PRELIMINARY DETERMINATION
ON PERMIT APPLICATION

January 26, 2016

Garnet USA, LLC.

Garnet Sand Production Facility

Proposed Action: The Department of Environmental Quality (Department) proposes to issue a permit, with conditions, to the above-named applicant. The application was assigned Permit Application Number 2888-04.

Proposed Conditions: See attached.

Public Comment: Any member of the public desiring to comment must submit such comments in writing to the Air Quality Bureau (Bureau) of the Department at the above address. Comments may address the Department's analysis and determination, or the information submitted in the application. In order to be considered, comments on this Preliminary Determination are due by February 10, 2016. Copies of the application and the Department's analysis may be inspected at the Bureau's office in Helena. For more information, you may contact the Department.

Departmental Action: The Department intends to make a decision on the application after expiration of the Public Comment period described above. A copy of the decision may be obtained at the above address. The permit shall become final on the date stated in the Department's Decision on this permit, unless an appeal is filed with the Board of Environmental Review (Board).

Procedures for Appeal: Any person jointly or severally adversely affected by the final action may request a hearing before the Board. Any appeal must be filed by the date stated in the Department's Decision on this permit. The request for a hearing shall contain an affidavit setting forth the grounds for the request. Any hearing will be held under the provisions of the Montana Administrative Procedures Act. Submit requests for a hearing in triplicate to: Chairman, Board of Environmental Review, P.O. Box 200901, Helena, MT 59620.

For the Department,

Julie A. Merkel
Permitting Services Section Supervisor
Air Quality Bureau
(406) 444-3626

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JM:JP
Enclosure

MONTANA AIR QUALITY PERMIT

Issued to: Garnet USA, LLC
P.O. Box 161
Alder, MT 59710

MAQP: #2888-04
Application Complete: 01/13/2016
Preliminary Determination (PD) Issued: 01/26/2016
Department's Decision (DD) Issued:
Permit Final:
AFS #: 057-0011

A Montana Air Quality Permit (MAQP), with conditions, is hereby granted to Garnet USA, LLC (Garnet) pursuant to Sections 75-2-204 and 211 of the Montana Code Annotated (MCA), as amended, and Administrative Rules of Montana (ARM) 17.8.740, *et seq.*, as amended, for the following:

SECTION I: Permitted Facilities

A. Plant Location

Garnet owns and operates a garnet sand production facility, including drilling, blasting, excavation (placer mining) of garnet-bearing sand and gravel, separation, screening, and concentration of the garnet sand and product drying. The mine site is located one-half mile east of the city of Alder in Section 10, Township 6 South, Range 4 West, Madison County, Montana.

B. Current Permit Action

On December 30, 2015, the Department of Environmental Quality (Department) received an application to remove a 15 million British Thermal Unit (btu) dryer and a generator set with a combined power rating of 850 horsepower (hp)as well as adding new equipment and increasing the amount of garnet bearing material production.

SECTION II: Conditions and Limitations

A. Emission Limitations

1. Process fugitive emissions shall be limited to 10% opacity (ARM 17.8.749).

2. Stack emissions shall be limited to 7% opacity from the product handling baghouse (ARM 17.8.749).

3. Particulate emissions shall be limited to 0.05 grams per dry standard cubic meter (g/dscm) from the product handling baghouse. An initial demonstration of compliance (stack testing) will not be required, but the Department may require testing at a later time based on visual observation (ARM 17.8.105 and 17.8.749).

4. Particulate emissions shall be limited to 0.01 grains per dry standard cubic foot (gr/dscf) from the propane dryer baghouse. (ARM 17.8.752).

5. Maximum annual garnet sand production shall be limited to 100,000 metric tons (110,000 US Tons) per rolling 12-month time period. The maximum amount of raw material handled shall be limited to 2,000,000 metric tons (2,204,600 US Tons) per rolling 12-month time period (ARM 17.8.749).

6. All visible emissions from any Standards of Performance for New Stationary Source (NSPS)-affected crusher shall not exhibit an opacity in excess of the following averaged over 6 consecutive minutes (ARM 17.8.340 and 40 Code of federal Regulation (CFR) Part 60, Subpart OOO).

   - For Crushers that commence construction, modification, or reconstruction on or after April 22, 2008: 12% opacity

   - For crushers that commenced construction, modification, or reconstruction after August 31, 1983, but before April 22, 2008: 15% opacity

7. All visible emissions from any other NSPS-affected equipment, other than a crusher (such as screens or conveyors), shall not exhibit opacity in excess of the following averaged over 6 consecutive minutes (ARM 17.8.340, and 40 CFR 60, Subpart OOO).

   - For equipment that commences constructing, modification, or reconstruction on or after April 22, 2008: 7% opacity

   - For equipment that commences construction, modification, or reconstruction after August 31, 1983, but before April 22, 2008: 10% opacity

8. All visible emissions form any non-NSPS affected equipment shall not exhibit an opacity of 20% or greater averaged over 6 consecutive minutes (ARM 17.8.304).

9. Water and spray bars shall be available on site at all times and operated as necessary to maintain compliance with the opacity limitations in Sections II.A.6, II.A.7, and II.A.8 (ARM 17.8.752).

10. Garnet shall not operate more than three (3) crushers at any given time and the combined maximum rated design capacity of the crushers shall not exceed 1,000 tons per hour (TPH) (ARM 17.8.749)

11. Garnet shall not operate more than two (2) screens at any given time and the combined maximum rated design capacity of the screen shall not exceed 800 TPH (ARM 17.8.749).

12. Garnet shall not operate or have on site more than five (5) diesel-fired generator/engine sets at any given time. The combined maximum rated design capacity of the diesel-fired generator/engine(s) shall not exceed 325 (hp).

The total combined hours for the diesel-fired generator/engine set(s) shall not exceed 6,000 hours of operation during any rolling 12-month time period (ARM 17.8.479).

13. Garnet shall use proper blasting techniques, proper explosive selection, optimized application of explosives, and the utilization of best operating practices to mitigate gaseous and particulate emissions from explosives detonation and blasting (ARM 17.8.752).

14. Garnet shall use a drill platform shroud enclosure for the drilling of overburden and garnet producing rock and soil (ARM 17.8.752).

15. Garnet shall not operate or have on site more than one (1) gasoline-fired generator set at any given time. The combined maximum rated design capacity of the gasoline-fired generator engine(s) shall not exceed 190 hp. The total combined hours for the gasoline-fired engine generator set(s) shall not exceed 6,000 hours of operation during any rolling 12-month period (ARM 17.8.749)

16. Garnet shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions or airborne particulate matter (ARM 17.8.308).

17. Garnet shall treat all unpaved portions of the haul roads, access roads, and the general plant area with water and/or chemical dust suppressant as necessary to maintain compliance with the reasonable precautions limitation in Section II.A.5 (ARM 17.8.749).

18. Garnet shall comply with all applicable standards and limitations, and the reporting, recordkeeping and notification requirements contained in 40 Code of Federal Regulations (CFR) 60, Subpart OOO, *Standards of Performance for Nonmetallic Mineral Processing Plants* (ARM 17.8.340 and 40 CFR 60, Subpart OOO).

19. Garnet shall comply with all applicable standards and limitations, and the reporting, recordkeeping, and notification requirements contained in 40 CFR 60, Subpart IIII, *Standards of Performance for Stationary Compression Ignition Internal Engines* and, 40 CFR 60, Subpart JJJJ, *Standards of Performance for Stationary Spark Ignition Internal Combustion Engines,* and 40 CFR 63, Subpart ZZZZ, *National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocation Internal Combustion Engines*, for any applicable diesel or gasoline engine (ARM 17.8.340, 40 CFR 60, Subpart IIII; ARM 17.8.342; and 40 CFR 63, Subpart ZZZZ)

B. Testing Requirements

1. Within 60 days after achieving the maximum production rate, but no later than 180 days after initial startup, and Environmental Protection Agency (EPA) Method 9 opacity test and/or other methods and procedures, as specified in 40 CFR Part 60.675 must be performed on all NSPS-affected

equipment to demonstrate compliance with the emissions limitations contained in Sections II.A.5 and II.A.6 (ARM 17.8.340, 40 CFR 60, Subpart A and Subpart OOO).

2. All compliance source tests shall conform to the requirements of the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106).

3. The Department may require further testing (ARM 17.8.105).

C. Operational Reporting Requirements

1. Garnet shall supply the Department with annual production information for all emission points, as required by the Department in the annual emission inventory request. The request will include, but is not limited to, all sources of emissions identified in the emission inventory contained in the permit analysis.

   Production information shall be gathered on a calendar-year basis and submitted to the Department by the date required in the emission inventory request. Information shall be in the units required by the Department. This information may be used for calculating operating fees, based on actual emissions from the facility, and/or to verify compliance with permit limitations. Garnet USA shall submit the annual garnet sand production and raw material handled annually to the Department by March 1 of each year; the information may be submitted along with the annual emission inventory (ARM 17.8.505).

2. Garnet shall notify the Department of any construction or improvement project conducted pursuant to ARM 17.8.745 that would include the ***addition of a new emission unit***, change in the control equipment, stack height, stack diameter, stack flow, stack gas temperature, source location, or fuel specifications, or would result in an increase in source capacity above its permitted operation. The notice must be submitted to the Department, in writing, 10 days prior to start up or use of the proposed de minimis change, or as soon as reasonable practicable in the event of an anticipated circumstance causing the de minimis change, and must include the information requested in ARM 17.8.745(1)(d) (ARM 17.8.745).

3. Garnet shall maintain on-site records showing daily hours of operation and daily production rates for the last 12 months. The records compiled in accordance with this permit shall be maintained by Garnet as a permanent business record for at least 5 years following the date of the measurement, must be available at the plant site for inspection by the Department, and must be submitted to the Department upon request (ARM 17.8-745).

4. Garnet shall document, by month, the hours of operation for each of the diesel/gasoline engine/generator set(s). By the 25th day of each month, Garnet shall total the hours of operation for each diesel/gasoline engine/generator for the previous month.

The monthly information will be used to demonstrate compliance with the rolling 12-month limitation in Section II.A.12 and II.A.15. The information for each of the previous months shall be submitted along with the annual emission inventory (ARM 17.8.749)

5. All records compiled in accordance with this permit must be maintained by Garnet as a permanent business record for at least 5 years following the date of the measurement, must be available at the plant site for inspection by the Department, and must be submitted to the Department upon request (ARM 17.8.749).

6. Garnet shall document, by month, the amount of raw material handled and garnet sand produced. By the 25th day of each month, Garnet shall total the raw material handled and garnet sand production for the previous month. The monthly information will be used to verify compliance with the rolling 12-month limitation in Section II.A.4 (ARM 17.8.749).

7. Garnet shall annually certify that its emissions are less than those that would require the source to obtain an air quality operating permit as required by ARM 17.8.1204(3)(b). The annual certification shall comply with the certification requirements of ARM 17.8.1207. The annual certification shall be submitted along with the annual emissions inventory information (ARM 17.8.749 and ARM 17.8.1204).

SECTION III: General Conditions

A. Inspection – Garnet shall allow the Department's representatives access to the source at all reasonable times for the purpose of making inspections or surveys, collecting samples, obtaining data, auditing any monitoring equipment (Continuous Emissions Monitoring System (CEMS), Continuous Emissions Rate Monitoring System (CERMS)) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this permit.

B. Waiver – The permit and all the terms, conditions, and matters stated herein shall be deemed accepted if Garnet fails to appeal as indicated below.

C. Compliance with Statutes and Regulations – Nothing in this permit shall be construed as relieving Garnet of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided for in ARM 17.8.740, *et seq*. (ARM 17.8.756).

D. Enforcement – Violations of limitations, conditions and requirements contained herein may constitute grounds for permit revocation, penalties or other enforcement as specified in Section 75-2-401, *et seq*., MCA.

E. Appeals – Any person or persons jointly or severally adversely affected by the Department's decision may request, within 15 days after the Department renders its decision, upon affidavit setting forth the grounds therefore, a hearing before the Board of Environmental Review (Board). A hearing shall be held under the provisions of the Montana Administrative Procedures Act. The filing of a request

for a hearing does not stay the Department's decision, unless the Board issues a stay upon receipt of a petition and a finding that a stay is appropriate under Section 75-2-211(11)(b), MCA. The issuance of a stay on a permit by the Board postpones the effective date of the Department's decision until conclusion of the hearing and issuance of a final decision by the Board. If a stay is not issued by the Board, the Department's decision on the application is final 16 days after the Department's decision is made.

F. Permit Inspection – As required by ARM 17.8.755, Inspection of Permit, a copy of the air quality permit shall be made available for inspection by Department personnel at the location of the permitted source.

G. Air Quality Operation Fees – Pursuant to Section 75-2-220, MCA, failure to pay the annual operation fee by Garnet may be grounds for revocation of this permit, as required by that section and rules adopted thereunder by the Board.

H. Duration of Permit – Construction or installation must begin or contractual obligations entered into that would constitute substantial loss within 3 years of permit issuance and proceed with due diligence until the project is complete or the permit shall expire (ARM 17.8.762).

I. The Department may modify the conditions of this permit based on local conditions of any future site. These factors may include, but are not limited to, local terrain, meteorological conditions, proximity to residences, etc.

J. Garnet shall comply with the conditions contained in this permit while operating in any location in Montana, except within those areas that have a Department-approved permitting program or areas considered tribal lands.

Montana Air Quality Permit (MAQP) Analysis
Garnet USA, LLC
MAQP #2888-04

I. Introduction/Process Description

A. Permitted Equipment

Garnet USA, LLC. (Garnet) operates the following equipment at their home pit, located approximately one-half mile east of the town of Alder, in Section 10, Township 6 South, Range 4 West, in Madison County, Montana

- One (1) 10 MMBTU/hour propane-fired rotary dryer
- Three (3) baghouse's
- One (1) Cone crusher
- One (1) Jaw crusher
- One (1) Impact crusher
- One (1) Triple deck screen
- Fourteen (14) propane-fired heaters
- One (1) 190 hp gasoline water pump
- One (1) 26 hp diesel-fired light generator
- One (1) 8 hp diesel-fire generator
- One (1) 40 hp diesel-fired light generator
- One (1) 150 hp diesel-fired generator
- One (1) 80 hp diesel-fired air compressor
- One (1) 21 hp diesel-fired heater
- One (1) 20,000 gallon vertical diesel storage tank
- Two (2) 6,000 gallon horizontal diesel storage tanks

B. Facility Description

Garnet USA, LLC. (Garnet) owns and operates a garnet sand production facility, including drilling, blasting, excavation (placer mining) of garnet-bearing sand and gravel, separation, screening, and concentration of the garnet sand and product drying.

The project processes up to two million metric tons per year of garnet bearing sands and gravels from previous placer gold mining tailings. Raw material is mined with a dragline feeding a nearby skid-mounted trommel, screen, and jig. Garnet bearing sands then goes to a stationary concentration plant followed by drying (propane-fired) and bagging.

C. Permit History

Cominco American, Inc. (Cominco American) submitted an air quality permit application on June 7, 1995, for a placer garnet mining operation to be located near Alder.

The application was deemed complete as of June 21, 1995, upon receipt of public notice. Permit **#2888-00** was issued to Cominco American on August 4, 1995.

The Department of Environmental Quality (Department) received a request, dated January 29, 2000, from Cominco American= and Montana Oregon Investment Group, LLC (Montana Oregon) to transfer ownership of Permit #2888-00. Ownership of Permit #2888-00 was transferred to Montana Oregon and permit rule references and language were updated. Permit **#2888-01** replaced Permit #2888-00.

The Department received a request, dated September 8, 2004, from Montana Oregon and Ruby Valley Garnet, LLC (Ruby Valley) to transfer ownership of Permit #2888-01 to Ruby Valley. The permit action transferred ownership of Permit #2888-01 to Ruby Valley. Permit #**2888-02** replaced Permit #2888-01.

The Department received a request on April 6, 2012, from Ruby Valley and Garnet USA to transfer ownership of Permit #2888-02 to Garnet USA. The permit action reflected the transfer of ownership of the facility and updated the permit language and rule references used by the Department. Permit#**2888-03** replaced Permit#2888-02.

D. Current Permit Action

On December 30, 2015, the Department received an application to modify MAQP#2888-03. The modification removes existing equipment and also includes the addition of new propane heaters; diesel generator sets, gasoline water pump, removal and replacement of a rotary dryer, and increasing the amount of waste rock processing to yield more garnet bearing material, as well as updates the permit language used by the Department. **MAQP# 2888-04** replaces MAQP# 2888-03.

E. Additional Information

Additional information, such as applicable rules and regulations, Best Achievable Control Technology/Reasonably Achievable Control Technology (BACT/RACT) determinations, air quality impacts, and environmental assessments, are included in the analysis associated with each change to the permit.

II. Applicable Rules and Regulations

The following are partial explanations of some applicable rules and regulations that apply to the facility.

The complete rules are stated in the Administrative Rules of Montana (ARM) and are available, upon request, from the Department. Upon request, the Department will provide references for locations of complete copies of all applicable rules and regulations or copies where appropriate.

A. ARM 17.8, Subchapter 1 -- General Provisions, including, but not limited to:

1. ARM 17.8.101 Definitions. This section includes a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.

2. ARM 17.8.105 Testing Requirements. Any person or persons responsible for the emissions of any air contaminant into the outdoor atmosphere shall, upon written request of the Department, provide the facilities and necessary equipment (including instruments and sensing devices) and shall conduct tests, emission or ambient, for such periods of time as may be necessary, using methods approved by the Department.

3. ARM 17.8.106 Source Testing Protocol. The requirements of this rule apply to any emission source testing conducted by the Department, any source, or other entity as required by any rule in this chapter, or any permit or order issued pursuant to this chapter, or the provisions of the Clean Air Act of Montana, 75-2-101, *et seq.*, MCA.

   Garnet USA shall comply with the requirements contained in the Montana Source Test Protocol and Procedures Manual, including, but not limited to, using the proper test methods and supplying the required reports. A copy of the Montana Source Testing Protocol and Procedures Manual is available from the Department upon request.

4. ARM 17.8.110 Malfunctions. (2) The Department must be notified promptly by phone whenever a malfunction occurs that can be expected to create emissions in excess of any applicable emission limitation, or to continue for a period greater than four (4) hours.

5. ARM 17.8.111 Circumvention. (1) No person shall cause or permit the installation or use of any device or any means which, without resulting in reduction in the total amount of air contaminant emitted, conceals or dilutes an emission of air contaminant which would otherwise violate an air pollution control regulation. (2) No equipment that may produce emissions shall be operated or maintained in such a manner that a public nuisance is created.

B. ARM 17.8, Subchapter 2 -- Ambient Air Quality including, but not limited to:

1. ARM 17.8.204 Ambient Air Monitoring.
2. ARM 17.8.210 Ambient Air Quality Standards for Sulfur Dioxide (SO_2)
3. ARM 17.8.211 Ambient Air Quality Standards for Nitrogen Dioxide (NO_2)
4. ARM 17.8.212 Ambient Air Quality Standards for Carbon Monoxide (CO)
5. ARM 17.8.213 Ambient Air Quality Standard for Ozone (O_3)
6. ARM 17.8.220 Ambient Air Quality Standard for Settled Particulate Matter (PM)
7. ARM 17.8.221 Ambient Air Quality Standard for Visibility
8. ARM 17.8.223 Ambient Air Quality Standards for Particulate Matter with an Aerodynamic Diameter of Ten Microns or Less (PM_{10})

Garnet USA must maintain compliance with the applicable ambient air quality standards.

C. ARM 17.8, Subchapter 3 -- Emission Standards, including, but not limited to:

1. ARM 17.8.304 Visible Air Contaminants. This rule requires that no person may cause or authorize emissions to be discharged into an outdoor atmosphere from any source installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes.

2. ARM 17.8.308 Particulate Matter, Airborne. (1) This section requires an opacity limitation of 20% for all fugitive emissions sources and that reasonable precautions are taken to control emissions of airborne particulate matter. (2) Under this rule, Garnet USA shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter.

3. ARM 17.8.309 Particulate Matter, Fuel Burning Equipment. This section requires that no person shall cause, allow, or permit to be discharged into the atmosphere particulate matter caused by the combustion of fuel in excess of the amount determined by this section.

4. ARM 17.8.310 Particulate Matter, Industrial Process. This section requires that no person shall cause, allow, or permit to be discharged into the atmosphere particulate matter in excess of the amount set forth in this rule.

5. ARM 17.8.322 Sulfur Oxide Emissions - Sulfur in Fuel. This section requires that no person shall burn liquid, solid, or gaseous fuel in excess of the amount set forth in this rule.

6. ARM 17.8.340 Standard of Performance for New Stationary Sources. This section incorporates, by reference, 40 Code of Federal Regulations (CFR) 60, Standards of Performance for New Stationary Sources (NSPS).

Garnet is considered an NSPS affected facility under 40 CFR Part 60 and is subject to the requirements of the following subparts.

a. 40 CFR 60, Subpart A – General Provisions apply to all equipment or facilities subject to an NSPS Subpart as listed below:

b. 40 CFR 60, Subpart OOO – Standards of Performance for Nonmetallic Mineral Processing Plants. In order for a processing plant to be subject to this subpart, the facility must meet the definition of an affected facility and the affected equipment must have been constructed, reconstructed, or modified after August 31, 1983. Based on the information submitted by Garnet USA, the equipment to be used under Permit #2888-04 is subject to this subpart because it meets the definition of an affected facility and has been constructed or modified after August 31, 1983.

c. 40 CFR 60, Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (CI ICE). Owners and operators of stationary CI ICE that commence construction after July 11, 2005, where the stationary CI ICE are manufactured after April 1, 2006, and are not fire pump engines, and owners and operators of stationary CI ICE after July 11, 2005, are subject to this subpart. Based on the information submitted by Garnet, the CI ICE equipment to be used under MAQP#2888-04 may be subject to this subpart because the equipment to be used under Permit #2888-04 is subject to this subpart because it meets the definition of an affected facility and has a displacement of less than 30 liters per cylinder.

d. 40 CFR 60, Subpart JJJJ – Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (SI ICE). Manufacturers of stationary SI ICE with a maximum engine power less than or equal to 19 kilowatt (KW) (25 horsepower (HP)) that are manufactured on or after July 1, 2008, and manufacturers of stationary SI ICE with a maximum engine power greater than 19 KW (25 HP) that are gasoline fueled or that are rich burn engines fueled by liquefied petroleum gas (LPG), where the date of manufactured on or after July 1, 2008; or on or after January 1, 2009, for emergency engines.

   Manufacturers of stationary SI ICE with a maximum engine power greater than 19 KW (25 HP) that are not gasoline fueled and are not rich burn engines fueled by LPG, where the manufacturer participates in the voluntary manufacturer certification program described in this subpart and where the date of manufactured on or after July 1, 2007, for engines with a maximum engine power greater than or equal to 500 HP (except lean burn engines with a maximum engine power greater than or equal to 500 HP and less than 1,350 HP) on or after January 1, 2008, for lean burn engines with a maximum engine power greater than or equal to 500 HP and less than 1,350 HP, on or after July 1, 2008, for engines with a maximum engine power less than 500 HP; or on or after January 1, 2009, for emergency engines.

Owners and operators of stationary SI ICE that commence construction after June 12, 2006, where the stationary SI ICE are manufactured on or after July 1, 2007, for engines with a maximum engine power greater than or equal to 500 HP (except lean burn engines with a maximum engine power greater than or equal to 500 HP and less than 1,350 HP), on or after January 1, 2008, for lean burn engines with a maximum engine power greater than or equal to 500 HP and less than 1,350 HP, on or after July 1, 2008, for engines with a maximum engine power less than 500 HP, or on or after January 1, 2009, for emergency engines with a maximum engine power greater than 19 KW (25 HP).

Based on the information submitted by Garnet, SI ICE equipment to be used under MAQP#2888-04 is subject to this subpart because it has a power rating greater than 19 KW (25 hp) and is gasoline fueled.

7. ARM 17.8.341 Emission Standard for Hazardous Air Pollutants. This section incorporates, by reference, 40 CFR 61, National Emission Standards for Hazardous Air Pollutant (NESHAP) for Source Categories.
This facility does not meet the applicability definition within 40 CFR 61.

8. ARM 17.8.342 Emission Standard for Hazardous Air Pollutant for Source Categories. This section incorporates, by reference, 40 CFR 63, NESHAP for Source Categories. This facility does not meet the applicability definition within 40 CFR 63.

D. ARM 17.8, Subchapter 5 -- Air Quality Permit Application, Operation and Open Burning Fees, including, but not limited to:

1. ARM 17.8.504 Air Quality Permit Application Fees. This section requires that an applicant submit an air quality permit application fee concurrent with the submittal of an air quality permit application. A permit application is incomplete until the proper application fee is paid to the Department. Garnet submitted the appropriate permit application fee for the current permit action.

2. ARM 17.8.505 Air Quality Operation Fees. An annual air quality operation fee must, as a condition of continued operation, be submitted to the Department by each source of air contaminants holding an air quality permit (excluding an open burning permit) issued by the Department. The air quality operation fee is based on the actual or estimated actual amount of air pollutants emitted during the previous calendar year.

An air quality operation fee is separate and distinct from an air quality permit application fee. The annual assessment and collection of the air quality operation fee, as described above, shall take place on a calendar-year basis. The Department may insert into any final permit issued after the effective date of these rules, such conditions as may be necessary to require the payment of an air quality operation fee on a calendar-year basis, including provisions which prorate the required fee amount.

E. ARM 17.8, Subchapter 7 -- Permit, Construction, and Operation of Air Contaminant Sources, including, but not limited to:

1. ARM 17.8.740 Definitions. This rule is a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.

2. ARM 17.8.743 Montana Air Quality Permits--When Required. This rule requires a person to obtain an air quality permit or permit alteration to construct, alter or use any air contaminant sources that have the Potential to Emit (PTE) greater than 15 tpy of any pollutant. Garnet has a PTE greater than 15 tpy of PM and PM_{10}; therefore, an air quality permit is required.

3. ARM 17.8.744 Montana Air Quality Permits--General Exclusions. This rule identifies the activities that are not subject to the Montana Air Quality Permit program.

4. ARM 17.8.745 Montana Air Quality Permits--Exclusion for De Minimis Changes. This rule identifies the de minimis changes at permitted facilities that do not require a permit under the Montana Air Quality Permit Program.

5. ARM 17.8.748 New or Modified Emitting Units--Permit Application Requirements. (1) This rule requires that a permit application be submitted prior to installation, alteration or use of a source. A permit application was submitted by Garnet for the current permit action. (7) This rule requires that the applicant notify the public by means of legal publication in a newspaper of general circulation in the area affected by the application for a permit. Garnet submitted an affidavit of publication of public notice in a newspaper of general circulation in the city of Butte, in Silver Bow County, as proof of compliance with the public notice requirements.

6. ARM 17.8.749 Conditions for Issuance or Denial of Permit. This rule requires that the permits issued by the Department must authorize the construction and operation of the facility or emitting unit subject to the conditions in the permit and the requirements of this subchapter. This rule also requires that the permit must contain any conditions necessary to assure compliance with the Federal Clean Air Act (FCAA), the Clean Air Act of Montana, and rules adopted under those acts.

7. ARM 17.8.752 Emission Control Requirements. This rule requires a source to install the maximum air pollution control capability that is technically practicable and economically feasible, except that BACT shall be utilized. The required BACT analysis is included in Section III of this permit analysis.

8. ARM 17.8.755 Inspection of Permit. This rule requires that air quality permits shall be made available for inspection by the Department at the location of the source.

9. ARM 17.8.756 Compliance with Other Requirements. This rule states that nothing in the permit shall be construed as relieving Garnet of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.740, *et seq*.

10. ARM 17.8.759 Review of Permit Applications. This rule describes the Department's responsibilities for processing permit applications and making permit decisions on those permit applications that do not require the preparation of an environmental impact statement.

11. ARM 17.8.760 Additional Review of Permit Applications. This rule describes the Department's responsibilities for processing permit applications and making permit decisions on those applications that require an environmental impact statement.

12. ARM 17.8.762 Duration of Permit. An air quality permit shall be valid until revoked or modified, as provided in this subchapter, except that a permit issued prior to construction of a new or altered source may contain a condition providing that the permit will expire unless construction is commenced within the time specified in the permit, which in no event may be less than 1 year after the permit is issued.

13. ARM 17.8.763 Revocation of Permit. An air quality permit may be revoked upon written request of the permittee, or for violations of any requirement of the Clean Air Act of Montana, rules adopted under the Clean Air Act of Montana, the FCAA, rules adopted under the FCAA, or any applicable requirement contained in the Montana State Implementation Plan (SIP).

14. ARM 17.8.764 Administrative Amendment to Permit. An air quality permit may be amended for changes in any applicable rules and standards adopted by the Board of Environmental Review (Board) or changed conditions of operation at a source or stack that do not result in an increase of emissions as a result of those changed conditions.

    The owner or operator of a facility may not increase the facility's emissions beyond permit limits unless the increase meets the criteria in ARM 17.8.745 for a de minimis change not requiring a permit, or unless the owner or operator applies for and receives another permit in accordance with ARM 17.8.748, ARM 17.8.749, ARM 17.8.752, ARM 17.8.755, and ARM 17.8.756, and with all applicable requirements in ARM Title 17, Chapter 8, Subchapters 8, 9, and 10.

15. ARM 17.8.765 Transfer of Permit. This rule states that an air quality permit may be transferred from one person to another if written notice of Intent to Transfer, including the names of the transferor and the transferee, is sent to the Department.

F. ARM 17.8, Subchapter 8 -- Prevention of Significant Deterioration of Air Quality, including, but not limited to:

1. ARM 17.8.801 Definitions. This rule is a list of applicable definitions used in this subchapter.

2. ARM 17.8.818 Review of Major Stationary Sources and Major Modifications--Source Applicability and Exemptions. The requirements contained in ARM 17.8.819 through ARM 17.8.827 shall apply to any major stationary source and any major modification, with respect to each pollutant subject to regulation under the FCAA that it would emit, except as this subchapter would otherwise allow.

   This facility is **not** a PSD source since this facility is not a listed source and the site's potential to emit is below 250 tpy of any pollutant (excluding fugitive emissions).

G. ARM 17.8, Subchapter 12 – Operating Permit Program Applicability, including, but not limited to:

1. ARM 17.8.1201 Definitions. (23) Major Source under Section 7412 of the FCAA is defined as any source having:

   a. PTE > 100 tpy of any pollutant;

   b. PTE > 10 tpy of any single Hazardous Air Pollutant (HAP), PTE > 25 tpy of any combination of HAPs, or lesser quantity as the Department may establish by rule; or

   c. PTE > 70 tpy of PM_{10} in a serious PM_{10} nonattainment area.

2. ARM 17.8.1204 Air Quality Operating Permit Program. (1) Title V of the FCAA amendments of 1990 requires that all sources, as defined in ARM 17.8.1204(1), obtain a Title V Operating Permit. In reviewing and issuing Air Quality Permit #2888-02 for Garnet USA, the following conclusions were made.

   a. The facility's PTE is less than 100 tpy for any pollutant.

   b. The facility's PTE is less than 10 tpy for any single HAP and less than 25 tpy of combined HAPs.

   c. This source is not located in a serious PM_{10} nonattainment area.

   d. This facility is subject to current NSPS (Subpart OOO, Subpart IIII, and Subpart JJJJ).

   e. This facility is not subject to any current NESHAP standards.

   f. This source is not a Title IV affected source, nor a solid waste combustion unit.

   g. This source is not an EPA designated Title V source.

Based on these facts, the Department determined that Garnet is a minor source of emissions as defined under Title V.

III. BACT Determination

A BACT determination is required for each new or modified source. Garnet shall install on the new or modified source the maximum air pollution control capability which is technically practicable and economically feasible, except that BACT shall be utilized.

Garnet submitted a BACT analysis with the current application addressing some available emission control methods for operations associated with the current permit action. The following control options have been reviewed by the Department in order to make the following BACT determination.

A. Rotary Dryer

Particulate Matter Emissions

A rotary dryer is a type of industrial dryer used to reduce or minimize liquid moisture content in the material that is being passed through it. As the material being passed through the dryer, the evaporation of liquids releases particulate material into the waste gas stream. The Department first looked at control technology to limit the emissions of particulate material into the ambient airspace. Below are some considerations for particulate matter emission controls to be used on the rotary dryer.

Electrostatic Precipitator
An electrostatic precipitator (ESP) is a filtration device that removes fine particles from a waste gas stream using the force of an induced electrostatic charge. The ESP removes particles from the gas stream by applying a negative electric charge to the particle and a positive charge to a collection plate. The gas stream is then passed by the positively charge plate which results in the collection of the negatively charged particles on the positively charged plate. The collected particulate is periodically dislodged from the plate, collected, and removed. Typical new equipment design efficiencies are between 99 and 99.9 percent.

Fabric Filter Baghouse
A fabric filter baghouse is a pollution control device that removes particles out of air or gas released from commercial processes or combustion for electricity generation. Waste gas is typically passed through long, cylindrical bags made of woven or felted fabric. The waste gas is directed into the baghouse via hoppers and is passed through the fabric bags, either on the inside or outside depending on cleaning method, and is collected in the fabric. When the fabric becomes congested with particulate material, the process is halted and the woven fabric bags are either cleaned or replaced. Fabric filters baghouse's range in efficiency from 90% to 99.9%, depending on age and model.

Wet Scrubber
A wet scrubber removes particles and gases from industrial exhaust streams by introducing the waste gas stream with a scrubbing liquid by either spraying the gas stream, forcing the waste gas through the liquid, or by some other means of contact such as a liquid film. The particulate or gases are collected in the scrubbing liquid. Wet scrubbers have a minimum efficiency of 95%, depending on the model and age of the scrubber.

Garnet has proposed to utilize a fabric filter baghouse to control particulate emissions from the rotary dryer. Based on the above analysis and information, the Department concurs with Garnet that the use of a baghouse constitutes BACT for control of gaseous and particulate emissions from operating the rotary dryer. Since the baghouse provides the highest level of control efficiency, with a manufacturer rating of 0.01 gr/dscf, out of the control technologies that were contemplated, no further analysis is necessary.

Combustion Emissions (carbon monoxide, oxides of nitrogen, sulfur dioxide, and volatile organic compounds)

The combustion of hydrocarbon fuel results in the formation of CO, NO_X, SO_2, and VOC. The use of propane as a fuel source of the rotary dryer produces minimal emissions of regulated pollutants. The Department has determined that no additional control is needed for the rotary dryer because propane is a clean burning fuel and any add on control technology would incur an excessive expense for relatively little environmental benefit.

B. Blasting/Drilling

Drilling

Particulate emissions from drilling are a result of the drill bit grinding and breaking rock material into smaller particles. These particles are then released into the atmosphere from the "drill hole" in the form of dust, which can contain material in the 2.5 micron ($PM_{2.5}$) size.

<u>Enclosure – Drill Platform Shroud</u>
Enclosure technology employs structural placement to shelter material from wind entrainment and to prevent suspended material from escaping the drilling area. Enclosures can either fully or partially surround the source.

Most drilling platforms provided partial enclosure through the use of a drill platform shroud or a skirt made of flexible material that hangs form the underside of the drill platform and surrounds the drill hole. The shroud enclosure contains the particulate dust that becomes lofted during drilling.

<u>Wet Dust Suppression Systems</u>
Wet drilling systems pump water into the bailing air from a water tank mounted on the drill. Water droplets in the bailing air trap dust particles as they travel up the annular space of the drilled hole, thus controlling dust as the air bails particulate from the hole. Emissions are reduced through agglomerate formation by combining small dust particles with larger aggregate or with liquid droplets.

Wet dust suppression systems are generally capable of controlling particulate emissions from mine drilling, however due to the fact that the Garnet mine will operate in a relatively cold climate, wet dust suppression would be problematic during freezing weather. Serious drawbacks within the system occur when ambient temperatures drop below freezing because the system relies on water to control particulate emissions. Additional and potentially extreme operational and engineering efforts would be required to prevent freezing with the system throughout the winter months.

Due to climatic issues, the Department has determined that wet dust suppression systems can be eliminated from further consideration for the control of particulates from overburden and coal drilling.

Dry Dust Collection Systems

Dry dust collection systems typically include the operation of a drill platform shroud, a drill stem seal and a dust collector. The shroud provides an enclosure around the area where the drill stem enters the ground and the enclosure is ducted to a dust collector. The dust collector fan creates a negative pressure inside the enclosure that captures dust as it exits the hole during drilling. The dust is removed in the collector and clean air is exhausted through the fan.

An advantage of the dry dust collection system is that it does not require the use of any expendable material such as water or chemical surfactant. As a result, the control technology can be operated at any outside temperature since there is no risk that water within the system will freeze. However, dry dust collection systems are expensive to install and maintain. The control system must be properly maintained to ensure maximum performance. Additionally, the system requires electrical power that is likely to be provided by a diesel generator to run the fan and dust collection system. This would result in more emitting points at Garnet.

Based on the above analysis and information, the Department concurs with Garnet that the use of an enclosure constitutes BACT for control of particulate emissions from operating the drill platform.

Blasting

Garnet will use emulsion and a mixture of ammonium nitrate and fuel oil (ANFO) for the blasting of overburden and rock. ANFO is a reliable explosive that is relatively easy to use, highly stable until detonation and low cost. In contrast, ammonium nitrate is water soluble and adsorbed water interferes with the explosive function of ANFO. Therefore, emulsion may be preferred in wet mining areas since it is more water resistant than ANFO. The rapid expansion of gases caused by the chemical reaction of the ANFO causes a release of flyrock, particulate emissions, as well as gaseous emissions into the atmosphere.

Blasting Techniques

Various blasting techniques will be utilized at Garnet and will depend on the material and preferred movement of debris and flyrock. Gaseous emissions will result from the detonation of the chemical compounds within the explosives. Particulate emissions will result from the blasting and loosening of compacted soil, rock, and overburden material. Although blasting generates a large amount of dust, the operation occurs infrequently enough that it is not considered to be a significant contributor of particulate emissions. Best operational practices and blasting techniques will be utilized for reducing gaseous and particulate emissions from the blasting of both overburden material and rock.
Proposed Operational Controls

The use of common BOPs is the industry standard method for minimizing blasting emissions. Garnet will use the following blasting BOPs:

- Optimize drill-hole size. Optimizing drill-hole size will result in effective blasting and reduce the number of blasts needed to achieve the desired effect.

- Optimize drill hole placement and utilization of sequential detonation. Optimizing drill hole placement will ensure that all material is successfully detonated and additional explosives are not needed in order to achieve complete fragmentation.

- Optimize usage of explosive. Proper usage of explosive prevents the detonation of unnecessary explosive and resulting excess emissions.

- Mine planning will result in blasting that is conducted in a manner that prevents overshooting and minimizes the area to be blasted.

- Minimized retention time between loading blasting holes with emulsion and detonation will increase the efficiency of the explosive.

Garnet provided estimated potential to emit calculations in the application for MAQP 2888-04 that will result from blasting and describe the basis for those estimations. However, it is difficult to assign emission rates using these values due to the uncontrollable variables inherent in the blasting process and the difficulty of measuring emission rates for a compliance demonstration. Therefore, BACT for reducing blasting emissions is better expressed as a work practice condition to use proper blasting techniques, proper explosive selection, optimized application of explosives, and the utilization of best operating practices.

Based on the above analysis and information, the Department concurs with Garnet that the use of work practice conditions including the use proper blasting techniques, proper explosive selection, optimized application of explosives, and the utilization of best operating practices as well as using ANFO that meets ultra-low sulfur specifications constitutes BACT for control of gaseous and particulate emissions from explosives detonation/blasting.

C. Gas/Diesel Engines

Any new diesel-fired engine would likely be required to comply with the federal engine emission limitations including, for example, EPA Tier emission standards for non-road engines (40 CFR Part 89 or 1039), New Source Performance Standard emission limitations for stationary compression ignition engines (40 CFR 60, Subpart IIII), or National Emission Standards for Hazardous Air Pollutant Sources for Reciprocation Internal Combustion Engines (40 CFR 63, Subpart ZZZZ).

Based on the above analysis and information, the Department agrees with Garnet that compliance with applicable federal standards and proper operation and maintenance of the engines constitutes BACT for the engine.

D. Crusher/Screening Operations

Two types of emission controls are readily available and used for dust suppression of fugitive emissions that result from the operation of crushing/screening equipment and associated activities. These two control methods are water and chemical dust suppressant. Chemical dust suppressant could be used on the area surrounding the crushing/screening operation, and for emission from the crushing/screening operation itself. However, in view of the fact that water is more readily available, more cost effective, is equally effective as chemical dust suppressant, while presenting less potential environmental quality degradation, water has been identified as the most appropriate method of pollution control of particulate emissions. In addition, water suppression has been required of recently permitted similar sources.

Garnet shall not cause or authorize to be discharged into the atmosphere from any NSPS-affected crusher any visible emissions that exhibit an opacity of 12% or greater averaged over six consecutive minutes for crushers that commenced construction, modification, or reconstruction on or after April 22, 2008. Additionally, Garnet shall not cause or authorize to be discharged into the atmosphere from any other associated NSPS-affected equipment, such as screens and material conveyors, any visible emissions that exhibit an opacity of 7% or greater averaged over six consecutive minutes for equipment that commences construction, modification, or reconstruction after April 22, 2008, and 10% for equipment that commences construction, modification, or reconstruction after August 31, 1983, but before April 22, 2008. Finally, Garnet shall not cause or authorize to be discharged into the atmosphere from any crusher, screen or associated equipment, not subject to NSPS, any visible emission that exhibit an opacity of 20% or greater averaged over six consecutive minutes.

Garnet is required to have water spray bars and water available on site at all times and to apply water, as necessary, to maintain compliance with the opacity restrictions and reasonable precaution limitations.

Based on the above analysis and information, the Department agrees with Garnet that using water spray bars and water dust suppressant to maintain compliance with the opacity requirements and reasonable precaution limitations constitutes BACT.

E. Propane-fired Heaters

Add on controls for reducing propane heater NO_x, CO, SO_2, and VOC emissions consist of Selective Catalytic Reduction, Catalytic Oxidization, and good combustion practices. Good combustion practices consist of limiting emissions through the use of low sulfur, commercial grade propane. Very little PM emissions are generated due to the combustion of propane. Due to the relatively small amount of maximum potential emissions of these pollutants, as well as the short amount of time the propane heaters are predicted to operate during the year, add-on controls would require an excessive expense for relatively little environmental benefit.

Based on the above analysis and information, the Department concurs with Garnet that the use of good combustion practices constitutes BACT for control of gaseous emissions from operating the Propane Comfort Heaters.

F. Storage Tanks

Fugitive emissions occur form vapor losses form valves, pump seals, flanges, connectors, and air eliminators. The generally-accepted method of controlling these emissions is through routine inspection and maintenance of the components.

Based on the above analysis and information, the Department agrees with Garnet the good maintenance practices constitute BACT for control of emissions from the above ground storage tanks.

G. Truck Loading

Particulate emission from fugitive dust results from loading and unloading of material at the mine and processing plant. Two types of emission controls were identified, water or chemical suppression and limiting the fall distance of the material. Water suppression is favorable to chemical suppression as water is more readily available and cost effective; however, water suppression is ineffective during winter months due to freezing.

Based on the above analysis, the Department agrees with Garnet that limiting fall distance constitutes BACT for control of emissions from truck loading operations.

H. Fugitive Emissions (VMT, storage piles)

Two types of emission controls are readily available and used for dust suppression of fugitive emissions that result from the operation of crushing/screening equipment and associated activities. These two control methods are water and chemical dust suppressant. Chemical dust suppressant could be used on the area surrounding the crushing/screening operation, and for emission from the crushing/screening operation itself. However, in view of the fact that water is more readily available, more cost effective, is equally effective as chemical dust suppressant, while presenting less potential environmental quality degradation, water has been identified as the most appropriate method of pollution control of particulate emissions.

IV. Emission Inventory

Source ID	Source Name	Existing or New	PM	PM_{10}	$PM_{2.5}$	NOx	CO	SOx	VOC	Single HAP	Total HAP
			(tons/year)								
	Aboveground Mine Sources		**11.12**	**4.34**	**1.93**	**0.93**	**3.66**	**0.11**			
1	*Drilling*	*New*	10.14	3.35	1.87						
2A	*Blasting - particulate emissions*	*New*	0.98	0.98	0.06						
2B	*Blasting - gaseous emissions*	*New*				0.93	3.66	0.11			
	Fugitive Sources - Non-Process		**106.00**	**32.01**	**4.28**						
3	*Haul Road Travel (updating)*	*Existing*	75.20	20.73	2.07						
4	*Pit Piles (Updating)*	*Existing*	8.84	4.18	0.63						
5	*Unwashed Plant Piles (updating)*	*Existing*	13.26	6.27	0.95						
6	*Washed Plant Piles (updating)*	*Existing*	8.69	0.82	0.62						
	Fugitive Sources - Process		**19.22**	**7.08**	**1.19**						
7	*Truck Loading*	*New*	0.37	0.26	0.03						
8	*Cone Crusher*	*Existing*	1.05	0.47	0.09						
9	*Jaw Crusher*	*Existing*	3.15	1.42	0.26						
10	*Impact Crusher*	*Existing*	1.05	0.47	0.09						
11	*Tripple Deck Screen*	*Existing*	5.78	1.94	0.13						
12	*Integrated Vibrating Cone Screen*	*Existing*	1.93	0.65	0.04						
13	*Material Transfer (updating)*	*Existing*	5.52	1.81	0.51						
14	*Truck UnLoading (updating)*	*Existing*	0.37	0.04	0.03						
	Non-Fugitive Sources - Process		**2.90**	**2.90**	**2.90**	**42.84**	**14.13**	**2.34**	**15.09**	**0.00**	**0.04**
15	*10 MMBTU/hr Propane Dryer - Dry Plant*	*New*	0.23	0.23	0.23	4.26	2.46	1.31E-04	0.33		
16	*Propane Heaters (Facility Wide Comfort Heat)* [1]	*New*	0.11	0.11	0.11	2.06	1.19	6.34E-05	0.00		
17	*190 HP Ford Water Pump Generator*	*New*	0.41	0.41	0.41	6.27	3.97	0.34	12.31	1.57E-03	1.50E-02
18	*26 HP Isuzu Generator - Light Plant*	*New*	0.17	0.17	0.17	2.42	0.52	0.16	0.20	2.72E-04	3.00E-03
19	*8 HP Generac Generator - EPA Tier 4*	*New*	0.05	0.05	0.05	0.74	0.16	0.05	0.06	2.72E-04	1.58E-03
20	*40 HP Caterpillar Generator - Light Plant- EPA Tier 4*	*New*	0.27	0.27	0.27	3.74	0.81	0.25	0.30	3.32E-04	4.12E-03
21	*150 HP John Deere Generator -EPA Tier 1*	*New*	0.99	0.99	0.99	13.95	3.01	0.92	1.13	1.24E-03	1.28E-02
22	*80 HP Caterpillar Generator - Air Compressor-EPA Tier 1*	*New*	0.53	0.53	0.53	7.44	1.60	0.49	0.60	6.61E-04	7.26E-03
25	*21 HP Isuzu Generator - Stationary Heater*	*New*	0.14	0.14	0.14	1.95	0.42	0.13	0.16	2.72E-04	5.51E-04
23	*Two, 6,000 Gallon Diesel Stoarge Tanks*	*Existing*	Insignificant (VOCs only)								
24	*One, 20,000 Gallon Diesel Storage Tank*	*New*	Insignificant (VOCs only)								

Note: A complete emissions inventory with calculations is on file with the Department.

V. Existing Air Quality

The location of the Garnet USA facility is located within an area classified as attainment/unclassifiable for all criteria pollutants for which the operation emits.

VI. Ambient Air Impact Analysis

The Department determined, based on the potential to emit and the actual operating conditions of the plant, the impacts from this permitting action will be minor. The Department believes it will not cause or contribute to a violation of any ambient air quality standard.

VII. Taking or Damaging Implication Analysis

As required by 2-10-105, MCA, the Department conducted the following private property taking and damaging assessment.

YES	NO	
X		1. Does the action pertain to land or water management or environmental regulation affecting private real property or water rights?
	X	2. Does the action result in either a permanent or indefinite physical occupation of private property?
	X	3. Does the action deny a fundamental attribute of ownership? (ex.: right to exclude others, disposal of property)
	X	4. Does the action deprive the owner of all economically viable uses of the property?
	X	5. Does the action require a property owner to dedicate a portion of property or to grant an easement? [If no, go to (6)].
		5a. Is there a reasonable, specific connection between the government requirement and legitimate state interests?
		5b. Is the government requirement roughly proportional to the impact of the proposed use of the property?
	X	6. Does the action have a severe impact on the value of the property? (consider economic impact, investment-backed expectations, character of government action)
	X	7. Does the action damage the property by causing some physical disturbance with respect to the property in excess of that sustained by the public generally?
	X	7a. Is the impact of government action direct, peculiar, and significant?
	X	7b. Has government action resulted in the property becoming practically inaccessible, waterlogged or flooded?
	X	7c. Has government action lowered property values by more than 30% and necessitated the physical taking of adjacent property or property across a public way from the property in question?
	X	Takings or damaging implications? (Taking or damaging implications exist if YES is checked in response to question 1 and also to any one or more of the following questions: 2, 3, 4, 6, 7a, 7b, 7c; or if NO is checked in response to questions 5a or 5b; the shaded areas)

Based on this analysis, the Department determined there are no taking or damaging implications associated with this permit action.

VIII. Environmental Assessment

An environmental assessment, required by the Montana Environmental Policy Act, was completed for this project. A copy is attached.

Permit Analysis Prepared by: John P. Proulx
Date: January 25, 2016

DEPARTMENT OF ENVIRONMENTAL QUALITY
Permitting and Compliance Division
Air Quality Bureau
P.O. Box 200901, Helena, Montana 59620
(406) 444-3490

DRAFT ENVIRONMENTAL ASSESSMENT (EA)

Issued To: Garnet USA, LLC.

Montana Air Quality Permit Number: 2888-04

Preliminary Determination Issued: January 26, 2016
Department Decision Issued:
Permit Final:

1. *Legal Description of Site*: Garnet USA, Inc. (Garnet) is located approximately one-half mile east of Alder in Section 10, Township 6 South, Range 4 West, in Madison County, Montana.

2. *Description of Project*: The Department of Environmental Quality (Department) received an application from Garnet on December 30, 2015, to modify an existing permit. The modification adds new propane heaters, diesel generator sets, a gasoline water pump, removal and replacement of a rotary dryer, and increasing the amount of waste rock processing to yield more garnet bearing material; the request also involves the incorporation of equipment from Garnet's portable permit, MAQP#4842-00.

3. *Objectives of Project*: The objectives of the current permit action are to add new and existing equipment to MAQP 2888-04 and increase production of garnet bearing material.

4. *Alternatives Considered*: In addition to the proposed action, the Department also considered the "no-action" alternative. The "no-action" alternative considers what would happen if there were no action taken by the permittee. If Garnet did not complete the proposed action, the facility would continue to operate under the permitted allowances of material handled. Garnet would not see an increase in operating costs, an increase in possible revenue, or the addition of new employees. The Department did not pursue the "no-action" alternative because Garnet demonstrated compliance with all applicable rules and regulations as required for permit issuance. Other alternatives considered were discussed in the best available control technology (BACT) analysis in Section III of the Permit Analysis.

5. *A Listing of Mitigation, Stipulations, and Other Controls*: A list of enforceable conditions, including a BACT analysis, is included in MAQP #2888-04.

6. *Regulatory Effects on Private Property*: The Department considered alternatives to the conditions imposed in this permit as part of the permit development. The Department determined that the permit conditions are reasonably necessary to ensure compliance with applicable requirements and demonstrate compliance with those requirements and do not unduly restrict private property rights.

7. *Potential physical and biological effects of the proposed project on the human environment. The "no-action" alternative was discussed previously.*

SUMMARY OF COMMENTS ON POTENTIAL PHYSICAL AND BIOLOGICAL EFFECTS: The following comments have been prepared by the Department.

A. Terrestrial and Aquatic Life and Habitats

There will be little to no impacts to terrestrial and aquatic life and habitats. The current permitting action takes place on a developed mine site. A Best Available Control Technology (BACT) Analysis was conducted by the Department of Environmental Quality (Department) and determined that fabric filter baghouses will be used to contain pollutants from the rotary dryer, dry plant building, and the laboratory/clean room. Water will be used as dust suppression for crushers, screens, material piles, and haul roads in order to reduce airborne particulates.

The Department recognizes that the location is in the Greater Sage-Grouse general habitat area as defined by Executive Order No. 12-2015. The application for this project was received before the Executive Order effective date of 1/1/2016 and therefore is not subject to the Executive Order No. 12-2015. However, if Garnet decides to expand its operational boundaries in the future, Garnet may be subject to Executive Order No. 12-2015.

B. Water Quality, Quantity and Distribution

The current permit action will cause a minor impact on water quality, quantity, and distribution with the addition of new equipment that requires dust suppression. Garnet currently uses a closed loop watering system that consists of a de-sliming pond, suspended solids settling pond, and finally a holding pond for garnet processing. The closed loop water circuit is replenished by pumping clean water from man-made ponds located on the mine property. Water is pumped from a holding pond into a water truck and used as a dust suppressant on crushers, screens, haul roads, and process storage piles.

C. Geology and Soil Quality, Stability and Moisture

The current permit action will cause minor impacts on the geology, soil quality, stability and moisture with the addition of new equipment. The current permit action adds operational equipment in order to process more garnet bearing material.

Garnet uses Ammonium Nitrate Fuel Oil (ANFO) as their primary explosive to fracture the garnet bearing material. The Department has conducted a BACT Analysis and identified control measures such as a "drill shroud" and Best Operational Practices to reduce particulate and gaseous emissions from detonating explosive materials.

D. Vegetation Cover, Quantity, and Quality

The current permit action will cause minor impacts to vegetative cover, quantity, or quality with the increase of production capacity. The Department conducted a BACT Analysis and determined that Garnet shall use water as a form of dust control on all crushers, screen, material storage piles, and haul roads reducing airborne particulate emissions.

E. Aesthetics

The current permit action will cause a minor impact on the aesthetics of the facility with the addition of new operating equipment as the mine site has already been established.

F. Air Quality

The current permit action will cause minor impacts on air quality with the addition of new equipment. The Department conducted a BACT Analysis and determined that Garnet shall use water as a form of dust control on all crushers, screens, material storage piles, and haul roads reducing airborne particulate emissions as well as fabric filter baghouses to control emissions from process equipment such as propane dryers and laboratories.

G. Unique Endangered, Fragile, or Limited Environmental Resources

The Department contacted the Natural Resource Information System-Montana Natural Heritage Program in an effort to assess any potential impacts to any unique endangered, fragile or limited environmental requires in the initial proposed area of operation. Four species of concern were identified: Great Blue Heron, Greater Sage-Grouse, Bobolink, and the Hoary Bat. The area considered is defined by the section, township and range of the proposed site, with an additional one mile buffer.

The Department recognizes that the location is within the Greater Sage-Grouse general habitat area. The application for this project was received before the Executive Order No. 12-2015 effective date of 1/1/2016 and therefore is not subject to the Executive Order.

The Department has determined that issuance of this permit would have minor impacts related to an increase of potential emissions of non-critical pollutants to the atmosphere near the facility and would not result in a threat to unique, endangered, fragile, or limited environmental resources.

H. Demands on Environmental Resource of Water, Air and Energy

The addition of process equipment would result in a minor impact on demands for water and energy. With an increase in process throughput, the facility will need to add more crushers, screens, storage piles, and increase vehicle travel on the mine site. The increase in vehicle miles traveled, material storage piles, and an additional crushing circuit will increase the need for water suppression of dust. The inclusion of an additional crushing circuit will also increase the mine sites need for energy.

Water is supplied to the mine site via holding ponds located on the mine site while power is delivered through permanent power lines.

I. Historical and Archaeological Sites

A historical and archaeological investigation was conduct by the Montana Historical Society – State Preservation Office (SHPO) in an effort to identify any historical and/or archaeological sites that may be present in the location of the mine facility. Because no structures would be expected to be removed or altered as a result of issuance of MAQP#2888-04, no impacts to known significant sites would be expected.

J. Cumulative and Secondary Impacts

There would be only minor cumulative and secondary impacts from this project to the vegetation, terrestrial habitats, and air quality.

8. *Potential economic and social effects of the proposed project on the human environment. The "no-action" alternative was discussed previously.*

SUMMARY OF COMMENTS ON POTENTIAL ECONOMIC AND SOCIAL EFFECTS: The following comments have been prepared by the Department.

A. Social Structures and Mores

The current permit action will have no effects on the social structures and mores because the mining operation has been previously established in the local community.

B. Cultural Uniqueness and Diversity

There will be no impact to the cultural uniqueness and diversity associated with the current permit action.

C. Local and State Tax Base and Tax Revenue

The current permit action will have minor impacts on local and state tax base and tax revenue. With an increase in production amounts listed in MAQP#2888-04, Garnet will incur greater operational fee's that include increases in fuel. The increase cost of production will result in an increase in goods and services needed, which will result in an increase in local and state taxes for items such as diesel fuel and propane.

D. Agricultural or Industrial Production

There will be minor impacts to industrial production. Garnet is classified as a mine and the current permit action will increase industrial production of garnet bearing material. There will be no impacts to any agricultural production as there are no agricultural operations taking place on the mine site.

E. Human Health

There will be minor effects to human health associated with the current permit action. The air emissions generated from the addition of new process equipment such as propane heaters, diesel generator sets, and gasoline water pumps pose a minor threat to human health. Garnet and the Department have conducted a BACT analysis and identified proper pollution controls to prevent hazards to human health.

F. Access to and Quality of Recreational and Wilderness Activities

There will be no effects to access to or quality of, recreational and wilderness activities. The mine site is located on private ground and is surrounded by improved road ways with access to lands not associated with Garnet's operation.

G. Quantity and Distribution of Employment

The current permit action will have minor effects to quantity of employees, Garnet projects an increase to their workforce of approximately 6 employees as a result of the current permit action.

H. Distribution of Population

There will be no effects to the distribution of employment because the projected workforce will most likely be hired from the local populace.

I. Demands for Government Services

There will be minor effects to the demand for Government Services. With the current permit action, the Department, along with other agencies such as Mine Safety and Health Administration (MSHA) will conduct compliance inspections on a pre-determined basis. There will be no need for additional government services such as schools, law enforcement, or fire protection because the current permit action is not expected to increase the population of the surrounding communities.

J. Industrial and Commercial Activity

The current permit action will result in a minor increase in industrial activities with the increase in garnet bearing material production.

K. Locally Adopted Environmental Plans and Goals

Executive Order No. 12-2015 applies to projects initiated beginning January 1, 2016. As this application was received before that date, the Executive Order does not specifically apply to this permit action. Although the Executive Order was not developed locally, it will have local implications for projects located in Connectivity Areas, Core Areas and General Habitat Areas. Since the project site is inside the general habitat boundary, it is likely to be subject to the Executive Order in the future. If the site were to expand, or have impacts such as requiring road construction into the General Habitat Area, it may be subject to the Executive Order in the future.

L. Cumulative and Secondary Impacts

There will be little to no cumulative and secondary impacts from the current permit action.

Recommendation: No Environmental Impact Statement (EIS) is required.

If an EIS is not required, explain why the EA is an appropriate level of analysis: The current permitting action adds operational equipment as well as removes certain items from Garnet's MAQP and increases the amount of garnet bearing material production. MAQP #2888-04 includes conditions and limitations to ensure the facility will operate in compliance with all applicable rules and regulations. In addition, there are no significant impacts associated with this proposal.

Other groups or agencies contacted or which may have overlapping jurisdiction: Montana Historical Society – State Historic Preservation Office, Natural Resource Information System – Montana Natural Heritage Program

Individuals or groups contributing to this EA: Department of Environmental Quality – Air Resources Management Bureau, Montana Historical Society – State Historic Preservation Office, Natural Resource Information System – Montana Natural Heritage Program

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