

Statement of Basis

Permittee: Prairie River Minerals LLC

Facility: Prairie River Minerals LLC, 29013 County Highway 61

Grand Rapids, Minnesota 55744, Itasca County

Permit Number: MN0071544

Date: August 27, 2020

Purpose

This document serves as a resource of information and briefly describes the derived permit conditions and reasons the conditions are necessary for the permit

Description of permitted facility

The application indicates Prairie River Minerals, LLC is proposing to collect and process a bulk sample for a demonstration project near Coleraine, Minnesota. The proposed demonstration project will produce high-grade iron lump and sinter feedstock products using an ultra-high dense medium separation (UHDMS) technology. The finished products will be shipped off-site to evaluate the potential for use in steel making operations. The proposed demonstration project is expected to last for a period of approximately 3 to 9 months.

The company will obtain a bulk sample of up to approximately 500,000 metric tons from the Jessie Mine, Jessie #2 Mine and Buckeye Mine natural ore legacy stockpiles. These lean ore stockpiles contain material with an approximate average iron content of 32% and particle sizes ranging from fines to approximately 36 inches that was discarded unprocessed from historic operations. Primary crushing and sizing will be conducted using various methods at each stockpile. Crushed material one inch or smaller will be transported to a surge pile adjacent to the demonstration plant for further processing.

The UHDMS beneficiation process at the demonstration plant is a wet process using recirculated water from the thickener and the process water tank. The combined lump and sinter product goes to a screen where final separation between the lump ore and sinter fines takes place. The lump ore and sinter fines are stockpiled separately and hauled to PRM's proposed rail loadout facility for shipping. Total production of lump ore and sinter fines for the demonstration project is estimated to be 150,000 metric tons.

Process water used in the beneficiation processes and for plant cleaning will be appropriated from the West Hill mine pit per a DNR water appropriation permit. Additives in the beneficiation process include ferro-silica, lime and a flocculant. All process water used in the plant will be collected and recirculated, the only water to leave the plant will be moisture contained in the final products and rejects/waste material, and evaporation losses from the process. No process wastewater will be discharged to surface waters as a part of the demonstration project.

A bermed staging area immediately adjacent to the plant will be used to temporarily stage dewatered rejects/waste material from the plant prior to relocation to the waste management area (WMA) where the rejects/waste material will be disposed of as a waste stockpile within the 5-acre WMA site. Berms surrounding both the waste staging area and the WMA will be constructed to prevent run-on into, and run-off from these areas. Any potential draindown from the stockpiled rejects/waste materials, as well as precipitation contacting the waste materials, will be collected within the berms and routed to infiltration basins located within the waste staging area and/or the WMA.

The maximum volume of water to be managed on and/or infiltrated within the WMA is estimated to be approximately 500,000 gallons based on precipitation from a 24 hour, 25 year rain event (approximately 4.75 inches of rain). Preconstruction geotechnical work (e.g., infiltration/permeability testing) will be completed as necessary as part of the WMA design process.

Authorization

The draft permit is based on a SDS permit application dated July 31, 2020 and additional documents found in the Administrative record. This SDS permit does not allow for the discharge of process wastewater or industrial stormwater to surface waters.

This permit authorizes the management of process wastewater from the proposed 500,000 metric ton demonstration project only. It is expected the demonstration project will take between 3 to 9 months. This permit does not authorize the discharge of process wastewater or industrial stormwater from the facility. The discharge and management of industrial stormwater for the demonstration project will be regulated under the NPDES/SDS Industrial Stormwater General Permit (MNR050000).

This permit does not authorize the management of wastewater or stormwater associated with a full-scale project. A major permit modification is required for the processing of any additional stockpile/feed/source material beyond the 500,000 metric tons of material described in the July 31, 2020 permit application.

Waste streams

The monitoring requirements for waste streams are assigned in order to ascertain their impact on wastewater treatment processes, contributions to other treatment facilities, and/or land treatment/discharge sites. Requirements are based on the MPCA sampling policies and/or state health requirements.

(WS001 and WS002)

This permit contains two waste streams, which have been assigned a waste stream station for monitoring and reporting purposes. Monitoring will be required at the infiltration basins located at the waste management area (WS001) and the waste staging area (WS002). Samples are required to be collected at WS001 and WS002 twice monthly and when possible, shall be timed to be collected within 48 hours of a 24-hour precipitation event exceeding 0.5 inches. The following table outlines the associated monitoring requirements for the waste streams.

Table [1]: WS001 and WS002

Pollutant	Calendar month average	Calendar month maximum	Calendar month minimum	Calendar month total	Frequency	Which months
Chloride, Total	Monitor only	Monitor only			2 x month	Jan-Dec
Hardness, Calcium & Magnesium Calculated (as CaCO ₃)	Monitor only	Monitor only			2 x month	Jan-Dec

Iron, Dissolved (as Fe)	Monitor only	Monitor only			2 x month	Jan-Dec
Iron, Total (as Fe)	Monitor only	Monitor only			2 x month	Jan-Dec
pH		Monitor only	Monitor only		2 x month	Jan-Dec
Precipitation				Monitor only	1 x day	Jan-Dec
Total Dissolved Solids (TDS)	Monitor only	Monitor only			2 x month	Jan-Dec
Specific Conductance	Monitor only	Monitor only			2 x month	Jan-Dec
Sulfate, Total (As SO ₄)	Monitor only	Monitor only			2 x month	Jan-Dec

Stormwater management

The discharge and management of industrial stormwater for this facility will be regulated under the National Pollutant Discharge Elimination System (NPDES)/State Disposal System (SDS) Industrial Stormwater General Permit (MNR050000). This permit does not permit the discharge of industrial stormwater to surface waters.

The Industrial Stormwater General Permit includes requirements for a number of industrial sectors, each addressing specific industrial activity categories. Sector G of the permit covers metallic mining facilities that discharge stormwater contaminated by contact with, or that has come in contact with, any overburden, raw material, intermediate product, finished product, byproduct or waste product located on the site of the operation. Prairie River Minerals LLC will be required to follow Sector G requirements in the Industrial Stormwater General Permit, including those related to benchmark monitoring.

Groundwater monitoring

Groundwater monitoring for this short-term demonstration project is not required. The permittee will be required to submit a groundwater monitoring plan with its application for major modification for the processing of material beyond the 500,000 metric ton demonstration project. The groundwater monitoring plan must include the following information.

- A. Depth to groundwater;
- B. Direction of groundwater flow;
- C. Nearest groundwater receptor (lake, stream, etc);
- D. Soil/surficial material stratigraphy from soil borings or well logs;
- E. Infiltration rates and capacities of soil/surficial materials;
- F. Proposed groundwater monitoring well locations; and
- G. Proposed monitoring well installation and construction details (casing types, screen intervals, etc.).

Groundwater monitoring will be required for any processing of material beyond the 500,000 metric ton demonstration project. Location of monitoring wells and monitoring parameters will be determined based on information submitted with the groundwater monitoring plan as well as wastewater quality, quantity and waste characterization information collected during the demonstration project.

Special requirements

- The berms surrounding the waste staging area and waste management area must be constructed to prevent run-on into and runoff from these areas. The berms must be designed, constructed and managed to fully contain the volume of water generated within these areas from a 10-year, 24-hour storm event. This permit prohibits any discharge, or seepage of wastewater or stormwater from the waste staging area and waste management area
- The infiltration basins located at the waste staging area and waste management area must meet the following locational standards:
 - A. The infiltration basins shall be located entirely above the high water table. A minimum separation of four feet between the bottom of the infiltration basin and the maximum groundwater elevation must be maintained;
 - B. The infiltration basins may not be located within a wetland;
 - C. The infiltration basins may not be located in an area which is unsuitable because of topography, geology, hydrology or soils; and
 - D. The infiltration basins are required to maintain a minimum of three feet of freeboard.
- A semi-annual Demonstration Project Report is required to be submitted starting February 2021 and semi-annually until such time that the demonstration project is concluded, or when a total of 500,000 metric tons of material has been processed whichever is sooner.
- A major permit modification is required for the processing of any additional stockpile/feed/source material beyond the 500,000 metric tons of material described in the July 31, 2020 permit application. The application for a major permit modification must include the following information:
 - A. Updated project description;
 - B. Updated maps and figures showing locations of source materials, haul routes, stockpile areas and rejects/waste material disposal areas;
 - C. Proposed management plans for reject/waste materials, process wastewater and industrial stormwater;
 - D. Projected quality and quantity of wastewater based on waste characterization studies;
 - E. Updated water balance and flow diagrams; and
 - F. Proposed groundwater monitoring plan.

Total facility requirements

Certified laboratory

Effective January 1, 2013, all Minnesota municipal, county or industrial laboratories that analyze wastewater per Clean Water Act requirements must be certified by the MPCA or the Minnesota Department of Health. Information regarding MPCA laboratory certification is located on the MPCA website at <https://www.pca.state.mn.us/water/mpca-laboratory-certification>. If there are any questions concerning the MPCA laboratory certification, please contact the MPCA at 1-800-657-3864 or by email at qa.questions.mPCA@state.mn.us. Commercial laboratories doing these analyses must maintain Minnesota Department of Health certification.

Electronic Discharge Monitoring Reports (eDMRs)

The electronic Discharge Monitoring Reports (eDMRs), Sample Values/Operational Spreadsheets, and related attachments shall be electronically submitted via the MPCA Online e-Services Portal (https://rsp.pca.state.mn.us/TEMPO_RSP/Orchestrate.do?initiate=true). Paper copies of DMRs will no longer be accepted. The eDMR and Sample Value/Operational Spreadsheets are generated directly from the limits and monitoring requirements in the issued permit for the facility. They are generated by the Pollution Control Data Specialist assigned to manage the data for the facility and will be available online within 30 days of the permit action, please make sure to download the most recent version of the eDMR and Sample Value/Operational Spreadsheet prior to submitting the next monthly eDMRs.

Additional requirements

The permit includes additional requirement for proper system operation and maintenance, outfall erosion control best management practices, eDMR submittals, monitoring and analyses, using approved test methods etc. The permit includes standard permit text as required by state and federal rules and regulations. Such language includes, but is not limited to: record retention for at least three years, general prohibitions, duty to notify, compliance responsibilities, compliance/noncompliance notification, conditions requiring modification, and a requirement to allow for entry and inspection.

Term of permit

The Agency has made a preliminary determination to reissue this SDS permit for a term of approximately five years. The effective date of the permit and the permit expiration date will be determined at the time of issuance.