

# NEVADA DIVISION OF ENVIRONMENTAL PROTECTION

## FACT SHEET

(pursuant to Nevada Administrative Code 445A.236)

**Permittee Name:** Dyno Nobel Inc.  
P. O. Box 1628  
Battle Mountain, NV 89820

**Permit Number:** NEV90031

**Location:** Dyno Nobel Inc. – Battle Mountain Plant  
Six miles north, two miles east of Battle Mountain  
Battle Mountain, Lander County, Nevada

Latitude : 40° 41' 22"

Longitude: 116° 52' 3"

Township 33N, Range 45E, Section 35 MDB&M

**Flow:** Design meets the State of Nevada standard of performance  
as a Zero Discharge Facility

### **Well Head Protection**

The facility is not within a well-head protection capture zone, or within the 7000 foot buffer of any public water.

### **General**

The Dyno Nobel Inc. Battle Mountain Plant, formerly owned and operated by Coastal Chemical, is located six miles north and two miles east of Battle Mountain in western Lander County, Nevada. The facility manufactures nitric acid (HNO<sub>3</sub>) and ammonium nitrate (NH<sub>4</sub>NO<sub>3</sub>). Ammonium nitrate is used as a blasting agent component in the mining industry. At the Dyno Nobel facility, ammonium nitrate is produced by the neutralization of nitric acid with ammonia. The water in the ammonium nitrate solution is then evaporated and the solution is concentrated to approximately 99% ammonium nitrate. The material is then formed into granules or “prills”, which are subsequently dried and coated with a preservative before storage and shipment.

While under the direction of Coastal Chemical, the site was heavily impacted by spills and leakage from the various on-site holding ponds. Extraction of impacted shallow groundwater is ongoing.

### **Description of Discharge**

The facility water is supplied by an on-site well. Water is treated and used for potable water supply, boiler feed water and process cooling. Various water treatment reject and process streams are contained on site at the facility. These include the following: cooling tower Reverse Osmosis (RO) reject water; boiler water softener brine and rinse water; boiler blow-down water; nitric acid plant sump fluid; plant site stormwater collection sumps (3); and plant site wash-down water.

The above listed fluids are directed to a triple-lined four (4) acre evaporation pond, with an approximate storage capacity of 4.0 million gallons, as Outfall 001. The permit limits the 30-day average flow rate to 0.049 MGD. The evaporation pond is constructed with 2-40 mil high density polyethylene (HDPE) liners, overlain by a 60 mil HDPE liner. Originally double lined, the pond developed leaks and required the third liner. A layer of DN1 type "Geonet" drainage net separates each liner layer, and serves to conduct any fluid leaking through the upper or middle HDPE liner to a fluid collection sump. Two leak detection monitor ports (LDMP) are located on the north and south sides of the evaporation pond. The north LDMP monitors any fluid present between the upper two liner layers; the south LDMP monitors fluid present between the lower two liner layers. Fluid collected within the leak detection system is pumped back into the evaporation pond. During the period from Second Quarter 2002 through First Quarter 2005, the facility reported an average of 2.17 gallons per day collected in the LDMPs.

The fluid in the evaporation pond is, as expected, high in nitrate. The effect of the evaporation action concentrates the solution to the extent that the fluid is used as a salable liquid fertilizer. Sale of the fertilizer solution is monitored as Outfall 002

In 2001, a leak-detected HDPE evaporation apron was added to the evaporation pond to aid in fluid evaporation. The fluid is pumped onto the apron, which is heated by action of the sun, and remaining fluid reports back into the evaporation pond. Fluid pumped to the evaporation apron is monitored as Outfall 003. Two leak detection sumps are associated with the evaporation apron.

### **Receiving Water Characteristics**

A system of nine (9) monitor wells is associated with this facility. Well logs indicate the presence of two distinct hydro-geologic horizons below the facility: The upper unconfined aquifer is encountered at approximately 30 feet below ground surface (bgs), and is approximately 30 feet thick. The upper aquifer is underlain by a clay layer at 60 feet bgs, which extends to approximately 90 feet bgs. The lower aquifer is confined by the clay layer.

The original four monitor wells were MW1, MW2, MW3, and MW4, all approximately downgradient of the evaporation pond and plant site. MW1 is completed in the lower confined aquifer; MW2, MW3, and MW4 are completed in the upper aquifer. It has been observed that MW2, MW3, AND MW4 have all been impacted by pond leaks and/or rail car spills. Subsequent additions to the monitor well system include NMW3 (upgradient of the evaporation pond), MW5, MW6 (downgradient of the plant site), MW7 and MW8 (downgradient of the evaporation pond). MW3 is now being used as an extraction well for groundwater remediation, with extracted groundwater being added to the ammonium nitrate production process.

The lower aquifer is of generally good quality, as evidence by monitoring results for MW1. Monitoring results for monitor well NMW3, upgradient of the evaporation pond and production facility, give information on background water quality of the upper aquifer. During the period from Second Quarter 2002 through First Quarter 2005, the following groundwater information was reported:

| Well | Parameter                     | Average | Maximum | Minimum |
|------|-------------------------------|---------|---------|---------|
| MW1  | Total Nitrogen (mg/l)         | 1.1     | 5.0     | 0.088   |
|      | Total Dissolved Solids (mg/l) | 370     | 410     | 340     |
|      | Chloride (mg/l)               | 16      | 18      | 12      |
| MW2  | Total Nitrogen (mg/l)         | 114.7   | 140     | 97      |
|      | Total Dissolved Solids (mg/l) | 2267    | 2500    | 1900    |
|      | Chloride (mg/l)               | 315     | 390     | 280     |
| MW3  | Total Nitrogen (mg/l)         | 12,067  | 22,000  | 5,100   |
|      | Total Dissolved Solids (mg/l) | 21,900  | 38,000  | 8,800   |
|      | Chloride (mg/l)               | 843     | 6,100   | 100     |
| NMW3 | Total Nitrogen (mg/l)         | 3.2     | 14      | 0.65    |
|      | Total Dissolved Solids (mg/l) | 739     | 990     | 590     |
|      | Chloride (mg/l)               | 43      | 67      | 27      |
| MW4  | Total Nitrogen (mg/l)         | 1,618   | 2,980   | 940     |
|      | Total Dissolved Solids (mg/l) | 5,600   | 7,800   | 3,600   |
|      | Chloride (mg/l)               | 86.8    | 110     | 69      |
| MW5  | Total Nitrogen (mg/l)         | 0.8     | 1.6     | 0.1     |
|      | Total Dissolved Solids (mg/l) | 793     | 840     | 770     |
|      | Chloride (mg/l)               | 35.3    | 74      | 14      |
| MW6  | Total Nitrogen (mg/l)         | 0.8     | 1.6     | 0.1     |
|      | Total Dissolved Solids (mg/l) | 778     | 840     | 740     |
|      | Chloride (mg/l)               | 33.8    | 50      | 15      |
| MW7  | Total Nitrogen (mg/l)         | 0.9     | 2.3     | 0.1     |
|      | Total Dissolved Solids (mg/l) | 914     | 2,540   | 670     |
|      | Chloride (mg/l)               | 35.5    | 55      | 15      |
| MW8  | Total Nitrogen (mg/l)         | 15.3    | 33      | 2.3     |
|      | Total Dissolved Solids (mg/l) | 843     | 1,200   | 110     |
|      | Chloride (mg/l)               | 34.6    | 51      | 4       |

**Proposed Effluent Limitations and Monitoring Requirements**

Discharge Monitoring:

Outfalls 001, 002, and 003 shall be limited and monitored according to the following table:

Outfall 001

| Parameter  | Discharge Limitation |                  | Monitoring Requirements |             |
|--|----------------------|------------------|-------------------------|-------------|
|  | 30 Day Average       | Daily Maximum    | Measurement Frequency   | Sample Type |
| Flow to Pond (MGD)   | 0.049                | Monitor & Report | Continuous              | Flow Meter  |
| pH (Standard Units)  | Monitor & Report     |                  | Quarterly               | Discrete    |
| Total Nitrogen (mg/l)  | Monitor & Report     |                  | Quarterly               | Discrete    |
| Total Kjeldahl Nitrogen (mg/l)                                 | Monitor & Report     |                  | Quarterly               | Discrete    |
| Nitrate as N (mg/l)  | Monitor & Report     |                  | Quarterly               | Discrete    |
| Total Dissolved Solids (mg/l)                                  | Monitor & Report     |                  | Quarterly               | Discrete    |
| North Leak Detection Port Fluid Accumulation (gallons per day) | Monitor & Report     | 10               | Weekly                  | Calculation |
| South Leak Detection Port Fluid Accumulation (gallons per day) | Monitor & Report     | 10               | Weekly                  | Calculation |

Outfall 002

| Parameter   | Discharge Limitation |                  | Monitoring Requirements |             |
|---|----------------------|------------------|-------------------------|-------------|
|   | 30 Day Average       | Daily Maximum    | Measurement Frequency   | Sample Type |
| 550 Solution (weight & date shipped, and destination) | Monitor & Report     | Monitor & Report | Each Shipment           | Discrete    |
| pH (Standard Units)                                   | Monitor & Report     | Monitor & Report | Quarterly               | Discrete    |
| Total Nitrogen (mg/l)                                 | Monitor & Report     | Monitor & Report | Quarterly               | Discrete    |

Outfall 003

| Parameter   | Discharge Limitation |               | Monitoring Requirements |             |
|---|----------------------|---------------|-------------------------|-------------|
|   | 30 Day Average       | Daily Maximum | Measurement Frequency   | Sample Type |
| East Apron Leak Detection Port Fluid Accumulation (gallons per day) | Monitor & Report     | 10            | Weekly                  | Calculation |
| West Apron Leak Detection Port Fluid Accumulation (gallons per day) | Monitor & Report     | 10            | Weekly                  | Calculation |

Groundwater Monitoring

Groundwater monitoring wells MW1, MW2, MW3, NMW3, MW4, MW5, MW6, MW7, and MW8, and the Supply Well shall be limited and monitored according to the following:

| PARAMETERS                        | GROUNDWATER LIMITATIONS | MONITORING REQUIREMENTS  |                       |             |
|-----------------------------------|-------------------------|--------------------------|-----------------------|-------------|
|                                   |                         | Sample Location          | Measurement Frequency | Sample Type |
| Depth to Groundwater (feet)       | Monitor & Report        | All Wells                | Quarterly             | Discrete    |
| Groundwater Elevation (feet AMSL) | Monitor & Report        | All Wells                | Quarterly             | Calculated  |
| Total Nitrogen as N (mg/l)        | 10                      | MW1, NMW3, MW5, MW6, MW7 | Quarterly             | Discrete    |
|                                   | Monitor & Report        | MW2, MW3, MW4, MW8       |                       |             |
| Total Dissolved Solids (mg/l)     | Monitor & Report        | All Wells                | Quarterly             | Discrete    |
| Chlorides (mg/l)                  | Monitor & Report        | All Wells                | Quarterly             | Discrete    |

Schedule of Compliance

- a. The Permittee shall implement and comply with the provisions of the schedule of compliance after approval by the Administrator, including in said implementation and compliance, any additions or modifications that the Administrator may make in approving the schedule of compliance.
- b. The Permittee shall submit by March 1, 2006, any updates or revisions to the Operations and Maintenance Manual.

### **Procedure for Public Comment**

Notice of the Divisions intent to renew the subject permit, subject to the conditions contained within the permit, is being sent to the **Battle Mountain Bugle** and the **Elko Daily Free Press** for publication. The notice is being mailed to interested persons on our mailing list. Anyone wishing to comment on the proposed permit may do so in writing for a period of 30 days following the date of the public notice. All comments regarding this permit must be received or postmarked by **5:00 pm on March 20, 2006**. The comment period may be extended at the discretion of the Administrator.

A public hearing on the proposed determination can be requested by the applicant, and affected State, any affected interstate agency, the Regional Administrator or any interested agency, person or group of persons.

The request must be filed within the comment period and must indicate the interest of the person filing the request and the reasons why a hearing is warranted.

Any public hearing determined by the Administrator to be held must be conducted the geographical area of the proposed discharge or any other area the Administrator determined to be appropriate. All public hearings must be conducted in accordance with NAC 445A.238.

The final determination of the Administrator may be appealed to the State Environmental Commission pursuant to NRS 445A.605.

### **Proposed Determination**

The Division has made the tentative determination to renew the proposed permit for a period of five (5) years, in accordance with effluent limitations, monitoring requirements, and other conditions set forth in the renewed permit.

### **Rationale for Permit Requirements**

The design of this facility meets the State's zero discharge standard of performance. No discharge of fluids or wastes is allowed at the facility. Groundwater monitoring is required to confirm that remediation actions continue to be effective in reducing contamination at the site and that no additional impact due to site activities occurs.

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