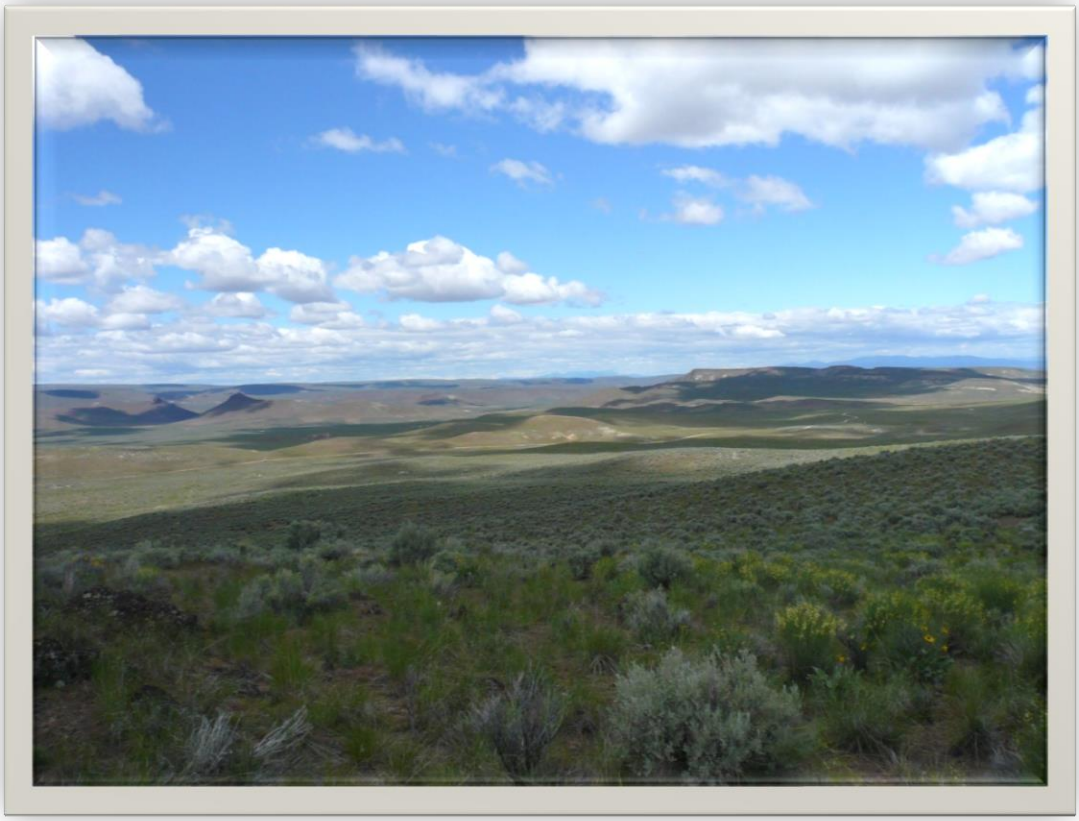
CALICO RESOURCES USA CORP.
GRASSY MOUNTAIN MINE PROJECT
STATE OF OREGON
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION 43 PERMIT APPLICATION

NOVEMBER 2019



EM STRATEGIES

Reno:
1650 Meadow Wood Lane
Reno, Nevada 89502
Phone: (775) 826-8822 | Fax: (775) 826-8857

Elko:
835 Railroad Street
Elko, Nevada 89801
Phone: (775) 753-9496 | Fax: (775) 826-8857

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This Division 43 Permit Application (Application) is submitted as part of the Department of Geology and Mineral Industries (DOGAMI) Division 37 Consolidated Permit Application (CPA) and summarizes the information required by the Department of Environmental Quality (DEQ). Oregon Administrative Rules (OAR)-632-037 make DOGAMI the umbrella agency for the permitting of metal mines, except placer mines and operations using only gravity separation to process ore.

The CPA will be delivered to DOGAMI in paper and digital formats. For ease of addressing the specific topics required by the DEQ, this Application includes references to the sections of the CPA text and appendices that address those topics. Table 1 is a summary of the CPA report organization that will be uploaded to the DOGAMI sharesite for review by all coordinating, commenting, cooperating and permitting agencies.

Table 1. Organization of Grassy CPA on the DOGAMI sharesite

CPA Text	Grassy Mountain Mine Project, State of Oregon, DOGAMI Division 37 Consolidated Permit Application
Appendix A	Oversize Figures
Appendix B	Baseline Studies and Work Plans (to be uploaded to DOGAMI sharesite)
Appendix C	Tailings Design Report
Appendix D	Mill Design Report
Appendix E	Emergency Response Plan
Appendix F	Cyanide Management Plan
Appendix G	Monitoring Plan
Appendix H	Noxious Weed Monitoring and Control Plan
Appendix I	Wildlife Mitigation Plan
Appendix J	Reclamation Cost Estimate
Appendix K	Interim Management Plan
Appendix L	ODEQ Water Pollution Control Facility Application and Division 43 Report
Appendix M	ODEQ Class I Air Quality Operating Permit Application
Appendix N	OWRD Dam Permit Application
Appendix O	ODEQ Storm Water Permit Application
Appendix P	OWRD Water Rights Amendment
Appendix Q	Monitor Well Plan
Appendix R	Malheur County Land Use Compatibility Statement (LUCS)
Appendix S	Portal Design Report
Appendix T	Ecological Risk Assessment
Appendix U	Inadvertent Discovery Plan
Appendix V	Aggregate Application
Appendix W	Alternatives Support Documents
Appendix X	Mining Claim Information
Appendix Y	Stormwater Management Plan
Appendix Z	Petroleum Contaminated Soil Management Plan
Appendix AA	Quality Assurance Plan
Appendix AB	Hazardous Material Reporting
Appendix AC	Road Design Report
Appendix AD	Well Field Design Report
Appendix AE	Water and Wastewater Design

1 INTRODUCTION AND GENERAL INFORMATION

Calico Resources USA Corp. (Calico) proposes to construct, operate, reclaim, and close an underground mining and precious metal milling operation known as the Grassy Mountain Mine Project (Project). The Project is proposed in Township 21 South, Range 44 East (T21S, R44E), and T22S, R44E, Malheur County, Oregon. Additional Project description and location information is below and in the **CPA Text Section 1 and Appendix L of the CPA**.

This Application addresses the specific requirements in DEQ Division 43 (OAR-340-043). The information required is included in the CPA; therefore, this Application serves as a reference guide to the sections of the CPA text and appendices that address each topic (Table 1). The information below and in the CPA, along with the WPCF-N Permit Application (**Appendix L of the CPA**) constitute the Division 43 permit required for chemical mining operations.

Applicant

Operator Name:	Calico Resources USA Corp.
Mailing Address:	665 Anderson Street Winnemucca, Nevada 89445
Phone Number:	(775) 625-3600
Taxpayer Identification Number:	45-2188867
Oregon Registry Number:	78127694

Contact Information

Point of Contact for this Permit Application:

Nancy J. Wolverson
665 Anderson Street
Winnemucca, Nevada 89445
Phone (775) 770-4615

Corporate Point of Contact:

Carlo Buffone
665 Anderson Street
Winnemucca, Nevada 89445
Phone (775) 625-3600

Additional information about the applicant can be found in **CPA Text Section 1 and Appendix L of the CPA.**

Facility Location

The Project is located in Malheur County, Oregon, approximately 22 miles south-southwest of Vale and consists of two areas: the Mine and Process Area and the Access Road Area (Permit Area) (Figure 1 and Figure 2 below). The Permit Area shown in all figures and text shows and

describes the boundary of the proposed Project. The Access Road extends north from the Mine and Process Area to the Malheur County Road named Twin Springs Road.

Additional information about the facility location, contact information, land status and surface ownership can be found in **CPA Text Section 1 and Appendix L of the CPA.**

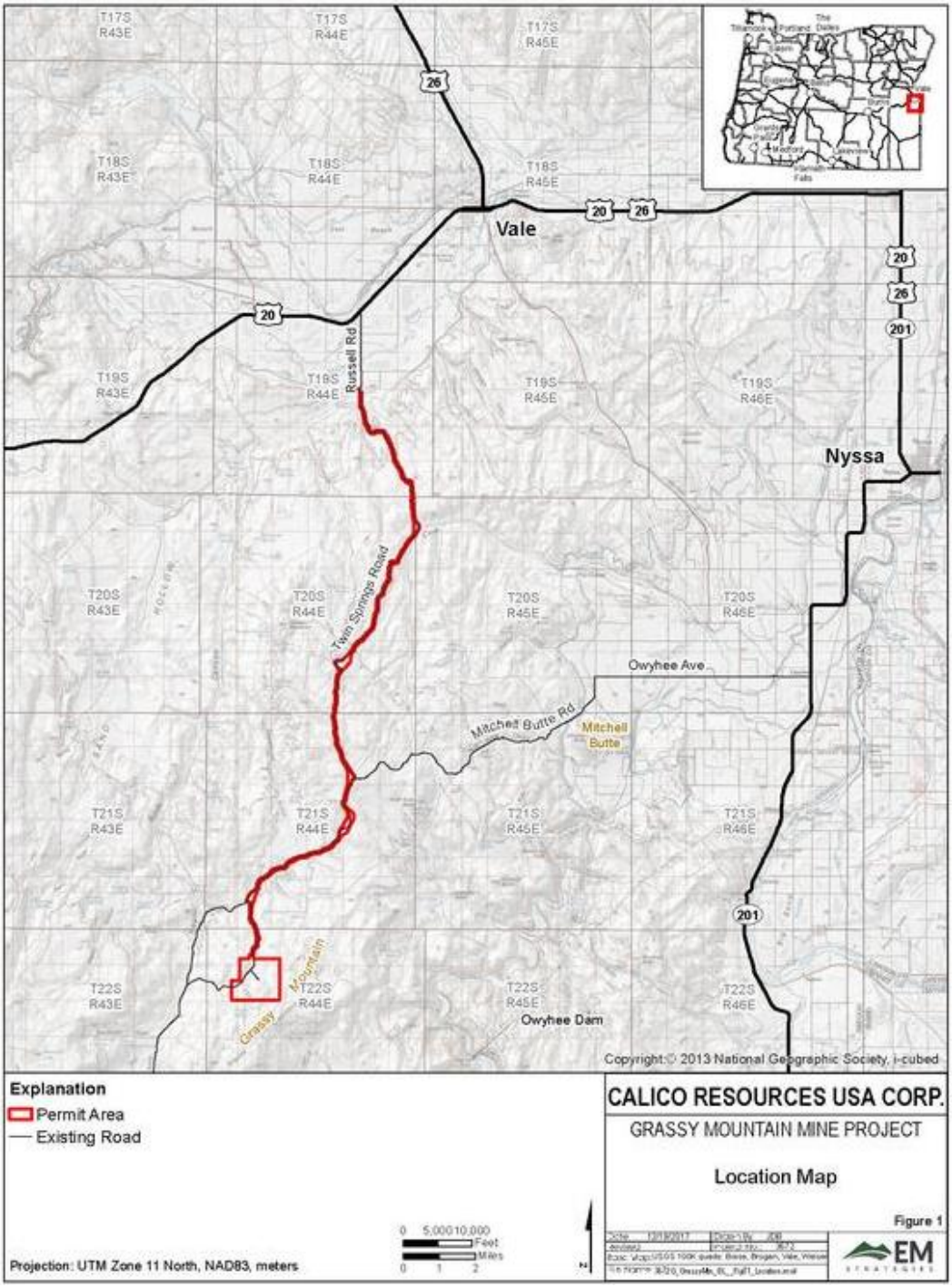

Figure 1. Location Map

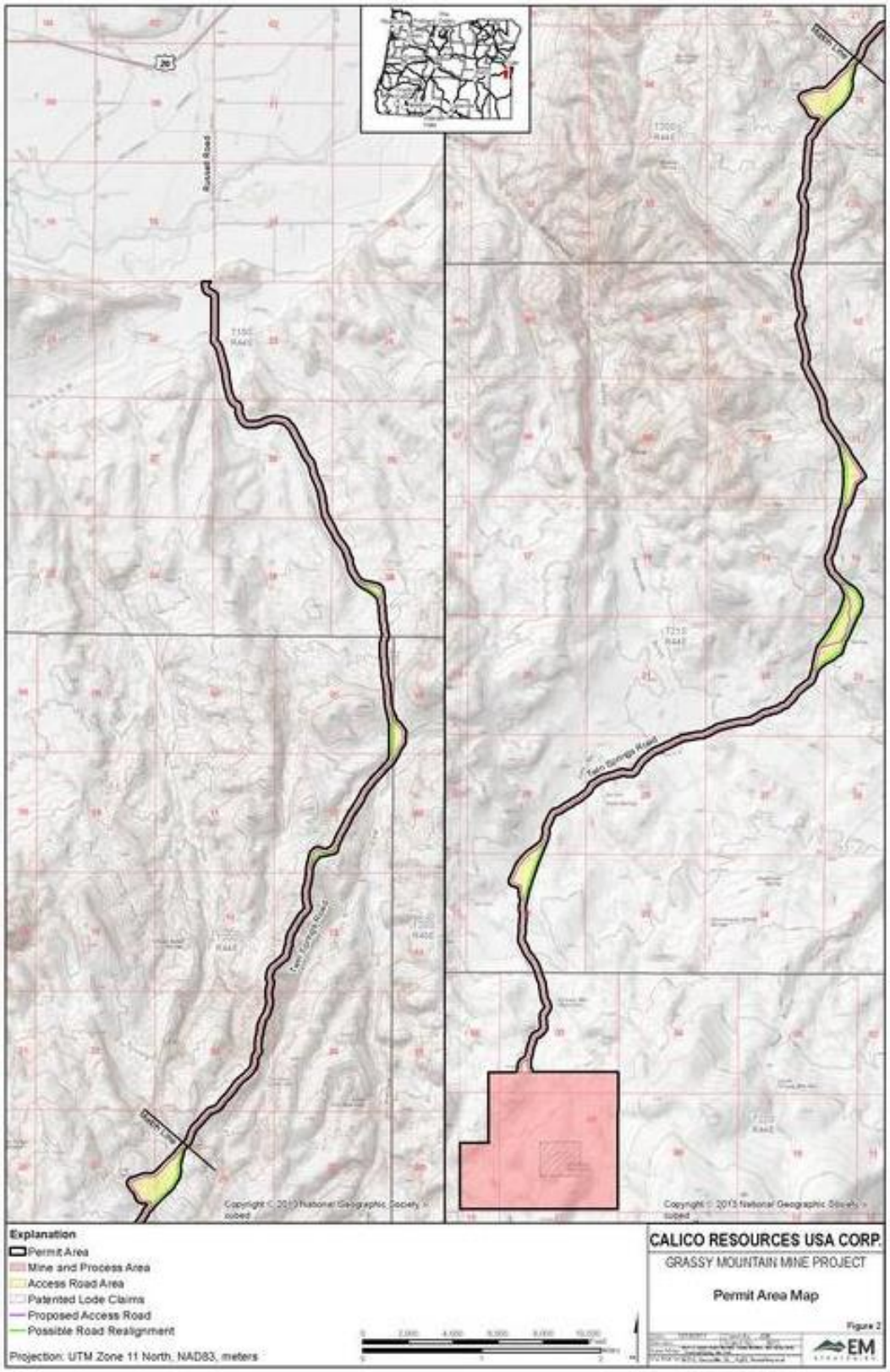

Figure 2. Permit Area Map

2 GENERAL INFORMATION

The Project is an underground precious metal mining operation, with a mill to extract the metal and a tailings facility to store the processed ore. The mill and tailings facilities are a zero-discharge design. In addition, there will be a septic system with a leach field.

The mining operation, including processing and mine tailings management are described in **CPA Text Section 3 and Appendices C, D, L, N, O, S, V, AC, AD, and AE of the CPA**. A complete description and a set of drawings for the planned Water and Wastewater facilities are in **Appendix AE of the CPA.**

3 LIST OF PERMITS ASSOCIATED WITH THE PROJECT

Table 2 Permits Associated with the Project

Permit	Regulatory Agency
Air Quality Operating Permits	Oregon Department of Environmental Quality, Bureau of Air Pollution Control
Chemical Mining Permit	Oregon Department of Environmental Quality
Chemical Process Mines Permit	Oregon Department of Geology and Mineral Industries
Permit to Appropriate Water	Oregon Water Resources Department
General Discharge Permit (Storm Water)	Oregon Department of Environmental Quality
Dam Safety Permit	Oregon Water Resources Department
Air Quality Operating Permit	Oregon Department of Environmental Quality
Hazardous Waste Identification Number	United States Environmental Protection Agency
Plan of Operations/Record of Decision	United States Department of the Interior, Bureau of Land Management
Explosives Permit	United States Department of the Treasury, Bureau of Alcohol, Tobacco, Firearms, and Explosives

4 DESCRIPTION OF THE SITE

In general, the proposed mining and precious metal processing operations will consist of an underground mine and ore processing facilities, including a conventional mill and tailings storage facility (TSF), and waste rock storage areas, as well as other support facilities. The Project will include the following major components (**Error! Reference source not found.**3):

- One underground mine;
- One waste rock storage area;
- One carbon-in-leach (CIL) processing plant;
- One borrow pit area;
- One Tailings Storage Facility (TSF);
- Run-of-mine (ROM) ore stockpile;

- One reclaim pond;
- A water supply well field and pipeline, associated water delivery pipelines, and power;
- A power substation and distribution system;
- One ventilation shaft;
- Access and haul roads;
- Ancillary facilities that include the following: haul, secondary, and exploration roads; truck workshop; warehouse; stormwater diversions; sediment control basins; reagent and fuel storage; storage and laydown yards; explosive magazines; fresh water storage; monitoring wells; meteorological station, an administration/security building; borrow areas; growth media stockpiles; and solid and hazardous waste management facilities to manage wastes; and
- Reclamation and closure, including the potential development of an Evaporation Cell (E-Cell) for the TSF.

Calico proposes to mine approximately three million tons (mtons) of mill-grade ore and 0.2 mtons of waste rock (total of 3.2 mtons). The material (both ore and waste) will be extracted from the underground mine using conventional underground mining techniques of drilling, blasting, mucking, loading, and hauling.

A complete description of the site is included in the **CPA Text, along with detail on the specific topics in the Appendices**.

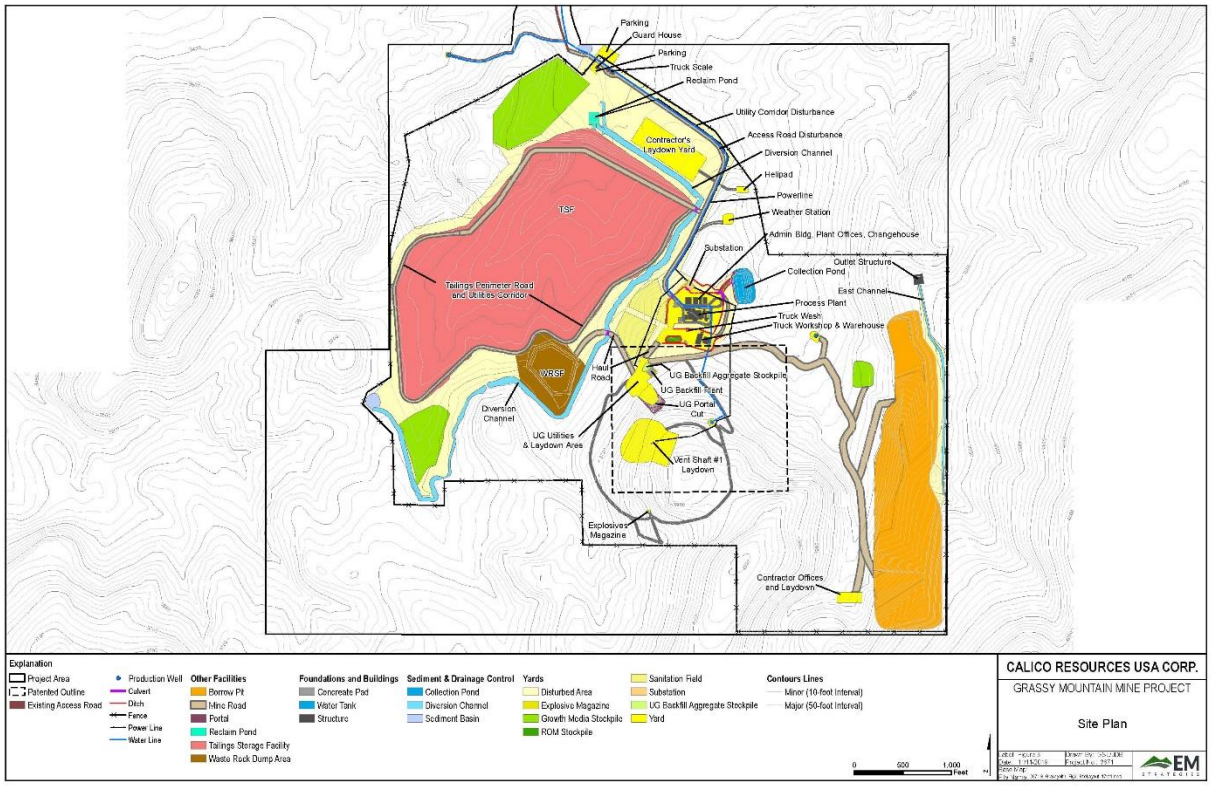

Figure 3 Project general arrangement map

5 SITE CONDITIONS (BASELINE DATA REPORTS)

The Baseline Data Reports (BDRs) and the Environmental Baseline Study Work Plans (September 22, 2017) (Work Plans) are in **Appendix B of the CPA**.

The following BDRs are included in **Appendix B of the CPA**:

- Air Quality Resources
- Aquatic Resources
- Areas of Critical Environmental Concern/Research Natural Areas
- Cultural Resources
- Environmental Justice
- Geochemistry
- Geology and Soils
- Grazing Management
- Groundwater
- Land Use
- Noise
- Oregon Natural Heritage Plan Areas
- Outstanding Natural Areas
- Recreation
- Socioeconomics
- Surface Water
- Terrestrial Vegetation
- Transportation
- Visual Resources
- Wetlands
- Wild, Scenic or Recreational Rivers
- Wildlife Resources

Individual BDRs are referenced in this application, as needed for clarity.

Specific site condition topics listed below from OAR 340-043, are shown with reference to the corresponding section (s) and appendices of the CPA which address the topic in detail.

- Climate/meteorology characterization, with supporting data (**Appendix C of the CPA**)
- Soils characterization, with supporting data (**Appendix B; Geology and Soils BDR**)
- Surface Water hydrology study, with supporting data (**Appendix B; Surface Water BDR**)
- Characterization of surface and groundwater quality (**Appendix B; Surface Water BDR and Groundwater BDR**)
- Inventory of surface water and groundwater beneficial uses (**Appendix B; Surface Water BDR and Groundwater BDR**)

- Hydrogeologic characterization of groundwater with supporting data (**Appendix B; Groundwater BDR**)
- Geologic engineering, hazards and geotechnical study with supporting data (**CPA Text Section 3 and Appendix C of the CPA**)
- Characterization of mine materials and wastes (**Appendix B; Geochemistry BDR and Appendix T of the CPA**). Includes discussion on the following in relation to overburden, waste rock, stockpiled ore and mine tailings:
    - chemical and mineral analysis related to toxicity,
    - determination of the potential for acid water formation,
    - determination of the potential for long-term leaching of toxic materials from the wastes;
- Characterization of wastewater produced by the operation, including quantity, chemical quality and physical quality (**Appendix AE of the CPA**)
    - Quantity
    - Chemical quality
    - Physical quality
- Assessment of potential for acid-water formation from waste disposal facilities, low grade stockpiles and waste rock piles (**Appendix B; Geochemistry BDR and Appendix T of the CPA**)

6 ANALYSIS OF HOW THE PROPOSED OPERATION WILL AFFECT THE SITE AND THE ENVIRONMENT

The Project is designed as a zero-discharge facility.

The TSF is designed as a zero-discharge facility capable of storing the 500-year, 24-hour storm event and an allowance for wave action and to meet the minimum requirements for a Low Hazard Dam. Permanent and temporary stormwater diversions will collect and divert a majority of the stormwater runoff around the facility to a natural drainage on the north side of the TSF. The TSF will be a continuous geomembrane-lined facility with continuous primary and secondary containment. A network of perforated pipes will capture and convey underflow via gravity to the reclaim pond located downstream of the main embankment. Water from the reclaim pond will be pumped back to the mill for reuse in the process circuit. For details on the design of the TSF and Storm Water Management see **Appendices C and Y of the CPA**.

The design of the Mill and Processing is also zero-discharge. The containment strategy associated with the process plant can be divided between the containment of process flows and reagents, and the collection and containment of surface contact water. Each containment area is located on a cast in-situ concrete slab, which will have curbs providing the required containment volume. Diversion ditches will be constructed above plant infrastructure where required to prevent runoff from entering the process plant areas. Precipitation that falls directly on the pad will be collected in a system of ditches and culverts and directed by gravity towards the collection pond. Details of the design of the Mill and Processing area, including the containment details and stormwater management, see **Appendices D and Y of the CPA**.

The Mining Operation is also designed for zero-discharge. When groundwater is encountered during mining, it will be collected, taken to the surface and used in the processing circuit, as needed. The mine will be backfilled as each level is mined out with material that is not acid-generating, either basalt from the borrow pit on the east side of the Permit Area, or cemented waste rock from the mining operation. For details of the mining operation and the testwork that has been completed to evaluate the groundwater, waste rock and basalt, see **CPA Text Section 3 and Appendix B (Geochemistry and Groundwater BDRs) of the CPA**.

Reclamation and Closure plans are described in **CPA Text Section 4 of the CPA**. Additionally, Operational Environmental Protection Measures are described in **CPA Text Section 3.6**. Also refer to **Appendices E, F, G, H, I, K, T, Y, Z, AA, and AB.** Additionally, a Post-Reclamation Topography Map is included in **Appendix A of the CPA.**

As part of the CPA process, DOGAMI will be completing an Environmental Evaluation (EE) (OAR-632-037-0085), which will address the impacts to the environment based on the information submitted in the CPA.

7 PLANS AND SPECIFICATIONS

Description of the facilities to be constructed, including the following specific topics shown with reference to the section (s) and appendices of the CPA that describe the topic in detail (**CPA Text Section 3, Appendices C, D, L, Q, S, V, AD and AE of the CPA**).

- Tanks (**Appendix D**)
- Pipes and other storage and conveyance means for processing chemicals and solution wastewaters (**Appendices C and D of the CPA**)
    - All chemical conveyances (ditches, troughs, pipes, etc.) shall be equipped with secondary containment and leak detection means for preventing and detecting release of chemicals to surface water, groundwater or soils.
- Management plan for control of surface water (**Appendix O and Y of the CPA**)
- Management for treatment of excess wastewater (**Appendix AE of the CPA**)
    - Include provision for reuse and wastewater minimization
- Facility construction plan including, as applicable (**Appendix C of the CPA**):
    - Low-permeability soils barriers,
    - Types of geosynthetics to be use and a description of their installation methods
    - Design of wastewater treatment facilities and processes,
- Quality assurance plan for applicable phases of construction (**Appendix AA of the CPA**)
- Preliminary closure plan (**CPA Text Section 4, Appendices C, D, and V of the CPA**)
- Preliminary post-closure monitoring plan (**CPA Text Section 4.9, Appendices C, G, V, Y of the CPA**)
- Preliminary post-closure maintenance plan (**CPA Text Section 4.9**)
- Spill containment and control plan (**CPA Text Section 4, Appendices E, Z, AB of the CPA**)

8 DESIGN, CONSTRUCTION, OPERATION AND CLOSURE REQUIREMENTS

- Design, construction, operation and closure requirements for: (**CPA Text Section 3, Appendices C, D, S, V, AD and AE**)
    - Chemical process facilities
    - Waste disposal facilities
    - Mixing, distribution and application of chemicals associated with mining operations d. Ore preparation and beneficiation facilities
    - Process ore facilities
- Alternative facilities may be approved by the DEQ (**CPA Text Section 5 of the CPA**)
    - Applicant must demonstrate that alternatives will provide equivalent or better environmental protection; burden of proof is with the applicant
    - Written approval required
- Groundwater monitoring plan (**Appendix Q**)
    - Monitoring wells shall be installed for detection of groundwater contamination as required by OAR Ch340, Div40