

Notice: The use of this form is optional and does not guarantee Department of Natural Resources (department) approval of the best management practice (BMP) plan. This form is provided for the convenience of the applicant to meet the BMP plan requirements of the Wisconsin Pollutant Discharge Elimination System (WPDES) General Permit No. WI-0049344-05-0 for dewatering operations. The WPDES general permit requires applicants to develop and submit a best management practice (BMP) plan to demonstrate compliance with the general permit. Following approval of the BMP plan by the department, the permittee shall operate consistent with the approved BMP plan. Plans must be site-specific. The department may request additional information not included in this form.

Plan Amendments: Permittees shall notify the department when the BMP plan is amended to determine if the amendment requires department approval.

Project/Facility Name	Plan Preparer	Date	
CM-Project	Eric Quigley	02/14/2020	
Discharge Contact On Site:		Emergency Contact:	
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I. Hours of Operation: _____ hours per day or ☒ 24 hours continuously

II. Average and Maximum Pumping Rate: _____ na _____ GPM Avg.; _____ na _____ GPM Max.

III. Project Schedule:

Drilling is anticipated to be carried out during February and March of 2020 during frozen ground conditions. All or part of the program may be completed during the summer of 2020 (likely May-June) if ground conditions during spring breakup deteriorate prior to or during the drilling program.

Sumps will be excavated prior to the beginning of drilling at each site. Drilling for each site will take between 2-7 days and the sump may be left open for an additional period of time to allow for adequate dewatering of sump water before the sump is backfilled.

IV. Pumping equipment to be used:

Water is pumped from the sump to a holding/mud tank on the drill rig via a 2" or 3" trash pump. Water is pumped down the hole to lubricate the drill string via a hydraulic powered bean pump. Water exiting the drill hole is diverted to the sump where it is recirculated through the process.

For initial filling and maintaining sufficient water level in the sumps: Water is pumped from a water truck via a 2" or 3" trash pump to the drill rigs holding/mud tank until the sump is filled to a sufficient level.

V. Dewatering site location and description (attach remediation and redevelopment (R&R) site map):

Up to 10 sumps constructed for the purpose of storing/recirculating drilling fluids will be located in sections 4 and 9 of T35N R11E in Schoepke Twp. in Oneida County. Sumps will be dug with a backhoe or similar equipment and will be approx. 15'x6'x4'. Refer to attached Notice of Intent to Drill Document for plan maps and detailed locations of drill sites containing sumps.

All sites are located on undeveloped, forested land with no known contamination issues. Prior land uses include intermitant logging operations, and historic exploratory drilling completed during the 1970's and 80's.

*Note: Guidance on how to use and generate R&R site maps can be found here:
<http://dnr.wi.gov/topic/Brownfields/rrsm.html>.*

VI. Describe source material in contact with dewatering influent:

1. Surface water used during the drilling process has the potential to introduce biologic contaminants to groundwater via discharge down the drill hole as well as discharge from the sump.
2. Drilling muds (DNR approved) may be mixed with water to aid in the drilling process.
3. Drill cuttings consisting of soil, sand, gravel, and pulverized bedrock are flushed from the drillhole and are allowed to settle within the sump. Metallic sulfide minerals may be encountered within the bedrock. Oxidation of these minerals has the potential to generate acidic water conditions.
4. Machinery on site has the potential to introduce hydrocarbons to the influent.

VII. Describe measures to reduce intake of source materials or other debris:

1. Surface water will be treated with chlorine (laudary bleach) at a concentration of 1 gallon/100 barrels (clear water), 2.5 gallons/100 barrels (cloudy water), 5 gallons/100 barrels (dirty water).
2. Only DNR approved drilling products may be used during the drilling process. A list of DNR approved products is attached to this BMP for reference.
3. A geologist on site will observe the bedrock cores to determine metallic sulfide content. As recommended by the DNR, if the hole contains greater than 3% metallic sulfide content (by volume) over 50', lime will be added to the cuttings prior to backfilling the sump at a concentration sufficient to neutralize any potential acid generation. (approximately 0.1 lb lime per 100lbs cuttings for each 1% sulfide by volume).
4. Machinery at the drill site will have absorbent materials and/or spill containment placed underneath equipment to prevent the introduction of hydrocarbons to the influent.

VIII. Describe measures to reduce debris or other material in the discharge flow path:

NA

IX. Discharge location and description:

Sump water will be discharged to groundwater. See the attached map "Site Map with Water Features" for individual locations of drill sites with respect to nearby wetlands and streams (Stockley Creek). Each drill site will have one sump located on the site.

Note: The permittee may use the surface water data viewer (<https://dnrmaps.wi.gov/H5/?Viewer=SWDV>) to identify wetlands, outstanding resource waters (ORW) and exceptional resource waters (ERW) in the county where the discharge will occur.

X. If the proposed discharge will be to a wetland, explain how impacts to wetlands will be minimized:

NA

Note: Discharges to wetlands are not allowed under the permit until specific Department approval has been received.

XI. Describe how visual inspections of the discharge will be performed:

The drilling crew monitors the water levels within the sump continuously during drilling to ensure that there is adequate water for the drilling process. As water in the sump is depleted due to loss of fluid down the hole or due to discharge of fluid to groundwater within the sump, additional water is added. Water will be added to the process only to ensure sufficient water for drilling is available. The water level in the sump will not be allowed exceed a depth that comes within 1.5 feet of the ground surface to prevent the potential for overflow.

Note: See Form 3400-233 for an example visual inspection log. Visual inspections shall be conducted and recorded on a daily basis by the permittee prior to discharge to surface waters or groundwater. If the discharge continues beyond a week (7-days), follow-up visual inspections of the discharge shall be conducted on a weekly basis. If the permittee observes any of the parameters listed in Section 4.1 of the general permit that result in an inconsistency with the discharge requirements in Section 3 of the general permit, the permittee shall not discharge until the inconsistency is corrected. If treatment is necessary to correct the discharge inconsistency, the permittee shall treat the discharge in accordance with Section 4.4 of the general permit.

XII. Describe treatment measures that will be used to treat the dewatering water prior discharge (attach plans and specs / schematic drawings as needed):

As described above in section VII, water will be treated with chlorine to disinfect surface water, and lime may be added to the cuttings prior to backfilling the sump if metallic sulfide content exceeds 3% over 50' of penetrated bedrock.

Note: At a minimum, the treatment practices shall be rated to remove total suspended solids to a level at or below 40 mg/L in the discharge to surface waters. If oil and grease is present, as indicated by an oily sheen or foam in the dewatering water, the treatment practices shall be rated to remove oil and grease to a level at or below 15 mg/L in the discharge to surface waters or groundwater.

XIII. Describe measures to dissipate energy/velocity of the discharge flow to prevent erosion caused by the discharge:

NA

XIV. Describe maintenance procedures of dewatering and treatment equipment:

The drilling contractor conducts a pre-shift inspection of all drilling and pumping equipment at the beginning of each 12 hour shift. Any required maintenance is conducted immediately and before drilling commences for that shift.

XV. Describe measures to prevent and contain spills during dewatering operation. Also explain responsive actions necessary in the event that treatment equipment fails:

All drilling water is diverted to the sump and the sump is maintained to a level as to provide sufficient water to the process and will not exceed a depth that comes closer than 1.5 feet to the ground surface level to prevent the possibility of overflow.

All treatment additives (chlorine and lime) are added to the drilling fluids manually and timing and quantity of additions will be documented

Treatment of the drilling fluids (chlorine additions and potential lime additions) are completed manually and will be documented as they are completed within the drill contractor shift reports and/or sump abandonment log.

XVI. Describe how records will be kept at the discharge site and be stored following completion of the project:

Shift reports are generated by the drilling contractor and provided to and reviewed by a representative of Badger Minerals on a daily basis. Details pertinent to dewatering contained within the shift reports will include:

Amount of water added to the drilling process
Quality of the water added (clear, cloudy, dirty)
Amount of chlorine added to disinfect water
Amount and type of drilling products used

Comments related to a visual inspection of water management including:

- assurance that all source water is being properly diverted to the sump
- assurance that water level in the sump has been maintained properly to avoid overflow of sump

Comments related to a visual inspection of potential sources of hydrocarbons

-assurance that all potential sources have been inspected and that proper containment/absorbent materials are in place

- note if/where leaks are detected and if current containment methods are adequate
- note of all measures taken to rectify/contain leaks
- inspection of sump for appearance of hydrocarbons in sump water

Upon completion of drilling at each site, the sump will be backfilled. A representative of Badger Minerals will document the following within a Sump Abandonment Log:

Assurance that backfilling is completed and site is returned to natural grade

Assurance that stockpiled topsoil has been spread over backfilled sump

Quantity of lime additions to cuttings (if necessary due to metallic sulfide content)

-Sulfide content within bedrock will be documented in the geologic logs created by the geologist on site.

Copies of the shift reports are retained by both the company (Badger Minerals) and the drilling contractor. Digital copies of the shift reports, geologic logs containing metallic sulfide content within bedrock as well as a digital copy of the Sump Abandonment Log will be stored on an external hard drive and will be available for a minimum of 3 years.

***Note:** The permittee shall retain records of all visual inspections logs, additive usage logs; monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation; copies of all reports required by the permit; and all data used to complete the notice of intent (NOI) for the permit for a period of at least 3 years from the date of the sample, measurement, report or application.*

XVII. Describe how noncompliance will be reported to the department:

Noncompliance will be reported as outlined in section 8 of the general permit and will include contacting the departments regional office within 24 hours of becoming aware of the noncompliance issue and submitting a detailed report of the noncompliance within 5 calender days.

XVIII. Describe how personnel directly involved with discharge activities will be trained on the BMP plan and have access to the plan:

A copy of the BMP and all attachments will be provided to the drilling contractor and will be kept at the drilling rig during drilling operations.

Prior to initiating the drilling program, a meeting between all contractors/employees involved directly with the drilling program will be briefed on all technical aspects and reporting requirements of this BMP.

***Note:** On-site personnel directly involved with discharge activities shall have access to the BMP plan at all times while at the discharge location(s). BMP plan access may include an internet webpage.*

Certification

I certify that this document, to the best of my knowledge and belief, is true, accurate, and complete.

Signature of Plan Preparer

Date

2/25/20