Chapter 1. Purpose of and Need for Action

Introduction

Land managers for the Coronado National Forest (the Coronado), an administrative unit of the U.S. Department of Agriculture Forest Service (Forest Service), prepared this draft environmental impact statement (DEIS) in response to a preliminary mine plan of operations (MPO) submitted by Augusta Resource Corporation (Augusta Resource), the parent company of Rosemont Copper Company (Rosemont Copper), for development of the Rosemont ore deposit. The same preliminary MPO (WestLand Resources Inc. 2007a) was also submitted to the Bureau of Land Management for concurrent consideration. The preliminary MPO presented in this document addresses activities proposed on lands administered by both the Forest Service and Bureau of Land Management, for which Federal decisions are required.

Rosemont Copper's preliminary MPO is for construction, operation, reclamation, and closure of an open-pit mine to extract locatable minerals such as copper, molybdenum, and silver.[1] The preliminary MPO also includes associated infrastructure and ancillary facilities. Associated infrastructure consists of haul and access roads, ore transportation systems, ore processing facilities, waste rock and tailings areas, leach facilities, and electrical and water transmission lines. Ancillary facilities consist of various buildings integral to the operations (i.e., administration building, employee change house, warehouse, analytical laboratory, vehicle servicing facilities, storage facilities, guard house, and truck scale).

The proposed mine site is located on the east side of the Santa Rita Mountains of the Nogales Ranger District, approximately 30 miles south of Tucson, Arizona (figure 1). Activity is proposed on approximately 995 acres of private land owned by Rosemont Copper, 3,670 acres of National Forest System land, 15 acres of Bureau of Land Management administered land, and 75 acres of Arizona State Land Department land administered as a State Trust. The mine life, including construction, operation, reclamation, and closure, is approximately 25 years and may include beneficial and adverse impacts on the human environment.

Three Federal agencies have authority regarding the preliminary MPO approval and permitting process: the Forest Service, Bureau of Land Management, and U.S. Army Corps of Engineers. The Forest Service is the lead agency. There are 17 cooperating Federal, State, and local agencies with jurisdiction or special expertise related to aspects of the preliminary MPO, including the Bureau of Land Management and U.S. Army Corps of Engineers.

Document Structure

The Coronado prepared this document in compliance with the National Environmental Policy Act and other relevant laws, regulations, and policies. This document discloses the direct, indirect, and cumulative environmental consequences that would result from the Coronado and Bureau of Land Management's approval of the preliminary MPO and alternatives to it. This document considers necessary amendments to the "Coronado National Forest Land and Resource Management Plan," as amended (forest plan) (U.S. Forest Service 1986), which governs overall management of the Coronado National Forest. The "Proposed Phoenix Resource Management Plan and Final Environmental Impact Statement" (Bureau of Land Management 1988) directs land uses and other special uses of Bureau of Land Management administered land.

[1] Trace amounts of gold are anticipated to be recovered during the offsite refining processes; however, recovery rates are not expected to be significant.

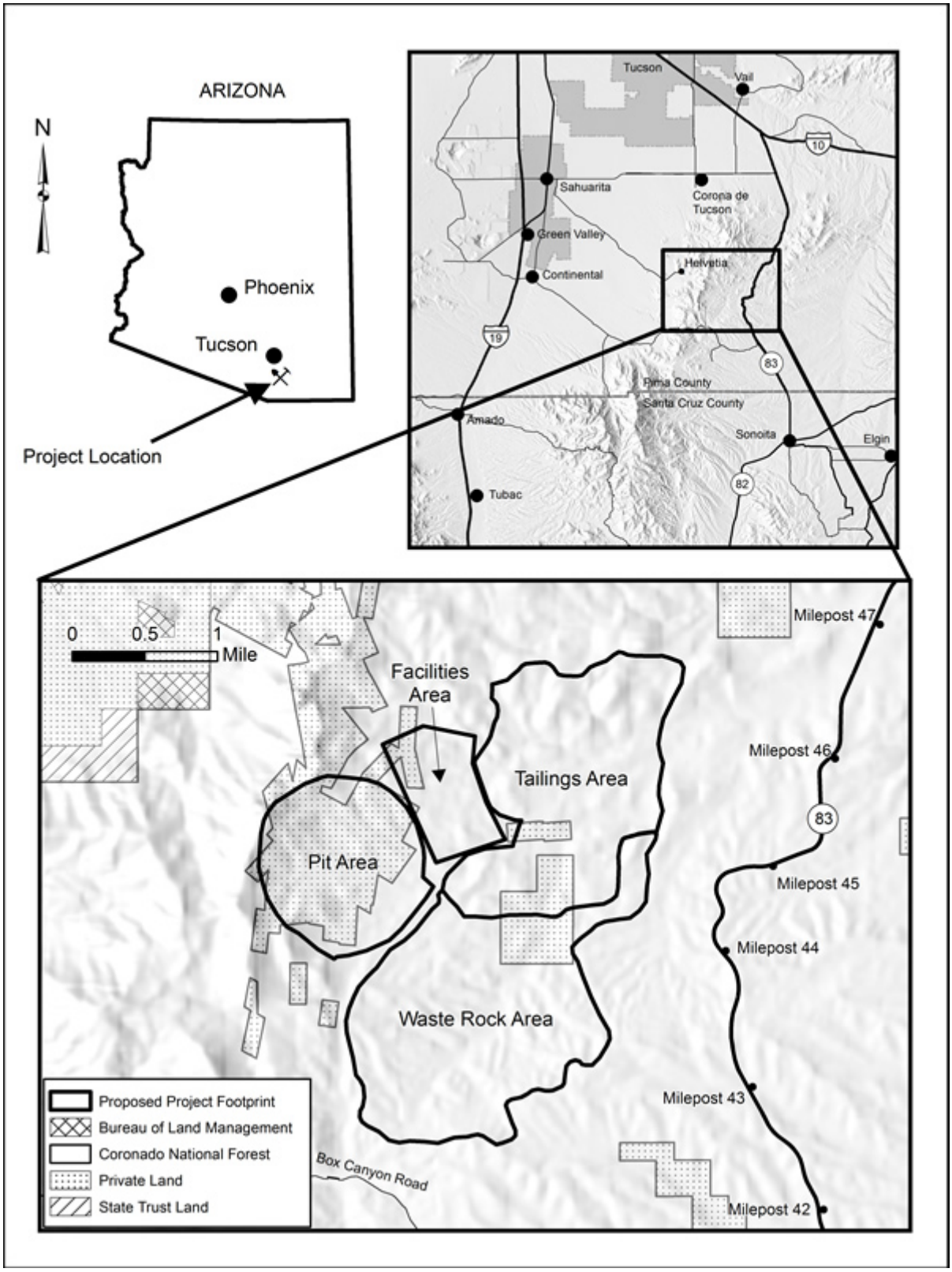

Figure 1. Project location

This document is organized into two volumes and an appendix: Volume 1 contains the Executive Summary, Chapters 1–2, and portions of Chapter 3; Volume 2 contains portions of Chapter 3, Chapters 4–7, and the Index as follows:

Volume 1:

- *Chapter 1. Purpose of and Need for Action:* Chapter 1 focuses on the underlying need to which the agency is responding in proposing the action and alternatives, the framework in which decisions will be made by the three responsible Federal agencies, and the significant issues associated with the proposed action.
- *Chapter 2. Alternatives, Including the Proposed Action:* Chapter 2 describes the proposed action, along with the alternatives considered in detail. Action alternatives were developed based on significant issues raised by the public, the Coronado resource specialists, and other agencies. The no action alternative is included in the range of alternatives considered in detail. Chapter 2 also provides a comparison summary based on each alternative's environmental consequences, which are presented in chapter 3. This chapter identifies the Coronado and Bureau of Land Management's preferred alternative, as well as alternatives considered but eliminated from detailed study.
- *Chapter 3. Affected Environment and Environmental Consequences:* Chapter 3 describes the affected environment and the environmental consequences associated with the proposed action and the alternatives considered in detail. The affected environment information provides the baseline conditions, incorporating past and present actions, for determining potential impacts. Reasonably foreseeable actions are also considered in determining potential cumulative effects. Cumulative effects include analysis of incremental impacts from past, present, and reasonably foreseeable actions. Irreversible and irretrievable commitments of resources, if any, are disclosed at the end of each resource section in chapter 3. This chapter provides the analyses for the comparison summary presented in chapter 2.

Volume 2:

- *Chapter 3. Affected Environment and Environmental Consequences*
- *Chapter 4. Cooperating Agencies and Consultation:* Chapter 4 identifies the cooperating agencies and consulting agencies, including tribal governments, involved during the development of this document.
- *Chapter 5. List of Preparers:* Chapter 5 identifies the individuals responsible for the development of this document.
- *Chapter 6. Literature Cited:* Chapter 6 provides a list of literature cited in this document.
- *Chapter 7. Glossary:* The glossary provides definitions of terms used in this document.
- *Index:* The index provides page numbers by topic within this document.

Appendix:

- The appendix provides more detailed information to support the analyses presented in this document. The appendix includes the following:
  A. Executive Summary of the Mine Plan of Operations
     Mine plan of operations and supporting documents (provided electronically on a compact disc (CD) only)
  B. U.S. Army Corps of Engineers' Section 404(b)(1) Alternatives Analysis
  C. Draft Monitoring Plan
  D. Visual Simulations (provided electronically on a CD only)

E. U.S. Army Corps of Engineers' Habitat Mitigation Plan
F. Tribal Consultation

The analyses conducted for this project reflect the best available science.[2] Supporting documentation may be found in the project record, located at the Coronado Supervisor's Office (Tucson, Arizona). Documents are available pursuant to the provisions of the Freedom of Information Act (40 Code of Federal Regulations 1506.6(f)). Key materials may also be found on the project website at http://www.RosemontEIS.us.

The information furnished in this document, along with supporting documentation contained in the project record, is intended to provide adequate site-specific information for the responsible Federal officials to make reasoned decisions. In compliance with 40 Code of Federal Regulations 1502.21, the EIS may briefly describe material incorporated by reference to keep the EIS streamlined; all material incorporated by reference is contained in the project record and/or posted on the project website. Impacts are discussed in proportion to their significance, with emphasis on items deemed most useful to decision-makers and the public.

Background

The current Rosemont preliminary MPO is the latest in an extensive history of copper prospecting and development in southern Arizona. Copper production in the Santa Rita Mountains began in the 1880s and continued until the 1950s. Previous mining activity on the east side of the Santa Rita Mountains supported operation of the Rosemont smelter in the Rosemont mining district. Previous mining activity on the west side of the Santa Rita Mountains supported operation of the Columbia smelter at Helvetia in the Helvetia mining district. Although several exploration projects have been undertaken, there has been no recent production of copper. The increased value of copper over the past several years has made mining of the Rosemont ore deposit economically viable.

In July 2007, Rosemont Copper submitted a preliminary MPO to the Coronado, requesting approval to construct, operate, reclaim, and close an open-pit mine on and adjacent to National Forest System lands administered by the Coronado for development of the Rosemont ore deposit. The Forest Service's review identified the need for additional information. In February 2008, the supplemental preliminary MPO was accepted for environmental review by the Coronado.

In July 2007, Rosemont Copper also submitted the preliminary MPO to the Bureau of Land Management, requesting approval of the preliminary MPO because it includes an electrical transmission line, water pipeline, and access road that may cross Bureau of Land Management administered lands. In March 2008, the preliminary MPO was accepted by the Bureau of Land Management after Rosemont Copper submitted requested supplemental information.

At the request of the Rosemont Copper, the U.S. Army Corps of Engineers reviewed a preliminary delineation for potentially jurisdictional waters of the United States submitted in accordance with regulatory guidance letter no. 08-02. The U.S. Army Corps of Engineers has determined that potentially jurisdictional waters of the United States are present within the proposed project area; these waters are discussed in the "Surface Water Quantity" section of chapter 3.

[2] What constitutes best available science might vary over time and across scientific disciplines. Agency regulations require that public information be of "high quality" because "accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA [the National Environmental Policy Act]" (see 40 Code of Federal Regulations 1500.1(b),1502.9(b), 1502.22, and 1502.24).

Purpose of and Need for Action

The purpose of and need for action is to respond to Rosemont Copper's preliminary MPO to mine copper and associated minerals for which they own private mineral rights and have a possessory interest in unpatented mining claims within the project area.

Pursuant to Federal mining laws, the Forest Service and Bureau of Land Management are required to respond to a preliminary MPO for conducting mining operations. Under 36 Code of Federal Regulations 228.5, the Forest Service must determine whether to approve the preliminary MPO submitted by Rosemont Copper or to require changes or additions deemed necessary to meet the requirements of the regulations for environmental protection set forth in 36 Code of Federal Regulations 228.8. Under 43 Code of Federal Regulations 3809, the Bureau of Land Management must determine whether to approve the preliminary MPO submitted by Rosemont Copper, to approve the preliminary MPO subject to changes or conditions that are necessary to meet the performance standards in 43 Code of Federal Regulations 3809.420 and to prevent unnecessary or undue degradation, or to disapprove or withhold approval of the preliminary MPO for reasons specified in 43 Code of Federal Regulations 3809.411(d)(3). In addition, the Bureau of Land Management must determine whether any occupancy of Bureau of Land Management administered land proposed in the preliminary MPO is in conformance with the regulations at 43 Code of Federal Regulations 3715.

Under regulations of the U.S. Department of Agriculture, Rosemont Copper must conduct mining operations in accordance with the regulations at 36 Code of Federal Regulations 228 Subpart A under a plan of operations approved by the Forest Service. Under regulations of the Secretary of the Interior, Rosemont Copper must conduct mining operations in accordance with the regulations at 43 Code of Federal Regulations 3809 and 3715 under a plan of operations approved by the Bureau of Land Management.

The Coronado is addressing this project at this time in order to comply with its statutory obligation to respond to Rosemont Copper's preliminary MPO in a timely manner. The actions proposed in this DEIS are for the development of the Rosemont ore deposit owned and/or claimed by Rosemont Copper in a manner that does the following: (1) complies with Federal, State, and local laws and regulations, (2) reduces adverse environmental impacts on National Forest System lands, (3) is without undue or unnecessary degradation[3] of lands administered by the Bureau of Land Management, and (4) is the least environmentally damaging practicable alternative in accordance with 40 Code of Federal Regulations 230 as it pertains to Section 404 of the Clean Water Act. Rosemont Copper is entitled to conduct operations that are reasonably incidental to exploration and development of mineral deposits on its mining claims pursuant to U.S. mining laws.

The purpose of and need for action is based on statutes, regulations, and policies that govern mining on National Forest System land and Bureau of Land Management administered land, as follows:

- The General Mining Law of 1872 conferred a statutory right for claimants to enter upon public lands open to location, stake mining claims in pursuit of locatable minerals, and conduct mining activities in compliance with Federal and State statutes and regulations.

[3] Unnecessary or undue degradation of the environment is defined as "surface disturbance greater than what would normally result when an activity is being accomplished by a prudent operator in usual, customary, and proficient operations of similar character and taking into consideration the effects of operations on other resources and land uses, including those resources and uses outside the area of operations" (43 Code of Federal Regulations 3809.5).

- The 1897 Organic Administration Act grants the Secretary of Agriculture the authority to regulate the occupancy and use of National Forest System lands. It provides the public with continuing rights to conduct mining activities under general mining laws and in compliance with rules and regulations applicable to National Forest System lands. It also recognizes the rights of miners and prospectors to access National Forest System lands for prospecting, locating, and developing mineral resources.
- The Multiple-Use Mining Act of 1955 confirms the ability to conduct mining activities on public lands, locate necessary facilities, and conduct reasonable and incidental uses to mining on public lands, including National Forest System lands.
- The Multiple-Use Sustained-Yield Act of 1960 requires that National Forest System lands be administered in a manner that includes consideration of relative values of various resources as part of management decisions. Furthermore, it specifies that nothing in the act be construed to affect the use of mineral resources on National Forest System lands.
- The 1970 Mining and Minerals Policy Act established the Federal Government's policy for mineral development "to foster and encourage private enterprise in the development of economically sound and stable industries and in the orderly development of domestic resources to help assure satisfaction of industrial, security, and environmental needs."
- Forest Service mining regulations at 36 Code of Federal Regulations 228 Subpart A provide direction on the administration of locatable mineral operations on National Forest System lands.
- Bureau of Land Management mining regulations at 43 Code of Federal Regulations 3809 and 3715 provide direction on the administration of locatable minerals and supporting facilities on Bureau of Land Management administered land.

With regard to mining, one goal of the Coronado forest plan is to "support environmentally sound energy and minerals development and reclamation" (U.S. Forest Service 1986:11). However, an initial assessment indicates that the preliminary MPO is inconsistent with various aspects of the forest plan. Programmatic amendment(s) to the forest plan would be needed to ensure forest plan consistency should the preliminary MPO or another action alternative be selected.

The proposed electrical transmission line, water pipeline, and access road on Bureau of Land Management administered lands are in an area that provides for mineral exploration and development under the regulations at 43 Code of Federal Regulations 3809 (Bureau of Land Management 1988:14)(Bureau of Land Management 1988:14). The Bureau of Land Management has determined that the proposed action and action alternatives are consistent with the "Proposed Phoenix Resource Management Plan and Final Environmental Impact Statement" (Bureau of Land Management 1988), which directs land use planning for Bureau of Land Management administered lands within the project area.

Proposed Action in Brief

The National Environmental Policy Act process begins with a proposed action, in this case the preliminary MPO submitted by Rosemont Copper. It should be noted that the proposed action is one of several alternatives considered in the DEIS. The proposed action should not be confused with the preferred alternative, which is identified in chapter 2 and is the agency's current preference for implementation based on the current analysis.

The proposed action is to approve the preliminary MPO for construction, operation with concurrent reclamation, and closure of an open-pit copper, molybdenum, and silver mine. The following elements, which are integral to the project, are included in the proposed action:

- Ore transportation systems;
- Ore processing facilities;
- Waste rock and tailings facilities;
- Leach facilities;
- Road construction;
- Road maintenance;
- Electrical and water transmission lines;
- Various buildings;
- Elements and mitigation measures to reduce potential environmental impacts;
- Resource monitoring during construction, operation, reclamation, and closure; and
- Labor requirements for construction, operation, reclamation, and closure.

Production estimates include 234 million pounds of copper, 4.5 million pounds of molybdenum, and 2.7 million ounces of silver annually over an active mining period of approximately 20 years. Mine construction and closure activities would take an additional 5 years.

A detailed summary of the proposed action is presented in chapter 2, along with the other action alternatives considered in detail. A summary of the preliminary MPO is provided in appendix A, which also contains further detail on the proposed action.

Decision Framework

The Forest Service is the lead agency in the preparation of this document, in accordance with the Council on Environmental Quality regulations for implementing the National Environmental Policy Act at 40 Code of Federal Regulations 1501.5. The Bureau of Land Management and U.S. Army Corps of Engineers are Federal cooperating agencies with decisions to be made from this planning effort.

Forest Service

The Forest Supervisor of the Coronado National Forest, as the lead deciding official for this project, determined that preparation of an EIS was required because approving a preliminary MPO could have significant impacts on the human environment (40 Code of Federal Regulations 1500). The forest supervisor will consider the beneficial and adverse impacts of each alternative in determining reasonable measures to impose on the MPO for the protection of Coronado National Forest surface resources. However, the forest supervisor's decision space is limited by the regulations governing locatable mineral activities on National Forest System lands (36 Code of Federal Regulations 228 Subpart A) and other applicable laws and regulations discussed previously.

The Forest Service may reasonably regulate mining activities to protect surface resources, but there are statutory and constitutional limits to its discretion when reviewing and approving an MPO. The Forest Service may reject an unreasonable MPO but cannot categorically prohibit mining or deny reasonable and legal mineral operations under the mining laws.

The forest supervisor will select the proposed action or an alternative that allows for development of the mineral resource while reducing potential environmental impacts. Using the analysis in the final EIS (FEIS) and supporting documentation, the forest supervisor will make the following decisions regarding National Forest System lands:

1. Whether to approve the preliminary MPO as submitted by Rosemont Copper or an alternative considered in detail in the FEIS. The final decision could include a blend of components within the range of alternatives considered.
2. Whether to approve the plan with needed changes or additions that will satisfy regulations.
3. Whether a bond will be required and the amount.
4. Whether to amend the forest plan in the area impacted by the mine.

Prior to approval of an MPO, the forest supervisor will require financial assurance or a reclamation bond to ensure that National Forest System lands and resources involved with the mining operation are reclaimed in accordance with the approved MPO and reclamation requirements (36 Code of Federal Regulations 228.8 and 228.13).

Following issuance of this DEIS, comments will be accepted that will be considered in preparing an FEIS. Following or concurrent with issuance of the FEIS, the forest supervisor will issue a record of decision (ROD). The ROD may contain changes or additions to the preliminary MPO necessary to reduce or eliminate adverse environmental impacts from the proposed mineral development on National Forest System lands, as well as any required amendments to the forest plan. This decision is subject to 36 Code of Federal Regulations 215, “Notice, Comment, and Appeal,” and 36 Code of Federal Regulations 251 Subpart C, “Appeal of Decisions Relating to Occupancy and Use of National Forest System Lands.” Rosemont Copper may appeal the decision pursuant to 36 Code of Federal Regulations 215 or 251. Other parties who comment on the DEIS may appeal the decision pursuant to 36 Code of Federal Regulations 215.

Following resolution of any appeal, Rosemont Copper must change the preliminary MPO to that described in the ROD and resubmit it to the Forest Service, along with the required reclamation bond or other specified financial assurance. Once the Forest Service determines that the MPO has been changed as required and that the bond or financial assurance instrument is acceptable, it will notify Rosemont Copper that the MPO has been approved.

Bureau of Land Management

Approximately 15 acres of Bureau of Land Management administered land would be potentially affected by an electrical transmission line, water pipeline, and access road associated with the preliminary MPO. Current land uses on potentially affected Bureau of Land Management administered land include grazing, recreation, mineral exploration, rockhounding, hunting, a gas pipeline, and a power line. Under 43 Code of Federal Regulations 3809, for surface management, and 43 Code of Federal Regulations 3715, for surface occupancy, the Bureau of Land Management has regulatory oversight responsibilities for Federal lands under its jurisdiction. The Bureau of Land Management must consider land status, affected resources, resource values, environmental conditions, and the concerns of various interested parties in accordance with Bureau of Land Management Manual and Handbook 1790-1 (Bureau of Land Management 2008b), Department of the Interior regulation at 43 Code of Federal Regulations 46, and Departmental Manual Part 516, “National Environmental Policy Act of 1969,” chapter 11 (Bureau of Land Management 2009).

Using the analysis in the FEIS and supporting documentation, the Tucson field office manager, as responsible official for the Bureau of Land Management, will make the following decisions regarding Bureau of Land Management administered land:

1. Whether to approve the preliminary MPO as submitted by Rosemont Copper or an alternative considered in detail in the EIS to avoid unnecessary or undue degradation of the environment on Bureau of Land Management administered land, under 43 Code of Federal Regulations 3809 and 3715.
2. Whether to select the no action alternative if the analysis shows that unnecessary or undue degradation of the environment would occur from all action alternatives.

Following issuance of this DEIS, comments will be accepted that will be considered in producing an FEIS. Following or concurrently with issuance of the FEIS, the Bureau of Land Management will issue a ROD, which may contain changes or additions to the preliminary MPO needed to avoid unnecessary or undue degradation of the environment on Bureau of Land Management administered land. This decision may be subject to administrative review by Bureau of Land Management's state director or an administrative law judge, whose decisions may be appealed to the Interior Board of Land Appeals, pursuant to 43 Code of Federal Regulations 4.

U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers is a cooperating Federal agency that regulates the discharge of dredged and/or fill material into waters of the United States, including wetlands, under Section 404 of the Clean Water Act.

A Section 404 of the Clean Water Act individual permit is required for the discharge of dredged and/or fill material into waters of the United States (33 Code of Federal Regulations 323), regardless of whether the activity is on public or private lands. In accordance with the Clean Water Act, Section 404(b)(1) guidelines (40 Code of Federal Regulations 230), the U.S. Army Corps of Engineers may only permit the least environmentally damaging practicable alternative in light of cost, logistics, and technology.

For purposes of the Section 404(b)(1) alternatives analysis, the basic project purpose is to mine copper, and the overall project purpose is to mine copper using conventional open-pit mining and sulfide (mill and concentrate) and oxide (leach and solvent extraction and electrowinning) ore processing for the purpose of producing copper and/or copper precursors, silver, and molybdenum within the mining district of southeastern Arizona (Pinal, Gila, Greenlee, Graham, Cochise, Santa Cruz, and Pinal Counties).

In addition to the alternatives considered in detail in the body of this EIS, a Section 404(b)(1) alternatives analysis is included in appendix B, "U.S. Army Corps of Engineers' Section 404(b)(1) Alternatives Analysis."

Based on the analysis in the FEIS and supporting documentation, the U.S. Army Corps of Engineers' public interest review, and the determination of the least environmentally damaging practicable alternative in the Section 404(b)(1) alternatives analysis, the Los Angeles District Commander will determine whether to do the following:

1. Issue Rosemont Copper a Clean Water Act Section 404 individual permit for the discharge of dredged and/or fill material into waters of the United States for the preliminary MPO; or

2. Issue Rosemont Copper a Clean Water Act Section 404 individual permit with modifications or special conditions; or
3. Deny the Clean Water Act Section 404 individual permit.

The U.S. Army Corps of Engineers will issue a public notice during the DEIS comment period and will consider all comments received in response to the public notice, the DEIS, and public hearings (if applicable) as part of the public interest review. Following issuance of the FEIS, the U.S. Army Corps of Engineers will prepare a ROD regarding the Section 404 permit. The U.S. Army Corps of Engineers' administrative appeals process allows the applicant to appeal a denied permit or a proffered permit that the applicant has declined. Details on this process are contained in 33 Code of Federal Regulations 331, "Administrative Appeals Process."

Arizona Corporation Commission

The proposed action includes the construction of a transmission line across lands not administered by a Federal agency. The Coronado has determined this is a connected action because the sole purpose for the construction of the transmission line is to support the mine. According to 40 Arizona Revised Statutes Chapter 2, Article 6.2, the Arizona Corporation Commission established a line siting committee to create procedures in order to provide review of proposed siting transmission and generating facilities.

Utilities, such as the proposed transmission line to support the mine, are subject to commission/committee jurisdiction and are required to make an application with the commission for a Certificate of Environmental Compatibility. The committee considers, during public hearings, the matter(s) contained in the application relative to a series of factors specified in Arizona Revised Statutes 40-360.06. Following these deliberations, the committee makes a recommendation to the commission regarding the Certificate of Environmental Compatibility. The recommendation to the commission may also include proposed conditions and/or restrictions. Subsequently, the commission makes a final determination on the Certificate of Environmental Compatibility application. The commission votes on the Certificate of Environmental Compatibility matter in a public proceeding and may accept, reject, or modify the committee's recommendations. More information on the committee's jurisdiction, powers, and duties can be found at 40 Arizona Revised Statutes.

The Arizona Corporation Commission is a State agency; therefore, it does not have authority over the Federal agencies' decisions discussed above. The Coronado and Bureau of Land Management have the authority to site the lines on lands they administer. Siting authority on private and state lands lies with the Arizona Corporation Commission. However, the Federal agencies and the commission/committee are coordinating with respect to the siting of the transmission line so that their decisions will not conflict.

Tribal Consultation

A variety of regulations require that the Coronado consult with federally recognized Native American tribes with interests in the lands of proposed actions. The Coronado instituted official consultation with 12 tribes in March 2008 upon notice of Rosemont Copper's intent to file a preliminary MPO. The process and results are detailed in "An Ethnohistory of the Rosemont Copper Project Area in the Eastern Santa Rita Mountains, Pima County, Arizona" (Griset 2011) and summarized in the "Cultural Resources" section.

Public Involvement

Public involvement for preparing an EIS begins with publication in the Federal Register of a "Notice of Intent to Prepare an Environmental Impact Statement."

On March 13, 2008, the Coronado began soliciting comments on the preliminary MPO with publication in the Federal Register of a "Notice of Intent to Prepare an Environmental Impact Statement" (Federal Register 73(50):13527–13529). Six open house public meetings were held as follows: March 18, 2008 (Tucson, Arizona); March 19, 2008 (Green Valley, Arizona); March 20, 2008 (Patagonia, Arizona); April 5, 2008 (Vail, Arizona); April 22, 2008 (Sahuarita, Arizona); and April 23, 2008 (Elgin, Arizona). Approximately 1,000 people attended the open houses. Oral and written comments were solicited at the meetings and accepted by mail, hand delivery, facsimile, and electronic mail throughout the scoping period.

On April 29, 2008, a "Corrected Notice of Intent to Prepare an Environmental Impact Statement" was published in the Federal Register (73(83):23181). This notice announced a change in the duration of the scoping comment period and provided information regarding three public hearings. The scoping comment period was extended to July 14, 2008, for a total scoping comment period of 120 days. The public hearings were held as follows: May 12, 2008 (Elgin, Arizona); June 7, 2008 (Sahuarita, Arizona); and June 30, 2008 (Tucson, Arizona). Both oral testimony and written comments were collected at the public hearings. Oral testimony was professionally audio-recorded and documented by a court reporter. A total of 860 people signed in at the public hearings, with 169 people presenting formal oral comments.

On June 27, 2008, in response to public concerns about constraints limiting hearing attendance and participation, the Coronado hosted a toll-free phone hotline for use by the public to provide comments. A total of 302 people left recorded comments, which were transcribed for the record.

The Coronado's efforts to solicit comments on the proposal and the corresponding public participation are described further in "Scoping Summary Report #1, Extent of Public Participation" (U.S. Forest Service 2009d).

Comments were received from members of Congress and tribal governments; Federal, State, and local agencies; organized interest groups; businesses; and individuals. The Coronado received 11,082 comment submittals during the scoping comment period, consisting of approximately 70 percent postcards, petitions, and duplicate submittals. Approximately 16,000 discrete comments were identified in the scoping submittals. Scoping submittals received from March 13, 2008, through August 1, 2008, were documented and analyzed. A systematic process referred to as content analysis was used to sort the contents of the submittals. Detailed records about this process are on file at http://www.rosemonteis.us/node/339.

Content analysis resulted in the identification of 11 significant issues that drove development of action alternatives and are the focus of this DEIS. Some public concerns were determined to be outside the scope of this DEIS because of one or more of the following: they did not reflect a legitimate cause and effect relationship supported by scientific evidence; they were not relevant to the decision to be made; they were outside the Forest Service's, Bureau of Land Management's, or U.S. Army Corps of Engineers' authority; or they were already decided by law, regulation, or policy.

Public concerns addressed through required plan and permit approval processes and routine disclosures (see chapter 3) were not considered significant issues. For instance, cumulative effects

analysis is required for all resource areas (see chapter 3); therefore, "cumulative effects analysis" is not in and of itself considered a significant issue. Many public comments submitted during the scoping period suggested alternative components that were either considered in detail or eliminated from detailed analysis (see chapter 2).

Issues

Using the comments from tribes, agencies, organizations, and the public, the Forest Service interdisciplinary team (ID team) developed a list of significant issues to address in the environmental analysis. Issues determined not to be significant or that have been covered by prior environmental review are discussed only briefly or eliminated from detailed study (40 Code of Federal Regulations 1500.1(b), 1500.2(b), 1500.4(c), 1501.7(3), 1502.2(b), and 1506.3). Issues are addressed by describing comparative factors to provide a way to describe, compare, and contrast the effects of the proposed action and other alternatives, including no action. Significant issues are used to formulate alternatives to the proposed action, develop elements and mitigation measures, and analyze environmental effects. A summary of significant issues for this project follows.

Issue 1: Impact on Land Stability and Soil Productivity

Ground disturbance from clearing vegetation, grading, and stockpiling soils may accelerate erosion and reduce soil productivity. The tailings and waste rock piles may be unstable over time, and reclamation may not adequately result in a stable, revegetated landscape. The geochemical composition of tailings and waste rock piles may not support native vegetation. Soils are nonrenewable resources. Loss of the soil resource may result in an irretrievable loss of soil productivity, physical structure, and ecological function across the proposed mine site and across downgradient lands if the mining area acts as a barrier to sourcing and supporting natural downslope transportation of geological material, water, and nutrients through alluvial, eolian, and fluvial processes.

Issue 1 Factors for Alternative Comparison

- Qualitative assessment of long-term stability of tailings and waste piles
- Character of risks to stability through time, including expected results of reclamation
- Area and quantitative level of disturbance leading to lost soil productivity (acres)
- Qualitative assessment of the potential for revegetation of tailings and waste rock piles
- Qualitative evaluation of alteration of soil productivity and soil development
- Sediment delivery to Davidson Canyon, Cienega Creek, or other streams and washes, compared with background sediment loading (tons per year)

Issue 2: Impact on Air Quality

Changes in air quality that may occur from the mine operation were identified as a significant issue. Construction, mining, and reclamation activities at the mine and along transportation and utility corridors would increase dust, airborne chemicals, and transportation related (mobile) emissions in the affected area. Air quality standards would be compromised. The Clean Air Act and other laws, regulations, policies, and plans set thresholds for air quality, including Class I airsheds. The emission of greenhouse gases has been implicated in global climate change, and the policy of the Federal Government is to reduce these emissions when possible (Executive Order 13514).

Greenhouse gases are those in the atmosphere that retain heat. They are natural and keep the earth from becoming too cold. The specific gases known as greenhouse gases are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorocarbons. CH_4, N_2O, and fluorinated gases would be emitted; however, the anticipated level of emissions of these gases is much smaller than the level of CO_2 emissions.

Issue 2 Factors for Alternative Comparison

- Particulate emission estimates, compared with background and threshold (particulate matter less than or equal to 2.5 microns in diameter ($PM_{2.5}$) and particulate matter less than or equal to 10 microns in diameter (PM_{10}))
- Greenhouse gas emission estimates, compared with background (tons) during construction, operation, and postclosure
- Volatile organic compound (VOC) and nitrogen oxide (NO_x) emissions and emissions rates to air
- Quantitative assessment of the ability to meet air quality standards

Issue 3: Impact on Water Resources

This group of issues relates to the effects of mine construction, operation, closure, and postclosure on the quality and quantity of water for beneficial uses, wells, and stock watering. The loss of water availability to riparian and other plant and animal habitat is addressed in Issues 4 and 5.

Issue 3A: East Side Groundwater Availability

The proposed open-pit mine may reduce groundwater availability to private and public wells in the vicinity of the open pit. Household water availability may be reduced.

Issue 3A Factors for Alternative Comparison

- Direction and degree of change in water table level (feet), including annual average, range, and rate, compared with background
- Impairment of mountain-front groundwater recharge function
- Locations in which water resources may be impacted (geographic extent)
- Duration of the effect (in years)
- Comparison of mine pit water loss by evaporation with overall basin water balance
- Potential reduction in groundwater outflow from Davidson Canyon
- Approximate number of wells within the geographic extent of the impact

Issue 3B: West Side Groundwater Availability

Water needed to run the mine facility could reduce groundwater availability to private and public wells in the Santa Cruz Valley, specifically the communities of Sahuarita and Green Valley, Arizona. Household water availability may be reduced.

Issue 3B Factors for Alternative Comparison

- Water needed for operations from the Santa Cruz Valley and comparison with other water uses and basin water balance, measured in acre-feet
- Change in water table level (feet), including annual average and range, compared with background
- Locations in which water resources may be impacted (geographic extent)
- Duration of the effect (in years)
- Potential for subsidence to occur as a result of groundwater withdrawal
- Approximate number of wells within the geographic extent of the impact

Issue 3C: Groundwater Quality

Construction and operation of the mine pit, waste rock, and leach facilities may result in exceedances of Arizona Aquifer Water Quality Standards. The mine pit may result in the creation of a permanent pit lake, which may concentrate dissolved metals and toxins and may lower pH levels. Likewise, disposal of waste material in surface facilities such as tailings, waste rock, and leaching operations may contribute to degradation of the aquifer.

Issue 3C Factors for Alternative Comparison

- Ability to meet Arizona Aquifer Water Quality Standards
- Ability to demonstrate best available demonstrated control technology

Issue 3D: Surface Water Availability

Construction and operation of the mine pit, tailings, waste rock, and leach facilities may result in changes in surface water discharge to Davidson Canyon and Cienega Creek, portions of which are designated an Outstanding Arizona Water by the Arizona Department of Environmental Quality. Additionally, the availability of water for stock water tanks may be reduced.

Issue 3D Factors for Alternative Comparison

- Quantitative assessment of water released and available for beneficial uses
- Determination/estimation of number of stream miles changed from intermittent flow status to ephemeral flow status as a result of the project
- Quantitative assessment of potential lowering of the water table/reduced groundwater flow to Davidson Canyon and Cienega Creek that results in permanent changes in flow patterns and that may affect their Outstanding Arizona Water designations and current designated uses
- Stock watering tanks that will be unavailable (number)
- Change in volume, frequency, and magnitude of runoff from the project area
- Change in recharge of the aquifer by runoff
- Number of seeps and springs lost or impaired

Issue 3E: Surface Water Quality

Construction and operation of tailings, waste rock, and leach facilities may result in sediment or other pollutants reaching surface water and degrading water quality, leading to a loss of beneficial uses.

Sediment may enter streams, increase turbidity, and exceed water quality standards. Downstream segments of Davidson Canyon and Cienega Creek have been designated Outstanding Arizona Waters by the Arizona Department of Environmental Quality. Outstanding Arizona Waters are Tier 3 waters for antidegradation purposes and are given the highest level of antidegradation protection.
As outstanding resource waters, Tier 3 waters must be maintained and protected, with no degradation in water quality allowed.

Issue 3E Factors for Alternative Comparison

- Ability to meet Arizona Surface Water Quality Standards
- Area (in acres) and locations that may be affected by surface water quality impacts and the duration (in years) of those impacts

Issue 4: Impact on Springs, Seeps, and Riparian Habitats

This issue relates to the potential impacts on riparian and wetland habitat that would result from the alteration of surface and subsurface hydrology from the pit and other operations. Potential impacts may include loss of riparian habitat and fragmentation of riparian habitat and corridors, including Cienega Creek.

Issue 4 Factors for alternative comparison

- Riparian habitat disturbed, unique or uncommon riparian habitat disturbed, and wildlife corridors disturbed (acres)
- Riparian habitat lost and unique or uncommon riparian habitat lost (acres)
- Seeps and springs degraded or lost (number)
- Qualitative assessment of ability to meet legal and regulatory requirements for riparian areas

Issue 5: Impact on Plants and Animals

This group of issues focuses on effects on plant and animal populations and habitats. Many aspects of the mine operations have the potential to affect individuals, populations, and habitat for plants and animals, including special status species. Species of conservation concern may be affected. This issue includes the potential for impacts to wildlife as a result of landscape alteration and from light, noise, vibration, traffic, and other disturbance from the proposed mine operations.

Issue 5A: Vegetation

The pit, plant, tailings and waste piles, road and utility corridors, and other facilities may result in a permanent change to the vegetation, and reclamation is not expected to restore vegetation to preproject conditions.

Issue 5A Factor for Alternative Comparison

- Vegetation permanently lost or modified, by vegetation type (acres)

Issue 5B: Habitat Loss

The mine and ancillary facilities may result in a loss of habitat for numerous plant and animal species.

Issue 5B Factors for Alternative Comparison

- Habitat lost, modified, or indirectly impacted (acres)
- Qualitative assessment of impacts to aquatic habitats and surface water that supports wildlife and plants such as stock tanks, seeps, and springs

Issue 5C: Nonnative Species

The mine operations may create conditions conducive to the introduction, establishment, and/or spread of nonnative species, which may out-compete native plants and animals. Forest Service and other Federal, State, and local laws, regulations, policies, and plans contain management direction for invasive plants.

Issue 5C Factor for Alternative Comparison

- Acres of disturbance that could create conditions conducive for invasive species

Issue 5D: Wildlife Movement

The mine operations may modify and/or fragment wildlife habitats and/or reduce connectivity between habitats. The transportation system and increased traffic could result in more wildlife roadkills.

Issue 5D Factors for Alternative Comparison

- Qualitative assessment of the change in movement corridors and connectivity between wildlife habitats
- Quantitative assessment of increased volume of traffic related mortality of various animal species

Issue 5E: Special Status Species or Species of Concern

The mine operations may impact habitat for species of concern. Species of concern include those afforded protection under the Endangered Species Act, Forest Service and Bureau of Land Management sensitive species, Forest Service management indicator species, migratory birds of conservation concern,[4] Arizona Game and Fish Department's wildlife of special concern in Arizona, and Sonoran Desert Conservation Plan priority vulnerable species.

Issue 5E Factors for Alternative Comparison

- Habitat lost for each species of concern (acres)
- Potential for alternative to affect the population viability of any species

[4] Migratory birds of conservation concern includes species listed as either National Partners in Flight priority bird species or migratory nongame birds of management concern in the United States.

Issue 5F: Animal Behavior

Mine operations, including drilling and blasting, may result in noise and vibrations, which may impact animal behavior and result in negative impacts on wildlife. Nocturnal and other animals may be adversely affected by the light glow in night skies.

Issue 5F Factor for Alternative Comparison

- Habitat impacted by noise, vibration, and light (acres)

Issue 6: Impact on Cultural Resources

This group of issues focuses on the adverse effects of the proposed mine operations on cultural resources. Mine operations would impact historic properties as well as traditional uses and perceptions of the land for the many communities who have used it over the past centuries. Native Americans claim the area as part of their ancestral homelands. Tribes consulted as part of the EIS process perceive disruption of the physical world as causing spiritual harm to the earth and to the people here. Ancestral human remains and sacred sites are known to exist in the project area, as are traditional resource collecting areas.

Ranching and mining communities also have attachments to the area that began in the late 19th century and continue through the present. Comments submitted during public scoping identified impacts to the historic rural landscape as an issue, as well as impacts to traditional resource collecting areas and recreation venues. Historic human burials may yet be found in areas not excavated during previous archaeological investigations.

Issue 6A: Historic Properties

Mine construction, operation with concurrent reclamation, and closure would bury, remove, or damage historic properties, including traditional cultural properties, sacred sites, traditional use areas, archaeological sites, historical structures, districts, and landscapes. Vibrations from blasting and drilling may damage historical structures in the immediate and adjacent areas. This may also result in the loss of or reduction in the future research and public interpretation potential of known and yet-to-be-discovered sites, along with the permanent alteration of cultural landscapes important to the ongoing cultural practices of Native American tribes and other communities with cultural or historic ties to the project area.

Issue 6A Factors for Alternative Comparison

- National Register of Historic Places eligible historic properties, including traditional cultural properties, sacred sites and other landscape-scale properties, buried, destroyed, or damaged (number)
- Potential for vibrations to damage historic structures in adjacent areas (number of structures)

Issue 6B: Disturbance of Human Remains

Human remains have been discovered in previous archaeological excavations of prehistoric and historical sites in the Rosemont area. Additional burials are present in previously excavated and unexcavated historic properties and may be present in as-yet undetected historic properties. Native American remains fall under the jurisdiction of the Native American Graves Protection and

Repatriation Act; nonnative remains fall under the Advisory Council's Policy on Burial Sites, Human Remains and Funerary Objects on Federal Lands (February 23, 2007). Arizona burial laws (Arizona Revised Statutes 41-844 and 41-865) protect human remains on State and private lands.

Issue 6B Factors for Alternative Comparison

- Prehistoric sites known/likely to have human remains (number)
- Historic period sites likely to have human remains (number)

Issue 6C: Sacred Sites

Several Federal laws direct Federal land management agencies, to the extent permitted by law and not clearly inconsistent with essential agency functions, to accommodate access to and use of Native American sacred sites, to avoid affecting the physical integrity of such sites wherever possible, and to temporarily close National Forest System land for traditional and cultural purposes. Tribal consultation has identified springs, high vision points, and many natural resources in the project area as having sacred ceremonial functions. Mine construction, operation with concurrent reclamation, and closure may preclude access to or destroy or degrade these types of resources.

Issue 6C Factors for Alternative Comparison

- Sacred springs impacted (number)
- Qualitative assessment of the impacts on Native Americans of desecration of land, springs, burials, and sacred sites
- Qualitative assessment of the impacts on other communities of the region regarding impacts on resources, such as historical townsites, cemeteries, mines, ranches, and homesteads

Issue 6D: Traditional Resource Collecting Areas

Native Americans and the ranching, mining, and Mexican American communities use the Rosemont area to collect and process natural resources for food, medicines, firewood, and traditional crafts. Mine construction, operation with concurrent reclamation, and closure may preclude access to or destroy or degrade these types of resources.

Issue 6D Factor for Alternative Comparison

- Traditional resource collection areas impacted (acres)

Issue 7: Impact on Visual Resources

This issue focuses on the visual impacts that would result from the mine pit, placement of tailings and waste rock piles, and development and use of other facilities. The proposed mine tailings and waste rock piles would create significant changes to the landscape within the mine footprint. The piles may block valued mountain views. The processing plant and transportation and utility corridors may also affect visual resources in the area. The character of the State Route 83 designated scenic corridor and the views from it may change. The ability for the area to meet assigned scenic integrity objectives in the forest plan may be reduced. Regardless of mitigation measures or reclamation required, the scenic quality of the landscape may be permanently degraded.

Issue 7 Factors for Alternative Comparison

- Area that would no longer meet current forest plan scenic integrity objectives designations (acres)
- Qualitative assessment/degree of change in landscape character from analysis viewpoints over time
- Miles of State Route 83 with direct line-of sight views of the project area
- Miles of project area visibility along concern level 1 and 2 roads and trails

Issue 8: Impact on Dark Skies and Astronomy

This issue relates to the potential for the mine operation and facilities to reduce night sky visibility. Increased light and air particulates from mine related facilities, equipment, vehicles, and processes may diminish dark skies. Airborne sulfur or sulfur compounds are known to damage the aluminum coatings on telescope optics. The increased sky glow would reduce the visibility of all celestial objects, particularly the faint ones, which are often the subject of scientific study. Area residents, recreationists, research and amateur astronomers, and stargazers value the current dark skies in the area. Key observation points and the Smithsonian Institution's Fred Lawrence Whipple Observatory may be adversely affected. This issue also relates to the impact of particulate emissions and vibration from blasting and drilling on sensitive astronomy equipment.

Pima County has enacted the Pima County Outdoor Lighting Code. Mine operations are exempt from this code, and some aspects of the operation may not be able to conform to the code because of worker safety concerns.

Issue 8 Factor for Alternative Comparison

- Distribution of fractional increase in sky brightness from mine facility and vehicle lighting

Issue 9: Impact on Recreation

This issue focuses on the effects of the mine operation on recreation on National Forest System and Bureau of Land Management administered lands, including loss of access and recreation opportunities and loss of or reduction in solitude, remoteness, rural setting, and quiet. The mine operation may lead to permanent changes to recreation settings (Recreation Opportunity Spectrum) and/or the type of recreation available and may result in increased pressure on public and private lands in other places to compensate for lost opportunities.

Issue 9 Factors for Alternative Comparison

- Area that would no longer meet current forest plan Recreation Opportunity Spectrum designations (acres)
- Area of the Coronado National Forest that would be unavailable for recreational use (acres) and public roads lost (miles)
- Qualitative assessment of potential for noise to reach recreation areas: audio "footprint"
- Qualitative assessment of impacts to solitude in designated Wilderness and other backcountry areas

- Hunter days lost (quantity based on percentage of Forest Service land lost under each alternative)
- Length of Arizona National Scenic Trail relocated (miles)
- Qualitative assessment of increased pressure on other areas, including roads and trails/trailheads

Issue 10: Impact on Public Safety

This issue focuses on the impact of increased traffic from the mine site on construction, operation, and maintenance of new and reconstructed roadways. Oversized vehicles and the transport of personnel, equipment, supplies, and materials related to the mine operation have the potential to increase traffic and reduce public safety. Hazardous materials would be transported, which may increase the risk of a spill or other public safety impact. Another aspect of this issue is human health risks to Coronado National Forest visitors if they accidentally come near the mine operations, tailings, or waste rock piles. Air quality impacts resulting from the operation may be harmful to public health.

Issue 10 Factors for Alternative Comparison

- Change in type and pattern of traffic by road and vehicle type
- Trip count per day for all hazardous materials and qualitative assessment of potential effects of accident
- Qualitative assessment of transportation conflicts
- Qualitative assessment of public health risk from mine operations and facilities
- Qualitative assessment of public health risk from geological hazards
- Qualitative assessment of public health risk from noise
- Quantitative assessment of ability to meet air quality standards for human health

Issue 11: Socioeconomic Impacts

This issue relates to the socioeconomic impacts of the proposed mine operation. The mine operation may have negative and positive socioeconomic impacts that may change over time. The socioeconomic stability of the area may be adversely affected. Residents', business owners', and visitors' expectations of national forests and the historic rural landscape may not be met.

Issue 11A: Regional Socioeconomics

The mine facilities and operation may result in changes over time to local employment, property values, tax base, tourism revenue, and demand and cost for road maintenance and emergency services. There may be costs to the alternative elements and mitigation measures that influence the present net value of the mine operations and, thus, its economic profile.

Issue 11A Factors for Alternative Comparison

- Change in employment over time
- Change in property values over time
- Change in tax base per year over time

- Change in demand and cost for road maintenance over time
- Change in demand and cost for emergency services over time
- Qualitative assessment of change in tourism revenue over time

Issue 11B: Rural Landscapes

The mine operation may not conform to the quality of life expectations as expressed by the forest plan and Federal, State, and local regulations and ordinances. Concerns have been expressed about modification of rural historic landscapes and local ranching traditions, which are important to local residents.

Issue 11B Factor for Alternative Comparison

- Qualitative assessment of the ability of alternatives to meet rural landscape expectations as expressed by Federal, State, and local regulations and ordinances