment installations at the facility had a PTE increase greater than 25 tons per year of VOCs therefore, an air quality 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. Montana-Dakota submitted the required 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. Montana-Dakota submitted an affidavit of publication of public notice for the December 26, 2018 issue of the *Sidney Herald* in the Town of Sidney in Richland County, as proof of compliance with the public notice requirements.

6. ARM 17.8.749 Conditions for Issuance or Denial of Permit. This rule requires that the permits issued by the Department 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 the Department 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 Montana-Dakota 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 the Department'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 the Department.

15. ARM 17.8.771 Mercury Emission Standards for Mercury-Emitting Generating Units. This rule identifies mercury emission limitation requirements, mercury control strategy requirements, and application requirements for mercury-emitting generating units. (9) No later than ten years after issuance of the permit containing the mercury emission limit, and every ten years thereafter, the owner or operator of a mercury-emitting generating unit, for which the Department has established a mercury emission limit under this rule, shall file an application with the Department to establish a revised mercury emission limit. This application fulfills this requirement.

G. 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 FCAA that it would emit, except as this subchapter would otherwise allow.

   This facility is a listed source and has the PTE 100 tpy or more of pollutants subject to regulation under the FCAA; therefore, the facility is major. The current permit action is required by ARM 17.8.771(9) and does not result in an increase in emissions of any regulated pollutant. Therefore the project would not constitute a major modification pursuant to ARM 17.8.801(20) and Prevention of Significant Deterioration regulations would not apply.

H. 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 source having:

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

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

   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. (1) 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 #0691-05 for Montana-Dakota, the following conclusions were made:

   a. The facility's PTE is greater than 100 tons/year for any pollutant.

   b. The facility's PTE is less than 10 tons/year for any one HAP and less than 25 tons/year for all HAPs.

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

   d. This facility is subject to a current NSPS (40 CFR 60, Subpart JJJJ).

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

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

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

   Based on these facts, the Department determined that Montana-Dakota is subject to the Title V operating permit program. Montana-Dakota was issued Title V Operating Permit #OP0691-07 on July 14, 2017.

III. BACT Determination

A BACT determination is required for each new or modified source. Montana-Dakota 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.

The current permit action addresses the BACT requirement for mercury emissions pursuant to ARM 17.8.771(9). ARM 17.8.771(9) requires that no later than 10 years after issuance of a permit establishing a mercury emission limit under ARM 17.8.771(1)(b)(i), and every 10 years thereafter, the affected facility must file an application to establish a revised mercury emission limit. Montana-Dakota received their initial MAQP establishing a mercury emissions limit for Unit 1 on February 25, 2009 and this application was intended to fulfill the ARM 17.8.771(9) requirement. The application included a review of mercury control information for other lignite units in the Unites States and the control system in place at Lewis & Clark Station.

A. Step 1 – Identify All Control Technologies

Montana-Dakota considered mercury emission control technologies (sorbent injection, oxidizing agent injection, and scrubber additives) and boiler technologies (oxidizing agents applied to the coal and multipollutant control strategies) to comply with the mercury emission limit. Mercury is defined in ARM 17.8.740 as "mercury or mercury compounds in either a gaseous or particulate form." In the gaseous form, mercury is in the elemental or the oxidized (ionic) form. Mercury is present in coal in trace amounts in various forms and is released during combustion as elemental mercury vapor. This elemental mercury vapor may then be oxidized by chlorine compounds present in the gas stream. Since lignite typically has low chlorine content, a majority of mercury emissions from lignite combustion are in the elemental vapor-phase form, which is not captured using common particulate control devices (i.e. multi-cyclone, wet scrubbers). A small fraction of mercury emissions from coal combustion are in the ionic, vapor-phase form, which can be captured using common particulate control devices. Very low mercury emissions from coal combustion are in the particulate phase (i.e. in the fly ash), which can also be captured using common particulate control devices. As such, Montana-Dakota focused on converting the elemental mercury to ionic or particulate mercury for capture in its particulate control devices. The technologies considered by Montana-Dakota included sorbent injection, utilization of oxidizing agents, use of scrubber additives, and multipollutant controls.

1. Sorbent Injection

Sorbent injection introduces a sorbent into the process exhaust gas stream, where it provides active surfaces that promote adsorption of exhaust mercury. The resulting particulate-bound mercury can be captured by particulate emissions control equipment. Standard powdered activated carbon injection, also referred to as activated carbon injection, is effective for reducing and controlling mercury emissions from coal combustion. However, the levels of chlorine and sulfur in the combustion gases are key in determining mercury capture efficiency. As chlorine content is generally low in western coals, treated sorbents are generally more prevalent for units that burn this coal. For example, halogenated sorbents enhance elemental mercury oxidation and overall mercury adsorption.

2. Oxidizing Agents

Oxidizing agents convert elemental mercury to ionic mercury through an oxidation reaction. Oxidizing agents are typically halogens or other strong oxidants such as calcium bromide (CaBr2), ozone, or permanganates. These agents work in the same manner as chlorine, naturally present in higher-grade coals (and generally eastern coals), to oxidize the mercury following combustion. The ionic mercury can then be captured in common particulate control devices (i.e. the wet scrubber). Oxidizing agents can be applied to the coal in the feeder system to be released with the elemental mercury during combustion, or to the flue gas stream after the boiler. Oxidizing agent injection technology can be used in conjunction with other technologies such as activated carbon injection; in this case the ionic mercury is adsorbed onto carbon particles and is then captured in the particulate control device.

3. Scrubber Additives

Chemical additives can be introduced into the wet scrubber liquor to enhance mercury removal. The purpose of the additive is to limit chemical reduction of ionic mercury to elemental mercury already captured by the wet scrubber. Chemical reduction typically occurs by reaction with aqueous sulfite and/or bisulfite species in solution because of SO2 absorption. If reduction occurs, elemental mercury is not soluble and is re-emitted into the exhaust gases. In general, scrubber additives are used as an enhancement to other mercury control options and not as a primary method. Testing at the Lewis & Clark Station indicated that the combination of scrubber additives with oxidizer agent injection would not meet the Montana Mercury Rule limit, and Montana-Dakota moved on from that technology to the sorbent and oxidizer injection combination that was predicted to meet the 1.5 lb/TBtu limit.

B. Step 2 – Eliminate Technically Infeasible Options

All of the control options listed are technically feasible.

C. Step 3 – Rank Remaining Technologies by Control Effectiveness

According to information provided in the permit application, the average mercury content in the lignite coal used at Lewis & Clark Station is approximately 15 lb/TBtu. Consistently meeting the Montana Mercury Rule limit of 1.5 lb/TBtu requires a control efficiency of at least 90%. The following table lists the control efficiencies based on site-specific studies conducted at Lewis & Clark Station as well as estimates provided to Montana-Dakota by mercury control technology consultants. Mercury control is very specific to coal quality and characteristics as well as control configuration; therefore, Lewis & Clark Station data is the basis for the calculations.

Control Technology	Mercury Reduction (% control)
Sorbent Injection/Oxidation Agent Injection	68-92%
Sorbent Injection	34-75%
Oxidation Agent Injection with/without Scrubber Additive	40-55%

D. Step 4 – Evaluate Most Effective Mercury Controls and Document Results

Montana-Dakota is currently operating the highest ranked mercury control option; a sorbent injection/oxidation agent injection system that includes sorbent material infused with oxidizing agent added post-boiler plus oxidizing agent added pre-boiler at high rates. The high rate of $CaBr_2$ application has resulted in accelerated wear on the coal feeding equipment; primarily the air heater baskets, coal feeder pipes, and coal mills. Montana-Dakota must repair and replace these components on a much more frequent basis than before the mercury control system was operating. They have not found an alternative to this chemical that would still allow the Lewis & Clark Station to meet the Montana Mercury Rule emission limit for lignite and lessen equipment damage. Montana-Dakota is continually working with vendors and researchers on different sorbent types that would maintain mercury control while reducing equipment damage. Potassium iodide (KI) is being explored as a substitute for $CaBr_2$.

E. Step 5 – Select Mercury BACT

A control system that oxidizes and sorbs emissions of mercury remains the most effective and best mercury emission control technology system for the Lewis & Clark Station. Montana-Dakota proposes to retain the current limit of 1.5 lb/TBtu on a rolling 12-month average basis as the revised mercury emission limit under ARM 17.8.771(9). The Department concurs that this remains BACT for mercury and establishes 1.5 lb/TBtu on a rolling 12-month average basis as the revised mercury emission limit in accordance with 17.8.771(9).

IV. Emission Inventory

Boiler (Unit 1)

Maximum Capacity: 600 MMBtu/hr (company information)
Emission Rate: 1.5 lb/TBtu (permit limit)
Hours of Operation: 8760 hr/year
Mercury Emissions: 600 MMBtu/hr * 1 TBtu/10^6 MMBtu * 1.5 lb/TBtu * 8760 hr/yr = 7.88 lb/yr

MAQP #0691-02 Permit Action

Project Emissions Summary									
	Description New Emitting Units	**PM10 (tpy)**	**PM2.5 (tpy)**	**SOx (tpy)**	**NOx (tpy)**	**VOC (tpy)**	**CO (tpy)**	**CO2e (tpy)**	**HAPS (tpy)**
EU10	20V34SG Wärtsilä RICE Generators #1 & #2	9.77	9.77	1.56	13.11	34.87	11.13	34967.66	7.49
IEU15	Natural Gas Line Heater	0.04	0.04	0.03	0.24	0.03	0.41	723.57	0.01

IEU16	Building Heaters\HVAC Units	0.08	0.08	0.06	1.03	0.06	0.44	1641.18	0.02
IEU17	Fugitive Road Dust	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Emissions		**9.93**	**9.90**	**1.65**	**14.38**	**34.96**	**11.97**	**37332.40**	**7.52**

20V34SG Wärtsilä Reciprocating Internal Combustion Engines

Generator Electrical Output - Gross	9341	kW
Engines	2	
Fuel	Natural Gas	
Annual Hours of Operation**	3970	hours
Natural Gas Heat Content	1086	btu/scf
Heat Rate	7761	Btu/kWh
Heat Input	72.6	MMBtu/hr

**The RICE emissions are calculated as individual units, but the permitted limit a natural gas throughput limit of 530.8 MMScf/ rolling 12-month period combined. Calculating each RICE (they are identical) at 3790 hours per year equates to the same overall emissions.
Calculation: (72.6 MMBtu/hr / 1,086 Btu/scf) * (3,970 hr/yr-engine * 2 engines) = 530.8 MMscf/yr

Startup Type	Number of annual startups	Average Daily Startups total
3Cold Start	166.7	0.5
6-hrs down	166.7	0.5
12-hrs down	166.7	0.5
Total	500	1.4

Startup Emission Data[1]			
Emission rate Per startup type (lb/30 min)			
Pollutant	**Cold Start**	**Warm Start**	**Hot Start**
NOx	7.4	5.9	3.4
CO	6.5	1.8	1.3
VOC	10.2	9.4	8.6
PM2.5/PM10/PM	1.5	1.5	1.5
SO2	0.2	0.2	0.2

1. Data supplied by manufacturer

Startup Emission Data 30 minute startup with 30 minute steady state operation			
Pollutant	Emission rate Per startup type (lb/hr)		
	Cold Start	**Warm Start**	**Hot Start**
NOx	14.80	11.80	6.80
CO	13.00	3.60	2.60
VOC	20.40	18.80	17.20
PM2.5/PM10/PM	3.00	3.00	3.00
SO2	0.37	0.37	0.37

1. NOx Startup emissions: 166.7 hr/yr x (14.8 lb/hr +11.8 lb/hr +6.8 lb/hr) = 5,567.78 lb/yr
5,567.78/2000 (lb/ton) = 2.784 tpy

Steady State Emissions							Startup Emissions Total[1]	Annual Emissions Incl Startup (2 engines)
Pollutant	**Steady State Emission Factor**	**Emission Factor Units**	**Factor Source**	**Emissions lb/hr**	**Emissions Each tpy**	**Emissions Total tpy**		
NOx	2.60	lb/hr	Manuf	2.6	5.2	10.3	2.78	13.1
CO	2.40	lb/hr	Manuf	2.4	4.8	9.5	1.6	11.1
VOC	7.6	lb/hr	Manuf	7.6	15.1	30.2	4.7	34.9
PM2.5/PM10/ PM	0.0313	lb/MMBtu	Manuf	2.27	4.5	9.0	0.75	9.8
SO2	0.0051	lb/MMBtu	Manuf	0.37	0.7	1.5	0.0925	1.6
CO2	942.00	lb/MWh-gross	Manuf	8799.22	17466.5	34932.9	0	34932.9
CH4	0.001	kg/mmBtu	40 CFR 98 Subpart C, Table C-2	0.16	0.3	0.6	-	0.6
N2O	0.0001	kg/mmBtu	40 CFR 98 Subpart C, Table C-2	0.02	0.0	0.1	-	0.1
CO2e	applying global warming potentials to mass emission rates		40 CFR 98 Subpart A, Table A-1	8808	17483.8	34967.7	-	34967.7

Hazardous Air Pollutants (HAPs) - 20V34SG Wärtsilä Reciprocating Internal Combustion Engines

Total HAPs	7.49 TPY

Natural Gas Line Heater

Max. Fuel Combustion Rate =	1.20 MMBtu/hr
Fuel Usage =	9.68 MMscf/yr
Fuel Low Heating Value=	1,086 MMBtu/MMscf
Hours of Operation =	8,760 hr/yr
Conversions:	1,086 MMBtu/MMscf
	2000 lbs/ton

Criteria Pollutants					
Pollutant	**Emissions Factor**	**Units**	**Emissions Factor Reference**	**Emissions (lbs/hr)**	**Emissions (tons/yr)**
PM	7.6	lb/MMscf	AP-42 Table 1.4-2 (07/98)	8.40E-03	0.037
NOx	50	lb/MMscf	AP-42 Table 1.4-1 (07/98)	5.52E-02	0.242
CO	84	lb/MMscf	AP-42 Table 1.4-1 (07/98)	9.28E-02	0.407
VOC	5.5	lb/MMscf	AP-42 Table 1.4-2 (07/98)	6.08E-03	0.027

SO2	5.71	lb/MMscf	Calculated, 2 gr/100 scf	6.31E-03	0.028
CO2	148774.0	lb/MMscf	AP-42 Table 1.4-2 (07/98)	1.64E+02	720.033
CH4	2.3	lb/MMscf	AP-42 Table 1.4-2 (07/98)	2.54E-03	0.011
N2O	2.2	lb/MMscf	AP-42 Table 1.4-2 (07/98)	2.43E-03	0.011
Total CO2e	149504.3	lb/MMscf	AP-42 Table 1.4-2 (07/98)	1.65E+02	723.568

Sample Calculation:
PM Emissions = (Emission Factor, lbs/MMscf) / (Fuel Heating Value, MMBtu/MMscf) x (Fuel Combustion Rate MMBtu/hr)
PM Emissions (lb/hr): (7.6 lb/MMscf) / (1086 MMBtu/MMscf) x (1.2 MMBtu/hr) = 0.0084 lbs/hr
PM Emissions (tons/yr): 0.0084 lbs/hr x (8760 hrs/yr) / (2000 lbs/ton) = 0.037 tons/yr

HAPs - Line Heater

Total HAPs	9.14E-03 TPY

Building Heaters\HVAC Units

Max. Fuel Combustion Rate =	3.00 MMBtu/hr*
Fuel Usage =	21.95 MMscf/yr
Hours of Operation =	8,760 hr/yr
Fuel High Heating Value=	1,197 MMBtu/MMscf
Conversions:	454 grams/lb
	2000 lbs/ton

*Maximum combined heat input rate for building heaters associated with this project

Criteria Pollutants					
Pollutant	**Emission Factor**	**Units**	**Emission Factor Reference**	**Emissions (lbs/hr)**	**Emissions Pollutant (tons/yr)**
PM	7.6	lb/MMscf	AP-42 Table 1.4-2 (07/98)	1.90E-02	0.08
NOx	94	lb/MMscf	AP-42 Table 1.4-1 (07/98)	2.36E-01	1.03
CO	40	lb/MMscf	AP-42 Table 1.4-1 (07/98)	1.00E-01	0.44
VOC	5.5	lb/MMscf	AP-42 Table 1.4-2 (07/98)	1.38E-02	0.06
SO2	5.71	lb/MMscf	Calculated, 2 gr/100 scf	1.43E-02	0.06
CO2	148774.0	lb/MMscf	AP-42 Table 1.4-2 (07/98)	3.73E+02	1633.16
CH4	2.3	lb/MMscf	AP-42 Table 1.4-2 (07/98)	5.76E-03	0.03
N2O	2.2	lb/MMscf	AP-42 Table 1.4-2 (07/98)	5.51E-03	0.02
Total CO2e	149504.3	lb/MMscf	AP-42 Table 1.4-2 (07/98)	3.75E+02	1641.18

Sample Calculation:
PM Emissions = (Emission Factor, lbs/MMscf) / (Fuel Heating Value, MMBtu/MMscf) x (Fuel Combustion Rate MMBtu/hr)
PM Emissions (lb/hr) = (7.6 lb/MMscf) / (1197 MMBtu/MMscf) x (3 MMBtu/hr) = 0.019 lbs/hr
PM Emissions (tons/yr) = (0.019 lbs/hr) x (8760 hrs/yr) / (2000 lbs/ton) = 0.083 tons/yr

HAPs - HVAC Units

Total HAPs	0.02 TPY

Fugitive Emissions: Vehicle Traffic (fugitive emissions resulting from vehicular traffic inside the plant boundaries.)

For Unpaved Roads Using: Equation (1a) of AP-42 Chapter 13.2.2 including precipitation mitigation

$$E = \left[k \left(\frac{s}{12} \right)^{a} \left(\frac{W}{3} \right)^{b} \right] \left(\frac{365 - p}{365} \right)$$

E = emission factor, (lb/vmt)
k = particle size multiplier (dimensionless) , TSP = 4.9, PM10 = 1.5, PM2.5 = 0.15
a = particle size multiplier (dimensionless), TSP = 0.7, PM10 = 0.9, PM2.5 = 0.9
b = particle size multiplier (dimensionless), TSP = 0.45, PM10 = 0.45, PM2.5 = 0.45
s = silt content of road surface material (%)
W = mean vehicle weight, (ton)
p = number of days of precipitation

Plant Road silt content averaging				
Industry	**Road Use**	**No. Samples**	**Slit Content % (Mean)**	**Weighted Sums**
Copper smelting	Plant Road	3	17	51
Iron and steel production	Plant Road	135	6	810
Sand and gravel processing	Plant Road	3	4.8	14
Stone quarrying and processing	Plant Road	10	10	100
Western surface coal mining	Plant Road	2	5.1	10
	totals:	153	---	986
	Weighted Average:			6.4

Source	**Particle Size Multiplier**			**Surface Silt Content**	**Empirical Constant**		**Mean Vehicle Weight**	**Empirical Constant**	**# of days >0.01 in. Precip**	**Emission Factors**		
	PM *k*	PM_{10} *k*	$PM_{2.5}$ *k*	% *s*	PM *a*	$PM_{2.5}$ *a*	ton *W*	(All) *b*	*p**	PM (lb/VMT)	PM10 (lb/VMT)	PM2.5 (lb/VMT)
Large Trucks	4.90	1.50	0.15	6.4	0.7	0.9	27.5	0.45	90	6.5	1.7	0.17
Personal Vehicles	4.90	1.50	0.15	6.4	0.7	0.9	2.5	0.45	90	2.2	0.6	0.06

Source	Number Trips per Year[b]	Distance per Trip[e]	VMT	Control Efficiency[d]	Emission Rates					
					PM (lb/hr)	PM_{10} (lb/hr)	$PM_{2.5}$ (lb/hr)	PM (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Large Trucks	12	0.5	6	50%	0.0	0.0	0.0	0.01	0.00	0.000
Personal Vehicles	520	0.5	260	50%	0.0	0.0	0.0	0.14	0.04	0.004
					Totals			0.15	0.04	0.004

a. Mean Precipitation days >0.01in from AP-42 Figure 13.2.2-1
b. Average number of trips estimated by Montana-Dakota
c. Data from AP-42 Table 13.2.2-1. No Industry listed represents the Lewis and Clark S determined from all plant roads listed in the table.
d. Watering control efficiency assumed to be 50%
e. Round Trip distance traveled per trip measured via Google Earth aerial imagery

Sample Calculation:

Emission Factor Determination

$$4.90 * \frac{(6.4418)}{12}^{\wedge} 0.7 * \frac{(27.5)}{3} ^{\wedge} 0.45 * \frac{(365 - 90)}{365} = 6.5 \text{ lb/VMT}$$

Emission Rate Calculation

6.47 lb/VMT * 6 VMT/yr * 0.005 ton/lb * (1 - 50%) = 0.01 tpy

TOTAL HAPs - Lewis & Clark Plant with Proposed Project

Hazardous Air Pollutant	Current Uncontrolled Facility PTE	Current Controlled Facility PTE	Natural Gas RICE Generators #1 & #2	Natural Gas Line Heater	Building Heaters\ HVAC Units	Total Proposed Facility PTE
TOTAL	**27.16**	**7.55**	**7.49**	**9.12E-03**	**2.07E-02**	**15.07**

CO_2 Emission Factors (for natural gas line heater and HVAC units only)

Gas Constituent	Methane	Ethane	Propane	Iso-Butane	N-Butane	Iso-Pentan	N-Pentane	Nitrogen	CO2
Mol. Weight	16.04	30.07	44.10	58.12	58.12	72.15	72.15	28.01	44.01
# of Carbon Atoms	1	2	3	4	4	5	5	0	2
% Carbon	74.80%	79.82 %	81.64%	82.58 %	82.58 %	83.16 %	83.16%	0.00%	54.53 %
Btu/scf	911.00	1631.0 0	2353.00	3094.0 0	3101.0 0	3698.0 0	3709.00	0.00	0.00
Mol%	68.94%	22.32 %	3.83%	0.10%	0.19%	0.02%	0.01%	3.66%	0.95%
	11.06	6.71	1.69	0.06	0.11	0.01	0.01	1.02	0.42
wt%	52.44%	31.82 %	8.01%	0.29%	0.51%	0.06%	0.03%	4.86%	1.98%

Calculated Net BTU 1092.06
Average Mol Wt 21.09
gas wt% Carbon 72.98%
CO2 Emission Factor, lb/MMScf 148,774 (for natural gas line heater and HVAC units only)

V. Existing Air Quality

The facility is located in the SW 1/4 of Section 9, Township 22 N, Range 59 E in Richland County, Montana. The air quality of this area is classified as either Better than National Standards or unclassifiable/attainment for the National Ambient Air Quality Standards (NAAQS) for criteria pollutants.

VI. Ambient Air Impact Analysis

The Department determined that there will be no impacts from this permitting action because this permitting action has no changes to potential emissions.

Therefore, the Department believes this action will not cause or contribute to a violation of any ambient air quality standard.

VII. Taking or Damaging Implication Analysis

As required by 2-10-105, MCA, the Department 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?
	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)

Based on this analysis, the Department determined there are no taking or damaging implications associated with this permit action.

VIII. Environmental Assessment

An environmental assessment, required by the Montana Environmental Policy Act, was completed for this project. A copy is attached.

DEPARTMENT OF ENVIRONMENTAL QUALITY
Air, Energy & Mining Division
Air Quality Bureau
P.O. Box 200901, Helena, Montana 59620
(406) 444-3490

ENVIRONMENTAL ASSESSMENT (EA)

Issued To: Montana-Dakota Utilities Co. – Lewis & Clark Station

Montana Air Quality Permit number (MAQP): #0691-05

EA Draft: February 11, 2019
EA Final: February 27, 2019
Permit Final: March 15, 2019

1. *Legal Description of Site:* Montana-Dakota Utilities Co. (Montana-Dakota) operates an electricity generating facility known as the Lewis & Clark Station located in the SW 1/4 of Section 9, Township 22 N, Range 59 E in Richland County, Montana. It is located approximately two miles south of Sidney, Montana. The facility consists of a tangentially-fired pulverized coal boiler, two reciprocating internal combustion engine generator sets, and associated equipment.

2. *Description of Project:* Administrative Rules of Montana (ARM) 17.8.771(9) requires that Montana-Dakota submit an application for a modification to their MAQP to address the Best Available Control Technology (BACT) requirement for mercury within 10 years of the issuance of the MAQP containing the original mercury emission limit under ARM 17.8.771(1)(b). MAQP #0691-00 was issued on February 25, 2009 to establish that initial limit. Montana-Dakota proposes to maintain their current mercury emission limit of 1.5 pounds per trillion British thermal units (lb/TBtu) on a rolling 12-month average basis as the revised mercury emission limit pursuant to ARM 17.8.771(9).

3. *Objectives of Project:* To establish that the Lewis & Clark Station is utilizing the best available control technology for air emissions of mercury.

4. *Alternatives Considered:* In addition to the proposed action, the Department also considered the "no-action" alternative. However, the permit application is required by ARM 17.8.771(9) and Montana-Dakota has complied with the requirements for a modification of the air quality permit. Therefore, the "no-action" alternative was eliminated from further consideration. Other alternatives considered were discussed in the BACT analysis, Section III, in the Permit Analysis.

5. *A Listing of Mitigation, Stipulations, and Other Controls:* A list of enforceable conditions, including a BACT analysis, would be included in MAQP #0691-05.

6. *Regulatory Effects on Private Property:* The Department considered alternatives to the conditions imposed in this permit as part of the permit development. The Department determined that the permit conditions are reasonably necessary to ensure compliance with applicable requirements and demonstrate compliance with those requirements and do not unduly restrict private property rights.

7. *SUMMARY OF COMMENTS ON POTENTIAL PHYSICAL AND BIOLOGICAL EFFECTS*: The following comments have been prepared by the Department.

A. *Terrestrial and Aquatic Life and Habitats*

The proposed action would not result in any change to the level of potential air emissions, nor would any construction be required. Montana-Dakota would be authorized to continue to operate their mercury control strategy with no changes. Therefore, no impact would be expected.

B. *Water Quality, Quantity and Distribution*

The proposed action would not result in any change to the level of potential air emissions, nor would any construction be required. Montana-Dakota would be authorized to continue to operate their mercury control strategy with no changes. Therefore, no impact would be expected.

C. *Geology and Soil Quality, Stability and Moisture*

The proposed action would not result in any change to the level of potential air emissions, nor would any construction be required. Montana-Dakota would be authorized to continue to operate their mercury control strategy with no changes. Therefore, no impact would be expected.

D. *Vegetation Cover, Quantity, and Quality*

The proposed action would not result in any change to the level of potential air emissions, nor would any construction be required. Montana-Dakota would be authorized to continue to operate their mercury control strategy with no changes. Therefore, no impact would be expected.

E. *Aesthetics*

The proposed action would not result in any change to the level of potential air emissions, nor would any construction be required. Montana-Dakota would be authorized to continue to operate their mercury control strategy with no changes. Therefore, no impact would be expected.

F. *Air Quality*

The proposed action would not result in any change to the level of potential air emissions, nor would any construction be required. Montana-Dakota would be authorized to continue to operate their mercury control strategy with no changes. Therefore, no impact would be expected.

G. *Unique Endangered, Fragile, or Limited Environmental Resources*

The proposed action would not result in any change to the level of potential air emissions, nor would any construction be required. Montana-Dakota would be authorized to continue to operate their mercury control strategy with no changes. Therefore, no impact would be expected.

H. *Sage Grouse Executive Order*

General Habitat Area
The Department recognizes that the site location is not within a Greater Sage Grouse General Habitat Area as defined by Executive Order No. 12-2015.

I. *Demands on Environmental Resource of Water, Air and Energy*

The proposed action would not result in any change to the level of potential air emissions, nor would any construction be required. Montana-Dakota would be authorized to continue to operate their mercury control strategy with no changes. Therefore, no impact would be expected.

J. *Historical and Archaeological Sites*

The proposed action would not result in any change to the level of potential air emissions, nor would any construction be required. Montana-Dakota would be authorized to continue to operate their mercury control strategy with no changes. Therefore, no impact would be expected.

K. *Cumulative and Secondary Impacts*

The proposed action would not result in any change to the level of potential air emissions, nor would any construction be required. Montana-Dakota would be authorized to continue to operate their mercury control strategy with no changes. Therefore, no impact would be expected.

8. *SUMMARY OF COMMENTS ON POTENTIAL ECONOMIC AND SOCIAL EFFECTS:* The following comments have been prepared by the Department.

A. *Social Structures and Mores*

The proposed action would not result in any change to the level of potential air emissions, nor would any construction be required. Montana-Dakota would be authorized to continue to operate their mercury control strategy with no changes. Therefore, no impact would be expected.

B. *Cultural Uniqueness and Diversity*

The proposed action would not result in any change to the level of potential air emissions, nor would any construction be required. Montana-Dakota would be authorized to continue to operate their mercury control strategy with no changes. Therefore, no impact would be expected.

C. *Local and State Tax Base and Tax Revenue*

The proposed action would not result in any change to the level of potential air emissions, nor would any construction be required. Montana-Dakota would be authorized to continue to operate their mercury control strategy with no changes. Therefore, no impact would be expected.

D. *Agricultural or Industrial Production*

The proposed action would not result in any change to the level of potential air emissions, nor would any construction be required. Montana-Dakota would be authorized to continue to operate their mercury control strategy with no changes. Therefore, no impact would be expected.

E. *Human Health*

The proposed action would not result in any change to the level of potential air emissions, nor would any construction be required. Montana-Dakota would be authorized to continue to operate their mercury control strategy with no changes. Therefore, no impact would be expected.

F. *Access to and Quality of Recreational and Wilderness Activities*

The proposed action would not result in any change to the level of potential air emissions, nor would any construction be required. Montana-Dakota would be authorized to continue to operate their mercury control strategy with no changes. Therefore, no impact would be expected.

G. *Quantity and Distribution of Employment*

The proposed action would not result in any change to the level of potential air emissions, nor would any construction be required. Montana-Dakota would be authorized to continue to operate their mercury control strategy with no changes. Therefore, no impact would be expected.

H. *Distribution of Population*

The proposed action would not result in any change to the level of potential air emissions, nor would any construction be required. Montana-Dakota would be authorized to continue to operate their mercury control strategy with no changes. Therefore, no impact would be expected.

I. *Demands for Government Services*

There would be some demand for government services to review the application materials and to issue the air quality permit. The demand for government services would be minor.

J. *Industrial and Commercial Activity*

The proposed action would not result in any change to the level of potential air emissions, nor would any construction be required. Montana-Dakota would be authorized to continue to operate their mercury control strategy with no changes. Therefore, no impact would be expected.

K. *Locally Adopted Environmental Plans and Goals*

The proposed action would not result in any change to the level of potential air emissions, nor would any construction be required. Montana-Dakota would be authorized to continue to operate their mercury control strategy with no changes. Therefore, no impact would be expected.

L. *Cumulative and Secondary Impacts*

The proposed action would not result in any change to the level of potential air emissions, nor would any construction be required. Montana-Dakota would be authorized to continue to operate their mercury control strategy with no changes. Therefore, no impact would be expected.

Recommendation: No Environmental Impact Statement (EIS) is required.

If an EIS is not required, explain why the EA is an appropriate level of analysis: The current permitting action is for the continued operation of a mercury control strategy. MAQP #0691-05 includes conditions and limitations to ensure the facility will operate in compliance with all applicable rules and regulations. In addition, there are no significant impacts associated with this proposal.

Other groups or agencies contacted or which may have overlapping jurisdiction: None.

Individuals or groups contributing to this EA: Department of Environmental Quality – Air Quality Bureau

EA prepared by: Ed Warner
Date: January 22, 2019