

CALICO RESOURCES USA CORP.

GRASSY MOUNTAIN MINE PROJECT
MALHEUR COUNTY, OREGON

MONITORING PLAN

November 2019

Submitted to

Oregon Department of Geology and Mineral Industries
Mineral Land Regulation & Reclamation
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GRASSY MOUNTAIN MINE PROJECT
MONITORING PLAN**

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1 INTRODUCTION

This Monitoring Plan has been prepared in support of the Grassy Mountain Mine Project (Project) located in Malheur County, Oregon, and has been included as part of the Consolidated Permit Application (CPA).

The Project is located approximately 22 miles south-southwest of Vale (Figure 1) and consists of two areas: the Mine and Process Area and the Access Road Area (Permit Area) (Figure 2). The Mine and Process Area is located on three patented lode mining claims and unpatented lode mining claims that cover an estimated 886 acres. These patented and unpatented lode mining claims are part of a larger land position that includes 419 unpatented lode mining claims and nine mill site claims on lands administered by the Bureau of Land Management (BLM). All proposed mining would occur on the patented claims, with some mine facilities on unpatented claims. The Mine and Process Area is in all or portions of Sections 5 through 8, Township 22 South, Range 44 East (T22S, R44E) (Willamette Meridian).

The Access Road Area is located on public land administered by the BLM, and private land controlled by others (Figure 2). A portion of the Access Road Area is a Malheur County Road named Twin Springs Road. The Access Road Area extends north from the Mine and Process Area to Russell Road, a paved Malheur County Road. The Access Road Area is in portions of Section 5, T22S, R44E, Sections 3, 10, 11, 14, 15, 21 through 23, 28, 29, and 32, T21S, R44E, Sections 1, 12 through 14, 23, 26, 27, and 34, T20S, R44E, Sections 6 and 7, T20S, R45E, and Sections 22, 23, 26, 35, and 36, T19S, R44E (Willamette Meridian). The Access Road Area totals approximately 876 acres.

1.1 Regulatory Requirements

1.1.1 Federal Regulations

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.

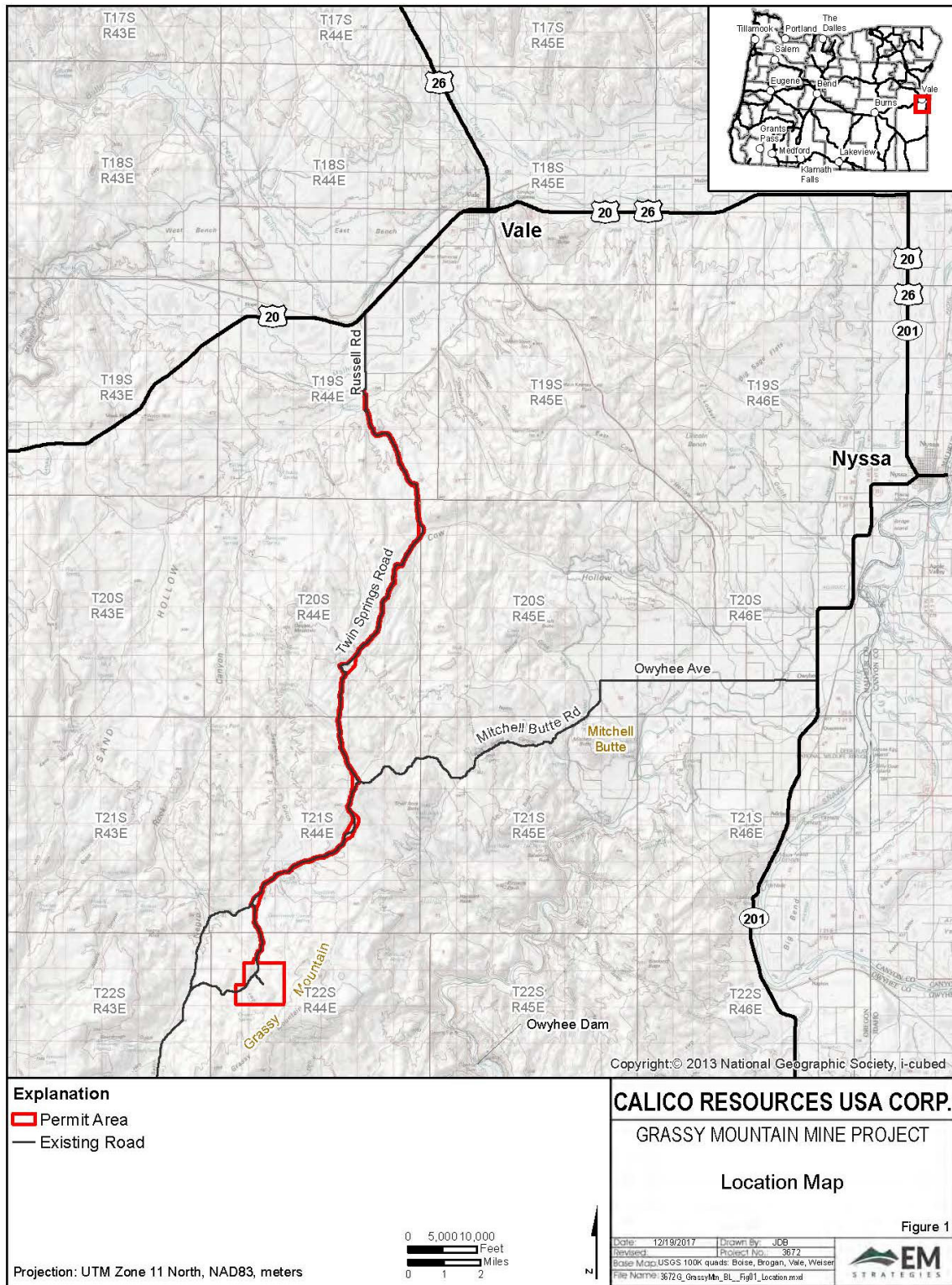


Figure 1: Location Map

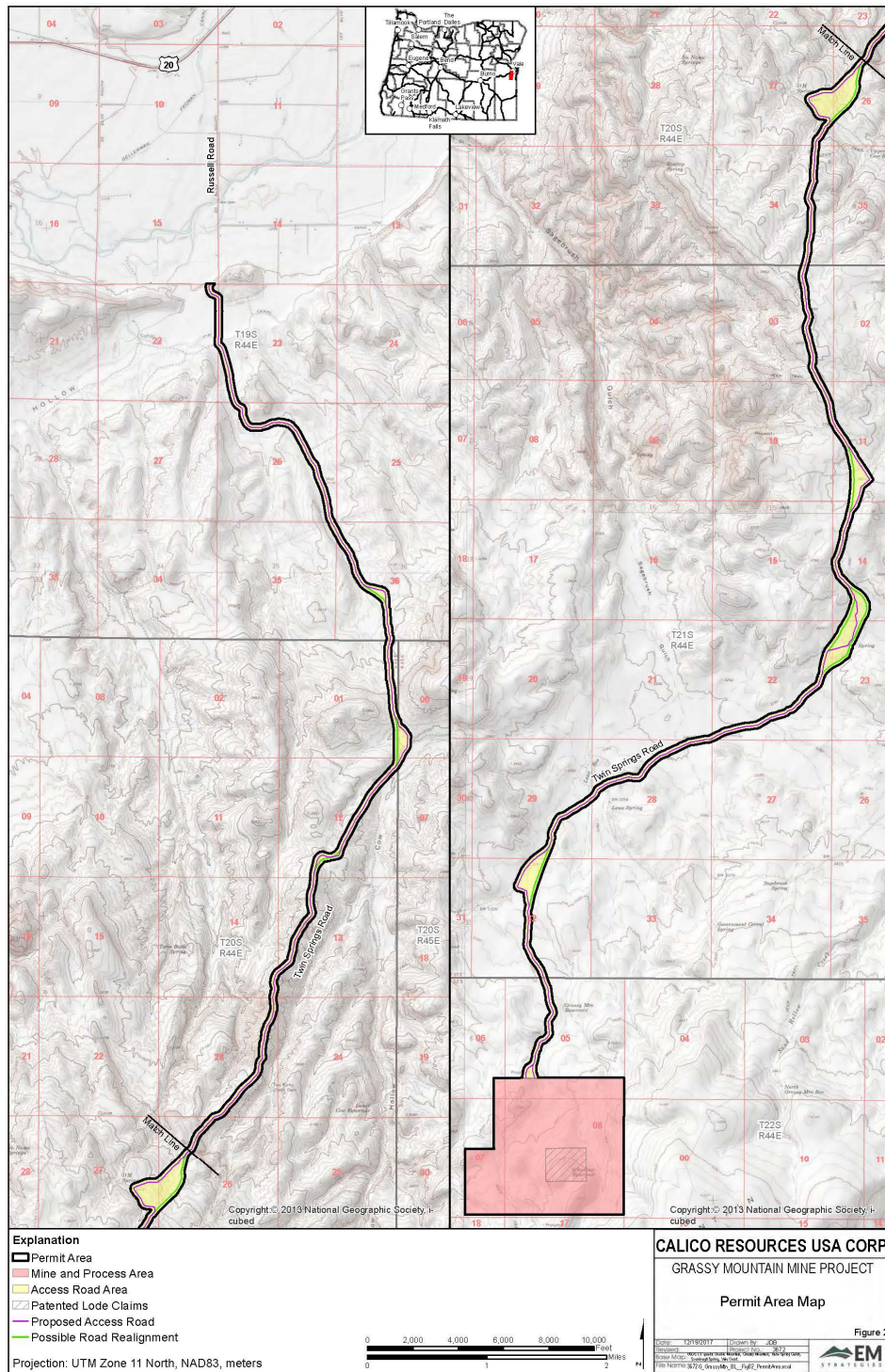


Figure 2: Permit Area Map

1.1.2 State Regulations

Oregon Administrative Rule (OAR) 632-037-0060 states that operational monitoring and reporting programs must be developed. Item 7 provides an example of the items to be included in the monitoring plan:

- Surface and groundwater monitoring systems within and outside of the Permit Area and reporting frequency;
- Water balance of the process system and leak detection systems and reporting frequency;
- Biological monitoring and reporting procedures and frequency; and
- Fish and wildlife injury and mortality monitoring and reporting frequency developed according to standards adopted by the Oregon Department of Fish and Wildlife (ODFW).

2 MONITORING PLAN

As part of the site-wide operating plan, Calico Resources USA Corp. (Calico) will monitor the following components in compliance with state permits and other plans: air quality; waste rock storage areas and stockpiles; reagent and diesel storage; sediment controls; groundwater; process solution containment; reclamation; noxious weeds; 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

Permit/Approval	Granting Agency	Areas Addressed
Chemical Process Mining Permit	Oregon Department of Geology and Mineral Industries (DOGAMI), Mineral Land Regulation & Reclamation	Surface disturbance, reclamation
Plan of Operations/Record of Decision	Bureau of Land Management	Surface disturbance, reclamation
Air Quality Permit	Oregon Department of Environmental Quality (ODEQ)	Fugitive dust, air emissions
Storm Water Permit	ODEQ	Storm water
Water Pollution Control Facility (WPCF) Permit	ODEQ	Process solution containment

2.1 Air Quality

Calico anticipates the issuance of a Standard Air Contaminant Discharge Permit (ACDP) for the Project by the Oregon Department of Environmental Quality (ODEQ). As per ODEQ regulations, the Project ACDP must be authorized by the ODEQ prior to Project commissioning. Appropriate emission control equipment will be installed and operated in accordance with the construction and operating air permits. Where required, pollution control devices installed by equipment manufacturers will control combustion emissions. Pollution control equipment will be installed,

operated, and maintained in good working order to minimize emissions. Fugitive dust will be monitored and controlled as described in the ACDP.

2.2 Waste Rock Storage Areas and Ore Stockpiles

Monitoring of the waste rock and ore stockpiles will be performed in accordance with the Water Pollution Control Facility (WPCF) Permit, and the rock characterization program in coordination with the ODEQ and the BLM.

There are two ore stockpiles on the Project site: the run-of-mine stockpile and the crushed ore stockpile. Both ore stockpiles will be lined in compliance with the OAR 640.43 Chemical Mining guidelines. The liner design, from subgrade through to the filter layer in contact with the ore, is as follows:

- Prepared Subgrade (as required)
- Geosynthetic Clay Liner
- HDPE Double Sided Textured Geomembrane (3.1")
- 18" Drainage Layer
- 6" Filter Fill

Run-off contact water will be collected in a dedicated sump within the lined stockpile area. When required, water will be transferred to the surface water collection pond using portable submersible pumps or vacuum trucks.

2.3 Reagent and Diesel Storage

Monitoring of the reagent and diesel storage areas will be in accordance with the WPCF Permit.

Diesel storage tanks will be clearly labelled, and their locations will be made well-known to all on-site personnel. Diesel will only be stored in designated areas with secondary containment, which will be impermeable and sized to contain 110 percent of the volume stored.

The primary process reagents are characterized as either alkaline or acidic as follows:

- Alkaline Reagents
 - Hydrate Lime
 - Sodium Hydroxide
 - Sodium Cyanide
- Acidic Reagents
 - Sodium Metabisulphite (SMBS)
 - Hydrochloric Acid
 - Copper Sulphate

Reagents will be stored in the covered reagent storage area. The exception to this is sodium cyanide, which will be stored in the fenced secure cyanide storage area. Both storage areas are located on an impervious concrete slab, and the cyanide area is also bunded to provide 110 percent containment of the largest vessel. Additional information on the management and storage of cyanide can be found in Appendix F of the CPA.

2.4 Sediment Controls

Calico will monitor disturbed areas for signs of erosion, sediment accumulation, and potential off-site discharges; and the chemical storage, dispensing, and processing areas for signs of spillage or potential equipment failure. Inspections of facilities that could result in impacts to receiving surface waters include the activities outlined below.

- All areas that contain materials, chemicals, or soils that could adversely impact surface waters will be inspected, cleaned and maintained to prevent discharge. These areas are designed to provide containment of contaminants through the use of berms, lined channels, swales, or secondary containment facilities. Outlets to these areas will be properly maintained to perform as designed at all times.
- Calico will regularly inspect, clean, maintain, and repair all equipment, systems, and material handling/storage areas that have the potential to impact receiving surface waters. All management control measures including stormwater structures, catch basins, treatment facilities will be repaired and maintained in proper working order to perform as designed at all times.

2.5 Groundwater Monitoring

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

2.6 Process Solution Containment Monitoring

All process solutions will be located within impervious concrete containments sized in accordance with the ODEQ to contain 110 percent of the largest tank volume plus freeboard for precipitation. Any discharge to the containment will be returned to an appropriate vessel through sump pumps and will not be released to the environment.

The process facility tailings sent to the Tailings Storage Facility will be monitored as part of the WPCF Permit and tailings flow and quality will be measured and reported to the ODEQ on a regularly scheduled basis.

2.7 Reclamation Monitoring

Calico will monitor for revegetation success according to the plans set forth in Section 4.9, Post Reclamation Monitoring and Maintenance, of the CPA. Areas to be monitored will include revegetation success, groundwater quality, and presence of erosion. Calico will also monitor

disturbed sites for noxious weeds as set forth in Section 3.6.11, Noxious Weeds and Invasive Nonnative Species, of the CPA. Following site closure, Calico will conduct site maintenance, site inspections, and any other necessary monitoring for the period of reclamation responsibility.

2.8 Noxious Weeds

Calico will monitor for the presence of noxious weeds in accordance with the *Grassy Mountain Mine Project, Malheur County, Oregon, Noxious Weed Monitoring and Control Plan*. Periodic monitoring of the Permit Area will be conducted to identify new infestations while they are small so they can be effectively eliminated.

2.9 Wildlife Monitoring

Wildlife monitoring will include:

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

Mortalities will be reported on a quarterly basis according to the ODFW's standard reporting forms.