



DEPARTMENT ORDER

**Dicaperl Minerals Corp.
Knox County
Thomaston, Maine
A-330-71-J-R**

**Departmental
Findings of Fact and Order
Air Emission License
Renewal**

FINDINGS OF FACT

After review of the air emission license renewal application, staff investigation reports, and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 Maine Revised Statutes (M.R.S.) § 344 and § 590, the Maine Department of Environmental Protection (Department) finds the following facts:

I. REGISTRATION

A. Introduction

Dicaperl Minerals Corp. (Dicaperl) has applied to renew their Air Emission License for the operation of emission sources associated with their perlite manufacturing facility.

The equipment addressed in this license is located at 94 Buttermilk Lane, Thomaston, Maine.

B. Emission Equipment

The following equipment is addressed in this air emission license:

Equipment	Max. Capacity (MMBtu/hr)	Maximum Firing Rate	Fuel Type	Date of Install.	Control Devices
Expansion Furnace	6.6	47.9 gal/hr	Distillate fuel	2005	Baghouses #1 and #2

Dicaperl also installed two propane-fired space heaters in November 2020. These space heaters are considered insignificant emissions units because they are each rated below 1.0 MMBtu/hr, the heat input capacity level at or above which would require their inclusion in the license; therefore, these small space heaters are not addressed further in this license.

Process Equipment

Equipment	Production Rate	Pollution Control Equipment
Pneumatic Conveyor and Williams Unit	1.8 ton/hr	Baghouses #1 and #2

C. Definitions

Distillate Fuel means the following:

- Fuel oil that complies with the specifications for fuel oil numbers 1 or 2, as defined by the American Society for Testing and Materials (ASTM) in ASTM D396;
- Diesel fuel oil numbers 1 or 2, as defined in ASTM D975;
- Kerosene, as defined in ASTM D3699;
- Biodiesel, as defined in ASTM D6751; or
- Biodiesel blends, as defined in ASTM D7467.

Records or Logs mean either hardcopy or electronic records.

D. Application Classification

All rules, regulations, or statutes referenced in this air emission license refer to the amended version in effect as of the date this license was issued.

The application for Dicaperl does not include the licensing of increased emissions or the installation of new or modified equipment. Therefore, the license is considered to be a renewal of currently licensed emission units only and has been processed through *Major and Minor Source Air Emission License Regulations*, 06-096 Code of Maine Rules (C.M.R.) ch. 115.

E. Facility Classification

The facility is licensed as follows:

- As a natural minor source of criteria pollutants, because no license restrictions are necessary to keep facility emissions below major source thresholds for criteria pollutants; and
- As an area source of hazardous air pollutants (HAP), because the licensed emissions are below the major source thresholds for HAP.

II. BEST PRACTICAL TREATMENT (BPT)

A. Introduction

In order to receive a license, the applicant must control emissions from each unit to a level considered by the Department to represent Best Practical Treatment (BPT), as defined in *Definitions Regulation*, 06-096 C.M.R. ch. 100. Separate control requirement categories exist for new and existing equipment.

BPT for existing emissions equipment means that method which controls or reduces emissions to the lowest possible level considering:

- the existing state of technology;
- the effectiveness of available alternatives for reducing emissions from the source being considered; and
- the economic feasibility for the type of establishment involved.

B. Process Description

Perlite is a glassy volcanic rock with a pearl-like luster. Crude perlite ore is mined, crushed, dried, ground, screened, and shipped to expansion plants like Dicaperl. Uses of expanded perlite include use in plaster aggregates, in concrete aggregates, in water filtration applications, for insulation, and for horticultural purposes.

Figure 1 below provides a visual of the perlite production sequence. Combustion air, fuel, and raw perlite ore go into the Expansion Furnace. In the furnace, the perlite ore begins to soften, and water trapped in the structure of the material is released as steam. This causes the hot perlite particles to expand 4- to 20-times their original size. Expanded perlite and air leave the furnace and move to a collector cyclone via a piping system. Product is pneumatically conveyed from the collector cyclone into a Williams Unit (mechanical classifier). Fines from the top of the collector cyclone go to Baghouse #1 for collection. Fines from this baghouse are dropped back into the system after the Williams Unit to make additional baghouse product. This product, along with the fines from Baghouse #1, is then collected in two cyclones. Whatever material passes over these two cyclones goes to the fines baghouse (Baghouse #2) and is collected as a secondary product.

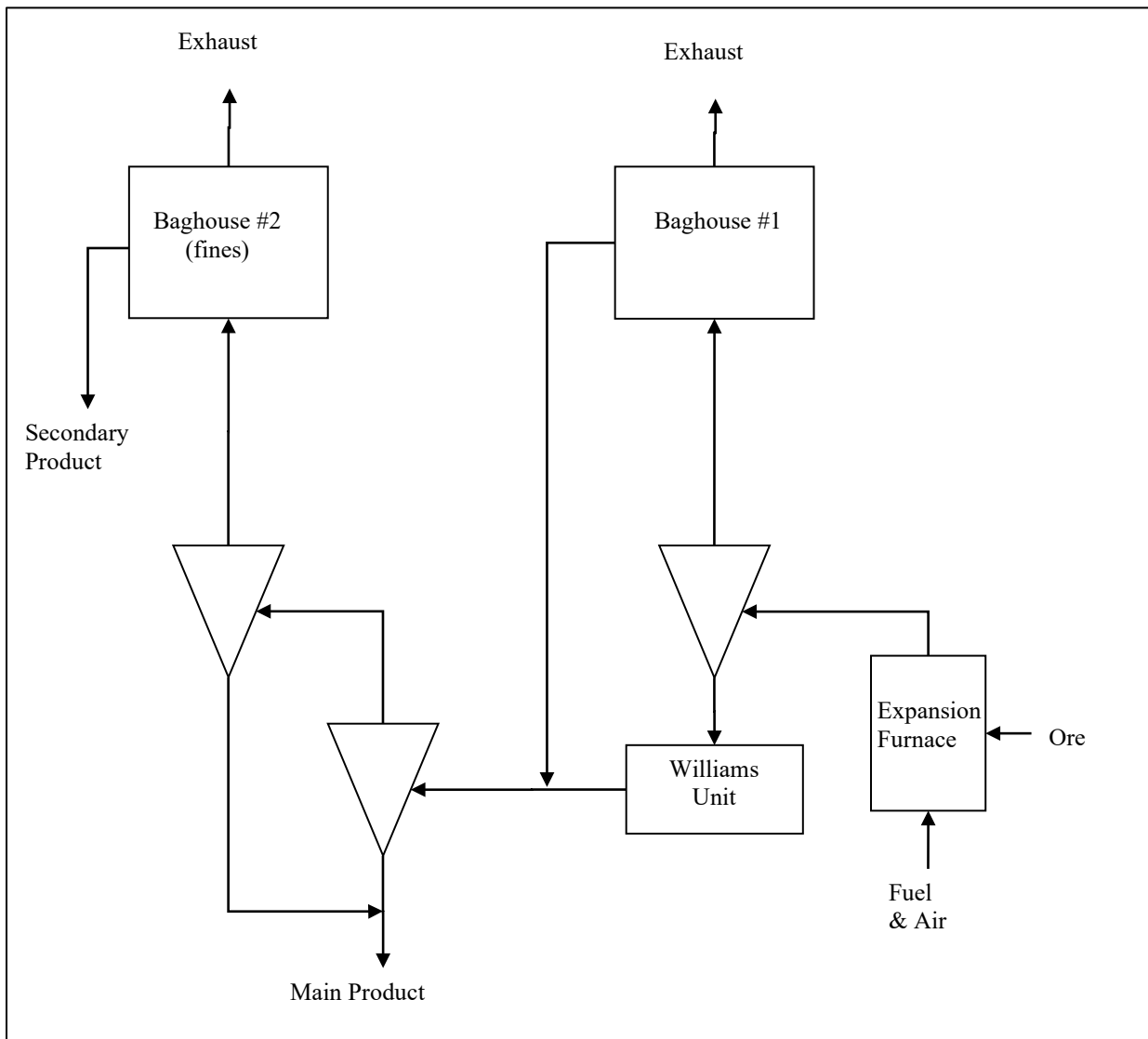


Figure 1. Process Diagram

C. Expansion Furnace, Pneumatic Conveyor, and Williams Unit

The Expansion Furnace has a maximum capacity of 6.6 MMBtu/hr and fires distillate fuel. It was installed in 2005. The Pneumatic Conveyor and Williams Unit have a production rate of 1.8 ton/hr of expanded perlite. The process is vented through Baghouse #1 and Baghouse #2 as shown in Figure 1 above.

With limited exceptions, no person shall import, distribute, or offer for sale any distillate fuel with a sulfur content greater than 0.0015% by weight (15 ppm) pursuant to 38 M.R.S. § 603-A(2)(A)(3). Therefore, the distillate fuel purchased or otherwise obtained for use in the Expansion Furnace shall not exceed 0.0015% by weight (15 ppm).

1. BPT Findings

The BPT emission limits for the Expansion Furnace and associated baghouses were based on the following:

- PM/PM₁₀/PM_{2.5} – 0.03 grains/dscf based on 06-096 C.M.R. ch. 115, BPT
- SO₂ – based on firing distillate fuel with a maximum sulfur content of 0.0015% by weight
- NO_x – 0.3 lb/MMBtu based on 06-096 C.M.R. ch. 115, BPT
- CO – 5 lb/1,000 gal based on AP-42 Table 1.3-1 dated 5/10
- VOC – 0.34 lb/1,000 gal based on AP-42 Table 1.3-3 dated 5/10
- Visible Emissions – 06-096 C.M.R. ch. 101, § 4(B)(3)

The PM, PM₁₀, and PM_{2.5} emissions limits from the baghouses were estimated based on the following factors from the baghouses' stacks.

Unit	Exhaust Flow Rate (ACFM)	Exit Temperature (°F)	Dry Flow Rate (DSCFM)
Baghouse #1	8,500	345	5,017.6
Baghouse #2	5,800	145	4,555.6

The Dry flow rates in the table above were estimated using the following equation:

$$DFR = EFR * \frac{528R}{T} * 0.9$$

Where:

- DFR = Dry flow rate in dry standard cubic feet per minute (DSCFM)
 - EFR = Exhaust flow rate in actual cubic feet per minute (ACFM)
 - T = Temperature in Rankine
- A moisture content of 10% is assumed

The BPT emission limits in the table below were estimated using the following equation:

$$HEL = DFR * \frac{EL}{7,000 \frac{grain}{lb}} * \frac{60 min}{1 hr}$$

Where:

- HEL = Hourly emission limit (lb/hr)
- EL = Estimated limit in grains per dry standard cubic feet (grain/dscf)

The BPT emission limits for the baghouses are the following:

Unit	PM (lb/hr)	PM ₁₀ (lb/hr)	PM _{2.5} (lb/hr)
Baghouse #1	1.29	1.29	1.29
Baghouse #2	1.17	1.17	1.17

The BPT emission limits for combustion products from the Expansion Furnace are the following (both baghouses combined):

Unit	SO ₂ (lb/hr)	NO _x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Expansion Furnace	0.01	1.98	0.24	0.02

2. Visible Emissions

Visible emissions from Baghouses #1 and #2 shall each not exceed 10% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 101, § 4(B)(3)]

3. Recordkeeping

Documentation shall include the sulfur content of the fuel delivered.

4. New Source Performance Standards (NSPS): 40 C.F.R. Part 60, Subpart UUU

The Expansion Furnace is subject to *Standards of Performance for Calciners and Dryers in Mineral Industries* 40 C.F.R. Part 60, Subpart UUU. Subpart UUU is applicable to calciners at mineral processing plants manufactured after April 23, 1986. The definition of “Calciner” includes expansion furnaces. The definition of “Mineral processing plant” includes the processing of perlite. [40 C.F.R. §§ 60.730 and 60.731]

a. Standards

(1) Particulate Matter (PM)

The baghouses shall not exceed an emission limit of 0.040 grains/dscf. [40 C.F.R. § 60.732(a)] The Department has determined that the BPT emission limit is more stringent than the above limit. Therefore, the PM emissions limit for the baghouses has been streamlined to the more stringent BPT limit, and only this more stringent limit will be included in the Order of this air emission license.

(2) Opacity

Visible emissions from the baghouses shall not exceed 10% opacity. [40 C.F.R. § 60.732(b)] This limit is comparable to the visible emission limit in

06-096 C.M.R. ch. 101. Both references shall be included in this air emission license.

b. Test Methods

- (1) An initial demonstration of compliance with the Subpart UUU PM standard using 40 C.F.R. Part 60, Appendix A, Method 5 is required by the subpart. [40 C.F.R. § 60.736(b)(1)] Dicaperl conducted this initial test in March 2010. The test results showed PM emission levels well below both the NSPS and BPT emission limits. Additional testing is to be conducted upon request by the Department.
- (2) Dicaperl shall use 40 C.F.R. Part 60, Appendix A, Method 9 and the procedures in § 60.11 to demonstrate compliance with the opacity standard of Subpart UUU. [40 C.F.R. § 60.736(b)(2)] Dicaperl shall perform the Method 9 test once per calendar week when the facility is in operator and keep records including the date, time, and results of those tests. Each Method 9 test shall last a minimum of 30 minutes. [06-096 C.M.R. ch. 115, BPT]

c. Emissions and Operations Monitoring

Dicaperl is exempt from the monitoring requirements of Subpart UUU, because the Expansion Furnace processes perlite and uses a dry control device (such as baghouses). [40 C.F.R. § 60.734(c)]

D. General Process Emissions

Visible emissions from any general process source shall not exceed 20% opacity on a six-minute block average basis.

E. Fugitive Emissions

Dicaperl shall not cause emissions of any fugitive dust during any period of construction, reconstruction, or operation without taking reasonable precautions. Such reasonable precautions shall be included in the facility's continuing program of best management practices for suppression of fugitive particulate matter. See 06-096 C.M.R. ch. 101, § 4(C) for a list of potential reasonable precautions.

Dicaperl shall not cause or allow visible emissions within 20 feet of ground level, measured as any level of opacity and not including water vapor, beyond the legal boundary of the property on which such emissions occur. Compliance with this standard shall be determined pursuant to 40 C.F.R. Part 60, Appendix A, Method 22.

F. Annual Emissions

The table below provides an estimate of facility-wide annual emissions for the purposes of calculating the facility's annual air license fee and establishing the facility's potential to emit (PTE). Only licensed equipment is included, i.e., emissions from insignificant activities are excluded. Similarly, unquantifiable fugitive particulate matter emissions are not included except when required by state or federal regulations. Maximum potential emissions were calculated based on operating the Expansion Furnace and Baghouses #1 and #2 for 8,760 hr/yr, each.

This information does not represent a comprehensive list of license restrictions or permissions. That information is provided in the Order section of this license.

Total Licensed Annual Emissions for the Facility
Tons/year
 (used to calculate the annual license fee)

	PM	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO	VOC
Expansion Furnace	--	--	--	--	8.7	1.0	0.1
Baghouse #1	5.7	5.7	5.7	--	--	--	--
Baghouse #2	5.1	5.1	5.1	--	--	--	--
Total TPY	10.8	10.8	10.8	--	8.7	1.0	0.1

Pollutant	Tons/year
Single HAP	9.9
Total HAP	24.9

III. AMBIENT AIR QUALITY ANALYSIS

The level of ambient air quality impact modeling required for a minor source is determined by the Department on a case-by-case basis. In accordance with 06-096 C.M.R. ch. 115, an ambient air quality impact analysis is not required for a minor source if the total licensed annual emissions of any pollutant released do not exceed the following levels and there are no extenuating circumstances:

Pollutant	Tons/Year
PM ₁₀	25
PM _{2.5}	15
SO ₂	50
NO _x	50
CO	250

The total licensed annual emissions for the facility are below the emission levels contained in the table above and there are no extenuating circumstances; therefore, an ambient air quality impact analysis is not required as part of this license.

This determination is based on information provided by the applicant regarding licensed emission units. If the Department determines that any parameter (e.g., stack size, configuration, flow rate, emission rates, nearby structures, etc.) deviates from what was included in the application, the Department may require Dicaperl to submit additional information and may require an ambient air quality impact analysis at that time.

ORDER

Based on the above Findings and subject to conditions listed below, the Department concludes that the emissions from this source:

- will receive Best Practical Treatment,
- will not violate applicable emission standards, and
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.

The Department hereby grants Air Emission License A-330-71-J-R subject to the following conditions.

Severability. The invalidity or unenforceability of any provision of this License or part thereof shall not affect the remainder of the provision or any other provisions. This License shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

STANDARD CONDITIONS

- (1) Employees and authorized representatives of the Department shall be allowed access to the licensee's premises during business hours, or any time during which any emissions units are in operation, and at such other times as the Department deems necessary for the purpose of performing tests, collecting samples, conducting inspections, or examining and copying records relating to emissions (38 M.R.S. § 347-C).
- (2) The licensee shall acquire a new or amended air emission license prior to beginning actual construction of a modification, unless specifically provided for in Chapter 115.
[06-096 C.M.R. ch. 115]
- (3) Approval to construct shall become invalid if the source has not commenced construction within eighteen (18) months after receipt of such approval or if construction is discontinued for a period of eighteen (18) months or more. The Department may extend this time period upon a satisfactory showing that an extension is justified, but may condition such extension upon a review of either the control technology analysis or the ambient air quality standards analysis, or both. [06-096 C.M.R. ch. 115]

- (4) The licensee shall establish and maintain a continuing program of best management practices for suppression of fugitive particulate matter during any period of construction, reconstruction, or operation which may result in fugitive dust, and shall submit a description of the program to the Department upon request. [06-096 C.M.R. ch. 115]
- (5) The licensee shall pay the annual air emission license fee to the Department, calculated pursuant to Title 38 M.R.S. § 353-A. [06-096 C.M.R. ch. 115]
- (6) The license does not convey any property rights of any sort, or any exclusive privilege. [06-096 C.M.R. ch. 115]
- (7) The licensee shall maintain and operate all emission units and air pollution systems required by the air emission license in a manner consistent with good air pollution control practice for minimizing emissions. [06-096 C.M.R. ch. 115]
- (8) The licensee shall maintain sufficient records to accurately document compliance with emission standards and license conditions and shall maintain such records for a minimum of six (6) years. The records shall be submitted to the Department upon written request. [06-096 C.M.R. ch. 115]
- (9) The licensee shall comply with all terms and conditions of the air emission license. The filing of an appeal by the licensee, the notification of planned changes or anticipated noncompliance by the licensee, or the filing of an application by the licensee for a renewal of a license or amendment shall not stay any condition of the license. [06-096 C.M.R. ch. 115]
- (10) The licensee may not use as a defense in an enforcement action that the disruption, cessation, or reduction of licensed operations would have been necessary in order to maintain compliance with the conditions of the air emission license. [06-096 C.M.R. ch. 115]
- (11) In accordance with the Department's air emission compliance test protocol and 40 C.F.R. Part 60 or other method approved or required by the Department, the licensee shall:
 - A. Perform stack testing to demonstrate compliance with the applicable emission standards under circumstances representative of the facility's normal process and operating conditions:
 1. Within sixty (60) calendar days of receipt of a notification to test from the Department or EPA, if visible emissions, equipment operating parameters, staff inspection, air monitoring or other cause indicate to the Department that equipment may be operating out of compliance with emission standards or license conditions; or
 2. Pursuant to any other requirement of this license to perform stack testing.

- B. Install or make provisions to install test ports that meet the criteria of 40 C.F.R. Part 60, Appendix A, and test platforms, if necessary, and other accommodations necessary to allow emission testing; and
 - C. Submit a written report to the Department within thirty (30) days from date of test completion.
[06-096 C.M.R. ch. 115]
- (12) If the results of a stack test performed under circumstances representative of the facility's normal process and operating conditions indicate emissions in excess of the applicable standards, then:
- A. Within thirty (30) days following receipt of the written test report by the Department, or another alternative timeframe approved by the Department, the licensee shall re-test the non-complying emission source under circumstances representative of the facility's normal process and operating conditions and in accordance with the Department's air emission compliance test protocol and 40 C.F.R. Part 60 or other method approved or required by the Department; and
 - B. The days of violation shall be presumed to include the date of stack test and each and every day of operation thereafter until compliance is demonstrated under normal and representative process and operating conditions, except to the extent that the facility can prove to the satisfaction of the Department that there were intervening days during which no violation occurred or that the violation was not continuing in nature; and
 - C. The licensee may, upon the approval of the Department following the successful demonstration of compliance at alternative load conditions, operate under such alternative load conditions on an interim basis prior to a demonstration of compliance under normal and representative process and operating conditions.
[06-096 C.M.R. ch. 115]
- (13) Notwithstanding any other provisions in the State Implementation Plan approved by the EPA or Section 114(a) of the CAA, any credible evidence may be used for the purpose of establishing whether a person has violated or is in violation of any statute, regulation, or license requirement. [06-096 C.M.R. ch. 115]
- (14) The licensee shall maintain records of malfunctions, failures, downtime, and any other similar change in operation of air pollution control systems or the emissions unit itself that would affect emissions and that is not consistent with the terms and conditions of the air emission license. The licensee shall notify the Department within two (2) days or the next state working day, whichever is later, of such occasions where such changes result in an increase of emissions. The licensee shall report all excess emissions in the units of the applicable emission limitation. [06-096 C.M.R. ch. 115]

- (15) Upon written request from the Department, the licensee shall establish and maintain such records, make such reports, install, use and maintain such monitoring equipment, sample such emissions (in accordance with such methods, at such locations, at such intervals, and in such a manner as the Department shall prescribe), and provide other information as the Department may reasonably require to determine the licensee's compliance status. [06-096 C.M.R. ch. 115]
- (16) The licensee shall notify the Department within 48 hours and submit a report to the Department on a quarterly basis if a malfunction or breakdown in any component causes a violation of any emission standard (38 M.R.S. § 605). [06-096 C.M.R. ch. 115]

SPECIFIC CONDITIONS

(17) **Expansion Furnace, Pneumatic Conveyor, and Williams Unit**

A. Fuel

1. The Expansion Furnace is licensed to fire distillate fuel. [06-096 C.M.R. ch. 115, BPT]
2. The facility shall not purchase or otherwise obtain distillate fuel with a maximum sulfur content that exceeds 0.0015% by weight (15 ppm). [06-096 C.M.R. ch. 115, BPT]
3. Fuel sulfur content compliance shall be demonstrated by fuel delivery receipts from the supplier, a statement from the supplier that the fuel delivered meets Maine's fuel sulfur content standards, certificate of analysis, or testing of fuel in the tank on-site. [06-096 C.M.R. ch. 115, BPT]

B. Emissions from Baghouses #1 and #2 shall not exceed the following [06-096 C.M.R. ch. 115, BPT]:

Unit	PM (lb/hr)	PM ₁₀ (lb/hr)	PM _{2.5} (lb/hr)
Baghouse #1	1.29	1.29	1.29
Baghouse #2	1.17	1.17	1.17

C. Emissions from the Expansion Furnace (both baghouses combined) shall not exceed the following [06-096 C.M.R. ch. 101, § 4(B)(3)]:

Unit	SO ₂ (lb/hr)	NO _x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Expansion Furnace	0.01	1.98	0.24	0.02

D. Visible emissions from Baghouses #1 and #2 shall each not exceed 10% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 115, BPT and 40 C.F.R. § 60.732(b)]

- E. Dicaperl shall comply with all requirements of 40 C.F.R. Part 60, Subpart UUU applicable to the Expansion Furnace including, but not limited to, the following:

Dicaperl shall use 40 C.F.R. Part 60 Appendix A, Method 9 and the procedures in § 60.11 to demonstrate compliance with the opacity standard of Subpart UUU. [40 C.F.R. § 60.736(b)(2)] Dicaperl shall perform the Method 9 test once per calendar week when the facility is in operator and keep records including the date, time, and results of those tests. Each Method 9 test shall last a minimum of 30 minutes. [06-096 C.M.R. ch. 115, BPT]

(18) General Process Sources

Visible emissions from any general process source shall not exceed 20% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 101, § 4(B)(4)]

(19) Fugitive Emissions

- A. Dicaperl shall not cause emissions of any fugitive dust during any period of construction, reconstruction, or operation without taking reasonable precautions. Such reasonable precautions shall be included in the facility's continuing program of best management practices for suppression of fugitive particulate matter. See 06-096 C.M.R. ch. 101, § 4(C) for a list of potential reasonable precautions.
- B. Dicaperl shall not cause or allow visible emissions within 20 feet of ground level, measured as any level of opacity and not including water vapor, beyond the legal boundary of the property on which such emissions occur. Compliance with this standard shall be determined pursuant to 40 C.F.R. Part 60, Appendix A, Method 22.

[06-096 C.M.R. ch. 101, § 4(C)]

Dicaperl Minerals Corp.
Knox County
Thomaston, Maine
A-330-71-J-R

Departmental
Findings of Fact and Order
Air Emission License
Renewal

- (20) If the Department determines that any parameter value pertaining to construction and operation of the emissions units, including but not limited to stack size, configuration, flow rate, emission rates, nearby structures, etc., deviates from what was submitted in the application or ambient air quality impact analysis for this air emission license, Dicaperl may be required to submit additional information. Upon written request from the Department, Dicaperl shall provide information necessary to demonstrate AAQS will not be exceeded, potentially including submission of an ambient air quality impact analysis or an application to amend this air emission license to resolve any deficiencies and ensure compliance with AAQS. Submission of this information is due within 60 days of the Department's written request unless otherwise stated in the Department's letter.
[06-096 C.M.R. ch. 115, § 2(O)]

DONE AND DATED IN AUGUSTA, MAINE THIS 9th DAY OF SEPTEMBER, 2024.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY:  for
MELANIE LOYZIM, COMMISSIONER

The term of this license shall be ten (10) years from the signature date above.

[Note: If a renewal application, determined as complete by the Department, is submitted prior to expiration of this license, then pursuant to Title 5 M.R.S. § 10002, all terms and conditions of the license shall remain in effect until the Department takes final action on the license renewal application.]

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: June 21, 2024

Date of application acceptance: June 25, 2024

Date filed with the Board of Environmental Protection:

This Order prepared by Kendra Nash, Bureau of Air Quality.

