E. U.S. Army Corps of Engineers' Habitat Monitoring Plan

ROSEMONT COPPER PROJECT
(SPL-2008-00816-MB)

PROPOSED MITIGATION CONCEPT

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DOCUMENT PURPOSE AND ORGANIZATION

Rosemont Copper Company (Rosemont; the Applicant) proposes to develop an open pit copper mine known as the Rosemont Copper Project (Project). Because portions of the Project occur on lands managed by the U.S. Forest Service, Coronado National Forest (CNF), the Applicant has submitted a Mine Plan of Operations (MPO) to the CNF. The CNF has deemed the Plan of Operations complete for the purpose of initiating review under the National Environmental Policy Act (NEPA), and is in the process of developing a draft Environmental Impact Statement (DEIS). The U.S. Army Corps of Engineers (Corps) is a cooperating agency in the DEIS development process because there are anticipated Project impacts to identified potential waters of the U.S. within the Project area (Corps File No. SPL-2008-00816-MB).

Rosemont is seeking a Section 404 permit to discharge fill materials into potential waters of the U.S. in connection with the Project. The Corps has determined that the overall project purpose for the Project is to develop the mineral resources associated with an ore deposit in southeastern Arizona (Pima, Pinal, Gila, Graham, Greenlee, Cochise, and Santa Cruz counties) using conventional open pit mining and sulfide (mill and concentrate) and oxide (leach and SX/EW) ore processing for the purpose of producing copper and/or copper precursors, silver, and molybdenum.

The purpose of this Proposed Mitigation Concept (PMC) is to identify a conceptual approach for providing compensatory mitigation for unavoidable impacts to potential waters of the U.S. resulting from the Rosemont Project. The Approved Final Mitigation Plan (AFMP) will be finalized prior to issuance of the Section 404 permit, and will comply with the Corps' and the U.S. Environmental Protection Agency's (EPA) "Final Rule for Compensatory Mitigation for Losses of Aquatic Resources" (33 C.F.R. Parts 325 and 332 and 40 C.F.R. Part 320; published in 73 Fed. Reg. 19594-19705) hereinafter referred to as the 2008 Mitigation Rule.

Components of the AFMP required by the 2008 Mitigation Rule are listed below (33 CFR § 332.4(c)).

- Objectives
- Site Selection
- Site Protection Instrument
- Baseline Information
- Determination of Credits
- Mitigation Work Plan
- Maintenance Plan
- Performance Standards
- Monitoring Requirements
- Long-term Management Plan
- Adaptive Management Plan

- Financial Assurances
- Other Information

Rosemont is currently coordinating with the Corps to identify suitable mitigation opportunities for the Project. It is Rosemont's intention that the AFMP, when completed, become part of any proffered individual permit for the Project. Once a permit has been issued, Rosemont may modify the AFMP only with the approval of the Corps.

PROJECT REQUIRING MITIGATION

LOCATION

The Rosemont Copper Property (Property) consists of a group of patented mining claims, unpatented mining claims, and fee land covering most of the Rosemont Mining district and the adjacent Helvetia Mining District within unincorporated Pima County in southeastern Arizona. The core of the Property consists of 132 patented lode claims that encompass an area of 1,969 acres. A contiguous group of 949 unpatented lode claims that in total encompass approximately 12,000 acres surrounds the patented claims. Most of the unpatented claims are located on federal land administered by the CNF but a smaller portion of claims are on federal land administered by the Bureau of Land Management (BLM). Additionally, there are 14 parcels of Rosemont-owned fee land grouped into six individual areas totaling 911 acres east of the Santa Rita Mountains. Cumulatively, these patented claims, unpatented claims, and fee lands cover approximately 14,880 acres (Rosemont Holdings).

The Project is located approximately 30 miles southeast of Tucson, Arizona, and west of State Route (SR) 83. Primary access to the Property is from Interstate 10 (I-10) to SR 83 south, then west on the Project's main access road. A secondary access exists on the west side for utility corridor maintenance and emergency purposes.

Geographically, the Project is located east of the Santa Rita Mountains from approximately 6,824 feet above mean sea level (amsl) at Weigles Butte on the west side of the Project to approximately 4,500 feet amsl at the lower end of Barrel Canyon near SR 83. Topographically, the Project site consists of mountain front and rolling foothills bisected by mostly ephemeral washes draining generally eastward towards Davidson Canyon which discharges into Cienega Creek north of I-10.

Vegetation cover types include Madrean evergreen woodland and semidesert grassland biomes. Madrean evergreen woodlands generally cover the higher elevations of the Project site and are characterized by open woodlands or savannah with interspersed grasses and forbs. Semidesert grassland covers the lower elevations of the Project site and is characterized by open grasslands and widely scattered shrubs and cactus. Intermittent xeroriparian areas are present along some of the major washes in Barrel, McCleary, and Wasp Canyons.

PROJECT DESCRIPTION

As part of the EIS development process, the Corps and CNF identified four (4) alternatives to the proposed action (as outlined in the MPO). These alternatives are:

- Phased Tailings
- Barrel
- Barrel Trail
- Scholefield-McCleary

Although the Scholefield-McCleary alternative has the lowest impacts to potential waters of the U.S., it has other significant environmental effects. Of the remaining alternatives, the Barrel Alternative has the lowest comparable direct and indirect effects to potential waters of the U.S. A complete description of this alternative is provided in the DEIS for the Project. A brief summary of the primary components of the Project is provided below.

Project: The Rosemont Project includes the excavation of approximately 600 million tons of ore, and the Project is expected to produce approximately 220 million pounds of copper per year for approximately 20 years. The average annual production of molybdenum and silver is projected to be 5 million pounds and 3.5 million ounces, respectively.

Mining: Mining of the ore will be through conventional open-pit mining techniques that include drilling the rock in place, blasting it and then moving the materials with electric shovels and trucks. Mining operations will be carried out in the open pit with benches that are 50 feet in height. The pit will be constructed to meet the standards required for stability as identified by Rosemont's geotechnical engineering analysis and will conform to Mine Safety and Health Administration standards.

Ore Processing: Ore will be processed either by conventional sulfide milling or by oxide leaching. Depending on the type of ore, ore will either be transported by haul truck directly to the leach pad or to the primary crusher where it will be crushed and loaded onto a conveyor for transport to the mill. The copper concentrates from the milling operations (sulfide material) will be shipped offsite to a smelter. Leach ore (oxide material) will be placed on the leach pad, located in a minor tributary of Barrel Canyon. The heap leach facility will be large enough to contain all the oxide material processed on a lined leach pad. Solutions from the leach pad will be collected in a process solution pond and then pumped to the solvent extraction/electrowinning (SX/EW) plant where copper cathodes are produced. The copper cathodes generated from the SX/EW plant will be transported offsite to customers.

Waste Rock: Waste rock will be transported by haul truck to the waste rock storage areas located in Barrel Canyon. Construction of the waste rock facility will be initiated with a perimeter berm in Barrel Canyon.

Tailings: The residual from the milling operation, tailings, will be dewatered at the plant site facilities and then conveyed overland to the tailings facilities. The dewatered tailings will be placed by conveyor in a structure known as the dry stack tailings facility, which will utilize a waste rock perimeter berm. The tailings facility will be capped and reclaimed at closure.

Ancillary Facilities: The ancillary facilities necessary to support the Rosemont mine and ore processing operations include an administration building, change house, warehouse with lay down yards, analytical laboratory, light vehicle and process maintenance building, mine truck shop, mine truck wash and lube facility, powder magazines and ammonium nitrate storage, tank farms, and a main guard shack with truck scale. Also included are fuel and lubricant storage and dispensing facilities for mine and process equipment.

Surface Water Management Approach: Surface water management facilities include diversions around the facility to convey storm event flows upgradient of the pit, operating facilities, waste rock, and tailings storage areas back into drains or other control structures to discharge downgradient of operations. Permanent diversion structures will carry at least the 100-year, 24-hour storm event dependent on location and utility. Temporary diversions, in place for less than five years, will be sized for the 25-year, 24-hour event. Underdrains will be located along the major drainages underlying the facilities.

Primary and Secondary Access and Utility Alignments: Primary access to the Project site will be from SR 83. Secondary access and utility alignments will be from the west. The water supply system alignment will generally follow the secondary access road alignment. There are several offsite alternatives that address the location of the electrical utility alignment, although none of these alternatives is anticipated to have a significant effect on waters of the U.S.

JURISDICTIONAL AREAS TO BE IMPACTED

Per the provisions of Corps RGL 08-02 (dated June 26, 2008), the Applicant submitted a preliminary jurisdictional waters determination (PJD) to the Corps on May 29, 2009. Additional information was submitted per Corps request on July 31, 2009. Supplemental information related to Sycamore Canyon and the offsite waterline alignment was provided to the Corps on January 5, 2010, and March 1, 2010, respectively. Approval of the PJD by the Corps was provided in November 2010.

The total estimated area of potentially jurisdictional waters within the analyzed portion of the Project site is approximately 101.6 acres. The analysis area included, generally, the entirety of the Barrel Canyon watershed that reports to the gage station at SR 83. Additional potential waters of the U.S. occur along the proposed utility alignments west of the Project site. The majority of the onsite potential waters of the U.S. are ephemeral, flowing only in response to local storm events. Springs located within McCleary Canyon will occasionally discharge for an extended period after storm events, resulting in minor surface water flow within McCleary Canyon before the spring water infiltrates back into the ground.

Implementation of the proposed Project will result in direct impacts to approximately 37.7 acres of potential waters of the U.S. from the construction of the waste rock dumps, tailings piles, leach pad, plant site, and pit. The Project is also anticipated to result in indirect impacts to approximately 2.2 acres of potential waters of the U.S.

Two potential special aquatic sites, as defined by the 404(b)(1) guidelines (40 CFR §230.3(q-1)), were identified on the Property. The potential special aquatic sites consist of wetlands associated with Scholefield and Fig Tree Springs. Neither of these wetlands will be impacted by the proposed Project.

The Rosemont site is located entirely within the watershed of the Santa Cruz River. Most of the Project area drains towards Davidson Canyon Wash, which is tributary to Cienega Creek, which becomes Pantano Wash, which is in turn tributary to the Rillito River, which drains to the Santa Cruz River approximately 52 river miles from the Project area. Drainages on the west side of the Santa Rita Mountains, which will be impacted by ancillary facilities, drain directly to the Santa Cruz River.

As described above, the drainages on site are generally ephemeral in nature, with occasional extended discharge from springs in McCleary Canyon after storm events. As such, the associated functions and services of these features are relatively limited, when compared to the spectrum of waters of the U.S. available nationwide. Primary functions of these features relate to stormwater flow, aquifer recharge, xeroriparian habitat, and wildlife movement corridors. Although a number of models have been developed, by the Corps and others, to attempt to quantify the functions of streams and other surface waters, none have been developed specifically for arid systems. Several models are currently being evaluated for their potential to provide a meaningful quantitative assessment of the functions of the onsite drainages at the Rosemont Project. If suitable quantitative data can be developed, that information is anticipated to inform the final mitigation plan.

OVERVIEW OF THE MITIGATION AND MONITORING PLAN

The 2008 Mitigation Rule includes a specific order in which five general classes of compensatory mitigation options must be considered: 1) mitigation banks, 2) in-lieu fee programs, 3) permittee-responsible mitigation under a watershed approach, 4) permittee-responsible mitigation through on-site and in-kind mitigation, and 5) permittee-responsible mitigation through off-site and/or out-of-kind mitigation. Rosemont considered these five general classes of compensatory mitigation when developing this PMC. Per the requirements of the 2008 Mitigation Rule, Rosemont's analysis focused on the watershed of the Santa Cruz River.

Mitigation Banks. Mitigation banks are the preferred method of mitigation. 33 C.F.R. §332.3(b)(2) and (3). However, there are currently no approved mitigation banks in Arizona, and so this approach is not practicable for Rosemont.

In-lieu Fee. An in-lieu fee program includes a sponsoring entity that assumes responsibility for overseeing the mitigation site in exchange for a fee. It is the second most preferable form of mitigation. 33 C.F.R. §332.3(b)(2). In-lieu fees are calculated by estimating the cost of onsite mitigation for the project, and then applying a per-acre cost for the mitigation. Currently there are ten (10) sponsoring entities in the in-lieu fee program in Arizona, only one of which (the Tucson Audubon Society) has an approved in-lieu fee program in the Santa Cruz River watershed. However, Rosemont has been informed by the Corps that the Tucson Audubon Society would not accept Rosemont as a partner in their in-lieu projects. In addition to the Tucson Audubon Society, the Arizona Game and Fish Department is currently working with the Corps to have several projects accepted into the in-lieu fee program, though the schedule for those projects coming online is unknown.

Given the above, there are currently no suitable in-lieu fee projects for the Rosemont Project. As such, permittee-responsible mitigation approaches are also being evaluated.

Permittee-responsible mitigation under a watershed approach. Rosemont understands that the only approved watershed plan in the Santa Cruz River watershed is Pima County's Sonoran Desert Conservation Plan (SDCP). However, the applicability of the SDCP for compensatory mitigation under CWA Section 404 is in only the preliminary stages of evaluation by the Corps. As such, this option is not anticipated to be available for the Rosemont Project.

Permittee-responsible mitigation through on-site and in-kind mitigation. The Corps mitigation rule states: "***On-site*** means an area located on the same parcel of land as the impact site, or on a parcel of land contiguous to the impact site." Rosemont is currently evaluating the potential for contiguous offsite Rosemont-owned parcels to offer compensatory mitigation for impacts to the impacted potential waters of the U.S. The functions and services of the ephemeral drainages on these mitigation parcels would be anticipated to be comparable to those that will be impacted by the Rosemont Project. Rosemont anticipates that mitigation credit for these parcels will be available through preservation with either a restrictive covenant or conservation easement placed over the mitigation lands. The mitigation ratio that will be available for these mitigation lands will be determined as the mitigation plan is further developed.

Permittee-responsible mitigation through off-site and/or out-of-kind mitigation. Rosemont is evaluating additional offsite parcels for their potential to provide compensatory mitigation opportunities. While the location and nature of the sites is currently confidential, all of the parcels being considered are within the Santa Cruz River watershed, and offer varying opportunities for preservation or restoration of surface water resources.