

4.0 ENVIRONMENTAL ANALYSIS

This section provides information regarding the effects and potential adverse environmental impacts resulting from implementation of the Project, as described in Section 2.0, Project Description, for each environmental resource category identified in CEQA Guidelines Appendix G. Environmental resource categories are presented as subsections to this section.

Each subsection contains an existing conditions (description of the baseline conditions) and regulatory setting as it relates to the specific environmental resource; identifies and determines the significance of potential environmental impacts; evaluates the applicability of Standard and Specific Project Requirements (defined in Section 1.3 and provided in Section 2.5 of this Draft PEIR) to the particular resource category; and describes mitigation measures, where appropriate, that minimize potential impacts to the extent feasible.

4.0.1 EXISTING CONDITIONS

The existing conditions describes the physical environmental conditions in the vicinity of the Project, as they existed at the time the NOP was published (SCH#2008082066, filed August 14, 2008) (14 CCR §15125(a)). Each environmental resource category subsection includes a brief description of the environmental setting as it relates to that particular environmental resource category. A regional overview is provided below to facilitate a general understanding of the environmental setting at the Park.

4.0.2 REGIONAL OVERVIEW

The regional, local, and area setting for the Project are described in Section 2.2 of this Draft PEIR. This section presents an overview of the diverse environmental conditions within the Park and its vicinity; thus providing a backdrop for the resource-specific analyses included in the following subsections of this Draft PEIR.

4.0.2.1 Topography

The Park's topography is variable, with Park elevations ranging from 1,900 to 2,900 feet above mean sea level (amsl). This topographic diversity influences vegetation and other biotic resources and results in micro-climate variations at the varying elevations. The steep to very steep rolling hills and perennial drainages in the Park are interspersed with more gentle plateaus in a pattern representative of the western foothills of the Sierra Nevada. Piles of mine waste rock and mill tailing substantially affect the topography of those specific areas. The waste rock deposits generally occur as small to large conical mounds of cobble and sand, supporting sparse vegetative cover.

4.0.2.2 Climate

The Park is located within a semi-Mediterranean climatic zone typical of the Sierra Nevada foothills. During the summer months, warm dry winds remove moisture from the vegetation and soil surface. Rainfall in the summer is rare and is usually generated from thunderstorms. Winters are generally mild and wet, with the majority of precipitation occurring from November through May. Rainfall averages approximately 53 inches per year and is usually accompanied by a southwest wind. Snowfall averages about 30 inches total per year, but depths rarely reach more than 8 inches at any one time (DPR 1978). The annual evapotranspiration rate is about 54 inches per year. The average daily maximum temperature in January is 53°F while the average daily maximum temperature in July is 87°F. The average daily minimum temperature in January is 31°F and the average daily minimum temperature in July is 55°F. Newmont has kept temperature and precipitation data at the Magenta Drain Portal since the summer of 2006 (DPR 2006).

4.0.2.3 Hydrology

The Park is located within the Wolf Creek Watershed, a tributary to the Bear River. The Bear River flows into the Feather River, which drains into the Sacramento River system. Little Wolf Creek flows from east to west through the central part of the Park, into the Sand Dam Area, and then continues westward to Wolf Creek. Small ephemeral drainages that carry water only during heavy storms are located throughout the Park.

Natural drainage patterns in the Park have been modified and disrupted by past mining activities, which often involved channeling water into ditches for use in ore processing operations. The Little Wolf Creek drainage was modified during the mining era by the construction of the Sand Dam to prevent discharge of tailings materials. Little Wolf Creek now flows through the Sand Dam marsh area, which was created with the impounded tailing materials upstream of the dam.

Groundwater at the Park flows within a complex system of fractured bedrock and underground mine workings. Groundwater is present within the Empire Mine shaft at a water elevation of approximately 2,495 feet amsl. Water from a 240-foot-deep vertical well is extracted from the main shaft for use in irrigation and other non-potable water uses within the Park. This well water meets RWQCB water-quality criteria for agricultural use (Zabaneh 2008, MFG and Clear Creek Consultants, Inc. 2008b). Shallower perched-water zones likely exist within the Park, but have not been explored. The Nevada Irrigation District (NID) supplies potable water for the Park.

4.0.2.4 Geology

The Park lies within the foothills of the Sierra Nevada Mountain Range. The western slope of the Sierra Nevada is characterized by north- to northwest-trending belts of metamorphic rocks, which pre-date the Sierra Nevada granitic rock that underlies the eastern and higher portion of the range. The geology of the metamorphic region is complex due to the juxtaposition of multiple accreted terranes, which are blocks of former ocean floor sediment and volcanic rock that have been added to the western margin of the North America continent over a long period of time. Two fundamental groups of rocks are recognized in the Sierra foothills. The older group of rocks is called the “Bedrock Series” and consists of the older Paleozoic and Mesozoic metamorphic terranes. The younger group of rocks, called the “Superjacent Series,” includes Tertiary gravels and lava flows that were deposited over the older rocks after a period of intense faulting, metamorphism, and granitic intrusion.

The Empire Mine and other mines in the Park are part of the Grass Valley Gold Mining District, which is centered around the City of Grass Valley. The central part of the district is characterized by the Grass Valley pluton, which is an elongated north-trending body of Mesozoic granodiorite that intrudes the older metamorphic rocks. The Grass Valley pluton is cut by various dike rocks that are heavily mineralized. The Grass Valley district was the most heavily mineralized and richest gold district in the state, with a number of productive veins.

4.0.2.5 Flora and Fauna

Vegetation community types occurring at the Park include forest (Ponderosa Pine Forests and Woodlands Alliance, Black Oak Forests and Woodlands Alliance), chaparral (Whiteleaf Manzanita Association), riparian (Arroyo Willow Riparian Forests and Woodlands Alliance, White Alder Forest and Woodland Alliance), and grassland (California Annual Grassland Alliance). The Park also contains lands that have been modified for human use such as houses, landscaped areas, and features associated with the historic mining operations. Waste rock and tailings support only sparse vegetation, most of which is not native to the area. Aquatic and hydrologic features at the Park include two perennial streams, a seasonal pond, emergent wetland, drainage ditches, and man-made concrete ponds.

Fauna native to the area include larger mammals such as mule deer, mountain lion, black bear, and smaller mammals such as rabbit, squirrel, skunk, coyote, and bobcat. Bird species commonly found in the area include turkey vulture, red-tailed hawk, and dark-eyed junco. Typical reptile and amphibian species include lizards, snakes, and frogs.

4.0.3 TIERED IMPACT ANALYSIS

The tiering of environmental analyses in CEQA documents is discussed in Section 1.3. Section 4.0 analyzes a series of related environmental actions at two levels: Program Level and Area-Specific Level. A brief description of each level follows.

4.0.3.1 Program Level Analysis

The Program Level of analysis evaluates impacts associated with Park-wide Program Actions (characterization, evaluation, interim actions and remediation) that could be implemented for potential future remediation projects. Section 2.6.3 of this Draft PEIR defines each potential Program Action. DPR, Newmont, and their consultants are in the process of characterizing, evaluating, and analyzing data; therefore, the Draft PEIR evaluates impacts associated with a wide range of remediation methods and materials that could be utilized throughout the Park.

For the Program Level evaluation, DPR conducted an analysis to determine the anticipated Project Actions (land disturbing activities that could be utilized to implement Program Actions) associated with the identified Program Actions that could be used for future projects. DPR conducted an analysis to determine which project actions could be necessary to implement various Program Actions. This helped form the basis for how the impact analysis was conducted for each environmental resource issue. Table 4.0-1, Proposed Program Actions and Anticipated Project Actions at the Park, identifies Project Actions that were reasonably foreseeable for each of the Program Actions. This table was updated based on the results of the impact analyses. DPR used this table to assess reasonably foreseeable impacts that could occur to each of the environmental resources evaluated in this section.

**TABLE 4.0-1
PROPOSED PROGRAM ACTIONS AND ANTICIPATED PROJECT ACTIONS AT THE PARK**

Program Actions	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.	Grading Activities	Boring Activities	Demolition and/or Removal of Structures, Including Temporary Structures	Importation of Supplies/Materials for Remediation	Excavation Activities	Temporary and Permanent Fencing Installation	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 Structure and Temporary Treatment Plant	Construction and Installation of Permanent Exclusion Barriers	Construction and Maintenance of access Roads	Monitoring Activities
CHARACTERIZATION																				
Characterization (e.g., soil sampling)	x	x		x	x			x	x		x					x				
EVALUATION																				
Evaluation (e.g., bench/pilot testing)	x			x				x	x		x									x
INTERIM ACTIONS																				
Fences	x					x					x							x		
Signs											x							x		
Installation of Zeolite Treatment Cells				x				x	x		x					x				
Installation of Straw Wattles											x			x						

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Use of soil tackifiers/binding agents							x		x		x					x					
Construction of a temporary plant at the Magenta Drain Area	x		x	x		x	x	x	x		x	x		x		x	x	x	x	x	
REMEDIATION OPTIONS																					
In-Situ Cover Establishment and Stabilization	x		x	x	x		x	x	x	x	x	x		x	x	x				x	x
Selective Removal and/or Replacement of Surface Materials	x	x	x	x	x			x	x	x	x	x	x	x	x	x				x	x

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Complete Removal and/or Replacement of Surface Materials	x	x	x	x	x			x	x	x	x	x		x	x	x				
Placement of Removed Soils or Material Within the Park	x	x	x	x		x		x	x		x	x		x	x	x			x	x
Placement of Cover Over Selected Areas	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x				x
Use of Institutional Controls																		x		
Stormwater Collection and Diversion Structures	x	x	x	x	x		x	x	x	x	x	x		x	x	x	x			

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Implement Active Treatment Measures	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x
Implement Passive Treatment Measures	x	x		x	x			x		x	x			x	x	x				
Other Water Treatment Measures	x	x	x	x	x		x	x	x	x	x	x		x	x	x	x			
Remediation of Structures				x		x	x								x	x				
Use of Engineering Controls to Prevent Access	x		x	x			x		x						x	x	x			
Maintenance and Enhancement of Existing Cover									x			x			x	x				x

Findings will be made on future Program Level projects to determine whether: (1) the proposal is consistent with the Program EIR; (2) any impacts that were not previously considered in the Program EIR will be reduced to less than significant by implementing Standard and Specific Project Requirements and mitigation measures evaluated in the Program EIR; and (3) the proposal shall incorporate Project Requirements and all applicable mitigation measures and alternatives identified in the Program EIR. If remediation actions are proposed beyond the suite of remediation measures provided in Section 2.6.3 of this Draft PEIR, DPR will independently assess potential impacts of those measures and prepare a subsequent environmental document, if necessary.

4.0.3.2 Area-Specific Level

The 10 Remediation Areas will be analyzed individually, to the extent feasible, to fully address CEQA requirements related to potential impacts. Section 2.6.4.11, Unidentified Areas, indicates that there could be Program Actions implemented at other areas of the Park; however, these areas have yet to be identified, therefore an area-specific analysis cannot be conducted at this time. Where Program Actions, have been, or would be, implemented, Section 4.0 provides an area-specific evaluation for each environmental resource category. The 10 Remediation Areas are:

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

DPR incorporated Standard and Specific Project Requirements into the Project. After incorporation of these Project Requirements, DPR conducted an analysis to determine whether Program and Project Actions could have a potential significant impact on a particular resource. DPR applied the information from Table 4.0-1 to each Remediation Area to determine whether, based on existing conditions of the specified area, there could be a potential impact to a particular environmental resource category.

4.0 Environmental Analysis

If DPR determined that an impact could occur to a particular environmental resource, an 'X' is marked in the environmental resource category column of Table 4.0-2, Summary of the Results of Area-Specific Impact Findings for the 10 Remediation Areas. Information from this table provides a starting point for area-specific impact analysis for each environmental resource evaluated in this section.

**TABLE 4.0-2
SUMMARY OF THE RESULTS OF AREA-SPECIFIC IMPACT FINDINGS FOR THE 10 REMEDIATION AREAS**

Remediation Areas	Environmental Resource Categories													
	Aesthetics	Air Quality	Biological Resource	Cultural Resources	Geology and Soils	Hazards Hazardous Materials	Hydrology Water Quality	Land Use Planning**	Noise	Population Housing	Public Services and Utilities	Transportation	Growth Inducing	Cumulative
Area 1: Mine Yard and Stamp Mill Area			x*	x					x					x
Area 2: Cyanide Plant Area		x	x	x										x
Area 3: Conveyance Corridor and Adit Project Area		x	x	x										x
Area 4: Sand Dam Area		x	x	x										x
Area 5: Historic Mine and Mill Areas		x	x	x					x					x
Area 6: Magenta Drain Area		x	x	x					x					x
Area 7: Stacy Lane Pond Area		x	x	x					x					x
Area 8: Historic Grounds Area		x		x					x					x
Area 9: Residences and Residences' Yards Area				x					x					x
Area 10: Trails Areas		x	x	x					x					x

Notes:

* X = Area-Specific Potential Impacts to Environmental Resources

** Includes Agriculture and Mineral Resources