

Appendix O - Amendment to the Non-metallic Mining Reclamation Plan  
DS Mine, Town of Cooks Valley, Chippewa County, WI

## 1.0 INTRODUCTION

This document is to be used in conjunction with the Non-Metallic Mining Reclamation Plan prepared by SEH, Inc., dated August 22, 2011 (Reclamation Plan).

EOG Resources, Inc. (EOG) is seeking to obtain an amendment to the non-metallic mining reclamation permit from Chippewa County, Wisconsin for a currently permitted industrial sand mining facility in the Town of Cooks Valley, Wisconsin ("Site" or "Mine Site"). EOG ("Operator") currently operates the permitted DS Mine Site located in the SW 1/4 of Section 29; the NE 1/4 of the SE 1/4 and the SE 1/4 of the SE 1/4 of Section 30; and the NE 1/4 of the NE 1/4 of Section 31, T30N, R10W, in the Town of Cooks Valley Chippewa County, Wisconsin (Reclamation Plan, Appendix B-1 "Site Location Map"). EOG has recently purchased two parcels just south of the current permitted mining operations boundary ("Johnson Site"), located in the SE 1/4 of the NE 1/4 of Section 31, T30N, R10W, in the Town of Cooks Valley, Chippewa County, Wisconsin (See Figure O-1, "Site Location Map O-1"). EOG is requesting a permit amendment to add approximately 37 acres to the permitted mining operations boundary. The Johnson Site will be used to provide additional stormwater management facilities to further treat stormwater that has come into contact with areas associated with mining activities to further protect the local drainage ways and waters of the State.

Proposed activities on the Johnson Site include clearing and grubbing, stripping topsoil, grading, excavating, constructing berms, constructing basins and installing stormwater outfall structures along with any necessary erosion control devices.

## 2.0 SITE INFORMATION

### 2.1 Project Description

The Operator proposes to construct and maintain stormwater management facilities at the Johnson Site to provide additional stormwater treatment for the DS Mine Site. The proposed stormwater management facilities will function as part of the treatment train that currently exists at the DS Mine Site. The purpose of the proposed stormwater management facilities is to provide the Operator the ability to treat stormwater prior to discharging off the site into the local drainage ways and the waters of the state. The proposed amendment will provide additional capacity to treat and detain stormwater at the site to enable the Operator to best perform stormwater Best Management Practices (BMP) identified in the Storm Water Pollution Prevention Plan (SWPPP).

### 2.2 Site Description

The Parcel ID numbers for the Johnson Site are listed below. Figure O-2, "Johnson Site Initial Site Plan" shows the overall property boundaries.

- 23010-3114-05010000
  - 19.5 acres zoned residential located in the W 1/2 of the SE 1/4 of the NE 1/4 of Section 31.

- 23010-3114-00020000
  - 17.7 acres zoned agricultural located in the E 1/2 of the SE 1/4 of the NE 1/4 of Section 31.

### 2.2.1 Operator

The Johnson Site is owned and operated by EOG Resources, Inc. A copy of Chippewa County tax record is attached, Attachment O-1.

Name, address and telephone number of the applicant, land owner and mine operator:

Applicant/Operator/Land Owner: EOG Resources, Inc.  
 Contact Name: Thomas Maul, Mine Manager  
 Address: 1400 Halbleib Road  
Chippewa Falls, WI 54729  
 Telephone: 715-450-6064  
 Email: Thomas\_Maul@eogresources.com

### 2.2.2 Surrounding Property Information

The properties surrounding the Johnson Site include residential, agricultural, and forested land. Figure O-2, "Initial Site Plan" shows the parcel boundaries. Names and addresses of property owners within 660 feet of the Johnson Site are as follows (according to the Chippewa County tax records):

|   |  |
|---|--|
| LA Property Acquisitions, LLC<br>14411 County Highway DD<br>Bloomer, WI 54724 | Paul and Vicki Freeberg<br>2195 135th Avenue<br>Colfax, WI 54730 |
| David Wogernese<br>PO Box 165<br>Eau Claire, WI 54702                         | Mark and Virginia Berge<br>1705 135th Avenue<br>Colfax, WI 54730 |
| Dennis Schindler<br>3182 County Highway A<br>Bloomer, WI 54724-3951           |  |

\*See Section 2.2.2 of the Reclamation Plan for adjacent property owners list for the DS Mine.

### 2.2.3 Location of Manmade Features

There is a house, garage, driveway and domestic well located on the parcel with PID #23010-3114-05010000. There is a private well and septic system associated with the residence located on-site. There is overhead electric serving the Site. There are no manmade features on the parcel with PID # 23010-3114-00020000. See Figure O-2, "Initial Site Plan."

### 3.0 GEOLOGIC COMPOSITION AND DEPTH OF MINERAL DEPOSIT

See Section 3.0 of the Reclamation Plan. A limited amount of material will be temporarily removed as stated herein.

#### 3.1 Distribution, Thickness, and Type of Topsoil

The USDA Natural Resources Conservation Service (NRCS) soil survey data for Chippewa County shows the proposed project boundary to include 8 soil series with varying slopes. Table O-1, "Chippewa County Soil Survey Data Table", lists the soils types found on the Johnson Site. Figure O-3, "Soils Map", illustrates the Johnson Site soils. The topsoil thickness ranges from six (6) to nine (9) inches with an average of seven (7) inches. The B-horizon thickness ranges from zero (0) to 35 inches. Subsoil will be used to construct berms and/or dikes for the construction of the stormwater pond. The topsoil will be re-applied over exposed soils to establish vegetation. A-horizon soils will be kept separate from B-horizon soils. Topsoil will not be stockpiled with general overburden materials.

Table O-1 Chippewa County Soil Survey Data Table

| Soil Series Name                           | Hydrologic Soil Group | Topsoil - thickness (inches) | Bottom of B-Horizon - Depth from Surface (inches) | B-Horizon Thickness (inches) | Top of Bedrock - Depth from Surface (inches) |
|--|-----------------------|------------------------------|---|------------------------------|--|
| Arenzville silt loam, 0-3% slopes          | B                     | 8                            | NE  | 0                            | NE   |
| Eleva Sandy Loam, 6-12% slopes, eroded     | A                     | 9                            | 36  | 27                           | 36   |
| Elk mound Loam, 12-20% slopes, eroded      | D                     | 7                            | 19  | 12                           | 19   |
| Gale silt loam, 2-6% slopes                | C                     | 8                            | 36  | 28                           | 36   |
| Gale silt loam, 6-12% slopes, eroded       | C                     | 8                            | 36  | 28                           | 36   |
| Northfield silt loam, 6-12% slopes, eroded | D                     | 8                            | 18  | 10                           | 18   |
| Orion silt loam, 0-2% slopes               | B/D                   | 7                            | NE  | 0                            | NE   |
| Plainbo loamy sand, 12-20% slopes, eroded  | A                     | 6                            | 20  | 14                           | 28   |
| Seaton silt loam, 6-12% slopes, eroded     | B                     | 7                            | 42  | 35                           | NE   |
| Seaton silt loam, 12-25% slopes eroded     | B                     | 7                            | 42  | 35                           | NE   |
| Average Thickness                          |                       | 7                            | Average Thickness                                 | 12                           |  |

#### 3.2 Groundwater Information

The groundwater elevation at the Johnson Site varies from approximately 1050 to 1064 feet above mean sea level (msl), as provided from available data by Kraemer Mining and Materials (KMM), see Attachment O-2, "DS Johnson Property Water Table Elevations". The proposed stormwater treatment facilities will not be constructed below the water table. The bottom of excavation will be approximately elevation 1064 feet above msl.

Additional groundwater and well information is provided in the Reclamation Plan, Section 3.2.

## 4.0 SURFACE WATERS AND SITE DRAINAGE

### 4.1 Location of Surface Waters

The proposed project area is located within the Red Cedar River Watershed. There are no surface waters in the area of the Johnson Site proposed project. The Johnson Site is tributary to an intermittent stream to the south of the site. Running Valley Creek is classified by the WDNR as a Class II Trout Stream which flows into Eighteenmile Creek and ultimately discharges to the Red Cedar River. See Figure O-4, "Site and Surrounding Features Drainage Patterns".

### 4.2 Existing Topography and Drainage Patterns

Existing site topography is shown on Figure O-2, "Initial Site Plan." Existing topography shown on Figure O-2 is from USGS Quad Map. Existing drainage patterns are shown on Figure O-4, "Site and Surrounding Features Drainage Patterns".

## 5.0 BIOLOGICAL INFORMATION

The proposed Johnson Site area is located on the northern edge of the Western Coulee and Ridges Ecological Landscape which is characterized by a relatively extensive forested landscape (WDNR, 2006). This ecological landscape is currently a mix of forest, agriculture, and wetlands. See the Section 5.0 of the Reclamation Plan for additional information.

### 5.1 Wetlands

A preliminary field review, performed by Ayres Associates, to determine the presence of wetlands was performed in October 2014 and January 2015. Wetlands were identified on the eastern portion of the Johnson Site. No wetlands were identified on the western portion of the Johnson Site. There will be no wetland impacts as part of this project. Hydrology will be maintained to the identified wetlands through pond discharges and stormwater diversions. A minimum 25 foot buffer will be maintained as a no-disturb zone.

## 6.0 AREAL EXTENT AND SITE OPERATIONS PLAN

The areal extent of the Johnson Site is shown on Figure O-5 "Site Operations Plan." The site operations will include installation of erosion control devices, clearing and grubbing, removal of topsoil and B-Horizon, excavation to the elevations of the proposed stormwater treatment features, and installation of stormwater utility piping and structures. Some stockpiling of topsoil and B-Horizon will occur on the Johnson Site to be re-applied after the proposed stormwater features have been constructed.

Figure O-5, "Site Operations Plan" shows the location of the Johnson Site property boundary, operations boundary, proposed stormwater treatment features, wetland boundary, wetland buffer, site access roads, disturbed areas, existing structures, and stockpile locations. The existing house and driveway on the Johnson

Site will remain throughout the mining operation and into the post-mining condition. During construction and development of the Site, the house will not be utilized or occupied in any fashion.

#### Earthwork Quantity Estimation:

The total volume of material excavated from the proposed stormwater ponds is approximately 227,000 cubic yards. The topsoil in the area of the stormwater ponds will be removed and then replaced once the ponds have been excavated to final grade (all topsoil will remain on-site). The volume of subsoil (estimated average thickness of 12 inches) to be removed is approximately 16,900 cubic yards. Topsoil and subsoil will be kept separate to the extent practicable and locations will be signed as practicable. The subsoil removed from the pond areas will be placed in a portion of stockpile S-5. The remainder of the excavated pond material will be placed in either stockpile S-4 or S-5.

Stockpile S-4 encompasses approximately 7 acres and has an approximate volume of 187,000 cubic yards. Stockpile S-5 encompasses approximately 4 acres and has an approximate volume of 73,000 cubic yards. Topsoil and subsoil will be removed in the locations of stockpiles S-4 and S-5 and kept separate to the extent practicable. The quantity of topsoil and subsoil in the stockpile areas includes approximately 11,000 cubic yards of topsoil (average 7" thickness) and approximately 18,800 cubic yards of subsoil (average 12" thickness). Material from the pond excavation is not estimated to be hauled off-site. No waste material from the processing plant will be used in the construction of stockpiles S-4 and S-5.

#### 6.1 Groundwater Monitoring

Groundwater elevation monitoring will continue as proposed in Section 6.1 of the Reclamation Plan. Annual water quality sampling and testing will be provided for all of the monitoring wells at the Site for the following parameters: total suspended solids (TSS), turbidity, nitrate, iron, arsenic, lead, naphthalene, acrylamide, and specific conductivity. Water quality data and water level data will be summarized and submitted to Chippewa County in an annual report.

An additional monitoring well will be installed near Basin B8.1, per the request of LCFM, and tested in accordance with the parameters above. The proposed well location is shown on Figure O-5 "Site Operations Plan."

#### 6.2 Areas A-0 through A-2: Mine Development and Opening

No changes are proposed to Section 6.2 of the Reclamation Plan.

#### 6.3 Areas A-3 through A-8 (including A-3a)

No Tunnel City or Wonewoc sandstone will be removed on the Johnson Site (phase A-3a).

Mining of the Tunnel City sandstone over the entire mine site has been addressed in a report prepared by Ayres and Associates. This report had previously been submitted to County.

#### 6.4 Storm Water Management and Erosion Control

See Attachment O-3 Stormwater Management and Site BMP Plan. The Johnson Site erosion control BMPs are shown on Figure O-6, "Concept Stormwater BMP Site Plan."

#### 6.5 Temporary Erosion Control and Vegetation Plan

See Attachment O-3, Stormwater Management and Site BMP Plan. The Johnson Site erosion control BMPs are shown on Figure O-6, "Concept Stormwater BMP Site Plan."

#### 6.6 Fine Material Handling

No changes are proposed to Section 6.6 of the Reclamation Plan.

### 7.0 POST MINING LAND USE

The post mining land use of the Johnson Site will consist predominantly of Conservation Land/Wildlife Habitat planted to establish passively managed native prairie and preserve wetland wildlife habitat. In addition, the existing house and driveway on the Johnson Site will remain throughout the mining operation and into the post-mining condition.

The post mining land use of the remainder of the DS Mine Site will also consist of Conservation Land/Wildlife Habitat planted to establish passively managed native prairie. See Figure O-8, "Post Mining Land Use."

### 8.0 RECLAMATION MEASURES

Final reclamation will take place on the Johnson Site once all mining and final reclamation is considered complete on the DS Mine Site. The northern portion of the site will be placed into final reclamation grade and once sufficient vegetation is established may be eligible for consideration of final reclamation prior to project completion at the DS Mine Site.

#### 8.1 Final Grading and Slopes

Final reclamation on the Johnson Site will be performed according to Figure O-7, "Final Site Plan." All reclaimed slopes will be graded to 3:1 or flatter. Once grading is complete topsoil will be installed according to methods described in Section 8.4.3 of Appendix O. Seeding and mulching will be performed according to methods described in Section 8.4.5 of Appendix O. A cross-section of the Johnson Site is provided in Figure O-9 "Cross Section" showing the existing surface and the reclamation surface.

##### 8.1.1 Safety

The Johnson Site will not pose any unusual safety concerns, once graded to final reclamation grades.

## 8.2 Topsoil and Storage

### 8.2.1 Topsoil Removal

Topsoil and B-Horizon material will be removed, as necessary, segregated, and stockpiled. Management of topsoil will follow methods described in Section 625 of the WisDOT Standard Specifications, included in Appendix J, "WisDOT Standard Specifications for Highway and Structure Construction (2011 Edition)".

All topsoil and B-Horizon material will be temporarily stockpiled onsite. See Figure O-5, "Site Operations Plan" for proposed stockpile locations. All stockpiles will be seeded and mulched according to Section 6.4.

### 8.2.2 Contemporaneous Use of Topsoil

Where practicable, the topsoil removed for construction of the stormwater management facilities will be immediately redistributed to provide soil stabilization.

### 8.2.3 Topsoil Redistribution and Site Preparation

See Appendix O Section 8.4.

## 8.3 Structures

The existing house and driveway on the Johnson Site will remain throughout the mining operation and into the post-mining condition. During construction and development of the Site, the house will not be utilized or occupied in any fashion.

## 8.4 Final Reclamation Vegetation Plan (Revegetation Plan)

### 8.4.1 Goals and Intent

The intent of this revegetation plan is to establish temporary and permanent vegetation in order to stabilize all newly backfilled and graded areas, and to provide stable soil conditions and slopes following construction mining activity on the Johnson Site. The Revegetation Plan describes timing and methods of seed bed preparation, rates and kinds of soil amendments, seed application timing, methods and rates, mulching, netting, and any other techniques needed to accomplish soil and slope stabilization upon reaching final reclamation grades.

As reclamation progresses the following revegetation plan may be modified to allow test plots and adoption of variations in revegetation procedures that maximize the success of revegetation based on site specific conditions that are encountered.

The Johnson Site will be fully reclaimed once all mining and final reclamation is considered complete on the DS Mine Site. Final grades will be constructed to generally reestablish pre-construction surface water drainage patterns. As areas are brought up to final grade, topsoil will be placed and vegetation established in accordance with the methods described in the following sections.

#### 8.4.2 Planned Vegetation

The majority of the Site will be revegetated with a native prairie seed mix to support a passive recreational/wildlife habitat post mining land use. There will be a mix of open space initially planted with a seed mix suitable for sandy soils containing a mixture of native grass and forbs. Test plots may be utilized to determine the appropriate seed mixture given the appropriate soil conditions created upon final reclamation. Fertilizing, seeding and mulching will consist of incorporating the fertilizing material into the soil; preparing seedbeds and furnishing and sowing the seed mixture as described in the following sections.

All seed will conform to the Wisconsin statutes and Wisconsin administrative code chapter ATCP 20 regarding noxious weed seed content and labeling and will originate only from Minnesota, Wisconsin, Iowa or Illinois. Seed will be used within one year of the test date appearing on the label. Seed will be stored before use in a way that protects it from damage by heat, moisture, rodents, or other causes. Any seed that becomes damaged will be discarded.

#### 8.4.3 Placement of Topsoil

Once final grades have been attained to the final grades and slopes, loamy material (B Horizon topsoil) with an average thickness of about 12 inches will be used on the upper most layer of reclamation backfill where practical. Subsoil will be covered with three to six inches of A Horizon topsoil. Topsoil placement will be in accordance with Wisconsin Department of Transportation (WIDOT) Standard Specification 625.3.3, *Placing*. The topsoil will be placed and spread to a minimum depth of 3 inches. Clods and lumps will be broken down using the appropriate equipment to provide a uniformly textured soil. Rocks, twigs, foreign material, and clods that cannot be broken down will be removed from the site and properly disposed at an offsite location. Dress the entire area to present a uniform appearance. The site soils will not require rolling.

The seed bed will be prepared in accordance with WIDOT specifications 630.32.2. Grading, top-soiling, and fertilizing will be conducted prior to permanent seeding. Prior to seeding, the area will be prepared using discs, harrows, or other appropriate equipment to obtain a reasonably even and loose seedbed in accordance with WIDOT Standard Specifications 630.3.2 *Preparation of Seed Bed*.

#### 8.4.4 Fertilizer

Use of fertilizer and the application of other soil amendments (lime, organic matter, compost, etc.) will be based on soil testing for nutrient content, pH and organic matter of the topsoil in the area to be reclaimed and on the requirements of the proposed vegetation. Native prairie seed mixes typically do not require fertilizer. Soil sampling will be performed by an accredited laboratory for analysis at least 30 days prior to initial reseeding activities. Based on the results of the analysis, amendments will be applied to the soil prior to seeding. When contemporaneous placement of topsoil is performed as part of progressive reclamation, results from the previous testing and/or test plots will be considered when adding fertilizer and/or soil amendments.

Fertilizer used on the Site will meet the general requirements of WIDOT Section 629 Fertilizer and Agricultural Limestone. Fertilizers to be used on the Site for seeding or other planting will be standard,

commercial, packaged or bulk products, in granular or liquid form conforming to Wisconsin statutes and the Wisconsin administrative code chapter ATCP 40. The fertilizer containers will be required to be plainly marked with the analysis of the contents showing minimum percentages of total nitrogen, available phosphoric acid and soluble potash. If furnishing the fertilizer in bulk, an invoice will be included in each shipment indicating the minimum percentages of total nitrogen, available phosphoric acid, and soluble potash in the contents.

If using fertilizer with a total of nitrogen, phosphoric acid, and potash greater than 32 percent, it will be applied at a rate that provides equal nitrogen, phosphoric acid and potash. Fertilizer will conform to the following minimum requirements unless applying fertilizer in areas that are deemed critical. Total nitrogen will at least equal the sum of the phosphoric acid and soluble potash.

|                                      |     |
|--------------------------------------|-----|
| Nitrogen, not less than .....        | 16% |
| Phosphoric Acid, not less than ..... | 6%  |
| Potash, not less than .....          | 6%  |

Critical areas (those areas located within 75 feet of wetlands, streams, rivers, or lakes; slopes, ditches, and swales that drain directly to a wetland, stream, river, or lake are also deemed critical) will be fertilized with phosphorus-free fertilizer with a nitrogen-phosphorous-potash content of 16-0-6 or 10-0-10 or other as otherwise approved by the engineer.

Fertilizer will be applied uniformly and incorporated in the soil by light discing or harrowing. Granular fertilizer will be pulverized and free from lumps when applied.

#### 8.4.5 Planting

Planting will be conducted in conformance with WIDOT's Standard Specifications for Highway Construction. Select the method of sowing from Method A or Method B.

Method A: Sow the selected seed mixture using equipment adapted to the purpose, or by scattering it uniformly over the areas to be seeded. Lightly rake or drag to cover the seed with approximately 1/4 inch of soil. After seeding, lightly roll or compact the areas using suitable equipment, preferably the cultipacker type, when the engineer judges the seedbed too loose, or if the seedbed contains clods that might reduce seed germination. The contractor shall not roll slopes steeper than 1:3. If scattering seed by hand, this work will be performed with satisfactory hand seeders and only when the air is calm enough to prevent seeds from blowing away.

Method B: Sow or spread the seed upon the prepared bed using a stream or spray of water under pressure and operated from an engineer-approved machine designed for that purpose. Place the selected seed mixture and water into a tank, provided within the machine, in sufficient quantities that when spraying the seed on a given area it is uniformly spread at the required application rate. During this process, keep the tank contents stirred or agitated to provide uniform distribution. Spread the tank contents within one hour after adding the seed to the tank. The engineer will reject seed that remains mixed with the water for longer

than one hour. The engineer will not require dragging or rolling.

**Mulching:**

In seeded areas with slopes equal to or flatter than 4:1, mulch will be applied in accordance with WiDOT Standard Spec. 627 Mulching. Mulching material will consist of straw or hay in an air-dry condition, wood excelsior fiber, wood chips, or other suitable material of a similar nature that the engineer approves, and is substantially free of noxious weed seeds and objectionable foreign matter. The mulch will be applied uniformly over the soil surface by hand or machine within 24 hours after seeding in accordance with WiDOT Standard Spec. 627.3.2, Method A or B. Mulch will be applied at a rate of 2 tons per acre. Immediately after placement, all mulch material will be anchored into the soil by crimping (straight disking) in a direction perpendicular to that of the overland stormwater flow. The mulch will be punched into the soil to a depth of 2 to 3 inches with a disk spacing of 8" or less. The mulch will not be placed during periods of excessively high winds that might preclude proper mulch placement. The mulch will be applied loosely enough to allow some sunlight to penetrate and air to slowly circulate, but thick enough to shade the ground, conserve soil moisture and prevent or reduce erosion. The mulched area will be maintained and all areas damaged by wind, erosion, traffic, or other causes before final establishment of vegetation and acceptance or partial acceptance of work will be repaired.

In seeded areas with slopes steeper than 4:1, biodegradable erosion control blankets will be installed uniformly over the soil surface by hand within 24 hours after seeding in accordance with manufactures recommendations. Mats that meet WiDOT Standard Spec 628.2 ECRM Class 1 Type B Mat will be used.

Method A: Uniformly spread the mulching material over the designated areas to a loose depth of 1/2 to 1 1/2 inches. Use a specific rate of application; dependent on the character of the material, that results in a cover conforming to the requirements specified above in 627.3.1. Loosen or make fluffy the mulch material from compacted bales before spreading in place. Unless directed otherwise, begin mulching at the top of the slopes and proceed downward. Securely anchor straw or hay mulch by using engineer-approved netting anchored to the ground with pegs or staples to prevent it from floating as the vegetation grows. Instead of this anchorage, the contractor may secure mulch by heavy biodegradable twine fastened by pegs or staples to form a grid with 6 to 10 feet spacing. The contractor may use department-approved erosion control mats, listed in the erosion control product acceptability list (PAL), instead of separately applying mulch and netting.

Method B: Treat straw or hay with a tackifier, blow from a machine, and uniformly deposit over designated areas in one operation. Place straw or hay uniformly over the area 1/2 to 1 inch deep, using 1/2 to 3 tons of mulch per acre. Mix and place tackifier according to the PAL. Within the above limits, the engineer will determine, on the job, the application rate of the mulch and the tackifier, and the engineer may vary the rates during mulching to produce the desired results. Use an engineer-approved machine to place the mulch that blows or ejects by constant air stream a controlled amount of mulch and applies a spray of tackifier to partially coat the straw or hay, sufficient to hold together and keep in place the deposited straw or hay. The contractor may apply the tackifier as an overspray in a separate operation after placing the straw or hay. Apply wood fiber, wood chips, or similar material with engineer-approved blowing machines, or other engineer-approved methods, that place a controlled amount of mulch uniformly over the area 1/2 to 1 1/2 inches deep. Treat areas receiving wood chip mulch, with one pound of available nitrogen per 1000 square feet before or after applying the chips. Throughout the process, feed the mulch material into the blowing

machine to produce a constant and uniform ejection from the discharge spout, and operate in a position to produce mulch of uniform depth and coverage.

#### 8.4.6 Seeding Dates

Areas may be seeded at any time temperature and moisture conditions are suitable, except between July 1 and August 15 unless approved by LCFM. The optimum time for seeding in a native prairie is from spring to early summer (April 15th to June 20th) when temperatures become warm enough for germination of warm season grasses and forbs. For warm season plant species to germinate the mean soil temperature needs to be above 65 degrees Fahrenheit. Planting native seed at this time of the year allows the warm season plant species to begin establishing early in the growing season. When seeding in the fall, this same type of seed mix will lie dormant until the following spring when germination takes place.

Reclamation activities will be scheduled to accommodate spring or fall seeding. When this is not possible, a cover crop of warm season annual grasses may be used to reduce erosion, runoff, and potential pollution of surface waters, and add organic matter to the soil. The cover crop will consist of a oats at a high seeding rate to prevent soil erosion at a rate of 3-4 bu/ac or 96-128 lbs/ac. Modifications to the cover crop may be made depending upon the time of seeding and nature of the area to be seeded. Any modifications to the cover crop species or rate will be in accordance with Wisconsin Agronomy Technical Note 7, *Cover and Green Manure Crop*, included as Attachment O-4 and be submitted to the LCFM for approval prior to seeding.

Cover crops may be drilled, no-tilled, slurry applied, broadcast or over-seeded with or without incorporation depending on field conditions. Incorporation of seed following planting by light shallow tillage, or use of a ring roller, culti-packer or similar tool to embed the seed will result in a more uniform seedling emergence.

#### 8.4.7 Protection/Maintenance

Short term and long term monitoring and management of the land will be required to establish and maintain the post-mining land uses. The applicant will prepare a Soil Rehabilitation and Vegetative Management Plan for each post-mining land use and land cover type to be reviewed by the County prior to initial reclamation activities. The plan will include a description of the management practices, methods and techniques that will be used to:

1. Recondition the disturbed mine soil to assure the success of the vegetative planting and the sustainability of selected plant communities and associated wildlife habitat;
2. Plant vegetation to establish the proposed land cover;
2. Monitor and control noxious weeds and invasive species to target levels; and
3. Limit or otherwise actively manage the reclaimed area for anticipated plant species that will occur through natural succession.

Fertilized, seeded and/or mulched areas shall be maintained until a uniform grass stand has developed to meet or exceed the 70% vegetative cover standard. This may require incidental watering or touching up

minor areas of erosion that may occur between seeding and establishment of and acceptance of vegetation. If erosion problems occur (in the event of ineffective mulch or mats ), check dams, diversion swales, riprap, terracing or other grade control practices will be added to ensure sheet flow and prevent rills.

During the growing season, seeded areas will be mowed two times per year as applicable. Vegetation will be cut to 6 inches when it has reached a height of at least 12 inches. Noxious weeds listed below will be eradicated from the seeded areas as soon as they become evident. Noxious weeds on the site will be eradicated by hand pulling or by applying a post-emergence herbicide. The herbicide will be a water-soluble herbicide that deactivates on contact with soil, and leaves no harmful residue.

| <u>SPECIES COMMON NAME</u> | <u>SPECIES BOTANICAL NAME</u> |
|----------------------------|-------------------------------|
| Musk thistle               | Carduus nutans                |
| Spotted knapweed           | Centaurea maculosa            |
| Canada thistle             | Cirsium arvense               |
| Bull thistle               | Cirsium vulgare               |
| Field bindweed             | Convolvulus arvensis          |
| Leafy spurge               | Euphorbia esula               |
| Sweetclover                | Melilotus species             |
| Wild parsnip               | Pastinaca sativa              |

#### 8.4.8 Revegetation Standard

See section 9.0.

### 9.0 CRITERIA FOR SUCCESSFUL RECLAMATION

Revegetation success will be a function of the land use and seed mix used and will be determined using a combination of percent cover and plant diversity. Upon reclaiming any portion of the site the post-mining land use will be maintained while the mine site is still operating under the reclamation permit. The applicant understands that the County is in the process of developing performance measures to be used on sites throughout the County in order to standardize evaluation of reclamation success in an objective manner. EOG will defer to the reasonable guidance that the County develops for reclamation performance measures for each post-mining land use and understands that ultimately the County must make the determination of success for each planted cover type. If the development of these performance standards is not complete at the time of permit approval, a condition that requires EOG to further develop a success standard in accordance with reasonable County guidelines once they are available is acceptable to the applicant.

Percent Cover: The percentage of area that is covered, shaded or intercepted by vegetation will be used as one criterion for successful revegetation. Revegetation will be considered successful for native prairie mix when vegetation covers more than 70% of the surface averaged over the revegetated area. A number of quadrants, 1 meter by 1 meter, will be photo documented and used to represent the vegetative cover over the Site. Documentation will occur during the peak period of vegetative growth, generally in August.

Diversity: Goals for plant diversity will remain flexible to accommodate microenvironments created as part of final reclamation and revegetation. In general for areas planted with native prairie grasses will initially have a higher prevalence of cool season grasses (Canadian rye) that by the third year will transition to warm season grasses (Big Bluestem, Indian Grass, and Switchgrass). In general, diversity goals will be considered met when there are two warm season grasses and three species of forbs and or legumes present over the planted area.

Compliance with the reclamation measures described in Section 8.0 shall be determined by on-site inspections conducted by the LCFM or its agent. Once areas have achieved the reclamation measures, the areas will be considered successfully reclaimed. No further reclamation activities shall be required after the LCFM inspects the area and signs a County Certification of Reclamation.

## 10.0 FINAL SITE ACTIONS

The stormwater management facilities will be removed per standard methods. The Johnson Site will be reclaimed in accordance with Figure O-7, "Final Site Plan".

## 11.0 FINANCIAL ASSURANCE

Financial assurance will be achieved through a bond by EOG prior to commencement of activity on the Johnson Site. A copy of an example bond form is included in the Reclamation Plan, Appendix M-1, "Financial Assurance Bond/Non-Metallic Mining Form for Chippewa County". The financial assurance is based on the acres disturbed and reclaimed at the proposed Johnson Site. The mine operator shall complete and submit an annual report in accordance with NR 135.36. The annual report information required by the LCFM is included in the Reclamation Plan Appendix N, "Annual Reclamation Report and Activities Plan".

## 12.0 STANDARDS

The site will operate in accordance with standards established by Chippewa County.

12.1 The Site will be subject to Part II-Standards of the Chippewa County Ordinance for Non-metallic Mining Reclamation will be reclaimed in conformance with the general performance standards contained in Subchapter II of Chapter NR 135, Wisconsin Administrative Code, and the technical guidance and standards for site reclamation as established in Reclamation Standards for Non-metallic Mines in Chippewa County Appendix I.

12.2 Refuse and other solid wastes. Nonmetallic mining refuse will be reused in accordance with a reclamation plan. Other solid wastes will be disposed of in accordance with applicable rules of the department adopted pursuant to chapters. 289 and 291, Stats.

- 12.3 Area disturbed and contemporaneous reclamation. Nonmetallic mining reclamation will be conducted, to the extent practicable, to minimize the area disturbed by nonmetallic mining and to provide for nonmetallic reclamation of portions of the nonmetallic mining site while nonmetallic mining continues on other portions of the nonmetallic mining site.
- 12.4 Public health, safety and welfare. All nonmetallic mining sites will be reclaimed in a manner so as to comply with federal, state and local regulations governing public health, safety and welfare.
- 12.5 Habitat restoration. When the land use required by the reclamation plan approved pursuant to an applicable reclamation ordinance requires plant, fish or wildlife habitat, it will be re-stored, to the extent practicable, to a condition at least as suitable as that which existed before the lands were affected by nonmetallic mining operations.
- 12.6 Compliance with environmental regulations. Reclamation of nonmetallic mining sites will comply with any other applicable federal, state and local laws including those related to environmental protection, zoning and land use control. Note: other applicable environmental, zoning or land use regulations may include chapters. NR 103, 115, 116, 117, 205, 216, 269, 105, 106, 140, 150, 340, 500, 590, and 812, chapters 30 and 91, Stats., and Section 404 of the Clean Water Act (33 USC s. 1344), which may be applicable to all or part of either an existing or proposed nonmetallic mining project. History: Cr. Register, September, 2000, No. 537, effective 12/1/2000.
- 12.7 Surface water and wetlands protection. Nonmetallic mining reclamation will be conducted and completed in a manner that assures compliance with water quality standards for surface waters and wetlands contained in chapters NR 102 through 105. Before disturbing the surface of a nonmetallic mining site and removing topsoil, all necessary measures for diversion and drainage of runoff from the site to prevent pollution of waters of the state will be installed in accordance with the reclamation plans approved pursuant to an applicable reclamation ordinance. Diverted or channelized runoff resulting from reclamation may not adversely affect neighboring properties.
- 12.8 Groundwater protection
1. Groundwater Quantity. A nonmetallic mining site will be reclaimed in a manner that does not cause a permanent lowering of the water table that results in adverse effects on surface waters or a significant reduction in the quantity of groundwater reasonably available for future users of groundwater.
  2. Groundwater Quality. Nonmetallic mining reclamation will be conducted in a manner, which does not cause groundwater quality standards in chapter NR 140 to be exceeded at a point of standards application.

13.0 CERTIFICATION

The operator of the proposed DS Mine (Johnson Site) Nonmetallic Mineral Facility hereby certifies that it is there intent to comply with:

1. The statewide nonmetallic mining reclamation standards established by NR 135 Subchapter II;
2. The Chippewa County nonmetallic mining reclamation standards established by the County's nonmetallic mining reclamation ordinance Part II Standards; and
3. The Town of Cooks Valley's Nonmetallic Mining Ordinance Chapter 19.

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Thomas Maul  
EOG Resources, Inc.  
Mine Manager

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Date