

# Statement of Basis

**Permittee:** Prairie River Minerals LLC

**Facility:** Prairie River Minerals LLC, 29013 County Highway 61, Grand Rapids, Minnesota 55744-2359, Itasca County

**Permit Number:** MN0071544

**Date:** TBD

## 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 legacy natural ore stockpiles 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 4 to 5 years.

The company is proposing to process up to 6,500,000 metric tons of material from the Buckeye Mine Stockpile (500,000 metric tons) and Seven Cities Stockpile 39 (6,000,000 metric tons). The 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. Prairie River Mineral's existing Demonstration Project processing plant will be used to process the Seven Cities Stockpile 39 Extension material. No changes to the existing processing plant layout or benefaction process will be made to accommodate the Seven Cities Stockpile 39 Extension material. 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 proposed Waste Management Area (WMA) will be located on top of, and will extend west and east from, the existing permitted Demonstration Project WMA, including the infiltration basin and associated monitoring station WS001. The proposed infiltration basins include a western area infiltration basin and associated monitoring station WS003, and an eastern area infiltration basin and associated monitoring station WS004.

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 up to 300,000 metric tons per year, but may vary based on plant efficiency and throughput.

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 (approximately) 27.8 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.

This permit authorizes the management of process wastewater from the proposed 6,500,000 metric ton demonstration project only. A modification of this permit will be required for any processing of material beyond the initial 6,500,000 metric ton demonstration project. 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).

## **General information**

The permit is based on an SDS permit application dated April 12, 2021 and additional documents found in the Administrative record. The primary reason for modifying the permit is due to facility expansion. This SDS permit does not allow for the discharge of any wastewater to surface waters.

## Significant changes from the previous permit

The draft permit contains the following changes from the last issued permit:

- Facility Information

**Table 1: Changes summary**

Application Year	Amount of product produced (metric tons/year)		Raw Materials Consumed (metric tons)	Amount of Product Consumed (metric tons/year)	
	Average	Maximum		Average	Maximum
2020	130,000	130,000	500,000	130,000	130,000
2021	250,000	300,000	6,500,000	250,000	300,000

- Wastewater Treatment: added 2 new infiltration basins (WS003 & WS004)
- Limits & Monitoring requirements for proposed WS003 and WS004
- Added requirement for Groundwater Assessment to be submitted upon processing completion of 500,000 metric tons of material
- Phased permit requirements – notification upon completion of construction/initiation of operation of proposed infiltration basins
- Notification upon proposed closure of infiltration basin at WS001
- Monitoring Phases introduced
  - Phase 1 – current monitoring with WS001, WS002
  - Phase 2 – transition away from and elimination of WS001, continuation of WS002, addition of WS003 and WS004
  - Phase 3 – Continued monitoring of WS002, WS003, WS004

## Chemical additives

Chemical additives are addressed by the additive limits and associated monitoring in the permit.

**Table 2: Chemical additives currently approved for use at this facility consist of the following:**

Name	Dosage frequency	Location and maximum addition rate	Discharge location
Hyperfloc AF 304	Slug - Daily (only one flocculent will be used, while operating 6 days a week)	Fines Thickener; 100 pounds/day	WS001 WS002 WS003 WS004
Hyperfloc AF 307	Slug - Daily (only one flocculent will be used, while operating 6 days a week)	Fines Thickener; 100 pounds/day	WS001 WS002 WS003 WS004
FreezeTrol 60	Slug - 50 gallons/year (freeze conditions assumed for 30 operating days/year)	Plant Conveyor Belt; 1.7 gallons/day	WS001 WS002 WS003 WS004

<sup>1</sup> These additives shall not be used in conjunction: the facility shall use one or the other.

## 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.

## Waste streams

Limit and 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, WS002, WS003, WS004)

This permit will contain 4 infiltration basin waste streams, which have all been assigned a waste stream station for monitoring and reporting purposes. WS001 is in the Waste Management Area, WS002 is in the Waste Stacker Area. Proposed WS003 will be the West Infiltration Basin, and Proposed WS004 will be the East Infiltration Basin. Samples shall be collected at the infiltration basins 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 limit and monitoring requirements for the waste streams.

**Table 3: WS001, WS002, WS003, WS004**

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 <sub>3</sub> )	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
Solids, Total Dissolved (TDS)	Monitor Only	Monitor Only			2 x month	Jan-Dec
Specific Conductance	Monitor Only	Monitor Only			2 x month	Jan-Dec

Sulfate, Total (as SO4)	Monitor Only	Monitor Only			2 x month	Jan-Dec
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## 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 6,500,000 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 6,500,000 metric tons of material described in the April 12, 2021 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.
- The Permittee shall complete and submit a Potential for Groundwater Impacts Report after the company processes 500,000 metric tons of material. The purpose is to determine if there is reasonable potential for groundwater impacts from site activities. The report requires the following:
  - Summarize water quality results
  - Describe trends
  - Discuss environmental or health risks from water in the infiltration basins
  - Recommendation on whether or not groundwater monitoring should be done

## **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](mailto: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](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 [final issued/reissued/modified] 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.

### **Construction projects**

Separate written approval of plans and specifications, in addition to the final issued permit, must be obtained from the MPCA before construction can begin for any planned construction projects.

### **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 effective date of the permit and the permit expiration date will be determined at the time of issuance.

The Agency has made a preliminary determination to reissue this SDS permit for a term of approximately five years.