

**AIR EMISSION PERMIT NO. 07500003- 001**

**IS ISSUED TO**

**NORTHSHORE MINING COMPANY**

Silver Bay Power Company  
Cleveland-Cliffs Inc.  
10 Outer Drive  
Silver Bay, Lake County, MN 55614

The emission units, control equipment and emission stacks at the stationary source authorized in this permit are as described in the following permit applications:

<b>Permit Type</b>	<b>Application Date</b>
Title V Air Emission Permit	January 17, 1995
Title V Information Request Submittal	November 26, 2002

This permit authorizes the Permittee to operate the stationary source at the address listed above unless otherwise noted in Table A. The Permittee must comply with all the conditions of the permit and with all general conditions listed in Minn. R. 7007.0800, subp. 16 and all standard permit requirements listed in 40 CFR § 70.6(a) which are incorporated by reference. Any changes or modifications to the stationary source must be performed in compliance with Minn. R. 7007.1150 to 7007.1500. Terms used in the permit are as defined in the state air pollution control rules unless the term is explicitly defined in the permit.

**Permit Type:** Federal; Part 70

**Issue Date:** February 24, 2004

**Expiration:** February 24, 2009  
All Title I Conditions do not expire.

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Ann M. Foss  
Major Facilities Section Manager  
Majors and Remediation Division

for Sheryl A. Corrigan  
Commissioner  
Minnesota Pollution Control Agency

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**NOTICE TO THE PERMITTEE:**

Your stationary source may be subject to the requirements of the Minnesota Pollution Control Agency's (MPCA) solid waste, hazardous waste, and water quality programs. If you wish to obtain information on these programs, including information on obtaining any required permits, please contact the MPCA general information number at:

Metro Area (651) 296-6300

Outside Metro Area 1-800-657-3864

TTY (651) 282-5332

The rules governing these programs are contained in Minn. R. chs. 7000-7105. Written questions may be sent to: Minnesota Pollution Control Agency, 520 Lafayette Road North, St. Paul, Minnesota 55155-4194.

Questions about this air emission permit or about air quality requirements can also be directed to the telephone numbers and address listed above.

**PERMIT SHIELD:**

Subject to the limitations in Minn. R. 7007.1800, compliance with the conditions of this permit shall be deemed compliance with the specific provision of the applicable requirement identified in the permit as the basis of each condition. Subject to the limitations of Minn. R. 7007.1800 and 7017.0100, subp. 2, notwithstanding the conditions of this permit specifying compliance practices for applicable requirements, any person (including the Permittee) may also use other credible evidence to establish compliance or noncompliance with applicable requirements.

**FACILITY DESCRIPTION:**

Cleveland-Cliffs Inc is the parent company of both Northshore Mining Company and Silver Bay Power Company. Northshore Mining Company operates a taconite processing plant at the Silver Bay facility. Silver Bay Power Company operates a power plant at the Silver Bay facility to provide electricity for the taconite processing operations and the grid. The three companies are the Permittee of this Title V permit for the Silver Bay facility (AQ File No. 27A).

The Silver Bay facility was originally built in the mid-1950s by Reserve Mining Company and was briefly owned by Cyprus Minerals from 1989 to 1994 (Northshore was purchased in 1994 by Cleveland Cliffs, Inc.). Northshore (Reserve Mining at the time) was the first taconite operator in Minnesota. The Silver Bay facility is located on the north shore of Lake Superior.

Through a company owned, 47-mile railroad, the Northshore plant receives crushed ore that has been processed in the primary and secondary crushers at the Peter Mitchell Mine, near Babbitt, MN. The taconite plant further crushes the ore in tertiary crushers, dry cobs the ore (removes the larger non-metallic chunks of ore with magnetic separation of the un-concentrated ore), and then concentrates the iron content from roughly 25 percent to 65 percent in a series of ball mills, rod mills, magnetic concentrators and froth flotation cells. The iron concentrate is then mixed with a variety of binders and fluxing agents (i.e. limestone/dolomite mixture) and formed into small balls referred to as green balls. The green balls are then fired in traveling grate furnaces and indurated into taconite pellets. The pellets are shipped through the Great Lakes system to blast furnaces in the lower Great Lakes and made into a variety of steel products.

Air emission units at the Silver Bay facility (taconite plant and power plant) consist of electric generating boilers, steam heating boilers, rail car unloading, crushed ore storage bins, tertiary crushers, dry cobbles, coarse tailings handling operations, additive storage and handling operations, indurating furnaces, and fired pellet handling and screening. In addition, there are fugitive emission sources at the plant that consist of haul roads, concentrate storage piles, taconite pellet cooling piles, taconite pellet storage piles, pellet transfer operations, pellet ship loadout operations, coal piles, fluxstone piles, coal/fluxstone handling operations, coal ash handling operations, and tailings basin operations.

Fabric filters are used to control particulate matter emissions from the two large power boilers. Fabric filter dust collectors are used to collect particulate matter emissions from the rail car unloading operations, tertiary crushers, dry cobbles, coarse tailings handling operations, pellet screening for the hearth layer, and the additive storage and handling operations. The various crushed ore storage bins are controlled with either fabric filters (cartridge filters, CE 030 and CE 031) or multiclones (all 22 of these are located at the concentrator building, CE 032 through CE 053). The four indurating furnaces (Nos. 5, 6, 11, and 12) are controlled with wet-walled electrostatic precipitators to collect particulate matter as well as sulfur dioxide, acid gases, and various other air pollutants. Furnace discharges and indoor pellet screening are controlled with type N rotoclones.

Pellet screening, estimated at 600,000 long tons per year, at the pellet yard is allowed with this permit issuance (FS 017). This will be performed either by Northshore personnel or contractor.

Requirements from Air Emission Permit No. 07500003-007 (non-DELTA), issued on December 28, 2001, to Northshore Mining Company for the Pilot Demonstration Research and Development Plant (PDRDP) are included in this Title V permit for the Silver Bay facility.

## **APPENDIX MATERIALS**

**Appendix A: { Not applicable to this permit }**

**Appendix B: Fugitive Dust Control Actions Required for Mile Post 7 Area**

**Appendix C: Daily Visible Emission Checklists – Explanation & An Example**

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## **Appendix B. Fugitive Dust Control Actions Required for Mile Post 7 Area**

The following requirements apply to the Milepost 7 Tailings Basin area.

### **(1) Air Control Technology**

Pursuant to this Permit, best available air emission control technology shall include specifically, but not exclusively, the use of tailings submersion to the maximum extent practicable but consistent with the Milepost 7 Five Year Operations Plan, as conditionally approved by the MPCA on August 21, 1997 (and any revisions thereto as approved by the MPCA and in compliance with the terms of NPDES/SDS Permit MN 0055301 and this Permit), vegetation, spray water, effective and nonpolluting chemical binders, or other dust retardants on all exposed tailings surfaces.

### **(2) Tailings Disposal and Stabilization**

All tailings except coarse tailings hauled to the Peter Mitchell Mine Pit, tailings used for road, dam and dike construction within the basin, backfill in the plant area, or tailings temporarily stored within the basin for future construction purposes, shall be placed within the tailings basin at all times and may be surface spigotted and stabilized consistent with the Milepost 7 Five Year Operations Plan, as conditionally approved by the MPCA on August 21, 1997, and any revisions thereto as approved by the MPCA and in compliance with the terms of NPDES/SDS Permit MN 0055301 and this Permit.

### **(3) Exposed Coarse Tailings - Wetting**

Coarse tailings shall approximate the particle size distribution outlined by Attachment 1. The coarse tailings shall contain a silt (size fraction smaller than 74 microns) content that shall comply with Attachment 2. Representative sampling, and testing of the gradation of this material at the loading facilities by the plant shall be conducted at least once a month; the results shall be reported monthly to the MPCA. Portions of these representative samples shall be provided to the MPCA for purposes of a quality assurance audit, as requested by the MPCA.

Coarse tailings shall be sufficiently moist before and after railroad car or truck load-out at the facility to minimize dust emissions during loading, transportation and unloading operations.

The coarse tailings material shall be wetted in such a manner as to maintain zero visible emissions until it is treated with dust suppressants, vegetated, or placed under water. There shall be no stockpiling of coarse tailings at the plant. The water content of the coarse tailings shall be verified and reported monthly to the MPCA.

Excessive wetting shall be controlled to avoid free draining of water from the railroad cars during the transportation of coarse tailings. Appropriate measures have been implemented to control and collect drainage from the railroad cars prior to transport, and shall continue to be maintained.

### **(4) Exposed Coarse Tailings - Splitter Dikes, Railroad Roadbeds, Dams**

There shall be no more than a 400-foot wide exposed coarse tailings surface on the basin splitter dikes (including safety berms), and no more than a 200-foot wide exposed coarse tailings surface

on railroad roadbeds not located on basin splitter dikes. The total exposed area of coarse tailings shall at no time exceed 300 acres. Estimates of the total exposed coarse tailings area shall be performed monthly, and reported to the MPCA upon request.

(5) Exposed Coarse Tailings - Vegetation and Treatment

The balance of the exposed coarse tailings area shall be vegetated or treated with dust suppressants of such concentration and applied with such frequency that, except for emissions caused by extreme meteorological conditions, the visible emissions from these areas shall be essentially zero. Field tests for selected dust suppressant chemicals to be used for various application situations have been conducted, and a Fugitive Emissions Control Plan provided to the MPCA for approval and the MPCA hereby approves the continued use of the chemicals and methods described in the Fugitive Emissions Control Plan. This plan must be resubmitted within 90 days of the issuance of this Permit, for MPCA review and approval.

Should future studies or information prove that Coherex, or any other dust suppressants approved by the MPCA, are environmentally unsound, the MPCA may require a change in the use of dust suppressants.

The Regulated Party shall continue implementation of the approved vegetation plan to provide sufficient vegetative cover which will become self-sustaining, will minimize the emission of dust and fibers and will minimize the erosion of basin structures. The vegetation plan shall continue to be included as part of the Milepost 7 Five Year Operations Plan, as conditionally approved by the MPCA on August 21, 1997, and any revisions thereto as approved by the MPCA and in compliance with the terms of NPDES/SDS Permit MN 0055301 and this Permit. In addition, the vegetation activities shall be recorded monthly, and reported to the MPCA upon request.

(6) Treatment Technology

The Regulated Party shall be required to apply the Best Available Technology (BAT) to maintain air quality and to comply with all applicable laws, rules, court orders, and decisions, specifically including Minn. R. 7009.0010 to 7009.0080 and other duly adopted rules and standards which now or in the future may be applied to the facility.

(7) Air Quality Limits

The air quality standards at or beyond the property line of the disposal system to which the Regulated Party shall adhere, consistent with the determination of the Minnesota Supreme Court, are, among others, as follows:

- a. Compliance with Minn. R. 7009.0010 to 7009.0080, 7011.0700 to 7011.0735 and 7011.0150;
- b. Fibers in the ambient air shall be below a medically significant level;
- c. The ambient air shall contain no more fibers than that level ordinarily found in the ambient air of a control city such as St. Paul;

- d. The fibers in the ambient air shall be maintained below a level which is injurious to human health or welfare in violation of Minn. Stat. § 116.06 (3); and
- e. Such other standards which now or in the future may be applied to the Regulated Party's fiber emission.

The MPCA recognizes that the above fiber level standards or measurements applicable to fiber emissions emanating from the Regulated Party's operations are to be determined in the future to a degree which approaches reliable scientific and medical precision. The control city standard set forth in paragraph (c) was found by the federal courts to be based on a reasonable medical theory. Any future fiber level standards applied pursuant to paragraphs (b), (d), and (e) must likewise be based on a reasonable medical theory.

(8) Definitions

"Fibers", for the purpose of this Permit, are defined as chrysotile and amphibole mineral particles with 3-to-1 or greater aspect ratios.

"Fugitive dust" means particulate emissions from open sources exposed to the air environment which enter the atmosphere due to the forces of wind, man's activity, or both.

"Coarse tailings" means a mixture of 65-75 percent dry cobs and 25-35 percent filtered tailings.

"Exposed coarse tailings" means coarse tailings surfaces that have not been treated by artificial means including but not limited to watering, chemical stabilization, mulching or vegetation, or natural methods (rainfall or snow cover).

**Appendix C: Daily Visible Emission Checklists – Explanation & An Example**

The Permittee shall develop Daily Visible Emission Checklists for the stack equipped with dry control equipment as part of the O & M Plan. An example is provided on the next page. Note that fabric filters (baghouses) that are equipped with MPCA-approved broken bag detectors are not subject to daily visible emission inspection.

The Permittee shall also develop Daily Visible Emission Checklists for fugitive emission sources at the Silver Bay facility as part of the Fugitive Control Plan for the Silver Bay facility. Note that FS 018 denotes the untreated beaches at Mile Post 7 Tailings Basin Area, for which special control actions are required for fugitive dust in general. See Appendix B of this permit.

A checklist may cover only a few stacks, a few fugitive emission sources, or a number of stacks and nearby fugitive emission sources. Weather condition codes (ambient air temperature; and "clear," "foggy," or "raining/snowing".) are included in the checklists to help assessing whether ambient air conditions were conducive to making the visible emission check.



Daily Visible Emission Checklist (Part of the O & M Plan): **An example\***

Visual inspection of each stack is to be recorded on day shift Sunday through Saturday.

Record "OK" if equipment does not require attention.

Record "RA" if equipment requires attention to reduce visible emission from the stack.

Record actions taken to remedy problems that require attention ("RA" items).

Record "Moist" if moisture plume limits visible emission observations.

If the unit is down for more than one hour and the service area is active, notify the Environmental Engineer with the following information: Unit number, time it went down, why it went down, and when it is expected to be operating again.

At the end of each week, send completed inspection form to Environmental Engineer to file.

S V	EU	CE	Operator ID	Description	SU N	MO N	TUE	WE D	TH U	FRI	SA T
				Year _____ Date →							
				Time →							
				Initials →							

Record corrective actions or comments for each "RA." Also record pressure drop and/or water pressure/flow for each unit that moisture plume interferes with the observation.

Date \_\_\_\_/\_\_\_\_/\_\_\_\_ Employee \_\_\_\_\_ # \_\_\_\_\_

\* *This is an example for the Permittee to develop their own checklists. This example may not have included all the requirements specified in the text of this Appendix or relevant information required through other regulatory actions in effect. This example is not for fugitive emission sources.*

Fugitive Emission Sources for this permit.

FS	Description	FS	Description
001	Coal yard: transfer from ship to pile	011	Pellet cooling: Pile discharge
002	Coal yard: scraper traffic on pile	012	Pellet cooling: wind erosion from pile
003	Coal yard: wind erosion from pile	013	Pellet bridge discharge to yard
004	Fluxstone: transfer from ship to pile	014	Pellet boat loading
005	Fluxstone: hauling on unpaved road	015	Pellet yard wind erosion
006	Fluxstone: moving in Section 12 area	016	Pellet reclaiming activities
007	Fluxstone: wind erosion from pile	017	Pellet screening in pellet yard
008	Concentrate hauling to PDRDP	018	Mile Post 7 untreated basin beaches
009	Coarse tails handling at loadout bin	019	Secondary traffic on unpaved roads
010	Pellet cooling: transfer tower		

### **Appendix D: Current Status and Plan for TSP Compliance**

1. Environmental Standard Operating Procedures (ESOPs) have been formally written and implemented for Fugitive Dust control in each relevant department; department employees receive annual training on those ESOPs. ESOPs specify the goal of “no visible dust emissions” and specify equipment or methods available to control emissions. The training stresses that extra vigilance is needed during dry, windy conditions, and when dust-generating potential is higher than normal due to multiple activities (e.g. reclaiming and boat loading).
2. General Fugitive Dust Awareness and Prevention training is given to all employees at plant.
3. Screenhouse rotoclone reliability is optimized by scheduling cleanout at least every 8 weeks.
4. Screenhouse rotoclone operation plan: at first sight of excessive emissions, shut down feed to the screenhouse until problem is solved. If problem cannot be solved promptly, shut down rotoclone fan to prevent excessive stack emissions until problem is solved.
5. Cooling pile operating procedure has been revised as follows: during furnace startup, add maximum water at available transfer points between the furnace discharges and the cooling pile yard. (Note: during winter operations, water application can only be made at the furnace discharges.)
6. Road watering and sweeping are performed as needed; any employee may call for a watering truck.
7. Road watering and/or Coherex application includes parking areas, road shoulders, driving lanes in Pellet Yard, and areas of Pellet Yard newly exposed by removal of the storage pile.
8. Fines dredged from overflow channel shall be reclaimed and sent to Milepost 7; if reclaiming is not possible before they dry out, they shall be treated with Coherex.
9. Fines chute from end of D conveyor is being re-engineered in an attempt to avoid the plugging and icing problems that caused a safety concern before. If an effective design can be implemented in a cost-effective manner, such a chute will be installed at the end of D conveyor and possibly at the center (halfway point, lengthwise) of the D conveyor.
10. Fines chute from end of boat loading conveyors is being re-engineered to avoid plugging. If tests indicate that an effective and affordable design can be implemented, it will be installed on both boat loaders.
11. Water sprays, watering trucks and other equipment installed or purchased for dust control shall be maintained in good working order.

12. Exhaustive tests of many chemical dust suppressants have so far failed to find a suppressant compatible with pellets as they leave Northshore Mining's furnaces. However, Northshore continues to be open to the possibility that such a suppressant will be developed and become available at some time in the future. In the event that a future chemical is developed that is compatible with Northshore's chemical and operating requirements, Northshore will continue to explore the possibility of cost-effective application of such chemicals.

***Table 1. Actions Taken or Began, Equipment Installed During Previous Plans & Revisions***

<b><i>Year implemented</i></b>	<b><i>Description of Action/Project/Equipment Installation</i></b>
1998	Implemented annual employee fugitive dust training plantwide.
1999	Paved the limestone haul road.
1999 (and recurring)	Published memos relating to problems, increased vigilance at Pellet Plant and Material Handling.
1999	Installed vacuum cleaner system in "D" conveyor gallery to remove loose dust which might otherwise fall to ground from highest conveyor belt on property. Also added 4" water header to "D" conveyor gallery to allow wet cleanup when appropriate.
1999	Installed wipers on head end of boat loaders to sweep fines into boat instead of allowing them to be carried back to the dock.
1999	Automated and improved water sprays on 160 head end and along 62/162 conveyors. (Water had been present but not as well controlled.)
1999	Installed adjustable water controls on "F" conveyors to allow boat loader operators to control spray in response to visual cues.
1999	Installed automatic water spray on Truck Dump pocket.
1999	Purchased sweeper to sweep paved roads and dock area during non-freezing months. (Sweeper requires a damp road to work, so is not usable during winter months.)
1999	Installed water header in pellet storage yard to support water cannons during non-freezing months.
1999	Committed to more aggressive use of Coherex or chloride compounds as dust suppressant on unpaved roads.
1999	Installed large double-walled storage tank for Coherex on-site to improve the supply and eliminate the need to rely on contractor availability.
1999	Began treating parking lots and unpaved road shoulders in dust suppressant treatment program.
1999	Increased road watering frequency during non-freezing months.

**Table 1. Actions Taken or Began, Equipment Installed During Previous Plans & Revisions  
(Continued)**

<b><i>Year implemented</i></b>	<b><i>Description of Action/Project/Equipment Installation</i></b>
1999	Began washing boat loaders instead of sweeping. Initial effort was during the non-freezing months only; subsequent improvements in water supply have extended the period when this activity is feasible.
1999	Added motor amperage monitoring and alarming to screenhouse rotoclone display in control room; improved water level control.
1999	Changed screenhouse rotoclone operation policy: At first sign of excessive emissions, shut down feed to screenhouse until problem solved. If immediate repair not possible, leave rotoclone off to contain feed inside screenhouse, and restrict feed to 100 LTPH.
1999	Trained Yards & Docks personnel to run watering truck in order to allow quicker response to unexpected dust.
2000 - 2001	Installed water sprays on dump pockets in pellet yard: completed truck dump spray system; added sprays to 2 reclaim pockets.
1999 onward	Replaced 2 Concentrator multiclones with more efficient, newer-technology cartridge filters.
1999 onward	Research and investigation into dust suppressant for cooling pile pellets.
2000	Paved haul road: Power House to DMO via Pumphouse 1.
2000	Reactivated 12S rotoclone in Pellet Plant to reduce load on Screenhouse rotoclone and improve its performance.
2000	Installed water cannon in pellet yard to be used as necessary during non-freezing conditions.
2000	Overhauled watering truck to improve reliability.
2000	Purchased additional water cannon and built another, for a total of 3 water cannons in pellet yard.
2000 onward (recurrent)	Cleaned out culvert system to allow better drainage on docks, reduce fines deposited on dock area that can dry out and blow around.
2000	Added more water sprays and control valves at each conveyor.
2001	Installed cleanouts for F conveyor galleries to allow wet cleanout instead of dry sweeping of fines.
2001	Installed dump snout/chute from end of "D" conveyor to control falling dust. Experienced plugging problems; snout had to be removed in 2002 for safety reasons.

***Table 1. Actions Taken or Began, Equipment Installed During Previous Plans & Revisions  
(Continued)***

<b><i>Year implemented</i></b>	<b><i>Description of Action/Project/Equipment Installation</i></b>
2001	Automated water sprays for F conveyors to allow operation from boatloader cabs; improves response to and control of dust during boat loading operations.
2002	Continued paving around plant where appropriate.
2002	Replaced black and white camera on cooling pile with color camera to improve Control Room's ability to discriminate between dust and steam.
2002	Improved lighting in pellet yard to allow better dust detection at night.
Began 2002 (recurrent)	Removed fines dredged from mill water overflow channel (final channel of stormwater collection system) and deposited in tailings basin.

**Appendix E: Pilot Demonstration Research and Development Plant (PDRDP) Information**

Northshore Mining Company has obtained an MPCA-approved Data Collection Protocol (DCP) for the PDRDP. The DCP is required in Air Emission Permit No. 07500003-007 (non-DELTA), pursuant to Minn. Stat. sections 115.04, subd. 1 and 116.091, subd. 1; Minn. R. 7007.0600, subp. 2. The following text, in italic font style, is taken from that permit with only EU and CE numbers updated.

*Data Collection Protocol. The Permittee shall design and submit a Pilot Environmental Data Collection and Evaluation Protocol (Protocol) for MPCA review and approval. The Permittee is prohibited from initiating operation of the PDRDP until MPCA has issued a written approval of the Protocol. The primary goals and objectives of the Protocol are to identify, monitor, sample, and analyze the various air, water, solid waste, and hazardous waste streams and pollutants associated with PDRDP operations for the purposes of preparing an environmental impact statement (EIS) and conducting various media permit reviews for any proposed commercial scale ITmk3 plant.*

*The Permittee shall design the protocol and implement the MPCA-approved Protocol to accomplish these goals and objectives.*

*1. Protocol Submission Deadline. The Permittee must take into consideration Pilot Environmental Data Collection requirements in the detail design and engineering of the PDRDP. The Permittee shall submit the initial draft Protocol to the MPCA 90 days after final design engineering of the PDRDP air, water, and solids handling system has been completed.*

*2. Protocol Process Operational Scenarios. The Protocol must identify the proposed alternative process operational scenarios (POS) that are expected to be tested using the Peter Mitchell area iron ore during the pilot demonstration program. Each POS should be described in detail and include information on the proposed iron ore, additives (e.g. fluxing agents, binders, etc.), reductant, and combustion fuels.*

*3. Protocol Data Collection and Evaluation Methods. The Permittee shall provide detail in the Protocol how the environmental parameters, identified in Lists 1, 2, and 3 of the Appendix of this permit, are to be monitored, collected, sampled and analyzed for purposes of regulatory review of a potential commercial scale ITmk3 plant (environmental review, air toxic review, air emission permitting, water quality permitting, and solid and hazardous waste permitting). The Protocol must specify monitoring, collection and sampling locations and monitoring frequency for all parameters listed including those parameters in List 3. The Protocol must identify the laboratory and analytical methods to be used to analyze environmental monitoring and sampling.*

*For the parameters in Lists 1, 2, and 3, data must be collected and analyzed so that it can be expressed in units that can be used readily in environmental impact calculations and evaluations for the potential commercial scale ITmk3 plant. These units include, but are not limited to, mass rate (mass per unit time), concentration (mass per unit volume of air or water, with air or water temperature specified; percent, or parts per million or billion by mass or volume, as appropriate; specify dry or wet basis, as appropriate), production-based unit (pollutant mass per ton of iron nugget made for each POS), and fuel-based unit (pollutant mass per million Btu of heat input for combustion; pollutant mass per million Btu of total heat input in combustion fuel and reductants). Composition shall be analyzed for all materials (iron ore concentrate, fuels, reductants, binders, fluxing agents, slag, scrubber chemical additives, scrubbed solids, furnace spills, and iron nuggets) entering and leaving EU 630 and CE 201, respectively. If a listed parameter cannot be quantified through testing, the Permittee shall search the technical literature to provide an upper bound for that parameter. If a parameter was below detection limit, the Permittee report clearly both “below detection” and the detection limit. The Protocol must propose methods of data presentation to assist the goals and objectives of the Protocol.*

*All, or part of, the Protocol shall be in the MPCA public file, depending on the extent of data protection requested by the Permittee and the MPCA Commissioner’s determination on any request. If needed, data protection for pilot environmental data collection must be addressed in the Protocol.*

*The MPCA will review the Protocol submittal and notify the Permittee in writing of the approval or disapproval of the submittal. The MPCA and the Permittee shall consult with each other upon the request of either party during the review. If the submittal is disapproved in whole or in part, the MPCA shall notify the Permittee of the specific inadequacies and shall stipulate the needed revisions.*

*4. Periodic Reports. The Permittee shall submit periodic Pilot Environmental Data Collection Reports to the MPCA within 30 days after end of each calendar quarter following Initial Startup of the PDRDP.*

This Title V permit, in Table A GP 017, also references Lists 1, 2, and 3, which are mentioned in the above text in italic font style. For information completeness, the three lists are provided in the following pages.

**List 1. Chemicals\* Chemicals\* Needed for Future Air Toxic Review  
and/or Environmental Review for the Commercial Scale ITmk3 Plant**

	Name	CAS No.		Name	CAS No.
1	Acetaldehyde	75-07-0	27	Hydrogen chloride	7647-01-0
2	Acetone	67-64-1	28	Hydrogen cyanide	74-90-8
3	Acrolein	107-02-8	29	Manganese	7439-96-5
4	Antimony trioxide	1309-64-4	30	Mercury, elemental	7439-97-6
5	Arsenic	7440-38-2	31	Methyl bromide	74-83-9
6	Barium	7440-39-3	32	Methyl chloride	74-87-3
7	Benzene	71-43-2	33	Methyl ethyl ketone	78-93-3
8	Beryllium	7440-41-7	34	Methyl isobutyl ketone	108-10-1
9	Bromoform	75-25-2	35	Methyl methacrylate [2]	80-62-6
10	Cadmium	7440-43-9	36	Methyl tertiary butyl ether	1634-04-4
11	Carbon disulfide	75-15-0	37	Methylene chloride	75-09-2
12	Carbon tetrachloride	56-23-5	38	Naphthalene	91-20-3
13	2-Chloroacetophenone	532-27-4	39	Nickel-subsulfide	12035-72-2
14	Chlorobenzene	108-90-7	40	N-Nitrosodimethylamine	62-75-9
15	Chloroform	67-66-3	41	Phthalic anhydride	85-44-9
16	Chromium (VI)	18540-29-9	42	Styrene	100-42-5
17	Cumene	98-82-8	43	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6
18	1,2-Dichlorobenzene	95-50-1	44	Tetrachloroethylene	127-18-4
19	1,3-Dichloropropene	542-75-6	45	Toluene	108-88-3
20	Ethyl benzene	100-41-4	46	1,1,1-Trichloroethane	71-55-6
21	Ethyl chloride	75-00-3	47	1,1,2-Trichloroethane	79-00-5
22	Ethylene dibromide	106-93-4	48	Trichloroethylene	79-01-6
23	Ethylene dichloride	107-06-2	49	Trichlorofluoromethane	75-69-4
24	Formaldehyde	50-00-0	50	Vinyl acetate	108-05-4
25	Hexachlorobenzene	118-74-1	51	Vinylidene chloride	75-35-4
26	Hexane	110-54-3	52	Xylene	1330-20-7

\* This list is based on information provided in the August 30, 1999, Air Toxic Review of a commercial scale REDSMELT plant proposed by Northshore Mining Company. Future environmental and air quality permit reviews for any proposed commercial scale ITmk3 plant likely will need an analysis of the pollutants and chemicals provided in this list. Nothing in this permit affects or waives MPCA's ability to require the analysis of other pollutants and chemicals not included in this list for any future environmental and/or air quality permit reviews for any proposed commercial scale ITmk3 plant.

**List 2. Criteria and Other Pollutants\* Needed for Air Quality Permit  
and Environmental Reviews for the Commercial Scale ITmk 3 Plant**

	Name		Name
1	Particulate Matter of size $\leq 10 \mu\text{m}$ (PM <sub>10</sub> )	8	Lead
2	Nitrogen oxides (NO <sub>x</sub> )	9	Mercury
3	Sulfur dioxide (SO <sub>2</sub> )	10	Arsenic
4	Sulfuric acid mist (SO <sub>3</sub> and/or SO <sub>4</sub> )	11	Nickel
5	Carbon monoxide (CO)	12	Selenium
6	Volatile organic compounds (VOC)	13	Fibers (detailed characterization)
7	Fluoride		

\* Some pollutants determined with EPA Reference Method 29 are included in this list, while others are in List 1. There are overlaps such as mercury in these two lists. Acid gases are arranged in a similar manner. Future air quality permit and environmental reviews for any proposed commercial scale ITmk3 plant likely will need an analysis of the pollutants and chemicals provided in this list. Nothing in this permit affects or waives MPCA's ability to require the analysis of other pollutants and chemicals not included in this list for any future air quality permit and/or environmental reviews for any proposed commercial scale ITmk3 plant.



**List 3. Parameters\* Needed for Water Quality Permit Review  
for the Commercial Scale ITmk3 Plant**

	Name		Name		Name
1	Bicarbonates	21	Ammonia	41	Lead
2	Boron	22	Temperature	42	Lithium
3	Calcium	23	Fibers (detailed**)	43	Manganese
4	Chloride	24	Nitrate-nitrite	44	Nickel
5	Fluoride	25	Total organic nitrogen	45	Selenium
6	Magnesium	26	Phosphorus	46	Silver
7	Mercury	27	Bromide	47	Strontium
8	Molybdenum	28	Sulfide	48	Thallium
9	pH	29	Surfactants	49	Tin
10	Potassium	30	Alkalinity	50	Titanium
11	Sodium	31	Aluminum	51	Vanadium
12	Specific conductance	32	Antimony	52	Zinc
13	Sulfate	33	Arsenic	53	Gross alpha
14	Total dissolved solids	34	Barium	54	Radium-226
15	Biochemical oxygen demand	35	Beryllium	55	Radium -228
16	Chemical oxygen demand	36	Cadmium	56	Radium -222
17	Total organic carbon	37	Chromium	57	Uranium
18	Gasoline range organics	38	Cobalt	58	Scan of organics***
19	Diesel range organics	39	Copper		
20	Pyrene	40	Iron		

\* The metals shall be analyzed in total form, using AA furnace methods as per 40 CFR 136.3.

\*\* Detailed characterization is required of quantities of the various fiber types and size distributions.

\*\*\* Scan of organic compounds shall be performed using EPA Methods 624 & 625, according to 40 CFR 136. In addition to those pollutants listed in Methods 624 and 625 (Appendix D, Table II), the concentrations of at least ten of the most abundant constituents of the acid and base/neutral organic fractions, shown to be present by peaks on the total ion plots (reconstructed gas chromatograms) within ten percent of the nearest internal standard, shall be identified. Identification shall be through the use of the EPA/NIH computerized library of mass spectra, with visual confirmation and potential quantification.

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

**Table A contains limits and other requirements with which your facility must comply. The limits are located in the first column of the table (What To do). The limits can be emission limits or operational limits. This column also contains the actions that you must take and the records you must keep to show that you are complying with the limits. The second column of Table A (Why to do it) lists the regulatory basis for these limits. Appendices included as conditions of your permit are listed in Table A under total facility requirements.**

**Subject Item:****Total Facility**

<b>What to do</b>	<b>Why to do it</b>
<b>A. OPERATIONAL REQUIREMENTS</b>	hdr
Comply with the O & M Plan: Follow the actions and recordkeeping specified in the O & M plan. The plan may be amended by the Commissioners written approval.	Minn. R. 7007.0800 subp. 14 and Minn. R. 7007.0800 subp. 16(J)
Comply with the Fugitive Control Plan for the Silver Bay Facility: Follow the actions and recordkeeping specified in the plan. The plan may be amended with the Commissioners approval. If the Commissioner determines the Permittee is out of compliance with Minn. R. 7011.0150, or fugitive control plan, then the Permittee may be required to amend the fugitive control plan. Note that the required fugitive dust control actions during Mile Post 7 tailings basin area operations, found in Appendix B of this permit, are a special set of requirements for this permit, which is excluded from the fugitive control plan for the Silver Bay Facility.	Minn. R. 7011.0150
Fugitive Emissions: Do not cause or permit the handling, use, transporting, or storage of any material in a manner which may allow avoidable amounts of particulate matter to become airborne. Comply with all other requirements listed in Minn. R. 7011.0150.	Minn. R. 7011.0150
Comply with the requirements in Appendix B, which contains fugitive dust control actions required during Mile Post 7 tailings basin area operations.	Minn. R. 7007.0800, subp. 4(D); subp. 14; subp. 16(J)
Noise: The Permittee shall comply with the noise standards set forth in Minn. R. 7030.0010 to 7030.0080 at all times during the operation of any emission units. This is a state only requirement and is not federally enforceable.	Minn. R. 7030.0010 - 7030.0080
Air Pollution Control Equipment: Operate all pollution control equipment whenever the corresponding process equipment and emission units are operated, unless otherwise noted in Table A.	Minn. R. 7007.0800, subp. 2; Minn. R. 7007.0800, subp. 16(J)
<b>B. PERFORMANCE TESTING REQUIREMENTS</b>	hdr
Performance Testing: Conduct all performance tests in accordance with Minn. R. ch. 7017 unless otherwise noted in Tables A, B, and/or C.	Minn. R. ch. 7017
Operating and/or production limits will be placed on emission units based on operating conditions during compliance testing. Limits set as a result of a compliance test (conducted before or after permit issuance) apply until new operating/production limits are set following formal review of a performance test as specified by Minn. R. 7017.2025.	Minn. R. 7017.2025
<b>C. MONITORING REQUIREMENTS</b>	hdr
Monitoring Equipment Calibration: Annually calibrate all required monitoring equipment (any requirements applying to continuous emission monitors are listed separately in this permit).	Minn. R. 7007.0800, subp. 4(D)
Monitoring Equipment: Install or make needed repairs to monitoring equipment within 270 days of issuance of the permit if monitoring equipment is not installed and operational on the date the permit is issued.	Minn. R. 7007.0800, subp. 4(D)
Complete monitoring equipment debugging, troubleshooting, and establishment of parameter ranges within 450 days of Permit Issuance.	Minn. R. 7007.0800, subp. 4(D)
Operation of Monitoring Equipment: Unless otherwise noted in Tables A, B, and/or C, monitoring a process or control equipment connected to that process is not necessary during periods when the process is shutdown, or during checks of the monitoring systems, such as calibration checks and zero and span adjustments. If monitoring records are required, they should reflect any such periods of process shutdown or checks of the monitoring system.	Minn. R. 7007.0800, subp. 4(D)
Daily Visible Emission Checklists for the O & M Plan: All stacks equipped with dry control equipment (multiclones - stacks of GP 010 & 011; fabric filters - stacks of GP 003 through 009, 012 & 013, and SV 097) plus SV 005 must appear individually in at least one of the Daily Visible Emission Checklists. Observations and observation dates, weather condition codes, whether and what corrective action(s) had been taken, and observer's ID must be included in the checklists. Appendix C provided explanations for the checklists and an example checklist.	Minn. R. 7007.0800, subp. 4(D); subp. 14; subp. 16(J)

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

<p>Visible Emission Check: Prior to approval of the O&amp;M Plan, the Permittee shall check visible emissions from GP 003 through GP 013, SV 097 and SV 005 once daily when in operation during daylight hours. A form(s) meeting the "Daily Visible Emission Checklists for the O &amp; M Plan" requirement shall be used to indicate whether process or control equipment requires attention. In the event the Permittee makes a finding that attention is required, the Permittee shall investigate the process and control equipment performance and implement appropriate corrective action, if necessary.</p> <p>Upon approval of the O&amp;M Plan, the Permittee shall check visible emissions from GP 003 through GP 013, SV 097 and SV 005 once daily when in operation during daylight hours. The Permittee shall use the daily visible emission checklists in the O&amp;M Plan (see Appendix C for detail) as a means to indicate when appropriate corrective actions in the O&amp;M Plan should be taken.</p>	Minn. R. 7007.0800, subp. 4(D); subp. 14; subp. 16(J)
<p>Daily Visible Emission Checklists for the Fugitive Control Plan at the Silver Bay Facility: FS 001 through FS 017 and FS 019 must appear individually in at least one of the Daily Visible Emission Checklists. Observations and observation dates, weather condition codes, whether and what corrective action(s) had been taken, and observer's ID must be included in the checklists. Appendix C provided explanations for the checklists.</p>	Minn. R. 7007.0800, subp. 4(D); subp. 14; subp. 16(J)
<p>Fugitive Dust Observations: Prior to the approval of the fugitive control plan for the Silver Bay facility, the Permittee shall observe fugitive dust sources FS 001 through FS 017 and FS 019 once daily during daylight hours. A form(s) meeting the "Daily Visible Emission Checklists for the Fugitive Plan at the Silver Bay Facility" shall be used to check fugitive dust control practices. In the event the Permittee makes a finding that attention to fugitive dust sources is required, the Permittee shall investigate the fugitive dust sources and implement corrective action, if necessary.</p> <p>Upon approval of the fugitive control plan, the Permittee shall observe fugitive dust sources FS 001 through FS 017 and FS 019 once daily during daylight hours. The Permittee shall use the daily visible emission checklist(s) in the fugitive dust control plan (see Appendix C for detail) as a means to indicate when appropriate corrective actions in the fugitive control plan are taken.</p>	Minn. R. 7007.0800, subp. 4(D); subp. 14; subp. 16(J)
<p>Visible Emissions Training: The Permittee shall (1) ensure that one plant employee obtain an initial EPA Method 9 certification and be recertified every three years or (2) employ a similarly certified contractor. This person will train other plant employees to perform the daily visible emission check as detailed in the O&amp;M Plan and Fugitive Control Plan.</p>	Minn. R. 7007.0800, subp. 4(D); subp. 14; subp. 16(J)
<p>Ambient Air Quality Monitoring: The Permittee shall continue to operate TSP and PM-10 ambient air quality monitors at the existing sites, in accordance with the MPCA approved ambient monitoring plans and MPCA Exhibit M. The Permittee shall continue to operate fiber ambient air monitors at Stations 1 (Beaver Bay) and 7 (Silver Bay) at a monitoring frequency of one sample per 21 days, while meeting other requirements in the existing, MPCA approved ambient monitoring plans and MPCA Exhibit M.</p>	Minn. R. 7007.0800, subp. 4(D); subp. 16(J)
<p>Ambient Fiber Monitoring Report: due 30 days of receipt at Northshore Mining Company any MDH laboratory report on ambient air fiber analysis results.</p>	Minn. R. 7007.0800, subp. 4(D); subp. 16(J)
<p>D. RECORD KEEPING REQUIREMENTS</p>	hdr
<p>Record keeping: Maintain records describing any insignificant modifications (as required by Minn. R. 7007. 1250, subp. 3) or changes contravening permit terms (as required by Minn. R. 7007.1350 subp. 2), including records of the emissions resulting from those changes.</p>	Minn. R. 7007. 0800, subp. 5(B)
<p>Record keeping: Retain all records at the stationary source for a period of five (5) years from the date of monitoring, sample, measurement, or report. Records which must be retained at this location include all calibration and maintenance records, all original recordings for continuous monitoring instrumentation, and copies of all reports required by the permit. Records must conform to the requirements listed in Minn. R. 7007.0800, subp. 5(A).</p>	Minn. R. 7007.0800, subp. 5(C)
<p>Contractors: The Permittee shall retain records on site of all contractors allowed on site that include any crushers, screens and conveyors. The Permittee shall also retain records on site of all contractors whose operations would require an Air Emission Permit from the MPCA. The records shall include the contractors company name, MPCA air emissions permit number, short description of activities undertaken by the contractor, estimate of emissions or materials handled and the dates the contractor was on site. The record shall be updated at least monthly.</p> <p>The Permittee shall evaluate if the activities of any contractor required NSR permitting prior to the contractor performing such activities. If a contractor has its own permit, but it is determined that the contractor is under the common control of the taconite plant then the contractor's permit does not shield the taconite plant or the contractor from the NSR &amp; Part 70 modification regulations or enforcement actions.</p>	Minn. R. 7011.0800 subp. 2

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

<b>E. REPORTING</b>	hdr
Notification of Deviations Endangering Human Health or the Environment: As soon as possible after discovery, notify the Commissioner or the state duty officer, either orally or by facsimile, of any deviation from permit conditions which could endanger human health or the environment.	Minn. R. 7019.1000, subp. 1
Notification of Deviations Endangering Human Health or the Environment Report: Within 2 working days of discovery, notify the Commissioner in writing of any deviation from permit conditions which could endanger human health or the environment. Include the following information in this written description: 1. the cause of the deviation; 2. the exact dates of the period of the deviation, if the deviation has been corrected; 3. whether or not the deviation has been corrected; 4. the anticipated time by which the deviation is expected to be corrected, if not yet corrected; and 5. steps taken or planned to reduce, eliminate, and prevent reoccurrence of the deviation.	Minn. R. 7019.1000, subp. 1
Breakdown Notifications: Notify the Commissioner within 24 hours of a breakdown of more than one hour duration of any control equipment or process equipment if the breakdown causes any increase in the emissions of any regulated air pollutant. The 24-hour time period starts when the breakdown was discovered or reasonably should have been discovered by the owner or operator. However, notification is not required in the circumstances outlined in Items A, B and C of Minn. R. 7019.1000, subp. 2.  At the time of notification or as soon as possible thereafter, the owner or operator shall inform the Commissioner of the cause of the breakdown and the estimated duration. The owner or operator shall notify the Commissioner when the breakdown is over.	Minn. R. 7019.1000, subp. 2
Shutdown Notifications: Notify the Commissioner at least 24 hours in advance of a planned shutdown of any control equipment or process equipment if the shutdown would cause any increase in the emissions of any regulated air pollutant. If the owner or operator does not have advance knowledge of the shutdown, notification shall be made to the Commissioner as soon as possible after the shutdown. However, notification is not required in the circumstances outlined in Items A, B and C of Minn. R. 7019.1000, subp. 3.  At the time of notification, the owner or operator shall inform the Commissioner of the cause of the shutdown and the estimated duration. The owner or operator shall notify the Commissioner when the shutdown is over.	Minn. R. 7019.1000, subp. 3
Emission Fees: due 60 days after receipt of an MPCA bill.	Minn. R. 7002.0005 through Minn. R. 7002.0095
<b>F. MISCELLANEOUS</b>	hdr
Application for Permit Amendment: If a permit amendment is needed, submit an application in accordance with the requirements of Minn. R. 7007.1150 through Minn. R. 7007.1500. Submittal dates vary, depending on the type of amendment needed.	Minn. R. 7007.1150 through Minn. R. 7007.1500
Extension Requests: The Permittee may apply for an Administrative Amendment to extend a deadline in a permit by no more than 120 days, provided the proposed deadline extension meets the requirements of Minn. R. 7007.1400, subp. 1(H).	Minn. R. 7007.1400, subp. 1(H)
Inspections: Upon presentation of credentials and other documents as may be required by law, allow the Agency, or its representative, to enter the Permittee's premises to have access to and copy any records required by this permit, to inspect at reasonable times (which include any time the source is operating) any facilities, equipment, practices or operations, and to sample or monitor any substances or parameters at any location.	Minn. R. 7007.0800, subp. 9(A)
Circumvention: Do not install or use a device or means that conceals or dilutes emissions, which would otherwise violate a federal or state air pollution control rule, without reducing the total amount of pollutant emitted.	Minn. R. 7011.0020
Operation Changes: In any shutdown, breakdown, or deviation the Permittee shall immediately take all practical steps to modify operations to reduce the emission of any regulated air pollutant. The Commissioner may require feasible and practical modifications in the operation to reduce emissions of air pollutants. No emissions units that have an unreasonable shutdown or breakdown frequency of process or control equipment shall be permitted to operate.	Minn. R. 7019.1000, subp. 4
The Permittee shall comply with the General Conditions listed in Minn. R. 7007.0800, subp. 16.	Minn. R. 7007.0800, subp. 16

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

<p>With respect to fibers, the air quality standards at or beyond the property line of the Silver Bay facility to which the Permittee shall adhere, consistent with the determination of the Minnesota Supreme Court, are:</p> <p>a. fibers in the ambient air shall be below a medically significant level;  b. the ambient air shall contain no more fibers than that level ordinarily found in the ambient air of a control city such as St. Paul;  c. the fibers in the ambient air shall be maintained below a level which is injurious to human health or welfare in violation of Minn. Stat. Sec. 116.06 (3); and  d. such other standards which now or in the future may be applied to the Permittee's fiber emissions.</p> <p>The MPCA recognizes that the above fiber level standards or measurements applicable to fiber emissions emanating from the Permittee's operations are to be determined in the future to a degree with approaches reliable scientific and medical precision. (To be continued in the next row)</p>	<p>Title I Condition: Per Permit No. 27A-89-OT-1 on ambient fiber standards</p>
<p>(Continued from the above row)</p> <p>The control city standard set forth in paragraph (b) was found by the federal courts to be based on a reasonable medical theory. Any future fiber level standards applied pursuant to paragraphs (a), (c) and (d) must likewise be based on a reasonable medical theory.</p> <p>"Fibers," for the purpose of this permit, are defined as chrysotile and amphibole mineral particles with 3-to-1 or greater aspect ratios.</p>	<p>Title I Condition: Per Permit No. 27A-89-OT-1 on ambient fiber standards (continued from the above row)</p>
<p>The Permittee shall comply with the TSP Compliance Plan attached to this permit as Appendix D.</p>	<p>Minn. R. 7007.0800, subp. 4(D); subp. 14; subp. 16(J)</p>
<p>EIS Required. The Permittee is prohibited from initiating construction of any proposed commercial scale ITmk3 plant at the Silver Bay facility and the Peter Mitchell mine until an environmental impact statement (EIS) under Minn. R. chapter 4410 has been prepared for the proposed commercial scale ITmk3 plant, the EIS process under Minn. R. chapter 4410 has been completed and any applicable regulatory permitting process has been completed in regard to construction initiation.</p>	<p>Minn. R. ch. 4410</p>

# TABLE A: LIMITS AND OTHER REQUIREMENTS

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

**Subject Item:** GP 001 Power Boilers

**Associated Items:** CE 001 Fabric Filter - High Temperature, i.e., T>250 Degrees F  
CE 002 Fabric Filter - High Temperature, i.e., T>250 Degrees F  
CM 001 Boiler 1: 20% Opacity, EU001, 1-min ave.  
CM 008 Boiler 2: 20% Opacity, EU002, 1-min ave.  
EU 001 Power Boiler 1  
EU 002 Power Boiler 2  
SV 001 Power House Unit #1  
SV 002 Power House Unit #2

What to do	Why to do it
A. POLLUTANT LIMITS	hdr
Total Particulate Matter: less than or equal to 0.6 lbs/million Btu heat input . This limit applies individually to both EU 001 and EU 002.	Minn. R. 7011.0510, subp. 1
Sulfur Dioxide: less than or equal to 4.0 lbs/million Btu heat input when burning coal, and less than or equal to 2.0 lb/million Btu when burning oil. This limit applies individually to both EU 001 and EU 002.	Minn. R. 7011.0510, subp. 1
The Permittee shall restrict the sulfur content of coal so that SO2 emission from each power boiler does not exceed 2.5 lb SO2/million BTU on 1-hour average, 2.0 lb SO2/million BTU on 3-hour average, 1.8 lb SO2/million BTU on 24-hour average, and 1.5 lb SO2/million BTU based on annual average (these restrictions apply individually to both EU 001 and EU 002). The Permittee shall restrict the sulfur content of any grade of commercial fuel oil so that SO2 emission from EU 001 does not exceed 0.5 lb SO2/million BTU. Note that this Title I Condition is more stringent than the Sulfur Dioxide limit, above.	Title I Condition due to the modeling study for Permit No. 27A-89-OT-1, Exhibit I
Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity. This limit applies individually to both EU 001 and EU 002.	Minn. R. 7011.0510, subp. 2
B. OPERATIONAL REQUIREMENTS	hdr
Fuel Limits: The Permittee shall combust natural gas or coal in this group. Distillate fuel oil is also allowed for EU 001.	Minn. R. 7007.0800, subp. 2
For each unit in GP 001 to not be an affected unit subject to the requirements of the federal Acid Rain Program, 40 CFR 72.6(b)(4)(i), each unit in GP 001 shall retain the cogeneration qualifying facility status, as per the Public Utility Regulatory Policies Act of 1978; and shall be restricted in supplying electricity to any utility power distribution system to, on a three-year rolling average basis: 1) less than or equal to one-third of its potential electrical output capacity, and 2) less than or equal to 219,000 MWe-hrs actual electric output (on a gross basis).	Minn. R. 7007.0800, subp. 2
C. PERFORMANCE TESTING REQUIREMENTS	hdr
Initial Performance Test: due 180 days after Permit Issuance to measure SO2 emission from one power boiler. The Permittee shall also sample and analyze the fuel for sulfur content and heating value.	Title I Condition due to the modeling study for Permit No. 27A-89-OT-1, Exhibit I
Initial Performance Test: due 180 days after Permit Issuance to measure PM emission and Opacity from both SV 001 and SV 002.	Minn. R. 7017.2020, subp. 1
Performance Test Pre-test Meeting: due 7 days before Initial Performance Test.	Minn. R. 7017.2030, subp. 4
D. CONTINUOUS OPACITY MONITORING (COM)	hdr
COMS Certification Test: due 60 days after Permit Issuance.	Minn. R. 7017.1050, subp. 1
COMS Certification Test Pretest Meeting: due 7 days before COMS Certification Test.	Minn. R. 7017.1050, subp. 1
Continuous Opacity Monitoring: The Permittee shall use CM 001 for SV 001 and CM 008 for SV 002 to measure opacity.	Minn. R. 7017.1000, subp. 1, Minn. R. 7007.0800, subp. 2
Continuous Operation: Except for system startups, shutdowns, breakdowns, repairs, calibration checks, and zero and span adjustments, the Permittee shall operate CM 001 continuously when venting exhaust gas from EU 001 through SV 001, and operate CM 008 continuously when venting exhaust gas from EU 002 through SV 002.	Minn. R. 7007.0800, subp. 2
Daily Calibration Drift (CD) Check: The CD shall be quantified and recorded at zero (low-level) and upscale (high-level) opacity at least once daily. CM 001 and CM 008 must be adjusted whenever the calibration drift exceeds twice the specification of PS-1 of 40 CFR 60, Appendix B.	Minn. R. 7017.1000

# TABLE A: LIMITS AND OTHER REQUIREMENTS

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

COMS Calibration Error Audit: due before end of each half-year following Permit Issuance. Conduct three point calibration error audits at least 3 months apart but no greater than 8 months apart. Filter values used shall correspond to approximately 11%, 20%, and 37% opacity.	Minn. R. 7007.0800, subp. 2
COMS Monitoring Data: The Permittee shall reduce all COMS data to 6-minute averages. Opacity averages shall be calculated from all equally spaced consecutive 10-second (or shorter) data points in the 6-minute averaging period.	Minn. R. 7007.0800, subp. 2
Record Keeping: The Permittee must retain records of all COMS monitoring data and support information for a period of five years from the date of the monitoring sample, measurement, or report. Records shall be kept at the source.	Minn. R. 7007.0800, subp. 5
E. SO2 EMISSION MONITORING REQUIREMENTS	hdr
Fuel Properties Monitoring: The Permittee shall obtain, from the supplier for each fuel shipment, a certificate that specifies sulfur content (in percent sulfur by weight) and heating value of the fuel (in BTU per lb). For any shipment received without the certificate, the Permittee shall sample the shipment for analysis of sulfur content and heating value.	Title I Condition due to the modeling study for Permit No. 27A-89-OT-1, Exhibit I
<p>Fuel Usage &amp; Sulfur Dioxide Emission Rate Monitoring: By the fifteenth day of each calendar month, the Permittee shall collect recorded fuel usage rate (U, in tons) for the previous calendar month, calculate and record (at the time of calculation) the sulfur dioxide emission for the previous month as follows:</p> $E = U * S * 2$ <p>where:</p> <p>E = SO2 emissions in tons for the previous month,  U = Tons of coal used for the previous month,  S = percent by weight of sulfur in coal, based on most current supplier certification,  2 = molar ratio of sulfur dioxide to sulfur</p> <p>This method of Fuel Usage &amp; sulfur Dioxide Emission Rate Monitoring may be changed by the MPCA, upon a written notification from the Permittee that the sulfur content in the coal exceeded 0.50%.</p>	Title I Condition due to the modeling study for Permit No. 27A-89-OT-1, Exhibit I

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

**Subject Item:** GP 002 Process Boilers**Associated Items:** EU 003 Process Boiler 1

EU 004 Process Boiler 2

SV 003 Process Boiler #1 &amp; #2

What to do	Why to do it
<b>A. POLLUTANT LIMITS</b>	hdr
Total Particulate Matter: less than or equal to 0.6 lbs/million Btu heat input . This limit applies individually to both EU 003 and EU 004.	Minn. R. 7011.0510, subp. 1
Sulfur Dioxide: less than or equal to 2.0 lbs/million Btu heat input when burning oil. This limit applies individually to both EU 003 and EU 004.	Minn. R. 7011.0510, subp. 1
The Permittee shall restrict the sulfur content of any grade of commercial fuel oil so that SO2 emission does not exceed 0.5 lb SO2/million BTU. This limit applies individually to both EU 003 and EU 004. Note that this Title I Condition is more stringent than the Sulfur Dioxide limit, above.	Title I Condition due to the modeling study for Permit No. 27A-89-OT-1, Exhibit I
Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity. This limit applies individually to both EU 003 and EU 004.	Minn. R. 7011.0510, subp. 2
<b>B. OPERATIONAL REQUIREMENTS</b>	hdr
Fuel Limits: The Permittee shall combust natural gas or distillate fuel oil in this group.	Minn. R. 7007.0800, subp. 2
<b>C. PERFORMANCE TESTING REQUIREMENTS</b>	hdr
Initial Performance Test: due 180 days after Resuming Operation to measure SO2 emission from one process boiler, when it is fired with distillate fuel oil. The Permittee shall also sample and analyze the fuel for sulfur content, heating value, and density.	Title I Condition due to the modeling study for Permit No. 27A-89-OT-1, Exhibit I
Initial Performance Test: due 180 days after Resuming Operation to measure PM emission and Opacity from either SV 003 or SV 004.	Minn. R. 7017.2020, subp. 1
Performance Test Pre-test Meeting: due 7 days before Initial Performance Test.	Minn. R. 7017.2030, subp. 4
<b>D. SO2 EMISSION MONITORING REQUIREMENTS</b>	hdr
Fuel Properties Monitoring: The Permittee shall obtain, from the supplier for each fuel shipment, a certificate that specifies sulfur content (in percent sulfur by weight) and heating value of the fuel (in BTU per lb). For any shipment received without the certificate, the Permittee shall sample the shipment for analysis of sulfur content and heating value.	Title I Condition due to the modeling study for Permit No. 27A-89-OT-1, Exhibit I



**TABLE A: LIMITS AND OTHER REQUIREMENTS**

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

**Subject Item:** GP 003 Crude Ore Rail Car Unloading**Associated Items:** CE 007 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

CE 008 Fabric Filter - Low Temperature, i.e., T&lt;180 Degrees F

EU 007 West Car Dump

EU 008 East Car Dump

SV 007 East Car Dump

SV 008 East Car Dump

What to do	Why to do it
<b>A. POLLUTANT LIMITS</b>	hdr
Total Particulate Matter: less than or equal to 0.002 grains/dry standard cubic foot (this limit applies individually to both EU 007 and EU 008).	Title I Condition: ambient air quality standards cited in Permit No. 27A-89-OT-1; Minn. R. 7009.0080
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011.0735. This limit applies individually to both EU 007 and EU 008. Note that the Title I Condition, above, on Total Particulate Matter, is a more stringent limit.	Minn. R. 7011.0710, subp. 1.A.
Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity. An exceedance of this opacity standard occurs whenever any one-hour period contains two or more six-minute periods during which the average opacity exceeds 20 percent, or whenever any one-hour period contains one or more six-minute periods during which the average opacity exceeds 60 percent. This limit applies individually to both EU 007 and EU 008.	Minn. R. 7011.0710, subp. 1.B.
<b>B. POLLUTION CONTROL EQUIPMENT REQUIREMENTS</b>	hdr
Process monitoring: the visual emissions observer in the facility staff shall check stack visible emissions (opacity) for SV007 and SV 008 once daily using a Daily Visible Emission Checklist.	Minn. R. 7007.0800, subp. 4; subp. 5; and subp. 14
Fabric Filter Pulse Rate Monitoring: Monitor and record individually for CE 007 and CE 008 once each week when in operation the cleaning cycle pulse rate. Once the operating range is established it becomes an enforceable part of this permit. A deviation from the established range shall trigger a corrective action as detailed in the O&M plan.	Minn. R. 7007.0800, subp. 4; subp. 5; and subp. 14
<b>C. PERFORMANCE TESTING REQUIREMENTS</b>	hdr
Initial Performance Test: due 180 days after Permit Issuance to measure PM emission from one stack in GP 003.	Title I Condition: ambient air quality standards cited in Permit No. 27A-89-OT-1; Minn. R. 7009.0080
Initial Performance Test: due 180 days after Permit Issuance to measure opacity from one stack in the pool of GP 003 and GP 004.	Minn. R. 7017.2020, subp. 1
Performance Test Pre-test Meeting: due 7 days before Initial Performance Test.	Minn. R. 7017.2030, subp. 4

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

**Subject Item: GP 004 Crushed Ore Storage****Associated Items:** CE 009 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

CE 010 Fabric Filter - Low Temperature, i.e., T&lt;180 Degrees F

EU 009 Fine Crusher Bin Storage - West

EU 010 Fine Crusher Bin Storage - East

SV 009 Fine Crusher Bin Storage - W

SV 010 Fine Crusher Bin Storage - E

What to do	Why to do it
<b>A. POLLUTANT LIMITS</b>	hdr
Total Particulate Matter: less than or equal to 0.002 grains/dry standard cubic foot (this limit applies individually to both EU 009 and EU 010).	Title I Condition: ambient air quality standards cited in Permit No. 27A-89-OT-1; Minn. R. 7009.0080
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011.0735. This limit applies individually to both EU 009 and EU 010. Note that the Title I Condition, above, on Total Particulate Matter, is a more stringent limit.	Minn. R. 7011.0710, subp. 1.A.
Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity. An exceedance of this opacity standard occurs whenever any one-hour period contains two or more six-minute periods during which the average opacity exceeds 20 percent, or whenever any one-hour period contains one or more six-minute periods during which the average opacity exceeds 60 percent. This limit applies individually to both EU 009 and EU 010.	Minn. R. 7011.0710, subp. 1.B.
<b>B. POLLUTION CONTROL EQUIPMENT REQUIREMENTS</b>	hdr
Process monitoring: the visual emissions observer in the facility staff shall check stack visible emissions (opacity) for SV009 and SV 010 once daily using a Daily Visible Emission Checklist.	Minn. R. 7007.0800, subp. 4; subp. 5; and subp. 14
Fabric Filter Pulse Rate Monitoring: Monitor and record individually for CE 009 and CE 010 once each week when in operation the cleaning cycle pulse rate. Once the operating range is established it becomes an enforceable part of this permit. A deviation from the established range shall trigger a corrective action as detailed in the O&M plan.	Minn. R. 7007.0800, subp. 4; subp. 5; and subp. 14
<b>C. PERFORMANCE TESTING REQUIREMENTS</b>	hdr
Initial Performance Test: due 750 days after Permit Issuance to measure PM emission from one stack in GP 004.	Title I Condition: ambient air quality standards cited in Permit No. 27A-89-OT-1; Minn. R. 7009.0080
Initial Performance Test: due 180 days after Permit Issuance to measure opacity from one stack in the pool of GP 003 and GP 004.	Minn. R. 7017.2020, subp. 1
Performance Test Pre-test Meeting: due 7 days before Initial Performance Test.	Minn. R. 7017.2030, subp. 4

# TABLE A: LIMITS AND OTHER REQUIREMENTS

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

**Subject Item:** GP 005 Tertiary Crushing

**Associated Items:** CE 011 Fabric Filter - Low Temperature, i.e., T<180 Degrees F  
CE 012 Fabric Filter - Low Temperature, i.e., T<180 Degrees F  
CE 013 Fabric Filter - Low Temperature, i.e., T<180 Degrees F  
CE 014 Fabric Filter - Low Temperature, i.e., T<180 Degrees F  
CE 017 Fabric Filter - Low Temperature, i.e., T<180 Degrees F  
CE 018 Fabric Filter - Low Temperature, i.e., T<180 Degrees F  
CE 019 Fabric Filter - Low Temperature, i.e., T<180 Degrees F  
CE 020 Fabric Filter - Low Temperature, i.e., T<180 Degrees F  
EU 011 Crusher Line 4  
EU 012 Crusher Line 3  
EU 013 Crusher Line 2  
EU 014 Crusher Line 1  
EU 017 Crusher Line 101  
EU 018 Crusher Line 102  
EU 019 Crusher Line 103  
EU 020 Crusher Line 104  
SV 011 Fine Crushing Line 4  
SV 012 Fine Crushing Line 3  
SV 013 Fine Crushing Line 2  
SV 014 Fine Crushing Line 1  
SV 017 Fine Crushing Line 101  
SV 018 Fine Crushing Line 102  
SV 019 Fine Crushing Line 103  
SV 020 Fine Crushing Line 104

What to do	Why to do it
A. POLLUTANT LIMITS	hdr
Total Particulate Matter: less than or equal to 0.002 grains/dry standard cubic foot (this limit applies individually to each unit in this group).	Title I Condition: ambient air quality standards cited in Permit No. 27A-89-OT-1; Minn. R. 7009.0080
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011.0735. This limit applies individually to each unit in this group. Note that the Title I Condition, above, on Total Particulate Matter, is a more stringent limit.	Minn. R. 7011.0710, subp. 1.A.
Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity. An exceedance of this opacity standard occurs whenever any one-hour period contains two or more six-minute periods during which the average opacity exceeds 20 percent, or whenever any one-hour period contains one or more six-minute periods during which the average opacity exceeds 60 percent. This limit applies individually to each unit in this group.	Minn. R. 7011.0710, subp. 1.B.
B. POLLUTION CONTROL EQUIPMENT REQUIREMENTS	hdr
Process monitoring: the visual emissions observer in the facility staff shall check stack visible emissions (opacity) for each unit in this group once daily using one or more Daily Visible Emission Checklists.	Minn. R. 7007.0800, subp. 4; subp. 5; and subp. 14
Fabric Filter Pulse Rate Monitoring: Monitor and record individually for each CE in this Group once each week when in operation the cleaning cycle pulse rate. Once the operating range is established it becomes an enforceable part of this permit. A deviation from the established range shall trigger a corrective action as detailed in the O&M plan.	Minn. R. 7007.0800, subp. 4; subp. 5; and subp. 14
C. PERFORMANCE TESTING REQUIREMENTS	hdr
Initial Performance Test: due 180 days after Permit Issuance to measure PM emission from two stacks in this group.	Title I Condition: ambient air quality standards cited in Permit No. 27A-89-OT-1; Minn. R. 7009.0080

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

Initial Performance Test: due 180 days after Permit Issuance to measure opacity from two stacks in this group.	Minn. R. 7017.2020, subp. 1
Performance Test Pre-test Meeting: due 7 days before Initial Performance Test.	Minn. R. 7017.2030, subp. 4

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

**Subject Item:** GP 006 Crushed Ore Conveying**Associated Items:** CE 015 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

CE 016 Fabric Filter - Low Temperature, i.e., T&lt;180 Degrees F

EU 015 Crushed Ore Conveyors - West

EU 016 Crushed Ore Conveyors - East

SV 015 Crushed Ore Conveyors - W

SV 016 Crushed Ore Conveyors - E

What to do	Why to do it
<b>A. POLLUTANT LIMITS</b>	hdr
Total Particulate Matter: less than or equal to 0.002 grains/dry standard cubic foot (this limit applies individually to both EU 015 and EU 016).	Title I Condition: ambient air quality standards cited in Permit No. 27A-89-OT-1; Minn. R. 7009.0080
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011.0735. This limit applies individually to both EU 015 and EU 016. Note that the Title I Condition, above, on Total Particulate Matter, is a more stringent limit.	Minn. R. 7011.0710, subp. 1.A.
Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity. An exceedance of this opacity standard occurs whenever any one-hour period contains two or more six-minute periods during which the average opacity exceeds 20 percent, or whenever any one-hour period contains one or more six-minute periods during which the average opacity exceeds 60 percent. This limit applies individually to both EU 015 and EU 016.	Minn. R. 7011.0710, subp. 1.B.
<b>B. POLLUTION CONTROL EQUIPMENT REQUIREMENTS</b>	hdr
Process monitoring: the visual emissions observer in the facility staff shall check stack visible emissions (opacity) for SV015 and SV 016 once daily using a Daily Visible Emission Checklist.	Minn. R. 7007.0800, subp. 4; subp. 5; and subp. 14
Fabric Filter Pulse Rate Monitoring: Monitor and record individually for CE 015 and CE 016 once each week when in operation the cleaning cycle pulse rate. Once the operating range is established it becomes an enforceable part of this permit. A deviation from the established range shall trigger a corrective action as detailed in the O&M plan.	Minn. R. 7007.0800, subp. 4; subp. 5; and subp. 14
<b>C. PERFORMANCE TESTING REQUIREMENTS</b>	hdr
Initial Performance Test: due 640 days after Permit Issuance to measure PM emission from one stack in this group.	Title I Condition: ambient air quality standards cited in Permit No. 27A-89-OT-1; Minn. R. 7009.0080
Initial Performance Test: due 640 days after Permit Issuance to measure opacity from one stack in this group.	Minn. R. 7017.2020, subp. 1
Performance Test Pre-test Meeting: due 7 days before Initial Performance Test.	Minn. R. 7017.2030, subp. 4

# TABLE A: LIMITS AND OTHER REQUIREMENTS

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

**Subject Item:** GP 007 Dry Cobbing & Conveying

**Associated Items:** CE 021 Fabric Filter - Low Temperature, i.e., T<180 Degrees F  
CE 022 Fabric Filter - Low Temperature, i.e., T<180 Degrees F  
CE 023 Fabric Filter - Low Temperature, i.e., T<180 Degrees F  
CE 024 Fabric Filter - Low Temperature, i.e., T<180 Degrees F  
CE 025 Fabric Filter - Low Temperature, i.e., T<180 Degrees F  
EU 021 Dry Cobbing  
EU 022 Dry Cobbing  
EU 023 Dry Cobbing  
EU 024 Dry Cobbing  
EU 025 Dry Cobbing  
SV 021 Dry Cobber - West  
SV 022 Dry Cobber - East  
SV 023 Dry Cobber - West Center  
SV 024 Dry Cobber - Center  
SV 025 Dry Cobber - East Center

What to do	Why to do it
A. POLLUTANT LIMITS	hdr
Total Particulate Matter: less than or equal to 0.01 grains/dry standard cubic foot (this limit applies individually to each unit in this group).	Title I Condition: ambient air quality standards cited in Permit No. 27A-89-OT-1; Minn. R. 7009.0080
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011.0735. This limit applies individually to each unit in this group. Note that the Title I Condition, above, on Total Particulate Matter, is a more stringent limit.	Minn. R. 7011.0710, subp. 1.A.
Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity. An exceedance of this opacity standard occurs whenever any one-hour period contains two or more six-minute periods during which the average opacity exceeds 20 percent, or whenever any one-hour period contains one or more six-minute periods during which the average opacity exceeds 60 percent. This limit applies individually to each unit in this group.	Minn. R. 7011.0710, subp. 1.B.
B. POLLUTION CONTROL EQUIPMENT REQUIREMENTS	hdr
Process monitoring: the visual emissions observer in the facility staff shall check stack visible emissions (opacity) for each unit in this group once daily using one or more Daily Visible Emission Checklists.	Minn. R. 7007.0800, subp. 4; subp. 5; and subp. 14
Fabric Filter Pulse Rate Monitoring: Monitor and record individually for each CE in this Group once each week when in operation the cleaning cycle pulse rate. Once the operating range is established it becomes an enforceable part of this permit. A deviation from the established range shall trigger a corrective action as detailed in the O&M plan.	Minn. R. 7007.0800, subp. 4; subp. 5; and subp. 14
C. PERFORMANCE TESTING REQUIREMENTS	hdr
Initial Performance Test: due 640 days after Permit Issuance to measure PM emission from one stack in this group; due 1450 days after Permit Issuance to measure PM emission from another stack in this group.	Title I Condition: ambient air quality standards cited in Permit No. 27A-89-OT-1; Minn. R. 7009.0080
Initial Performance Test: due 640 days after Permit Issuance to measure opacity from one stack in this group.	Minn. R. 7017.2020, subp. 1
Performance Test Pre-test Meeting: due 7 days before Initial Performance Test.	Minn. R. 7017.2030, subp. 4

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

**Subject Item: GP 008 Coarse Tails Handling**

**Associated Items:** CE 026 Fabric Filter - Low Temperature, i.e., T<180 Degrees F  
CE 027 Fabric Filter - Low Temperature, i.e., T<180 Degrees F  
CE 028 Fabric Filter - Low Temperature, i.e., T<180 Degrees F  
CE 029 Fabric Filter - Low Temperature, i.e., T<180 Degrees F  
EU 026 Coarse Tails Conveying  
EU 027 Coarse Tails Conveying  
EU 028 Coarse Tails Transfer  
EU 029 Coarse Tails Loadout  
SV 026 Tails Belts  
SV 027 Tails Belts  
SV 028 Tails Belts  
SV 029 Tails Belts

What to do	Why to do it
A. POLLUTANT LIMITS	hdr
Total Particulate Matter: less than or equal to 0.01 grains/dry standard cubic foot (this limit applies individually to each unit in this group).	Title I Condition: ambient air quality standards cited in Permit No. 27A-89-OT-1; Minn. R. 7009.0080
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011.0735. This limit applies individually to each unit in this group. Note that the Title I Condition, above, on Total Particulate Matter, is a more stringent limit.	Minn. R. 7011.0710, subp. 1.A.
Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity. An exceedance of this opacity standard occurs whenever any one-hour period contains two or more six-minute periods during which the average opacity exceeds 20 percent, or whenever any one-hour period contains one or more six-minute periods during which the average opacity exceeds 60 percent. This limit applies individually to each unit in this group.	Minn. R. 7011.0710, subp. 1.B.
B. POLLUTION CONTROL EQUIPMENT REQUIREMENTS	hdr
Process monitoring: the visual emissions observer in the facility staff shall check stack visible emissions (opacity) for each unit in this group once daily using one or more Daily Visible Emission Checklists.	Minn. R. 7007.0800, subp. 4; subp. 5; and subp. 14
Fabric Filter Pulse Rate Monitoring: Monitor and record individually for each CE in this Group once each week when in operation the cleaning cycle pulse rate. Once the operating range is established it becomes an enforceable part of this permit. A deviation from the established range shall trigger a corrective action as detailed in the O&M plan.	Minn. R. 7007.0800, subp. 4; subp. 5; and subp. 14
C. PERFORMANCE TESTING REQUIREMENTS	hdr
Initial Performance Test: due 640 days after Permit Issuance to measure PM emission from one stack in this group.	Title I Condition: ambient air quality standards cited in Permit No. 27A-89-OT-1; Minn. R. 7009.0080
Initial Performance Test: due 640 days after Permit Issuance to measure opacity from one stack in this group.	Minn. R. 7017.2020, subp. 1
Performance Test Pre-test Meeting: due 7 days before Initial Performance Test.	Minn. R. 7017.2030, subp. 4

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

**Subject Item:** GP 009 Concentrator Bins - W or E; with Cartridge Collectors**Associated Items:** CE 269 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

CE 270 Fabric Filter - Low Temperature, i.e., T&lt;180 Degrees F

EU 030 West Transfer Bin

EU 031 East Transfer Bin

SV 030 Concentrator Transfer Bin - W

SV 031 Concentrator Transfer Bin - E

What to do	Why to do it
<b>A. POLLUTANT LIMITS</b>	hdr
Total Particulate Matter: less than or equal to 0.03 grains/dry standard cubic foot (this limit applies individually to both EU 030 and EU 031).	Title I Condition: ambient air quality standards cited in Permit No. 27A-89-OT-1; Minn. R. 7009.0080
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011.0735. This limit applies individually to both EU 030 and EU 031. Note that the Title I Condition, above, on Total Particulate Matter, is a more stringent limit.	Minn. R. 7011.0710, subp. 1.A.
Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity. An exceedance of this opacity standard occurs whenever any one-hour period contains two or more six-minute periods during which the average opacity exceeds 20 percent, or whenever any one-hour period contains one or more six-minute periods during which the average opacity exceeds 60 percent. This limit applies individually to both EU 030 and EU 031.	Minn. R. 7011.0710, subp. 1.B.
<b>B. POLLUTION CONTROL EQUIPMENT REQUIREMENTS</b>	hdr
Process monitoring: the visual emissions observer in the facility staff shall check stack visible emissions (opacity) for each unit in this group once daily using one or more Daily Visible Emission Checklists.	Minn. R. 7007.0800, subp. 4; subp. 5; and subp. 14
Gas Stream Pressure Drop: Upon installation of monitoring equipment, monitor and record individually for each CE at least once every day when in operation. Once the operating range is established it becomes an enforceable part of this permit. A deviation from the established range shall trigger a corrective action as detailed in the O&M plan.	Minn. R. 7007.0800, subp. 4; subp. 5; and subp. 14
<b>C. PERFORMANCE TESTING REQUIREMENTS</b>	hdr
Initial Performance Test: due 640 days after Permit Issuance to measure PM emission from one stack in this group.	Title I Condition: ambient air quality standards cited in Permit No. 27A-89-OT-1; Minn. R. 7009.0080
Initial Performance Test: due 640 days after Permit Issuance to measure opacity from one stack in this group.	Minn. R. 7017.2020, subp. 1
Performance Test Pre-test Meeting: due 7 days before Initial Performance Test.	Minn. R. 7017.2030, subp. 4



# TABLE A: LIMITS AND OTHER REQUIREMENTS

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

**Subject Item:** GP 010 Concentrator Bins - West; with Multiclones

**Associated Items:** CE 032 Multiple Cyclone w/o Fly Ash Reinjection - Most Multiclones  
CE 033 Multiple Cyclone w/o Fly Ash Reinjection - Most Multiclones  
CE 034 Multiple Cyclone w/o Fly Ash Reinjection - Most Multiclones  
CE 035 Multiple Cyclone w/o Fly Ash Reinjection - Most Multiclones  
CE 036 Multiple Cyclone w/o Fly Ash Reinjection - Most Multiclones  
CE 037 Multiple Cyclone w/o Fly Ash Reinjection - Most Multiclones  
CE 038 Multiple Cyclone w/o Fly Ash Reinjection - Most Multiclones  
CE 039 Multiple Cyclone w/o Fly Ash Reinjection - Most Multiclones  
CE 040 Multiple Cyclone w/o Fly Ash Reinjection - Most Multiclones  
CE 041 Multiple Cyclone w/o Fly Ash Reinjection - Most Multiclones  
CE 042 Multiple Cyclone w/o Fly Ash Reinjection - Most Multiclones  
CE 043 Multiple Cyclone w/o Fly Ash Reinjection - Most Multiclones  
EU 032 West Storage Bin #1  
EU 033 West Storage Bin #2  
EU 034 West Storage Bins #3  
EU 035 West Storage Bins #4  
EU 036 West Storage Bins #5  
EU 037 West Storage Bin #6  
EU 038 West Storage Bin #7  
EU 039 West Storage Bin #8  
EU 040 West Storage Bin #9  
EU 041 West Storage Bin #10  
EU 042 West Storage Bin #11  
EU 043 West Storage Bin #12  
SV 032 Conc Bin - Section 1  
SV 033 Conc Bin - Section 2  
SV 034 Conc Bin - Section 3  
SV 035 Conc Bin - Section 4  
SV 036 Conc Bin - Section 5  
SV 037 Conc Bin - Section 6  
SV 038 Conc Bin - Section 7  
SV 039 Conc Bin - Section 8  
SV 040 Conc Bin - Section 9  
SV 041 Conc Bin - Section 10  
SV 042 Conc Bin - Section 11  
SV 043 Conc Bin - Sec 12 - Fluxstone

What to do	Why to do it
A. POLLUTANT LIMITS	hdr
Total Particulate Matter: less than or equal to 0.03 grains/dry standard cubic foot (this limit applies individually to each unit in this group).	Title I Condition: ambient air quality standards cited in Permit No. 27A-89-OT-1; Minn. R. 7009.0080
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011.0735. This limit applies individually to each unit in this group. Note that the Title I Condition, above, on Total Particulate Matter, is a more stringent limit.	Minn. R. 7011.0710, subp. 1.A.

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity. An exceedance of this opacity standard occurs whenever any one-hour period contains two or more six-minute periods during which the average opacity exceeds 20 percent, or whenever any one-hour period contains one or more six-minute periods during which the average opacity exceeds 60 percent. This limit applies individually to each unit in this group.	Minn. R. 7011.0710, subp. 1.B.
B. POLLUTION CONTROL EQUIPMENT REQUIREMENTS	hdr
Process monitoring: the visual emissions observer in the facility staff shall check stack visible emissions (opacity) for each unit in this group once daily using one or more Daily Visible Emission Checklists.	Minn. R. 7007.0800, subp. 4; subp. 5; and subp. 14
C. PERFORMANCE TESTING REQUIREMENTS	hdr
Initial Performance Test: due 360 days after Permit Issuance to measure PM emission from two stacks in the pool of GP 010 and GP 011.	Title I Condition: ambient air quality standards cited in Permit No. 27A-89-OT-1; Minn. R. 7009.0080
Initial Performance Test: due 360 days after Permit Issuance to measure opacity from two stacks in the pool of GP 010 and GP 011.	Minn. R. 7017.2020, subp. 1
Performance Test Pre-test Meeting: due 7 days before Initial Performance Test.	Minn. R. 7017.2030, subp. 4

# TABLE A: LIMITS AND OTHER REQUIREMENTS

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

**Subject Item:** GP 011 Concentrator Bins - East; with Multiclones

**Associated Items:**

- CE 044 Multiple Cyclone w/o Fly Ash Reinjection - Most Multiclones
- CE 045 Multiple Cyclone w/o Fly Ash Reinjection - Most Multiclones
- CE 046 Multiple Cyclone w/o Fly Ash Reinjection - Most Multiclones
- CE 047 Multiple Cyclone w/o Fly Ash Reinjection - Most Multiclones
- CE 048 Multiple Cyclone w/o Fly Ash Reinjection - Most Multiclones
- CE 049 Multiple Cyclone w/o Fly Ash Reinjection - Most Multiclones
- CE 050 Multiple Cyclone w/o Fly Ash Reinjection - Most Multiclones
- CE 051 Multiple Cyclone w/o Fly Ash Reinjection - Most Multiclones
- CE 052 Multiple Cyclone w/o Fly Ash Reinjection - Most Multiclones
- CE 053 Multiple Cyclone w/o Fly Ash Reinjection - Most Multiclones
- EU 044 East Storage Bin #101
- EU 045 East Storage Bin #102
- EU 046 East Storage Bin #103
- EU 047 East Storage Bin #104
- EU 048 East Storage Bin #105
- EU 049 East Storage Bin #106
- EU 050 East Storage Bin #107
- EU 051 East Storage Bin #108
- EU 052 East Storage Bin #109
- EU 053 East Storage Bin #110
- SV 044 Conc Bin - Section 101
- SV 045 Conc Bin - Section 102
- SV 046 Conc Bin - Section 103
- SV 047 Conc Bin - Section 104
- SV 048 Conc Bin - Section 105
- SV 049 Conc Bin - Section 106
- SV 050 Conc Bin - Section 107
- SV 051 Conc Bin - Section 108
- SV 053 Conc Bin - Section 110
- SV 276 Conc Bin - Section 109

What to do	Why to do it
A. POLLUTANT LIMITS	hdr
Total Particulate Matter: less than or equal to 0.03 grains/dry standard cubic foot (this limit applies individually to each unit in this group).	Title I Condition: ambient air quality standards cited in Permit No. 27A-89-OT-1; Minn. R. 7009.0080
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011.0735. This limit applies individually to each unit in this group. Note that the Title I Condition, above, on Total Particulate Matter, is a more stringent limit.	Minn. R. 7011.0710, subp. 1.A.
Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity. An exceedance of this opacity standard occurs whenever any one-hour period contains two or more six-minute periods during which the average opacity exceeds 20 percent, or whenever any one-hour period contains one or more six-minute periods during which the average opacity exceeds 60 percent. This limit applies individually to each unit in this group.	Minn. R. 7011.0710, subp. 1.B.
B. POLLUTION CONTROL EQUIPMENT REQUIREMENTS	hdr
Process monitoring: the visual emissions observer in the facility staff shall check stack visible emissions (opacity) for each unit in this group once daily using one or more Daily Visible Emission Checklists.	Minn. R. 7007.0800, subp. 4; subp. 5; and subp. 14

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

C. PERFORMANCE TESTING REQUIREMENTS	hdr
Initial Performance Test: due 360 days after Permit Issuance to measure PM emission from two stacks in the pool of GP 010 and GP 011.	Title I Condition: ambient air quality standards cited in Permit No. 27A-89-OT-1; Minn. R. 7009.0080
Initial Performance Test: due 360 days after Permit Issuance to measure opacity from two stacks in the pool of GP 010 and GP 011.	Minn. R. 7017.2020, subp. 1
Performance Test Pre-test Meeting: due 7 days before Initial Performance Test.	Minn. R. 7017.2030, subp. 4

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

**Subject Item: GP 012 Additive Handling & Storage - West (by SV locations)****Associated Items:** CE 072 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

CE 073 Fabric Filter - Low Temperature, i.e., T&lt;180 Degrees F

CE 074 Fabric Filter - Low Temperature, i.e., T&lt;180 Degrees F

CE 075 Fabric Filter - Low Temperature, i.e., T&lt;180 Degrees F

CE 076 Fabric Filter - Low Temperature, i.e., T&lt;180 Degrees F

EU 072 West Additive Bin 2

EU 073 West Additive Bin 1

EU 074 West Additive Blending 1 &amp; 2

EU 075 West Additive Blending 3 &amp; 4

EU 076 West Additive Blending 5 &amp; 6

SV 072 West Pel Bentonite Storage 2

SV 073 West Pel Bentonite Storage 1

SV 074 Fce 1,2 Bentonite Day Bin &amp; Air Slide

SV 075 Fce 3,4 Bentonite Day Bin &amp; Air Slide

SV 076 Fce 5,6 Bentonite Day Bin &amp; Air Slide

What to do	Why to do it
<b>A. POLLUTANT LIMITS</b>	hdr
Total Particulate Matter: less than or equal to 0.01 grains/dry standard cubic foot (this limit applies individually to each unit in this group).	Title I Condition: ambient air quality standards cited in Permit No. 27A-89-OT-1; Minn. R. 7009.0080
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011.0735. This limit applies individually to each unit in this group. Note that the Title I Condition, above, on Total Particulate Matter, is a more stringent limit.	Minn. R. 7011.0710, subp. 1.A.
Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity. An exceedance of this opacity standard occurs whenever any one-hour period contains two or more six-minute periods during which the average opacity exceeds 20 percent, or whenever any one-hour period contains one or more six-minute periods during which the average opacity exceeds 60 percent. This limit applies individually to each unit in this group.	Minn. R. 7011.0710, subp. 1.B.
<b>B. POLLUTION CONTROL EQUIPMENT REQUIREMENTS</b>	hdr
Process monitoring: the visual emissions observer in the facility staff shall check stack visible emissions (opacity) for each unit in this group once daily using one or more Daily Visible Emission Checklists.	Minn. R. 7007.0800, subp. 4; subp. 5; and subp. 14
Gas Stream Pressure Drop: Upon installation of monitoring equipment, monitor and record individually for each CE at least once every day when in operation. Once the operating range is established it becomes an enforceable part of this permit. A deviation from the established range shall trigger a corrective action as detailed in the O&M plan. (Note these baghouses are shaker style units that do not employ a cleaning cycle pulse for bag cleaning.)	Minn. R. 7007.0800, subp. 4; subp. 5; and subp. 14
<b>C. PERFORMANCE TESTING REQUIREMENTS</b>	hdr
Initial Performance Test: due 360 days after Permit Issuance to measure PM emission from two stacks in the pool of GP 012 and GP 013.	Title I Condition: ambient air quality standards cited in Permit No. 27A-89-OT-1; Minn. R. 7009.0080
Initial Performance Test: due 360 days after Permit Issuance to measure opacity from two stacks in the pool of GP 012 and GP 013.	Minn. R. 7017.2020, subp. 1
Performance Test Pre-test Meeting: due 7 days before Initial Performance Test.	Minn. R. 7017.2030, subp. 4

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

**Subject Item: GP 013 Additive Handling & Storage - East (by SV locations)****Associated Items:** CE 077 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

CE 078 Fabric Filter - Low Temperature, i.e., T&lt;180 Degrees F

CE 079 Fabric Filter - Low Temperature, i.e., T&lt;180 Degrees F

CE 080 Fabric Filter - Low Temperature, i.e., T&lt;180 Degrees F

CE 081 Fabric Filter - Low Temperature, i.e., T&lt;180 Degrees F

CE 082 Fabric Filter - Low Temperature, i.e., T&lt;180 Degrees F

CE 083 Fabric Filter - Low Temperature, i.e., T&lt;180 Degrees F

CE 084 Fabric Filter - Low Temperature, i.e., T&lt;180 Degrees F

EU 077 East Additive Blending - Fce 11 Day Bin

EU 078 East Additive Blending - Fce 11 Air Slide

EU 079 East Additive Blending - Fce 12 Day Bin

EU 080 East Additive Blending - Fce 12 Air Slide

EU 081 East Additive Bins 3-4

EU 082 East Additive Bins 5-6

EU 083 East Additive Unload

EU 084 East Additive Unload, Supplemental

SV 077 Furnace 11 Day Bin Collector

SV 078 Furnace 11 Air Slide Collector

SV 079 Furnace 12 Day Bin Collector

SV 080 Furnace 12 Air Slide Collector

SV 081 East Pel Ben Storage Bin 3,4

SV 082 East Pel Ben Storage Bin 5,6

SV 083 Bentonite Unloading Collector

SV 084 Supplemental Ben Unload Col

What to do	Why to do it
A. POLLUTANT LIMITS	hdr
Total Particulate Matter: less than or equal to 0.01 grains/dry standard cubic foot (this limit applies individually to each unit in this group).	Title I Condition: ambient air quality standards cited in Permit No. 27A-89-OT-1; Minn. R. 7009.0080
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011.0735. This limit applies individually to each unit in this group. Note that the Title I Condition, above, on Total Particulate Matter, is a more stringent limit.	Minn. R. 7011.0710, subp. 1.A.
Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity. An exceedance of this opacity standard occurs whenever any one-hour period contains two or more six-minute periods during which the average opacity exceeds 20 percent, or whenever any one-hour period contains one or more six-minute periods during which the average opacity exceeds 60 percent. This limit applies individually to each unit in this group.	Minn. R. 7011.0710, subp. 1.B.
B. POLLUTION CONTROL EQUIPMENT REQUIREMENTS	hdr
Process monitoring: the visual emissions observer in the facility staff shall check stack visible emissions (opacity) for each unit in this group once daily using one or more Daily Visible Emission Checklists.	Minn. R. 7007.0800, subp. 4; subp. 5; and subp. 14
Gas Stream Pressure Drop: Upon installation of monitoring equipment, monitor and record individually for each CE at least once every day when in operation. Once the operating range is established it becomes an enforceable part of this permit. A deviation from the established range shall trigger a corrective action as detailed in the O&M plan. (Note these baghouses are shaker style units that do not employ a cleaning cycle pulse for bag cleaning.)	Minn. R. 7007.0800, subp. 4; subp. 5; and subp. 14
C. PERFORMANCE TESTING REQUIREMENTS	hdr
Initial Performance Test: due 360 days after Permit Issuance to measure PM emission from two stacks in the pool of GP 012 and GP 013.	Title I Condition: ambient air quality standards cited in Permit No. 27A-89-OT-1; Minn. R. 7009.0080

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

02/25/04

Facility Name: Northshore Mining Co - Silver Bay  
Permit Number: 07500003 - 001

Initial Performance Test: due 360 days after Permit Issuance to measure opacity from two stacks in the pool of GP 012 and GP 013.	Minn. R. 7017.2020, subp. 1
Performance Test Pre-test Meeting: due 7 days before Initial Performance Test.	Minn. R. 7017.2030, subp. 4

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

**Subject Item: GP 014 Pellet Indurating Furnaces**

**Associated Items:**

- CE 101 Electrostatic Precipitator - High Efficiency
- CE 102 Electrostatic Precipitator - High Efficiency
- CE 103 Electrostatic Precipitator - High Efficiency
- CE 104 Electrostatic Precipitator - High Efficiency
- CE 105 Electrostatic Precipitator - High Efficiency
- CE 111 Electrostatic Precipitator - High Efficiency
- CE 112 Electrostatic Precipitator - High Efficiency
- CE 113 Electrostatic Precipitator - High Efficiency
- CE 114 Electrostatic Precipitator - High Efficiency
- CE 115 Electrostatic Precipitator - High Efficiency
- CE 261 Electrostatic Precipitator - High Efficiency
- CE 262 Electrostatic Precipitator - High Efficiency
- CE 263 Electrostatic Precipitator - High Efficiency
- CE 271 Electrostatic Precipitator - High Efficiency
- CE 272 Electrostatic Precipitator - High Efficiency
- CE 273 Electrostatic Precipitator - High Efficiency
- EU 100 Furnace 11 Hood Exhaust #1101, #1102, & #1103
- EU 104 Furnace 11 Waste Gas #1105 & #1104
- EU 110 Furnace 12 Hood Exhaust #1201, #1202, & #1203
- EU 114 Furnace 12 Waste Gas #1205 & #1204
- EU 262 Furnace 6 H.E./W.G. #601, #602, & #603
- EU 634 Fce 5 HE-WG #501; #502; #503
- SV 101 Furnace 11 Hood Exhaust
- SV 102 Furnace 11 Hood Exhaust
- SV 103 Furnace 11 Hood Exhaust
- SV 104 Furnace 11 Waste Gas
- SV 105 Furnace 11 Waste Gas
- SV 111 Furnace 12 Hood Exhaust
- SV 112 Furnace 12 Hood Exhaust
- SV 113 Furnace 12 Hood Exhaust
- SV 114 Furnace 12 Waste Gas
- SV 115 Furnace 12 Waste Gas
- SV 261 Furnace 6 Hood Exhaust-Waste Gas
- SV 262 Furnace 6 Hood Exhaust-Waste Gas
- SV 263 Furnace 6 Hood Exhaust-Waste Gas
- SV 266 Fce 5 HE-WG #501;#502;#503
- SV 267 Fce 5 HE-WG #501;#502;#503
- SV 268 Fce 5 HE-WG #501;#502;#503
- SV 270 Fce 11 Hood Exhaust Bypass
- SV 271 Fce 11 Waste Gas Bypass
- SV 272 Fce 12 Hood Exhaust Bypass
- SV 273 Fce 12 Waste Gas Bypass
- SV 274 Fce 5 HE-WG Bypass
- SV 275 Fce 6 HE-WG Bypass



**TABLE A: LIMITS AND OTHER REQUIREMENTS**

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

What to do	Why to do it
<b>A. POLLUTANT LIMITS</b>	hdr
Total Particulate Matter: less than or equal to 0.01 grains/dry standard cubic foot (this limit applies individually to each SV in this group except the bypass stacks).	Title I Condition: ambient air quality standards cited in Permit No. 27A-89-OT-1; Minn. R. 7009.0080
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011.0735. This limit applies individually to each SV in this group except the bypass stacks. Note that the Title I Condition, above, on Total Particulate Matter, is a more stringent limit.	Minn. R. 7011.0610, subp. 1.A.(1)
Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity. An exceedance of this opacity standard occurs whenever any one-hour period contains two or more six-minute periods during which the average opacity exceeds 20 percent, or whenever any one-hour period contains one or more six-minute periods during which the average opacity exceeds 60 percent. This limit applies individually to each SV in this group except the bypass stacks.	Minn. R. 7011.0610, subp. 1.A.(2)
Sulfur Dioxide: less than or equal to 2.0 lbs/million Btu heat input, when the indurating furnace is fired with a liquid fossil fuel. This limit applies individually to each furnace in this group.	Minn. R. 7011.0610, subp. 2(B)(1)
The Permittee shall restrict the sulfur content of any grade of commercial fuel oil so that stack SO <sub>2</sub> emission does not exceed 0.5 lb SO <sub>2</sub> /million BTU heat input. This limit applies individually to Furnaces 5, 6, 11, and 12. Note that this Title I Condition is more stringent than the Sulfur Dioxide limit, above.	Title I Condition due to the modeling study for Permit No. 27A-89-OT-1, Exhibit I
<b>B. POLLUTION CONTROL EQUIPMENT REQUIREMENTS</b>	hdr
Wet ESP Requirement: The Permittee shall operate no less than the same number of wet electrostatic precipitators (CEs) associated with each furnace and with no less than the same number of CEs with the electric fields on as during the most recent performance test that has shown compliance with the particulate matter limit standards described for this group.	Minn. R. 7007.0800, subp. 14
Wet ESP Requirement: Monitor and record whether the electric field is on for each CE once every 24 hours when in operation. Monitor and record primary amperage, primary voltage, and inlet gas temperature for each CE once every 24 hours when in operation.	Minn. R. 7007.0800, subp. 4; subp. 5; and subp. 14
Water Flow Rate: Monitor and record the water flow rate to each CE once every 24 hours when in operation. Once the operating range is established it becomes an enforceable part of this permit. A deviation from the established range shall trigger a corrective action as detailed in the O&M plan.	Minn. R. 7007.0800, subp. 4; subp. 5; and subp. 14
Bypass Event Record Keeping: the Permittee shall record and maintain records of the time, date, duration, cause, and corrective action of wet ESP bypass events.	Minn. R. 7007.0800, subp. 5
<b>C. PERFORMANCE TESTING REQUIREMENTS</b>	hdr
Initial Performance Test: due 360 days after Permit Issuance to measure PM emission from two furnaces (one from Furnaces 11 and 12 and the other from Furnaces 5 and 6) in this group. PM sampling shall be performed for at least two stacks for Furnace 11 or Furnace 12, and for at least one stack for Furnace 5 or Furnace 6. Gas flow rate shall be determined for all stacks of each furnace except the bypass stacks.	Title I Condition: ambient air quality standards cited in Permit No. 27A-89-OT-1; Minn. R. 7009.0080
Performance Test Pre-test Meeting: due 7 days before Initial Performance Test.	Minn. R. 7017.2030, subp. 4

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

**Subject Item: GP 015 Furnace Discharge of Finished Pellets**

**Associated Items:** CE 120 Rotoclone  
CE 121 Rotoclone  
CE 265 Rotoclone  
CE 274 Rotoclone  
EU 120 Furnace 11 Discharge  
EU 121 Furnace 12 Discharge  
EU 265 Furnace 6 Discharge  
EU 635 Furnace 5 Discharge  
SV 120 Furnace 11 Discharge  
SV 121 Furnace 12 Discharge  
SV 265 Furnace 6 Discharge  
SV 269 Furnace 5 Discharge

What to do	Why to do it
A. POLLUTANT LIMITS	hdr
Total Particulate Matter: less than or equal to 0.03 grains/dry standard cubic foot (this limit applies individually to each unit in this group).	Title I Condition: ambient air quality standards cited in Permit No. 27A-89-OT-1; Minn. R. 7009.0080
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011.0735. This limit applies individually to each unit in this group. Note that the Title I Condition, above, on Total Particulate Matter, is a more stringent limit.	Minn. R. 7011.0710, subp. 1.A.
Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity. An exceedance of this opacity standard occurs whenever any one-hour period contains two or more six-minute periods during which the average opacity exceeds 20 percent, or whenever any one-hour period contains one or more six-minute periods during which the average opacity exceeds 60 percent. This limit applies individually to each unit in this group.	Minn. R. 7011.0710, subp. 1.B.
B. POLLUTION CONTROL EQUIPMENT REQUIREMENTS	hdr
Gas Stream Pressure drop: Upon installation of monitoring equipment, monitor and record individually for each CE at least once every day when in operation. Once the operating range is established it becomes an enforceable part of this permit. A deviation from the established range shall trigger a corrective action as detailed in the O&M plan.  This requirement of gas stream pressure drop may be replaced with a requirement of monitoring the associated fan motor amperage, if MPCA approves supporting field data submitted by the Permittee for such replacement. Such field data shall be developed during Initial Performance Testing for at least one rotoclone controlled stack each of GP 015 and GP 016. In the interim before the MPCA approval, the Permittee shall perform both gas stream pressure drop monitoring and fan motor amperage monitoring to initiate the supporting field data development.	Minn. R. 7007.0800, subp. 4; subp. 5; and subp. 14
C. PERFORMANCE TESTING REQUIREMENTS	hdr
Initial Performance Test: due 640 days after Permit Issuance to measure PM emission from one stack in this group.	Title I Condition: ambient air quality standards cited in Permit No. 27A-89-OT-1; Minn. R. 7009.0080
Performance Test Pre-test Meeting: due 7 days before Initial Performance Test.	Minn. R. 7017.2030, subp. 4

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

**Subject Item:** GP 016 Pellet Screening (indoor - product & hearth layer)**Associated Items:** CE 097 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

CE 122 Rotoclone

CE 123 Rotoclone

CE 124 Rotoclone

CE 125 Rotoclone

EU 097 Hearth Layer

EU 122 Furnace 11 Pellet Screen

EU 123 East Furnace Screen House

EU 124 Furnace 12 Pellet Screen

EU 125 East Furnace Screen House

SV 097 Hearth Layer

SV 122 Furnace 11 Screening

SV 123 East Furnace Screen House

SV 124 Furnace 12 Screening

SV 125 East Furnace Screen House

What to do	Why to do it
<b>A. POLLUTANT LIMITS</b>	hdr
Total Particulate Matter: less than or equal to 0.05 grams/dry standard cubic meter (0.022 grains/dry standard cubic foot) of exhaust gas on and after the date on which the performance test required is completed. This limit applies individually to each unit in this group.	40 CFR 60.382(a)(1)
Opacity: less than or equal to 7 percent opacity for SV 097.	40 CFR 60.382(a)(2)
Opacity: less than or equal to 10 percent opacity for any Process Fugitive Emissions.	40 CFR 60.382(b); Minn. R. 7011.2700
<b>B. POLLUTION CONTROL EQUIPMENT REQUIREMENTS</b>	hdr
Gas Stream Pressure Drop: The Permittee shall install, calibrate, maintain, and operate a monitoring device for each CE in this group for the continuous measurement and recording of the change in pressure of the gas stream through the CE. The monitoring device must be certified by the manufacturer to be accurate within 250 Pascals (1 inch water) gauge pressure, plus or minus; and must be calibrated on an annual basis in accordance with manufacturer's instructions.	40 CFR 60.384(a); 40 CFR 60.385 (b); Minn. R. 7011.2700
Liquid Flow Rate: The Permittee shall install, calibrate, maintain, and operate a monitoring device for each CE in this group except CE 097 for the continuous measurement and recording of the scrubbing liquid flow rate to the CE. The monitoring device must be certified by the manufacturer to be accurate within 5%, plus or minus, of design scrubbing liquid flow rate; and must be calibrated on an annual basis in accordance with manufacturer's instructions. Note that the information provided by the control equipment supplier shows that control performance of the type of rotoclones used in this group cannot be monitored with the liquid flow rate, because liquid is added "as needed" and not continuously. Thus, this requirement shall be met by submitting a compliance plan specified in Table C of this permit.	40 CFR 60.384(b); 40 CFR 60.385 (c); Minn. R. 7011.2700
Process monitoring: the visual emissions observer in the facility staff shall check stack visible emission (opacity) for SV 097 once daily using a Daily Visible Emission Checklist.	Minn. R. 7007.0800, subp. 4; subp. 5; and subp. 14
<b>C. Reporting</b>	hdr
<b>D. PERFORMANCE TESTING REQUIREMENTS</b>	hdr
Initial Performance Test: due 60 days after achieving maximum capacity, but no later than 180 days after Initial Startup, to measure PM emissions from ALL stacks in this group, and Opacity from SV 097. The Permittee shall also record the measurements of change in pressure of the gas stream across each CE during Initial Performance Test. This requirement shall be met by submitting a compliance plan specified in Table C of this permit.	40 CFR 60.385(a) & (b); Minn. R. 7011.2700
Performance Test Pre-test Meeting: due 7 days before Initial Performance Test.	Minn. R. 7017.2030, subp. 4

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

**Subject Item: GP 017 Pilot Demonstration Research & Development (PDRDP)**

**Associated Items:**

- CE 201 Wet Scrubber-High Efficiency
- CE 202 Fabric Filter - Medium Temperature i.e., 180 F<T<250 F
- CE 203 Fabric Filter - Medium Temperature i.e., 180 F<T<250 F
- CE 204 Fabric Filter - Medium Temperature i.e., 180 F<T<250 F
- EU 630 Rotary Hearth Furnace
- EU 631 Iron Nugget Green Ball Processor
- EU 632 Iron Nugget Coal Pulverizer
- EU 633 Auxiliary Reductant Equipment
- SV 201 Rotary Hearth Furnace and Iron Nugget Green Ball Processor
- SV 202 Iron Nugget Coal Pulverizer
- SV 203 Auxiliary Reductant Equipment

What to do	Why to do it
A. OPERATIONAL REQUIREMENTS	hdr
Alternative Process Operational Scenario Plan: For any process operational scenarios (POS) on the Peter Mitchell area (PMA) iron ore that were not identified and approved in the Protocol and any proposed POS on non-PMA iron ore, the Permittee shall submit a proposed Alternative Process Operational Scenario Plan (APOSP) for MPCA review and approval at least 30 days before the anticipated startup of the alternative process operational scenario. Table B of this permit contains the short version of this recurrent submittal requirement. An alternative process operational scenario is defined as, but not limited to, changes in raw iron supply and/or supplier(s), iron ore concentrate supply and/or supplier(s), additives (binders and fluxing agents) supply and/or supplier(s), iron reductant supply and/or supplier(s), combustion fuel supply and/or supplier(s). (To be continued in the next row)	Minn. Stat. sections 115.04, subd. 1 and 116.091, subd. 1; Minn. R. 7007.0600, subp. 2
(Continued from the above row) The APOSP must describe and evaluate if such changes are expected to cause changes in Potential-To-Emit and concentration values of the parameters in Lists 1 and 2, projected water quality parameters in List 3, solid waste, and/or hazardous waste parameters, in comparison to the information presented for the POSs in the Protocol. All three lists can be found in Appendix E of this permit.  The APOSP must describe and identify any proposed changes in data collection, monitoring, sampling, analysis, etc. from the approved Protocol. The Permittee does not need to request approval for returning to previously approved alternative process operational scenarios.  (To be continued in the next row)	Minn. Stat. sections 115.04, subd. 1 and 116.091, subd. 1; Minn. R. 7007.0600, subp. 2
(Continued from the above row) 1. APOSP Approval. The Permittee is prohibited from initiating startup of an alternative process operational scenario without the written approval of the MPCA. The Permittee can submit multiple alternative operational scenarios in advance to obtain flexibility in operating and testing GP 017 under various proposed POSs.  The MPCA will review the APOSP submittal and notify the Permittee in writing of the approval or disapproval of the submittal. The MPCA and the Permittee shall consult with each other upon the request of either party during the review. If the submittal is disapproved in whole or in part, the MPCA shall notify the Permittee of the specific inadequacies and shall stipulate the needed revisions.	Minn. Stat. sections 115.04, subd. 1 and 116.091, subd. 1; Minn. R. 7007.0600, subp. 2

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

**Subject Item:** EU 005 Coal Transfer & Coal Bunkers**Associated Items:** SV 005 Coal Transfer & Bunkers

What to do	Why to do it
A. POLLUTANT LIMITS	hdr
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011.0735.	Minn. R. 7011.0710, subp. 1.A.
Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity. An exceedance of this opacity standard occurs whenever any one-hour period contains two or more six-minute periods during which the average opacity exceeds 20 percent, or whenever any one-hour period contains one or more six-minute periods during which the average opacity exceeds 60 percent.	Minn. R. 7011.0710, subp. 1.B.
B. OPERATIONAL REQUIREMENTS	hdr
Process monitoring: the visual emissions observer in the facility staff shall check stack visible emissions (opacity) once daily using a Daily Visible Emission Checklist.	Minn. R. 7007.0800, subp. 4; subp. 5; and subp. 14
C. PERFORMANCE TESTING REQUIREMENTS	hdr
Initial Performance Test: due 640 days after Permit Issuance to measure PM emission and Opacity.	Minn. R. 7017.2020, subp. 1
Performance Test Pre-test Meeting: due 7 days before Initial Performance Test.	Minn. R. 7017.2030, subp. 4

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

**Subject Item:** EU 630 Rotary Hearth Furnace**Associated Items:** CE 201 Wet Scrubber-High Efficiency

GP 017 Pilot Demonstration Research &amp; Development (PDRDP)

SV 201 Rotary Hearth Furnace and Iron Nugget Green Ball Processor

What to do	Why to do it
<b>A. OPERATIONAL AND POLLUTANT LIMITS</b>	hdr
Operating Hours: less than or equal to 7500 hours/year using 12-month Rolling Sum .	Title I Condition: used to avoid review under 40 CFR 52.21; Minn. R. 7007.0100, subp. 25(B)
Particulate Matter < 10 micron: less than or equal to 0.015 grains/dry standard cubic foot of exhaust gas.	Title I Condition: used to avoid review under 40 CFR 52.21; Minn. R. 7007.0100, subp. 25(B)
Particulate Matter < 10 micron: greater than or equal to 80 percent control efficiency . The Permittee shall operate and maintain the control equipment such that it achieves this overall control efficiency.	Title I Condition: used to avoid review under 40 CFR 52.21; Minn. R. 7007.0100, subp. 25(B)
Nitrogen Oxides: less than or equal to 32.4 tons/year using 12-month Rolling Sum . The Permittee shall conduct performance testing for each process operational scenario and calculate annual emission rate based on these performance testing results.	Title I Condition: used to avoid review under 40 CFR 52.21; Minn. R. 7007.0100, subp. 25(B)
Sulfur Dioxide: less than or equal to 32.0 tons/year using 12-month Rolling Sum . The Permittee shall conduct performance testing for each process operational scenario and calculate annual emission rate based on these performance testing results.	Title I Condition: used to avoid review under 40 CFR 52.21; Minn. R. 7007.0100, subp. 25(B)
Sulfur Dioxide: less than or equal to 4.0 lbs/million Btu heat input when burning coal, and less than or equal to 2.0 lb/million Btu when burning oil.	Minn. R. 7011.0610, subp. 2(B)(1)
Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity.	Minn. R. 7011.0610, subp. 1(A)(2)
Fuel Limits: natural gas, distillate fuel oil, or coal.	Minn. R. 7007.0800, subp. 2
<b>B. CONTROL EQUIPMENT MONITORING</b>	hdr
Gas Stream Pressure Drop: monitor and record for CE 201 at least once every day when in operation. Complete pressure drop monitoring equipment debugging, trouble-shooting, and establishment of parameter range no later than the Initial Performance Test. Specific data will be added to this requirement after MPCA reviews the Initial Performance Test results.	Title I Condition: control equipment monitoring for Title I PM10 Emission Limit
Liquid Flow Rate: monitor and record for CE 201 at least once every day when in operation. Complete liquid flow rate monitoring equipment debugging, trouble-shooting, and establishment of parameter range no later than the Initial Performance Test. Specific data will be added to this requirement after MPCA reviews the Initial Performance Test results.	Title I Condition: control equipment monitoring for Title I PM10 Emission Limit
<b>C. CALCULATION AND RECORDKEEPING</b>	hdr
Operating hours: by the 15th of the month, the Permittee shall calculate and record: 1) the total operating hours of the previous month based on daily records, and 2) the 12-month rolling sum of operating hours by summing the operating hours of the previous 12 months.	Title I Condition: calculation and record keeping for Title I Condition Operational Limit
Nitrogen Oxides: by the 15th of the month, the Permittee shall calculate and record: 1) the total mass of DRI product made (ton) for the previous month under different process operational scenarios, 2) the total amount of thermal energy used (million BTU) under different process operational scenarios, 3) the 12-month rolling sum of total mass of DRI product made (MDRI12) by summing the data of the previous 12 months under different process operational scenarios, 4) the 12-month rolling sum of total amount of thermal energy used (Efire12) by summing the data of the previous 12 months under different process operational scenarios. (To be continued in the next row)	Title I Condition: calculation and record keeping for Title I Condition NOx Emission Limit
(Continued from the above row) When NOx emission factors, which shall be in both units of lb NOx/ton DRI made and lb NOx/MMBtu fired, become available from performance testing for a process operational scenario, the Permittee shall calculate and record: 5) the 12-month rolling sum of NOx emissions by multiplying the emission factor of lb NOx/ton DRI made and MDRI12 for the appropriate process operational scenario, and 6) the 12-month rolling sum of NOx emissions by multiplying the emission factor of lb NOx/MMBtu fired and Efire12 for the appropriate process operational scenario.  Note existing NOx emission factors may be used for NOx emission calculation associated with a new process operational scenario until its associated NOx emission factors become available from performance testing. At that time, the Permittee shall revise NOx emission using the new emission factors for the new process operational scenario.	Title I Condition: calculation and record keeping for Title I Condition NOx Emission Limit

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

<p>Sulfur Dioxide [Approach 1]: The results of MDRI12 and Efire12 for the Nitrogen Oxides will be used. See NOx 1) through 4) above.</p> <p>When SO2 emission factors, which shall be in both units of lb SO2/ton DRI made and lb SO2/MMBtu fired, become available from performance testing for a process operational scenario, the Permittee shall calculate and record: 5) the 12-month rolling sum of SO2 emissions by multiplying the emission factor of lb SO2/ton DRI made and MDRI12 for the appropriate process operational scenario, and 6) the 12-month rolling sum of SO2 emissions by multiplying the emission factor of lb SO2/MMBtu fired and Efire12 for the appropriate process operational scenario.</p> <p>(To be continued in the next row)</p>	<p>Title I Condition: calculation and record keeping for Title I Condition SO2 Emission Limit</p>
<p>(Continued from the above row)</p> <p>Note existing SO2 emission factors may be used for SO2 emission calculation associated with a new process operational scenario until its associated SO2 emission factors become available from performance testing. At that time, the Permittee shall revise SO2 emission using the new emission factors for the new process operational scenario.</p>	<p>Title I Condition: calculation and record keeping for Title I Condition SO2 Emission Limit</p>
<p>Sulfur Dioxide [Approach 2 - Mass Balance Calculation]: by the 15th of the month, the Permittee shall calculate and record the following: 1) the contribution of sulfur from the materials entering EU 151 based on total usage of each sulfur-containing material (including fuel) and its sulfur content for the previous month, 2) the removal of sulfur from scrubbing water leaving CE 1PP based on total usage of scrubbing water and the sulfur concentration difference between the outlet and inlet of CE 1PP for the previous month, 3) the removal of sulfur from DRI product for the previous month based on production data and product sulfur content, 4) the removal of sulfur from solid spills recovered and particulate matter captured by CE 1PP for the previous month with sulfur content data, 5) SO2 emissions for the previous month derived by first subtracting all sulfur removal data from the sulfur contribution data,</p> <p>(To be continued in the next row)</p>	<p>Title I Condition: calculation and record keeping for Title I Condition SO2 Emission Limit</p>
<p>(Continued from the above row)</p> <p>6) the 12-month rolling sum of SO2 emissions by summing the SO2 emissions of the previous 12 months.</p> <p>The Permittee shall use appropriate sulfur content data for items 1) through 4) above, especially for a new process operational scenario.</p>	<p>Title I Condition: calculation and record keeping for Title I Condition SO2 Emission Limit</p>
<p>D. PERFORMANCE TESTING REQUIREMENTS</p>	<p>hdr</p>
<p>Initial Performance Test: due 60 days after achieving maximum capacity at EU 630 but no later than December 18, 2003, to measure PM10 (Emission Limit only, no control efficiency), NOx, SO2, Gas Stream Pressure Drop, and Liquid Flow Rate.</p>	<p>Title I Condition: performance testing for Title I Conditions</p>
<p>Performance Test: the Permittee shall conduct one (1) or more performance tests for each one of all process operational scenarios to measure PM10 (Emission Limit only), NOx, SO2, Gas Stream Pressure Drop, and Liquid Flow Rate. If a process operational scenario lasts more than a calendar year, conduct performance testing at least once per calendar year. If the Mass Balance Calculation approach (Sulfur Dioxide [Approach 2], above) is used to estimate SO2 emissions, the Permittee may exclude SO2 from this testing requirement.</p>	<p>Title I Condition: performance testing for Title I Conditions</p>
<p>Performance Test Pre-test Meeting: due 7 days before Initial Performance Test.</p>	<p>Minn. R. 7017.2030, subp. 4</p>

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

**Subject Item:** EU 631 Iron Nugget Green Ball Processor**Associated Items:** CE 202 Fabric Filter - Medium Temperature i.e., 180 F<T<250 F

GP 017 Pilot Demonstration Research &amp; Development (PDRDP)

SV 201 Rotary Hearth Furnace and Iron Nugget Green Ball Processor

What to do	Why to do it
<b>A. OPERATIONAL AND POLLUTANT LIMITS</b>	hdr
Operating Hours: less than or equal to 7500 hours/year using 12-month Rolling Sum .	Title I Condition: used to avoid review under 40 CFR 52.21; Minn. R. 7007.0100, subp. 25(B)
Particulate Matter < 10 micron: less than or equal to 0.015 grains/dry standard cubic foot of exhaust gas.	Title I Condition: used to avoid review under 40 CFR 52.21; Minn. R. 7007.0100, subp. 25(B)
Particulate Matter < 10 micron: greater than or equal to 79 percent control efficiency . The Permittee shall operate and maintain the control equipment such that it achieves this overall control efficiency.	Title I Condition: used to avoid review under 40 CFR 52.21; Minn. R. 7007.0100, subp. 25(B)
Total Particulate Matter: less than or equal to 0.05 grams/dry standard cubic meter (0.022 grains/dry standard cubic foot) of exhaust gas on and after the date on which the performance test required is completed. This more stringent limit meets the Total Particulate Matter requirement in Minn. R. 7011.0610, subp. 1(A)(1).	40 CFR 60.382(a)(1); Minn. R. 7011.2700
Opacity: less than or equal to 7 percent opacity of exhaust gas.	40 CFR 60.382(a)(2); Minn. R. 7011.2700
Process fugitive emission: less than or equal to 10 percent opacity.	40 CFR 60.382(b)
Fuel Limits: natural gas.	Minn. R. 7007.0800, subp. 2
<b>B. CONTROL EQUIPMENT MONITORING</b>	hdr
Gas Stream Pressure Drop: monitor and record for CE 202 at least once every day when in operation. Complete pressure drop monitoring equipment debugging, trouble-shooting, and establishment of parameter range no later than the Initial Performance Test. Specific data will be added to this requirement after MPCA reviews the Initial Performance Test results.	Title I Condition: control equipment monitoring for Title I PM10 Emission Limit
<b>C. RECORD KEEPING</b>	hdr
Record keeping: Maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of the facility including; any malfunction of the air pollution control equipment.	40 CFR 60.7(b), Minn. R. 7019.0100, subp. 1
<b>D. PERFORMANCE TESTING REQUIREMENTS</b>	hdr
Initial Performance Test: due 60 days after achieving maximum capacity at EU 631 but no later than December 18, 2003, to measure Total Particulate Matter and Gas Stream Pressure Drop.	40 CFR 60.8(a); Minn. R. 7017.2015, subp. 2(A)
Initial Performance Test: due 60 days after achieving maximum capacity at EU 631 but no later than December 18, 2003, to measure PM10 (Emission Limit only, no control efficiency) and Gas Stream Pressure Drop.	Title I Condition: performance testing for Title I Conditions
Performance Test: the Permittee shall conduct one (1) or more performance tests for each one of all process operational scenarios to measure PM10 (Emission Limit only) and Gas Stream Pressure Drop. If a process operational scenario lasts more than a calendar year, conduct performance testing at least once per calendar year.	Title I Condition: performance testing for Title I Conditions
Performance Test Pre-test Meeting: due 7 days before Initial Performance Test.	Minn. R. 7017.2030, subp. 4



**TABLE A: LIMITS AND OTHER REQUIREMENTS**

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

**Subject Item:** EU 632 Iron Nugget Coal Pulverizer**Associated Items:** CE 203 Fabric Filter - Medium Temperature i.e., 180 F<T<250 F

GP 017 Pilot Demonstration Research &amp; Development (PDRDP)

SV 202 Iron Nugget Coal Pulverizer

What to do	Why to do it
A. OPERATIONAL AND POLLUTANT LIMITS	hdr
Particulate Matter < 10 micron: less than or equal to 0.010 grains/dry standard cubic foot of exhaust gas. This more stringent limit meets the Total Particulate Matter limits in Minn. R. 7011.0715, subp. 1(A).	Title I Condition: used to avoid review under 40 CFR 52.21; Minn. R. 7007.0100, subp. 25(B)
Particulate Matter < 10 micron: greater than or equal to 99 percent control efficiency. The Permittee shall operate and maintain the control equipment such that it achieves this overall control efficiency.	Title I Condition: used to avoid review under 40 CFR 52.21; Minn. R. 7007.0100, subp. 25(B)
Opacity: less than or equal to 20 percent opacity.	Minn. R. 7011.0715, subp. 1(B)
Fuel Limits: natural gas.	Minn. R. 7007.0800, subp. 2
B. CONTROL EQUIPMENT MONITORING	hdr
The Permittee shall maintain each piece of control equipment according to the manufacturer's specification, shall conduct inspections, and maintain documentation of those actions as required by Minn. R. 7011.0075, subp. 2(A) to 2(I).	Minn. R. 7011.0075, subp. 2
Gas Stream Pressure Drop: monitor and record for CE 203 at least once every day when in operation. Complete pressure drop monitoring equipment debugging, trouble-shooting, and establishment of parameter range no later than the Initial Performance Test. Specific data will be added to this requirement after MPCA reviews the Initial Performance Test results.	Title I Condition: control equipment monitoring for Title I PM10 Emission Limit
C. PERFORMANCE TESTING REQUIREMENTS	hdr
Initial Performance Test: due 60 days after achieving maximum capacity at EU 632 but no later than December 18, 2003, to measure Opacity.	Minn. R. 7011.0715, subp. 1(B)
Initial Performance Test: due 60 days after achieving maximum capacity at EU 632, but no later than December 18, 2003, to measure PM10 (Emission Limit only, no control efficiency) and Gas Stream Pressure Drop.	Title I Condition: performance testing for Title I Conditions
Performance Test: the Permittee shall conduct performance testing at least once per calendar year to measure PM10 (Emission Limit only; no control efficiency) and Gas Stream Pressure Drop.	Title I Condition: performance testing for Title I Conditions
Performance Test Pre-test Meeting: due 7 days before Initial Performance Test.	Minn. R. 7017.2030, subp. 4

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

**Subject Item:** EU 633 Auxiliary Reductant Equipment**Associated Items:** CE 204 Fabric Filter - Medium Temperature i.e., 180 F<T<250 F

GP 017 Pilot Demonstration Research &amp; Development (PDRDP)

SV 203 Auxiliary Reductant Equipment

What to do	Why to do it
A. OPERATIONAL AND POLLUTANT LIMITS	hdr
Particulate Matter < 10 micron: less than or equal to 0.010 grains/dry standard cubic foot of exhaust gas.	Title I Condition: used to avoid review under 40 CFR 52.21; Minn. R. 7007.0100, subp. 25(B)
Particulate Matter < 10 micron: greater than or equal to 99 percent control efficiency . The Permittee shall operate and maintain the control equipment such that it achieves this overall control efficiency.	Title I Condition: used to avoid review under 40 CFR 52.21; Minn. R. 7007.0100, subp. 25(B)
Opacity: less than or equal to 20 percent opacity .	Minn. R. 7011.0715, subp. 1(B)
B. CONTROL EQUIPMENT MONITORING	hdr
The Permittee shall maintain each piece of control equipment according to the manufacturer's specification, shall conduct inspections, and maintain documentation of those actions as required by Minn. R. 7011.0075, subp. 2(A) to 2(I).	Minn. R. 7011.0075, subp. 2
Gas Stream Pressure Drop: monitor and record for CE 204 at least once every day when in operation. Complete pressure drop monitoring equipment debugging, trouble-shooting, and establishment of parameter range no later than the Initial Performance Test. Specific data will be added to this requirement after MPCA reviews the Initial Performance Test results.	Title I Condition: control equipment monitoring for Title I PM10 Emission Limit
C. PERFORMANCE TESTING REQUIREMENTS	hdr
Initial Performance Test: due 60 days after achieving maximum capacity at EU 633 but no later than December 18, 2003, to measure Opacity.	Minn. R. 7011.0715, subp. 1(B)
Initial Performance Test: due 60 days after achieving maximum capacity at EU 633 but no later than December 18, 2003, to measure PM10 (Emission Limit only, no control efficiency) and Gas Stream Pressure Drop.	Title I Condition: performance testing for Title I Conditions
Performance Test: the Permittee shall conduct performance testing at least once per calendar year to measure PM10 (Emission Limit only; no control efficiency), Opacity, and Gas Stream Pressure Drop.	Title I Condition: performance testing for Title I Conditions
Performance Test Pre-test Meeting: due 7 days before Initial Performance Test.	Minn. R. 7017.2030, subp. 4

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

**Subject Item: EU 636 Uncontrolled conveyor transfer pts inside fce bldg: A1, 2, 9, 10; C1, 2, 3; D1**

<b>What to do</b>	<b>Why to do it</b>
<b>A. POLLUTANT LIMITS</b>	hdr
Opacity: less than or equal to 10 percent opacity for any Process Fugitive Emission. Note that, due to lack of a stack/vent associated with any indoor conveyor transfer point in EU 636, PM and Opacity limits specified in 40 CFR 60.382(a) are not given for EU 636.	40 CFR 60.382(b); Minn. R. 7011.2700
<b>B. POLLUTION CONTROL EQUIPMENT REQUIREMENTS</b>	hdr
Process monitoring: the visual emissions observer in the facility staff shall check visible emissions from EU 636 at appropriate building openings - roof vents, windows, and entry ways of the Pelletizer Building - once daily using a Daily Visible Emission Checklist.	Minn. R. 7007.0800, subp. 4; subp. 5; and subp. 14
<b>C. Reporting</b>	hdr
<b>D. PERFORMANCE TESTING REQUIREMENTS</b>	hdr
Initial Performance Test: due 60 days after achieving maximum capacity, but no later than 180 days after Initial Startup, to measure Process Fugitive Emission. This requirement shall be met by submitting a compliance plan specified in Table C of this permit.	40 CFR 60.385(a) & (b); Minn. R. 7011.2700
Performance Test Pre-test Meeting: due 7 days before Initial Performance Test.	Minn. R. 7017.2030, subp. 4

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

**Subject Item:** EU 637 Concentrate Loadout**Associated Items:** CE 205 6% or Greater Moisture Content

What to do	Why to do it
A. POLLUTANT LIMITS	hdr
Opacity: less than or equal to 10 percent opacity for any Process Fugitive Emission. Note that, due to lack of a stack/vent associated with EU 637, PM limit specified in 40 CFR 60.382(a)(1) is not given for EU 637.	40 CFR 60.382(b); Minn. R. 7011.2700
B. POLLUTION CONTROL EQUIPMENT REQUIREMENTS	hdr
Process monitoring: the visual emissions observer in the facility staff shall check visible emission from EU 637 once daily, when in operation, using a Daily Visible Emission Checklist.	Minn. R. 7007.0800, subp. 4; subp. 5; and subp. 14
C. Reporting	hdr
D. PERFORMANCE TESTING REQUIREMENTS	hdr
Initial Performance Test: due 60 days after achieving maximum capacity, but no later than 180 days after Initial Startup, to measure Process Fugitive Emission. This requirement shall be met by submitting a compliance plan specified in Table C of this permit.	40 CFR 60.385(a) & (b); Minn. R. 7011.2700

## TABLE B: SUBMITTALS

02/25/04

Facility Name: Northshore Mining Co - Silver Bay  
Permit Number: 07500003 - 001

Table B lists most of the submittals required by this permit. Please note that some submittal requirements may appear in Table A or, if applicable, within a compliance schedule located in Table C. Table B is divided into two sections in order to separately list one-time only and recurrent submittal requirements.

Each submittal must be postmarked or received by the date specified in the applicable Table. Those submittals required by parts 7007.0100 to 7007.1850 must be certified by a responsible official, defined in Minn. R. 7007.0100, subp. 21. Other submittals shall be certified as appropriate if certification is required by an applicable rule or permit condition.

Send any application for a permit or permit amendment to:

Permit Technical Advisor  
Permit Section  
Air Quality Division  
Minnesota Pollution Control Agency  
520 Lafayette Road North  
St. Paul, Minnesota 55155-4194

Also, where required by an applicable rule or permit condition, send to the Permit Technical Advisor notices of:

- accumulated insignificant activities,
- installation of control equipment,
- replacement of an emissions unit, and
- changes that contravene a permit term.

Unless another person is identified in the applicable Table, send all other submittals to:

Supervisor  
Compliance Determination Unit  
Air Quality Division  
Minnesota Pollution Control Agency  
520 Lafayette Road North  
St. Paul, Minnesota 55155-4194

Send submittals that are required to be submitted to the U.S. EPA regional office to:

Mr. George Czerniak  
Air and Radiation Branch  
EPA Region V  
77 West Jackson Boulevard  
Chicago, Illinois 60604

Send submittals that are required by the Acid Rain Program to:

U.S. Environmental Protection Agency  
Clean Air Markets Division  
1200 Pennsylvania Avenue NW (6204N)  
Washington, D.C. 20460

**TABLE B: ONE TIME SUBMITTALS OR NOTIFICATIONS**

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

What to send	When to send	Portion of Facility Affected
Application for Permit Reissuance	due 180 days before expiration of Existing Permit	Total Facility
Fugitive Control Plan	due 60 days after Permit Issuance for review and approval by the Commissioner. The plan shall identify all fugitive sources at the Silver Bay Facility, primary & contingent control measures & practices, and records kept. The Permittee shall follow the actions and record keeping specified in the control plan. The Commissioner may require additions or changes to the Fugitive Emission Control Plan when granting approval. The Permittee will be given an opportunity to comment on any required additions or changes to the plan before the Commissioner grants approval of the plan. The plan may be amended by the Permittee with the Commissioner's approval. If the Commissioner determines the Permittee are out of compliance with Minn. R. 7011.0150 or the fugitive emission control plan, then the Permittee may be required to amend the control plan and/or to install and operate particulate matter ambient monitors.	Total Facility
Notification of compliance status	due 30 days after Discovery of Deviation of Applicability status for any Emission Unit of GP 001. This one-time notification is required in the event that the unit has become an affected unit subject to the requirements of the federal Acid Rain Program.	GP001
Notification of the Actual Date of Initial Startup	due 15 days after Initial Startup. This requirement shall be met by submitting a compliance plan specified in Table C of this permit.	EU636, EU637, GP016
Notification	due 14 days after Fuel Supplier Certification or Fuel Sulfur Analysis indicated fuel sulfur in a shipment exceeded 0.50% by weight.	GP001
Notification	due 30 days after Resuming Operation of Process Boilers 1 and 2.	GP002
Operation and Maintenance Plan	due 180 days after Permit Issuance. The Permittee shall provide an O&M plan for review and approval by the Commissioner. The O&M plan shall identify all air pollution control equipment, a preventative maintenance program for that equipment, description of corrective actions to be taken in the event of a malfunction or breakdown, description of the employee training program, daily visible emission checklists, and the records kept to demonstrate plan implementation. The Commissioner may require additions or changes to the O&M plan when granting approval. The Permittee will be given an opportunity to comment on any required additions or changes to the plan before the Commissioner grants approval of the plan.	Total Facility
Performance Test Notification (written)	due 30 days before Performance Test.	EU005, EU630, EU631, EU632, EU633, EU636, GP001, GP002, GP003, GP004, GP005, GP006, GP007, GP008, GP009, GP010, GP011, GP012, GP013, GP014, GP015, GP016
Performance Test Plan	due 30 days before Performance Test.	EU005, EU630, EU631, EU632, EU633, EU636, GP001, GP002, GP003, GP004, GP005, GP006, GP007, GP008, GP009, GP010, GP011, GP012, GP013, GP014, GP015, GP016

**TABLE B: ONE TIME SUBMITTALS OR NOTIFICATIONS**

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

Performance Test Report - Microfiche Copy	due 105 days after Performance Test. A CD-ROM copy of the test report shall be accepted as an alternative to the microfiche copy, provided that the test report in the CD-ROM is in PDF or TIF format to address compatibility issues.	EU005, EU630, EU631, EU632, EU633, EU636, GP001, GP002, GP003, GP004, GP005, GP006, GP007, GP008, GP009, GP010, GP011, GP012, GP013, GP014, GP015, GP016
Performance Test Report	due 45 days after Performance Test.	EU005, EU630, EU631, EU632, EU633, EU636, GP001, GP002, GP003, GP004, GP005, GP006, GP007, GP008, GP009, GP010, GP011, GP012, GP013, GP014, GP015, GP016
Submittal of Permit Application	due 90 days after Initial Performance Test is completed for this permit (except for EU 636, units subject to Initial Performance Test are to be tested within 180, 360, or 640 days after Permit Issuance). The Permittee shall submit parameter ranges, along with rationale for their development, in a permit amendment application, to incorporate the air pollution control equipment parameter ranges (scrubbing water flow rate and/or gas stream pressure drop) into this permit. The rationale for choosing these ranges shall include the control equipment manufacturer's recommended ranges and any reasons for deviating from the recommended ranges.	Total Facility
Submittal	due 30 days before Anticipated Date of Initial Startup of Alternative Process Operational Scenario. See the APOS Plan requirement for GP 017 in Table A of this permit for detail.	GP017
Testing Frequency Plan	due 60 days after Initial Performance Test. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on one-year (12 months), 36 months, and 60 months intervals, or as applicable, shall be required upon written approval of the MPCA.	EU005
Testing Frequency Plan	due 60 days after Initial Performance Test. The plan shall specify a testing frequency for the two stacks of this group, based on the test data and MPCA guidance. Future performance tests based on one-year (12 months), 36 months, and 60 months intervals, or as applicable, shall be required upon written approval of the MPCA.	GP001, GP002, GP003, GP004, GP006
Testing Frequency Plan	due 60 days after Initial Performance Test. The plan shall specify a testing frequency for this group, based on the test data and MPCA guidance. Future performance tests based on one-year (12 months), 36 months, and 60 months intervals, or as applicable, shall be required upon written approval of the MPCA.	GP005, GP007, GP008, GP009, GP010, GP011, GP012, GP013, GP014, GP015, GP016

**TABLE B: RECURRENT SUBMITTALS**

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

What to send	When to send	Portion of Facility Affected
Ambient Air Monitoring Report	due 45 days after end of each calendar quarter following Permit Issuance to provide ambient air quality data on TSP and PM-10 to determine compliance with Minnesota Ambient Air Quality Standards.	Total Facility
Excess Emissions/Downtime Reports (EER's)	due 30 days after end of each calendar quarter following Permit Issuance. (Submit Deviations Reporting Form DRF-1 as amended). The EER shall indicate all periods of monitor bypass and all periods of exceedances of the limit including exceedances allowed by an applicable standard, i.e. during startup, shutdown, and malfunctions.	GP001
Quarterly Report	due 30 days after end of each calendar quarter starting 06/21/2003 to make available to MPCA periodic Pilot Environmental Data collected under the approved Data Collection Protocol for PDRDP.	GP017
Semiannual Deviations Report	due 30 days after end of each calendar half-year following Initial Performance Test. The Permittee shall report occurrences when the measurements of gas stream pressure drop and scrubbing liquid flow rate of each CE in this group differ by more than 30%, plus or minus, from the average obtained during the most recent performance test.	GP016
Semiannual Deviations Report	due 30 days after end of each calendar half-year following Permit Issuance. The first semiannual report submitted by the Permittee shall cover the calendar half-year in which the permit is issued. The first report of each calendar year covers January 1 - June 30. The second report of each calendar year covers July 1 - December 31.	Total Facility
Compliance Certification	due 30 days after end of each calendar year following Permit Issuance (for the previous calendar year). To be submitted on a form approved by the Commissioner, both to the Commissioner, and to the U.S. EPA regional office in Chicago. This report covers all deviations experienced during the calendar year. The EPA copy shall be sent to: Mr. George Czerniak, Chief, Air Enforcement and Compliance Assurance Branch, Air and Radiation Division, EPA Region V, 77 West Jackson Boulevard, Chicago, Illinois 60604	Total Facility
Emissions Inventory Report	due 91 days after end of each calendar year following Permit Issuance (April 1). To be submitted on a form approved by the Commissioner.	Total Facility



**TABLE C: COMPLIANCE SCHEDULE**

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

Table C contains the compliance schedule as required by Minn. R. 7007.0500, subp. 2 (K). You must complete the actions required in Table C by the dates listed in the table. All submittals must be postmarked or received by the date specified in the table, and certified by a responsible official, defined in Minn. R. 7007.0100, subp. 21.

**Subject Item:** GP 016 Pellet Screening (indoor - product & hearth layer)

**Associated Items:** CE 097 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

CE 122 Rotoclone

CE 123 Rotoclone

CE 124 Rotoclone

CE 125 Rotoclone

EU 097 Hearth Layer

EU 122 Furnace 11 Pellet Screen

EU 123 East Furnace Screen House

EU 124 Furnace 12 Pellet Screen

EU 125 East Furnace Screen House

SV 097 Hearth Layer

SV 122 Furnace 11 Screening

SV 123 East Furnace Screen House

SV 124 Furnace 12 Screening

SV 125 East Furnace Screen House

Citation	Corrective Action	When to complete the action
40 CFR 60.384(b); 40 CFR 60.385 (c); Minn. R. 7011.2700	Compliance Plan	due 30 days after Permit Issuance to USEPA and MPCA to propose Alternative Monitoring for the rotoclones in GP 016 with regard to the Liquid Flow Rate monitoring requirement of NSPS, subp. LL.
40 CFR Section 60.7(a)(3); Minn. R. 7019.0100, subp. 1	Compliance Plan	due 30 days after Permit Issuance to USEPA and MPCA to report the Actual Date of Initial Startup.
40 CFR 60.385(a) & (b); Minn. R. 7011.2700	Compliance Plan	due 30 days after Permit Issuance to USEPA and MPCA to propose initial performance test schedule

**TABLE C: COMPLIANCE SCHEDULE**

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

**Subject Item: EU 636 Uncontrolled conveyor transfer pts inside fce bldg: A1, 2, 9, 10; C1, 2, 3; D1**

<b>Citation</b>	<b>Corrective Action</b>	<b>When to complete the action</b>
40 CFR Section 60.7(a)(3); Minn. R. 7019.0100, subp. 1	Compliance Plan	due 30 days after Permit Issuance to USEPA and MPCA to report the Actual Date of Initial Startup of the uncontrolled conveyor transfer points inside the Pelletizer Building.
40 CFR 60.385(a) & (b); Minn. R. 7011.2700	Compliance Plan	due 30 days after Permit Issuance to USEPA and MPCA to propose initial performance test schedule and pollutant(s) to be determined in the test: PM, Opacity, and/or Process Fugitive Emissions. For Process Fugitive Emission (Opacity), the Permittee may identify the appropriate building openings - roof vents, windows, and entry ways of the Pelletizer Building, and justify the selection of these building openings. The Permittee may also request a time span of 365 days to assess Process Fugitive Emission, due to facility proximity to Lake Superior and complex operations inside the Pelletizer building.

**TABLE C: COMPLIANCE SCHEDULE**

02/25/04

Facility Name: Northshore Mining Co - Silver Bay

Permit Number: 07500003 - 001

**Subject Item:** EU 637 Concentrate Loadout**Associated Items:** CE 205 6% or Greater Moisture Content

Citation	Corrective Action	When to complete the action
40 CFR Section 60.7(a)(3); Minn. R. 7019.0100, subp. 1	Compliance Plan	due 30 days after Permit Issuance to USEPA and MPCA to report the Actual Date of Initial Startup.
40 CFR 60.385(a) & (b); Minn. R. 7011.2700	Compliance Plan	due 30 days after Permit Issuance to USEPA and MPCA to propose to conduct performance test for Process Fugitive Emission and to have no add-on control beyond the existing CE 205 (filter cake material moisture content of 9%) as the Alternative Monitoring for the conveyor transfer of wet concentrate, pursuant to the provisions of NSPS (40 CFR 60).

**TECHNICAL SUPPORT DOCUMENT FOR  
AIR EMISSION PERMIT NO. 07500003-001**

This technical support document is for all the interested parties of the draft permit. The purpose of this document is to set forth the legal and factual basis for the draft permit conditions, including references to the applicable statutory or regulatory provisions.

**1. General Information**

**1.1. Applicant and Stationary Source Location:**

Owner and Operator Address and Phone	Facility Address
Northshore Mining Company Silver Bay Power Company Cleveland-Cliffs Inc 10 Outer Drive, Silver Bay, MN 55614 Denny Wagner, Sr. Environmental Engineer, at Northshore Mining Co., (218)226-6056	Northshore Mining Company (SIC: 1011) Silver Bay Power Company Cleveland-Cliffs Inc 10 Outer Drive Silver Bay, MN 55614-1499 Lake County

Cleveland-Cliffs Inc is the parent company of both Northshore Mining Company and Silver Bay Power Company. Northshore Mining Company operates a taconite processing plant at the Silver Bay facility. Silver Bay Power Company operates a power plant at the Silver Bay facility to provide electricity for the taconite processing operations and the grid. The three companies are the Permittee of this Title V permit for the Silver Bay facility (AQ File No. 27A).

The Title V permit application submitted by Northshore Mining Company in January 1995 and November 2002, includes, among the units for taconite processing operations, two power boilers (EU 001, EU 002, CE 001, CE 002, SV 001, and SV 002), coal transfer & bunkers (EV 005 and SV 005), and coal yard fugitive sources (FS 001 through FS 003). The power boilers and associated units are also found in the current permit, No. 27A-89-OT-1, issued originally to Cyprus Minerals Corporation and Cyprus Northshore Mining Corporation, August 17, 1989. The MPCA has not issued an air emission permit to Silver Bay Power Company for the power boilers and associated units.

**1.2. Description of the facility**

The Silver Bay facility was originally built in the mid-1950s by Reserve Mining Company and was briefly owned by Cyprus Minerals from 1989 to 1994 (Northshore was purchased in 1994 by Cleveland Cliffs, Inc.). Northshore (Reserve Mining at the time) was the first taconite operator in Minnesota. The Silver Bay facility is located on the north shore of Lake Superior.

Through a company owned, 47-mile railroad, the Northshore plant receives crushed ore that has been processed in the primary and secondary crushers at the Peter Mitchell Mine (named after the discoverer of iron bearing rock formations in northeastern Minnesota), near Babbitt, MN. The taconite plant further crushes the ore in tertiary crushers, dry cobs the ore (removes the larger non-metallic chunks of ore with magnetic separation of the un-concentrated ore), and then

concentrates the iron content from roughly 25% to 65% in a series of ball mills, rod mills, magnetic concentrators and froth flotation cells. The iron concentrate is then mixed with a variety of binders and fluxing agents (i.e. limestone/dolomite mixture) and formed into small balls referred to as green balls. The green balls are then fired in traveling grate furnaces and indurated into taconite pellets. The pellets are shipped through the Great Lakes system to blast furnaces in the lower Great Lakes and made into a variety of steel products.

Air emission units at the Silver Bay facility (taconite plant and power plant) consist of electric generating boilers, steam heating boilers, rail car unloading, crushed ore storage bins, tertiary crushers, dry cobblers, coarse tailings handling operations, additive storage and handling operations, indurating furnaces, and fired pellet handling and screening. In addition, there are fugitive emission sources at the plant that consist of haul roads, concentrate storage piles, taconite pellet cooling piles, taconite pellet storage piles, pellet transfer operations, pellet ship loadout operations, coal piles, fluxstone piles, coal/fluxstone handling operations, coal ash handling operations, and tailings basin operations.

Fabric filters are used to control particulate matter emissions from the two large power boilers. Fabric filter dust collectors are used to collect particulate matter emissions from the rail car unloading operations, tertiary crushers, dry cobblers, coarse tailings handling operations, pellet screening for the hearth layer, and the additive storage and handling operations. The various crushed ore storage bins are controlled with either fabric filters (cartridge filters, CE 030 and CE 031) or multiclones (all 22 of these are located at the concentrator building, CE 032 through CE 053). The four indurating furnaces (Nos. 5, 6, 11, and 12) are controlled with wet-walled electrostatic precipitators to collect particulate matter as well as sulfur dioxide, acid gases, and various other air pollutants. Furnace discharges and indoor pellet screening are controlled with type N rotoclones.

### 1.3 Description of any changes allowed with this permit issuance

Pellet screening, estimated at 600,000 long tons per year, at the pellet yard is allowed with this permit issuance (FS 017). This will be performed either by Northshore personnel or contractor.

### 1.4 Description of all amendments issued since the issuance of the last total facility permit

Permit Number and Issuance Date	Permit Action Number *	Action Authorized for Permits; Explanation for Others
No. 27A-89-OT-1; Issued on August 17, 1989	001	Total facility permit ( <i>the facility was shut down from August 1986 through January 30, 1990, due to the Reserve Mining bankruptcy</i> ), or “the 1989 Operating Permit.”

\* This is the Permit Action Number generated with MPCA’s *Permit Tracker* database. It is used to issue an air emission permit or an amendment without involving the permitting database, DELTA. DELTA has been used to issue Title V permits. DELTA generates its own Permit Action Number.

(Continued from the previous page)

Permit Number and Issuance Date	Permit Action Number *	Action Authorized for Permits; Explanation for Others
Draft amendment 1 No. 27A-89-OT-1, dated 5/23/90; Northshore staff gave MPCA staff an unsigned copy on 12/18/2002	N/A	This proposed activity was to relocate a baghouse from East Fine Crusher (314) to a conveyor transfer at the pelletizing area, and two rotoclones from the Research Building to the pellet discharge end of Furnaces 11 and 12. A 1997 report, <i>“Regulatory Applicability Analyses for Modifications to the Pellet Handling, Screening and Storage Systems Since Plant Restart in 1990,”</i> identified these control devices as the control equipment for hearth layer system (Project C). An April 15, 1997, Stipulation Agreement addressed several modifications that MPCA determined to be violations. These violations were in part due to failure to obtain a permit prior to construction. The hearth layer system was included in these violations.
Amendment 1 to No. 27A-89-OT-1; Issued on March 28, 1991	002	To stockpile and load taconite ore concentrate (with 10% moisture & dust suppressant sprayed) and coarse crude taconite ore (with Coherex or an equivalent dust suppressant), in addition to the taconite pellets made.
Amendment 2 to No. 27A-89-OT-1; October 15, 1992	003	To install two new emission units (organic binder storage bin and its feeder system), which would be equipped with baghouses for emission control.
No permit issued	004	A permit application was received on July 21, 1993. Correspondence file seems to suggest that the application was related to the Midrex FASTMET briquetting process, the first attempt to bring a direct reduced iron (DRI) technology to the Silver Bay facility.
No permit issued	005	An application for a Title V permit was received on January 17, 1995.
No permit issued	006	A submittal was received on March 1, 1995, as a permit application. It might be supplemental materials to the application received on January 17, 1995.
No. 07500003-007 issued on Dec. 28, 2001	007	A construction and operating permit for a Pilot Demonstration Research & Development Plant (PDRDP) to demonstrate ITmk3 (or iron nugget) technology at the Silver Bay facility. <sup>†</sup>
Permit process on hold at Northshore’s request	008	An application was received on March 27, 2002, for a major permit amendment to test coal fired pelletizing. Subsequently, Northshore asked MPCA to halt the permitting process.

\* This is the Permit Action Number generated with MPCA’s *Permit Tracker* database. It is used to issue an air emission permit or an amendment without involving the permitting database, DELTA. DELTA has been used to issue Title V permits. DELTA generates its own Permit Action Number.

<sup>†</sup> This is the third technology relative to DRI, regardless of production scale. In 2000, Northshore decided to stop the environmental review (EAW) process for then proposed Demag’s REDSMELT technology, which was the second DRI project pursued. New units for REDSMELT were left in DELTA for the draft Title V permit, some of which are used in this Title V permit for the PDRDP units (GP 017), while others are marked “removed” in the facility description database. No permit action number was assigned to the REDSMELT project.

## 1.5. Facility Emissions:

**Table 1.** Total Facility Limited Potential-to-Emit (ton/year) <sup>a</sup>

Air Pollutant	Emission Rate
1. Sulfur dioxide (SO <sub>2</sub> )	13,636 <sup>b</sup>
2. Nitrogen oxides (NO <sub>x</sub> )	5,955
3. Particulate matter (PM)	5,741 <sup>c</sup>
4. Particulate matter of size $\leq 10 \mu\text{m}$ (PM <sub>10</sub> )	5,578
5. Carbon monoxide (CO)	718
6. Hydrochloric acid (HCl)	75.0
7. Hydrofluoric acid (HF)	48.1
8. Volatile organic compounds (VOC) <sup>d</sup>	142
9. Formaldehyde (HCHO) <sup>d</sup>	6.38
10. Other Method 29 elements (“metals”)	5.55 <sup>e</sup>
11. Lead (Pb)	0.358
12. Mercury (Hg)	0.00715 <sup>f</sup>

- In general, the limited PTEs result from applicable regulations, restrictions taken so that attainment of ambient air quality standards can be demonstrated, and/or application of control equipment or work practice. The PTEs tabulated above are generated from a spreadsheet file attached to this technical support document. They may differ very slightly from the PTE totals generated on DELTA due to numerical rounding.
- Fuel sulfur restrictions for boilers originated from the 1989 Operating Permit.
- Particulate concentration limits on most stacks, which are more stringent than the Industrial Process Equipment Rule, originated from the 1989 Operating Permit. The intent was to maintain compliance with NAAQS & MAAQS.
- The 143 ton/yr VOC listed above does not include the 6.38 ton/yr HCHO. HCHO is a VOC, according to 40 CFR 51.100 (s), and a hazardous air pollutant (HAP), according to the 1990 Clean Air Act Amendments.
- These elements are As, Be, Cd, Co, Cr, Mn, Ni, Sb, and Se. EPA Method 29 also includes lead (Pb) & mercury (Hg). Items 10-12 sum up to 5.88 ton/year.
- Of this mercury emission rate from the entire facility (14.3 lb/yr), 8.93 lb/yr is estimated for 4 pellet indurating furnaces at a combined production rate (maximum) of 8.072 million long tons of pellets per year; 3.42 lb/yr is estimated for the two coal-fired power boilers at rated capacities of 517 million Btu/hr & 765 million Btu/hr, respectively; 0.20 lb/yr is from the PDRDP (GP 017); the remaining 1.78 lb/yr from firing the indurating furnaces with fuel oil, taconite ore processing, etc.

**Table 2.** Facility Classification

Classification (check appropriate box)	Major	Synthetic Minor	Minor
Prevention of Significant Deterioration	✓		
Non-Attainment Area Review			
Part 70 Operating Permit Program	✓*		

\* This is the current permit action.

The emission of fibers is estimated as  $2.17 \times 10^{11}$  fibers/sec, if all stacks are operated at their respective designated gas flow rates. This estimate is provided here for any scale-up for ITmk3 beyond the existing PDRDP likely to be proposed in the near future (DELTA, MPCA's permitting database, accepts units such as lb/hr and ton/yr but not fibers/sec). More on fibers can be found later in the next section.

## 2. Regulatory Basis

### 2.1 Unit Grouping

Regulatory basis of the emission or operational limit is summarized for Groups in Table 3.

Table 4 provides similar information for the units not included in the 16 groups defined with this permit action.

**Table 3.** Regulatory Overview of Facility by Groups

Group	Group Title & [Key Rules]	List of Units
1	Power boilers [Title I conditions <sup>a</sup> on SO <sub>2</sub> , per 89-OT, exhibit I; Minn. R. 7011.0510 existing indirect heating equipment]	CE 001, CE 002, EU 001, EU 002, SV 001, SV 002
2	Process boilers Power boilers [Title I conditions <sup>a</sup> on SO <sub>2</sub> , per 89-OT, exhibit I; Minn. R. 7011.0510 existing indirect heating eqp.]	EU 003, EU 004, SV 003
3	Crude ore rail car unloading [Title I condition <sup>b</sup> for Minn. R. 7009.0080]	CE 007, CE 008, EU 007, EU 008, SV 007, SV 008
4	Crushed ore storage [Title I condition for Minn. R. 7009.0080]	CE 009, CE 010, EU 009, EU 010, SV 009, SV 010
5	Tertiary crushing [Title I condition for Minn. R. 7009.0080]	CE 011, CE 012, CE 013, CE 014, CE 017, CE 018, CE 019, CE 020, EU 011, EU 012, EU 013, EU 014, EU 017, EU 018, EU 019, EU 020, SV 011, SV 012, SV 013, SV 014, SV 017, SV 018, SV 019, SV 020
6	Crushed ore conveying [Title I condition for Minn. R. 7009.0080]	CE 015, CE 016, EU 015, EU 016, SV 015, SV 016
7	Dry cobbing & conveying [Title I condition for Minn. R. 7009.0080]	CE 021, CE 022, CE 023, CE 024, CE 025, EU 021, EU 022, EU 023, EU 024, EU 025, SV 021, SV 022, SV 023, SV 024, SV 025
8	Coarse tails handling [Title I condition for Minn. R. 7009.0080]	CE 026, CE 027, CE 028, CE 029, EU 026, EU 027, EU 028, EU 029, SV 026, SV 027, SV 028, SV 029

Please turn to the end of this table for footnotes.



**Table 3.** Regulatory Overview of Facility by Groups (Continued)

Group	Group Title & [Key Rules]	List of Units
9	Concentrator bins – W or E; with cartridge collectors [Title I condition for Minn. R. 7009.0080]	CE 269, CE 270, EU 030, EU 031, SV 030, SV 031
10	Concentrator bins – west; with multiclones [Title I condition for Minn. R. 7009.0080]	CE 032, CE 033, CE 034, CE 035, CE 036, CE 037, CE 038, CE 039, CE 040, CE 041, CE 042, CE 043, EU 032, EU 033, EU 034, EU 035, EU 036, EU 037, EU 038, EU 039, EU 040, EU 041, EU 042, EU 043, SV 032, SV 033, SV 034, SV 035, SV 036, SV 037, SV 038, SV 039, SV 040, SV 041, SV 042, SV 043
11	Concentrator bins – east; with multiclones [Title I condition for Minn. R. 7009.0080]	CE 044, CE 045, CE 046, CE 047, CE 048, CE 049, CE 050, CE 051, CE 052, CE 053, EU 044, EU 045, EU 046, EU 047, EU 048, EU 049, EU 050, EU 051, EU 052, EU 053, SV 044, SV 045, SV 046, SV 047, SV 048, SV 049, SV 050, SV 051, SV 053, SV 276
12	Additive handling & storage – west (by SV locations) [Title I condition for Minn. R. 7009.0080]	CE 070, CE 071, CE 072, CE 073, CE 074, CE 075, CE 076, EU 070, EU 071, EU 072, EU 073, EU 074, EU 075, EU 076, SV 070, SV 071, SV 072, SV 073, SV 074, SV 075, SV 076
13	Additive handling & storage – east (by SV locations) [Title I condition for Minn. R. 7009.0080]	CE 077, CE 078, CE 079, CE 080, CE 081, CE 082, CE 083, CE 084, EU 077, EU 078, EU 079, EU 080, EU 081, EU 082, EU 083, EU 084, SV 077, SV 078, SV 079, SV 080, SV 081, SV 082, SV 083, SV 084
14	Pellet indurating furnaces [Title I conditions <sup>a</sup> on SO <sub>2</sub> , per 89-OT, exhibit I; Title I condition <sup>b</sup> for Minn. R. 7009.0080]	CE 101, CE 102, CE 103, CE 104, CE 105, CE 111, CE 112, CE 113, CE 114, CE 115, CE 261, CE 262, CE 263, CE 271, CE 272, CE 273, EU 100, EU 104, EU 110, EU 114, EU 262, EU 634, SV 101, SV 102, SV 103, SV 104, SV 105, SV 111, SV 112, SV 113, SV 114, SV 115, SV 261, SV 262, SV 263, SV 266, SV 267, SV 268
15	Furnace discharges of finished pellets [Title I conditions for Minn. R. 7009.0080]	CE 120, CE 121, CE 265, CE 274, EU 120, EU 121, EU 265, EU 635, SV 120, SV 121, SV 265, SV 269

Please turn to the end of this table for footnotes.

**Table 3. Regulatory Overview of Facility by Groups (Continued)**

Group	Group Title & [Key Rules]	List of Units
16	Pellet screening (indoor – product & hearth layer) [40 CFR 60.380-386, NSPS, subp. LL]	CE 097, CE 122, CE 123, CE 124, CE 125, EU 097, EU 122, EU 123, EU 124, EU 125, SV 097, SV 122, SV 123, SV 124, SV 125
17	PDRDP [Title I Conditions – hours of operations, grain loading of stack gas; 40 CFR 60.380-386, NSPS, subp. LL]	CE 201, CE 202, CE 203, CE 204, EU 630, EU 631, EU 632, EU 633, SV 201, SV 202, SV 203 (We are using these unit numbers, <sup>c</sup> which used to be assigned to the abandoned DRI project – Demag's REDSMELT process)

- a. The 1989 Operating Permit, Permit No. 27A-89-OT-1, has operational restriction on SO<sub>2</sub> (in “Exhibit I”) due to modeling for the boilers and palletizing furnaces. At Northshore’s request (letter dated July 18, 2003), “fuel oil” and “No. 2 fuel oil,” which are found in the 89-OT and Exhibit I, are now phrased as “any grade of commercial fuel oil” in this Title V permit. The MPCA interprets this new phrase to ban used or waste oil for combustion at the power boilers, the process boilers, and the palletizing furnaces at the Silver Bay facility.
- b. The 1989 Operating Permit has particulate emission limits for many process units on the basis of “Minn. R. 7005.0010 – 7005.0080,” which is now numbered as “Minn. R. 7009.0080” (State Ambient Air Quality Standards). These are equivalent to Title I conditions, in current regulatory terms. Group 9 is limited with this Part 70 permit to PM<sub>10</sub> emission of 0.03 gr/dscf, which is the same as for the multiclones (GP 010 and GP 011), even though the cartridge collectors for Group 9 work far better.
- c. Scott Gischia, of Northshore Mining Company, informed Hongming Jiang, in telephone conversations, October 9, 2003, that EU 630 (with CE 201) and EU 631 (with CE 202) were connected to one common stack (SV 201), thus the stacks should be one less than those in Air Emission Permit No. 07500003-007.

**Table 4. Regulatory Overview of Units Not Grouped\***

EU	Description	Key Rules
005	Coal transfer and bunkers (SV 005)	Minn. R. 7011.0710 Pre-1969 Industrial Process Equipment
636	Pellet transfer points inside the pelletizer building	40 CFR 60.380-386, NSPS, subp. LL (see the explanation in the text below this table)
637	Concentrate (filter cake) loadout (CE 205 – moisture at 9%)	

## 2.2 Units for Emission Limits

At Permittee’s request, particulate (PM) emission limits are set in the units of gr/dscf, just as in the 1989 Operating Permit (Group 9 is one exception, because of the recent control equipment upgrade to the cartridge collectors; see the footnote of Table 3). The use of mass concentration limit of the particulate emission is consistent with the proposed taconite NESHAP; NSPS, subp. LL; and Minn. R. 7011.0735. It is recognized that the current National Ambient Air Quality Standards (NAAQS) has PM<sub>10</sub> but not PM.

However, this Part 70 permit does not set PM<sub>10</sub> emission limits for two reasons. Currently available data are not sufficient to derive the needed PM<sub>10</sub> emission limits. In addition, we

expect an air quality analysis (dispersion modeling) to be performed within the 5-year permit term, likely sooner than later, due to *either* any scale-up of ITmk3, or iron nugget, project to be proposed for construction in 2006 (see Skillings Mining Review, June 2003, page 5) *or* a different regulatory action such as Title V modeling. When the model input data becomes available, PM<sub>10</sub> emission limits, in mass rate (lb/hour), should be incorporated into this Part 70 permit to replace the PM emission limits, in mass concentration (gr/dscf). The model input data is expected to include PM<sub>10</sub> emissions in mass rate (gram/sec) instead of mass concentration.

### **2.3 GP 017 – Pilot Demonstration Research and Development Plant (PDRDP)**

GP 017 has one packed-bed wet scrubber (CE 201) and three fabric filters (CE 202 – CE 204). Pre-construction submittals for water quality required in Air Emission Permit No. 07500003-007 (non-DELTA permit), which was set to expire on the date this Title V permit was issued, have been received and approved by the MPCA. MPCA also received and approved the required Data Collection Protocol. The initial startup date for the PDRDP was June 21, 2003. As part of the permit requirement of Data Collection Protocol (No. 07500003-007; the requirement is now placed in Appendix E of this Title V permit, with updated unit numbering), periodic data collection reporting will begin soon. This periodic (quarterly) reporting and the Alternative Process Operational Scenario Plan (APOSOP) now become requirements for GP 017 in this Title V permit. Three lists referenced in the APOSOP requirement can also be found in Appendix E. Another requirement from Permit No. 07500003-007, *i.e.*, an environmental impact statement (EIS) is required before construction of any proposed commercial scale ITmk3 plant, is placed in Table A, Facility (FC) level, of this Title V permit.

Requirements for individual PDRDP emission units, EU 630 through EU 633, are carried forward to this Title V permit, with some changes (mostly corrections) as described in this paragraph. EU 630 to EU 633 replaced EU 151 (Rotary hearth furnace) to EU 154 (Auxiliary Reductant Equipment), respectively; SV 201 replaced both SV 1PP and SV 2PP (common stack but separate EUs and CEs), and SV 202 and SV 203 replaced SV 3PP and SV 4PP, respectively; CE 201 to CE 204 replaced CE 1PP to CE 4PP, respectively. “December 18, 2003” replaced “180 days after the initial startup of EU 630, EU 631, EU 632, and EU 633” in several requirements. We added explicit language to not require performance testing for particulate control efficiency, because particulate emission limit(s) in gr/dscf can better serve the compliance and scale-up purposes. We removed Opacity from the initial performance testing requirement for EU 630 and EU 631 (SV 201 is the common stack), because of experience with frequent water vapor presence at the WWESP-controlled indurating furnace stacks. The 12-month rolling sum is used now for EU 631, to be consistent with that for EU 630. We made a correction that EU 633 is now not subject to NSPS, subp. LL. We allowed CD-ROM as an alternative to microfiche copy of performance test report for PDF or TIF file formats.

### **2.4 Performance Testing**

Excluding GP 002, GP 017, EU 636 and EU 637, this Title V permit requires initial performance testing of 11 stacks within 180 days after Permit Issuance, 7 stacks within 360 days, and 6 stacks within 640 days. Recurrent performance testing dates and frequencies must be proposed by the Permittee as required in the Testing Frequency Plan, based on results from initial performance testing, MPCA’s test frequency guidance document that uses factors including margin of

compliance, and the requirements of the recently promulgated (October 30, 2003) federal regulation (40 CFR 63, subp. RRRRR).

GP 002 is idle. A notification is required for resuming operation. Initial performance testing is required after GP 002 resuming operation. The requirements of initial and subsequent performance testing for GP 017 are specified for individual emission units (EU 630 to EU 633). EU 636 and EU 637 will be discussed in Section 2.6 of this technical support document.

GP 014 (Pellet indurating furnaces) is not required to be evaluated for stack plume opacity, because there is nearly always water vapor (or steam) present that makes opacity measurements nearly impossible. SV 201 in GP 017 is not required to be evaluated for stack plume opacity, either, as mentioned in Section 2.3 above.

## **2.5 Monitoring of Type N Rotoclones**

There are 8 type N rotoclones for GP 015 and GP 016. A letter (attached to this TSD) from the rotoclone supplier, Process Engineering, Inc., Excelsior, Minnesota, dated September 22, 2003, suggests gas stream pressure drop alone as the surrogate parameter for monitoring control performance, if continuous emission monitoring at the stack is not required. Hongming Jiang was also informed, in a telephone conversation with the supplier on September 22, 2003, that neither water flow rate nor water level was a suitable surrogate parameter for monitoring type N rotoclones. Thus, the MPCA initially considered gas stream pressure drop as the only parameter to monitor for GP 015.

Northshore prefers monitoring fan motor amperage, which is explained in two attached e-mails (Scott Gischia 12/10/2003 and Dan Josephs, an employee of American Air Filter, 11/5/2003). The MPCA decided to combine the two monitoring methods for GP 015, before approving fan motor amperage monitoring on the basis of field data to be developed. The development of such field data is expected to be completed with Initial Performance Testing of at least one rotoclone controlled stack each from GP 015 and GP 016.

Northshore needs to seek an approval from USEPA for alternative monitoring for GP 016 (the MPCA does not have the authority over any “affected facility” of New Source Performance Standard (NSPS), subp. LL, “Metallic Mineral Processing Plants”), Northshore is interested in making fan motor amperage monitoring the only parametric monitoring method for GP 016. The field data development, mentioned in the above paragraph, may be very useful.

## **2.6 Compliance Plan Concerning GP 016, EU 636, and EU 637**

Around the period when Northshore Mining Company was proposing the REDSMELT project, a report was submitted to the MPCA (1997 PSD Applicability Report), which identifies pellet screens and conveyors that were in use then are “affected facilities” for NSPS, subp. LL. In this Title V permit, the pellet screens (EUs) with their respective control equipment (CEs) and stacks/vents (SVs) are found in GP 016. The uncontrolled, indoor, conveyor transfer points inside the Pelletizer Building are labeled as EU 636. None of the conveyor transfer points of EU 636 is equipped with a stack/vent.

There was oversight, when Air Emission Permit No. 07500003-007 was issued for the PDRDP on December 28, 2001, that a wet concentrate loadout was not included in that permit. The conveyor transfer point, called EU 637 with CE 205 in this Title V permit, has been used since June 2003, if not earlier, to drop filter cake material to trucks, which then deliver the material to the PDRDP, or to rail cars for shipment off-site. When coming out of the vacuum and filtering process, the filter cake material – finished iron concentrate and about 9% of moisture – is conveyed through the wall of the Filter Building to EU 637, without stockpiling outside. It is the MPCA's inspectors' experience that loading and unloading such high moisture content material with a conveyor transfer drop does not cause any emission. For this reason, we assigned CE 205 as the actual control for EU 637 and assumed that it achieves 100% control efficiency for PM and/or PM<sub>10</sub>, because of "6% or Greater Moisture Content." We do not believe that EU 637 should have any *add-on control* beyond the existing CE 205.

In the early part of 2003, MPCA staff had informal discussions with the staff of USEPA Region 5 Office regarding the wet concentrate loadout (EU 637) and the indoor, uncontrolled conveyor transfer points (EU 636). On May 15, 2003, the MPCA staff was advised that NSPS, subp. LL does not distinguish wet processing from dry processing in metallic mineral plant operations and Northshore Mining Company should make a formal request with USEPA for approval of any *alternative monitoring*, pursuant to the provisions of NSPS. Alternative monitoring was explained to even include *no monitoring* as an option.

In the current permitting context, the Permittee will contact USEPA within 30 days after Permit Issuance to request for such approvals by submitting the Compliance Plan, which is required in Table C (*Compliance Schedule*) of this Title V permit, for GP 016, EU 636 and EU 637.

The Compliance Plan needs to include the dates of initial startup of various units and the dates for initial performance testing of various units as well as monitoring/alternative monitoring devices and/or work practices. For type N rotoclones in GP 016, the company may propose to monitor gas stream pressure drop, but not water flow rate or water level, for control equipment performance. Furthermore, the company may propose to replace monitoring gas stream pressure drop with monitoring fan motor amperage. See Section 2.5 above for detailed reasoning.

For EU 636, the various indoor conveyor transfer points do not have their own stacks/vents or control equipment, the company may propose to conduct initial performance testing for *fugitive process emission* using Method 9, but not PM or Opacity that are usually associated with a stack. (This Title V permit does not required PM or Opacity in the initial performance testing for EU 636.) A scaled drawing may be helpful in presenting the company's case, if it identifies building openings (entry ways, windows, and vents), pickup points of hoods for other EUs, and locations of various EU 636 transfer points. The company may also propose to have 365 days as a suitable time frame for assess fugitive process emission, because of vapor presence or other peculiarity due the lake shore location of the Silver Bay production facility. It should be understood that, due to the wide dispersion of the transfer points encompassed by EU 636 amongst the variety of other non-NSPS equipment in the Pellet Plant, it is very difficult to determine the true source of any material entrained in the air leading to the *fugitive process emission* measurement out of a building opening.



For EU 637, the company may propose to conduct initial performance testing for *fugitive process emission* using Method 9, but not PM or Opacity that are usually associated with a stack (EU 637 has no stack; this Title V permit does not required PM or Opacity in the initial performance testing for EU 637). The company may explain why material moisture content (CE 205) alone is an acceptable control by elaborating on the nature of wet concentrating process, including the ability of fine particles of finished iron ore concentrate to retain moisture (9%) for an extended period of time, and the fact that EU 637 has replaced the old practice of using a surge pile and a front end loader for filter cake material loadout.

## 2.7 Clarification of Fuel Oil Restrictions

Based on the input values for a subsequent air quality modeling study, Exhibit I of the 1989 Operating Permit has the following fuel sulfur condition, “The Permittees shall use fuel oil with a sulfur content and heating value corresponding to an uncontrolled sulfur dioxide emission rate of 0.5 lbs/million BTU.”

The word *uncontrolled* is redundant for power boiler 1 (EU 001 in GP 001), because SO<sub>2</sub> emission is not controlled at all with the control equipment (CE 001) – a fabric filter. The 1989 fuel sulfur condition means that EU 001 cannot be fired with residual oil. EU 002, also in GP 001, is not configured to fire with fuel oil. Thus, for GP 001 in this Title V permit, the 1989 fuel sulfur condition is rewritten as follows, “The Permittee shall restrict the sulfur content of any grade of commercial fuel oil so that SO<sub>2</sub> emission from EU 001 does not exceed 0.5 lb SO<sub>2</sub>/million BTU.”

As for the taconite pellet indurating furnaces (GP 014), the 1989 fuel sulfur condition is rewritten as follows, “The Permittee shall restrict the sulfur content of any grade of commercial fuel oil so that stack SO<sub>2</sub> emission does not exceed 0.5 lb SO<sub>2</sub>/million BTU heat input.” The phrase of *heat input* means that the energy from the exothermic (heat releasing) reaction of magnetite oxidation is excluded in determining compliance to the emission limit. This rewritten 1989 fuel sulfur condition for GP 014 is done at the request of Northshore Mining Company in a letter dated July 18, 2003.

While *any grade of commercial fuel oil* in the GP 001 fuel sulfur condition still means distillate fuel oil for EU 001, *any grade of commercial fuel oil* in the GP 014 fuel sulfur condition can be fuel oil No. 6 (“bunker C”). Unlike power boilers, indurating furnace stacks are equipped with control equipment, wet wall electrostatic precipitators (WWESP), which, according to the Permittee’s calculations, are capable of removing 80% of sulfur present in the inlet gas stream of the WWESP. The MPCA staff believes that the word *uncontrolled* in the 1989 fuel sulfur condition should not have been used for indurating furnace stacks (stack emission of 2.0 lb SO<sub>2</sub>/million BTU heat input is allowed in a state rule). With this interpretation, MPCA has allowed Northshore Mining Company to pursue firing the indurating furnaces with fuel oil No. 6, provided that the Permittee obtains other regulatory approvals. The GP 014 fuel sulfur condition presents clarification of the modeling-related requirement in this Title V permit.

Firing the indurating furnaces with fuel oil No. 6 can cause cross-media pollutant transfer. Northshore has informed MPCA water quality staff that the company is working with consultants to address concerns on the quality of the WWESP effluent inflow to the planned new

fluoride wastewater treatment plant, and then the effluent quality from that plant. Northshore anticipates that the new treatment system will remove not only fluoride but also sulfate – which is one of the dissolved solids-type water pollutants typically of concern with conversion to higher sulfur fuels – and will be working with the MPCA to ensure that the water quality would not worsen due to the fuel conversion.

Finally, it should be noted that emission limits specified in this Title V permit may be changed when the MPCA approves a different dispersion modeling demonstration.

## **2.8 Dispersion Modeling**

With issuance of this Title V permit, all taconite mining and processing facilities will soon begin air quality dispersion modeling to show their status with respect to ambient air quality standards. The Permittee for this Title V permit should perform dispersion modeling sooner rather than later, because of the many changes since 1989 and the current pursuit of alternative indurating fuels as well as any type of scale-up of the ITmk3 technology.

## **2.9 Fibers**

It should be noted that with this Title V permit the fibers continue to be regulated at both the Silver Bay production facility (see Table A of the permit, at FC level) and at Mile Post 7 Tailings Basin Area (see Appendix B of the permit) as in the 1989 Operating Permit:

*With respect to fibers, the air quality standards at or beyond the property line of the facility to which the Permittee shall adhere, consistent with the determination of the Minnesota Supreme Court, are:*

- a. fibers in the ambient air shall be below a medically significant level;*
- b. the ambient air shall contain no more fibers than that level ordinarily found in the ambient air of a control city such as St. Paul;*
- c. the fibers in the ambient air shall be maintained below a level which is injurious to human health or welfare in violation of Minn. Stat. Sec. 116.06 (3); and*
- d. such other standards which now or in the future may be applied to the Permittee's fiber emissions.*

*The MPCA recognizes that the above fiber level standards or measurements applicable to fiber emissions emanating from the Permittee's operations are to be determined in the future to a degree with approaches reliable scientific and medical precision. The control city standard set forth in paragraph (b) was found by the federal courts to be based on a reasonable medical theory. Any future fiber level standards applied pursuant to paragraphs (a), (c) and (d) must likewise be based on a reasonable medical theory.*

*"Fibers," for the purpose of this permit, are defined as chrysotile and amphibole mineral particles with 3-to-1 or greater aspect ratios.*

This Title V permit also requires ambient monitoring for fibers. It has specialized specifications for fabric filters in GP 003 through GP 008 for purpose of minimizing potential fiber emissions.

To convert the “medically significant level” language to something more readily enforceable, federally and as a practical matter, such as a numeric concentration value, a policy change may be needed at the State of Minnesota. This was one of the reasons that an international fiber symposium was held in St. Paul, March 30 – April 1, 2003. The conference papers presented are in the process of being peer reviewed for publication (*the process was expected to take two years*). After the papers are published, the Minnesota Department of Health (MDH) will determine if they can conduct a risk assessment for fibers or if they can draw any conclusions about the potential health impacts from fibers. Based on MDH's findings, the MPCA and Minnesota Department of Natural Resources may make policy changes with respect to fibers. Until then, the MPCA will continue to regulate airborne fibers as required by the court who deemed them a health concern.

### **2.10 Mile Post 7 Tailings Basin Area Fugitive Dust Control**

The MPCA has been regulating fugitive dust emissions from the Mile Post 7 Tailings Basin Area through National Pollutant Discharge Elimination System (NPDES)/State Disposal System (SDS) permit MN0055301. These provisions are proposed to be transferred to this Title V (air emission) permit. Mile Post 7 air quality requirements in NPDES/SDS permit MN0055301 are incorporated into Appendix B of this Title V permit. A brief requirement is added in Table A at FC level in the Title V permit to reference Appendix B. After the issuance of this Title V permit, the Mile Post 7 air quality requirements would be removed from the next reissued permit MN0055301.

In order to make it less confusing, the fugitive control plan for the Silver Bay production facility is explicitly called the “fugitive control plan for the Silver Bay facility,” where the clarity is needed in Tables A and B of this Title V permit. In addition, the fiber language in the Title V permit (Table A, at FC level) is repeated in Appendix B with a sentence to state the language is intended for the “disposal system” (Mile Post 7 area).

## **3. Technical Information**

This Part 70 permit action has updated the requirements established in previous permit actions.

## **4. Public Notice and USEPA Review**

A notice was published on Duluth New Tribune, December 30, 2003, to invite public comment on the draft Title V permit from December 31, 2003 through January 29, 2004. Direct mailing of the public notice was also made to the individuals whose names appear in MPCA’s mailing lists. In addition, the public notice, the draft Title V permit, and the technical support document (TSD: except for this section) has been posted on the MPCA’s web site since December 31, 2003.

With these outreach efforts, Superior National Forest, U.S. Forest Service, provided the MPCA with the only comment letter for the draft Title V permit (received January 13, 2004). The Permittee, through Scott Gischia of Northshore Mining Company, provided an update regarding EU 636 during the public notice period and asked for clarification on February 10, 2004.

U.S. EPA staff approved the issuance of this Title V permit in an e-mail on February 23, 2004.



**Comment 1:** *It is our understanding that a power boiler such as the units at Northshore is limited in the amount of electricity that can be sold to the grid before the units become regulated under the federal acid rain program. We feel that this threshold, along with appropriate recordkeeping and/or reporting, should be included in this permit.*

**MPCA Response:** We accepted the suggestion by adding two requirements to the permit. We also asked the Permittee for and received relevant information (“Exemption of SBPC from the Acid Rain Program,” one of the attachments to this TSD).

(1) The following is added in Permit Table A, GP 001, B. Operational Requirements:

“What to do:” For each unit in GP 001 to not be an affected unit subject to the requirements of the federal Acid Rain Program, 40 CFR 72.6(b)(4)(i), each unit in GP 001 shall retain the cogeneration qualifying facility status, as per the Public Utility Regulatory Policies Act of 1978; and shall be restricted in supplying electricity to any utility power distribution system to, on a three-year rolling average basis: 1) less than or equal to one-third of its potential electrical output capacity, and 2) less than or equal to 219,000 MWe-hrs actual electric output (on a gross basis). “Why to do it:” Minn. R. 7007.0800, subp. 2.

(2) The following is added in Permit Table B, One time Submittals and Notifications:

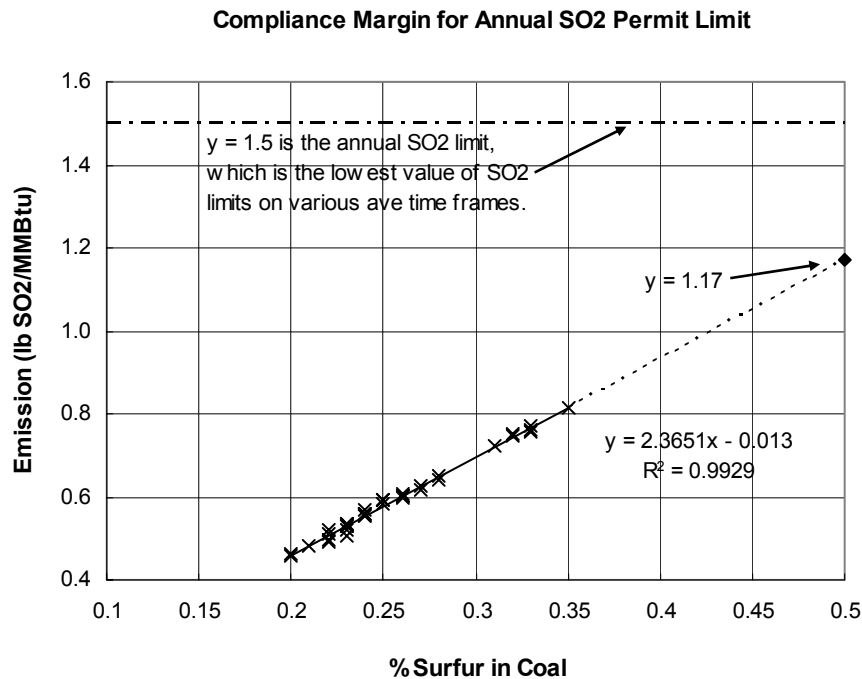
“What to send:” Notification of compliance status.

“When to send:” due 30 days after Discovery of Deviation of Applicability status for any Emission Unit of GP 001. This one-time notification is required in the event that the unit has become an affected unit subject to the requirements of the federal Acid Rain Program.

“Portion of Facility Affected:” GP 001.

**Comment 2** (also concerning the power boilers): *We don’t understand how compliance with short-term sulfur dioxide limits (one-hour and three-hour) can be shown through fuel sulfur testing. For units of this size, sulfur dioxide continuous emission monitoring systems (CEMS) seem appropriate.*

**MPCA Response:** We do not change our view. We present a plot, below, of sulfur dioxide (SO<sub>2</sub>) emission (calculated with mass balance) versus sulfur content in coal for the power boilers (EU 001 and EU 002) to show the margin of compliance to the annual SO<sub>2</sub> permit limit. The boilers have been fired with Powder River Basin (PRB) coal. Data points in symbol “×” are for the recent months (January 20, 2002 – November 30, 2002), for which we have detailed data.



A preliminary review, by the Permittee, of several months worth of SO<sub>2</sub> CEM data collected for EU 002 (power boiler 2) during the two-year site-specific modeling-monitoring study for the 1989 Operating Permit suggests that the 1-hour averaged SO<sub>2</sub> emission is “at least less than half the Title V limit” of 2.5 lbSO<sub>2</sub>/million BTU heat input. We believe that ample margins could also be shown for both one-hour and three-hour sulfur dioxide limits, if the entire SO<sub>2</sub> CEM data so collected can be retrieved successfully from old, 5 ¼” floppy disks. Please note that MPCA’s continuing pursue of the entire SO<sub>2</sub> CEM data is for future permitting interest and not for this Title V permit *per se*. See the attached e-mail from Hongming Jiang to Scott Gischia, 2/23/2004.

Thus, we do not feel that requiring CEMS for the boilers is appropriate at this time. However, should the sulfur content in coal exceed 0.5% by weight, we would re-evaluate this issue and the current monthly SO<sub>2</sub> emission calculation requirement.

**Comment 3** (concerning dispersion modeling mentioned in the TSD): *There is discussion concerning air quality dispersion modeling, made applicable through the Title V permit process, but there are no items requiring this in the draft Title V permit. Reference is also made to the other taconite facilities that are starting work on this task. What are the current Title V related modeling requirements for this facility and the taconite industry as a whole? Are these requirements contained in permits for the facilities? Will the emission rates of nearby taconite facilities be considered in the modeling study for each facility? When will this modeling task be completed? How will the results of this task be incorporated into the Title V permits for each facility; e.g., if reduced emission rates are necessary to avoid modeled exceedances?*

**MPCA Response:** Title V modeling is a state requirement. According to the agreement between the Minnesota Pollution Control Agency (MPCA) and the taconite industry, within 120 days of MPCA’s notification to individual companies in the industry that the last initial Title V

permit, which is this permit (No. 07500003-001), is issued, the companies are required to submit air dispersion modeling results. In fact, the industry has started to prepare for the modeling work recently. Richard Cordes, (651) 296-8157, can be contacted for the ongoing modeling efforts.

**EU 636 Update** (Resulting from an E-mail from Scott Gischia of Northshore, 1/20/2004): *This is relevant to the paragraph regarding EU 636 in Section 2.6. Eight items (one wet screen and others transfer points) are identified: A01, A02, A09, A10, C01, C02, C03, and D01. They have all been inside the Pelletizer Building. A01 no longer exists. A02 and D01 are not controlled with any control equipment. C01, C02, and C03 are found to be in some control with CE 097 (a baghouse). A09 is found to be in some control with CE 125 (a rotoclone). A10 is found to be in some control with CE 123 (a rotoclone).*

**MPCA Response:** Although it is helpful, the EU 636 Update does cause any change in the initial performance testing requirement for *fugitive process emission* for EU 636, as discussed in Section 2.6 of this TSD.

**Question on Test Frequency Plan** (Resulting from an E-mail from Scott Gischia of Northshore, 2/10/2004): *The permit lists requirements for submittal of Testing Frequency Plans (TFP) due 60 days after the 1st performance test. Does this mean one plan submitted after testing of each of the stacks listed? Or does it mean 60 days after the initial testing has been completed for all stacks in this group?*

**MPCA Response:** The Permittee should submit a plan after each source (or set of sources, if several are tested at within a few weeks of each other) is tested, proposing a test frequency based on margin of compliance for the specific group. Since the test requirements are dispersed at numerous due dates throughout the permit, the Permittee needs to track when tests are done and be sure to submit a TFP for each test conducted, within 60 days. So, for the tests due 180 days after permit issue, the Permittee could submit one letter, that should propose appropriate test frequencies for each of the tested sources or groups.

EPA asked MPCA for clarifying several points relative to compliance. MPCA responded to each one of them satisfactorily. See the attached e-mail from Hongming Jiang to Jennifer Darrow, 2/17/2004.

## 5. Conclusion

Based on the information provided by Northshore Mining Company, the MPCA has reasonable assurance that the proposed operation of the emission facility, as described in the Air Emission Permit No. 07500003-001 and this technical support document, will not cause or contribute to a violation of applicable federal regulations and Minnesota Rules.

Permit Team: Hongming Jiang and Bob Beresford.

Peer reviewed by: Dick Cordes.

Attachments: Spreadsheet file GI-07\_T5.xls

Letter from Process Engineering, Inc., 9/22/2003, on rotoclone monitoring

E-mail from Dan Josephs, of American Air Filter, 11/5/2003

E-mail from Scott Gischia, of Northshore Mining, 12/10/2003

Exemption of Silver Bay Power Company from the Acid Rain Program

E-mail from Hongming Jiang to Scott Gischia, 2/23/2004

E-mail from Hongming Jiang to Jennifer Darrow, of USEPA, 2/17/2004