SALTON SEA ECOSYSTEM RESTORATION PLAN

Final

Follow-On Data Collection for Rock Source Evaluation

April 2005

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List of Acronyms

ACHP	Advisory Council on Historic Properties
BACT	Best Available Control Technology
BIA	Bureau of Indian Affairs
BLM	United States Bureau of Land Management
CA OMR	California Office of Mine Reclamation
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CDFG	California Department of Fish and Game
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CGS	California Geologic Survey
CNDDB	California Natural Diversity Database
CRA	California Resources Agency
CUP	Conditional Use Permit
DHAP	Deer Herd Action Plan
DOC	Department of Conservation
EA	environmental assessment
EIR/EIS	environmental impact report/environmental impact statement
ESA	Endangered Species Act (federal)
GIS	geographic information system
HCP	Habitat Conservation Plan
ICAPCD	Imperial County Air Pollution Control District
MOU	Memorandum of Understanding
MSW	Municipal Solid Waste
NEPA	National Environmental Policy Act
NRHP	National Register of Historic Places
PEIR	Programmatic Environmental Impact Report
Reclamation	United States Bureau of Reclamation
RWQCB	Regional Water Quality Control Board
SCAQMD	South Coast Air Quality Management District
SMARA	Surface Mine and Reclamation Act
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
USNTS	United States National Transportation Statistics
VOC	volatile organic compound
WDR	Waste Discharge Requirements

FOLLOW-ON DATA COLLECTION FOR ROCK SOURCE EVALUATION

The reconnaissance-level study of potential rock source areas for use as in-sea barrier construction material for the Salton Sea (CRA, 2004) identified three potential source areas for additional evaluation: the Mesquite Mine, Eagle Mountain Mine, and Coolidge Mountain areas (shown on Figure 1). This report presents more detailed information on each of these three areas as possible sources for up to approximately 40 million cubic yards of quarried rock material. This material could be used to construct the wide variety of in-sea barriers being considered for the Salton Sea.

Through field meetings and site visits, observations, review of available existing permits and reports, and discussions with regulators, the data presented in this report provide a better understanding of the suitability of the three sites as potential sources areas from the standpoint of both availability of suitable material and environmental permitting issues. It should be noted that the focus on these sites in no way limits the possibility of other sites being considered in the future if more information becomes available.

Based on the information obtained for this report, both the Eagle Mountain Mine and the Coolidge Mountain area should be carried forward as potential rock source areas for construction of the in-sea barriers. Because development of Coolidge Mountain includes a new quarry near the Sea and associated infrastructure and Eagle Mountain Mine represents a more distant source of already quarried rock material inclusive of required transportation infrastructure, inclusion of these two sites represents a reasonable range of potential rock sources for evaluation in the Salton Sea Ecosystem Restoration Plan (SSERP). By considering these two source areas, the impacts compared in the Programmatic Environmental Impact Report (PEIR) for the SSERP should be representative of impacts that would occur if alternate sites are developed during detailed design of the project. Mesquite Mine is no longer considered a potential source area because the available waste rock does not appear to be available in the quantity and quality required.

Field explorations are recommended at both Eagle Mountain and Coolidge Mountain to explore the materials below the surface, obtain samples for lab testing, and to verify the feasibility of using these sites as source areas for in-sea barriers. Also a conceptual layout of the necessary facilities at each site should be developed including quarry areas, onsite haul roads, structures, and delivery routes.

BACKGROUND

It is likely that a number of the alternatives being developed for the SSERP will include the concept of constructing earth and rock barriers in the Salton Sea to manage water quality and/or elevation of the Sea. Construction of these barriers will require a relatively large volume of rock, up to 40 million cubic yards. The PEIR for the SSERP will include an evaluation of the impacts associated with providing this construction material from a range of potential sources.

The earlier reconnaissance-level study of potential rock source areas for use as in-sea barrier construction material for the Salton Sea (CRA, 2004) identified three potential rock source areas for additional evaluation. Two of the sites are existing mines (Eagle Mountain Mine and Mesquite Mine) where stockpiled waste rock of a sufficient quality and quantity are potentially available, and the final site (Coolidge Mountain) is an undeveloped area of land to the west of the Sea. The report concluded that site visits, meetings with landowners, and more detailed review of existing documentation should be conducted for these three sites.

Figure 1 Rock Source Areas

Previous documents that have addressed source rock for potential in-sea construction have identified the Chocolate Mountains as a potential source area (U.S. Department of Interior, 1974; USBR, 1998). More recently, the SSA (SSA, 2004b) report identified the same three potential source areas considered in the reconnaissance report (CRA, 2000) in the cost portion of the document, however, no analysis was provided and no determination of the suitability of the material was provided. Another SSA report (SSA, 2004a) considered dredging of in-sea sediments and excavating upland areas adjacent to the Sea as potential sources of fill material. The report did not include analysis of the suitability of the material.

TASK OBJECTIVE

The objective of this task was to visit the three sites and gather and review information on existing infrastructure, environmental documentation, permitting and land ownership, and to identify data necessary to further assess the feasibility of using the Mesquite Mine, Eagle Mountain Mine, and Coolidge Mountain sites to produce source rock suitable for in-sea barrier construction. Up to 40 million cubic yards of rock with an approximate diameter of 4 feet may be needed for the construction of in-sea barriers. This report presents the data gathered during this review. It should be noted that some conceptual alternatives could use finer material from within the Sea or from adjacent upland areas and would require significantly smaller quantities of rock.

This report is based only on published and readily available information and considers the three potential source areas identified in the previous reconnaissance-level report (CRA, 2004). The recommendations of this report will help guide a subsequent task to perform field work, laboratory testing, or other evaluations to provide more information on the suitability of the rock sources.

It should be noted that specific locations of in-sea earth and rock barriers and construction techniques are not known at this time. For the purposes of this report, delivery of material was assumed to be roughly the mid length of the Sea, in the vicinity of the cities of Salton City (west shore) and Bombay Beach (east shore). These locations, along with the three potential source areas under consideration in this report, are shown in Figure 1.

SITE VISITS

On December 15 and 16, 2004, three CH2M HILL representatives conducted reconnaissance site visits to the Mesquite Mine and Eagle Mountain Mine potential source rock sites. On January 19, 2005, two CH2M HILL representatives met with representatives of the Torres Martinez Desert Cahuilla Indians at the Torres Martinez Tribal Headquarters in Thermal, California to discuss the Coolidge Mountain source rock site. The purpose of the site visits was to advance the earlier source identification work and to meet with representatives of the potential rock sources to discuss source history, planned development, and other factors and issues that may impact development of the site as a potential source of rock.

During the meetings, CH2M HILL representatives indicated the preliminary nature of the inquiry and that the primary purpose was ultimately to identify one or more sources for rock that could be used for fill for various alternatives for the Salton Sea Project. It was discussed that the desired primary source material was durable quarried rock with an approximate diameter of 4 feet. It was also discussed that additional material, such as gravel, fines, or well graded rock may also be required for potential construction and, as such, the material requirements were not currently defined.

MESQUITE MINE

Site Description

The Mesquite Mine is an open-pit gold mine located approximately 10 miles east of Glamis, California, southeast of the Salton Sea (shown on Figure 1). The mine is located south of the Chocolate Mountains and the Chocolate Mountain Aerial Gunnery Range in Township 13S, Range 19E, Sections 4, 5, and 6, San Bernardino base meridian. The mine comprises approximately 5,200 acres (County of Imperial and BLM, 2000).

The original mining area included the Big Chief Mine and was considered to be part of the Land Group (Morton, 1977). Mesquite Mine is accessed from State Highway 78 (Ted Kipf Road), which runs northeast out of Glamis. Three primary pits are present at the site (Big Chief, Rainbow, and Vista). Waste rock from historical open-pit mining operations is stored onsite in large waste dumps and leach pads. Also present across the site are many unpaved haul roads and assorted facilities related to ore processing and carbon reclamation.

History

The Mesquite Mine is a conventional open-pit, heap leach mine, first operated on a large scale in 1985. The mine was acquired by Western Goldfields Company of Reno, Nevada in 2003 from Newmont Mining Corporation. The mine produced an average of approximately 200,000 ounces of gold per year until mid-2001 when mining ceased. Since that time, production has continued at between 50,000 and 60,000 ounces of gold per year from ore previously placed on the leach pads. Two new projects at the site are planned or under development.

A planned mine expansion would include excavation of approximately 242 million tons of waste rock and 89 million tons of ore (County of Imperial and BLM, 2000). The planned expansion includes the potential to extract ore from any of nine permitted areas on the property.

In addition to the planned mine expansion, Los Angeles County Sanitation District (Los Angeles County Department of Public Works, 2003) has completed environmental documents to support development of a regional landfill that will be served principally by rail haul (BLM and County of Imperial, 1995). The proposed Mesquite Regional Landfill will occupy approximately 2,300 acres within the mine property and will be developed as an aboveground area fill. The landfill was permitted by the California Integrated Waste Management Board in 1997. Construction of the landfill is planned to begin in 2007 with the first waste arriving onsite in 2008 (California RWQCB, 2004). Construction of a railroad spur from the Union Pacific line to the landfill to allow the rail haul of the solid waste was part of the original 1996 Record of Decision (USEPA, 1996) and is anticipated to be constructed in 2010 (Dodge, 2005).

Site Ownership

The Mesquite Mine property is a collection of state, federal, and private (patented) land. The portion of the property to be developed as the Mesquite Landfill is currently owned by the Los Angeles County Sanitation District. Site land ownership, along with select site features, is shown in Figure 2.

Site Geology

The following discussion of site geology is taken from the Mesquite Mine Expansion Environmental Impact Report/Environmental Impact Statement (EIR/EIS) (County of Imperial, 2000).

Figure 2 Mesquite Mine

Three general geologic units occur in the site vicinity:

- Quaternary Alluvium (Qal)
- Tertiary Bear Canyon Conglomerate (Tbc)
- Undifferentiated igneous and metamorphic basement rocks (bc)

Quaternary Alluvium is the most prevalent geologic unit exposed on the ground surface in the mine vicinity. This unit consists of a relatively thin veneer covering the eroded rock of the pediment. Exposed alluvium is comprised of deposits from three different ages, differentiated according to the degree of dissection and the development of pedogenic soils. Within this unit, intermediate and older age alluvium covers the majority of the site. The most recent alluvial unit is of Holocene age (less than 10,000 years old) and is constrained to the active channel floors. It consists of loose sands and gravels with a generally low silt content. The intermediate alluvial unit is represented by sets of perched alluvial fan surfaces that lie up to four feet above the active channels and is slightly coarser grained than the younger recent alluvium. The third alluvial unit, the older alluvium, is represented by the highest alluvial fan surfaces. This older alluvium unit, with a distinct yellowish-red color, is widespread. It consists of poorly consolidated sands and gravels. All three alluvial units were deposited as eroded materials from the Chocolate Mountains. The maximum alluvial thickness overlying the bedrock and basement rock pediment is judged to be about 20 feet.

The bedrock unit underlying the older alluvium is the Bear Canyon Conglomerate. It is Upper Miocene (5 to 11 million years old) to Lower Pliocene (3 to 5 million years old) in age and consists of nonmarine sedimentary rocks with interbedded basalt flows. The sedimentary units consist of poorly sorted and variable sandstone, conglomerate, and breccia with a sandy to clayey matrix. The conglomerate unit is locally exposed in rounded hills protruding above the piedmont fans. The thickness of the conglomerate varies, but appears to be several hundred feet or more in places.

The basement rock consists of Tertiary volcanic rocks and pre-Tertiary age (greater than 65 million years old) igneous and metamorphic rocks. At the surface, the rock appears to be highly fractured and jointed. At depth, these discontinuities become fewer in number and tighter because of confinement by the weight of the overlying rock. Depth to basement rock in the mine vicinity varies from zero at outcrops to depths in excess of 1,000 feet. The gold ore predominantly occurs in gneiss and granitic basement rock in essentially free or native form.

Existing Infrastructure

Highway 78, a paved two-lane highway, leads from Brawley to Glamis and eastward past the Mesquite Mine toward the Colorado River. Union Pacific Railroad (UPRR) tracks are present about 6.5 miles from the mine entrance. A railroad spur is planned to connect the future landfill to the UPRR tracks in Glamis by 2010 to facilitate transport of solid waste to the planned Mesquite Regional Landfill. Electric power lines and telephone are present at the onsite mine office.

Availability of Material/Rock

No topographic mapping was obtained for this study and no estimate of the actual onsite stockpiled material was available. The majority of the heap leach pads and existing waste piles will be used for daily cover for the landfill (discussion with Western Goldfields during site visit, December 2004). Based on a visual reconnaissance in December 2004, the waste rock piles appear to be highly weathered rock (Figure 3). Much of the material is three-inch minus with 40 to 70 percent being less than six-inches. Some isolated boulders are present, but screening and sorting would likely be required to produce the required four-foot diameter boulders, likely in quantities significantly less than needed for the Salton Sea Ecosystem Restoration Plan. Future mining activities may generate more waste rock, but the timing of mining the expansion areas and the associated generation of suitable waste rock is not known. It is likely,

based on documentation on Western Goldfield's Web site, that the majority of new waste material will also be used for the landfill to reduce the cost of pre-stripping mine areas by transporting waste material directly from pits to the landfill site.

Figure 3 Typical Waste Rock Pile at Mesquite Mine

Existing Environmental Documentation and Permits/Plans

Environmental documents have been prepared for the proposed Mesquite Regional Landfill project and the Proposed Expansion of the Existing Gold Mine. Both are summarized below.

Landfill

The Draft EIR/EIS on the Mesquite Regional Landfill was released in April 1994 and the Final EIR/EIS was published in July 1995. The proposed project would include unloading and loading of Municipal Solid Waste (MSW) residue containers from rail cars, placement of MSW into the landfill, and rail and equipment maintenance. Landfill gas would be recovered and either destroyed by flaring or used for energy. Leachate collection and processing and wastewater treatment would also occur. Temporary storage of recyclable materials would also be provided. The proposed landfill is designed to accommodate up to 600 million tons of MSW and would have an operational life of 100 years. MSW would be collected from population centers in Southern California, including Imperial County, by local collection vehicles and taken to existing or future transfer stations. From these locations, MSW residue would be transferred to railroad loading intermodals where it would be loaded for rail haulage to the Mesquite Regional Landfill. The proposed federal action for the projects includes approval of a land exchange for approximately 1,750 acres, rights-of-way for a railroad spur and a gas pipeline plus an amendment to the California Desert Conservation Area Plan.

The Mesquite Regional Landfill Project has secured all of the required permits to go forward, including permits from the Imperial County Air Pollution Control District, the California Integrated Waste

Management Board, the Regional Water Quality Control Board (RWQCB) and issuance of a Biological Opinion by the U.S. Fish and Wildlife Service (USFWS).

Mine Expansion

The Final EIR/EIS on the Proposed Expansion of the Existing Mesquite Gold Mine was published in May 2002. The lead agencies for this document were the Bureau of Land Management (BLM) and Imperial County.

As lead agency under the Surface Mining and Reclamation Act (SMARA) and the California Environmental Quality Act (CEQA), the Imperial County Planning Commission prepared and adopted a Final EIR/EIS (SCH No. 1998121054) for the Mesquite Mine expansion project. The Notice of Determination filed by the County on March 27, 2002, found that the project would have a significant effect on the environment. Mitigation measures were made a condition of the approval of the project and a Statement of Overriding Considerations was adopted for this project.

Additionally, the following two documents were prepared in relationship to the Section 7 Consultation process for continued operations and exploration at the Mesquite Mine:

- Biological Opinion on the Proposed Mesquite Mine Exploratory Drilling Project (PCN-98-20004-TCD), Imperial County, California (1-6-98-F-39). This July 7, 1998 biological opinion addressed the proposed exploratory drilling program north of Big Chief pit.
- The Mesquite Mine Operations Biological Assessment for the Desert Tortoise (Gopherus agassizii), Bureau of Land Management, El Centro Resource Area, November 1991. The Biological Opinion for the Continued Operations of Gold Fields Operating Company's Mesquite Mine (BO No. 1-6-92-F-22) was issued by the U.S. Fish and Wildlife Service, Southern California Field Station, Carlsbad, on March 26, 1992 (as amended, per BLM, July 21, 1992).

As part of the approval process for the mine expansion, Imperial County approved Conditional Use Permit No. 98-0022 and Reclamation Plan No. 98-0004. The mine plan includes the mineral development of the state lands as part of the larger Mesquite Mine expansion project. The expansion is planned to occur on state lands in the Chocolate Mountains leased to Western Goldfields Corporation.

The primary term of the lease for use of the state-owned Chocolate Mountain lands is ten years. Western Goldfields has the right to renew for two successive periods not to exceed ten years each. Under SMARA, there are no specific requirements pertaining to the export of waste rock material, as long as the removal of the material does not compromise the planned reclamation for the site and the mine is under an existing active permit.

Conceptual Plan to Obtain Source Material

The concept at Mesquite Mine is to make use of the available onsite stockpiled waste rock and rinsed leach pad material rather than quarrying new rock, thereby avoiding the permitting and impacts associated with new quarry construction. The material would be transported to a common rail loading point using off-road trucks, conveyors (for the finer fraction of the material), electric tramways, or other transport methods. From the loading point, the material would be placed in heavy-duty rail cars and transported to the assumed point of use in the vicinity of Bombay Beach via the planned rail spur to Glamis and the main UPRR tracks. Offloading would occur at a future rail siding that would accommodate transfer of the rock to barges or other means of emplacing the material in the Sea.

Required Infrastructure Upgrades

If the available waste rock and rinsed heap leach material were available, a large-scale screening operation would be necessary to sort material into piles for use as stated above. The Mesquite Regional Landfill Project includes construction of a railroad spur from the existing mine to the UPRR Line. For the purposes of this infrastructure analysis, it is assumed that transport of material from Mesquite Mine to the Salton Sea via railroad for the construction of the barrier is contingent upon the implementation of the Mesquite Regional Landfill Project.

Haul Route

If the Mesquite Landfill Project is constructed, rail haul would allow for delivery of materials directly to the Salton Sea shore without major hauling impacts to local roads. The new rail spur from Glamis would require new storage and loading areas at the Mesquite Mine. Without the construction of the landfill, a combination of road and rail haul could be implemented, with the rail load point at Glamis. The assumed road haul is approximately 10 miles, with a 45-mile rail haul. The use of the UPRR tracks from Glamis to the offloading point near the Sea would require careful coordination with existing passenger and freight schedules. The transport would also require new railroad sidings and unloading and storage areas at the Sea.

Environmental Regulations and Required Permits

Table 1 summarizes the applicable environmental regulations and potentially required permits for the acquisition, loading and transport of existing waste rock from the Mesquite Mine via the proposed rail spur and existing UPRR rail line to the Salton Sea. Each of the applicable regulations and permits is described in additional detail below.

National Environmental Policy Act and California Environmental Quality Act

Currently the lead agency for the PEIR is the California Resources Agency (CRA), pursuant to the requirements of CEQA. The PEIR would become a joint state/federal document under both the National Environmental Policy Act (NEPA) and CEQA if a federal partner is identified for the project or if federal funding becomes available for the project.

U.S. Fish and Wildlife Service – Endangered Species Act

Section 9 of the Endangered Species Act (ESA) prohibits the "take" of species federally listed as threatened or endangered. Take is defined to include harm or harassment, including significant habitat modification or degradation that could potentially kill or injure wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Take incidental to otherwise lawful activities can be authorized under Section 10 of the ESA for non-federal activities or under Section 7, where a federal nexus or agency is involved. At this point in the development of the SSERP, it is anticipated that Section 10 would apply to the Plan and that a Habitat Conservation Plan (HCP) must be prepared that specifies impacts to federally listed species and measures to minimize and mitigate such impacts. The consultation with USFWS would address all of the actions associated with the construction and operation of the SSERP together. If the HCP is approved by USFWS, an Incidental Take Permit for the action will be issued.

According to the Mesquite Mine Expansion Draft EIR/EIS, the desert tortoise is the only federal or state listed endangered or threatened wildlife species observed or expected to occur onsite. The Draft EIR/EIS also states that there are no federal or state listed endangered or threatened plant species observed or expected to occur on the site. However, the Mesquite Mine Expansion Draft EIR/EIS did not cover the railroad corridor between the existing mine and the UPRR tracks. This area is not within the critical habitat (see Figure 4) but is located near the critical habitat for desert tortoise, and the desert tortoise is known to occur in the area. Impacts of the construction of that railroad and the use of railcars to haul solid waste along the railroad are addressed in the Mesquite Regional Landfill EIR/EIS.

Table 1
Summary of Applicable Environmental Regulations and Required Permits

Agency/Regulation/Permit	Mesquite Mine	Eagle Mountain Mine	Coolidge Mountain (Tribal Lands)	Coolidge Mountain (Non-Tribal Lands)
Federal				
Lead Agency – TBD – National Environmental Policy Act (NEPA)	SSERP PEIR would become joint CEQA/NEPA document if a federal partner is identified or federal funding secured.	SSERP PEIR would become joint CEQA/NEPA document if a federal partner is identified or federal funding secured.	Transport of material from quarry would be assessed in SSERP PEIR. Development of quarry may require NEPA due to BIA involvement and trust responsibilities.	SSERP PEIR would become joint CEQA/NEPA document if a federal partner is identified or federal funding secured.
USFWS – Endangered Species Act	Section 10 consultation required, or Section 7 consultation if there is Federal involvement, to determine need for HCP due to potential presence of desert tortoise along railroad route.	Section 10 consultation required to determine need for HCP due to potential presence of desert tortoise along railroad route.	If BIA is involved, a Section 7 process or equivalent, may be required for development of the quarry due to designation of area as critical habitat for Peninsular bighorn sheep.	Compliance with the ESA would require a Section 10 consultation, or Section 7 consultation if there is Federal involvement, and an HCP to demonstrate conservation measures to protect listed species, particularly Peninsular bighorn sheep.
Advisory Council on Historic Preservation	No cultural resources requirements anticipated with loading of waste rock and transporting along existing railroad.	No cultural resources requirements anticipated with loading of waste rock and transporting along existing railroad.	Consult with State Historic Preservation Office (SHPO) on potential for quarry development to have adverse effect on cultural resources. (Section 106 of National Historic Preservation Act).	Consult with State Historic Preservation Office (SHPO) on potential for quarry development to have adverse effect on cultural resources. (Section 106 of National Historic Preservation Act).
Bureau of Alcohol, Tobacco and Firearms – Federal Explosives Law – High Explosives Permit	N/A	N/A	High Explosives Permit for blasting.	High Explosives Permit for blasting.

Table 1
Summary of Applicable Environmental Regulations and Required Permits

Agency/Regulation/Permit	Mesquite Mine	Eagle Mountain Mine	Coolidge Mountain (Tribal Lands)	Coolidge Mountain (Non-Tribal Lands)
United States Corps of Engineers – Clean Water Act – Section 404 Permit	N/A	N/A	Depending on layout of quarry and access routes, there is the potential for impacts to Waters of the U.S., which would require a permit Under the Clean Water Act, Section 404.	Depending on layout of quarry and access routes, there is the potential for impacts to Waters of the U.S., which would require a permit Under the Clean Water Act, Section 404.
State				
CRA – Lead Agency under California Environmental Quality Act (CEQA)	CEQA required, loading and transport of material would be part of SSERP PEIR	CEQA required, loading and transport of material would be part of SSERP PEIR	Transport of material from quarry would be assessed in SSERP PEIR.	If quarry is developed by the State and is located on non-tribal lands, CEQA is sufficient and quarry development would be covered in SSERP PEIR.
Department of Conservation (w/ local enforcement by Riverside or Imperial County) – Surface Mining and Reclamation Act of 1975-Mining and reclamation permit	No requirements under SMARA to remove waste material from a site with an active permit.	No requirements under SMARA to remove waste material from a site with an active permit.	If BIA is involved due to any required discretionary action as trustee of the lands such as approval of lease or contract related to development of the quarry, then the quarry must comply with all applicable regulations, including SMARA.	Development of a quarry would require issuance of a mining and reclamation permit under SMARA by Imperial County.
California Department of Fish and Game Code – Section 2080-2081 – CESA Incidental Take Permit	Depending on potential for effects to desert tortoise along railroad route, could require CESA Incidental Take Permit under Sections 2080-2081 of California Fish and Game Code.	Depending on potential for effects to desert tortoise along railroad route, could require CESA Incidental Take Permit under Sections 2080-2081 of California Fish and Game Code.	Due to potential presence of Peninsular bighorn sheep, potential access roads outside of tribal lands may require CESA Incidental Take Permit under Section 2080-2081.	Due to potential presence of Peninsular bighorn sheep would require CESA Incidental Take Permit under Section 2080-2081.
California Department of Fish and Game Code – Section 1603 – Streambed Alteration Agreement	Not anticipated to be required.	Not anticipated to be required.	Depending on location and access road for export of materials could require Streambed Alteration Agreement under Section 1603 of the California Fish and Game Code.	Depending on layout of quarry, ancillary facilities, and access road for export of materials could require Streambed Alteration Agreement under Section 1603 of the California Fish and Game Code.

Table 1
Summary of Applicable Environmental Regulations and Required Permits

Agency/Regulation/Permit	Mesquite Mine	Eagle Mountain Mine	Coolidge Mountain (Tribal Lands)	Coolidge Mountain (Non-Tribal Lands)
California Department of Transportation – Encroachment Permit	No encroachment permits required.	No encroachment permits required.	Depending on road improvements required to export materials, encroachment permit may be required.	Depending on road improvements required to export materials, encroachment permit may be required.
California Regional Water Quality Control Board	It is assumed that existing operations at Mesquite Mine are in compliance with RWQCB rules under their existing permits and that existing permit conditions allow the loading and moving of waste rock.	It is assumed that existing operations at Eagle Mountain Mine are in compliance with RWQCB rules under their existing permits and that existing permit conditions allow the loading and moving of waste rock.	Depending on size and location of access road for export of materials off tribal lands, an NPDES permit for stormwater discharge during construction may be required.	Waste Discharge Requirements for discharges of waste to land (Title 23, Chapter 15 of California Code of Regulations; National Pollution Elimination System Permit for stormwater discharge during construction (Clean Water Act); NPDES for storm water discharge from industrial facilities.
South Coast Air Quality Management District – Rule 1302 – Major Source Permit	N/A	If emissions from material handling, including loading into the conveyor or truck are greater than 70 tons per year a major source permit will be required. Offsets will also likely be required.	N/A	N/A
Local				
Imperial County Board of Supervisors – California Surface Mining and Reclamation Act – Mining and Reclamation Permit	N/A	N/A	N/A	Reclamation and mining permit/conditional use permit for development of quarry.

Table 1
Summary of Applicable Environmental Regulations and Required Permits

Agency/Regulation/Permit	Mesquite Mine	Eagle Mountain Mine	Coolidge Mountain (Tribal Lands)	Coolidge Mountain (Non-Tribal Lands)
Imperial County Air Pollution Control District – Clean Air Act – and Local Rules 900 and 207 Authority to Construct	If emissions from material handling, including loading into the conveyor or truck are greater than 70 tons per year a major source permit will be required. Offsets will also likely be required.		If emissions from material handling, including loading or unloading into the conveyor or truck occur off tribal lands and are greater than 70 tons per year, a major source permit will be required. Offsets will also likely be required.	Requires Authority to Construct and Permit to Operate. If emissions from material handling, including loading into the conveyor or truck are greater than 70 tons per year, a major source permit will be required. Offsets will also likely be required.
Imperial County Fire Department	N/A	N/A	N/A	Plan Review for compliance with Uniform Fire Code.
Imperial County Department of Health Services – Water System Permit	N/A	N/A	N/A	Depending on water supply for quarry, a permit may be required.

Figure 4 Habitat and Managed Lands

The potential for the additional railcars for export of waste rock from Mesquite Mine to the Salton Sea via railway to jeopardize the desert tortoise would need to be addressed via a consultation with both the USFWS under the federal ESA and the California Department of Fish and Game (CDFG) under the California Endangered Species Act (CESA).

California Department of Fish Game – California Endangered Species Act

The CDFG is the state agency responsible for issuance of CESA incidental take permits under Sections 2080-2081 of the California Fish and Game Code. There are no state agency consultation procedures under CESA. For projects that affect both a state and federal listed species, compliance with the federal ESA will satisfy CESA if the CDFG determines that the federal incidental take authorization is "consistent" with CESA under F&G Code Section 2080.1. For projects that will result in a take of a state only listed species, the applicant must apply for a take permit under F&G Code Section 2081(b).

Under CESA, CDFG is also responsible for issuing Streambed Alteration Agreements under F&G Code Section 1603. Pursuant to Sections 1600-1607 of the California Fish and Game Code, a Streambed Alteration Agreement is necessary if there is to be any modification to a streambed due to construction activities. Substantial changes to natural drainage channels require a streambed alteration agreement from the CDFG under Section 1603 of the State Fish and Game Code. To obtain permits and/or agreements, the applicant must demonstrate that their Proposed Action is the least damaging practicable alternative. No Streambed Alteration Agreements are anticipated to be required for transport of rock material from this site, assuming that the construction of the railroad extension will occur under the auspices of the Mesquite Mine Regional Landfill Project.

California Department of Fish and Game Deer Herd Action Plan

The CDFG has designated the area surrounding the Mesquite Mine as the D-12 deer zone and has prepared a Deer Herd Action Plan (DHAP) for this area. The D-12 DHAP addresses deer herds found in the vicinity of the existing mine and proposed expansion areas. Although this plan deals primarily with issues relating to hunting, it is an official management plan dealing with the specific issues relating to deer herds in this region and, therefore, the overall management policies may be applicable to the export of material from the site.

Although no genetic evidence supports a differentiation, the mule deer in the area of the Mesquite Mine are referred to by the CDFG as burro deer based on subtle differences in coloration and size. There are no other deer species or subspecies found in this region. The burro deer fall within the CDFG D-12 deer zone. Local deer hunters recognize the D-12 deer zone as providing high-quality hunting opportunities. In recent years, increased interest has resulted in more sportsmen from throughout the state applying to hunt there.

State Water Resources Control Board – Clean Water Act

The State Water Resources Control Board (SWRCB) is the responsible agency for implementing the federal Clean Water Act in the State of California. In California, the Clean Water Act, as it pertains to mining activities, is implemented through Title 23, Chapter 15, Discharges of Waste to Land and Chapter 3, Water Resources Control Board, California Code of Regulations (CCR), as adopted on October 18, 1984. The Porter Cologne Water Quality Control Act, updated in 1989, regulates contaminants in surface or groundwater in the State of California.

The SWRCB oversees the regulatory activities of the nine RWQCBs in California. For the Mesquite Mine Expansion, the Lower Colorado River RWQCB is the responsible agency for the Waste Discharge Requirements (WDRs) and National Pollution Discharge Elimination System (NPDES) permits. Depending on the conditions in the existing NPDES permits, which were not available for review, the

loading and transport of waste material from Mesquite Mine to the Salton Sea may require additional permits.

Imperial County Air Pollution Control District

Air quality in the Mesquite Mine area is regulated by the Imperial County Air Pollution Control District (ICAPCD). The Mesquite Regional Landfill Project and the Mine Expansion projects have both secured the air quality permits required for their construction and operations.

ICAPCD Regulation 2, Rule 202 Exemptions, states that an Authority to Construct or Permit to Operate is not required for motor vehicles or locomotives used to transport freight. Therefore, the transport of the waste rock from the mine to the Salton Sea on the railway would not require a permit. However, depending on how the waste rock material is transported to the railcars, the loading of the material onto railcars and unloading may be an additional potential emissions source that may require a permit from the ICAPCD.

The ICAPCD federal operating permit requirement (ICAPCD Rule 900) is enacted if a facility has the potential to emit more than 100 tons per year after Best Available Control Technology (BACT) is implemented. Only those emissions above 137 pounds per day will require offsets. If associated with a federal action in this nonattainment area, all project emissions would also need to be included in any analysis of applicability of, and compliance with, General Conformity requirements.

A determination of additional air quality permit requirements would require a specific material loading and unloading method, in conjunction with a detailed review of existing permits that is beyond the current scope.

Imperial County – Surface Mining and Reclamation Act

Imperial County is the local enforcement agency for SMARA. Under SMARA, there are no specific requirements pertaining to the export of waste rock material, as long as the removal of the material does not compromise the planned reclamation for the site and the mine is under an existing active permit. Currently, Mesquite Mine is operating under an active permit and the removal of existing waste piles would not affect reclamation plans, therefore, no permit under SMARA is required. (Wideen, 2005).

EAGLE MOUNTAIN MINE

Site Description

Eagle Mountain Mine is a former iron-ore mine located approximately 10 miles north of Desert Center, northeast of the Salton Sea. The mine is approximately 40 miles from the assumed point of use on the eastern shore of the Salton Sea. An area map of the site is shown on Figure 4. The mine is located in Township 4S, Range 14E, Sections 1 and 2, Township 4S, Range 15E, Sections 4, 5, and 6, Township 3S, Range 14E, Sections 34, 35, and 36, and Township 3S, Range 15E, Section 31. The current site consists of three main pits (Eastern Pit, Central Pit, and the Black Eagle Pit) and numerous scattered waste rock piles. Unpaved haul roads are present across the property. The adjacent community of Eagle Mountain contains houses, schools, and paved roadways. Although currently housing few people, it was a major community when the mine was in operation.

History

Eagle Mountain Mine was operated by Kaiser from 1948 to 1983. During the life of the mine, more than 940 million tons of material was extracted from the site, including 712 million tons of coarse and plant tailings (Kaiser, 2005). Prior to 1965 the raw ore was shipped via UPRR (formerly Southern Pacific) rail to steel mills at Fontana. After 1965 the ore was formed into pellets on-site and shipped via rail to

Fontana. Mining was concurrent at three pits on the site depending on the type of ore needed at the Fontana mills. The ore was hauled in 100-ton ore cars with 100 cars per train, and three power units per train (communication with Kaiser, 2004).

A municipal landfill and recycling center is planned for a portion of the property at the former mine site (Riverside County and BLM, 1997). Solid waste from Los Angeles, Riverside, San Bernardino, and Ventura counties would be brought to the site primarily by rail, but also by truck.

Site Ownership

Approximately 9,149 acres of the Eagle Mountain Mine property are owned by Kaiser (Kaiser, 2004). In addition, BLM has transferred to Kaiser approximately 3,481 acres of public land, much of which is disturbed from past mining operations and is subject to unpatented mining and mill site claims currently held by Kaiser. In exchange for this land, BLM has acquired from Kaiser approximately 2,846 acres of land that include areas containing important habitat for the desert tortoise (a federally listed threatened species) and habitat supporting the desert pupfish (a federally listed endangered species). The majority of this land is associated with the Eagle Mountain Railroad, which leads from the mine to the junction at Ferrum on the eastern shore of the Salton Sea. This land exchange is the subject of litigation, which is the current obstacle for the planned landfill project moving forward; however a decision is anticipated in the near future.

In connection with the land exchange described above, the BLM granted to Kaiser a new and additional right of way (ROW) pursuant to the Federal Land Management Policy Act for the Eagle Mountain Railroad (the "FLMPA ROW"). Kaiser also has a ROW for the railroad pursuant to Private Law 790 which was passed by the United States Congress in 1952. PL 790 granted to Kaiser a ROW over all federal lands for the railroad and for related facilities. Accordingly there are two ROW grants for the Eagle Mountain Railroad. The FLMPA ROW is also being challenged as part of the land exchange litigation. However, in the event that the BLM's grant of the FLMPA ROW is successfully challenged, the PL 790 ROW is not the subject of litigation and it would allow the use of the railroad to haul waste rock.

Site Geology

The following discussion of site geology is taken from the Eagle Mountain Landfill and Recycling Center EIR/EIS (Riverside County and BLM, 1997) and the U.S. Geological Survey (USGS) Report on the Geology of Eagle Mountain Mine (Force, 2001).

The geology of the Eagle Mountain area is complex, and was traditionally considered to be a skarn deposit formed by the intrusion of granitoid rocks into older carbonate-bearing sequences. Basement rocks beneath the site are believed to be gneissic, which vary from massive coarse-grained granitoid rocks to finely layered gneiss. Locally, the basement rocks are altered to granular quartz rock. Also present are meta-sedimentary rocks, and a series of intrusive igneous dikes. The meta-sedimentary rocks consist of quarzite, meta-arkose, marble, and the ore zone. Igneous rocks include quartz monzonite (adamellite), diorite, monzonite porphyry, grandiorite, and granite. The most voluminous intrusions are Jurassic quartz monzonites, which form branching sills from tens to hundreds of meters thick.

There are also some sedimentary rocks, such as conglomerate, and surficial unconsolidated deposits that consist of sands, gravels, and cobbles.

Existing Infrastructure

The mine is accessible by roadway from Interstate 10. A railroad spur was built and maintained when the mine was operational (Figure 5). The spur extended for a distance of approximately 50 miles from the loadout area of the mine to a connection with the UPRR next to the eastern shore of the Salton Sea at Ferrum. According to Kaiser, repairs related to storm damage may be required along portions of the rail alignment.

Figure 5 Eagle Mountain Railroad Siding at Ferrum (East Side of Salton Sea)

Figure 4 shows the location of the railroad on the site, and two proposed railroad spurs anticipated if the landfill project moves forward. Power, water, and telephone service is present at the mine. Unpaved haul and access roads exist throughout the mine area. Many are well maintained and others could be improved with grading.

Availability of Material/Rock

During the life of the mine, more than 712 million tons of waste rock was removed from the pits, most of which is still stockpiled at the site (Figure 6) (Riverside County and BLM, 1997). Of the total stockpiled waste rock, approximately 165.5 million tons were estimated to exist in the west end property of the mine (Kaiser, 2004), outside of the 4,600 acre site of the proposed landfill, and is available for use by Kaiser (discussion during 2004 site visit).

The approximate locations of the waste rock piles are shown in Figure 7 and the approximate quantity of rock contained in each area of the west end is defined in Table 2 (Kaiser, 2004).

Figure 6 Typical Waste Rock Pile at Eagle Mountain Mine

Figure 7 Eagle Mountain Mine

Table 2
Waste Rock Piles at Eagle Mountain Mine

Waste Rock Pile	Area (acres)	Quantity (tons)	Estimated Volume (cubic yards)*
A	44.74	1,103,148	656,636
B	63.39	17,381,986	10,346,420
C	78.15	3,790,383	2,256,180
D	7.54	1,202,860	715,988
E	32.75	385,191	229,280
F	10.74	2,560,945	1,524,372
G	51.62	3,916,635	2,331,330
H	82.72	13,967,517	8,313,998
I	161.65	34,543,191	20,561,423
J	394.36	86,611,600	51,554,524
Total	927.66	165,500,000	98,490,152

* Volume estimated using 1.68 tons/cubic yard (Roberts, 2005b)

Although the suitability of the stockpiled waste rock for in-sea barrier construction is unknown at this time, the material appears to be sound durable rock. Several waste piles in the west end appear to contain rock up to about six feet in maximum size with most of the material smaller than three feet. The visible portions of the waste piles that looked most promising for hard rock contain a wide range of sizes from large boulders to sand. To segregate the larger boulders from the sand and cobbles, sorting on the ground or screening would be required. Uniformly sized gravel is also present in some piles. Silt and clay may be available in some pits that were lined with sludge from the iron ore processing operations.

Kaiser has performed a number of laboratory test programs on samples of the aggregate taken from waste piles across the Eagle Mountain property. The specific locations of sample sources and test results were not available for this study. Table 3 summarizes the types of data (Kaiser, 2004).

Table 3
Available Aggregate Laboratory Test Results – Eagle Mountain Waste Rock

Contractor	Analysis	Reference	Date
Smith Emory	**Petrographic Analysis**	NA	June 1994
Earth Systems	**Aggregate Testing**		April 1995
	Sieve Analysis	ASTM C-136	
	Specific Gravity	ASTM C-127/8	
	Organic Impurities	ASTM C-40	
	Los Angeles Abrasion	ASTM C-131	
	Flat & Elongated Particle Count	ASTM D-4791	
	Clay Lumps	ASTM C-142	
	Friable Particles	ASTM C-142	
	Soundness (Sodium Sulfate)	ASTM C-88	
	Potential Reactivity	ASTM C-289	

Table 3
Available Aggregate Laboratory Test Results – Eagle Mountain Waste Rock

Contractor	Analysis	Reference	Date
C. H. J. Incorporated	**Aggregate Testing**		April 2003
	Sieve Analysis	ASTM C-136	
	Specific Gravity and Absorption	ASTM C-127	
	Bulk Specific Gravity	NA	
	Flat & Elongated Particle Count	NA	
	Los Angeles Abrasion	ASTM-C-131	
	Soundness	ASTM C-88	
	Film Stripping	Caltrans 302	
	Potential Reactivity	ASTM C-289	
	Staining Test	ASTM C-641	

Existing Environmental Documentation and Permits/Plans

In 1997, an EIR/EIS was completed for the Eagle Mountain Landfill and Recycling Center Project by the BLM and County of Riverside. The EIR/EIS evaluates a proposal by Mine Reclamation Corporation and Kaiser Eagle Mountain, Inc. to develop a Class III nonhazardous municipal solid waste landfill, primarily a waste-by-rail facility, on a portion of the Kaiser Eagle Mountain Mine, Riverside County, California. The proposed project also includes the renovation and repopulation of Eagle Mountain Townsite and a Specific Plan, General Plan Amendment, Change of Zone, Development Agreement, Revised Permit to Reclamation Plan, and Tentative Tract Map with the County. As previously discussed, the proposed project includes a land exchange, involving about 3,481 acres of public land, and application for two rights-of-way with the BLM. The EIR/EIS analyzes the effects of the proposed action and alternatives on such environmental issues as desert tortoise, air and water quality, and wilderness. The EIR/EIS describes and analyzes six alternatives in addition to the proposed project. A court ruling in May 1999 upheld the adequacy of the document.

A significant portion of the existing Eagle Mountain Mine was operating prior to the passage of SMARA and therefore is not regulated under SMARA. The remainder of the site is operating under SMARA and has an authorization under Active Permit 91-33-0060 to continue operations for several years, though the mine is currently inactive.

Conceptual Plan to Obtain Source Material

The concept at Eagle Mountain Mine is to make use of the available onsite stockpiled waste rock material rather than quarrying new rock. The material would be transported to a common rail loading point using off-road trucks, conveyors (for the finer fraction of the material), electric tramways, or other transport methods. From the loading point, the material would be placed in heavy-duty rail cars and transported to Ferrum on the eastern shore of the Sea via the Eagle Mountain Railroad. Offloading would occur at a future rail siding that would accommodate easy transfer of the rock to barges or other means of emplacing the material in the Sea. It is assumed that transport of the waste rock material from Ferrum to the assumed point of use would utilize the method of in-sea rock transport and would not require a separate haul via land to Bombay Beach.

Required Infrastructure Upgrades

The waste rock would have to be loaded into trucks and transported to the central area of the mine, where it would be loaded onto rail cars for transport to the eastern side of the Salton Sea. From discussions with Kaiser, the existing rail line to Ferrum is currently inoperable due to isolated washouts along the line. The siding at Ferrum contains several rows of tracks where unloading and temporary storage facilities would have to be developed. The rock would need to be transported from Ferrum to the point of use by an extension of the railroad, by conveyor, or by truck. It would be necessary to cross the existing UPRR tracks at Ferrum to access the assumed point of use. If offloading was completed in the vicinity of the existing siding at Ferum, it would require an undercrossing of the UPRR tracks to access the Sea. As an alternative, a new siding could be constructed on the west side of the UPRR tracks to avoid the undercrossing. However, schedule coordination with UPRR would be required. Due to the types of rail cars used to haul rock, it would not be possible to haul rock in conjunction with the solid waste rail haul return trip.

Haul Route

Rock materials from the mine are assumed to be hauled by rail to the eastern side of the Salton Sea. As part of the Eagle Mountain Mine Landfill project, repairs to the railroad were required. The majority of these have been completed; however, as discussed above, additional repairs will be necessary due to recent erosion events.

Environmental Regulations and Required Permits

National Environmental Policy Act and California Environmental Quality Act

Currently, the lead agency for the SSERP PEIR is the CRA, pursuant to the requirements of CEQA. The PEIR would become a joint state/federal document under both NEPA and CEQA if a federal partner is identified for the project or if federal funding becomes available for the project. The Eagle Mountain Mine railroad does pass through some federal lands, however, the Eagle Mountain Mine landfill project included the securing of a right-of-way through those lands to allow for the transport of non-mining materials. It is expected that the existing right-of-way would also apply to transport of waste rock to the Sea and no additional federal action that would trigger NEPA would be required to allow for that transport (Roberts, 2005).

Table 1 summarizes the applicable environmental regulations and potentially required permits for the acquisition, loading and transport of existing waste rock from the Eagle Mountain Mine via the Eagle Mountain Railroad to the Salton Sea. Each of the applicable regulations and permits is described in additional detail below.

U.S. Fish and Wildlife Service – Endangered Species Act

Requirements for compliance with the ESA are described above under the discussion for Mesquite Mine. This discussion describes additional regulations concerning areas designated as critical habitat under the ESA because of the presence of critical habitat for the desert tortoise along the railroad haul route from Eagle Mountain Mine to the Salton Sea.

The ESA requires (with only rare exceptions) the designation of critical habitat for all endangered and threatened species. Critical habitat is a term used in the ESA to refer to the specific geographic areas that have the physical and biological features that are essential to the conservation of a listed species, and that may require special management considerations for protection.

The purpose of designating critical habitat is to require federal agencies to consider the effects of actions they carry out, fund, or authorize on habitat that is essential to the conservation of a listed species. The designation of critical habitat on private land will have no impact on private landowner activities that do not require federal funding or permits. States, local governments, and other non-federal entities are

affected by the designation of critical habitat only if their actions occur on federal lands; require a federal permit, license, or other authorization; or involve federal funding. It is discussed here because of the potential for federal involvement with the SSERP.

Significant portions of the potentially affected area for hauling waste material from Eagle Mountain Mine are designated as critical habitat for the desert tortoise. Issues regarding the desert tortoise are summarized below.

The EIR/EIS for the Eagle Mountain Landfill reported that bighorn sheep scat was detected at the project site during 1989-90 and 1995 surveys. Bighorn sheep were also detected during surveys for the 1992 EIR/EIS along the Eagle Mountain Railroad. As a result, the EIR/EIS included measures to protect the bighorn sheep, including replacement of habitat through Environmental Mitigation Trust Contribution; installation of three permanent water sources far from the mine site to encourage bighorn sheep to use surrounding natural areas and reduce the risk of train-kill for sheep possibly moving between the Orocopias and the Chocolate Mountains in search of water; purchase of additional land to compensate for lost habitat; rehabilitation of Buzzard Springs and clearing of Tamarisk; relocation of sheep if they are not naturally expanding their ranges to incorporate new water sources; preservation of habitat areas around the landfill (644 acres); monitoring of sheep movement; restriction of train movement between the Orocopia and Chocolate Mountains (3-4 mile segment of the approximately 50-mile long Eagle Mountain Railroad); and implementation of an employee awareness program. As discussed above for the desert tortoise, requirements for the Eagle Mountain Landfill project for protection of the bighorn sheep are not directly applicable to the export of waste rock from the site for the SSERP, however additional railcars on the railroad to transport material will likely be considered an additional potential impact and may require further mitigation.

The population of bighorn sheep potentially present at the Eagle Mountain Landfill site is not part of the distinct population listed as endangered, therefore no Section 10 or Section 7 is required under the Endangered Species Act.

Desert Tortoise Critical Habitat

As shown on Figure 4, a significant portion of the railroad from the Eagle Mountain Mine is located in an area designated as critical habitat for the desert tortoise. The desert tortoise is federal and state listed as threatened. The EIR/EIS prepared for the Eagle Mountain Mine Landfill in 1996 described the observed distribution of desert tortoises in the vicinity of the site. During a study for the landfill project, 11 railroad trips were monitored on the Eagle Mountain Railroad during which 23 tortoises were removed from the railroad berm or tracks.

Under the landfill proposal to utilize the railroad to transport solid waste, the potential impacts to the desert tortoise resulting from use of the railroad were addressed in depth. The mitigation measures for the desert tortoise required contribution to an environmental mitigation trust of $1/ton transported, limits on individual deaths/removals, surveying and monitoring prior to and during construction/maintenance, relocation of individuals from railroad bed, installation of a culvert system and protective fence, preservation of offsite habitat, implementation of raven control and monitoring, and worker education. Although, the particulars of the operation of the landfill may differ from the transport of waste rock from the Eagle Mountain Mine site to the Sea, there are some similarities and thus the required mitigation measures for that project may be a guide. It is likely that at a minimum, there would be a requirement for continuous monitoring of the railroad for desert tortoises and removal of individuals during railway activity.

A Section 10 or Section 7 process under the ESA (if a federal partner or federal nexus is identified) will be required to determine if the project could result in take of the desert tortoise, and if so, what measures must be taken to minimize or avoid the take.

California Department of Fish Game – California Endangered Species Act

For the Eagle Mountain Mine Landfill project, CDFG has issued two permits under CESA. First, a Section 2081 CESA Memorandum of Understanding (MOU) was entered into between Mine Reclamation Corporation (Kaiser) and CDFG on May 16, 1994. This MOU details the requirements necessary to ensure that sensitive species of wildlife will be adequately protected during construction and operation of the landfill project. This CESA MOU expires 99 years after the date of execution. Second, Mine Reclamation Corporation also entered into a Section 1603 Streambed Alternation Agreement with CDFG that outlines acceptable levels of activities in streambeds and appropriate mitigation for erosion and protects biological habitat in streambed areas. On June 8, 1994, the CDFG issued a 1603 Streambed Alteration Agreement authorizing work within the dry desert washes located at the landfill site, the container handling yard, and along Eagle Mountain Road and Eagle Mountain Railroad. This agreement expires on April 30, 2006. However, the work required to upgrade the railroad under the 1603 permit has already been completed.

State Water Resources Control Board – Clean Water Act

Requirements and procedures of implementation of the Clean Water Act are described above under the Mesquite Mine discussion. Depending on the conditions in the existing NPDES permits, which were not available for review, the loading and transport of waste material from Eagle Mountain Mine to the Salton Sea may require additional permits.

Riverside County – Surface Mining and Reclamation Act

Riverside County is the local enforcement agency for SMARA for Eagle Mountain Mine. Under SMARA, there are no specific requirements pertaining to the export of waste rock material, as long as the removal of the material does not compromise the planned reclamation for the site and the mine is under an existing active permit. Currently, the portions of Eagle Mountain Mine that are subject to SMARA are under an active permit and the removal of existing waste piles would not affect reclamation plans. Therefore, no further permit under SMARA is required (Wideen, 2005).

South Coast Air Quality Management District

The Eagle Mountain site is located in an area under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The use of the railroad to transport waste rock from the mine to the Salton Sea would greatly reduce air emissions compared to sites where material must be transported by truck and/or where material has not yet been mined. However, it is anticipated that to reach the railroad at the mine site, the material will need to be loaded from the existing waste stockpile location and transported to the railroad and transferred to rail cars.

These activities may result in fugitive PM_{10} emissions, and these emissions will count toward the potential to emit for the facility in accordance with SCAQMD Rule 1302 Section (ad) "Potential to Emit." Therefore, the emissions from loading and transporting the material to the railroad will count, as will any additional emissions from material handling. A major source permit and potential offsets will be required if the facility's potential to emit is greater than 70 tons per year of PM_{10}, after BACT has been implemented. Any emissions increases over 70 tons per year will have to be offset with reductions elsewhere, or offsets can be purchased on the open market. The facility will require a federal operating permit, issued by the SCAQMD, if the facility will have the potential to emit more than 100 tons per year of any regulated pollutant, after BACT controls are implemented.

Emissions associated with material transport in trucks will include emissions of ozone precursors (i.e., NO_x and volatile organic compounds [VOCs]) from fuel combustion, and PM_{10} from fuel combustion, entrained road dust, and tire wear. If associated with a federal action in this nonattainment area, these emissions would also need to be included in any analysis of applicability of, and compliance with, General Conformity requirements.

COOLIDGE MOUNTAIN

Site Description

Coolidge Mountain is the eastern-most extension of the Santa Rosa Mountains, located on the western side of the Salton Sea. A site map of the area is shown on Figure 8. The potential source area under consideration is located approximately one mile west of Desert Shores and includes Sections 7, 8, 17, 18, 19, 20, 29, and 30 of Township 9S and Range 9E. Some jeep roads and mine exploration roads have been constructed in the southeastern portion of the area. Due to its close proximity to the Salton Sea and its favorable geology, there may be potential for a new quarry to serve as a source rock supply. The source area under consideration is the portion of the mountain mapped as granitic and rhyolitic rock in Figure 8. Access to the area is by two to three miles of undeveloped roads leading to State Route 86.

History

No major quarries or mines are located in the Coolidge Mountain area. Several gravel and aggregate pits and processing facilities are present in the washes below the mountains, specifically in Section 21. A proposed sand and gravel quarry is also being planned in the alluvium just east of the area. On the south end of the area, the Cahuilla Gold Mine is being considered for development (Western Goldfields, 2003). This would be either an open-pit mine, an underground mine, or a combination of the two methods.

Site Ownership

Land ownership in the area consists of alternating one square mile sections of various private owners and the Torres Martinez Desert Indian Tribe. A portion of the land in Section 17 is owned by the Salton Community Service District. The entire parcel of Section 7 is owned by the non-profit Anza-Borrego Foundation. The Cahuilla gold mine is proposed to be developed mostly on land owned by the Torres Martinez Indian Tribe and a number of private properties in Sections 19 and 29. The land ownership is shown in Figure 9.

Site Geology

The majority of the source area under consideration is mapped as containing granitic rocks (see Figure 10). More detailed mapping performed during exploration for the Cahuilla gold mine defines the area as quartz monzonite (adamellite). Rock to the north and east of the granitic rock is classified as quartzite and gneiss. Rock in the areas under consideration for the gold mine is mapped as rhyolite and sedimentary conglomerate. They are separated from the granitic rocks by the Modoc fault.

Existing Infrastructure

The site is currently undeveloped. Rough jeep roads and washed-out exploration tracks permit limited site access to Sections 21 and 29. The remaining sections must be accessed by foot.

Availability of Material/Rock

The granitic rocks and rhyolite, as mapped by the State of California (Morton, 1977), have good potential for use in-sea. During the site visit, the exposed rock appeared to be a hard fractured rock with much less fractured rock exposed in washes that extend through parts of the site (Figure 10). Data related to exploration of the Cahuilla gold project may be of use in the confirmation of suitable rock quality and quantity. These data were unavailable for this study.

During the recent site visit, it was not possible to obtain access permission to the higher altitude portions of the potential source area to confirm that the granitic rocks are present at the surface and to identify the areal extent of the granitic rock. Numerous granitic rock boulders were present in the washes at the southern end of the potential source area. As stated in the earlier reconnaissance report, the approximate dimensions of a potential source area necessary to supply the required rock volume could be 100 feet high over an area of 250 acres.

Figure 8 Coolidge Mountain Mapped Geology

Figure 9 Coolidge Mountain Land Ownership

Figure 10 Rock Outcropping at the Southern Edge of Coolidge Mountain (Wonderstone Wash Area)

Existing Environmental Documentation

It is understood that an Environmental Assessment (EA) has been completed for the Cahuilla gold mine project, however, the document was not available for this study. Environmental documentation related to development of the gravel quarry in Section 28 is currently underway and was also unavailable.

Conceptual Plan to Obtain Source Material

The concept at Coolidge Mountain is to develop a new quarry on unimproved land either within the Torres Martinez Desert Cahuila Indian Reservation and/or on adjacent lands that are privately owned. Source rock would be quarried using drill and blast techniques and transported directly to the Sea utilizing off-road trucks, conveyors (for the finer fraction of the material), electric tramways, or other transport methods. At the Sea, the material would be loaded into the method of in-sea rock transport. A large undercrossing or overcrossing of State Route 86 may be required to avoid disruptions to traffic. It is assumed that transport of the waste rock material from the vicinity of Salton Sea Beach to the assumed point of use would utilize the method of in-sea rock transport and would not require a separate haul via land to Salton City.

Required Infrastructure Upgrades

Development of the site would require new quarry and transportation infrastructure. A crossing of State Route 86 will be necessary.

Environmental Regulations and Required Permits

The environmental regulations and required permits for this location will vary based on the location of the quarry and if there is a federal partner or federal funding for the project. If the quarry is located solely

within lands held in trust for the Torres Martinez Desert Cahuilla Indians, the Bureau of Indian Affairs (BIA) will play a role in the approval process for the quarry as per CFR Title 25.

If a federal agency and/or federal funding is involved in the project, that agency would be responsible for assuring that no federal action is in conflict with the requirements of the ESA, and the quarry facility would be subject to ESA requirements. However, other permits typically required by local, regional, and state agencies for operation of a quarry would not be required if the quarry were solely on tribal lands, although the requirements of these agencies may need to be met due to other requirements.

Table 1 summarizes the applicable environmental regulations and potentially required permits for the acquisition, loading and transport of quarried rock from Coolidge Mountain to the Salton Sea. Each of the applicable regulations and permits is described in additional detail below.

The discussion below separately describes the applicable regulations and permits should a new quarry be proposed in the Coolidge Mountain area entirely inside the tribal lands or on lands outside of the tribal lands. If the facility bridges both tribal lands and private or publicly held lands, an agreement will need to be reached between the tribe and other parties, including responsible agencies, to develop an approach to comply with the applicable regulations.

Applicable Regulations and Permits if Quarry Is Within Tribal Lands

CFR Title 25 Chapter 1 – Part 216 – Surface Exploration, Mining, and Reclamation of Lands

The requirements for development of mineral resources underlying Indian Lands are prescribed under CFR Title 25 – Indians, Chapter 1 – Bureau of Indian Affairs, Department of the Interior, Part 216, Surface Exploration, Mining, and Reclamation of Lands. Subpart A requires that the Secretary of Interior or a representative may prohibit operations on any part of the lands where it has been shown that operations cannot feasibly be conducted by any known methods or measures to avoid the destruction of key wildlife habitat or important scenic, historic, or other natural or cultural features. Subpart B authorizes any Indian Tribe, subject to the approval of the Secretary and any limitation contained in its constitution or charter, to enter into a minerals agreement with respect to mineral resources in which the tribe owns a beneficial or restricted interest. Section 225.24 requires that the Secretary ensure that all environmental studies are prepared as required by NEPA, the Archaeological and Historic Preservation Act, the National Historic Preservation Act, the American Indian Religious Freedom Act, and Executive Order 11593, which addresses protection and enhancement of the cultural environment.

Secretarial Order #3206 American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act

This Secretarial Order clarifies responsibilities of the Departments of Commerce and the Interior (Departments) when the implementation of the ESA affects (or may affect) Indian lands, tribal trust resources, or the exercise of tribal rights. The Order requires that implementation of the ESA, when it has the potential to affect tribes must be done in a manner that ensures that Indian tribes do not bear a disproportionate burden for the conservation of listed species.

Additionally, the Order states that because of the unique government-to-government relationship between Indian tribes and the United States, the Departments and affected Indian tribes need to establish and maintain effective working relationships and mutual partnerships to promote the conservation of sensitive species (including candidate, proposed, and listed species) and the health of ecosystems upon which they depend. Such relationships should focus on cooperative assistance, consultation, the sharing of information, and the creation of government-to-government partnerships to promote healthy ecosystems.

Although various representatives designated by the Indian community were part of the tribal negotiation team that developed this Order, the tribes have not acknowledged that the ESA applies to them. The tribes acknowledge that the ESA is administered by the USFWS and the National Oceanic and Atmospheric Administration Fisheries Service (NOAA Fisheries, or also known as the National Marine Fisheries Service). In their administration of the Act, the Services must, on occasion, deal with Indian tribes. By participating in the development of this Order, the tribes were seeking to ensure that tribal sovereignty, tribal rights, and the federal trust responsibility to Indian people receive full and fair recognition in the implementation of the ESA. Both the federal team and the tribal team acknowledged that species conservation could be best achieved through government-to-government collaboration and communication rather than through litigation.

Peninsular Bighorn Sheep Critical Habitat

Peninsular bighorn sheep have been listed under the CESA since 1971, but they have continued their decline despite the state listing. Habitat loss for Peninsular bighorn sheep has continued to occur, and in March 1998, the population was federally listed as endangered, six years after it was originally proposed for listing. The USFWS determined that Peninsular bighorn sheep were in danger of extinction throughout a significant portion of their range due to: (1) disease from domestic cattle; (2) insufficient lamb recruitment; (3) habitat loss, degradation, and fragmentation by urban and commercial development; and (4) predation coinciding with low population numbers.

According to 50 CFR Part 17, Endangered and Threatened Wildlife and Plants, bighorn sheep were once divided into seven recognized subspecies based on differences in skull measurements (Department of Interior, 2001). These subspecies included Audubon bighorn sheep (Ovis canadensis auduboni), Peninsular bighorn sheep (O. c. cremnobates), Nelsons bighorn sheep (O. c. nelsoni), Mexican bighorn sheep (O. c. mexicana), Weems bighorn sheep (O. c. weemsi), California bighorn sheep (O. c. californiana), and Rocky Mountain bighorn sheep (O. c. canadensis). Audubon bighorn sheep are now extinct. As described below, bighorn sheep taxonomy has since been revised.

The term “desert bighorn’’ is used to describe bighorn sheep that inhabit dry and relatively barren desert environments and typically includes bighorn sheep subspecies that have to date been classified as Ovis canadensis nelsoni, O. c. mexicana, O. c. cremnobates, and O. c. weemsi. The validity of these subspecies delineations has been questioned and reassessed. Based on morphometric and genetic analyses, the Peninsular bighorn has been consolidated within the subspecies nelsoni (Nelson’s bighorn sheep), which is the current taxonomy (USFWS, 2001).

The Peninsular bighorn sheep in the United States declined from an estimated 1,171 individuals in 1971 to about 570 individuals in 1991. A rangewide census in October, 2000 estimated a population of approximately 400 in about eight ewe groups in the wild in the United States. In February 2001, the USFWS designated 844,897 acres of critical habitat in southern California for the endangered sheep.

As shown on Figures 4 and 9, all of the area considered as potential locations for a source area on Coolidge Mountain, including the portion held in trust for the Torres Martinez Desert Cahuilla Indians, is within the area designated as critical habitat for the endangered Penisular bighorn sheep. This distinct population is listed as endangered under the ESA.

Advisory Council on Historic Preservation

Section 106 of the National Historic Preservation Act of 1964 requires federal agencies to provide the Advisory Council on Historic Properties (ACHP) an opportunity to comment on any project on federal lands, or projects that are federally funded or permitted, that have a potential to affect properties included in or eligible for inclusion in the National Register of Historic Places (NRHP). Involvement of the BIA in the development of the quarry on the tribal lands will require surveys to assure compliance with this Act.

California Department of Transportation

The California Department of Transportation (Caltrans) has jurisdiction over state highways throughout California. Caltrans issues encroachment permits to land within its jurisdiction to ensure that the encroachments are compatible with the primary uses of the state highway system; to ensure the safety of the permittee and highway users; and to protect the state's investment in the highway facility that would be encroached upon. In order to deliver material from a quarry in the Coolidge Mountain area to the Salton Sea, an encroachment permit on State Route 86 will be required.

It should be noted that if the quarry is located on the tribal lands, access and haul roads will need to be constructed on lands that are currently privately held to deliver materials to the Sea. All activities associated with the construction of these roads and the transport of materials on those roads would be required to comply with applicable, federal, state, regional and local regulations. The regulations that would apply to those access and hauls roads are described below.

Applicable Regulations and Permits if Quarry Is on Private Lands

National Environmental Policy Act and California Environmental Quality Act

As described above, the lead agency for the SSERP PEIR is the CRA, pursuant to the requirements of CEQA. The PEIR would become a joint state/federal document under both NEPA and CEQA if a federal partner is identified for the project or if federal funding becomes available for the project. A new quarry in the Coolidge Mountain area on private lands would need to be assessed either in a separate CEQA document or as a part of the SSERP PEIR. If the sole function of the quarry were to supply the Plan with rock material and would not be developed otherwise, the impacts of the quarry would need to be addressed programmatically in the SSERP PEIR. A separate project-level EIR could tier off the PEIR to specifically address impacts of the quarry.

U.S. Fish and Wildlife Service – Endangered Species Act

The process for compliance with the ESA has been described in the sections above. Under the ESA, a new quarry developed on private lands would likely require a Section 10 or Section 7 process under the ESA due to the potential for quarry operations to impact the Pennisular bighorn sheep. An HCP would be required to assess impacts and develop appropriate mitigation measures before an incidental take permit could be issued.

Advisory Council on Historic Preservation

A new quarry on private lands in the Coolidge Mountain area would be required to comply with the requirements of the National Historic Preservation Act as described above for a quarry on tribal lands.

Bureau of Alcohol, Tobacco, and Firearms – CFR Title 27 – Federal Explosives Law

The Bureau of Alcohol, Tobacco, and Firearms regulates the use of explosives required for blasting. It is anticipated that a permit for the use of a blasting agent would be required.

U.S. Army Corps of Engineers – Clean Water Act –Section 404

Section 404 of the Clean Water Act authorizes the Secretary of the Army, acting through the Chief of Army Corps of Engineers, to issue permits for the discharge of dredged or fill material into the Waters of the United States, including wetlands. The term "Waters of the United States" has a broad meaning and incorporates both deepwater aquatic habitats and special aquatic sites, including wetlands, as follows:

- The territorial seas with respect to the discharge of fill material.
- Coastal and inland waters, lakes, rivers, and streams that are navigable Waters of the United States, including their adjacent wetlands.

- Tributaries to navigable Waters of the United States, including adjacent wetlands.
- Interstate waters and their tributaries, including adjacent wetlands.
- All other Waters of the United States not identified above, such as isolated wetlands and lakes,
- intermittent streams, prairie potholes, and other waters that are not a part of a tributary
- system to interstate waters or navigable Waters of the United States, the degradation or
- destruction of which could affect interstate commerce.

Depending on the layout of the quarry and ancillary facilities, including buildings and access roads or conveyors, there is the potential to impact Waters of the United States, which would require a permit under Section 404 of the Clean Water Act.

California Department of Conservation – Surface Mining and Reclamation Act

In conjunction with Imperial County, the local enforcement agency for SMARA, the Department of Conservation (DOC) has certain responsibilities pursuant to SMARA. Prior to the commencement of surface mining operations, SMARA requires that mine operators obtain reclamation plan approval and establish a financial guarantee for reclamation. Approved plans must be amended, and those amendments approved, prior to substantial deviations. The reclamation plan, amendments, and financial assurances must be approved by the lead agency (city or county where the mine is located). Prior to approval, the lead agency is required to forward a copy of the reclamation plan and financial assurance to DOC for a thirty and forty-five day review respectively. Mine operators are required to file an annual report with and pay an annual fee to DOC. DOC has a statutory responsibility to ensure that mine operators are in compliance with SMARA and that lead agencies meet their responsibilities pursuant to SMARA. DOC also maps mineral occurrences of regional and statewide significance. The maps are provided to lead agencies for use in making land management decisions so that the production and conservation of mineral resources are encouraged.

California Department of Fish and Game – California Endangered Species Act

The CDFG is the state agency responsible for issuance of CESA incidental take permits under Sections 2080-2081 of the California Fish and Game Code as well as Streambed Alteration Agreements under Sections 1600-1607 as described above under the requirements outlined for Mesquite Mine.

For a new quarry in the Coolidge Mountain area, there are likely to be potential impacts to Peninsular bighorn sheep, a state listed endangered species. Depending on the consultation requirements under the federal ESA, additional compliance under CESA may be required.

Also a determination of requirements for Streambed Alteration Agreement would depend on the specific locations of the quarry and any ancillary facilities, including buildings, water supply facilities, access roads, and other facilities required for the export of the rock material to the Salton Sea.

California Department of Transportation

As described above, Caltrans has jurisdiction over state highways throughout California. Depending on the method of transport selected to deliver material from a quarry in the Coolidge area to the Salton Sea, an application may be required for an encroachment permit on State Route 86, if deemed necessary.

State Water Resources Control Board – Clean Water Act

A new quarry in the Coolidge Mountain area would be required to comply with the requirements of the Clean Water Act as administered by the Lower Colorado River RWQCB. Permit requirements would

include WDRs as well as NPDES permits for stormwater discharge during construction and stormwater discharge from industrial facilities.

Imperial County Planning/Building/Fire/Health Departments

The Imperial County Planning/Building Department is responsible for implementing policies that guide land use and development in Imperial County. The new quarry in the Coolidge Mountain area on private lands would require a Conditional Use Permit (CUP) and Building Permits from the Imperial County Planning/Building Department before it could begin mining operations. The Fire Department would review plans to assure compliance with the Uniform Fire Code. Depending on the water supply proposed, the Department of Health Services may need to issue a water supply permit.

Imperial County Air Pollution Control District

The Coolidge Mountain area is also regulated by ICAPCD. The Coolidge site will include development of a new quarry, and all the associated construction and operation emissions. The permitting requirements outlined in the ICAPCD Rule 207, New and Modified Stationary Source Review, will need to be met prior to construction. In addition, requirements for a federal operating permit are triggered if the facility will have the potential to emit more than 100 tons per year of any regulated pollutant, after BACT controls are implemented. Only those emissions above 137 pounds per day will require offsets.

Emissions associated with the project could include ozone precursors (e.g., NOx and VOCs) from fuel combustion, and PM_{10} from fuel combustion, entrained road dust, tire wear, and blasting. If associated with a federal action in this nonattainment area, these emissions would also need to be included in any analysis of applicability of, and compliance with, General Conformity requirements.

FINDINGS

Through field meetings and site visits, observations, review of available existing permits and reports, and discussions with regulators, the data presented in this report provide a better understanding of the suitability of the three sites as potential sources areas. The focus on these sites in no way limits the possibility of other sites being considered in the future as more information becomes available. The full permitting issues cannot be understood until the project is fully defined and all of the potential impacts of the selected project have been disclosed. At that point, consultations with each of the regulatory agencies can be initiated and permit requirements completely identified. Additionally, this report is based on existing regulations, and does not speculate how potential future regulations may affect the project.

The following are the major findings for the three sites considered in this study:

Mesquite Mine

- The Mesquite Mine has been extensively developed as an open-pit gold mine with surface disturbance over most of the property.
- Rock quality is highly variable and the waste piles appear to contain mostly undersized highly weathered rock that is likely unsuitable as a source of durable rock.
- A planned railroad spur from the UPRR near Glamis to the landfill site could potentially be used in conjunction with the main UPRR tracks to haul rock to the vicinity of the Sea. Use of the UPRR tracks would require close coordination with scheduled passenger and freight service on that line.
- The Mesquite Mine Expansion project and the Mesquite Regional Landfill Project have each obtained all required permits for construction and operation.

- Loading and transport of waste rock from Mesquite Mine to the Sea would require compliance with CESA and ESA. The loading and handling of waste rock would require a major source permit from the ICAPCD.
- The majority of the existing waste rock is already committed as cover for the future Mesquite Regional Landfill.

Conclusion: It is recommended that Mesquite Mine no longer be considered a potential source area because the available waste rock does not appear to be available in the quantity and quality required.

Eagle Mountain Mine

- The Eagle Mountain Mine has been extensively developed as an open-pit iron ore mine with surface disturbance over most of the property. The mine is currently not in operation, but its permits are active.
- While some of the waste rock is committed as cover for the future regional solid waste landfill, the required quantity of suitable rock is available onsite. Additionally, some data exist on the quality of available rock.
- The existing Eagle Mountain Railroad could be used to haul rock to the vicinity of the Sea.
- The majority of the rail transport corridor has been designated as critical habitat for the desert tortoise.
- The Eagle Mountain Landfill Project has obtained all required permits for construction and operation. However, the associated BLM land transfer, part of the landfill plan, is subject to litigation.
- The acquisition and transport of waste rock from Eagle Mountain to the Salton Sea would require compliance with CESA and ESA. The loading and handling of waste rock would require a major source permit from the SCAQMD.

Conclusion: It is recommended that Eagle Mountain Mine continue to be considered a potential source area because the available waste rock appears to be available in the quantity and quality required. No apparent fatal flaw permit issues have been identified to date.

Coolidge Mountain

- The Coolidge Mountain source area is in close proximity to the western side of the Salton Sea.
- Coolidge Mountain has no developed mines, hard rock quarry areas, or infrastructure that could be used for these operations.
- The Coolidge Mountain area is critical habitat for the Pennisular bighorn sheep.
- Development of a new quarry could be on tribal lands or non-tribal property and associated permit requirements may differ. It is anticipated, however, that the substantive requirements of all applicable local, regional, state, and federal regulations would be met in either case.
- Development of a new quarry and infrastructure is likely to involve more permitting and local interest than the transport of existing waste rock from existing mining areas.
- The required quantity of suitable rock may be available onsite. Limited data to support this are available, and no onsite visual confirmation of the presence of suitable rock type has been completed to date.

Conclusion: It is recommended that Coolidge Mountain continue to be considered a potential source area because it likely contains rock in the quantity and quality required. No apparent fatal flaw permit issues have been identified to date.

RECOMMENDATIONS FOR FUTURE STUDY

Based on the information obtained for this report, we conclude that both the Eagle Mountain Mine and the Coolidge Mountain area appear to be appropriate for potential rock source areas for construction of the in-sea barriers.

The following are specific recommendations to verify the quality and quantity of rock available at each of the two source areas and to identify infrastructure needs for both sites. These activities may be completed as part of the PEIR or during future site-specific environmental and planning efforts.

Eagle Mountain Mine

1. Obtain and review available applicable existing laboratory test data identified in Table 3.
2. Meet with former mine personnel to review historic mine operations and review the limited available photographic operations records.
3. Conduct field verification program that includes coring up to 8 holes at Piles “I” and “J” to a depth of 200 feet to verify the quality of rock with depth in the waste piles.
4. Conduct down-hole digital logging of coreholes to assist in identification of material gradation.
5. Perform physical and chemical durability testing on select samples obtained during the field program.
6. Perform geophysical electrical resistivity survey at Piles “I” and “J” to identify pile depth and material gradation, in combination with the coring program.
7. Identify onsite infrastructure needs to handle and load the rock onto railcars.
8. Prepare technical memorandum presenting results and confirmation of the suitability of the available waste rock for use in in-sea construction.

Coolidge Mountain

1. Obtain and review existing corehole data.
2. Develop field verification program and meet with land owners to secure necessary access.
3. Perform geologic mapping of areas on Coolidge Mountain that might be potential quarry sites.
4. Conduct field verification program that includes up to ten (10) coreholes to an approximate depth of 300 feet.
5. Perform surface geophysical profiling of the potential source area using electrical resistivity to delineate surface extent of suitable rock type in combination with coring program and surface mapping.
6. Perform physical and chemical durability testing on select samples obtained during the field program.
7. Prepare generic quarry site layout including general area of disturbance, buildings, haul roads, and infrastructure using USGS quad sheet topography.
8. In conjunction with Eagle Mountain work, prepare technical memorandum presenting results and confirm the availability and suitability of the available waste rock for in-sea construction use. The results of this memorandum will be used as input to the preparation of design layouts and detailed costs estimates for “Water Management Infrastructure”.

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