

## 2.0 PROJECT DESCRIPTION

### 2.1 INTRODUCTION

The Department of Toxic Substances Control (DTSC) and the Central Valley Regional Water Quality Control Board (RWQCB) entered into a Joint Cleanup and Abatement Order, Imminent and/or Substantial Endangerment Determination and Partial Consent Order (Joint Order) with the Department of Parks and Recreation (DPR) and Newmont USA Limited (Newmont) to cleanup constituents of concern (COC) occurring in various areas of the Park. DPR and Newmont (together, the Project Proponents) are legally required to comply with the cleanup requirements provided in the Joint Order.

Subject to concurrence from DTSC and RWQCB, DPR retains some discretion in how those cleanup requirements are met. Further, DPR can address its own concerns and objectives beyond those specified in the Joint Order. As the CEQA Lead Agency for this Project, DPR retains the discretion to protect cultural resources, biological resources and Park visitors and Park personnel to a greater degree than specified in the Joint Order. It is essential, therefore, that DPR retain its Lead Agency status regarding the implementation of the Project.

This Draft Program Environmental Impact Report (Draft PEIR) evaluates the potential environmental impacts associated with characterization and evaluation, interim actions, and remediation at the Park. This evaluation is broad in nature; however, in instances where area-specific information is available, a detailed analysis has been conducted.

The Project Description is organized into the following subsections:

- Section 2.2, Regional, Local, and Area Setting, provides information regarding the location and setting of the Project.
- Section 2.3, Project Background and Need, provides a summary of the Park's historic background, the regulatory history and an explanation why the California Department of Parks and Recreation (DPR) is undertaking area characterization, evaluation, and remediation.
- Section 2.4, Project Objectives, identifies goals and objectives of the Project.
- Section 2.5, Standard Project Requirements and Specific Project Requirements Incorporated into Project, identifies various requirements that have been incorporated into the Project to reduce or eliminate environmental impacts.
- Section 2.6, Project Details, provides information regarding specific areas within the Park that involve characterization and evaluation of potential constituents of concern (PCOC), interim actions that have been implemented to eliminate or reduce the risk of exposure to humans and the environment while final remedial

actions are developed. The Project Proponents will implement remediation to permanently eliminate or reduce the unacceptable risk of exposure.

- Section 2.7, Regulatory Requirements, Permits and Approvals, identifies local, state, and federal regulatory requirements, permits, and approvals needed to implement the Project.

## 2.2 REGIONAL, LOCAL, AND AREA SETTING

### 2.2.1 REGIONAL SETTING

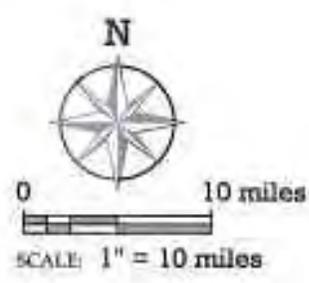
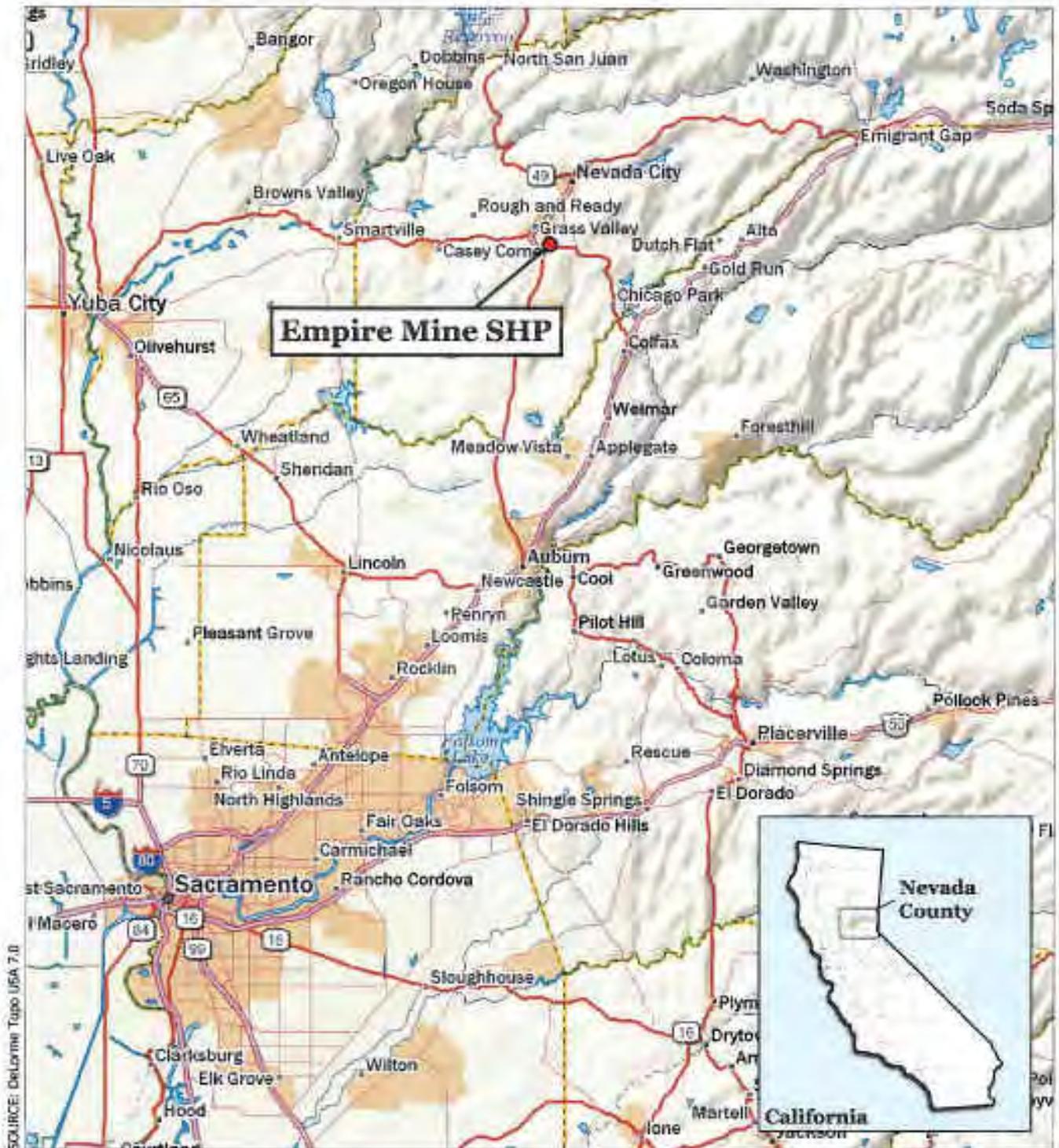
The Park is located in Nevada County (County), California within the foothills of the Sierra Nevada mountain range. It is approximately 50 miles northeast of Sacramento and is adjacent to and southeast of the City of Grass Valley (see Figure 2.0-1, Regional Location).

### 2.2.2 LOCAL SETTING

The Park, consisting of approximately 856 acres, is located at 10791 East Empire Street in Grass Valley, Nevada County, California (see Figure 2.0-2, Site Location). East Empire Street traverses the Park in an east-west direction. North of Empire Street, State Route 174 (SR 174) traverses the Park from northwest to southeast and then extends along the eastern boundary of the Park and the Union Hill area. Land uses surrounding the Park include limited commercial, industrial, open space and residential.

### 2.2.3 AREA SETTING

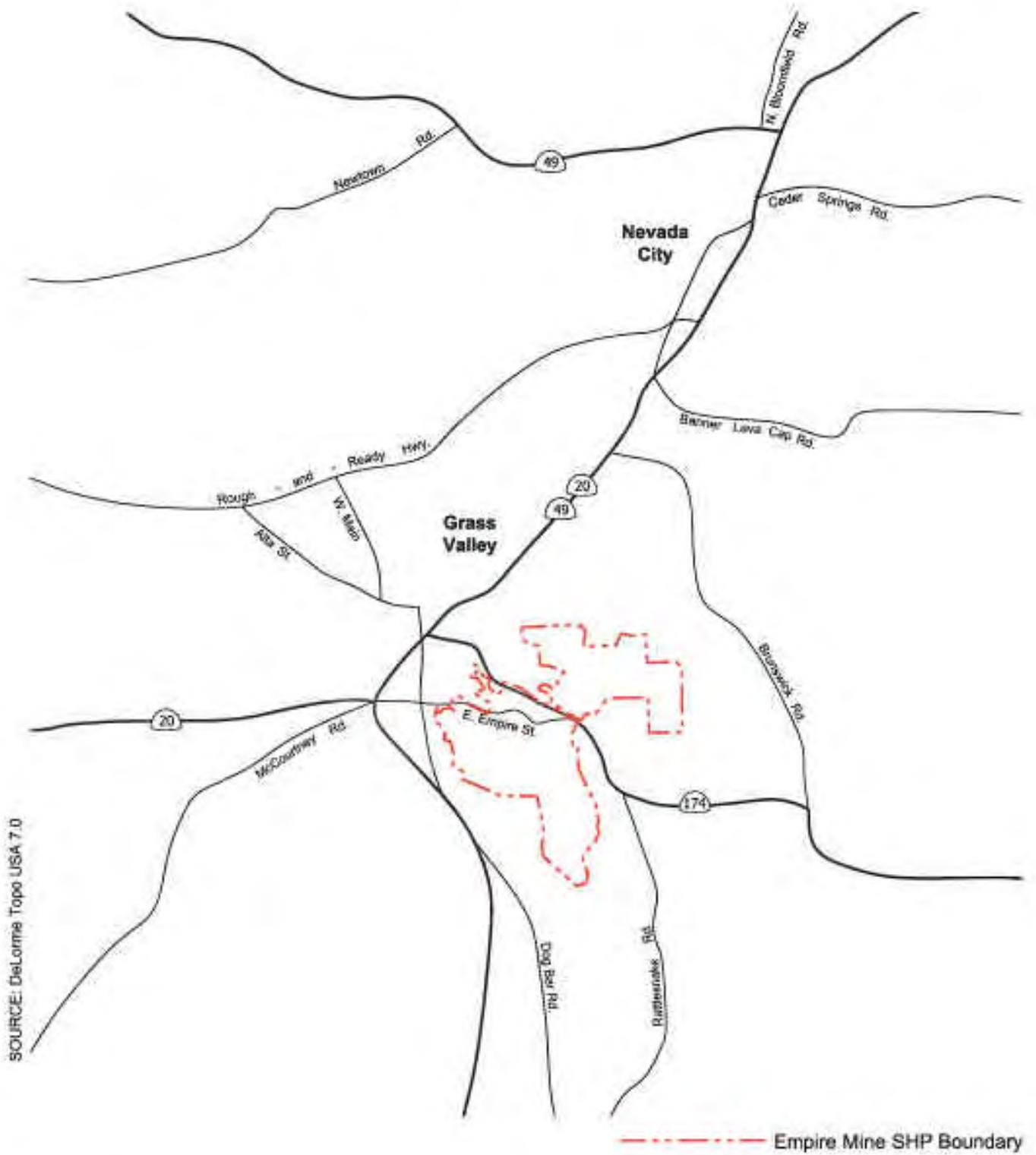
The Park has many natural features, including forested areas, riparian habitat along Little Wolf Creek and the South Fork of Wolf Creek, and an extensive trail system for walking, running, bicycling, and horseback riding (see Figure 2.0-3, Aerial Photograph). The Park contains several abandoned mine and mill operations, which were consolidated during the 100 years of operation at Empire Mine, that was closed in 1956, prior to acquisition by the state. In addition, numerous cultural resources associated with early mining and mill operations, including many of the original mine buildings, several of which have been refurbished, provide visitors with a glimpse of late 19<sup>th</sup> Century and early 20<sup>th</sup> Century mining techniques. Section 2.3 of this Project Description and Section 4.4, Cultural Resources, of this Draft PEIR provide a detailed discussion of these cultural resources.



**Figure 2.0-1**  
**Regional Location**  
 EMPIRE MINE SHP  
 SITE CHARACTERIZATION  
 AND REMEDIATION PROJECT

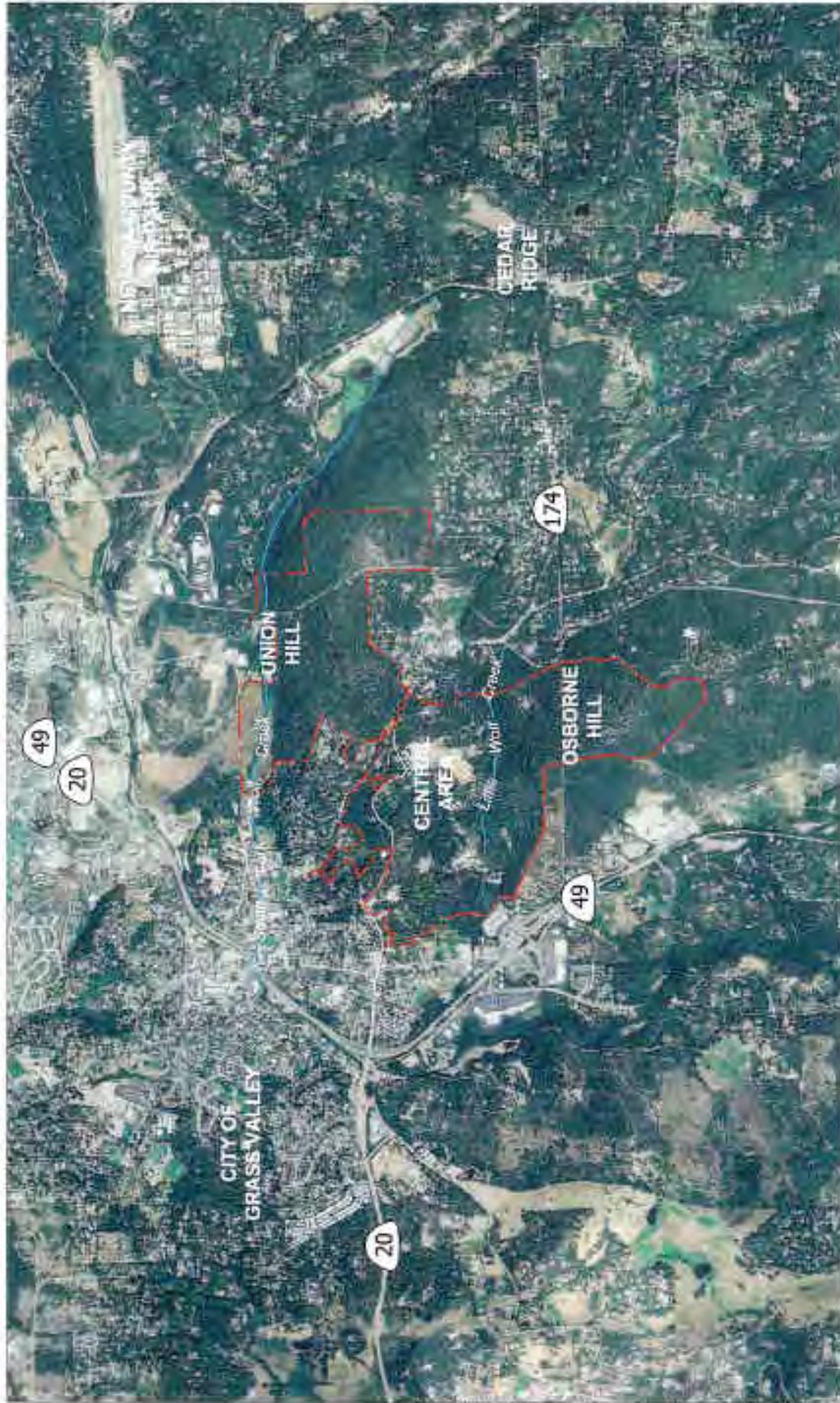
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**Figure 2.0-2**  
**Site Location**  
 EMPIRE MINE SHP  
 SITE CHARACTERIZATION  
 AND REMEDIATION PROJECT

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ARIAL PHOTOGRAPH SOURCE: Geokopter Imagery (June, 2005)

**Figure 2.0-3**  
**Aerial Photograph**  
 EMPIRE MINE SHP  
 SITE CHARACTERIZATION  
 AND REMEDIATION PROJECT

— Empire Mine SHP Boundary  
 — Waterways



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## 2.3 PROJECT BACKGROUND AND NEED

### 2.3.1 HISTORIC BACKGROUND

The Park's General Plan provides a summary of the Park as follows:

"The early development of California is closely linked to its history of gold mining. A mass migration of Americans sparked by the great gold rush in the late 1840s led to the eventual development of Empire Mine in Grass Valley. It became known worldwide as one of the most productive and longest operating gold mines in the West. Empire Mine State Historic Park, which contains approximately 856 acres, was established primarily on the basis of this historic significance. An example of the hard-rock type of mining technology, it is complemented by Marshall Gold Discovery State Historic Park and Malakoff Diggins State Historic Park, which represent the placer and hydraulic methods, respectively" (DPR 1978).

A more detailed discussion of the historic background of the Park is provided in Section 4.4, Cultural Resources.

### 2.3.2 MINING PROCESS

This subsection provides a brief description of the mining and milling processes, including ore-processing and gold recovery, to explain how mine- and mill-related materials (i.e., ore, waste rock, and tailings) that contained PCOC were deposited at the Park. Section 4.4 provides a detailed description of the historic mining, milling and ore-processing practices at the Park. Section 4.6, Hazards and Hazardous Materials, contains an extensive discussion of COC at the Park and the potential exposures that could occur to waters of the state, people, animals and plants.

From the 1850's to the 1950's, long before the Park was established in 1975, mining and mining-related activities occurred at the current site. The activities included mining, milling, and ore-processing, which involved: (1) the construction or development of vertical and incline shafts and horizontal tunnels deep into the ground generally along gold-bearing quartz veins where ore and waste rock were mined, removed, and hoisted to the surface for processing and eventual deposition on the land surface; (2) extraction of the ore and waste rock using either manual or mechanical drilling and underground blasting; (3) hauling the ore and waste rock to the surface; (4) crushing the ore; (5) milling the ore that separated the gold from the host rock; (6) refining the gold; (7) pouring the molten gold into molds, and (8) disposal of waste rock and mill tailings on the land.

For purposes of this evaluation, Steps 1, 3, 5, and 8 (above) would be the key steps that introduced measurable concentrations of COC to the Park. During these steps, some

waste and overburden rock containing naturally-elevated concentrations of COC (e.g., lead and arsenic) as well as tailings containing processing-concentrated metals and additional COC (e.g., mill reagents – mercury and cyanide) introduced during the milling processes were deposited along the ground surface of the property. Depending on the ore-processing practice of the time, mercury, chlorine, cyanide, and zinc were utilized used in the collection (e.g., amalgamation using mercury) and dissolution process using chlorination or cyanidation that separated the gold from the ore. Both mercury and cyanide have been identified as PCOC at the Park.

### **2.3.3 REGULATORY FRAMEWORK AND HISTORY**

#### **2.3.3.1 Department of Toxic Substances Control and Regional Water Quality Control Board**

##### **Department of Toxic Substances Control**

The California Department of Toxic Substances Control (DTSC) seeks to provide the highest level of safety, and to protect public health and the environment from exposure to hazardous substances. DTSC has a responsibility to investigate properties in California suspected to contain chemical contaminants from past land uses with the potential to negatively affect human health and the environment. DTSC is authorized to undertake the cleanup of sites where the release of hazardous material into soil, air, surface or groundwater has the potential to contaminate groundwater or result in human health impacts (DTSC 2008).

##### **Regional Water Quality Control Board**

In California, the State Water Resources Control Board (Water Board) is authorized through California Water Code Section 13172 to regulate the discharge of waste to land for the protection of water quality. Regulations promulgated by the Water Board are administered by the Regional Water Quality Control Boards (RWQCB).

The mining waste management regulations in Title 27 of the California Code of Regulations provide waste group classifications based on an assessment of the potential risk of water quality degradation posed by each waste. When establishing requirements for mining waste discharge, the RWQCB assigns the waste to one of three classifications: Group A, Group B, or Group C according to the following criteria:

- Group A – mining wastes that must be managed as hazardous waste provided the RWQCB finds that such mining wastes pose a significant threat to water quality;
- Group B - mining waste are either:

- Mining wastes that consist of or contain hazardous wastes, that qualify for a variance under applicable regulations, provided that the RWQCB finds that such mining wastes pose a low risk to water quality; or
- Mining wastes that consist of or contain nonhazardous soluble pollutants at concentrations which exceed water quality objectives for, or could cause, degradation of waters of the state; and
- Group C - mining wastes from which any discharge would be in compliance with the applicable water quality control plan, (e.g., Basin Plan) including water quality objectives other than turbidity.

The RWQCB can consider the following factors when classifying mining waste:

- Whether the waste contains hazardous constituents only at low concentrations;
- Whether the waste has no or low acid-generating potential; and
- Whether, because of its intrinsic properties, the waste is readily containable by less stringent measures.

The RWQCB administers mining waste regulations through the issuance of waste discharge requirements (WDRs), to each owner or operator of a mine waste management unit (Mining Unit) for the treatment, storage, or disposal of mining waste.

### **2.3.3.2 Department of Toxic Substances Control Involvement at the Park**

DTSC issued an Order to Post to DPR for portions of the Park on July 27, 1989, (see Section 2.6.4.2 for further discussion of the Cyanide Plant), based on elevated concentrations of lead, arsenic, and mercury in soils or other materials sampled in the vicinity of the Cyanide Plant and the Sand Dam (see Section 2.6.4.4 for further discussion of the Sand Dam). The Order to Post required DPR to post notices at trails and/or paths leading into and around contaminated areas directing visitors away from the area (DTSC and RWQCB 2006). The Park posted notices in English and Spanish along the trail west of the Sand Dam area, by the Cyanide Plant, and along the Hard Rock Trail by the former mill tailings stockpile (i.e., Red Dirt Pile – as described in Section 2.3.3.3) (Harding and Lawson 1992).

In 1992, DTSC ordered DPR to conduct a Preliminary Endangerment Assessment (PEA). As described in the California Health and Safety Code, Division 20, Chapter 6.8, Section 25319.5, a PEA is an analysis to determine whether current or past waste management practices have resulted in the release or threatened release of hazardous substances that pose a threat to public health or the environment.

A portion of the Park roughly bounded by the Sand Dam to the west, Little Wolf Creek to the south, the former Cyanide Plant to the east and the stamp mill to the north was addressed in the PEA (DTSC and RWQCB 2006). The area addressed by the PEA is

depicted on Plate 3 of that report (Harding and Lawson 1992). The PEA assessed whether metals and reagent concentrations identified at the area posed a potential risk to human health and the environment and compared metal concentrations gathered from mill tailings, located south of the mine and mill buildings and visitors center (known as the Mine Yard and Stamp Mill Remediation Area - as described in Section 2.6.4.1), to screening values approved by DTSC as a preliminary evaluation method. According to the findings of the PEA, arsenic, lead, mercury, and cadmium were present in soils above the screening levels in the former mill tailings stockpile area (Red Dirt Pile) and within the drainage below the Cyanide Plant (Harding and Lawson 1992). In addition, the PEA identified at least one point source of pollutants (known as the Magenta Drain), as defined in the federal Clean Water Act (CWA) to waters of the state and navigable waters of the United States (DTSC and RWQCB 2006). In July 2004, DTSC received additional inquiries from Park visitors regarding the mill tailing contamination and imposed additional requirements for the Park by letter dated July 29, 2005. DTSC noted that the mill tailings in the Sand Dam area appeared disturbed and also appeared to have migrated onto a trail. DTSC reiterated that DPR needed to fully characterize the nature and extent of contamination with appropriate agency oversight.

### **2.3.3.3 Regional Water Quality Control Board Involvement at the Park**

The Central Valley Regional Water Quality Control Board (RWQCB) regulates discharges to surface water at the Park including both stormwater and point source water releases. In the point source context, on June 23, 2006, the RWQCB issued DPR Waste Discharge Requirements (Order No. R5-2006-0058) and a National Pollutant Discharge Elimination System (NPDES) Industrial General Permit (NPDES No. CA0085171) to regulate the discharge from the Magenta Drain (DTSC 2006). In the stormwater context, DPR submitted a Notice of Intent (NOI) to comply with the Industrial General Permit for the entire Park and submitted a NOI to comply with the Construction Permits for the Adit Project and Red Dirt Pile. The Notice of Termination for the NOI to comply with the General Construction Storm Water Permit for the Adit project was submitted to the RWQCB on January 4, 2007.

### **2.3.3.4 Cleanup and Abatement Order, Imminent and/or Substantial Endangerment Determination and Partial Consent Order ("Joint Order")**

The Joint Order initially identified four Priority Action Work Plans for characterization, investigation and interim actions regarding the following: Exclusions, Trails, Red Dirt Pile, and Residences. Further, the Joint Order required a Magenta Drain Sampling and Monitoring Program. With the agreement of all parties the Joint Order was amended in July of 2007 (Amendment #1) to include additional Work Plans, Activities, and Monitoring Programs with anticipated schedules. The Joint Order was amended again on March 11, 2009 (Amendment #2, also known as the 2008 Order) to schedule additional work by the Project Proponents and to ensure that all regulatory requirements related to cleanup activities at the Park have been satisfied (for a complete list of

activities required under the Joint Order, see Exhibit C-6 Joint Order, as amended, in Appendix B, Joint Order).

### **2.3.3.5 Work Completed to Date**

Based on the Joint Order requirements, the Project Proponents conducted characterization, evaluation, and interim actions at the Park over the course of the last four years. Some examples of the work conducted pursuant to the Joint Order include the following:

- Interim actions at the Mine Yard and Stamp Mill Area (Remediation Area 1), which are described in Section 2.6.4.1;
- Interim actions in the Conveyance Corridor and Adit Project Area (Remediation Area 3), which are described in Section 2.6.4.3;
- Interim actions in the Residences and Residences' Yards Area (Remediation Area 9), which are described in Section 2.6.4.9.
- Interim Actions along trails sections that are described in Section 2.6.4.10; and
- Interim exclusionary, closure, and notice actions with the Sand Dam, Magenta Drain, and Osborne Hill Trails areas that are described in Sections 2.6.4.4, 2.6.4.6, and 2.6.4.10, respectively.
- Interim and time critical response actions at the Red Dirt Pile, pursuant to the Joint Order discussed in Section 2.3.3.4, above (DTSC 2007, DPR 2008).

For a detailed list of work completed to date, see the Envirostor website (Envirostor 2009).

### **2.3.3.6 Data Gap Report**

A Data Gap Report (DGR) is a compilation of existing background data for a proposed project that identifies areas where additional characterization and evaluation could be required to fully implement a proposed project.

MFG Inc. (MFG) prepared a DGR to document existing environmental data gathered for the Park prior to May 2006; the DGR is updated as additional data is collected. In addition to identifying existing data, the DGR includes a Conceptual Site Model (CSM) that describes potential release mechanisms, transport pathways, and exposure routes to receptors and is applied during characterization and investigation of Remediation Areas. Information from the CSM is used to define sources and pathways where remediation could be necessary, and if so, the scope required.

### **2.3.3.7 Work Plans**

The Project Proponents have prepared numerous work plans that provide a proposed approach to potential remediation for Remediation Areas around the Park. Section 2.6.4, Remediation Areas, provides a detailed explanation of the location of Remediation Areas where remediation could be appropriate, a description of the characterization and evaluation implemented or planned for each location, interim actions applied to date at each Remediation Area, and remediation completed or scheduled as part of the Project. Appendix C to this Draft PEIR, Technical Reports for Remediation Areas, provides a copy of each work plan or transmittal report (the most correct report) for each of the following areas:

- Mine Yard and Stamp Mill Area (Remediation Area 1);
- Cyanide Plant Area (Remediation Area 2);
- Conveyance Corridor and Adit Project (Remediation Area 3);
- Sand Dam Area (Remediation Area 4);
- Historic Mine and Mill Areas (Remediation Area 5);
- Magenta Drain Area (Remediation Area 6);
- Stacy Lane Pond Area (Remediation Area 7);
- Historic Grounds Area (Remediation Area 8);
- Residences and Residences' Yards (Remediation Area 9);and
- Trails (Remediation Area 10).

### **2.3.4 POTENTIAL CONSTITUENTS OF CONCERN AND EXPOSURE PATHWAYS**

#### **2.3.4.1 Potential Constituents of Concern**

The Joint Order addresses PCOC that could be present at the Park that exceed regulatory guidelines or could be above background levels. PCOC evaluated include aluminum, antimony, arsenic, barium, cadmium, chromium, cobalt, copper, cyanide, iron, lead, manganese, mercury, nickel, thallium, vanadium, and zinc. Of these PCOC, aluminum, antimony, arsenic, barium, cadmium, chromium, cobalt, copper, iron, lead, manganese, nickel, thallium, vanadium, and zinc are naturally occurring at the Park. Chlorine, cyanide, mercury, and zinc were also used in the milling process, as described in Section 2.3.2, above. Once PCOCs are determined to exceed regulatory screening levels they become Constituent of Concern (COC). See Table 2.0-1, Potential Constituents of Concern and Screening Levels for Protection of Human Health For Soil and Air, and Table 2.0-2, Potential Constituents of Concern at the Park and National Drinking Water Regulations, for the relevant soil, air, and water screening levels and drinking water regulations for the PCOC present at the Park.

**TABLE 2.0-1  
POTENTIAL CONSTITUENTS OF CONCERN  
AND SCREENING LEVELS FOR PROTECTION OF HUMAN HEALTH FOR SOIL AND AIR**

PCOC <sup>4</sup>	CHHSL FOR SOIL <sup>1</sup>		PRG FOR SOILS <sup>2</sup>		PRG FOR AIR <sup>2</sup>	
	Residential (mg/kg)	Commercial/ Industrial (mg/kg)	Residential (mg/kg)	Industrial (mg/kg)	Residential (mg/m <sup>3</sup> )	Industrial (mg/m <sup>3</sup> )
Aluminum <sup>3</sup>			77,000	990,000	5.2	22
Arsenic	0.07	0.24			0.00057	0.0029
Antimony	30	380				
Barium	5,200	63,000			0.52	2.2
Beryllium	150	1,700				
Cadmium	1.7	7.5			0.0014	0.068
Chromium	10,000	10,000				
Cobalt	660	3,200			0.00027	0.0014
Copper	3,000	380,000			N/A	N/A
Cyanide			1,600	20,000		
Lead	150			800		
Manganese					0.052	0.22
Mercury	18	180			0.31	1.3
Molybdenum	380	4,800				
Nickel	1,600	16,000			0.0094	0.047
Selenium	380	4,800				
Silver	380	4,800				
Thallium	5	63				
Vanadium	530	6,700				
Zinc	23,000	100,000				

**Notes:**

<sup>1</sup> California Human Health Screening Levels (CHHSL). Soil CHHSLs are based on the 2005 CAL EPA standards. <http://www.calepa.ca.gov/brownfields/documents/2005/CHHSLsGuide.pdf>

<sup>2</sup> Preliminary Remediation Goals (PRGs). Soil and Air PRGs are based on the April 2009, Non-Cancer Hazard Index <http://www.epa.gov/region09/superfund/prg/>

<sup>3</sup> Aluminum was only included as a PCOC with the Residences Work Plan.

<sup>4</sup> Not all PCOC have been identified for each Remediation Area

**TABLE 2.0-2  
POTENTIAL CONSTITUENTS OF CONCERN AT THE PARK AND  
NATIONAL DRINKING WATER REGULATIONS**

PCOC	National Primary Drinking Water Regulations <sup>1</sup>		National Secondary Drinking Water Regulations <sup>4</sup> (mg/l)
	Maximum Contaminant Level <sup>2</sup> (mg/l)	Maximum Contaminant Level Goal <sup>3</sup> (mg/l)	
Aluminum	N/A	N/A	0.05-0.2
Arsenic	0.01	0.0	N/A
Antimony	0.006	0.006	N/A
Barium	2.0	2.0	N/A
Cadmium	0.005	0.005	N/A
Chlorine	4.0	4.0	N/A
Cobalt	Listed CCL <sup>5</sup>	Listed CCL	Listed CCL
Copper	1.3	1.3	1.0
Cyanide	0.2	0.2	N/A
Iron	0.3	N/A	0.3
Lead	0.015	0.0	N/A
Manganese	.05	N/A	0.05
Mercury	0.002	0.002	N/A
Nickel <sup>6</sup>	N/A	N/A	N/A
Thallium	0.002	0.0005	N/A
Vanadium	Listed CCL	Listed CCL	Listed CCL
Zinc	.0016	N/A	5.0

**Notes:**

<sup>1</sup> National Primary Drinking Water Regulations are legally enforceable standards that apply to public water systems. Primary standards protect public health by limiting the levels of contaminants in drinking water.

<sup>2</sup> Maximum Containment Level is the highest level of a contaminant that is allowed in drinking water.

<sup>3</sup> Maximum Contaminant Level Goal is the level of a contaminant in drinking water below which there is no known or expected risk to health.

<sup>4</sup> The National Secondary Drinking Water Regulations are non-enforceable guidelines regulating contaminants that may cause cosmetic effects (such as skin and tooth discoloration) and aesthetic effects (such as taste, odor, and color).

<sup>5</sup> The National Drinking Water Contaminant Candidate List (CCL) lists contaminants that (1) are not already regulated under SDWA; (2) may have adverse health effects; (3) are known or anticipated to occur in public water systems; and (4) may require regulations under SDWA.

<sup>6</sup> Nickel is not currently regulated by the U.S. EPA regarding drinking water requirements. The previous standard was revoked in 1995.

Pursuant to the Joint Order, the Project Proponents conducted studies more fully described in Section 2.3.3, Regulatory Framework and History, above, and in Section 4.6., Hazards and Hazardous Substances, Project Proponents evaluated all PCOC and identified as COCs those that exceeded the following regulatory thresholds: California Human Health Screening Levels (CHHSLs) for residential use, RWQCB guidelines, California Toxic Rule (CTR) criteria, and EPA Region 9 Soil Preliminary Remediation Goals (PRGs) (U.S. EPA 2009a, 2009b; RWQCB 2009).

### **2.3.4.2 Exposure Pathway**

An exposure pathway is the route a constituent could take from its source to its end point, and how human and ecological receptors (wildlife, aquatic life, and plants) can come into contact with (or be exposed to) the constituent along the route. An exposure pathway has five parts:

- A source of COC, such as mine and mill related materials;
- A way for the COC to travel to the point of contact (e.g., water transporting a COC downstream, or wind blowing a COC through the air);
- A point of exposure or contact with the constituent;
- A route of exposure such as ingestion (eating, drinking), inhalation (breathing), or dermal contact (touching); and
- A receptor, such as humans or sensitive wildlife, birds, and plants.

The exposure pathway is considered to be complete when all five parts are present. Conversely, if any one of these five parts is not present, the exposure pathway is broken and considered to be incomplete. DTSC considers pathways to be complete unless there is scientific justification to demonstrate the chemical will not enter an environmental medium, either directly or indirectly, now or in the future (DTSC 1996).

## **2.4 PROJECT OBJECTIVES**

DPR's mission is to provide for the health, inspiration, and education of the people of California by helping to preserve the state's extraordinary biological diversity, protecting its most valued natural and cultural resources, and creating opportunities for high-quality recreation. The fundamental goal of a historic park, like Empire Mine, is the preservation of resources of historic and prehistoric value. The interpretation and presentation of these resources should help the visitor appreciate, understand, and enjoy learning about the aspect of California's heritage for which the park was established.

The intent of the Project is to:

- Provide for the inspiration and education of the people of California by helping to preserve the state's extraordinary biological diversity and creating opportunities for high-quality outdoor recreation;
- Protect and preserve valuable natural and cultural resources within the Park;
- Protect public health and the environment through minimizing exposure of Park users and DPR personnel to unacceptable health risks; and
- Comply with the intent and terms of the DTSC and RWQCB Joint Order.

## **2.5 ANALYTICAL METHODOLOGY, STANDARD PROJECT REQUIREMENTS AND SPECIFIC PROJECT REQUIREMENTS INCORPORATED INTO PROJECT**

### **2.5.1 ANALYTICAL METHODOLOGY**

In determining the appropriate analytical methodology for this PEIR, DPR followed the following steps:

#### **Step 1: Incorporation of Standard and Specific Project Requirements into the Project**

DPR reviewed potentially applicable Standard Project Requirements (environmental protection measures) that it has used for other projects throughout the State and selected those that were deemed applicable to the Project. Next, DPR reviewed environmental protection measures that could be incorporated into this Project at the Park (Specific Project Requirements). As discussed below in Section 2.5.2, Standard and Specific Project Requirements, these measures are titled Standard Project Requirements and Specific Project Requirements, respectively. Standard and Specific Project Requirements were then incorporated into the Project.

#### **Step 2: Impact Analysis**

After incorporating Project Requirements, DPR next evaluated the significance of potential impacts of the Project on the full ranges of CEQA resource topics. Many of the potential impacts were determined to be less than significant; however, DPR proceeded to Step 3, Mitigation, for impacts that could not be reduced to a level of less than significant through incorporation of Project Requirements.

#### **Step 3: Mitigation**

For impacts that were either potentially significant or potentially significant and unavoidable, DPR provided mitigation measures that reduced these impacts to less than significance thresholds to the extent feasible. If, after incorporation of project requirements and mitigation measures, the potential impacts could not be reduced to a level of less than significant, DPR made applicable findings as described in Step 4, below.

#### **Step 4: Findings Determination**

After incorporation of Project Requirements and Mitigation, DPR determined the significance of impacts to environmental resources issues. Each resource section provides applicable findings for each significance determination. In addition, Section 6.0, Significance of Environmental Impacts, provides findings for impacts that are potentially significant and unavoidable and provides Overriding Considerations. These

Overriding Considerations provide specific economic, legal, social, technological, and other benefits of the proposed Project that outweigh the unavoidable adverse environmental effects identified in this PEIR, including any effects not mitigated because of the infeasibility of Project Requirements or mitigation measures and that the adverse environmental effects are considered acceptable.

### 2.5.2 STANDARD AND SPECIFIC PROJECT REQUIREMENTS

DPR has two types of Project Requirements: Standard and Specific. Standard Project Requirements are applied to projects statewide at all parks, as required. These requirements were developed from the Park's Health and Safety Plan, Best Management Practices (BMPs) and known regulatory requirements. For example, a Standard Project Requirement addressing how to treat the inadvertent discovery of archaeological features is assigned to all projects statewide that include ground-disturbing work. However, for a project that does not have ground disturbance, such as replacing a roof on a historic structure, this Standard Project Requirement would not be necessary and therefore not applied to the project.

Specific Project Requirements are written for, and applied to, projects based on specific actions unique to a project and/or area that are necessary to complete the project while protecting resources. Specific Project Requirements have been developed for Aesthetics, Air Quality, Biological Resources, Cultural Resources, Geology and Soils, Hazards and Hazardous Materials, Hydrology, Noise, and Traffic.

Table 2.0-1, Summary of Standard and Specific Project Requirements for the Park, lists Standard Project Requirements and Specific Project Requirements that will be incorporated into the Project, as applicable.

**TABLE 2.0-1  
SUMMARY OF STANDARD AND SPECIFIC PROJECT REQUIREMENTS FOR THE PARK**

Project Requirements	Action
<b>AESTHETICS</b>	
<b>Standard Project Requirement AES-1:</b> Trail Fence Color	<ul style="list-style-type: none"> <li>New fences will be a color that blends in with the natural surroundings.</li> </ul>
<b>Specific Project Requirement AES-2:</b> Storage of Materials in the Viewshed of State Route 174.	<ul style="list-style-type: none"> <li>All materials required for interim and/or remediation actions will be stored outside of the viewshed of State Route 174.</li> </ul>
<b>Specific Project Requirement AES-3:</b> Posting of Information Signs	<ul style="list-style-type: none"> <li>The Project Proponents will post information signs near Remediation Areas with restricted access or closures resulting from Program Actions lasting longer than 3 months. The signs will include the following information:                             <ul style="list-style-type: none"> <li>Explanation for and description of the Program Action; and</li> <li>Length of Program Action or anticipated completion date.</li> </ul> </li> <li>Any new structures will be compatible with the materials, color and design of existing structures at the Park.</li> </ul>
<b>Specific Project Requirement AES-4:</b> New Structure Design	
<b>Specific Project Requirement AES-5:</b> Light Pollution	<ul style="list-style-type: none"> <li>To reduce direct and reflected light pollution, the Project Proponents will equip any permanent structure with outdoor light shields that concentrate the illumination downward. The direct source of the lighting (bulb, lens, filament, tube, etc) will not be visible off site and the lighting will be installed as low as possible on poles and/or structures to minimize light pollution of the night sky. The candle power of the illumination at ground level will not exceed what is required by any safety or security regulations of any government agency with regulatory oversight.</li> </ul>
<b>AIR QUALITY</b>	
<b>Standard Project Requirement AIR-1:</b> Dust and Ozone Reduction	<ul style="list-style-type: none"> <li>During dry, dusty conditions, all active construction areas will be lightly sprayed with dust suppressant to reduce dust without causing runoff.</li> <li>All trucks or light equipment hauling soil, sand, or other loose materials on public roads will be covered or required to maintain at least two feet of freeboard.</li> <li>All gasoline-powered equipment will be maintained according to manufacturer's specifications, and in compliance with all state and federal requirements.</li> <li>Paved streets adjacent to the Park shall either be swept or washed at the end of each day, or as required, to remove excessive accumulations of silt and/or mud which could have resulted from remediation construction activities.</li> <li>Excavation and grading activities will be suspended when sustained winds exceed 15 miles per hour (mph), instantaneous gusts exceed 25 mph, or when dust occurs from remediation related activities.</li> </ul>

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Project Requirements	Action
	where visible emissions (dust) cannot be controlled by watering or conventional dust abatement controls.
<b>BIOLOGICAL RESOURCES</b>	
<b>Specific Project Requirement BIO-1:</b> Humboldt Lily	<ul style="list-style-type: none"> <li>Excavated soils will not be side-cast along the side of trails or into the surrounding habitat at any work location in order to minimize impacts to the Humboldt Lily.</li> </ul>
<b>Standard Project Requirement BIO-2:</b> True's Manzanita Avoidance	<ul style="list-style-type: none"> <li>Prior to the start of Program Actions, and under the direction of a DPR-qualified biologist, the Project Proponents will flag and/or fence all True's Manzanita for avoidance within the Remediation Area; fencing will be removed after remediation has been completed.</li> </ul>
<b>Standard Project Requirement BIO-3:</b> California Red-Legged Frog (CRLF), California Horned Lizard, and Northwestern Pond Turtle	<ul style="list-style-type: none"> <li>Prior to remediation, a biologist that is approved by the USFWS (USFWS-approved biologist) to work with California Red-Legged Frogs (CRLF) will conduct a training session to familiarize all remediation personnel with identification of CRLF and other sensitive species, such as California horned lizard and northwestern pond turtle, their habitats, general provisions and protections afforded by the Endangered Species Act and measures implemented to protect these species, the limits of project work will also be discussed. During this training, all remediation personnel will be provided with species identification cards that include species photos. All remediation personnel and subcontractors will complete the training before they are authorized to work on the Remediation Area.</li> <li>The Project Proponents will designate an official point of contact (POC) to be at the Park during Program Actions in case a CRLF is found. If a CRLF is found at the Park, all work in that location will be temporarily halted and diverted to another location until DPR's State Representative is contacted and the USFWS-approved biologist and the USFWS are consulted for further direction.</li> <li>A USFWS-approved biologist will be present at all times during installation and removal of a temporary stream crossing at Little Wolf Creek, if and when a crossing is necessary.</li> </ul>
<b>Standard Project Requirement BIO-4:</b> Nesting Bird Species	<ul style="list-style-type: none"> <li>All Project Actions with the potential to affect nesting birds (as determined by a DPR-qualified biologist) will not occur during the breeding season (March 1 – August 31).</li> <li>If Project Actions are required during the California Spotted Owl breeding season (March 1 - August 31), protocol-level surveys to determine nesting status will be required. If the owl pair is determined to be non-breeding, Program Actions will be permitted. If the owl pair is determined to be breeding, no Project Actions with the potential to create noise disturbance will be allowed within 1,000 feet of the active nest until after the young have fledged and have the ability to fly out of the area of disturbance, as determined by a DPR-qualified biologist. If site conditions do not allow for a buffer of 1,000 feet, the Project Proponents will consult with the USFWS and CDFG, as appropriate.</li> <li>If Project Actions that could potentially cause take of other nesting bird species (as determined by a DPR-qualified biologist) are necessary during the breeding season (March 1 - August 31), pre-construction surveys will be required. If nesting birds are determined to be non-breeding, Program Actions will be permitted. If nesting sensitive birds, raptors, and/or migratory birds are found at the</li> </ul>

2.0 Project Description

Project Requirements	Action
	<p>Park, a buffer area of 1,000 feet, 250 feet or 100 feet, respectively, will be established around the nest(s); no Project Actions that could potentially cause nest failure will be permitted until the nest is vacated and the juveniles have fledged, as determined by a DPR-qualified biologist.</p> <ul style="list-style-type: none"> <li>At the discretion of a DPR-qualified biologist, Project Actions will be monitored to ensure that impacts to nesting sensitive birds, raptors, and/or migratory birds are minimized.</li> </ul>
<p><b>Standard Project Requirement BIO-5:</b> Tree Removal</p>	<ul style="list-style-type: none"> <li>The Project Proponents will not remove any trees equal to or greater than 15-inches diameter at breast height (4.5 feet) unless first inspected by a DPR-qualified biologist and determined to be unsuitable as nesting habitat for California Spotted Owls and other sensitive birds.</li> </ul>
<p><b>Standard Project Requirement BIO-6:</b> Maternal Bat Colonies</p>	<ul style="list-style-type: none"> <li>Project Actions will occur outside the maternity season for bats (March 1 – August 31). Prior to the start of Project Actions, a DPR-qualified biologist will conduct a presence/absence bat survey if snag and/or tree removal, or roof modification are scheduled to occur during maternity season, if bats are not detected, Program Actions will be permitted. If bats are detected, a DPR-qualified biologist will establish a 50-foot buffer exclusion zone around each occupied location until the roosting activities have ceased, as determined by a DPR-qualified biologist.</li> </ul>
<p><b>Standard Project Requirement BIO-7:</b> Minimize Area Necessary for Project Actions</p>	<ul style="list-style-type: none"> <li>Prior to implementation of Program Actions, the Project Proponents will determine and use the minimum area necessary for Program Actions, including staging and access, and place orange construction fencing or flagging around the boundaries of the proposed work area. Existing disturbed areas will be used to the extent possible. Unless prior approval is obtained from DPR, remediation actions will remain within the designated work area(s) to minimize habitat disturbance.</li> </ul>
<p><b>Standard Project Requirement BIO-8:</b> Avoidance or Minimization of Impacts to Federally Protected Wetlands</p>	<ul style="list-style-type: none"> <li>If site conditions allow, the Project Proponents will avoid or minimize impacts to federally protected wetlands. Where conditions do not allow for avoidance, appropriate permits will be obtained prior to site work.</li> </ul>
<p><b>CULTURAL RESOURCES</b></p>	
<p><b>Standard Project Requirement CULT-1:</b> Cultural Resources Recordation and Mapping</p>	<ul style="list-style-type: none"> <li>Prior to the start of Project Actions and to the extent not already completed, a DPR-qualified cultural resources specialist will map and record all historic features within the proposed Remediation Area to a level appropriate to Secretary of Interior Standards.</li> </ul>
<p><b>Standard Project Requirement CULT-2:</b> Cultural Resources Awareness Training</p>	<ul style="list-style-type: none"> <li>Prior to the start of Program Actions, a DPR-qualified cultural resources specialist will train remediation personnel in cultural resource identification and protection procedures.</li> </ul>

**2.0 Project Description**

<b>Project Requirements</b>	<b>Action</b>
<p><b>Standard Project Requirement CULT-3:</b> Cultural Resource Avoidance</p>	<ul style="list-style-type: none"> <li>• Prior to the start of Program Actions, and at the discretion of a DPR-qualified cultural resources specialist, the Project Proponents will flag and/or fence all cultural resources within 15 feet of Program Actions for avoidance within the Remediation Area; fencing will be removed after remediation has been completed.</li> <li>• At the discretion of a DPR-qualified cultural resources specialist, all Program Actions could be monitored. The Project Proponents will notify the Northern Service Center Cultural Resource Section a minimum of three weeks prior to the start of Program Actions to schedule monitoring, unless other arrangements are made in advance.</li> <li>• If intact cultural features are uncovered during Program Actions, work will be temporarily halted and diverted to another location until the DPR-qualified cultural resources specialist records and evaluates the find, and implements avoidance, preservation, or recovery measures.</li> <li>• If avoidance is required, the Project Proponents will modify Program Actions to avoid the cultural resources. The proposed modified Program Actions will be implemented upon review and approval of a DPR-qualified cultural resources specialist and DTSC and/or RWQCB.</li> </ul>
<p><b>Standard Project Requirement CULT-4:</b> Previously Undocumented Resources</p>	<ul style="list-style-type: none"> <li>• In the event that the DPR-qualified cultural resources specialist at the Park determines that potentially significant, previously undocumented/unflagged cultural resources (including but not limited to dark soil containing shellfish, bone, flaked stone, groundstone, or deposits of historic material) are encountered during Program Actions, all work in that location will be temporarily halted and diverted to another location, until DPR's State Representative is contacted; a DPR-qualified cultural resource specialist will record and evaluate the find and work with the Project Proponents to implement avoidance, preservation, or recovery measures, as appropriate, prior to any work resuming at that specific location.</li> <li>• In the event that previously undocumented cultural resources are encountered during Project implementation and a DPR-qualified cultural resources specialist is not on-site, the DPR State Representative will be contacted immediately and work within the immediate vicinity of the find will be temporarily halted or diverted until a DPR-qualified cultural resources specialist evaluates the find and determines the appropriate treatment and disposition of the cultural resource.</li> <li>• Prior to the start of Program Actions, a DPR-qualified cultural resources specialist will prepare a 'Construction Monitoring and Unanticipated Discovery Response Plan' (CMUDRP) to be implemented if an unanticipated discovery is made. Elements of the CMUDRP will include:             <ul style="list-style-type: none"> <li>- Implementation of worker and supervisor response procedures to be followed in the event of an unanticipated discovery, including appropriate points of contact for professionals qualified to make decisions regarding the potential significance of any find;</li> <li>- Identification of, and on-call contact information for, persons authorized to stop or redirect work that could affect the discovery;</li> <li>- Provisions for monitoring of Project Actions in resource-sensitive areas;</li> </ul> </li> </ul>

## 2.0 Project Description

Project Requirements	Action
<p>Standard Project Requirement CULT-5: Human Remains</p>	<ul style="list-style-type: none"> <li>- Stipulations of a minimum radius around any discovery within which construction work will be temporarily halted until the significance of the resource has been evaluated and implementation of avoidance, preservation, or recovery measures, as appropriate; and</li> <li>- Consultation procedures for contacting identified Native Americans, as appropriate.</li> <li>• In the event that human remains are discovered during Program Actions, all work at that location will be temporarily halted and diverted to another location. Any human remains and/or funerary objects will be left in place. The Project Proponents will immediately contact the DPR State's Representative who will then contact the DPR Sector Superintendent. The DPR Sector Superintendent (or authorized representative) will notify the County Coroner, in accordance with §7050.5 of the California Health and Safety Code, and the Native American Heritage Commission (NAHC) will be notified within 24 hours of the discovery if the Coroner determines that the remains are Native American. The NAHC will designate the "Most Likely Descendant" (MLD) of the deceased Native American. The MLD will recommend an appropriate disposition of the remains, if a Native American monitor is at the Park at the time of the discovery, and that person has been designated the MLD by the NAHC; the monitor will make the recommendation of the appropriate disposition. Work will not resume in the area of the find until proper disposition is complete (PRC §5097.98). No human remains or funerary objects will be cleaned, photographed, analyzed, or removed from the site prior to determination. If it is determined the find indicates a sacred or religious site, the site will be avoided to the maximum extent practicable.</li> <li>• The Project Proponents will conduct all Program Actions in a manner consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings (1995).</li> <li>• Prior to the construction of permanent project components at the Park, the Project Proponents will consult with a DPR-qualified cultural resources specialist for review and modification to avoid impacting the integrity of setting of significant historic features within the Park.</li> </ul>
<p>Standard Project Requirement CULT-6: Secretary of the Interior's Standards</p>	
<p>Standard Project Requirement CULT-7: Siting and Design of Permanent New Facilities</p>	
<p><b>GEOLOGY AND SOILS</b></p>	
<p>Standard Project Requirement GEO-1: Post-Earthquake Inspections of Structures and Features</p>	<ul style="list-style-type: none"> <li>• After a large earthquake (magnitude of 5.0 or greater within 50 miles of the Park), DPR-qualified personnel will inspect all structures (residences, adits, visitor center, etc) and features (trails, known mine openings, the Sand Dam, etc.) for damage, as soon as practical, and close any areas of the Park that are determined to pose a danger to Park users, volunteers, residents, and staff.</li> </ul>

2.0 Project Description

Project Requirements	Action
<p><b>Specific Project Requirement GEO-2:</b> Subsidence Evaluations of Shallow Mine Workings</p>	<ul style="list-style-type: none"> <li>As part of Project design and prior to ground disturbing activities, a geotechnical examination of the proposed work area will be completed to evaluate the ground surface over known or suspected shallow mine workings to assess the potential of ground subsidence.</li> </ul>
<p><b>HAZARDS AND HAZARDOUS MATERIALS</b></p>	
<p><b>Specific Project Requirement HAZMAT-1:</b> Transport of Hazardous Materials</p>	<ul style="list-style-type: none"> <li>Materials, that are removed during Program Actions and exceed cleanup goals and/or water quality objectives as established in the Central Valley Water Board's <i>Water Quality Control Plan for the Sacramento River and San Joaquin River Basins</i> (Basin Plan, RWQCB 2007), will either be deposited in the Park consistent with Remediation Option Placement of Removed Soils or Materials within the Park, which provides on-site management of materials, or removed and transported to a licensed disposal facility in accordance with applicable federal, state, and local regulations.</li> <li>Prior to the start of Program Actions, the Project Proponents will prepare and submit a Materials Management Plan that will avoid or minimize risks to include protocols and procedures that will protect human health and the environment from the potential exposure to metals and dust during remediation and/or maintenance activities that cause disturbances to the native soil and/or mine and mill materials. The protocols and procedures that will be implemented will meet the specific applicable requirements of California Regional Water Quality Control Board (RWQCB) and Department of Toxic Substances Control (DTSC). Components of the Materials Management Plan will be developed to avoid or minimize human health and environmental risks from the potential exposure to metals and dust resulting from materials disturbances. All work will be performed in accordance with a Site Health and Safety Plan. The Materials Management Plan will include, but not be limited to the following (where applicable):             <ul style="list-style-type: none"> <li>Requirement for staff to have appropriate training in compliance with 29 CFR, §§1910, et seq. (Occupational Safety and Health Standards), 1926 et seq (Safety and Health Regulations for Construction) and 8 CCR § 5192 (Hazardous Waste Operations and Emergency Response).</li> <li>Methods to assess risks prior to starting work;</li> <li>Procedures for the management and disposal of waste soils generated during construction activities or other activities that might disturb contaminated soil;</li> <li>Monitoring requirements;</li> <li>Storm water controls;</li> <li>Record keeping; and,</li> <li>Emergency response plan</li> </ul> </li> </ul>
<p><b>Standard Project Requirement HAZMAT-2:</b> Suspension of Work</p>	<ul style="list-style-type: none"> <li>All Project Actions will be suspended during heavy precipitation events (at least ½ inch of precipitation in a 24-hour period) or when heavy precipitation events are forecasted.</li> </ul>

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Project Requirements	Action
<p><b>Standard Project Requirement HAZMAT-3:</b> Decontamination of Project Vehicles and Equipment</p>	<ul style="list-style-type: none"> <li>The Project Proponents will set up decontamination areas for vehicles and equipment at Park entry/exit points and maintain the existing decontamination wash facility located in the Maintenance Yard. The decontamination areas will be designed to completely contain all wash water generated from washing vehicles and equipment. The Project Proponents will install BMPs, as necessary, to prevent the dispersal of wash water beyond the boundaries of the decontamination area, including over-spray.</li> </ul>
<p><b>Standard Project Requirement HAZMAT-4:</b> Wildfire Avoidance and Response</p>	<ul style="list-style-type: none"> <li>Prior to the start of Program Actions, the Project Proponents will develop a Fire Safety Plan and submit to the DPR Sector Superintendent for approval.</li> <li>Spark arrestors or turbo-charging (which eliminates sparks in exhaust) and fire extinguishers will be required for all heavy equipment.</li> <li>Construction crews will be required to park vehicles away from flammable or combustible materials, such as fuels, dry grass or brush. At the end of each workday, heavy equipment will be parked over a non-combustible surface to reduce the chance of fire.</li> <li>DPR personnel will have a State Park radio at the Park, which allows direct contact with Cal Fire and a centralized dispatch center, to facilitate the rapid dispatch of control crews and equipment in case of a fire.</li> <li>In the event that conditions at the Remediation Area are dry, a filled water truck will be at the Park for all Project Actions involving equipment with the potential to start a fire.</li> </ul>
<p><b>HYDROLOGY AND WATER QUALITY</b></p>	
<p><b>Standard Project Requirement HYDRO-1:</b> Erosion and Sediment Control and Pollution Prevention</p>	<ul style="list-style-type: none"> <li>Prior to the start of Program Actions involving ground disturbing activities, the Project Proponents will prepare and submit a Storm Water Pollution Prevention Plan (SWPPP) that identifies the temporary (e.g., tarping any stockpiled materials or soil; constructing silt fences, installation of straw bale barriers, fiber rolls, etc.) and permanent (e.g., utilizing structural containment and planting vegetation) BMPs to be used in all Remediation Areas, to reduce or eliminate the discharge of soil, surface water runoff, and pollutants during excavation, grading, aggregate cover installation, and any other ground disturbing activities. The SWPPP will also include BMPs for hazardous waste and contaminated soil management, and a Spill Prevention and Control Plan (SPCP).</li> </ul>
<p><b>Standard Project Requirement HYDRO-2:</b> Energy Dissipation</p>	<ul style="list-style-type: none"> <li>The Project Proponents will install appropriate energy dissipaters at water discharge points, as needed.</li> </ul>

2.0 Project Description

Project Requirements	Action
<p><b>NOISE</b></p> <p><b>Specific Project Requirement NOISE-1:</b> Noise Exposure</p>	<ul style="list-style-type: none"> <li>• Project Actions will be limited to the daylight hours, Monday through Friday. However, weekend work could be implemented to accelerate construction or address emergency or unforeseen circumstances. If weekend work is necessary, no work will occur on those days before 8:00 a.m. or after 6:00 p.m.</li> <li>• Internal combustion engines used for the implementation of Program Actions will be equipped with a muffler of a type recommended by the manufacturer. Equipment and trucks used for Project-related activities will utilize the best available noise control techniques (e.g., engine enclosures, acoustically attenuating shields or shrouds, intake silencers, ducts, etc.) whenever necessary.</li> <li>• Stationary noise sources and staging areas will be located as far from potential sensitive noise receptors, as possible. If they must be located near potential sensitive noise receptors, stationary noise sources will be muffled or shielded, and/or enclosed within temporary sheds.</li> </ul>
<p><b>TRANSPORTATION / TRAFFIC</b></p>	
<p><b>Specific Project Requirement TRAFFIC-1:</b> Traffic Control</p>	<ul style="list-style-type: none"> <li>• Prior to delivery and/or removal of Project-related equipment or materials that could impede or block access to driveways, cross streets, or street parking, DPR will coordinate with the local jurisdictions to develop and implement traffic control measures.</li> </ul>
<p><b>Specific Project Requirement TRAFFIC-2:</b> Overflow Parking in the Red Dirt Pile</p>	<ul style="list-style-type: none"> <li>• The main parking lot will be reserved for Park visitors; all Program Action-related vehicles will use the overflow parking lot on the Red Dirt Pile, if feasible.</li> </ul>
<p><b>Specific Project Requirement TRAFFIC-3:</b> Traffic Impact Study</p>	<ul style="list-style-type: none"> <li>• Prior to the start of any Project Action that would result in 50 or more vehicle trips during peak hours (7:00 a.m. to 9:00 a.m. or 4:00 p.m. to 6:00 p.m.) for a period exceeding 6 months in duration, the Project Proponents will prepare a Traffic Impact Study (TIS) for submittal and approval by Nevada County Department of Transportation and Sanitation (DOTS) and/or City of Grass Valley Public Works. The TIS will include, but will not be limited to:             <ul style="list-style-type: none"> <li>- Description of traffic inducing Project Actions;</li> <li>- Types of vehicles anticipated;</li> <li>- Approximate traffic volumes on/ offsite and roadways to be used;</li> <li>- Existing Conditions Traffic Counts;</li> <li>- Analysis of Project Action traffic volume impacts on intersections and traffic index; and</li> <li>- Any other TIS requirements as outlined in the appropriate jurisdiction's guidance on TIS preparation</li> </ul> </li> </ul>

## 2.6 PROJECT DETAILS

### 2.6.1 CHARACTERIZATION AND EVALUATION, INTERIM ACTIONS, AND REMEDIATION

Project Proponents have conducted, and continue to conduct, characterization studies in areas of the Park specified in the Joint Order. Results have been, and continue to be evaluated, to determine the nature and extent of COC at the Park and to assess how potential exposure pathways could be reduced or eliminated. This approach facilitates the development of interim actions, as well as permanent remediation measures. Further, because the evaluation of results has not been completed as of the preparation of the Draft PEIR, specific remediation options have not been prescribed for all Remediation Areas. Therefore, the Draft PEIR identifies and evaluates a suite of applicable remediation options for their potential impacts to the environment of each of the Remediation Areas. The Draft PEIR also provides Standard and Specific requirements that would be incorporated into the Project, as appropriate, to reduce environmental impacts to a less than significant level. Last, each resource section describes mitigation measures that would be applied either at a particular Remediation Area or Park-wide.

A three-tiered approach is used for each Remediation Area: (1) Characterization and Evaluation; (2) Interim Actions, if necessary; and (3) Remediation Options, collectively termed "Program Actions." The term "Program Actions" is used throughout this Draft PEIR to describe the range of characterization, evaluations, interim actions, and remediation that collectively constitute the Project. The Draft PEIR evaluates environmental impacts that could result from implementation of Program Actions as well as potential impacts of "Project Actions" (land disturbing activities that could be used to implement Program Actions) associated with the identified Program Actions that could be used at the Park. Thus, the PEIR identifies potential Project Actions for each Remediation Option to ensure that environmental impacts are appropriately assessed.

Characterization work determines the nature and extent of COC exceeding applicable standards or guidelines. Evaluation work determines the extent to which the identified constituents need to be managed and identifies a range of potential remediation measures that could be appropriate for each Remediation Area.

Interim Actions eliminate or reduce the potential exposure of humans and the environment to COC while permanent remediation options are evaluated and then implemented. Examples of interim actions include, but are not limited to, exclusionary fencing, and implementation of Best Management Practices (BMPs) to ensure that the COC remain isolated from potential exposure pathways. Some Interim Actions could ultimately be implemented as remediation measures.

Remediation measures will eliminate or reduce the potential exposure of humans and the environment to acceptable COC levels. The suite of remediation options evaluated in this DPEIR is provided in Section 2.6.3, below.

## 2.6.2 GENERAL APPROACH TO REMEDIATION

### 2.6.2.1 Characterization

Generally, characterization is accomplished by determining the presence or absence of PCOC, including tailing material, waste rock material, mine shafts, naturally occurring material, the source location(s), and the presence of soil or water that could have come into contact with PCOCs at the Park. Data are collected through field observations, field analysis, and field sampling, after which laboratory analyses of the samples assess or identify COCs and their concentrations, to provide Quality Assurance/Quality Control (QA/QC) on in-situ field measurements or to provide information on acid generation potential, and metals leachability.

The approach to characterization and evaluation under the Joint Order are consistent with Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) principles. This approach is consistent with DTSC's approach to evaluating potential human health and environmental risks.

MFG developed Sampling and Analysis Plans (SAP) for Remediation Areas where area characterization and investigation is required. The SAP provide:

- Appropriate procedures and protocol for documenting information;
- Appropriate procedures and protocol for performing in-situ and ex-situ field soil and/or water analyses, and laboratory analyses; and
- An outline of health and safety guidelines for people who are conducting the field observations, analysis, and sampling.

A combination of the following field analyses, field sampling, and laboratory analyses have been, and could be used to determine the presence of elevated concentrations of COC. Approved QA/QC measures have been, and will continue to be, implemented to ensure that the following work will adhere to proper regulatory protocols (e.g., ex-situ X-ray fluorescence [XRF] samples will be submitted for laboratory analysis and correlated with in field in-situ XRF measurements):

- Field surveys for visual identification of tailings and waste rock materials, such as deposits of tailings, waste rock, and/or mixtures of these materials with native soils;
- Field in-situ XRF measurements of metals (primarily arsenic and lead) concentrations in surface and subsurface materials;

- Collection of surface and subsurface soil samples for ex-situ XRF measurement of metals;
- Collection of surface and subsurface samples for laboratory analyses of pH, California CAM-17 metals analysis, acid generation potential and/or metals leachability testing;
- Collection of vegetation samples for laboratory analysis of metals content;
- Field surveys during wet season to identify and characterize the water quality of any springs or seeps present; and/or
- Monthly or quarterly collection of surface and groundwater samples for analytical analysis.

### **2.6.2.2 Evaluation**

A Data Transmittal and Evaluation Report (DTER) is prepared after characterization of each Area. The purpose of the DTER is to:

- Evaluate and present field and laboratory data and summarize the results of the field investigation, including a description of the area characterized;
- Classify the mining waste as described in the Mining Waste Management Regulations of Title 27 California Code of Regulations, Section 22480 to determine the potential risk of water quality degradation and the criteria for management of the mining waste;
- Update the CSM with additional field investigation data and current and anticipated future land use(s), as necessary;
- Determine if additional characterization is required; and
- If remedial action is necessary, present a range of applicable remedial action alternatives.

### **2.6.2.3 Assess Remedial Action Alternatives**

A Remedial Action Alternatives Report (RAAR) is prepared after the DTER is completed. Data from the DTER is used to provide the basis for identifying potential alternatives for evaluation in the RAAR. The purpose of the RAAR is to evaluate the range of applicable remedial action alternatives and to propose preferred remedial option(s) for a specific area. Specific components of the RAAR include:

- Definition of the action(s) to address exposure pathways related to elevated concentrations of COC; and
- An evaluation of the alternative actions based on the effectiveness, permanency, and cost of the various specific actions, at a minimum.

#### **2.6.2.4 Implementation Plans**

Each Project Implementation Plan details the project specific engineering design and specifications for the Remedial Alternative Actions Report (RAAR) remedial solution(s). These engineering designs and specifications will support the development and completion of plans, permit applications or agreements, such as:

- Storm Water Pollution Prevention Plan(s) (SWPPP) and application(s);
- U.S. Clean Water Act 404 Nationwide or Individual Permit applications;
- CDFG Streambed Alteration Agreements;
- Project Health and Safety Plans
- Project Material Management Plans;
- Project Fire Protection Plans; and
- Project Requirements and required mitigation surveys and actions.

Implementation Plans will incorporate the provisions of Closure and Post Closure Maintenance of Mining Units as described in the Mining Waste Management Regulations of 27 CCR, Section 22510, as defined in Section 2.3.3.1, Department of Toxic Substances Control and Regional Water Quality Control Board, above.

#### **2.6.2.5 Completion Reports**

The last step is for the Project Proponents is to prepare and submit a Completion Report to DTSC and RWQCB within 90 days after final remediation is implemented for a Remediation Area. These reports will include:

- Documentation of construction activities for the action;
- Operation and Maintenance plans for the constructed components if needed;
- Description of any future land-use restrictions relevant to Park operation that could be required because of the Program Action(s);
- Documentation that the constructed actions have achieved the performance objectives; and
- Any differences between the approved design and the as-builts.

### **2.6.3 RANGE OF POSSIBLE REMEDIATION OPTIONS**

This Draft PEIR evaluates impacts associated with common remedial actions that have been, or could be, used at the Park, allowing flexibility in proposing a final Remediation solution to the regulatory agencies. The Project Proponents, in consultation with RWQCB and DTSC, could determine that no action (i.e., none of the Remediation Options provided below) is warranted under the following general sets of circumstances:

- When a Remediation Area or other area at the Park is characterized and evaluated not to pose a current or potential threat to human health or the environment;
- When applicable environmental law does not provide the authority to take remedial action; or
- Where a previous Program Action eliminates existing and potential risks to human health and the environment so that no further action is necessary (EPA 1999).

To the extent applicable to a Remediation Area, proposed remedial actions would include appropriate signage and could include (but are not limited to) one or a combination of the following:

- **In-situ covers, establishment and stabilization.** This action would involve establishing a cover (either a vegetative cover or placement of rock or aggregate) in areas exceeding cleanup goals and/or water quality objectives. The remediation area would be graded or contoured to provide a stable landform, establish controlled drainage patterns, and to prepare the surface materials for establishment of a seed bed, as applicable. In addition to possible grading activities, surface materials could be ripped with track dozer equipment or disked and harrowed using conventional agricultural equipment. The surface materials would be assessed to determine any nutrient, substrate, or geochemical amendment requirements that could be necessary for establishing a stable vegetated landform that would protect against water and wind erosion. Amendment application and seeding activities would likely be conducted using conventional broadcast type equipment such as hydroseeders, herd or cyclone seeders, or using conventional drill type agricultural equipment. Vegetative communities would consist of interim sterile or native plant species, as appropriate. Stormwater BMPs would be implemented to protect the revegetated surface(s). In addition, this action could involve the use of retaining walls, cribbing, gabions and/or hill picker baskets to stabilize sloped or over-cut materials.
- **Selective removal and/or replacement of surface materials.** This action would involve removing some amount of surface material, including sediments from watercourses, in areas exceeding cleanup goals and/or water quality objectives. Depending on site-specific circumstances, soil could be replaced with either on-site material or with clean import material to an elevation consistent with surrounding topography and revegetated with interim and/or long-term native plant species, as appropriate. Depending on the site and proposed activities, grading or contouring of the soils or adjacent surface materials could be required to provide surface stability. Revegetation could include similar activities as described in the In-situ cover remediation option. Remediation actions could include placement of rock or aggregate on the surface instead of

revegetation. Installation of retaining walls, cribbing, gabions and/or retaining walls could be included.

- **Complete removal and/or replacement of surface materials.** This action would involve complete removal of all surface materials (mine and mill materials, and organic soils) exceeding cleanup goals and/or water quality objectives. The removed material would be managed on-site or at an appropriate off-site facility, depending on the material and its COC characteristics. Grading or contouring of the area could be required and revegetation could include similar activities as described in the In-situ cover remediation option (See above). Stormwater BMPs would be implemented to protect the Remediation Area. Remediation actions could include placement of rock or aggregate on the surface, instead of revegetation. In addition, this action could involve the use of cribbing, gabions, or retaining walls to stabilize sloped or over-cut materials.
- **Placement of removed soils or materials within the Park.** If characterization and evaluation determines that a material qualifies as either a Group B or Group C waste, and the RWQCB and the DTSC concur, DPR can manage the materials at the Park provided that the Project Proponents comply with the Materials Management Plan and the Site Health and Safety Plan. Management of materials at the Park will meet the specific applicable requirements of California Regional Water Quality Control Board (RWQCB) and Department of Toxic Substances Control (DTSC). Management of materials at the Park could include construction and/or closure of on-site Mining Units, as defined in Section 2.3.3.1, Department of Toxic Substances Control and Regional Water Quality Control Board, above.
- **Placement of cover over selected areas.** This action would involve covering selected areas consisting of mine and mill materials with the placement of rock or aggregate material, a clean fill cover, or an engineered low permeability cover containing an infiltration barrier. Installation activities could require grading or contouring of the area with either tracked or rubber-tired dozer equipment or tracked excavation equipment and rubber-tired hauling equipment. The clean fill cover could be stabilized by revegetating with interim and/or long-term native plant species, as appropriate. Stormwater BMPs would be implemented to protect the Remediation Area. In addition, this action could involve the use of cribbing, gabions, or retaining walls to stabilize sloped or over-cut materials.
- **Maintenance and enhancement of existing cover.** This action would involve maintaining and enhancing existing vegetative cover and/or duff (organic matter in various stages of decomposition on the floor of the forest) in areas where characterization, evaluation or implementation of institutional and/or engineered control sufficiently limits exposure to COC and associated unacceptable health risk.
- **Use of engineered controls to prevent access.** This action would involve the installation of exclusionary fences and/or boardwalks to control unauthorized access to certain areas potentially containing COC. In conjunction with use of

other engineered controls, appropriate viewing areas (including overlooks) would be installed, as necessary. This action could also be utilized as an interim action.

- **Use of Institutional controls.** This action would include using non-physical administrative or legal controls to limit the human exposure to COC. Examples of this could include but are not limited to: Use Restrictions and Covenants and Superintendent Orders (an authoritative mandate, command, or direction issued by a senior administrator, or Superintendent, under the authority of California State Parks).
- **Stormwater collection and diversion structures.** This action would include the engineering and construction of stormwater collection and diversion structures to minimize or eliminate stormwater contact with source materials or to divert and collect stormwater that has contacted source materials. Engineered collection and diversion structures would be designed to manage specified duration and flow conditions and would generally be constructed of clean imported rip-rap (e.g., cobble or larger size rock) materials, geotextile materials, imported clean soil materials, cement grout, concrete, conventional culvert-type installations. Additional stormwater diversion facilities could include but not be limited to engineered creek and/or water diversions (e.g., use of pumping devices), or construction of structures (e.g., roofs) that prevent direct precipitation on Remediation Areas. Stormwater BMPs would be implemented to control erosion and sedimentation, as applicable.
- **Implement active treatment measures.** This action would include measures such as construction of an active water treatment facility that would use chemical reagents or mechanical treatment processes to convey, oxidize and precipitate targeted metals from water within the facility and then discharge the treated water downstream of the facility in compliance with cleanup goals and/or water quality objectives.
- **Implement passive treatment measures.** This action would include measures such as construction or enhancement of a natural or constructed wetland, swale, or other passive water treatment systems that utilize passive oxidation and reduction reactions, soils attenuation, and/or wetland vegetation to remove targeted constituents from water and then discharge the treated water downstream in compliance with cleanup goals and/or water quality objectives.
- **Other water management measures.** This action would include measures such as pumping water from the Empire Mine irrigation wells to reduce effluent water quantities requiring treatment or management and installation of zeolite cells to remove zinc from surface water runoff from the mine yard to reduce metals concentrations and/or moderate the discharge rate of the mine effluent that could be treated at the treatment facility.
- **Remediation of structures.** This action would involve the replacement or coating of metal roofing, and cleaning of structure interiors to ensure that applicable cleanup goals are achieved.

The purpose of remediation is to eliminate or reduce the risk of potential exposure pathways to humans or the environment from COC identified at the Park. The Project Actions that would implement the Program Actions are listed below:

- Operation of heavy construction equipment;
- Transportation of contaminated soils leaving the Park and importation of clean fill material entering the Park;
- Mobilization and demobilization of heavy construction equipment to the Park;
- Demolition and/or removal of any structures, including temporary facilities;
- Importation of supplies and materials that could be used for remediation activities;
- Temporary and permanent fencing installation;
- Grading activities;
- Boring activities;
- Excavation activities;
- Blasting activities;
- Scarifying activities;
- Planting and seeding activities;
- Dredging and sediment removal;
- Stormwater BMP installation and maintenance activities;
- Physical contact with cultural and surface water resources;
- Removal of trees and other vegetation;
- Construction of ancillary structures, including utilities for either a temporary or permanent active water treatment facility;
- Construction and installation of permanent exclusion barriers;
- Construction and maintenance of access roads; and/or
- Monitoring activities (e.g., installation of check dams, handling biological resources, installation of wells and metering devices, etc.).

If substantially different Program Actions are proposed beyond the suite of Program Actions provided in Section 2.6.3 of this Draft PEIR, DPR will independently assess potential impacts of those measures and prepare any appropriate subsequent environmental documents.

### **2.6.4 REMEDIATION AREAS**

Sections 2.6.4.1 through 2.6.4.11 list potential Program Actions components by Remediation Area, as well as the Project Actions that implement those Program Actions. While some Program Actions could be complete remedial actions in

themselves, others are components of a final remedy. For example, Program Actions that include engineered controls (e.g. fencing) or institutional controls (e.g. Superintendant Order) as remedial options to control access and exposure could be implemented in certain places without reliance on other remedial actions. In other cases, Program Action components (e.g. selective removal of surface soils and installation of a passive water treatment system) could be combined to develop a Remediation Area's final remedy that meets project objectives. Subsequent characterization and evaluation could require modification of the remedial options for a given Remediation Area, although the variety of potential remedial options evaluated in this PEIR is quite broad to ensure the Project, as it is implemented, is responsive to site-specific conditions at each Remediation Area throughout the Park.

The Project Proponents identified the following Remediation Areas as potentially containing mining or milling related sources of COC, either because historic mining or processing wastes are present or because releases from these features have impacted nearby soil or water resources (see Figures 2.0-4a and 4b, Remediation Areas).

### **2.6.4.1 Mine Yard and Stamp Mill Area (Remediation Area 1)**

The Mine Yard is approximately 5.7 acres; the Stamp Mill is approximately 270 feet long by 90 feet wide (see Figure 2.0-5, Remediation Areas 1, 8, and 9) (MFG 2007e). The Mine Yard is defined as the area of historic mining, mine support, and ore processing facilities associated with the Empire Mine. The Mine Yard and Stamp Mill Area includes the following historic buildings and structures: the Stamp Mill Foundation, the Visitors' Center, the Visitor's Center parking lot, Docent Building/Warehouse, Manager's Office/Refinery/Safety Engineer's Office Building, Machine Shop, Blacksmith Shop, Welding Shop, Compressor Building, Hoist House, Transformer Building, and the open area between buildings. The Mine Yard Area, with exception of the Stamp Mill foundation, is open to Park visitors (MFG 2007e).

#### **Location**

The Mine Yard and Stamp Mill Area (Remediation Area 1) is located southwest of East Empire Street and located above the Cyanide Plant (see Figure 2.0-5).

#### **Characterization and Evaluation**

DPR collected stormwater samples in 2006 and 2007 from a stormwater outfall (16W) that drains surface water flows from the Mine Yard (See Figure 2.0-5). Laboratory analysis of the surface water determined that the samples contained elevated concentrations of zinc.

In 2007, MFG conducted a field characterization study to delineate potential mine and mill materials in the surface materials of the area not occupied by buildings or other features in the Mine Yard Area (see Appendix C-1, Mine Yard 2008 Data Transmittal Report). Characterization activities included conducting a visual survey, collecting in-situ and ex-situ XRF measurements of metals in soil samples, and performing chemical analyses on a number of soil samples. The field and laboratory analytical data results from the soil samples were submitted to the DTSC and RWQCB in a Data Transmittal Report submitted in January 2008 (MFG 2008k). Following completion of this PEIR, the Project Proponents will present an evaluation of the results of the area characterization study in a RAAR after incorporating comments and recommendations from DTSC and RWQCB on the DTER.

### **Interim Actions**

In 2006, DPR installed an engineered filter-fabric insert (Smart Sponge) for precipitating metals from stormwater drain inlets in the Mine Yard to absorb zinc from stormwater that was thought to originate from the metal roofs of the Historic Buildings. Although these measures have reduced concentrations of zinc, the resulting levels were not below the U.S. Environmental Protection Agency (U.S. EPA) benchmark value of 120 ppm.

Because Smart Sponges were not found to be sufficiently effective, in 2008 DPR installed a system of zeolite treatment cells in the storm drain manholes connected to the storm drain conveyance system. In addition, DPR installed three check dams at the stormwater outfall to provide additional treatment capacity. The zeolite treatment system is designed to intercept stormwater runoff from the building roofs and surface water runoff from the Historic Mine Yards. As the stormwater passes through the storm drain system, the multiple zeolite treatment cells, installed in sequential order, and the check dams absorb the zinc from the runoff. Stormwater runoff from the Mine Yard is sampled and analyzed as part of the Park-wide stormwater monitoring program. As of the date of the publication of this Draft PEIR, zinc concentrations in stormwater from the Mine Yard show an 85% reduction in dissolved zinc concentrations (Ernst 2009).

DPR installed stormwater BMPs during the fall of 2008 in the Stamp Mill Area. These include placing a straw wattle barrier along the northern and western boundaries of the Stamp Mill Area to help capture sediment in surface water runoff. In addition, DPR sprayed a soil tackifier/binding agent on exposed ground surface areas (non-paved) in the Stamp Mill Area, and installed exclusionary fencing along the southern edge of the Mine Yard to restrict access by the public. DPR is awaiting monitoring results to determine the effectiveness of these interim measures.

## Remediation

DPR is evaluating long-term Program Actions that will ensure compliance with applicable cleanup goals and/or water quality objectives. No specific remediation measures have been selected at this time; however, remediation measures for Remediation Area 1 could include (but are not limited to) one or a combination of the following:

- Use of institutional controls;
- Stormwater collection and diversion structures;
- Other water management measures (e.g., permanent zeolite cell installation);
- Remediation of structures;
- Use of engineered controls to prevent access;
- Selective removal and/or replacement of surface materials;
- Complete removal and/or replacement of surface materials;
- Placement of cover over selected areas; and/or
- Placement of removed soils or materials within the Park.

### **2.6.4.2 Cyanide Plant Area (Remediation Area 2)**

The Cyanide Plant Area (Remediation Area 2) encompasses 0.77 acres of cultural and natural resources that warrant protection from the adverse effects of Program Actions or Park visitor use (see Figure 2.0-6). The Cyanide Plant Area is 2.7 acres; the foundation of the Cyanide Plant has an interior area of approximately 16,000 square feet.

The Cyanide Plant was part of the ore processing facilities at the Empire Mine. During operation of the Cyanide Plant, gold was recovered from finely stamped ore by cyanide leaching. The building and mill equipment have been removed; however, the building foundations still exist. Tailings produced in this operation were hydraulically transported to the Sand Dam Area through a conveyance drainage channel downgradient of the Cyanide Plant.

#### **Location**

The Cyanide Plant is located below the Mine Yard and Stamp Mill Area, and up-gradient of the Conveyance Corridor (see Section 2.6.4.3) and Sand Dam Areas (see Section 2.6.4.4). The location of the Cyanide Plant Area (Remediation Area 2) is provided in Figure 2.0-6, Remediation Areas 2, 3, and 4.

#### **Characterization and Evaluation**

In 2007, MFG conducted field investigations, collected soil samples in the vicinity of Remediation Area 2, and evaluated the soil samples for compliance with the California Human Health Screening Levels (CHHSLs) for residential use. Although Remediation Area 2 does not contain residences, if soil metal concentrations are less than the residential CHHSLs, then concentrations of the COC would be below thresholds for risk to human health (MFG 2008b).

Based on the 2007 characterization, MFG concluded that the following COC exceeded residential CHHSLs in Remediation Area 2: arsenic, cadmium, copper, lead, and mercury within the Cyanide Plant foundations; and arsenic, cadmium, lead, and mercury outside the foundations.

#### **Interim Actions**

DPR installed engineered controls comprised of exclusion fencing and signage to prohibit public access (MFG 2008b). DPR also implemented several stormwater BMP technologies (including installation of a soil tackifier/binding agent, soil mulch, straw and/or pine needles, fiber rolls, and hay bales covered with filter fabric) and constructed a rock-lined diversion channel to prevent stormwater run-on and potential contaminants from leaving Remediation Area 2. In addition, DPR installed a temporary surface soil tackifier/binding agent around the

Cyanide Plant foundation to contain mine and mill materials with elevated metal concentrations until a permanent remedy is selected and implemented under the guidance of DTSC and RWQCB (DPR 2008d).

### **Remediation**

In June 2008, MFG prepared an Alternative Actions Report that identified potential remediation alternatives to reduce environmental impacts to acceptable levels (MFG 2008b). This report has not been finalized pending completion of this EIR.

DPR is evaluating long-term Program Actions that will ensure compliance with applicable cleanup goals and/or water quality objectives. No specific remediation measures have been selected at this time. However, likely remediation measures for this Remediation Area could include (but are not limited to) one or a combination of the following:

- Selective removal and/or replacement of surface materials;
- Complete removal and/or replacement of surface materials;
- Placement of removed soils or materials within the Park;
- Placement of cover over selected areas;
- Use of institutional controls;
- Use of engineered controls to prevent access ;
- Stormwater collection and diversion structures;
- In-situ covers; establishment and stabilization; and/or
- On-site removal and/or replacement of surface material.

#### **2.6.4.3 Conveyance Corridor and Adit Project (Remediation Area 3)**

Remediation Area 3 is approximately 600 feet long and encompasses approximately 8.6 acres. During operation of the Cyanide Plant, gold was recovered from finely milled ore by cyanide leaching. The tailings produced by this operation were hydraulically transported to the Sand Dam Area through the Conveyance Corridor, which follows the natural drainage downgradient of the Cyanide Plant. Residual deposits of tailings and other mine and mill related materials still exist within the Conveyance Corridor. Public access to the Conveyance Corridor is excluded by fencing. The exclusion fencing will remain in place until cleanup goals and/or water quality objectives are achieved at the Conveyance Corridor (MFG 2008a).

The Adit Project is located immediately southwest of the Cyanide Plant and along the northern edge of the conveyance channel. The Adit Project is intended to provide a realistic depiction of historic underground mining at Empire Mine and allow Park visitors an opportunity to tour an underground portion of the Empire Mine workings. Because of its proximity to the Cyanide Plant and conveyance corridor, surfaces within the Adit Project area could contain mine and mill materials. Public access to this area is currently prevented by exclusion fencing and will remain in place until characterization of the area and implementation of necessary Program Actions are completed.

### Location

The Conveyance Corridor and Adit Project (Remediation Area 3) are located west of the Cyanide Plant (see Figure 2.0-6); the Adit Project is located along the conveyance corridor.

### Characterization and Evaluation

In 2006 and 2007, MFG prepared Phase I and Phase II DGRs indicating that previous investigations reported elevated metal concentrations (primarily arsenic and lead) in the surface materials within the Remediation Area (MFG 2008a).

DPR and Newmont established a stormwater monitoring station (CC-1) in 2007 at the Old Hardrock Trail crossing at the Sand Dam as part of the 2007 Surface Water Monitoring Plan to assess stormwater quality and flow conditions associated with Remediation Area 3 (see Figure 2.0-6). Monitoring conducted during the 2007/2008 storm season reported dissolved metal concentrations for aluminum, cadmium, copper, lead, and zinc at levels exceeding cleanup goals and/or water quality objectives for stormwater benchmark values (MFG 2008a).

Based on characterization work, data analysis, and evaluation completed by MFG in 2008, the following documents will be delivered to DTSC and the RWQCB:

- A Data Transmittal and Evaluation Report;
- A Remedial Actions Alternative Analysis that assesses the range of potential remedial action(s); and
- If necessary, an Implementation Plan for any remedial action(s).

### Interim Actions

Newmont fenced Remediation Area 3 to prohibit unauthorized access. In 2008, DPR installed a rock channel energy dissipation system with straw bale check dams and filter fabric in the uppermost portion of the conveyance corridor to

contain or slow sediment transported below Remediation Area 2 (see Section 2.6.4.2). DPR applied a surface binding agent (soil tackifier) to the Adit Project area in October 2007 and 2008. DPR and Newmont also placed straw bales with fabric in the Conveyance Corridor and the Sand Dam Area to collect sediment-laden water. In addition, DPR installed mulch covers over bare soil and rock areas along the railroad tracks that lead into the Adit Area to reduce sedimentation into the conveyance corridor.

### **Remediation**

DPR is evaluating long-term Program Actions that will ensure compliance with applicable cleanup goals and/or water quality objectives. No specific remediation measures have been selected at this time. However, remediation measures for this Remediation Area could include (but are not limited to) one or a combination of the following:

- In-situ covers, establishment and stabilization;
- Selective removal and/or replacement of surface materials;
- Complete removal and /or surface materials replacement;
- Placement of removed soils or materials within the Park;
- Placement of cover over selected areas;
- Stormwater collection and diversion structures;
- Other water management measures;
- Use of institutional controls;
- Use of engineered controls to prevent access;
- Implement passive treatment measures; and/or
- Maintenance and enhancement of existing cover.

#### **2.6.4.4 Sand Dam Area (Remediation Area 4)**

The Sand Dam is an embankment constructed across Little Wolf Creek, downstream from its confluence with the Conveyance Corridor channel and another ephemeral stream that drains southerly from east of the Work Your Own Diggins (W.Y.O.D.) Mine. The dam was constructed in 1917-1918 from waste rock from the Pennsylvania Mine, and possibly the W.Y.O.D. Mine, to contain the tailings generated from the Cyanide Plant (MacBoyle 1919). Approximately 4.8 million tons of tailings were discharged to the Sand Dam Area between 1917 and 1956, when the mines closed (McQuiston 1986).

Little Wolf Creek flows into the Sand Dam area and exits through a spillway at the southwest end of the Sand Dam. An unnamed ephemeral drainage, originally used to convey tailings and water and referred to as the Conveyance Corridor, flows into

Remediation Area 4 before exiting the Park. An underground spring or seepage flow surfaces at the toe of the Dam embankment and enters Little Wolf Creek down gradient of Remediation Area 4.

Surface water was originally discharged through a metal culvert and wooden inlet. The existing outlet structure at the southwest end of the Sand Dam was constructed in the 1980s (DPR 1983). The Sand Dam does not contain a spillway overflow structure; however, the crest above the outlet pipe is about 2 feet lower than the adjacent crest, providing for emergency overflow.

The upstream embankment is visible for a height of approximately 10 feet, but is mostly buried by the impounded tailings deposits. The downstream embankment height is approximately 60 feet. The crest and upper embankment consists of cobbles, gravel and sand, and coarsens downward to large, angular rock in the lower portion of the embankment. The geometry of the embankment suggests that fill placement started from the north end and progressed south and southwest across the Little Wolf Creek drainage, with the embankment becoming wider to the south, creating a maximum crest width of about 150 feet. The embankment has a pronounced crest that extends above the mass fill which is aligned approximately north to south. The narrowest segment of the pronounced crest is near the south abutment, where the embankment crest narrows to about 12 feet (Golder 2007).

### **Location**

The Sand Dam Area (Remediation Area 4) is approximately 35 acres and is located near the southwest boundary of the Park, down gradient from the Red Dirt Pile and the Cyanide Plant (see Figure 2.0-6).

### **Characterization and Evaluation**

MFG performed characterization and evaluation of Remediation Area 4 in 2007, which included soil-type and vegetation-type identification (MFG 2007f, 2008i). Additional characterization work in 2008 included in-situ and ex-situ XRF analyses, soil and subsurface material sampling, waste rock sampling from test pits, vegetation sampling, water quality sampling and installation of three piezometers to monitor the depth to first encountered groundwater. Arsenic concentrations of the soil samples exceeded the residential CHHSLs. Further, several soil samples exceeded the industrial CHHSLs for cadmium and the industrial PRG for lead (MFG 2008m, 2009).

### **Interim Actions**

Newmont fenced Remediation Area 4 to restrict unauthorized access.

## Remediation

DPR is evaluating long-term Program Actions that will ensure compliance with applicable DTSC and RWQCB cleanup goals and/or water quality objectives. No specific remediation measures have been selected at this time. However, likely remediation measures for this Remediation Area could include (but are not limited to) one or a combination of the following:

- In-situ covers, establishment and stabilization;
- Selective removal and/or replacement of surface materials;
- Complete removal and/or replacement of surface materials;
- Placement of cover over selected areas;
- Placement of removed soils or materials within the Park;
- Use of institutional controls;
- Use of engineered controls to prevent access;
- Stormwater collection and diversion structures;
- Other water management measures;
- Implement passive treatment measures; and/or
- Maintenance and enhancement of existing cover.

### **2.6.4.5 Historic Mine and Mill Areas (Remediation Area 5)**

The Historic Mine and Mill Area (Remediation Area 5) is not one particular area at the Park; instead, it encompasses the former Empire Mine and a number of smaller historic mine and mill areas. The most extensive known mine workings are associated with the Empire, the Pennsylvania, and the W.Y.O.D Mines, located in the central area of the Park. Less extensive mine workings are associated with mines located in the Osborne Hill area in the southern part of the Park. The Sulphuret Works, a milling plant located on the northern Park boundary, and a number of other tunnels and shafts are located in the Union Hill Area (see Figure 2.0-7, Remediation Area 5 – Historic Mine and Mill Areas). Surrounding these facilities and structures are areas of surface disturbance and depositions of waste rock and tailings that were historically placed on the surface near mine entrances and in holes resulting from previous mining.

#### **Location**

The mines and mills have been grouped into three (3) categories: Central Area Mines, Osborne Hill Mines, and Union Hill Mines (see Figure 2.0-7).

## Characterization and Evaluation

The Mine and Mill Areas contain surface disturbances as a result of past mining and milling operations. Some of these areas have revegetated since mining or milling operations have ended; however, exposed waste rock and tailings could still exist and could contain COC.

In 2006 and 2007, MFG conducted a historic record review and area survey of the Mine and Mill Areas to identify any additional mines or mills that were not currently known to exist within the Park. The survey documented the location, topography, configuration (e.g., size, shape, type) of mine and mill facilities located, and the accessibility or proximity of the mine and mill materials to Park user facilities and trails (MFG 2007b). A field verification survey was conducted by MFG in December 2007 to identify, inventory, and describe surface features associated with all the historic mining and milling sites identified within the Park. MFG's field survey included both the previously known features and the additional features identified from review of the historic information sources.

Data gathered from the 2007 survey identified a total of 28 waste rock areas in the Park with waste rock deposits ranging from less than 0.01 to 4.7 acres (see Figure 2.0-7). However, tailings were not identified at any of the 28 locations (MFG 2007b). Each area was classified according to size, human accessibility, and proximity to existing trails or other Park facilities (MFG 2008g). Accessibility was defined as easy (accessible by walking over even terrain with no impeding vegetation), moderate (accessible by foot only with moderate exertion over uneven terrain and/or through impeding vegetation), or difficult (accessible by foot only with strong exertion over steep terrain and/or through dense, impeding vegetation). Proximity was defined as either a primary Park feature, adjacent to a primary Park feature (less than 100 feet from trails/facilities), or distant from a primary Park feature (greater than 100 feet from trails/facilities).

Using this classification, MFG selected 11 of the 28 sites for characterization because the waste rock areas are relatively large, are classified as either a primary Park feature or adjacent to a Park feature, and are easily accessible. Two additional waste rock areas, which are distant from existing trails and not easily accessible, were also characterized due to their proximity to surface drainages. Therefore, MFG characterized and evaluated 13 of the 28 survey areas.

In 2009, MFG delivered the data and results from this characterization and evaluation to DTSC and the RWQCB (see Appendix C-5, Historic Mine and Mill 2009 Data Transmittal Report). This data will be used to update the CSM and determine if Program Actions are required.

In 2008, the Anthropological Studies Center of Sonoma State University (ASC) conducted an Intensive Cultural Resources Survey of the Park. The results of this survey are provided in Section 4.4, Cultural Resources. ASC discovered additional locations that were not identified in MFG's survey (see Figure 2.0-7). Remediation measures applicable to locations identified and evaluated by MFG would also apply to the additional locations identified in ASC's survey.

### **Interim Actions**

Newmont fenced portions of Remediation Area 5 to temporarily restrict and prevent unauthorized access. Figures 2.0-4 and 2.0-6 show these fenced areas.

### **Remediation**

DPR is evaluating long-term Program Actions that will ensure compliance with applicable DTSC and RWQCB cleanup goals and/or water quality objectives. No specific remediation measures have been selected at this time. However, likely remediation measures for this Remediation Area could include (but are not limited to) one or a combination of the following:

- Use of institutional controls;
- In-situ covers, establishment and stabilization;
- Selective removal and/or replacement of surface materials;
- Placement of cover over selected areas;
- Complete removal and/or replacement of surface materials;
- Placement of removed soils or materials within the Park;
- Use of engineered controls to prevent access;
- Maintenance and enhancement of existing cover; and/or
- Stormwater collection and diversion structures.

#### **2.6.4.6 Magenta Drain Area (Remediation Area 6)**

The Magenta Drain was constructed to drain groundwater from the Empire Mine. Water flowing from the Magenta Drain enters a surface channel, which then flows to an unnamed creek, historically referred to as Woodpecker Ravine (see Figure 2.0-8, Remediation Area 6 – Magenta Drain). Woodpecker Ravine flows into the South Fork of Wolf Creek.

##### **Location**

The Magenta Drain tunnel extends for approximately 3,000 feet from the mine shaft to a portal in Woodpecker Ravine. The Magenta Drain Area (Remediation Area 6) is located in the northwest part of the Park near SR 174.

##### **Characterization and Evaluation**

Since August of 2006, DPR has monitored water quality at the Magenta Drain portal, downstream of the portal, and in downstream waters, in accordance with the RWQCB NPDES Permit (RWQCB 2006a). MFG monitored water quantity and water quality parameters approximately 150 feet downstream of the Magenta Drain Portal since 2006. Monitoring results indicate that water quality generally meets interim standards throughout the year, but does not meet the final effluent limits of the NPDES Permit (any time of the year) for manganese, iron, arsenic, percent dissolved oxygen, turbidity, and color. The primary Magenta Drain COC are arsenic, iron, and manganese (Tetra Tech 2005; MFG 2008).

A 2005 source assessment evaluated oxidation by aeration for arsenic, iron, and manganese removal (Tetra Tech EM Inc. 2005). The results did not show the required removal of arsenic or manganese to the required effluent limitations under the conditions evaluated.

Sediment samples were collected in August 2006 from seven locations in the Woodpecker Ravine downstream of the Magenta Drain portal. The sample locations were: at the Magenta Drain portal, the residential footbridge, upstream of the roadway culvert above Memorial Park, and at four approximately evenly spaced intervals along Woodpecker Ravine within Memorial Park. The selected locations were based on channel conditions and sediment occurrences. Samples were analyzed for Total Threshold Limit Concentrations (TTL) and Soluble Threshold Limit Concentrations (STLC) of arsenic, iron, manganese, and thallium. The analytical reports for the sediment are presented in the Quarterly Data Transmittal Report July through September 2006 (MFG, December 2006). Further characterization of some sediment from this watercourse is likely to occur.

A 2008 bench-scale and pilot-scale treatability study (MFG 2008) evaluated the utilization of active treatment technologies to treat mine influenced water (MIW) from the Magenta Drain. The treatment alternatives evaluated included pH adjustment, chemical oxidation, and greensand filtration alone and in combination for arsenic, iron, and manganese removal process. Several of the treatment conditions evaluated achieved the permit limits for arsenic, iron and manganese. The conclusion from the MFG test program was that "...the Magenta Drain water is amenable to treatment by greensand combined with a mixed-media roughing filter, potential clarifier, pH adjustment and oxidation" (MFG 2008).

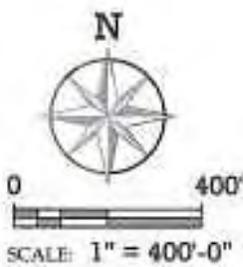
In 2008, Golder performed a bench-scale treatability study on MIW flowing from the Magenta Drain. This study showed that the processes involved were successful in treating two of the three COC (iron, arsenic) to below the effluent limitations (Golder 2009a). The results of bench-scale testing of four passive technologies (Golder 2008) indicated that passive treatment was incapable of treating one of the contaminants of concern, manganese, to the effluent limit. Due to this issue, Golder conducted a treatment alternatives comparative evaluation to evaluate conceptual treatment options incorporating both passive and active treatment elements (Golder 2009b). The Golder study concluded that arsenic and iron concentrations could be treated below effluent limitations; however, while manganese concentrations could be reduced by 80 percent they could not attain the applicable effluent limitations.

### **Interim Actions**

No interim actions have been identified for Remediation Area 6. However, upon completion of the characterization, appropriate interim measures would be implemented, if necessary.

### **Remediation**

DPR is evaluating long-term Program Actions that will ensure compliance with applicable DTSC and RWQCB cleanup goals and/or water quality objectives. Based on the results of the bench-scale and pilot-scale tests and the constraints of the site, an active treatment system was selected and is currently being designed. The design would be flexible so that adding passive technologies remains a feasible option in the future.



- - - Empire Mine SHP Boundary
- - - Woodpecker Ravine
- Magenta Drain Area (Area 6)
- Magenta Drain Tunnel
- In Holding

**Figure 2.0-8**  
**Remediated Area 6**  
**Magenta Drain**  
 EMPIRE MINE SHP  
 SITE CHARACTERIZATION  
 AND REMEDIATION PROJECT

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Likely remediation measures for this Remediation Area could include (but are not limited to) one or a combination of the following:

- Selective removal and/or cover of surface materials;
- Implement active water treatment measures; and/or
- Implement passive water treatment measures.

#### **2.6.4.7 Stacy Lane Pond Area (Remediation Area 7)**

The Stacy Lane Pond consists of an embankment constructed from waste rock and a tailing deposit suspected to originate from the Pennsylvania or W.Y.O.D. milling operations. McQuiston (1986) indicates that from 1918 through 1928 the mine produced and milled an additional 1.4 million tons of ore, with approximately 58,000 tons being discharged to Stacy Lane Pond. Remediation Area 7 is an approximate 2.8-acre tailings deposit with an embankment constructed from waste rock material. The embankment could also contain tailings. The Stacy Lane Pond dam is approximately 25 to 30 feet in height. The pond accumulates storm water during periods of heavy precipitation and dries during the summer. The Stacy Lane Trail crosses the tailings deposit just south of the pond.

#### **Location**

Stacy Lane Pond Area (Remediation Area 7) is located southwest of the Pennsylvania and W.Y.O.D. mines, in the northwest area of the Park (see Figure 2.0-9, Remediation Area 7 – Stacy Lane Pond).

#### **Characterization and Evaluation**

MFG performed sampling activities in September 2008 to delineate potential mine and mill materials in the Stacy Lane Pond Area and characterize those materials through collection of field descriptions and data on metal concentrations, acid generation potential, and metal solubility (MFG 2008j). Investigations in the Stacy Lane Pond Area included the delineation of tailings and waste rock, measuring metal concentrations in situ and ex situ utilizing the XRF, collection of surface and subsurface soils, tailings, and waste rock for further analysis, and collection of vegetation samples for laboratory analysis of total metals concentration. Two of the exploratory borings were converted to piezometers to monitor depth to water analysis.

In addition, MFG collected samples of vegetation for visual identification and analysis. MFG updated the CSM based on this data.

In February 2009, MFG submitted the draft final Data Transmittal and Evaluation Report to DTSC, the RWQCB, and DPR. Sampling data identified several

sample collections that exceeded the lead and cadmium Residential CHHSLs; however, they did not exceed the Industrial CHHSL for cadmium or the Commercial Industrial PRG for lead. Arsenic did not exceed the screening level of 270 mg/kg established by DTSC Human and Ecological Risk Division (HERD) for the recreation scenario. However, arsenic exceeded the Residential CHHSL. Once DTSC and RWQCB provide comments to Newmont on the Draft Final report, a RAAR will be prepared that states which Program Actions, if any, are required (MFG 2009b).

### **Interim Actions**

No interim actions have been identified for Remediation Area 7. However, upon completion of the characterization, appropriate interim measures would be implemented, if necessary.

### **Remediation**

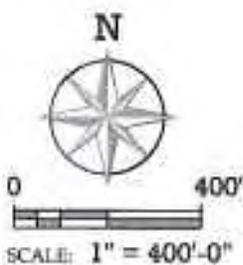
DPR is evaluating long-term Program Actions that will ensure compliance with applicable cleanup goals and/or water quality objectives. No specific remediation measures have been selected at this time. However, likely remediation measures for this Remediation Area could include (but are not limited to) one or a combination of the following:

- In-situ covers, establishment and stabilization;
- Selective removal and/or replacement of surface materials;
- Placement of cover over selected areas;
- Placement of removed soils or materials within the Park;
- Stormwater collection and diversion structures;
- Use of institutional controls;
- Use of engineered controls to prevent access;
- Maintenance and enhancement of existing cover; and/or
- Implement passive treatment measures.

CONTOUR INTERVAL: 5'-0"  
DATA SOURCE: MFG, Inc. (July, 2007)



- Empire Mine SHP Boundary
- Existing Trails
- Stacy Lane Pond Area (Area 7)



**Figure 2.0-9**  
**Remediation Area 7**  
**Stacy Lane Pond**  
EMPIRE MINE SHP  
SITE CHARACTERIZATION  
AND REMEDIATION PROJECT

**RESOURCE DESIGN**  
TECHNOLOGY, INC.

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#### **2.6.4.8 Historic Grounds Area (Remediation Area 8)**

The Empire Cottage, formerly the Bourn residence, and surrounding gardens and lawns in the Historic Grounds Area were established in 1897 by William Bourn Jr., owner of the Empire Mine for approximately 50 years (Empire Mine Park Association 2003). The original Starr house, built by George Starr, long-time superintendent of the Empire Mine, was destroyed by fire around 1913; the second Starr house also burned in 1935, leaving only the foundation remaining. The Clubhouse was built in 1905, with improvements completed over the years. The Historic Grounds Area (Remediation Area 8) is approximately 13 acres and encompasses the lawns, gardens, paths/trails, natural areas surrounding the Empire (Bourne) Cottage, the Starr House foundation, the Anderson residence, Empire Mine Clubhouse, greenhouse, and two garages (see Figure 2.0-5).

The Historic Grounds are currently maintained by Park grounds keepers and are open to Park visitors. Tours are offered of the Empire Cottage and the Grounds are used for various community affairs. The estate gardens include native and imported trees and plants, with rose bushes of many different varieties.

#### **Location**

The Historic Grounds (Remediation Area 8) are located in the central region of the Park, south of East Empire Street (see Figure 2.0-5). Remediation Area 8 is situated northwest of the Mine Yard and Stamp Mill Area (Remediation Area 1) and north of the Cyanide Plant (Remediation Area 2).

#### **Characterization and Evaluation**

MFG completed field characterization of Remediation Area 8 during the fall of 2008. Although no mine or mill materials were identified in the Historic Grounds Area, MFG collected surface and subsurface soil samples. Field characterization consisted of in-situ XRF analysis of lead and arsenic and subsurface soil sample collections that were analyzed for arsenic, lead, cadmium, and mercury concentrations.

Two of the sample locations (on the unpaved road near the northwest gate and on the unpaved path west of the Bourn Cottage lawn) had arsenic concentrations above 200 mg/Kg. Although below the cleanup goal, this level could indicate that mine and mill materials or incidentally placed materials (e.g. windblown, water transported) were present, or that mineralized bedrock was naturally weathering. Once DTSC and RWQCB's comments are submitted to Newmont on a Draft Final Data Transmittal and Evaluation Report are appropriately addressed, a RAAR will be prepared that recommends which Program Actions are required, if

any (MFG 2009b). A RAAR will be submitted to DTSC and the RWQCB ninety days after the Final EIR has been signed by DPR's Deputy Director.

In the event that additional characterization is conducted and elevated levels of metals are found at the Historic Grounds, appropriate remediation will be conducted. If additional characterization is required, DPR will independently assess potential impacts and prepare the appropriate subsequent environmental document.

### **Interim Actions**

No interim actions have been identified with Remediation Area 8. However, upon completion of the characterization, appropriate interim measures will be implemented, if necessary.

### **Remediation**

DPR is evaluating long-term Program Actions that will ensure compliance with applicable DTSC and RWQCB cleanup goals and/or water quality objectives. No specific remediation measures have been selected at this time. However, likely remediation measures for this Remediation Area could include (but are not limited to) one or a combination of the following:

- In-situ covers, establishment and stabilization;
- Selective removal and/or replacement of surface materials;
- Placement of cover over selected areas;
- Placement of removed soils or materials within the Park;
- Use of institutional controls;
- Use of engineered controls to prevent access;
- Stormwater collection and diversion structures; and/or
- Maintenance and enhancement of existing cover.

#### **2.6.4.9 Residences and Residences' Yards (Remediation Area 9)**

There are eight residential areas located within the Park, three of which DPR employees currently occupy. Six of the areas contain a residential structure, one contains a mobile home, and the remaining area is a vacant mobile home pad. All of the residences have defined lawns, which are irrigated with non-potable water pumped from the Empire Mine Shaft. The landscaping is maintained by Park maintenance personnel.

## Location

The residences are located southwest of the Historic Grounds Area (Remediation Area 8) and northeast of the Mine Yard and Stamp Mill Area (Remediation Area 1) (see Figure 2.0-5).

## Characterization and Evaluation

The Joint Order, described in detail in Section 2.3.3.3, identified the residences as one of the four Priority Action Work Plan Areas. The Residences 2006 Priority Action Work Plan mandated characterization at Remediation Area 9 and described the priority action measures to limit potential human health exposure pathways at the residences. The Priority Action Plan included the following:

- Collecting wipe and dust samples from the interiors; and
- Collecting soil samples from select locations in the residences' yards for field and analytical laboratory testing.

The cleaning effort is described below under Interim Actions.

Post-cleaning wipe and dust confirmation samples were collected from hard surfaces in the six residences. The post-cleaning confirmation sampling and analytical program included the analysis of lead and arsenic. The post-cleaning wipe samples analytical testing results indicated that the concentration of lead in wipe samples collected from interior surfaces ranged from below the laboratory reporting limit ( $0.5 \mu\text{g}/\text{ft}^2$ ) to  $78 \mu\text{g}/\text{ft}^2$ ; three lead wipe floor samples, from three residences, exceeded the screening level ( $50 \mu\text{g}/\text{ft}^2$ ).

Concentration of lead in vacuum samples ranged from  $69 \text{ mg}/\text{kg}$  to  $7,700 \text{ mg}/\text{kg}$ . Given the age of the structures, the suspected source of the elevated lead in the vacuum samples resulted from the lead-based paint. The Federal Department of Housing and Urban Development (HUD) and DHS defines "lead based paint" as paint and other surface coatings that contain an amount equal to, or in excess of, 0.5 % by weight ( $5,000$  parts per million [equivalent to  $\text{mg}/\text{kg}$ ]). Only one residence exceeded the HUD and DHS standards.

The concentration of arsenic in vacuum samples ranged from  $6.9 \text{ mg}/\text{kg}$  to  $60 \text{ mg}/\text{kg}$ . The concentration of arsenic in wipe samples collected from interior surfaces ranged from below the laboratory reporting limit (RL) of  $0.5 \mu\text{g}/\text{ft}^2$  to  $20 \mu\text{g}/\text{ft}^2$ . The arsenic concentration in wipe samples did not exceed the screening level ( $36 \mu\text{g}/\text{ft}^2$ ).

The objectives of the soil sampling programs are to: (1) define the nature and extent of elevated concentrations of lead in soil at the Park residences based on results and recommendations from the yard and drip zone sampling conducted in 2006; and (2) obtain data to support an area-specific human health risk assessment for arsenic in the soils around the Park's residences. Three additional phases of soil sampling are focused on collecting discrete soil samples for field testing and/or chemical analysis at the four residences where lead and arsenic were detected at concentrations above the comparison criteria. This follow-up work is based on recommendations presented in the residence sampling completion report (Tetra Tech 2007c).

The sampling program utilizes a combination of field testing using X-ray fluorescence and laboratory analytical testing. The results of the soil sampling program were submitted in a technical report to the DTSC and RWQCB on June 2, 2009.

### **Interim Actions**

In 2008, pursuant to the approved 2006 Priority Action Plan, a DPR contractor cleaned the interiors of six residences located in the Park to limit potential human-health exposure pathways from metals in dust on interior surfaces. Three isolated areas with lead concentrations above the screening levels will be re-cleaned and re-sampled to confirm that the lead cleanup goals and/or water quality objectives were achieved.

### **Remediation**

Remediation measures have been initiated for the residence interiors. DPR is evaluating long-term Program Actions that will ensure compliance with applicable environmental (exterior) cleanup goals and/or water quality objectives. Current remediation measures include, or could include (but are not limited to), one or a combination of the following:

- Remediation of structures (initiated in 2008);
- In-situ covers, establishment and stabilization;
- Selective removal and/or replacement of surface materials;
- Complete removal and/or replacement of surface materials; and/or
- Placement of cover over selected areas.

#### **2.6.4.10 Trails (Remediation Area 10)**

The trails generally are constructed on native ground surfaces, thus the surfaces of the trails are comprised largely of native soils and sand to cobble-size rock fragments and

are often partially or fully covered by layers of organic litter. Trail surfaces going through, adjacent to, or adjoining historic mine features could contain mine or mill materials (MFG 2007h).

### Location

The Park has approximately 14 miles of trails located throughout the Park as shown on Figure 2.0-10, Remediation Area 10 – Trails. However, only segments of two Park trails have been identified for clean up as part of this project.

A brief description of the two trails that comprise Remediation Area 10 is provided below:

- **W.Y.O.D. Loop Trail:** This trail includes four segments that traverse and provide access to the W.Y.O.D. Mine area from the Hard Rock Trail. In total, the W.Y.O.D. Trail is approximately 2,850 feet in length.
- **Hard Rock Trail:** This is the portion of the Hard Rock Trail west of the Sand Dam tailings area, extending south from the junction of the W.Y.O.D. Loop and Stacy Lane Trails. The length of the Hard Rock Trail is approximately 1,030 feet.

### Characterization and Evaluation

In 2006, DTSC and RWQCB identified three trails, based on the presence of mill and/or mine materials that could have elevated levels of metal and/or pose a potential exposure pathway to the public and park employees for priority characterization and remediation. The locations of the trails are shown on Figure 2.0-10 (MFG 2006a).

During 2006, MFG conducted an investigation to characterize the mine and mill materials present on trail surfaces throughout the Park based on surface metal concentrations (MFG 2007h). The Data Transmittal and Addendum for the Trails 2006 Priority Action Work Plan provided results of the 2006 investigation. In 2006, MFG performed surface sampling on the entire 14-mile trail network within the Park, including the three trail segments identified by DTSC and RWQCB. Results of the testing indicate elevated levels of arsenic and lead on documented portions of the 14-mile trail network (MFG 2007h).

### Interim Actions

DPR has fenced the old Hard Rock Trail which crosses the Sand Dam Area in the Closed Area (See Figure 2.0-4a and 4b and 2.0-10). Based on current characterization and evaluation, interim measures are not necessary at the W.Y.O.D. Trail and the Hard Rock Trail west of the Sand Dam Area. DPR has proposed remediation measures for trails at the Osborne Hill Area of the Park.

### Osborne Hill Trails

DPR prepared an Initial Study/Mitigated Negative Declaration under "independent utility" to evaluate and address impacts to the Osborne Hill trail network (see Section 1.5 of this Draft PEIR for further discussion of Independent Utility). The Mitigated Negative Declaration was adopted in January 2009; remediation is expected to begin in the Conlon Mine/Osborne Hill Trail Segment fall/winter 2009. The Osborne Hill Trail Network Project is discussed in greater detail in Section 5.0, Cumulative Impacts.

DPR subsequently prepared a Trails Implementation Plan (TIP) to adopt implementation measures for the renovation of recreational trails in the Osborne Hill area of the Park. Renovation of the trails is intended to protect human health and the environment by minimizing potential exposure to elevated arsenic concentrations on portions of trail surfaces while at the same time upgrading the trails to DPR trail standards that will minimize soil erosion, improve storm water drainage, increase the long-term stability of the trails, and provide recreational use for the public. This work was evaluated in a Mitigated Negative Declaration, which is discussed in Section 1.2 of this PEIR.

### Remediation Actions

DPR is evaluating long-term Program Actions that will ensure compliance with applicable cleanup goals and/or water quality objectives. No specific remediation measures have been selected at this time. However, likely remediation measures for this Remediation Area could include (but are not limited to) one or a combination of the following:

- In-situ covers, establishment and stabilization;
- Placement of cover over selected areas;
- Selective removal and/or replacement of surface materials;
- Complete removal and/or replacement of surface materials;
- Placement of removed soils or materials within the Park;
- Use of institutional controls;
- Use of engineered controls to prevent access;
- Maintenance and enhancement of existing cover; and/or
- Stormwater collection and diversion structures.

### **2.6.4.11 Unidentified Areas**

There could be additional areas within the Park that contain PCOC. The Project Proponents will utilize the CSM whenever areas within the Park are identified and, based on the information gathered from the CSM, implement appropriate characterization, evaluation, interim actions, and remediation, as necessary. In addition, the Project Proponents will utilize the Materials Management Plan discussed in Specific Project Requirement HAZMAT-2 to ensure that any PCOC are appropriately managed during characterization and evaluation of Unidentified Areas at the Park. If remediation is required, the Project Proponents will utilize identified remediation measures and Project Requirements provided in the PEIR.

## **2.7 REGULATORY REQUIREMENTS, PERMITS, AND APPROVALS**

### **2.7.1 REGULATORY REQUIREMENTS OUTLINED IN THE ORDER**

#### **2.7.1.1 Jurisdiction**

DTSC and the RWQCB have jurisdiction over this Project pursuant to Health and Safety Code (H&SC) Sections 25355.5(a)(1)(C), 25358.3, 58009, and 58010 and Water Code Sections 13267 and 13304, respectively. These sections authorize DTSC and the RWQCB to enter into an enforceable agreement/order with DPR and Newmont requiring the following:

- Characterization;
- Associated cost reimbursement for oversight and remediation of the Park and any off-site discharges; and
- Joint Order appropriate work (e.g., Newmont and DPR to conduct cleanup actions).

#### **2.7.1.2 Notification of Environmental Condition**

If DTSC or RWQCB determines that any activity (whether or not pursued in compliance with this Joint Order) could pose an imminent or substantial endangerment to the health and safety of people at the Park or in the surrounding area or to the environment they could issue a stop work order.

#### **2.7.1.3 Access**

According to the Joint Order, DPR will provide DTSC and RWQCB reasonable access to the Remediation Areas and will use best efforts to provide access to off-site areas to which access is necessary to implement the Joint Order (see Appendix B).

#### **2.7.1.4 Notification of Field Activities**

Pursuant to the Joint Order, the Project Proponents will inform DTSC and the RWQCB at least 7 days in advance of any field activities pursuant to the Joint Order and will allow DTSC, the RWQCB and/or their authorized representatives to take duplicates of any samples collected by DPR/Newmont (Joint Order at 15, paragraph 4.14).

#### **2.7.1.5 Public Participation Plan**

To provide the public an opportunity to be involved in DTSC's and RWQCB's decision making process relating to the Joint Order, DPR has implemented a Communication Strategy and is conducting appropriate public participation activities in accordance with Health and Safety Code Sections 25358.7 and DTSC Public Participation Policy and Procedures Manual (Exhibit E to the Joint Order).

#### **2.7.1.6 Reports**

All appropriate technical reports will be prepared by, or under the supervision of, a registered professional engineer or geologist, as required by the California Business and Professions Code sections 6735, 7835, and 7835.1. The reports must be signed and stamped with the professional's seal, identifying them as a registered professional. All technical reports submitted will include a statement signed by the authorized representative certifying under penalty of law that the representative has examined and is familiar with the report and that to their knowledge the report is true, complete, and accurate (Joint Order at pp. 8 and 9, paragraph 4.4).

#### **2.7.1.7 Additional Activities**

The Joint Order notes that the Project Proponents will conduct additional response measures and activities above and beyond those approved in the Joint Order with DTSC/RWQCB oversight by amending the Joint Order (Joint Order at 8, paragraph 4.2).

#### **2.7.1.8 Preservation of Documents**

According to the Joint Order, the Project Proponents will maintain a central repository of the data, reports, and other documents prepared pursuant to the Joint Order for a minimum of ten (10) years after the conclusion of all activities carried out under the Joint Order (Joint Order at 15, paragraph 4.17).

#### **2.7.1.9 Enforceability**

Compliance with the Joint Order is enforceable by either DTSC or the RWQCB. DTSC and the RWQCB agree to coordinate any enforcement effort to avoid unnecessarily duplicative legal proceedings in ensuring compliance (Joint Order at 10, paragraph 4.6).

## **2.7.2 POTENTIAL PERMITS AND APPROVALS THAT MAY BE REQUIRED AS A RESULT OF IMPLEMENTATION OF REMEDIATION**

Subject to the jurisdiction of DTSC and the RWQCB, described in Section 2.7.1, DPR retains approval authority for the Project at the Park. The Project could also require approval from the following government agencies:

- California Department of Fish and Game (Notification of Lake or Streambed Alteration);
- U.S. Army Corps of Engineers (Clean Water Act Section 404 Nationwide Permit);
- Central Valley Regional Water Quality Control Board (Clean Water Act Section 401 Water Quality Certification); and
- Northern Sierra Air Quality Management District (Permit to Operate).

