

**Hycroft Mine
Amendment to Plan of Operations
(NVN-064641)
Phase II Expansion Project
Monitoring Plan**

Submitted to:

***United States Department of the Interior
Bureau of Land Management
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Monitoring Plan for the Hycroft Mine Phase II Expansion Project

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Monitoring Plan for the Hycroft Mine Phase II Expansion Project

1 MONITORING PLAN

1.1 Introduction

Pursuant to 43 §CFR 3809.401(b)(4), a plan for monitoring the effect of the proposed operations must accompany the Plan of Operations. Monitoring plans may incorporate existing state or other federal monitoring requirements to avoid duplication. The monitoring plan must meet the following objectives:

- Demonstrate compliance with the approved plan of operations and other federal or state environmental laws and regulations;
- Provide early detection of potential problems, and to supply information that would assist in directing corrective actions should they become necessary; and,
- Provide details on type and location of monitoring devices, sampling parameters and frequency, analytical methods, reporting procedures, and procedures to respond to adverse monitoring results.

As part of the site-wide operating plan, Hycroft Resources and Development, Inc. (HRDI) currently, and will continue to monitor the following components in compliance with state permits and other plans: air quality, groundwater, noxious weeds, reclamation, slope stability, waste rock chemistry, solution chemistry, and wildlife. The major relevant permits/plans associated with each monitoring component are summarized in Table 1.

Table 1: Major Permits and Authorizations Required for Project Development

Operating Permits	Issuing Agency	Number	Status
Plan of Operations	BLM	N64641	Current
Mercury Operating Permit to Construct	NDEP Bureau of Air Pollution Control	AP1041-2255	Current
Permit to Operate a Public Water System	NDEP Bureau of Safe Drinking Water	HU-0864-12NTNC	Current
Class II Air Quality Permit and Class I Operating Permits to Construct	NDEP Bureau of Air Pollution Control	AP1041-0034.02, AP1041.3269 (Mill), AP1041-334 (Lime Silos) AP1041-2974 (Gyro)	Current
Water Pollution Control Permit-Crofoot Project	NDEP Bureau of Mining Regulation & Reclamation	NEV60013	Current
Water Pollution Control Permit-Brimstone Project	NDEP Bureau of Mining Regulation & Reclamation	NEV94114	Current
Bioremediation Facility Permit	NDEP Bureau of Mining Regulation & Reclamation	GNV041995-HGP15	Current
Reclamation Permit	NDEP Bureau of Mining Regulation & Reclamation	134	Current
Mining General Stormwater Pollution Prevention Permit	NDEP Bureau of Water Pollution Control	R300000: MSW-177	Current

Operating Permits	Issuing Agency	Number	Status
Artificial Pond Permit (Brimstone Process Ponds)	NV Department of Wildlife	S34481	Current
Artificial Pond Permit (Crofoot Process Ponds)	NV Department of Wildlife	S36665	Current
Artificial Pond Permit (North Process Ponds)	NV Department of Wildlife	S36661	Current
Dam Safety Permit (Crofoot Process Ponds)	NV Division of Water Resources	J-273	Current
Hazardous Materials Storage Permit	NV State Fire Marshall	8250	Current

1.2 Air

HRDI currently holds two air quality permits (Class I Operating Permit and Mercury Operating Permit to Construct) for the Hycroft Mine. Appropriate modifications to the air quality permits will be obtained from the Nevada Division of Environmental Protection, Bureau of Air Pollution Control (NDEP/BAPC) for the new Project facilities and land disturbance. As per BAPC regulations, the project air quality operating permits must be authorized by the Bureau prior to project commissioning.

Pollution control equipment is and will continue to be monitored according to construction and operating permits. Fugitive dust is and will continue to be monitored and controlled according to the *Surface Area Disturbance Dust Control Plan* as required by BAPC.

1.3 Waste Rock Disposal Facilities and Ore Stockpiles

Monitoring of the waste rock will continue in accordance with the Brimstone WPCP and the approved Waste Rock Management Plan.

Monitoring of leach ore, and PCS will be monitored in accordance with the WPCP.

Temporary ore stockpile areas will be constructed and monitored in accordance with the WPCP.

1.4 Reagent and Diesel Storage

Monitoring of the reagent and diesel storage areas will continue in accordance with the WPCP.

1.5 Heap Leach Facilities

Heap leach effluent is and will continue to be monitored as part of the WPCP. Operational flows are and will continue to be reported on a regularly scheduled basis, dependent upon individual facility parameters. Effluent quality and quantity parameters are and will continue to be provided to the NDEP in quarterly and annual reports.

New and revised Fluid Management and Monitoring Plans will be submitted to NDEP as part of the WPCP modification, and copied to BLM under separate cover.

1.6 Tailings Storage Facilities

The South Tailings Storage Facility embankment will have piezometers installed to monitor the water level within the facility. A grain size analysis of embankment underflow product will be monitored on a weekly basis. Sediment control structures on the downstream face of the embankment to be inspected and maintained in accordance with the WPCP.

Inspections of conveyance and distribution pipelines associated with tailings facility to be checked for leaks, and the surrounding low areas and washes to be inspected for ponding.

LCRS monitoring of sumps in various elements of the tailings facility and pipelines.

New and revised Fluid Management and Monitoring Plans will be submitted to NDEP as part of the WPCP modification for the Northeast Tailings Storage Facility, and copied to BLM under separate cover.

1.7 Sediment Controls

HRDI currently and will continue to monitor disturbed areas for signs of erosion, sediment accumulation and potential offsite discharges; and the chemical storage, dispensing and processing areas for signs of spillage or potential equipment failure in association with the storm water permit and WPCP. Inspections of sediment controls include the activities outlined below.

- Inspection of material handling areas for evidence of, or the potential for, pollutants entering the drainage and conveyance system (non-structural controls).
- Inspection of erosion control systems and sediment control devices (structural controls) in areas of material handling and along transportation corridors to verify that they are working effectively and/or to determine if maintenance is required.

1.8 Groundwater Monitoring

Groundwater monitoring will be undertaken in accordance with the WPCP and other permits as required.

1.9 Reclamation Monitoring

The revegetation release criteria for reclaimed mine sites is to achieve as close to 100 percent of the perennial plant cover of selected comparison areas as possible. At the Hycroft Project, reference areas were selected from representative plant communities adjacent to the mine site, test plots, or demonstration areas or, as appropriate. These reference areas have been used for historic reclamation that was deemed successful. Future reclamation will continue to be monitored in accordance with BLM and NDEP guidance.

1.10 Noxious Weeds

HRDI monitors and will continue to monitor for the presence of noxious weeds in accordance with the *Hycroft Noxious Weed Monitoring and Control Plan*. Periodic observation of the weeds being managed is undertaken to identify new establishments and evaluate the effectiveness of the weed control program. Periodic monitoring of the Project Area identifies new infestations while they are small and can be effectively eliminated. Periodic monitoring identifies areas where prevention measures will be implemented to prevent weed infestation.

1.11 Wildlife Monitoring

Wildlife monitoring includes:

- Fences and netting installed to prevent access by avian wildlife, livestock, and larger wildlife are monitored on a routine schedule to check for breaches;
- Surveys will be conducted for proposed facilities as necessary to determine the presence and/or use by special status species;
- The process water pond(s) are monitored on a daily basis for the condition of wildlife exclusion features and the presence of mortalities.

Mortalities are reported on a quarterly basis according to the NDOW's standard reporting forms.

1.12 Waste

The Class III Waivered landfill is visually monitored on a daily basis in accordance with the permit.

Hazardous waste collection and storage areas are inspected on a weekly basis in accordance with all applicable regulations.

Petroleum contaminated soils (PCS) storage and disposal areas are monitored in accordance with the WPCP.

2 MONITORING PLAN ELEMENTS

As described above, 43 §CFR 3809.401(b)(4) requires a plan for monitoring the effects of the proposed operations. The monitoring plan must demonstrate compliance with the approved plan of operations and other federal or state environmental laws and regulations. Further, the plan must provide early detection of potential problems, and supply information that would assist in directing corrective actions should they become necessary. Finally, the plan must provide details on type and location of monitoring devices, sampling parameters and frequency, analytical methods, reporting procedures, and procedures to respond to adverse monitoring results.

Table 2 provides a synopsis of the required elements as described in 43 §CFR 3809.401(b)(4). These elements are generally described and would be provided in greater detail as the relevant permits are acquired.

Table 2: Required Monitoring Elements

Area	Type of Monitoring Device	Location of Monitoring Device	Sampling Parameters	Sampling Frequency	Analytical Methods	Reporting	Early Detection
Air	Manual Opacity Readings	Project Area, Stationery Sources	Opacity	Per Air Permit	Per Air Permit	Initial compliance and violations.	Visible Emissions
	Mercury Emissions	Stationary Source Stacks	Mercury	Annually and for new sources	EPA Method	Annually and Initial Compliance	N/A
	Particulate Matter	Stationary Source Stacks	Particulate Matter	New sources	EPA	Initial Compliance	N/A
Waste Rock Management	Representative grab samples Based on rock type placed in dumps	Mining areas (pits & dumps)	MWMP, Profile, ANP/AGP Using a LECO-Type Analysis	Quarterly as Material is Mined	Pursuant to NDEP and BLM guidelines, the Approved Waste Rock Management Plan, and the Water Pollution Control Permit (WPCP)	Quarterly and Annual Summary	Deviation from minimum net neutralizing to net acid generation potential ratio
Leach Ore	Representative grab samples Based on rock type placed in dumps	Heap leach facilities.	ANP/AGP	Quarterly as material is placed	Pursuant to NDEP and BLM guidelines and the WPCP.	Quarterly and Annual Summary	N/A

Area	Type of Monitoring Device	Location of Monitoring Device	Sampling Parameters	Sampling Frequency	Analytical Methods	Reporting	Early Detection
Heap Effluent	Flow Meters and Manual Sampling	Per WPCP	MWMP Profile I, II, and III.	Per WPCP	Pursuant to 445A.459 (Methods for Obtaining Samples) and 445.0612 (Adoption by Reference of Certain Publications Related to Sample Collection, Analytical Methodologies, and Requirements for Certification)	Quarterly and Annual Summary	Monitoring of Leak Detection
Sediment Controls	Visual	Sediment control structures, run-on diversions, run-off collection channels	Estimated volume in structures, signs of erosion in diversions and collection channels	After major storm events/at least quarterly	Per Storm water Pollution Prevention Plan	Annually	Excess sedimentation, degradation of structures or channels
Wildlife	Visual	Process Ponds	Condition of Fencing and Netting, Presence of Waterfowl and Other Terrestrial Wildlife	Daily	Visual	Quarterly	Identification of needed repairs; Presence of Wildlife
Noxious Weeds	Visual	Project Area	Presence of Listed Nevada Noxious Weeds	Spring and Fall	Standard Industry Practices	Not Applicable	Presence of Noxious Weeds

Area	Type of Monitoring Device	Location of Monitoring Device	Sampling Parameters	Sampling Frequency	Analytical Methods	Reporting	Early Detection
Waste	Visual	Class III Waivered Landfill, Hazardous waste storage and accumulation areas.	General conditions, waste types labeling and container condition.	Daily	Visual	Not Applicable	Not Applicable
	Sampling	PCS Holding and disposal areas.	Total Petroleum Hydrocarbons, Volatile and Semi-volatile organic compounds; hazardous constituents.	In accordance with WPCP	Per WPCP	Quarterly with other WPCP requirements.	Not Applicable
Tailings Solution	LCRS Pumps	Sumps	Leak detection	Quarterly & excessive Flows	Pursuant to NDEP guidelines and the WPCP	Quarterly and Annual Summary	Excessive or low flows. Visible leaks. High phreatic levels
	Solution	Pond	Profile I	Quarterly			
Embankment	Piezometers	Embankment	Water levels	Monthly	Pursuant to NDEP guidelines and the WPCP	Quarterly and Annual Summary	Not Applicable
Tailings Solids	Representative Samples	TSF	ANP/AGP	Quarterly	Pursuant to NDEP guidelines and the WPCP	Quarterly and Annual Summary	Not Applicable
Groundwater	Wells	Various	Profile I	Quarterly	Pursuant to NDEP guidelines and the WPCP	Quarterly and Annual Summary	Not Applicable