

**DRAFT**  
**OPERATION AND MAINTENANCE PLAN**  
FOR  
**MINE WASTE CONSOLIDATION AREA**  
**CENTENNIAL M-1 PROPERTY**  
DTSC Site Code 102370  
Nevada County, California

April 2021

PREPARED ON BEHALF OF:  
**RISE GRASS VALLEY INC.**  
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PROJECT NO. 5279.04

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## ACRONYMS

|                   |   |
|-------------------|---|
| APN               | assessor parcel number  |
| bgs               | below ground surface  |
| BMP               | best management practice  |
| CCR               | California Code of Regulations  |
| CEQA              | California Environmental Quality Act  |
| CERCLA            | Comprehensive Environmental Response Compensation and Liability Act of 1980 |
| CFR               | Code of Federal Regulations   |
| COC               | constituent of concern  |
| DMP               | Dust Mitigation Plan  |
| DTSC              | California Department of Toxic Substances Control                           |
| DTSC-SL           | DTSC Screening Level  |
| EPA               | United States Environmental Protection Agency                               |
| HSC               | California Health and Safety Code   |
| HSP               | Health and Safety Plan  |
| LUC               | land use covenant   |
| mg/kg             | milligrams per kilogram   |
| mg/m <sup>3</sup> | milligrams per cubic meter  |
| OEHHA             | Office of Environmental Health Hazard Assessment                            |
| OMA               | operation and maintenance agreement   |
| OSHA              | Occupational Safety and Health Administration                               |
| RAP               | Remedial Action Plan  |
| RWQCB             | California Regional Water Quality Control Board                             |
| SOP               | standard operating procedure  |
| USEPA             | United States Environmental Protection Agency                               |
| VCA               | Voluntary Cleanup Agreement   |

## **1 INTRODUCTION**

On behalf of Rise Grass Valley Inc. (the Proponent), NV5 prepared this Operation and Maintenance Plan (O&M Plan) for a mine waste consolidation area (the Consolidation Area) located at the Centennial M-1 Property (the Site) in Nevada County, California.

A copy of this O&M Plan is to be kept at the site for reference and review. Access to the site by the California Department of Toxic Substances Control (DTSC) for inspection and review is to be arranged by the O&M Coordinator upon request.

### **1.1 SITE DESCRIPTION**

The site location is depicted on Figure 1. The Consolidation Area is located on the eastern end of the site as depicted on Sheet 1. Engineering plans for the Consolidation Area and cap were prepared by the Proponent and are presented as Sheets 1 and 2.

A legal description and parcel map are presented as Attachment A. As-built drawings are presented as Attachment B.

### **1.2 SUMMARY OF ENGINEERING CONTROLS**

The Consolidation Area contains mine waste (mine tailings and mine waste rock) and other mineralized soil and rock that contain naturally elevated levels of heavy metals (e.g., arsenic, lead, mercury). These metals present a potential health risk in the case of exposure such as dust inhalation, ingestion and dermal contact with the mine waste or contaminated soil.

The Consolidation Area includes approximately 130,000 cubic yards of mine waste and contaminated soil beneath the approximately 5.2-acre cap. The Consolidation Area is covered with a cap of compacted clean mine tailings that is intended to prevent exposure to the mine waste and contaminated soil that contain elevated metals concentrations. The cap consists of 48 inches of clean engineered fill, compacted and sloped to drain.

### **1.3 PROHIBITIONS**

Disturbance of the cap, side slopes, drainage facilities and the underlying materials within the Consolidation Area is prohibited unless conducted in accordance with this O&M Plan.

### **1.4 PURPOSE**

This O&M Plan presents:

1. Procedures for long-term operation, inspection, maintenance, monitoring and regulatory reporting that are required to preserve the engineering controls (the cap and associated surface drainage improvements).
2. Procedures for regulatory notification and management of contaminated soil and rock, should excavation into the Consolidation Area be required in the future.

### **1.5 GOALS AND OBJECTIVES**

The primary goal of the O&M Plan is to prevent uncontrolled exposures to contaminated mine waste and soil within the Consolidation Area. The following objectives are related to this goal:

1. Minimize disturbances of encapsulated soil and rock

2. Promote awareness of the Consolidation Area and cap system
3. Promote timely inspection, maintenance and repair of the cap system
4. Describe health and safety concerns related to the encapsulated soil and rock
5. Present understandable procedures for inspection, monitoring and reporting

## **1.6 BASIS FOR ENGINEERING CONTROLS**

Site cleanup and construction of the Consolidation Area are based on the findings of site investigation, laboratory analysis, and risk assessment presented in the *Preliminary Endangerment Assessment, Centennial M-1 Property* (PEA; NV5, 2020). Engineering analysis for the Consolidation Area was presented in the *Remedial Action Plan, Centennial M-1 Property* (RAP; NV5, 2021). This O&M Plan is to be incorporated into a future Remedial Design and Implementation Plan (RDIP) for the Centennial M-1 Property.

## **1.7 REGULATORY OVERSIGHT**

The California Department of Toxic Substances Control (DTSC) is the lead agency overseeing the construction and maintenance of the Consolidation Area. Planning and construction was performed pursuant to a Voluntary Cleanup Agreement (VCA; Docket No. HSA-FY18/19-014) between DTSC and the Proponent. The DTSC Site Code is 102370.

## **1.8 ENVIRONMENTAL MONITORING**

A Monitoring and Reporting Plan (MRP), which will also be a part of the RDIP for the site, describes procedures for routine groundwater monitoring at the location of the Consolidation Area. Groundwater monitoring includes water elevation measurement in three wells, groundwater sample collection, laboratory analysis, and reporting. Routine groundwater monitoring and reporting are required as part of the LUC to verify that groundwater quality is not impacted by the consolidated mine waste and soil.

## 2 HEALTH HAZARD SUMMARY

Arsenic, lead and mercury (present in mine waste and contaminated soil associated with the mine waste) are considered constituents of concern (COCs). Due to the presence of ultramafic rock in the vicinity of the site, naturally occurring asbestos (NOA) is a potential COC. Future property owners and users must be informed that the presence of arsenic, lead and mercury in the Consolidation Area may present human health concerns in the case of exposure (i.e., dermal contact, incidental ingestion and dust inhalation), and NOA is also potentially present in MWR.

The MWR is to be capped with 48 inches of compacted clean mine tailings to prevent exposure. A land use covenant (LUC) restricts excavation of the cap, cover soil or MWR without prior DTSC notification and specific soil management procedures and health and safety procedures. Potential health concerns associated with arsenic, lead, mercury, and NOA are described below.

### 2.1 ARSENIC

Arsenic was detected in mine waste at concentrations up to 4,000 milligrams per kilogram (mg/kg, also expressed as parts per million, or ppm). The central-tendency estimates (95% Upper Confidence Limit on the mean value) for the consolidated mine waste range from 170 to 1,250 mg/kg (depending upon the source area). The background threshold value for arsenic in site soil is 18 mg/kg, and the Total Threshold Limit Concentration (TTLC) is 500 mg/kg.

Arsenic is a carcinogen that causes cancer of the skin, lungs, bladder, and kidney, as well as acute health effects and noncancerous skin conditions. Arsenic exposure is also linked to diseases of the heart, lungs, and brain. Arsenic exposure in the workplace occurs through inhalation, ingestion, dermal (skin) contact and eye contact. Chronic exposure to arsenic can lead to conditions including dermatitis, wart formation and cancer. Acute exposures to high arsenic concentrations can cause lung distress and death.

Perhaps the single-most characteristic effect of long-term oral exposure to inorganic arsenic is a pattern of skin changes. These include patches of darkened skin and the appearance of small "corns" or "warts" on the palms, soles, and torso, and are often associated with changes in the blood vessels of the skin. Skin cancer may also develop. Swallowing arsenic has also been reported to increase the risk of cancer in the liver, bladder, and lungs. The Department of Health and Human Services (DHHS) has determined that inorganic arsenic is known to be a human carcinogen (a chemical that causes cancer). The International Agency for Research on Cancer (IARC) has determined that inorganic arsenic is carcinogenic to humans. The EPA has also classified inorganic arsenic as a known human carcinogen. Arsenic is regulated by Cal/OSHA as a carcinogen.

Exposure to higher-than-average levels of arsenic occurs mainly in workplaces, near or in hazardous waste sites, and in areas with high levels naturally occurring in soil, rocks, and water. Exposure to high levels of arsenic can cause death. Exposure to arsenic at low levels for extended periods of time can cause a discoloration of the skin and the appearance of small corns or warts.

## 2.2 LEAD

Lead was detected in mine waste at concentrations ranging up to 835 mg/kg. The central-tendency estimates (95% Upper Confidence Limit on the mean value) for the consolidated mine waste range from 104 to 244 mg/kg (depending upon the source area). The human health screening level for commercial/industrial land use is 360 mg/kg. Lead was not detected above the TTLC (1,000 mg/kg).

Lead in the body can cause serious damage to the central and peripheral nervous system, the cardiovascular system, and the kidneys. Exposure to high concentrations of lead can cause mental disorder, convulsions, coma, and sometimes death. Children are especially vulnerable and susceptible to lead poisoning. Even low levels persisting during childhood are known to slow a child's normal development and cause learning and behavioral problems. The Agency for Toxic Substances and Disease Registry (ATSDR), as well as numerous other investigators, reports long-lasting impacts on intelligence, motor control, hearing, and emotional development of children who have levels of lead in the body that are not associated with obvious symptoms.

## 2.3 MERCURY

Mercury was detected in mine waste at concentrations ranging up to 57 mg/kg. The central-tendency estimates (95% Upper Confidence Limit on the mean value) for the consolidated mine waste range from 4 to 12 mg/kg (depending upon the source area). The human health screening level for commercial/industrial land use is 4.4 mg/kg. The TTLC is 20 mg/kg.

Mercury takes on different forms in the environment. Methylmercury is a particularly toxic form that bioaccumulates in humans and wildlife. Mercury is converted by microbial action into methylmercury, which can then be incorporated into the tissues of microbes, plants, and animals (bioaccumulation). As methylmercury moves through the food chain, it is concentrated (biomagnification). Elemental mercury evaporates at room temperature and reacts with many elements to form salts, amalgams, and organo-mercury compounds. A number of these compounds are considered "highly hazardous" by the US EPA (P list). All mercury-containing waste is considered hazardous and requires special disposal considerations. Mercury vapor is readily absorbed through inhalation and can also pass through intact skin. After absorption, elemental mercury is carried by the blood to the central nervous system where it is oxidized. The oxidation product produces injury. Mercury metal and mercury compounds are highly hazardous if inhaled or if they remain on the skin for more than a short period of time.

## 2.4 ASBESTOS

Naturally occurring asbestos (NOA) is known to occur in serpentinite and other mafic or ultramafic bedrock in the site vicinity, and thus may be present in mine waste originating from these rock types. Asbestos is a term that refers to a group of naturally occurring fibrous minerals. The risk of developing asbestos-related disease varies according to the intensity, duration, and nature of the exposure. Asbestos exposure can cause a number of disabling and fatal diseases. The principal route of exposure is by inhalation through the nose and mouth. Asbestos, traditionally valued for its indestructibility, is especially resistant to the internal defenses of the human body. Once lodged inside the lungs, most fibers will not break up or dissolve, and they cannot be neutralized or removed.



To be a significant health concern, asbestos fibers must be inhaled. The respiratory system is sensitive to bacteria, viruses, and many airborne particles that can be inhaled. Reactions to these irritants can disrupt the functioning of the system, resulting in many ailments including the following: the common cold, hay fever, sinusitis, sore throat, acute or chronic bronchitis, emphysema, and lung cancer.

### **3 O&M PERSONNEL ROLES AND RESPONSIBILITIES**

The following O&M personnel are designated by the Proponent:

#### **3.1 O&M COORDINATOR**

Benjamin Mossman, President  
Rise Grass Valley Inc.  
PO Box 271  
Grass Valley, CA 95945  
604.260.4577  
admin@risegrassvalley.com

The O&M Coordinator is responsible for implementing the O&M Plan:

- Be familiar with site conditions and cap system
- Provide the O&M Plan to tenants and land users
- Evaluate any work proposed in the vicinity of the cap to determine whether the proposed work will intrude on the MWR and contaminated soil
- Oversee implementation of a DTSC-approved Standard Operating Procedure (SOP) for work that will intrude on MWR and contaminated soil
- Receive and submit all notices, comments, documents, reports, approvals, decisions and other communications to and from DTSC
- Prepare and submit Intrusive Work Completion / Incident Reports if needed
- Conduct routine and annual inspections (including five-year reviews)
- Prepare and submit annual and five-year reports
- Oversee environmental monitoring pursuant to the Monitoring and Reporting Plan (MRP)

#### **3.2 O&M PROFESSIONAL**

The O&M Professional listed below, or another qualified professional, is to be retained to perform environmental monitoring pursuant to the MRP, to document the outcome of any intrusive work performed in the cap area, and to review items that require professional review (e.g., five-year review). Pursuant to Business and Professions Code, Chapters 7 and 12.5, and the California Code of Regulations, Title 16, Chapters 5 and 29, the O&M Professional must be a California-registered professional (e.g., engineer or geologist) with expertise in arsenic and lead-impacted soil investigation and remediation, who is familiar with the cap systems installed at the site. A resume is presented as Attachment C.

Jason W. Muir, CE 60167  
Holdrege & Kull, An NV5 Company  
792 Searls Avenue, Nevada City, CA 95959  
Office: 530.478.1305  
Mobile: 530.362.2776  
jason.muir@nv5.com

## **4 TRAINING**

The O&M Coordinator is responsible for ensuring that site users and inspectors are trained and familiar with the provisions of this O&M Plan.

### **4.1 SITE USERS**

The O&M Coordinator is responsible for ensuring that site users are familiar with the following, at a minimum:

1. The contents of this O&M Plan;
2. The location and extent of the Consolidation Area, including the cap, side slopes and drainage improvements;
3. The prohibitions against cap disturbance and intrusive work without the specific knowledge of the O&M Coordinator and adherence to the provisions of this O&M Plan;
4. The health concerns related to the encapsulated MWR and soil; and
5. Procedures to be followed in the event of accidental damage to the cap.

### **4.2 SITE INSPECTORS**

The O&M Coordinator and any designee responsible for conducting routine inspections must be familiar with:

1. The contents of this O&M Plan;
2. The location and extent of the Consolidation Area, including the cap, side slopes and drainage improvements;
3. Required inspection locations;
4. Recognition of deteriorated or damaged pavement;
5. Procedures for inspection and checklist completion;
6. The SOP for intrusive work and the definition of intrusive work; and
7. Procedures for documentation and reporting.

## **5 INSPECTIONS**

Inspections will be conducted routinely by the O&M Coordinator or designee, who will be responsible for identification of any required repairs, documentation of changes in site conditions or usage, and any other significant information relating to effectiveness of the engineering controls. Examples of such conditions include cracks in the cap, soil movement, or other cap disturbance.

The O&M Coordinator will document all inspections and required repairs or maintenance, and incorporate such documents into the Annual Inspection Summary Report.

The O&M Coordinator will notify DTSC of any failures of the engineering controls that are not repaired within 14 days of discovery in accordance with the SOP (Attachment D). Such notifications will include a proposed schedule for maintenance and repair.

### **5.1 PERIODIC INSPECTION**

The frequency of periodic inspection is to be determined by the O&M Coordinator and will depend upon the use level of the cap area. Inspections must be frequent enough to identify cap distress or cap activities that may cause distress before the cap is compromised. For example, monthly inspection may be adequate when no activity is taking place on the cap. More frequent inspection is required if the cap is in routine use.

### **5.2 INSPECTION FOR UNPLANNED EVENTS**

The cap is to be inspected during or immediately following unplanned events such as fires, floods, heavy rain or seismic events. Heavy rainfall may be defined as exceeding 0.8 inches in one hour. Significant seismic events may include earthquakes occurring nearby with a magnitude of 5.0 on the Richter scale.

### **5.3 ANNUAL INSPECTION**

Annual inspections are to be completed by October 1 of every year. The O&M Coordinator will perform the annual inspection. The purpose of this inspection is to identify and review completion of any required repairs, changes in site conditions or usage, descriptions of any onsite construction activities, or any other significant information relating to the engineering controls that may have taken place over the previous twelve months.

During inspections, all items flagged for required maintenance will have a specified action date for completion of required repairs. The O&M Coordinator is responsible for follow-up review to ensure that identified repairs are completed on schedule, and will sign the completion blocks of the inspection reports.

### **5.4 FIVE-YEAR REVIEW**

Five-year reviews are to be conducted to evaluate ongoing remedy effectiveness at the location of the cap. The purpose of five-year reviews is to determine whether the remedy:

- a. Remains protective of human health and the environment;
- b. Is functioning as designed; and
- c. Is maintained appropriately by O&M activities.

Each Five-Year Review will be conducted by the O&M Coordinator who will prepare and sign the Five-Year Review report, following the outline in Attachment G.

The O&M Coordinator will notify DTSC at least 14 days in advance of each five-year inspection. The first five-year inspection is to be completed by October 1, 2024, and all subsequent annual inspections are to be completed by October 1 of every fifth year.

The inspection will be performed by the O&M Coordinator and will include the following:

1. Inspect the condition of engineering controls associated with the Consolidation Area (asphalt cap, side slopes and drainage controls).
2. Identify and evaluate repair work, changes in site conditions or usage, construction activities or any other significant activity that may have affected the condition of the engineering controls over the previous five years.
3. Flag items for required maintenance and repair, and specify a date for completion of the action.
4. Review the maintenance and repair work to verify its effectiveness, and sign and date in the completion blocks of the inspection reports documenting that the work was completed effectively.
5. Notify DTSC of any failure of the engineering controls that is not repaired within 14 days of discovery in accordance with the SOP (Attachment D). Include a proposed schedule for completion.
6. Submit the five-year report to DTSC within 60 days of the inspection.

## 6 ANNUAL AND FIVE-YEAR REPORTING

The O&M Coordinator must submit the following reports to DTSC:

- Annual reports,
- Five-year reports, and
- Completion reports for intrusive work (see the “Work Procedures” section)

### 6.1 ANNUAL REPORTS

The annual reports are intended to summarize the periodic inspections and document completions, delays, or failures to repair any items identified as needing repairs. The annual report must be signed by the O&M Coordinator, and will be submitted by the O&M Coordinator to DTSC no later than 60 calendar days after the annual inspection has been conducted. The annual reports are to be kept on file at the site.

An outline of a typical annual inspection summary report is presented in Attachment F. Annual reports will include:

1. Copies of the signed periodic inspection checklists completed since preparation of the previous annual report.
2. Results of the annual visual inspection and an evaluation of the condition of the pavement cap, side slopes and drainage systems.
3. Photographs depicting the cap and site conditions.
4. Description of activities performed since the previous annual report, such as:
  - a. Repairs to the cap,
  - b. Changes in site conditions or usage,
  - c. Construction activities in the vicinity of the cap, and
  - d. Work orders and completion reports for intrusive work.
5. Recommendations, if any, for cap maintenance or repair.
6. Recommendations, if any, for O&M Plan modification.
7. Intrusive work, maintenance or repairs planned for the coming year.
8. Summary of groundwater monitoring results for the year.
9. Conclusions regarding the ongoing effectiveness of the cap system.

### 6.2 FIVE-YEAR REPORTS

The first five-year report is due on December 1 five years after the date of DTSC site certification. For example, if DTSC certification is received in the fall of 2019, the first five year inspection is to be performed by October 1, 2024, and the report is to be submitted by December 1, 2024. All subsequent five-year reports are due December 1 of every fifth year. The O&M Coordinator will submit the Five-Year Review report to DTSC for review and approval. Five-year reports will be maintained in files at the site.

The Five-Year Review report will follow the format in Attachment G to summarize remedy effectiveness in the five-year period. The report will identify any incidents or problems with the cap systems and will evaluate system and component performance, effectiveness, and protectiveness. The five-year report will state conclusions and make recommendations for any changes needed to maintain remedy protectiveness. Five-year reports will include the following components: Introduction; Site Background; Physical Setting; Site Chronology; Removal Actions; Five-Year Review Process; Technical Assessment; Issues; Conclusions; Recommendations and Cost Impacts. The "Technical Assessment" component will include a summary of the previous four annual reports and the information identified in the annual inspection.

In addition to the information required in the annual reports, the five-year report will include a Technical Assessment and evaluation of the ongoing protectiveness of the remedy during the five-year review. This evaluation will address the following questions:

- Is the remedy functioning as intended by the remedy selection decision documents?
- Are the removal action objectives, goals, and criteria used at the time of the remedy selection still valid?
- Have there been any significant changes in the distribution or concentrations of the encapsulated MWR and contaminated soil?
- Has any other information come to light that could call into question the protectiveness of the remedy?
- Are any modifications needed to make the O&M Plan more effective?

## **7 CAP MAINTENANCE**

Maintenance of the cap is not expected to be necessary because the cap is constructed of 48 inches of non-expansive soil. Periodic mowing may be required, and repairs are necessary where erosion or other disturbance is observed. The need for maintenance is to be determined during annual and five-year review as described in the previous section, and at any time that surface erosion, disturbance or degradation is observed.



## **8 WORK PROCEDURES**

The O&M Coordinator must determine whether work in the cap area is "non-intrusive" or "intrusive" relative to the MWR and contaminated soil beneath the cap. "Intrusive" activities are prohibited unless conducted in accordance with applicable provisions of the O&M Plan.

The O&M Plan restricts activity only within the Consolidation Area, including the paved cap and the side slopes extending down from the cap. Notification to DTSC of construction, repairs, and maintenance activities is not required unless MWR or contaminated soil will be disturbed, or are inadvertently disturbed.

### **8.1 DEFINITIONS**

#### **8.1.1 Intrusive Work**

"Intrusive" work includes any construction or maintenance work activities that disturb MWR or contaminated soil, including but not limited to digging, drilling, excavating, grading, repairing, removing, trenching, filling, installing fence posts, gardening, and other soil movement that may penetrate or otherwise compromise the cap, thereby opening pathways for possible human exposures to contaminated soil.

#### **8.1.2 Non-Intrusive Work**

"Non-intrusive work" is defined as including construction, repairs, and/or maintenance activities at the site where exposure of lead-containing soils is not anticipated and where the integrity of the asphalt-concrete pavement cap and adjacent slopes are not compromised.

### **8.2 REQUIREMENTS FOR NON-INTRUSIVE WORK**

The O&M Coordinator must provide information regarding the location of cap system and the underlying MWR and contaminated soil to contractors and personnel performing non-intrusive work in the vicinity of the Consolidation Area.

The O&M Coordinator or designee must conduct inspections during construction and maintenance activities to verify that no intrusive work is performed and the cap is not compromised.

If MWR or contaminated soil are inadvertently disturbed or the integrity of the cap is compromised, then the O&M Coordinator must notify DTSC and implement the appropriate procedures pursuant to the intrusive work protocols below.

### **8.3 REQUIREMENTS FOR INTRUSIVE WORK**

The O&M Coordinator must oversee intrusive work to:

- a. Ensure that safeguards are in place to prevent or reduce the chance of worker or public exposure to contaminated soil;
- b. Prevent untrained or unauthorized personnel from performing intrusive work; and
- c. Restore the integrity of the engineering controls (the asphalt cap, side slopes and drainage controls) if compromised.

The following procedures must be performed and/or verified by the O&M Coordinator:

1. Provide advance notice of scheduled work to DTSC in accordance with the reporting procedures presented in this plan.
2. Provide information regarding location of cap components, cross-section construction details, and locations of MWR and contaminated soil to contractors and personnel.
3. Verify that personnel, contractors and their employees will comply with federal and state OSHA requirements.
4. Require that construction and maintenance work be performed in accordance with a DTSC-approved SOP (Attachment D).
5. Evaluate the proposed work schedule and promote timely completion of the work to reduce the chance of exposure.
6. Perform planned intrusive work only during extended dry periods of weather.
7. Implement best management practices (BMP) for erosion control so that contamination soil is not transported by wind or water.
8. Implement dust control practices.
9. Restrict access to the work site to reduce the chance of non-worker exposure.
10. Manage any MWR or contaminated soil brought to the surface in accordance with the SOP (Attachment D) and in compliance with local, state and federal law.
11. Comply with all applicable, relevant and appropriate federal, state, and local requirements.

#### **8.4 STANDARD OPERATING PROCEDURES FOR INTRUSIVE WORK**

Intrusive work must be conducted in accordance with the DTSC-approved Standard Operating Procedure (SOP; Attachment D). The SOP includes requirements for :

- Notification
- Management of excavated soil and rock
- Dust control
- Decontamination
- Cap repair, including temporary measures
- Evaluation and use of imported materials

If site conditions are not adequately addressed in the pre-approved SOP, then modification or revision of the SOP may be required. For example, the SOP does not include provisions for conducting air monitoring at fence lines, or use of a meteorological air station. When such air monitoring is required pursuant to CalOSHA or other regulatory requirements, a modified SOP detailing such procedures are to be submitted in advance for DTSC's review.

#### **8.5 NOTIFICATION AND REPORTING OF INTRUSIVE WORK**

Activities that disturb MWR and contaminated soil beneath the cap are not allowed without following the specific procedures outlined in this O&M Plan. The O&M Coordinator must notify DTSC in advance of intrusive as described below. All intrusive work activities must be conducted in accordance with a DTSC-approved SOP (Attachment D).

### **8.5.1 Notification**

Notification to DTSC by the O&M Coordinator is required for the following activities:

- Notify DTSC 14 days in advance if intrusive work will be performed in accordance with the SOP, and is anticipated to exceed seven days in duration.
- Notify DTSC at least 30 days in advance if intrusive work of any duration will follow a modified SOP. DTSC's approval of the modified SOP must be obtained prior to implementation of work.
- Notify DTSC of the occurrence of unplanned events (e.g., broken sewer line) that affect the cap or Consolidation Area.

### **8.5.2 Electronic Format**

Written communication to DTSC may be submitted via email. Email communication must include the name of the site, planned actions that may affect the Consolidation Area, anticipated start and completion dates, and description of how the area will be restored. The email must contain contact information for the O&M Coordinator and also the O&M Professional if appropriate. DTSC contact information is presented in the LUC.

### **8.5.3 Completion Reports for Intrusive Work**

A report format is presented in Attachment H. Within 60 days of completion the O&M Coordinator is to submit a completion report to DTSC to document the intrusive work, including:

- Dates work was performed
- Work location, with maps/figures
- Work performed, including restoration of cap systems where necessary
- Work practices to prevent potential exposures
- Variance or modifications (if any) of the approved SOP
- Summary of finished site conditions

## **8.6 HEALTH AND SAFETY REQUIREMENTS**

A Competent Person must conduct an exposure assessment at the initiation of any construction operation to ascertain how to best prevent dust generation and prevent exposure to heavy metals in soil and soil dust. OSHA Subpart D §1926 applies to construction work where an employee may be occupationally exposed to lead, including removal and consolidation of materials containing lead. A "Competent Person" is defined as "one who is capable of identifying existing and predictable lead hazards in the surroundings or working conditions and who has authorization to take prompt corrective measures to eliminate them." The Competent Person may be an industrial hygienist, hazardous substances consultant, safety officer or technician familiar with the identification and mitigation of chemical hazards related to heavy metals (e.g., lead, arsenic, nickel). All personnel performing the O&M activities specified in the O&M Plan will be responsible for operating in compliance with the most current requirements of:

- Title 8, California Code of Regulations, §5192 (8 CCR 5192), General Industry and Construction Safety Orders

- Title 29, Code of Federal Regulations, 0.120 (29 CFR 191 0.120), "Standards for Hazardous Waste Operations and Emergency Response (HAZWOPER)"
- Title 29, Code of Federal Regulations, 5 1926 (29 CFR 1926), Construction Industry Standards
- 40 Code of Federal Regulations (CFR) Part 745
- OSHA Publication 3142-09R, 2003, "Lead in Construction"
- Other pertinent requirements (e.g., local ordinances)

Site-specific health and safety requirements will be identified for the site under the supervision of a certified industrial hygienist in accordance with current health and safety standards as specified by the federal and California OSHA agencies. These requirements will be addressed in a Health and Safety Plan (HSP) that identifies proposed intrusive work activities, and specifies site characteristics, current conditions, history, physical and chemical hazards, and methods of handling and controlling so as to prevent or minimize exposures.

All personnel who perform intrusive work at the site must follow these requirements. Contractors doing field work in association with this O&M Plan will either adopt and abide by these site-specific requirements or develop their own health and safety plans, which, at a minimum, meet the site-specific requirements. A copy of a "Plan Acceptance Form" will be included in the HSP; all onsite personnel will read the requirements and sign the "Plan Acceptance Form" before starting the specified intrusive work.

## **9 RECORDKEEPING AND RETENTION**

Records (inspection and monitoring data, forms, reports, and other documents) prepared under the O&M Plan are to be maintained by the O&M Coordinator on file at the site. The records will be available for DTSC review upon request.

### **9.1 Records**

Records include but are not limited to:

- Inspection records: periodic inspection checklists, annual inspection summary reports, five-year review reports, completion reports for intrusive work and photographs associated with all of the above.
- Training records.
- Record documents: RAW, RDIP, Removal Action Completion Report, O&M Plan, LUC and O&M Agreement.

### **9.2 Retention**

All records will be preserved by O&M Coordinator for a minimum of 7 years after the conclusion of each relevant activity. The O&M Coordinator will notify DTSC in writing at least six months prior to destroying any documents prepared pursuant to the O&M Plan. If requested by DTSC, the O&M Coordinator will make documents available for review or reproduction.

### **9.3 Electronic Format**

The O&M Coordinator may elect to maintain paper copies of documents from the previous 12 months and the latest five-year report, and keep the rest as electronic files (e.g., in PDF).

### **9.4 DTSC Files**

DTSC's administrative record is available for public inspection during office hours at the following DTSC location:

Department of Toxic Substances Control  
8800 Cal Center Drive  
Sacramento, California 95826  
(800) 728-6942

## **10 PLAN UPDATES**

The O&M Coordinator may seek variance, modification or termination of the O&M Plan. “Variance” is a temporary waiver of a specific O&M Plan requirement. “Modification” is a permanent revision of an O&M Plan requirement. DTSC may allow variance, modification or termination of the O&M Plan if DTSC determines that (1) the requested action is protective of public health and safety and the environment, and (2) it is neither feasible nor appropriate to continue with the current O&M Plan requirements without the requested action.

### **10.1 VARIANCE**

The O&M Coordinator may apply to DTSC for a written variance from the provisions of the O&M Plan. DTSC will evaluate each request, and will grant a variance request only after determining that such a request would be protective of human health and the environment.

### **10.2 MODIFICATION**

When long-term performance of the cap remedies has been confirmed, the O&M Coordinator may apply to DTSC to modify the requirements of the O&M Plan based on site-specific monitoring results and conditions. Additionally, DTSC reserves the right to independently initiate appropriate O&M Plan modifications. As a result, DTSC may require the following O&M Plan modifications:

- Changes in the frequency of O&M activities;
- Modification, replacement, or addition of components to the O&M Plan if O&M activities fail to achieve the O&M objectives of protecting public health, safety and the environment;
- Evaluation, design, construction, and/or operation of additional remedial measures to achieve the O&M objectives.

### **10.3 TERMINATION**

Although it is not anticipated, DTSC may determine in the future that the O&M Plan may be terminated based on removal of the encapsulated material, change in land use, or availability of new scientific information resulting in changes or modifications to DTSC's technical criteria for evaluating risks posed by the encapsulated materials.

## 11 REFERENCES

- [CARB] California Air Resources Board, California Code of Regulations 593105, Air Toxics Control Measure
- [CFR] Code of Federal Regulations, Title 40, Part 745
- [DTSC] California Department of Toxic Substances Control, 2001 Oct. Information Advisory – Clean Imported Fill Material. Available online at [https://www.dtsc.ca.gov/Schools/upload/SMP\\_FS\\_Cleanfill-Schools.pdf](https://www.dtsc.ca.gov/Schools/upload/SMP_FS_Cleanfill-Schools.pdf)
- [HSC] California Health and Safety Code. Section 25356.1.5
- [OSHA] Occupational Health and Safety Administration, Publication 3142-09R, 2003, Lead in Construction
- NV5, 2020. Remedial Action Plan, Centennial M-1 Property, Nevada County, California.
- NV5, 2020. Preliminary Endangerment Assessment, Centennial M-1 Property, Nevada County, California.

## **FIGURES**

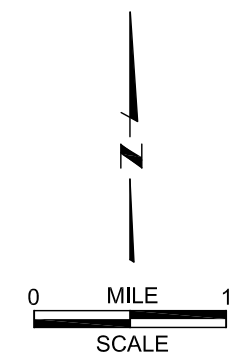
Figure 1      Location Map

Figure 2      Vicinity Map





BASE MAP FROM NEVADA COUNTY GEOGRAPHIC INFORMATION SYSTEM

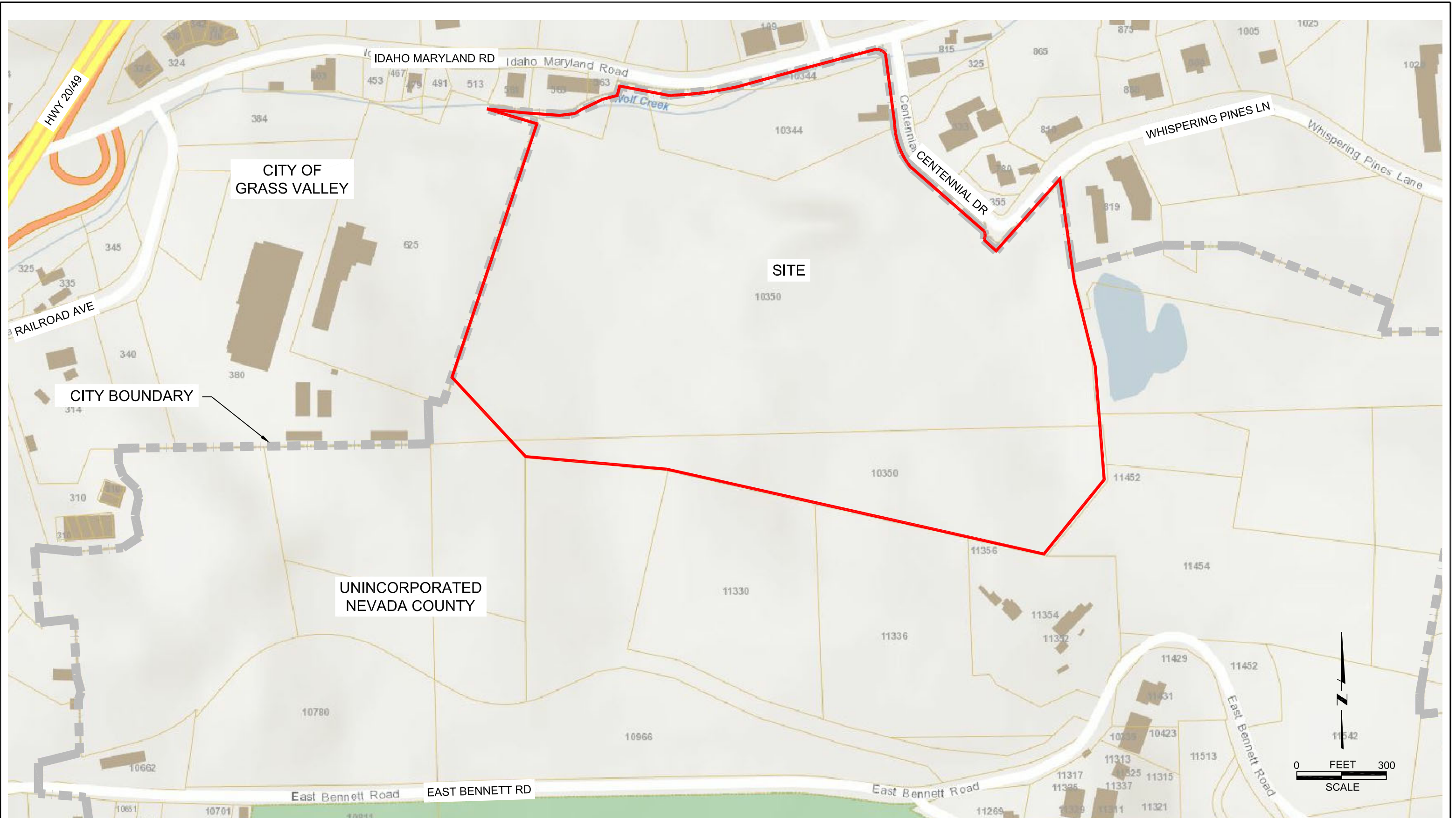


LOCATION MAP  
**CENTENNIAL M-1 PROPERTY**  
 GRASS VALLEY, CALIFORNIA

|              |                 |
|--------------|-----------------|
| DOCKET NO.:  | HSA-FY18/19-014 |
| SITE CODE:   | 102370          |
| NV5 PROJECT: | 5279.04         |
| DATE:        | MARCH 2020      |

FIGURE  
**1**





BASE MAP FROM NEVADA COUNTY GEOGRAPHIC INFORMATION SYSTEM



LOCATION MAP  
**CENTENNIAL M-1 PROPERTY**  
 GRASS VALLEY, CALIFORNIA

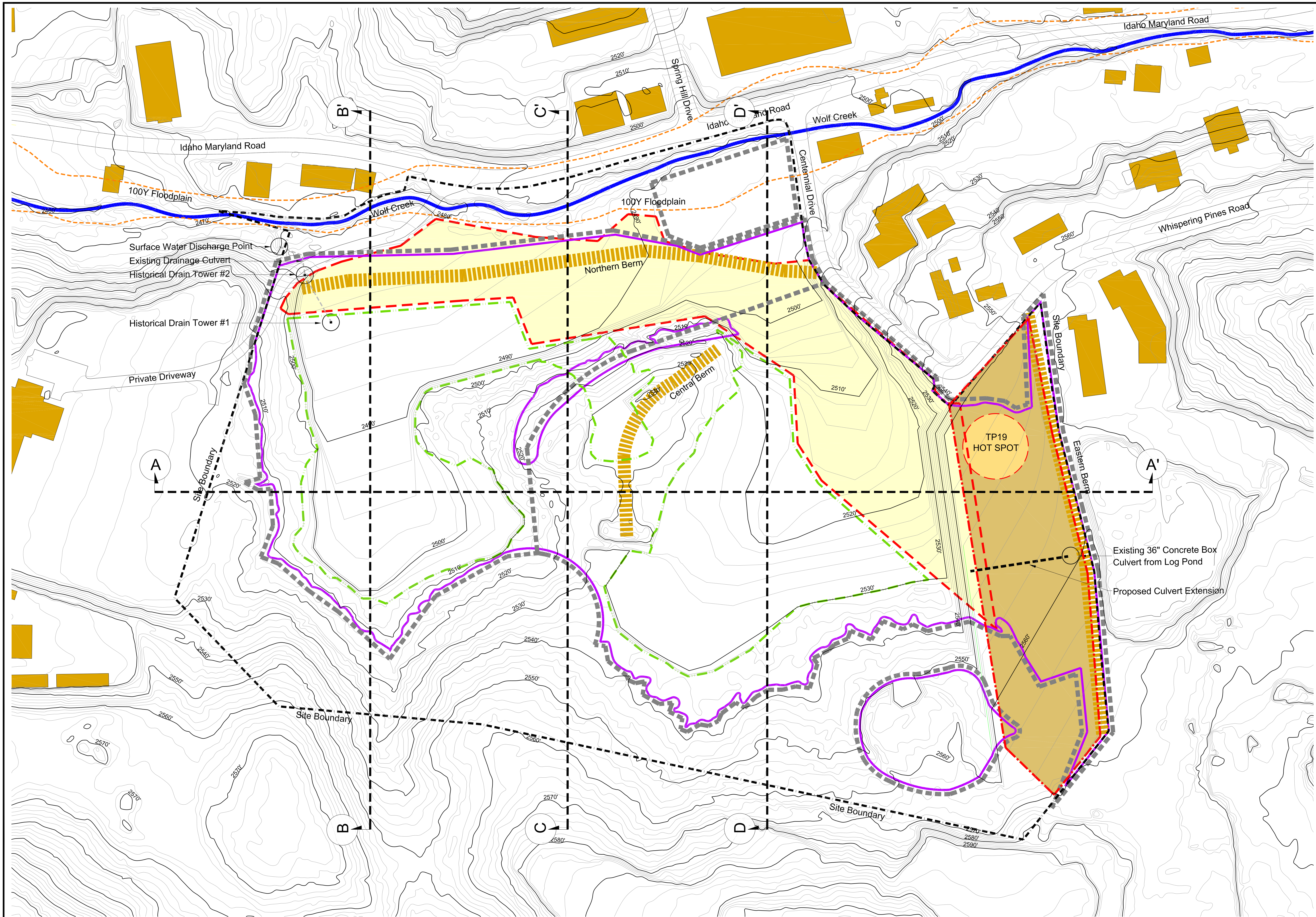
|              |                 |
|--------------|-----------------|
| DOCKET NO.:  | HSA-FY18/19-014 |
| SITE CODE:   | 102370          |
| NV5 PROJECT: | 5279.04         |
| DATE:        | MARCH 2020      |

## **SHEETS**

Sheet D1    Grading Plan

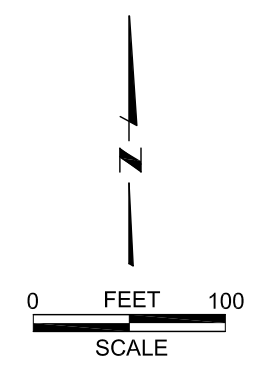
Sheet D2    Section Views





**NOTES**  
 FEATURE AND BOUNDARY LOCATIONS ARE APPROXIMATE AND WERE NOT DETERMINED BY SURVEY.

- LEGEND**
- SITE BOUNDARY
  - ASSESSMENT AREA BOUNDARY
  - ELEVATION CONTOUR LINE, 10-FOOT INTERVAL
  - ELEVATION CONTOUR LINE, 2-FOOT INTERVAL
  - ELEVATION DEPRESSION, 2-FOOT INTERVAL
  - STRUCTURE
  - MINE TAILINGS BOUNDARY
  - ▨ HISTORICAL BERM
  - ▨ EXCAVATION BOUNDARY
  - MINE WASTE CONSOLIDATION AREA
  - TP19 HOT SPOT
  - BORROW AREA BOUNDARY
  - CREEK - PERENNIAL
  - BOUNDARY OF 100-YEAR FLOODPLAIN
  - SECTION LINE (SEE SHEET D2)



BASE MAP AND TOPOGRAPHY BY RISE GRASS VALLEY, INC.

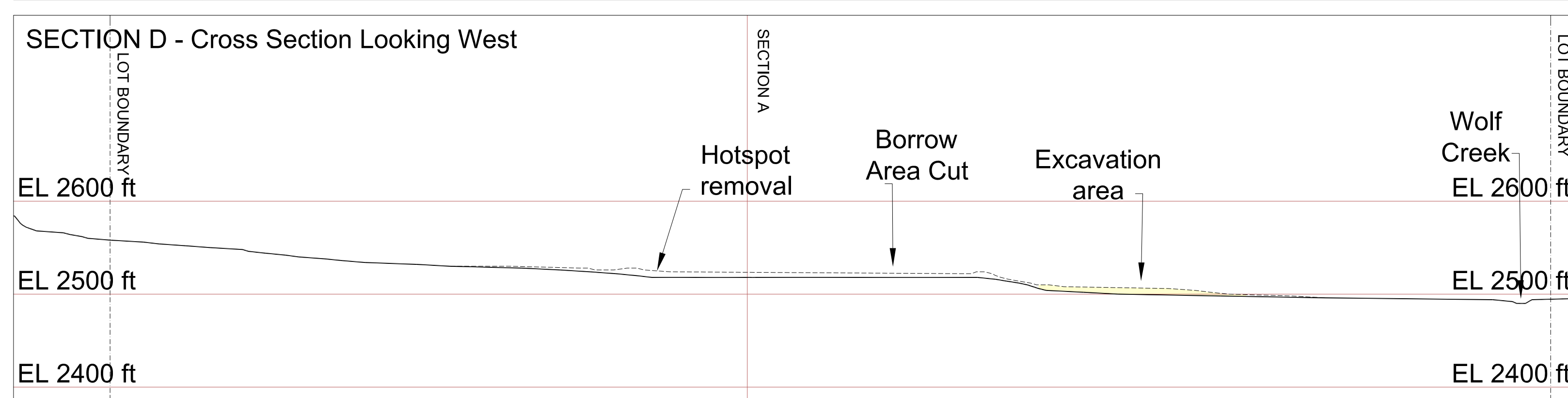
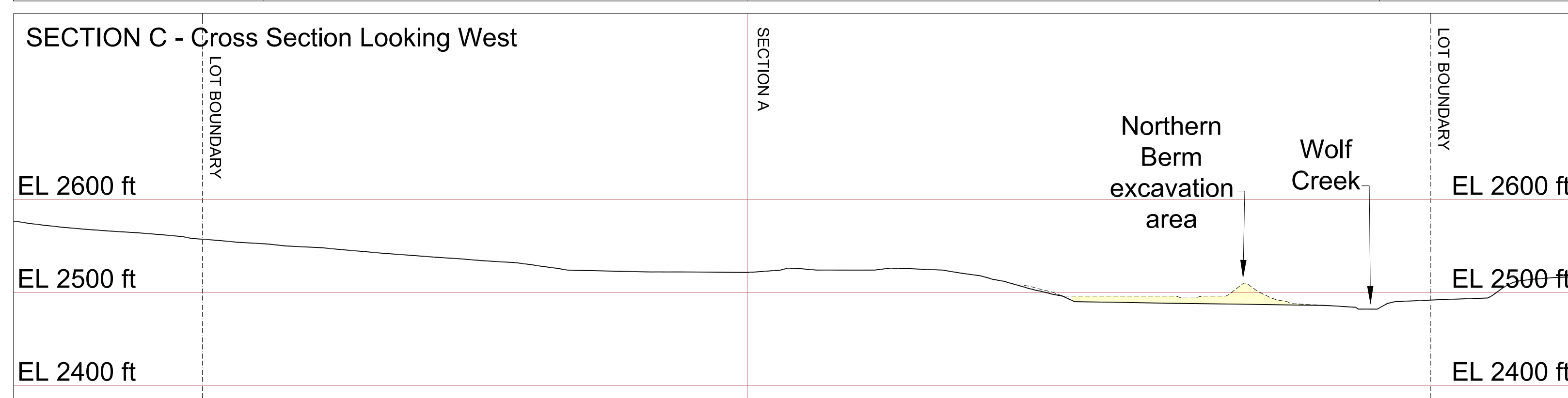
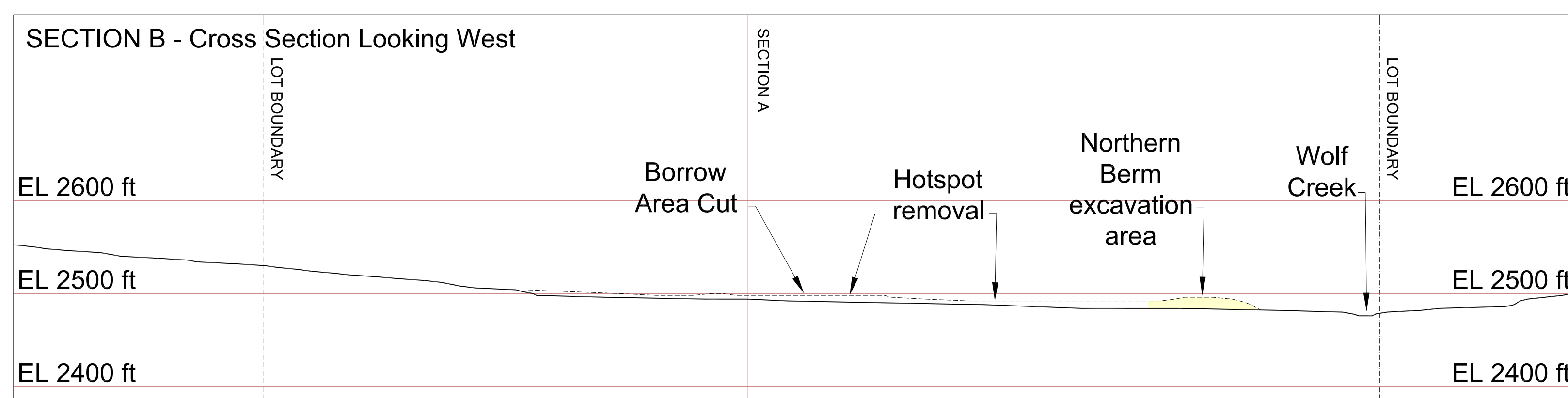
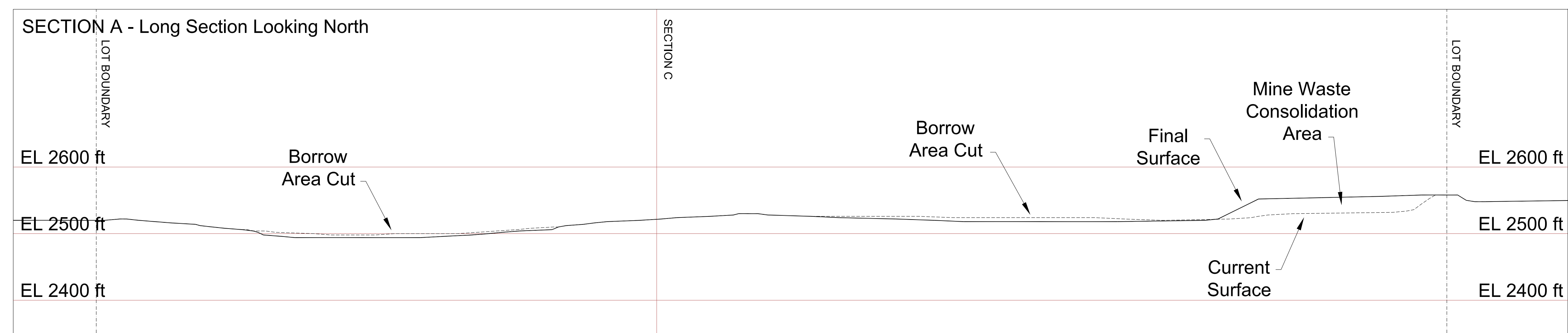
**NV5** **R**  
 Base map prepared by:  
 Rise Grass Valley Inc.  
 PO Box 271, Grass Valley, CA 95945  
 Horizontal Datum: NAD83 (2001)  
 Vertical Datum: GEOID 12B, NAVD 88  
 Projection: California State Plane Zone 2

**GRADING PLAN**  
**CENTENNIAL M-1 PROPERTY**  
 NEVADA COUNTY, CALIFORNIA

| NO. | REVISIONS | DATE | DTSC SITE CODE: 102370      | SHEET NO.:        |
|-----|-----------|------|-----------------------------|-------------------|
|     |           |      | DOCKET NO.: HSA-FY18/19-014 | <b>D1</b><br>OF 2 |
|     |           |      | CHECKED BY: MUIR            |                   |
|     |           |      | NV5 PROJECT NO.: 5729.04    |                   |
|     |           |      | DATE: JUNE 2020             |                   |



NOTES  
 FEATURE AND BOUNDARY LOCATIONS ARE  
 APPROXIMATE AND WERE NOT DETERMINED BY  
 SURVEY.



BASE MAP AND TOPOGRAPHY BY RISE GRASS VALLEY, INC.

| NO. | REVISIONS | DATE |
|-----|-----------|------|
|     |           |      |
|     |           |      |
|     |           |      |
|     |           |      |

|                             |
|-----------------------------|
| DTSC SITE CODE: 102370      |
| DOCKET NO.: HSA-FY18/19-014 |
| CHECKED BY: MUIR            |
| NV5 PROJECT NO.: 5729.04    |
| DATE: JUNE 2020             |

## **ATTACHMENT A**

Legal Description and Assessor's Parcel Map

[provided upon completion of remedial action and construction of cap]

## **ATTACHMENT B**

As-Built Drawings and Specifications

[provided upon completion of remedial action and construction of cap]

## **ATTACHMENT C**

Resume of O&M Professional



## **ATTACHMENT D**

Standard Operating Procedure (SOP) for Intrusive Work

**O&M PLAN ATTACHMENT D  
STANDARD OPERATING PROCEDURE  
FOR INTRUSIVE WORK**

AT

**MINE WASTE CONSOLIDATION AREA  
CENTENNIAL M-1 PROPERTY**

DTSC Site Code 102370  
Nevada County, California

April 2021

PREPARED ON BEHALF OF:

**RISE GRASS VALLEY INC.**  
333 CROWN POINT CIRCLE, SUITE 215  
GRASS VALLEY, CALIFORNIA



792 SEARLS AVENUE  
NEVADA CITY, CALIFORNIA 95959

PROJECT NO. 5279.04

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## ACRONYMS

|       |   |
|-------|---|
| BMP   | best management practice                          |
| CCR   | California Code of Regulations                    |
| COC   | constituent of concern                            |
| DMP   | Dust Mitigation Plan                              |
| DTSC  | California Department of Toxic Substances Control |
| HSC   | California Health and Safety Code                 |
| HSP   | Health and Safety Plan                            |
| LUC   | land use covenant                                 |
| mg/kg | milligrams per kilogram                           |
| OSHA  | Occupational Safety and Health Administration     |
| RAP   | Remedial Action Plan                              |
| RDIP  | Remedial Design and Implementation Plan           |
| RWQCB | California Regional Water Quality Control Board   |
| SOP   | standard operating procedure                      |
| USEPA | United States Environmental Protection Agency     |
| VCA   | Voluntary Cleanup Agreement                       |

## **1 INTRODUCTION**

This Standard Operating Procedure (SOP) describes procedures to be followed during “intrusive work” (as defined below) that may disturb mine waste (tailings and waste rock) and contaminated soil located within the Consolidation Area at the Centennial M-1 Property.

The O&M Coordinator must determine whether work in the cap area is "non-intrusive" or "intrusive" relative to the mine waste and contaminated soil beneath the cap. "Intrusive" activities are prohibited unless conducted in accordance with applicable provisions of the O&M Plan.

### **1.1 DEFINITIONS**

#### **1.1.1 Intrusive Work**

"Intrusive" work includes any construction or maintenance work activities that disturb mine waste or contaminated soil, including but not limited to digging, drilling, excavating, grading, repairing, removing, trenching, filling, installing fence posts, gardening, and other soil movement that may penetrate or otherwise compromise the cap, thereby opening pathways for possible human exposures to contaminated soil.

#### **1.1.2 Non-Intrusive Work**

"Non-intrusive work" is defined as including construction, repairs, and/or maintenance activities where exposure of mine waste or contaminated soil is not anticipated and where the integrity of the cap and adjacent slopes are not compromised.

### **1.2 GENERAL REQUIREMENTS FOR NON-INTRUSIVE WORK**

The O&M Coordinator must provide information regarding the location of the cap system and the underlying mine waste and contaminated soil to contractors and personnel performing non-intrusive work in the vicinity of the Consolidation Area.

The O&M Coordinator or designee must conduct inspections during construction and maintenance activities to verify that no intrusive work is performed and the cap is not compromised.

If mine waste or contaminated soil are inadvertently disturbed or the integrity of the cap is compromised, then the O&M Coordinator must notify DTSC and implement the appropriate procedures pursuant to the intrusive work protocols below.

### **1.3 GENERAL REQUIREMENTS FOR INTRUSIVE WORK**

The O&M Coordinator must oversee intrusive work to:

- a. Ensure that safeguards are in place to prevent or reduce the chance of worker or public exposure to contaminated soil;
- b. Prevent untrained or unauthorized personnel from performing intrusive work; and
- c. Restore the integrity of the engineering controls (the compacted clean mine tailings cap, side slopes and drainage controls) if compromised.

The following procedures must be performed and/or verified by the O&M Coordinator:

1. Provide advance notice of scheduled work to DTSC in accordance with the reporting procedures presented in this plan.
2. Provide information regarding location of cap components, cross-section construction details, and locations of mine waste and contaminated soil to contractors and personnel.
3. Verify that personnel, contractors and their employees will comply with federal and state OSHA requirements.
4. Require that construction and maintenance work be performed in accordance with a DTSC-approved SOP.
5. Evaluate the proposed work schedule and promote timely completion of the work to reduce the chance of exposure.
6. Perform planned intrusive work only during extended dry periods of weather.
7. Implement best management practices (BMP) for erosion control so that contamination soil is not transported by wind or water.
8. Implement dust control practices.
9. Restrict access to the work site to reduce the chance of non-worker exposure.
10. Manage any mine waste or contaminated soil brought to the surface in accordance with the SOP and in compliance with local, state and federal law.
11. Comply with all applicable, relevant and appropriate federal, state, and local requirements.

#### **1.4 O&M PLAN REQUIREMENTS**

This SOP is an attachment and an integral part of the Operation and Maintenance Plan (O&M Plan; NV5, 2020). The O&M Plan describes the Consolidation Area location and construction details, explains when this SOP must be followed, and sets forth prohibitions and requirements associated with the long-term maintenance of the Consolidation Area. Any intrusive work must be overseen by the O&M Coordinator and must be performed in accordance with both the O&M Plan and an approved SOP.

#### **1.5 HEALTH AND ENVIRONMENTAL HAZARDS**

The encapsulated material (mine tailings, mine waste rock and contaminated soil) contain elevated levels of heavy metals (e.g., arsenic, lead, mercury) that present potential health hazards if the material is excavated from beneath the cap. Potential exposure routes include dust inhalation, dermal contact and ingestion. The MWR and contaminated soil, if excavated from the Consolidation Area, require specific management procedures to reduce the chance of human exposure and to reduce the chance of release of contamination to the environment.

#### **1.6 CONTRACTOR QUALIFICATION**

Contractors performing intrusive work are required to hold current OSHA HAZWOPER certification (40-hour and 8-hour annual refresher training).

## **1.7 CONTRACTOR NOTIFICATION**

Information regarding the location of the cap, cross-section construction details, and the presence of elevated metals concentrations in the underlying soil must be provided by the O&M Coordinator to contractors who will perform intrusive work.



## **2 HEALTH AND SAFETY REQUIREMENTS**

The contractor performing intrusive work is responsible for health and safety of the contractor's employees and others in the vicinity of the intrusive work.

### **2.1 HEALTH AND SAFETY PLAN**

A site-specific health and safety plan (HSP) must be prepared under the supervision of a certified industrial hygienist in accordance with current health and safety standards as specified by the federal and California OSHA agencies. The HSP must identify the proposed intrusive work activities and specify methods of handling and controlling mine waste and contaminated soil to prevent or minimize exposures. All personnel who perform intrusive work at the site must follow the HSP requirements.

### **2.2 COMPETENT PERSON**

The contractor must designate a Competent Person. A "Competent Person" is one who:

1. Is capable of identifying existing and predictable conditions in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees;
2. Is capable of identifying existing arsenic, mercury, cobalt, thallium, and lead hazards in the workplace, and selecting the appropriate control strategy to reduce exposure; and
3. Has authority to take prompt corrective measures to eliminate such identified hazards.

The Competent Person may be a consultant, safety officer or technician familiar with sampling techniques, exposure routes and mitigation. The Competent Person may utilize the assistance of the O&M Professional or other trained professionals as appropriate.

### **2.3 TRAINING**

All contractors and personnel who will be performing intrusive work and may be subject to exposure (contact with mine waste, contaminated soil or soil dust) must be trained by a professional in the identification and avoidance of chemical hazards pursuant to CCR Title 8.

### **2.4 REFERENCE DOCUMENTS**

All personnel performing O&M activities will be responsible for operating in compliance with the most current requirements of:

- Title 8, California Code of Regulations, § 5144 (8 CCR 5144) Respiratory Protection
- Title 8, California Code of Regulations, § 5194 (8 CCR 5194) Hazard Communication
- Title 8, California Code of Regulations, § 3203 (8 CCR 3203) Injury and Illness Prevention Program
- Title 40, Code of Federal Regulations, 40 Code of Federal Regulations (CFR) Part 745
- OSHA Publication 3142-09R, Lead in Construction
- Other pertinent requirements (e.g., local ordinances, etc.)

### **2.5 EXPOSURE ASSESSMENT**

If an activity is to be performed that has not previously been assessed, then the competent person and/or a certified industrial hygienist will conduct an exposure assessment at the

initiation of cap-intrusive activities to determine whether airborne soil dust may exceed the OSHA Permissible Limit (PEL) as a result of the activity.

In accordance with the California Code of Regulations (CCR), Title 8, Subchapter 4, Construction Safety Orders, §1532.1, the permissible exposure limit (PEL) is 50 micrograms of lead per cubic meter of air (50 µg/m<sup>3</sup>) averaged over an 8-hour period. The 8-hour PEL for arsenic is 10 µg/m<sup>3</sup>.

The PELs listed above are time weighted average (TWA) concentrations for a normal eight-hour work day in a 40-hour work week, to which nearly all workers reportedly may be exposed without adverse health effects (Title 8, CCR, Section 5155).

## **2.6 AIR MONITORING**

Air monitoring may be required during the work depending on the extent, location, and timing of the planned lead soil disturbance based on a review of the planned intrusive work. Based on the small scale of the likely potential intrusive activities, this SOP does not include provisions for air monitoring or use of a meteorological air station. When such air monitoring is required pursuant to Cal/OSHA or other regulatory requirements, a modified or new SOP detailing such procedures will be submitted in advance for DTSC review and approval.

## **2.7 PERSONAL PROTECTIVE EQUIPMENT**

Personal protective equipment (PPE) and clothing are used to isolate individuals from contaminated soil as well as physical hazards. Unless otherwise indicated by the results of exposure assessment or monitoring, the minimum level of protection for workers performing lead soil intrusive activities is generally Level D (as defined by the EPA [July 1998]) and should include the following:

1. Work coveralls
2. Reflective/visible safety vests
3. Work gloves
4. Steel-toed boots
5. Safety glasses, as necessary
6. Hard hat, as necessary
7. Hearing protection, as necessary

Experience indicates that it is reasonable to expect that significant airborne metals and NOA concentrations in the work area will remain below acceptable levels as long as stringent dust control measures are implemented. Respirators and protective suits therefore likely will not be required unless air monitoring indicates possible excessive exposures. In this case, dust control measures will be increased or work activities will cease. However, the level of protection may be upgraded as deemed necessary by the competent person and/or by a certified industrial hygienist. Level of protection C, B, and A will not be utilized for the field activities described in this SOP. A new DTSC-approved SOP would be required if these higher levels of protection are determined to be necessary.

## **2.8 MEDICAL SURVEILLANCE**

A medical surveillance program is recommended for all personnel performing intrusive work. Employers are required to establish a medical surveillance program for all employees who are

or will be exposed to lead at or above the PEL of 50 µg/m<sup>3</sup> for lead in air and 10 µg/m<sup>3</sup> for arsenic in air.

## **2.9 KNOWN CHEMICAL HAZARDS**

The site was subject to historical gold mining operations. MWR and contaminated soil have been encapsulated beneath the pavement cap because they contain heavy metals and metalloids such as arsenic, lead and mercury.

### **2.9.1 Chemical Exposure Routes**

Typical exposure routes for soil excavation and sampling work generally include inhalation of contaminated soil dust, dermal (skin) contact with contaminated soil or water, and incidental ingestion of contaminated soil.

#### Inhalation

Excavation of soil at the site would generally not be expected to result in exposures in excess of the Cal/OSHA eight hour Permissible Exposure Limit (PEL) for these metals, provided that proper dust control and soil management procedures are employed.

Wet methods are typically used for dust control pursuant to 8 CCR 5145, Media for Allaying Dusts. The wet methods for dust control are intended to minimize visible dust and thus reduce the potential for airborne exposure.

Control of visible dust is an essential part of intrusive work activities. Although the control of visible dust is expected to be an effective method of controlling worker exposure by the inhalation route, periodic personal air sampling is necessary to demonstrate the effectiveness of engineering controls used to minimize exposures.

#### Dermal Contact

Dermal exposure is a concern for arsenic and lead, although they are not easily absorbed through the skin. Dermal contact with contaminated soil or water must be avoided by the use of personal protective equipment (PPE, e.g., gloves, boots, coveralls, hard hat and protective eye wear). Proper decontamination of PPE and equipment is essential to contain the contaminated soil and to prevent its transport outside of the contaminated area.

#### Incidental Ingestion

Inadequate personal hygiene practices could lead to inadvertent ingestion of metals residues. Incidental ingestion exposure will be controlled through personal hygiene practices such as the washing of hands and lower arms using soap and water prior to eating, drinking, smoking, and at the end of each work period. Compliance with personal hygiene practices is the responsibility of all employees, and is a very important part of minimizing employee exposures to metals in soil.

### **2.9.2 Potential Health Effects**

#### Arsenic

Arsenic was detected in mine waste at concentrations up to 4,000 milligrams per kilogram (mg/kg, also expressed as parts per million, or ppm). The central-tendency estimates (95% Upper Confidence Limit on the mean value) for the consolidated mine waste range from 170 to

1,250 mg/kg (depending upon the source area). The background threshold value for arsenic in site soil is 18 mg/kg, and the Total Threshold Limit Concentration (TTL) is 500 mg/kg.

Arsenic is a carcinogen that causes cancer of the skin, lungs, bladder, and kidney, as well as acute health effects and noncancerous skin conditions. Arsenic exposure is also linked to diseases of the heart, lungs, and brain. Arsenic exposure in the workplace occurs through inhalation, ingestion, dermal (skin) contact and eye contact. Chronic exposure to arsenic can lead to conditions including dermatitis, wart formation and cancer. Acute exposures to high arsenic concentrations can cause lung distress and death.

Perhaps the single-most characteristic effect of long-term oral exposure to inorganic arsenic is a pattern of skin changes. These include patches of darkened skin and the appearance of small "corns" or "warts" on the palms, soles, and torso, and are often associated with changes in the blood vessels of the skin. Skin cancer may also develop. Swallowing arsenic has also been reported to increase the risk of cancer in the liver, bladder, and lungs. The Department of Health and Human Services (DHHS) has determined that inorganic arsenic is known to be a human carcinogen (a chemical that causes cancer). The International Agency for Research on Cancer (IARC) has determined that inorganic arsenic is carcinogenic to humans. The EPA has also classified inorganic arsenic as a known human carcinogen. Arsenic is regulated by Cal/OSHA as a carcinogen.

Exposure to higher-than-average levels of arsenic occurs mainly in workplaces, near or in hazardous waste sites, and in areas with high levels naturally occurring in soil, rocks, and water. Exposure to high levels of arsenic can cause death. Exposure to arsenic at low levels for extended periods of time can cause a discoloration of the skin and the appearance of small corns or warts.

### Lead

Lead was detected in mine waste at concentrations ranging up to 835 mg/kg. The central-tendency estimates (95% Upper Confidence Limit on the mean value) for the consolidated mine waste range from 104 to 244 mg/kg (depending upon the source area). The human health screening level for commercial/industrial land use is 360 mg/kg. Lead was not detected above the TTL (1,000 mg/kg).

Lead in the body can cause serious damage to the central and peripheral nervous system, the cardiovascular system, and the kidneys. Exposure to high concentrations of lead can cause mental disorder, convulsions, coma, and sometimes death. Children are especially vulnerable and susceptible to lead poisoning. Even low levels persisting during childhood are known to slow a child's normal development and cause learning and behavioral problems. The Agency for Toxic Substances and Disease Registry (ATSDR), as well as numerous other investigators, reports long-lasting impacts on intelligence, motor control, hearing, and emotional development of children who have levels of lead in the body that are not associated with obvious symptoms.

### Mercury

Mercury was detected in mine waste at concentrations ranging up to 57 mg/kg. The central-tendency estimates (95% Upper Confidence Limit on the mean value) for the consolidated mine

waste range from 4 to 12 mg/kg (depending upon the source area). The human health screening level for commercial/industrial land use is 4.4 mg/kg. The TTLC is 20 mg/kg.

All forms of mercury are toxic. Mercury poisoning can result from inhalation, ingestion, and injection or absorption through the skin. All forms of mercury penetrate the placental barrier and should be considered teratogenic and reproductive effectors. The effects from exposure to excessive levels of airborne mercury or skin contact with mercury compounds may not be noticeable for months or years.

Mercury takes on different forms in the environment. Methylmercury is a particularly toxic form that bioaccumulates in humans and wildlife. Mercury is converted by microbial action into methylmercury, which can then be incorporated into the tissues of microbes, plants, and animals (bioaccumulation). As methylmercury moves through the food chain, it is concentrated (biomagnification). Elemental mercury evaporates at room temperature and reacts with many elements to form salts, amalgams, and organo-mercury compounds. A number of these compounds are considered "highly hazardous" by the US EPA (P list). All mercury-containing waste is considered hazardous and requires special disposal considerations. Mercury vapor is readily absorbed through inhalation and can also pass through intact skin. After absorption, elemental mercury is carried by the blood to the central nervous system where it is oxidized. The oxidation product produces injury. Mercury metal and mercury compounds are highly hazardous if inhaled or if they remain on the skin for more than a short period of time.

### NOA

Naturally occurring asbestos (NOA) is known to occur in serpentinite and other mafic or ultramafic bedrock in the site vicinity, and thus may be present in mine waste originating from these rock types. Asbestos is a term that refers to a group of naturally occurring fibrous minerals. The risk of developing asbestos-related disease varies according to the intensity, duration, and nature of the exposure. Asbestos exposure can cause a number of disabling and fatal diseases. The principal route of exposure is by inhalation through the nose and mouth. Asbestos, traditionally valued for its indestructibility, is especially resistant to the internal defenses of the human body. Once lodged inside the lungs, most fibers will not break up or dissolve, and they cannot be neutralized or removed.

To be a significant health concern, asbestos fibers must be inhaled. The respiratory system is sensitive to bacteria, viruses, and many airborne particles that can be inhaled. Reactions to these irritants can disrupt the functioning of the system, resulting in many ailments including the following: the common cold, hay fever, sinusitis, sore throat, acute or chronic bronchitis, emphysema, and lung cancer.

### **2.10 OTHER HAZARDS**

Other hazards (such as heat stress, heavy lifting, hearing protection, hazards associated with heavy equipment and vehicles, etc.) may be encountered during intrusive work. Contractors are required to address these hazards in their HSP and/or as part of their Injury and Illness Prevention Program (IIPP).

### **3 ENGINEERING CONTROLS**

#### **3.1 DUST CONTROL**

Dust control procedures are necessary during intrusive work to control the potential generation of dust and contaminant (e.g., arsenic, lead, mercury, NOA) exposure to workers, site occupants and/or neighbors. These procedures include a variety of dust control methods and practices designed to minimize the generation and spreading of dust that could contain elevated lead concentrations. Experience has shown that if good dust control is maintained, lead emissions can be kept below allowable levels.

##### **3.1.1 Dust Mitigation Plan**

A Dust Mitigation Plan (DMP) was prepared for site cleanup and is to be included as part of a future Remedial Design and Implementation Plan (RDIP). The purpose of the DMP is to provide requirements and guidelines to control and monitor emissions of soil dust during site grading and earthwork activities associated with the removal action. These requirements generally follow requirements for dust control set forth by the local air quality district.

##### **3.1.2 Wet Control**

During intrusive work, mine waste and contaminated soil must be adequately wetted prior to and during disturbance (excavating, loading, transporting, compacting, etc.) to minimize dust generation. If temporary stockpiling of metals-containing soil is needed, the stockpiles must also be kept adequately wetted.

If visible dust is observed exiting the work area, dust control measures will be increased. Increased dust control measures could include increasing water application or stopping work if excessive winds are present.

Stockpiles of mine waste and contaminated soil should be covered with heavy plastic sheeting and anchored to prevent wind and water erosion.

All earth-moving activities associated with intrusive work will cease in times of high wind conditions, defined as sustained winds that generate dust emissions at the site which cross the site boundary despite dust mitigation measures.

#### **3.2 SURFACE WATER CONTROL**

##### **3.2.1 Storm Water Pollution Prevention Plan**

The State of California Water Resources Control Board, as part of the National Pollutant Discharge Elimination System (NPDES), has adopted a statewide General Permit to Discharge Storm Water Associated with Construction Activity (General Permit) to address discharges of storm water runoff associated with applicable construction activities. The Regional Water Quality Control Board (RWQCB) is the responsible agency for implementing and enforcing General Permit provisions. The General Permit requires all dischargers where construction activity disturbs 1 acre or more to develop and implement a Storm Water Pollution Prevention Plan (SWPPP) which specifies Best Management Practices (BMPs) to prevent discharge of sediments to the storm drains and drainages in the area.

Intrusive work is generally not anticipated to disturb one acre or more of ground surface. Although the area disturbed during lead soil intrusive work may not exceed one acre, Best Management Practices (BMPs) for erosion and sediment control shall be implemented during the work to minimize storm water pollution, to prevent storm water from entering the work area (run-on), and to prevent the potential migration of storm water and/or sediment away from the work area via storm water runoff.

### **3.3 MWR AND CONTAMINATED SOIL MANAGEMENT**

#### **3.3.1 Stockpiling**

When possible, mine waste and/or contaminated soil excavated from the Consolidation Area shall be loaded directly onto trucks for off-site transport without stockpiling. Transportation and disposal must be performed in accordance with federal, state and local regulation, and disposal must be at a solid waste landfill capable of accepting the soil.

If temporary stockpiling is necessary, the MWR and contaminated soil must be placed on heavy plastic sheeting and must be kept adequately wetted or covered with plastic sheeting that is secured in place. Berms of clean soil or rock should be established around MWR and contaminated soil stockpiles to prevent run-on and runoff. Control measures must be inspected daily and maintained continuously.

#### **3.3.2 Disposal**

MWR and contaminated soil may be placed and compacted back in place beneath the cap in accordance with the RAP (NV5, 2021). Excess MWR and contaminated soil must be disposed off-site at an appropriately permitted solid waste facility.

If requested by the landfill, samples of the material must be collected to characterize the waste. The constituents of concern include arsenic, lead, mercury, nickel, thallium and NOA. Analytical results are to be forwarded to the proposed facility for approval prior to disposal.

## **4 WORK PROCEDURES**

### **4.1 FIELD DOCUMENTATION**

#### **4.1.1 Field Logs**

The O&M Coordinator or trained designee will conduct inspections during the MWR intrusive work and will prepare daily field logs documenting site activities. These logs will be included in the completion report. Each daily field log should contain, at a minimum, the following information:

- Project name and location;
- Contractor;
- Name of the person who approved the work;
- Names of workers performing the work at the Site;
- Name of the Competent Person and field personnel;
- Weather conditions;
- Chronological description of the work event; and
- Photographs

#### **4.1.2 Recordkeeping**

All documentation (e.g., field logs, reports, photographs, and other documents) are to be maintained by the O&M Coordinator on file at the site. The records will be available for inspection upon request by DTSC.

### **4.2 PREPARATION**

#### **4.2.1 Work Area Delineation and Security Measures**

The work area will be properly cordoned off prior to the initiation of intrusive work. Unauthorized persons will not be allowed to enter the work area. If gates are present around the work area, they will be locked after working hours. Additionally, clear warning signs should be posted to communicate access to the area is restricted to authorized personnel only. An appropriate display of the potential health risk would read as follows:

**WARNING**

**Authorized Personnel Only**

This area is known to contain soil with elevated levels of arsenic, mercury, cobalt, thallium, and lead, which are health hazards. Do not enter this area without appropriate personal protective equipment and proper decontamination setup. Do not enter this area without prior authorization by the O&M Coordinator: [name, telephone number].

#### **4.2.2 Utility Survey and Clearance**

As required by law, the contractor will mark the work area with white spray paint and contact Underground Service Alert (USA) at least 48 hours prior to any excavation work. In addition, as-built drawing will be reviewed to locate on-site underground utilities.



### **4.2.3 Engineering Controls**

Typical engineering controls are described in Section 3. Methods to be used to control the potential migration of contaminants (arsenic, mercury, cobalt, thallium, lead, NOA) by dust generation or migration of soil from the work area shall be established and in place prior to the start of the work. Engineering controls will be used to control dust generation. All personnel performing intrusive work activities must be familiar with lead hazards and control.

### **4.2.4 Permits**

The contractor will obtain all applicable permits prior to starting the intrusive work.

### **4.2.5 Notification**

Notification to DTSC by the O&M Coordinator is required for the following activities:

- Notify DTSC 14 days in advance if intrusive work will be performed in accordance with the SOP and is anticipated to exceed seven days in duration.
- Notify DTSC at least 30 days in advance if intrusive work of any duration will follow a modified SOP. DTSC's approval of the modified SOP must be obtained prior to implementation of work.
- Notify DTSC of the occurrence of unplanned events (e.g., broken sewer line) that affect the cap or Consolidation Area.

### **4.2.6 Electronic Format**

Written communication to DTSC may be submitted via email. Email communication must include the name of the site, planned actions that may affect the Consolidation Area, anticipated start and completion dates, and description of how the area will be restored. The email must contain contact information for the O&M Coordinator and also the O&M Professional if appropriate. DTSC contact information is presented in the LUC.

## **4.3 EARTHWORK**

### **4.3.1 Excavation**

Work that requires excavation using heavy equipment will adhere to CCR, Title 8, Section 1540, Excavation.

Water trucks or hoses will be used for dust control. Care will be taken during activities that will disturb metals-containing soil to minimize dust generation; this may include performing excavation more slowly or lowering drop heights during excavation and soil loading.

Excavation operations shall adhere to the following procedures:

1. Remove clean cover and stockpile away from the work area to prevent mixing with the underlying mine waste and contaminated soil.
2. Place all excavated mine waste and contaminated soil on heavy plastic sheeting to prevent mixing with surface materials.

3. Following repair work, replace mine waste and contaminated soil and compact according to geotechnical specifications (maximum 8-inch loose lift thickness, minimum 90% compaction per ASTM D 1557, minimum 95% compaction in upper six inches).
4. Rinse tools/equipment and shoes/clothing over plastic sheeting and use storm water Best Management Practices (BMPs) to contain runoff.
5. Replace cap system (clean compacted soil) to original thickness. Cover material may be re-used.
6. After removal of soil stockpile, fold plastic sheeting inward to prevent debris from leaving plastic and sweep remaining soil back into cap area so no mine waste or contaminated soil remains on the plastic. Discard used plastic.

#### **4.3.2 Soil Stockpiling**

If temporary stockpiling of mine waste or contaminated soil is necessary, the material will be placed on plastic sheeting, kept adequately wetted to prevent dust generation, covered with plastic sheeting and anchored, and protected from run-on and run-off by a berm. Stockpiles are to be inspected daily to evaluate and maintain the controls.

#### **4.3.3 Soil-Segregation**

Clean material comprising the cap system (soil and/or aggregate) shall be segregated and stockpiled separately from the underlying mine waste and contaminated soil.

If there is uncertainty regarding the identity of clean and contaminated materials, then the suspect materials should be segregated and managed as contaminated materials until laboratory testing determines the actual metals concentrations.

#### **4.4 TRANSPORTATION PLAN FOR OFF-SITE DISPOSAL**

If excess mine waste and/or contaminated soil cannot be placed and compacted back in the Consolidation Area, the mine waste and contaminated soil will be removed from the site for disposal at an appropriately permitted solid waste facility.

Waste determination will be required before an appropriate solid waste facility (i.e., Class I hazardous or Class II non-hazardous) is selected.

All transportation activities shall be performed in accordance with all applicable federal, state, and local laws, regulations, and ordinances. Truck drivers shall have Class A licenses.

##### **4.4.1 Loading**

Excess soil will be loaded into trucks adjacent to the work area. Trucks are not to travel on MWR or contaminated soil. Heavy plastic sheeting may be placed in the loading area to reduce the chance of spillage and subsequent cleanup requirements.

Any materials spilled during truck loading shall be recovered from the ground surface and loaded for disposal. All equipment wheels/tires that have contacted contaminated soil shall be cleaned over plastic sheeting by means of shovels and stiff-bristled brooms or brushes to remove all soil. Upon completion of cleaning, all debris shall be loaded for disposal, and the plastic sheeting will be folded and disposed.

Loading operations shall adhere to the following procedures:

1. Maintain soil moisture content during loading to prevent dust generation
2. Maintain at least six inches freeboard when loading trucks
3. Minimize drop heights during loading so that no visible dust is generated
4. Decontaminate trucks as described above prior to leaving the loading area
5. Remove any spilled soil so that trucks do not tracked spilled material away from the work area
6. Wet and cover all loads prior to leaving waste soil loading area

#### **4.4.2 Dust Control During Transportation**

Materials shall be transported in either closed-top bins or end dumps with tarp covers. The load must be completely protected and maintained. No dust generation or wind erosion from truck loads will be allowed. Truck drivers are to inspect their vehicle after loading to ensure the loads are appropriately secured and the vehicle is safe for highway travel. The appropriate Department of Transportation placard must be on the vehicle before leaving the site.

#### **4.4.3 Track-Out Control**

The truck entrance/exit, located immediately north of the Consolidation Area on Centennial Drive, shall be routinely inspected and cleaned with a broom if needed to remove visibly accumulated soil. All soil shall be removed from paved surfaces using stiff-bristled brooms or brushes. Soil is to be loaded for off-haul and disposal.

#### **4.4.4 Traffic Control**

Stage haul trucks in a clean area on site rather than on public roads. Use a flagger to assist the truck drivers to safely enter and exit the site.

#### **4.4.5 Disposal Facilities**

Class I waste will be transported to and disposed at one of the two landfills listed below:

- Waste Management Kettleman Hills Disposal Facility  
35251 Old Skyline Road  
Kettleman City, CA 93239  
(559) 309-7688
- Clean Harbors Buttonwillow Disposal Facility  
2500 West Lokern Road  
Buttonwillow, CA 93206  
(661) 762-6200

Non-hazardous waste will be disposed at one of the two landfills listed below:

- Neal Road Recycling and Waste Facility  
1023 Neal Road, Paradise, CA 95969  
(530) 345-4917
- Recology Ostrom Road Landfill  
5900 Ostrom Road

Wheatland, CA 95692  
(800) 208-2371

Alternate disposal facilities may be selected with the prior approval of DTSC.

#### **4.4.6 Transportation Route for Non-Hazardous Soil**

##### Local Directions to State Highway 20 westbound:

1. Exit the site by turning left (west) onto Centennial Drive, a paved public roadway with single lanes in both directions.
2. Travel 1,000 feet northwest on Centennial Drive before turning left (west) onto Idaho Maryland Road, a paved public roadway with single lanes in both directions.
3. Travel approximately ½ mile west on Idaho Maryland Road, beneath the Highway 20/49 overpass, then turn left onto the Highway 49 southbound onramp.
4. Travel southwest approximately 1¼ miles on Highway 20/49, then turn right at the Highway 20 interchange onto Highway 20 westbound.

##### Directions from State Highway 20 westbound to Ostrom Road Landfill:

1. Trucks will continue west on Highway 20 for 32 miles before turning left onto CA-20 W/CA-70 S/B St (signs for Yuba City/Sacramento).
2. In 0.2 miles turn right onto CA-20 W/CA-70 W/9th St (signs for Yuba City/Sacramento).
3. In 0.3 miles use the left 2 lanes to turn left onto CA-70 S/E St. In 4.6 miles Use the left 2 lanes to turn slightly left onto CA-65 S (signs for Roseville).
4. In 5.4 miles turn left on S Beal Rd. Head northeast on South Beale Road for 2.9 miles. Turn right on to Ostrom Road for 2.3 miles.
5. Turn right onto S. Erle Street for 0.2 miles to Recology Ostrom Road landfill facility entrance on the right.

#### **4.4.7 Transportation Route for Hazardous Soil**

##### Local Directions to State Highway 49 southbound:

1. Exit the site by turning left (west) onto Centennial Drive, a paved public roadway with single lanes in both directions.
2. Travel 1,000 feet northwest on Centennial Drive before turning left (west) onto Idaho Maryland Road, a paved public roadway with single lanes in both directions.
3. Travel approximately ½ mile west on Idaho Maryland Road, beneath the Highway 20/49 overpass, then turn left onto the Highway 49 southbound onramp.

##### Highway Route from SR49 Southbound to Waste Management Kettleman Hills Disposal Facility

1. Continue south on Highway 49 for 22 miles to Highway 80 west.
2. Continue west on Highway 80 for 32 miles to Interstate 5 south.
3. Continue south on Highway 5 for 214 miles to CA-41 S (Exit 309).
4. Continue southwest on CA-41 S for 3.4 miles to Skyline Road.
5. Turn right (northwest) on Skyline Road and continue to the facility at 35251 Skyline Road.

##### Highway Route from SR49 Southbound to Clean Harbors Buttonwillow Disposal Facility

1. Continue south on Highway 49 for 22 miles to Highway 80 west.
2. Continue west on Highway 80 for 32 miles to Interstate 5 south.
3. Continue south on Highway 5 for 280 miles to CA-46 W (Exit 278).
4. Turn right on CA-46 W.
5. Turn left onto Woodward Street.
6. Continue onto Lost Hills Road.
7. Turn left onto CA-33 S.
8. Turn left onto Lokern Road and continue to the facility at 2500 West Lokern Road.

#### **4.4.8 Hauler Recordkeeping – Hazardous Waste**

For material transported by truck to an in-state Class I disposal facility, the driver will carry a Hazardous Waste Manifest to the disposal facility. The site owner will also maintain copies of manifests as well as a log listing the date and time of truck loading, type of material, weight of load, and vehicle identification for each load of material transported by truck. Drivers will operate their vehicles and respond to emergencies in accordance with the licensed waste hauler's transportation safety plan and the attached spill response plan.

#### **4.4.9 Hauler Recordkeeping – Non-Hazardous Waste**

For material transported by truck to an in-state non-hazardous disposal facility, the driver will carry a Non-Hazardous Waste Manifest or Bill of Lading to the disposal facility. The site owner will also maintain copies of the manifests/bills of lading as well as a log listing the date and time of truck loading, type of material, weight of load, and vehicle identification for each load of material transported by truck. Drivers will operate their vehicles and respond to emergencies in accordance with the licensed waste hauler's transportation safety plan and the attached spill response plan.

#### **4.4.10 Spill Response**

For contaminated material spilled onto the ground surface along a transportation route, cleanup would typically consist of excavation and disposal of the contaminated soil at a disposal facility. All cleanup work is to be performed in accordance with a site-specific health and safety plan and in cooperation with interested state and local agencies. For accidental releases of contaminated material in or near a stream, river, or lake, the same general response procedures will apply, with particular emphasis on preventing the release of the spilled waste material into the water body. In the event of an actual release of contaminated material into a body of water, all work will be coordinated with state and local agencies to select practical and appropriate cleanup methods based on specific circumstances of the release.

In general, in the event of a spill the driver should contact their dispatcher who will in turn contact the contractor and O&M Coordinator. If material has spilled from the truck, the driver should place cones or other barrier around the spilled material, if feasible and safe, to reduce the chance of inadvertent contact. The driver should not attempt to clean up the spilled material.

#### **4.4.11 Disposal Documentation**

The following information, at a minimum, shall be documented and retained in the O&M file at the site:

- Project name and address
- Analytical results for transported soil
- Date(s) of transportation
- Location of facility where soil was transported
- Total amount of soil transported
- Truck weigh tickets
- Waste manifest forms

#### **4.5 DECONTAMINATION**

##### **4.5.1 Work Area**

Any contaminated mine waste or soil spilled or tracked in or outside the work area shall be cleaned up (wet sweeping, shoveling, etc.) and either placed within the cap area, beneath the cap, or off-hauled for disposal. Control procedures should be implemented during decontamination activities to prevent dust generation. The Contractor shall provide potable water and washing facilities for field personnel. The support area will be established prior to the initiation of lead soil intrusive work.

##### **4.5.2 Workers**

Workers shall minimize the amount of dirt or dust that may contain lead on their hands, face, clothing, and shoes. Footwear must be cleaned with a brush and water. These activities must be performed prior to leaving the work area. Washtubs with soap and water and rinse tubs will be provided for the cleaning of reusable equipment, and sanitation facilities will be provided for washing of hands and face. Wash water collected in the wash tubs will be placed in an on-site receptacle for disposal off-site. Water used for decontamination can be used for dust control on MWR and contaminated soil or can be discharged slowly to the ground surface where the cap system has not been replaced and allowed to infiltrate/evaporate.

##### **4.5.3 Vehicles and Equipment**

Decontamination of equipment and vehicles must be performed to reduce the physical transfer of lead soil from the work area. Before being removed from the work area, all vehicles and equipment in contact with lead soil must be thoroughly rinsed/hosed down with water to remove residual soil particles that may be lead-bearing; if water is used for decontamination a water supply will be present for this purpose. A wash area may be established near the exit of the work area. The decontamination wash water will be collected and stored in an on-site receptacle (e.g., baker tank). The decontamination water will be disposed of off-site. Water used for decontamination can be used for dust control on lead containing soil or discharged slowly to the ground surface where the cap system has not been replaced and allowed to infiltrate/evaporate.

The cabs of all vehicles and equipment that were used in the work area should be cleaned with a wet rag or sponge as needed to keep them free from accumulated dust and dirt.

Any disposable equipment not to be washed and reused will be placed in drums for proper disposal.

#### **4.6 BACKFILL, COMPACTION AND SITE RESTORATION**

The integrity of the cap system as a protective measure shall be restored to the original specifications as set forth in the RAP (NV5, 2021) following the completion of any cap-intrusive work. If any work (intrusive or non-intrusive) involves importing fill material it must be approved by DTSC.

Any soil disturbed beneath the cap system must be recompact to a minimum of 90% of the ASTM D1557 maximum dry density as specified in the RAP. The finished surface of the compacted soil must be restored to its original condition, smooth and graded to drain.

## **5 INSPECTION AND REPORTING**

### **5.1.1 Final Inspection**

Upon completion of the work and prior to reopening the area for public use, the O&M Coordinator shall conduct an inspection to ensure that the work has been performed in accordance with the SOP; i.e., the integrity of the cap system has been restored and all excess MWR and contaminated soil has been properly disposed.

### **5.1.2 Completion Report**

A report format is presented as Attachment H of the O&M Plan. Within 60 days of completion the O&M Coordinator is to submit a completion report to DTSC to document the intrusive work, including:

- Dates work was performed
- Work location, with maps/figures
- Work performed, including restoration of cap systems where necessary
- Work practices to prevent potential exposures
- Variance or modifications (if any) of the approved SOP
- Summary of finished site conditions



## **ATTACHMENT E**

Inspection Checklist

## INSPECTION CHECKLIST FOR CONSOLIDATION AREA SOIL CAP REMEDY

| Date                 |  | Inspector Name / Signature                               |                             |           |            |
|----------------------|--|--|-----------------------------|-----------|------------|
| Inspection Frequency |  | Supervisor Name/Signature                                |                             |           |            |
|                      |  |  |                             |           |            |
| Area                 | Surface Condition OK?                                    | Maintenance Required                                     | Recommended Action Schedule |           |            |
|                      |  |  | Plan                        | Implement | Completion |
| Cap Surface          | Yes <input type="checkbox"/> No <input type="checkbox"/> | Yes <input type="checkbox"/> No <input type="checkbox"/> |                             |           |            |
| Drainage Controls    | Yes <input type="checkbox"/> No <input type="checkbox"/> | Yes <input type="checkbox"/> No <input type="checkbox"/> |                             |           |            |

## **ATTACHMENT F**

Annual Report Outline

# **INSPECTION SUMMARY REPORT OUTLINE**

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- 1.0 GENERAL INFORMATION
- 2.0 NARRATIVE OF OBSERVATIONS
  - 2.1 Purposes of Current Annual Inspection
  - 2.2 School Site Walkthrough
  - 2.3 Annual Inspection Checklist and Field Log
  - 2.4 Discussion
    - 2.4.1 Drainage Controls - Cap Integrity
      - i. Corrective Action Schedule
    - 2.4.2 Landscape Areas - Cap Integrity
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- 3.0 CONCLUSIONS AND RECOMMENDATIONS
  - 3.1 Conclusions
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## **Appendices**

- 01 Site Location Map
- 02 Site Plan Map
- 03 Periodic (Monthly) Inspection Checklists
- 04 Training Records
- 05 Intrusive Work Completion Reports (if applicable)
- 06 Annual Inspection Checklist and Field Notes
- 07 Photo Log: Include photographs depicting site conditions

## **ATTACHMENT G**

Five Year Report Outline

# **FIVE YEAR REVIEW REPORT OUTLINE**

## **Table of Contents**

- 1.0 GENERAL INFORMATION
  - 1.1 Purpose of Current Five Year Review and Inspection
  - 1.2 Citation and Location of Previous Annual and Five Year Reviews, Remedial Action Plan
  - 1.3 Summary of Cap Systems
  - 1.4 Changes since Previous Five Year Review
- 2.0 NARRATIVE OF OBSERVATIONS
  - 2.1 Site Walkthrough
  - 2.3 Annual Inspection Checklist and Field Log
  - 2.4 Discussion
    - 2.4.1 Drainage Systems - Cap Integrity
      - i. Corrective Action Schedule
    - 2.4.2 Landscape Areas - Cap Integrity
      - i. Corrective Action Schedule
- 3.0 TECHNICAL ASSESSMENT
- 4.0 CONCLUSIONS AND RECOMMENDATIONS
- 5.0 SIGNATURE

## **Appendices**

- 01 Site Location Map
- 02 Site Map
- 03 Periodic (Monthly) Inspection Checklists
- 04 Training Records
- 05 Intrusive Work Completion Reports (if applicable)
- 06 Annual Inspection Checklist and Field Notes
- 07 Photo Log: Include photographs depicting site conditions

## **ATTACHMENT H**

Completion Report Outline

# **INTRUSIVE WORK COMPLETION REPORT OUTLINE**

## **Table of Contents**

- 1.0 GENERAL INFORMATION
- 2.0 PUBLIC NOTIFICATION ACTIVITIES (if applicable)
- 3.0 SUMMARY OF WORK ORDER
  - 3.1 Work Location (maps and figures for larger projects)
  - 3.2 Description of Work Activities
- 4.0 SITE PREPARATION
  - 4.1 Field Documentation
    - 4.1.1 Field Logbooks
    - 4.1.2 Photographs
  - 4.2 Site Preparation and Security Measures
    - 4.2.1 Work Area Delineation and Security Measures
    - 4.2.2 Dust Control
    - 4.2.3 Permits and Plan (if applicable)
- 5.0 REPAIR, MAINTENANCE, AND SITE RESTORATION
  - 5.1 Excavation
    - 5.1.1 Soil Staging, Segregation and Storage Operations
    - 5.1.2 Excavation Plan
    - 5.1.3 Decontamination
  - 5.2 Repair or Maintenance
  - 5.3 Compliance with Health and Safety Requirements
  - 5.4 Dust Control
  - 5.6 Transportation Plan for Offsite Disposal (if applicable)
  - 5.7 Backfill and Site Restoration
- 6.0 FIELD VARIANCE OR CHANGE ORDER (if applicable)
- 7.0 SIGNATURE