

1 **B. Mitigation and Monitoring Plan**

2

1 Mitigation and Monitoring Plan

2 Introduction

3 This mitigation and monitoring plan has been developed by the Coronado National Forest (the
4 Coronado) interdisciplinary team (ID team), using information from a number of sources. Since
5 release of the draft environmental impact statement (DEIS), mitigation and monitoring have been
6 reviewed and updated to include additional details on: the impacts being mitigated; whether the
7 mitigation measure is meant to avoid, minimize, reduce, rectify, or compensate for impacts;
8 monitoring actions; effectiveness criteria; timing; responsible party; and to which alternatives the
9 items are applicable. In addition, a number of mitigation and monitoring items have been added since
10 release of the DEIS.

11 As stated in chapter 2 of the final environmental impact statement (FEIS), the Council on
12 Environmental Quality (CEQ) states that agencies should not commit to mitigation measures absent
13 the authority or expectation of resources to ensure the mitigation is performed (Council on
14 Environmental Quality 2011). This mitigation and monitoring plan is designed to clearly disclose
15 which mitigation and monitoring items are within the authority of the U.S. Forest Service (Forest
16 Service) or other regulatory permitting agency (such as the U.S. Fish and Wildlife Service (USFWS),
17 U.S. Army Corps of Engineers (USACE), Arizona Department of Environmental Quality (ADEQ),
18 Arizona State Historic Preservation Office (SHPO), Arizona Department of Water Resources
19 (ADWR), etc.). To that end, this mitigation and monitoring plan is organized as follows.

20 **Mitigation and Monitoring – Forest Service** – Mitigation and monitoring items under this heading
21 are within the authority of the Forest Service, USFWS, USACE, or Arizona SHPO. They would be
22 specified as a requirement of the record of decision (ROD) and the final mine plan of operations
23 (MPO). This category includes mitigation measures and associated monitoring items that would help
24 to minimize impacts to Forest Service surface resources; or are required by the USFWS Biological
25 Opinion (BO), the Memorandum of Agreement with the Arizona SHPO and associated Historic
26 Properties Treatment Plan (HPTP), or as part of the USACE 404 permit. The Forest Service is
27 responsible for overseeing implementation of the mitigation and monitoring in this category. It has
28 the regulatory responsibility to do so for those measures that minimize impacts to Forest Service
29 surface resources, and it has a legal obligation to ensure that requirements of the BO and
30 Memorandum of Agreement/HTPT are implemented. While the requirements of the USACE 404
31 permit are the responsibility of that agency to oversee, the only mitigation measure that directly
32 mitigates for impacts to waters of the United States (WUS) is also a requirement of the BO. For the
33 purposes of this mitigation and monitoring plan, the USACE 404 permit mitigation is also contained
34 in this category. The Forest Service is also responsible for determining whether the implementation of
35 mitigation and the results of monitoring in this category are in compliance with the decision that will
36 be documented in the ROD, as well as compliance with the final MPO.

37 **Mitigation and Monitoring – Other Regulatory and Permitting Agencies** – Mitigation and
38 monitoring items under this heading are within the authority of other regulatory permitting agencies,
39 including the ADEQ and ADWR. These items include permit requirements and stipulations from
40 legally binding permits and authorizations such as the air quality permit, aquifer protection permit,
41 and groundwater withdrawal permit. Most of these permits have already been issued. Some of them
42 will be modified following the approval of the ROD. For example, the aquifer protection permit was
43 issued in 2012. It will be modified based on the alternative selected in the ROD. The mitigation and

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1 monitoring related to the aquifer protection permit and other permits that are described in this
2 appendix are based on the existing permits as issued, and similar permits for those that have yet to be
3 issued. As mentioned, these mitigation and monitoring items may be modified post-ROD to more
4 accurately reflect the selected alternative. These regulatory and permitting agencies would share
5 monitoring results and all instances of noncompliance with the Forest Service. The Forest Service is
6 also responsible for determining whether the implementation of mitigation and the results of
7 monitoring in this category are in compliance with the decision that will be documented in the ROD,
8 as well as compliance with the final MPO.

9 **Mitigation and Monitoring Measures - Rosemont Copper** – Rosemont Copper has publicly agreed
10 to consider or implement the mitigation and monitoring items under this heading. These may include
11 contractual and financial agreements over which the Forest Service and other agencies have no
12 jurisdiction. The items in this category are beyond the authority of the Forest Service or other
13 regulatory permitting agencies. Since the Forest Service and regulatory permitting agencies have no
14 mechanism to require implementation of the mitigation and monitoring items in this category, their
15 implementation is not assured. While the effectiveness of these mitigation measures is included in
16 chapter 3 of the FEIS, environmental impacts are addressed as measures that may occur, as opposed
17 to measures that would occur, unless otherwise noted.

18 **Potential Future Mitigation Measures** – The mitigation and monitoring items listed under this
19 heading have been suggested and are items in which Rosemont Copper has expressed interest in
20 implementing. However, development of these measures has not progressed to the point that adequate
21 details are available from which to determine their effectiveness in avoiding, reducing, or
22 compensating for impacts. While these mitigation and monitoring items may eventually be
23 implemented, they are not considered in determination of mitigation effectiveness disclosed in
24 chapter 3 of the FEIS.

25 Monitoring measures described in this plan are primarily addressed as either implementation
26 monitoring or effectiveness monitoring. Implementation monitoring is primarily focused on
27 determining whether a mitigation measure or requirement has been implemented according to the
28 FEIS, ROD, final MPO, or pertinent permit. Effectiveness monitoring is primarily focused on
29 determining whether the results of implementing the mitigation measure or requirement achieve the
30 results predicted in the FEIS upon which the ROD and final MPO are based, and whether they
31 comply with applicable laws and regulations.

32 A number of supporting documents and permits contain detailed information on mitigation or
33 monitoring requirements. In order to avoid repetition, the following documents are incorporated by
34 reference in their entirety:

- 35 • HPTP;
- 36 • HMMP;
- 37 • APP issued by the ADEQ;
- 38 • Air Quality Class II Synthetic Minor Permit (air quality permit) issued by the ADEQ;
- 39 • Stormwater Pollution Prevention Plan;
- 40 • Mineral Extraction and Metallurgical Processing Groundwater Withdrawal Permit;
- 41 • Rosemont Copper Project Light Pollution Mitigation Recommendation Report (Monrad et al.
42 2012);
- 43 • USFWS BO (contained in appendix E of this FEIS);

- 1 • USACE Clean Water Act Habitat Mitigation and Monitoring Plan (included in this
2 appendix);
- 3 • Arizona Corporation Commission (ACC) Certificate of Environmental Compliance (CEC)
4 issued to Tucson Electric Power Company (TEP) for power supply line (Decision No. 73232
5 and Amendment 1, dated June 12, 2012);
- 6 • Memorandum of Agreement with Arizona State Historic Preservation Officer (contained in
7 appendix D of this FEIS);
- 8 • Protection Program Master Agreement, dated December 1, 2009, recorded in the Pima
9 County Recorder's Office January 15, 2012, Recorder's Sequence No. 20100100153, as
10 amended by Amendment No. 1, dated December 17, 2010, recorded in the Pima County
11 Recorder's Office on February 10, 2010, Recorder's Sequence No. 20110410243; together
12 with the individual Rosemont Copper Residential Well Protection Program Well Owner
13 Agreements (private, direct contractual agreements with well owners);
- 14 • Well Protection Program Master Agreement, dated June 19, 2012, originally recorded in the
15 Pima County Recorder's Office on June 20, 2012, Recorder's Sequence No. 20121720146
16 and re-recorded to correct a clerical error July 25, 2012, Recorder's Sequence No.
17 20122070247; together with the individual Rosemont Copper Residential Well Protection
18 Program Well Owner Agreements (private, direct contractual agreements with well owners).

19 It is important to note that there are a number of plans and permits that would contain additional
20 details pertaining to mitigation and monitoring that would not be completed until after approval and
21 issuance of the ROD. Many of these plans and permits are specific to the alternative that is selected
22 for implementation and therefore cannot be fully developed prior to approval of the ROD. The
23 mitigation and monitoring items contained in these plans and permits would be required either as a
24 component of the final MPO or as a permit requirement of a regulatory permitting agency.

25 **Reporting and Evaluation** – Monitoring would be evaluated annually after reports are reviewed to
26 determine whether the level of monitoring and or reporting is appropriate for the current conditions.
27 This review may result in a change in the monitoring requirements. Please refer to chapter 2 of this
28 FEIS for a discussion of monitoring reporting and evaluation.

29 **Mitigation and Monitoring – Forest Service**

30 The mitigation and monitoring in this section would be required by the Forest Service and included in
31 the ROD and final MPO. The impact analyses are disclosed in chapter 3 of the FEIS, and final
32 conclusions regarding impacts consider the effectiveness of these mitigation and monitoring
33 measures.

Geology, Minerals, and Paleontology

MITIGATION MEASURE	
Description	FS-GMP-01 - Upon discovery of paleontological resources, suspension of operations pending Forest Service review
Source	Upon discovery of significant paleontological resources, Rosemont Copper would suspend work at that site and the site would be investigated by the appropriate personnel before work resumes. The designated Forest Service representative would promptly coordinate the investigation with appropriate Forest Service or other specialist. Significant fossils may be recovered.
Impacts Mitigated	Coronado ID team.
Location	Compensates for significant impacts to paleontological resources by allowing data to be gathered and evaluated. Requires investigation and documentation of significant paleontological resources, should they be found during operations.
Monitoring / Reporting Action	Includes all areas with surface disturbance on National Forest System (NFS) lands. Implementation: Rosemont Copper would conduct visual inspections when conducting ground-disturbing activities. Upon discovery of significant paleontological resources, Rosemont Copper would suspend work at that site and notify the Forest Service, and the site would be investigated by the Forest Service before work resumes. Effectiveness: Should paleontological resources be discovered, work suspended, and subsequent investigation conducted, the Forest Service would conduct an "after action review" to determine whether visual inspections, reporting, and data collection/evaluation were effective in achieving desired results.
Performance Criteria	Implementation and Effectiveness: Upon discovery of significant paleontological resources, Rosemont Copper would suspend work at that site and contact the designated Forest Service representative to investigate the discovery before work is reinstated.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for monitoring ground-disturbing activities for the presence of significant paleontological resources and for suspending operations at the site of such discovery and notifying the Forest Service. The Forest Service is responsible for investigating in a timely manner any significant paleontological resources that are located so that the Rosemont Copper operational suspension period is minimized.
Timing	Implementation and Effectiveness: Premining through active mining phases, when initial ground disturbance would occur.
Applicable Alternatives	All action alternatives.
MITIGATION MEASURE	
Description	FS-GMP-02 - Upon discovery of a cave or sinkhole, suspension of operations pending Forest Service review
Source	Upon indication or discovery of a cave or sinkhole, Rosemont Copper would suspend work at that site and contact the designated Forest Service representative to investigate the discovery before work is reinstated. The designated Forest Service representative would promptly coordinate the investigation with appropriate agency resource specialists. Any natural void in rock that is large enough for a human to enter constitutes a cave. Any collapse feature in or over carbonate rock constitutes a sinkhole.
Impacts Mitigated	Coronado ID Team.
Location	May compensate for impacts to cave by allowing data to be gathered and evaluated. Requires investigation and documentation of significant cave or sinkhole, should they be found during operations.
Location	Includes all areas with surface disturbance on NFS lands.

MITIGATION MEASURE	
Monitoring / Reporting Action	FS-GMP-02 - Upon discovery of a cave or sinkhole, suspension of operations pending Forest Service review
	<p>Implementation: Visual inspections by Rosemont Copper when conducting ground-disturbing activities to determine whether any cave or sinkhole has been discovered. Upon discovery of such resources, Rosemont Copper would suspend work at that site and notify the Forest Service, and the site would be investigated in the same 24-hour period by the Forest Service before work resumes.</p> <p>Effectiveness: Should a cave or sinkhole be discovered, work suspended, and subsequent investigation conducted, the Forest Service would conduct an “after action review” to determine whether visual inspections, reporting, and data collection/evaluation were effective in achieving desired results.</p>
Performance Criteria	<p>Implementation: Visual inspections by Rosemont Copper would be conducted when performing ground-disturbing activities.</p> <p>Effectiveness: Upon discovery of cave or sinkhole, Rosemont Copper would suspend work at that site and contact the designated Forest Service representative to investigate the discovery before work is reinitiated.</p>
Responsible Party	<p>Implementation: Rosemont Copper is responsible for conducting monitoring and reporting to the Forest Service.</p> <p>Effectiveness: Rosemont Copper is responsible for suspending operations and notifying the Forest Service, should discoveries of a cave or sinkhole occur. The Forest Service is responsible for conducting investigation that in a timely manner within the same 24-hour period so that the Rosemont Copper operational suspension period is minimized.</p>
Timing	<p>Implementation and Effectiveness: Premining thorough final reclamation and closure phases.</p>
Applicable Alternatives	All action alternatives.

Soils and Revegetation

MITIGATION MEASURE	
Description	FS-SR-01 - Growth media salvage and application
	<p>Soil would be salvaged in accordance with the final reclamation and closure plan. This plan would also specify where and how this growth media would be stored and how and where it would be applied on tailings and waste rock facilities and other disturbed areas in order to facilitate revegetation of mine related disturbance. Hill slopes would be monitored for erosion. Conservation measures related to known lesser long-nosed bat roost protection measures would be followed.</p>
Source	<p>This is a design feature that was contained in the preliminary MPO and further refined in the “Preliminary Soil Salvage and Management Plan” (CDM Smith, July 2012). Erosion monitoring aspects were subsequently required by the Coronado. Final specifications would be developed and included in the final MPO for the selected action. The BO specifies that conservation measures to protect lesser long-nosed bat roosts be followed (see Terms and Conditions for lesser long-nosed bat).</p>
Impacts Mitigated	<p>Would provide substrate for improving the success of revegetation efforts; would enhance soil function and stability, which in turn would promote revegetation and reduce impacts to surface water quality from potential erosion; and would reduce impacts to visual resources.</p>
Location	All disturbed areas except the mine pit. Includes linear features such as utilities and pipelines and stormwater diversion structures.

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MITIGATION MEASURE	FS-SR-01 - Growth media salvage and application
<p>Monitoring / Reporting Action</p>	<p>Implementation: Weekly visual inspections during soil (growth media) salvage and storage activities to ensure compliance with specifications in final MPO, with results reported quarterly; visual inspections of recently reclaimed areas after significant rainfall events (0.5 inch or greater precipitation within 24-hour period) to determine whether there are signs of accelerated erosion and areas in need of stabilization. Rosemont Copper would determine soil texture soil surface particle size of growth media at the time that growth media is placed on the surface of the waste rock. Quarterly, Rosemont Copper would provide geographic information system (GIS) information on the approximate areas where growth media was placed, as well as soil texture, surface particle size, and chemistry of the growth media in these areas. A final reclamation and closure plan would be developed by Rosemont Copper and approved by the Forest Service prior to issuance of the final MPO.</p> <p>An adaptive management approach (DOI 2009) would be used to set and refine success criteria for revegetation and soil stability. Refinement of success criteria would be based on monitoring and evaluation of data collected on revegetated sites, reference plots, and test plots under the guidance of a monitoring group composed of Forest Service and other experts. Rosemont Copper and the Forest Service would use National Resources Conservation Service (NRCS) Ecological Site Descriptions (ESDs) to identify comparable reference site replications in the vicinity of the mine. Success criteria would be expressed as a percent similarity of revegetated sites, compared with reference areas. Success criteria would be based on quantitative monitoring results and statistical analyses/comparisons of results from reference sites, test plots, and ongoing site monitoring of previously reclaimed areas. Texture of growth media would follow established NRCS protocols. Monitoring of growth media, soil stability, and site characteristics on reference areas, test plots, and previously revegetated areas would provide quantifiable results and set up a data feedback loop to continually adjust success criteria and objectives by the monitoring group and to determine whether changes are needed in growth medium texture, site preparation, soil amendments, soil mycorrhizal inoculation, or other characteristics.</p> <p>Effectiveness: Soil stability measurements may include measurements of: soil surface particle size, litter and basal plant cover; rills, water flow patterns, pedestals/terraettes, gullies, wind-scoured areas, soil surface loss or degradation, plant community distribution relative to infiltration and runoff, soil surface aggregate stability, and soil compaction (USDI and USDA, 2000, <i>Interpreting Indicators of Rangeland Health Version 3</i>, Technical Reference 1734-6.) Reclaimed area monitoring results would be statistically compared with reference plot results to determine whether objectives are being met. Additional measurements across the reclaimed sites would be required to detect the presence of rills and gullies and to quantify soil movement. Adaptive management adjustments would be assessed to ensure their compliance with the current National Environmental Policy Act (NEPA) decision; supported by monitoring data results; and documented in the project monitoring and evaluation report. This includes monitoring of sediment buildup in flow channels and removal of sediment if necessary to maintain adequate flow capacity.</p>

FS-SR-01 - Growth media salvage and application	
MITIGATION MEASURE Performance Criteria	<p>Implementation: Growth media would be salvaged, stockpiled and placed in accordance with the final MPO in areas protected from mining operations that are stable, isolated from surface water, and gently sloping and well drained. Growth media stockpiles would be convex in shape and would have slopes no steeper than 3:1. Stockpiles would be revegetated with native species no later than the first growth season following the premining phase. Sediment control structures would be installed and other best management practices implemented as needed to protect growth media from loss (wind or rain runoff).</p> <p>Placement of growth media and revegetation efforts would be implemented concurrently with reclamation efforts. Areas to be reclaimed would be contoured, graded, prepared, and seeded and/or planted in accordance with the final reclamation plan.</p> <p>Specifications and goals for the salvage, storage, and reuse of growth media from disturbed areas would be developed with the goal of providing sufficient cover on all disturbed areas to be reclaimed. Additional treatments to stabilize soils, soil amendments, and/or soil mycorrhizal inoculations may be considered pending monitoring results. Monitoring results would be used to determine whether additional mitigation measures are needed to enhance plant success on growth medium types or to improve soil stability.</p> <p>Revegetated areas would have diverse and permanent vegetative cover composed of species and cover amounts similar to natural vegetation in the area (FSM 2070, 2008). Revegetated shrub and tree plantings would be scattered across the landscape in a random/patchy distribution to mimic natural vegetation patterns on adjacent undisturbed areas.</p> <p>Available, onsite woody debris from clearing of the mine site would be used on the reclaimed growth medium surfaces to provide stability, organic matter, and microhabitats for seed germination, invertebrates, and small vertebrate species. Density of woody debris would meet guidelines that are portrayed in the draft Coronado Forest Plan.</p> <p>Should soil texture, surface particle size, or soil stability not meet revegetation objectives of the final reclamation and closure plan, appropriate, site-specific measures would be developed by Rosemont Copper in cooperation with the Coronado. Measures may include: additional soil being placed onsite, soil amendments, soil stability measures, or other prescribed treatments.</p> <p>Effectiveness: Slopes with growth media placement would contain a minimum of 1 foot of cover; would be stable; and monitoring results would show no signs of unacceptable soil movement as determined in comparisons with reference sites, ESDs, test plots, and previously revegetated reclamation areas. Growth media would be sufficient to ensure seeding and planting would be successful in establishing desired plant species and communities in location zones specified in the final reclamation plan. Growth media texture, surface particle size, and soil stability measurements would meet interim and final reclamation and revegetation objectives of the final reclamation and closure plan. Sediment channels would maintain design capacity needed for adequate movement of stormwater.</p>
Responsible Party	<p>Implementation and Effectiveness: Rosemont Copper is responsible for conducting monitoring and reporting to the Forest Service on a quarterly basis. The Forest Service is responsible for establishing success criteria to determine whether the growth media is sufficient to support revegetation objectives of the final reclamation and closure plan and soil stability requirements; and to spot check revegetation success and soil stability on NFS lands throughout the year. The Forest Service would conduct annual (at a minimum) site inspections to review monitoring results in cooperation with Rosemont Copper to: determine whether success criteria have been met and cause/effect for better or worse results than predicted; if data (from reference sites, test plots, and revegetated plots) indicates the need for adjustments to growth medium or soil amendments, seed/plant application rates, site preparation; determine whether acceptable soil stability has been achieved; and determine the need for additional mitigation measures for more successful revegetation and increased soil stability. The Forest Service would evaluate monitoring results to determine and document compliance with NEPA decision and effectiveness of mitigation.</p>

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FS-SR-01 - Growth media salvage and application	
MITIGATION MEASURE	FS-SR-01 - Growth media salvage and application
Timing	<p>Implementation: Monitoring would begin when salvage of soil (growth media) begins and continue until the Forest Service determines that no further reclamation efforts (seeding, planting, site stabilization, etc.) are necessary to meet final objectives to be determined by the Forest Service at the time of the mine closure. Activities near known lesser long-nosed bat roosts would occur when lesser long-nosed bats are not present, typically during the period from November 1 to July 1 each year.</p> <p>Effectiveness: Monitoring would begin when salvage of soil (growth media) begins to ensure that storage pile(s) are stable and do not contribute large quantities of dust during wind events; continuing through placement of growth media to ensure that it is stable, placed according to final reclamation plan, and does not erode excessively.</p>
Applicable Alternatives	All action alternatives; areas having growth media applied differ with some alternatives. Refer to alternative descriptions in chapter 2 for further information.

FS-SR-02 - Revegetate disturbed areas with native species	
MITIGATION MEASURE	FS-SR-02 - Revegetate disturbed areas with native species
Description	Includes efforts to establish native grasses, forbs, shrubs, and trees on areas disturbed by mining and mine related activities. Revegetation would be protected by detection and treatment of invasive weed species. Revegetation efforts would consider use of species important to Native American cultural uses. Conservation measures related to known lesser long-nosed bat roost protection measures would be followed.
Source	This is a design feature that was contained in the preliminary MPO. Further refinements have been made in various reclamation updates, and efforts to further refine revegetation plans are currently ongoing by the Forest Service. The BO provides woody vegetation goals for jaguar habitat (see Conservation Measure J3) and Terms and Conditions for lesser long-nosed bats (see BO Terms and Conditions for lesser long-nosed bat).
Impacts Mitigated	Would reduce impacts to surface water quality from potential erosion; would reduce impacts to visual resources; vegetation enhances soil function and stability. Potentially provides wildlife habitat (including habitat for jaguar, ocelot, and lesser long-nosed bat); suitable livestock grazing conditions; establishment of culturally important plant species; and future recreational use. Would reduce invasive species establishment and spread.
Location	All disturbed areas except the mine pit. Includes linear features such as utilities and pipelines and stormwater diversion structures.

FS-SR-02 - Revegetate disturbed areas with native species	
MITIGATION MEASURE	
Monitoring / Reporting Action	<p>Implementation: Visual inspections of recently reclaimed areas would be performed after significant rainfall events (0.5 inch or greater precipitation within 24-hour period) to determine whether there are signs of accelerated erosion and areas in need of stabilization to determine whether there is sufficient growth medium onsite to ensure revegetation success. A revegetation plan would be developed by Rosemont Copper and approved by the Forest Service as part of the final reclamation and closure plan, prior to approval of the final MPO. The revegetation plan would address how the different plant communities, including woody species, would be dispersed across the landscape.</p> <p>Revegetation efforts, including maps, of approximate areas revegetated and acreage of initial seeding, seed/plant mix, seeding/planting application rate, propagation, and transplanting would be reported on an annual basis. The Forest Service would determine revegetation success using an adaptive management approach to set and refine success criteria based on quantitative monitoring results and statistical analyses/comparisons of results from reference sites, test plots, and ongoing revegetation efforts. Revegetation success would be defined as similarity to comparable reference sites.</p> <p>Certified 'weed free' sources of plant material and erosion control would be required. Seed and other organic material would be tested by an independent lab for noxious and invasive species prior to placement on the growth medium. An 'early detection' invasive plant species protocol such as the <i>Monitoring Procedure for the SWNC Exotic Plant Protocol</i> (Standard Operating Procedure #4), used by the National Park Service Sonoran Desert Inventory and Monitoring Network, or other protocol as approved by the Forest Service, would be implemented. 'Early detection' focuses on high-traffic areas such as roads and parking areas that serve as invasive seed transport corridors. All other disturbed areas would be monitored twice a year following the rainy seasons (typically but not always late September and late March). Infestations of invasive species would be treated as soon as they are identified, or as soon as weather conditions are appropriate for treatment.</p> <p>The BO includes a conservation measure that calls for 3 to 40 percent woody vegetation cover averaged over the reclamation area. Additional tree and shrub cover may be required in order to meet similarity requirements to reference sites. Monitoring vegetation and site characteristics on these three types of plots would provide quantifiable results and set up a data feedback loop to continually adjust success criteria, objectives, species to be used in seed mix/planting, and site preparation techniques. Adaptive management adjustments would be assessed to ensure their compliance with current NEPA decision; supported by monitoring data results; and documented in the project monitoring and evaluation report. Invasive plant control measures comply with the "Environmental Assessment for the Invasive Exotic Plant Management Program" (Coronado National Forest 2004). GIS data for treatment areas, description of species treated, and the type and amount of herbicides used would be reported to the Forest Service annually.</p> <p>Effectiveness: Annual quantitative monitoring and reporting of revegetation and soil stability would be required. Vegetation measurements may include: species richness, canopy cover, basal cover, density/frequency, and plant community structure. Revegetated plot results would be statistically compared with reference plot results to determine whether objectives are being met. Disturbed and revegetated areas would be surveyed for invasive species twice a year following winter and summer rains; and such locations would be mapped and actions taken to prevent, eliminate, or control invasive plants should they occur, in accordance with the final MPO.</p>
Monitoring / Reporting Action, continued	

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FS-SR-02 - Revegetate disturbed areas with native species	
MITIGATION MEASURE	
Performance Criteria	<p>Implementation: Percent similarity to reference sites would be established based on ESDs, reference plots, test plots, and ongoing monitoring of previously revegetated plots.</p> <p>Placement of growth media and revegetation efforts would be implemented concurrently with reclamation efforts. Areas to be revegetated would be contoured, graded, prepared, and seeded and/or planted in accordance with the final reclamation and closure plan. Rosemont Copper and the Forest Service would use NRCS ESDs to identify comparable reference site replications in the vicinity of the mine. Native species used for revegetation efforts would be approved by the Forest Service in advance and would meet those specified in the final reclamation plan. Species would be determined from NRCS ESDs, reference sites, and test plot results.</p> <p>The revegetation plan would include measures to meet the terms and conditions of the biological assessment.</p> <p>Species composition on revegetated sites would be similar to those found on reference sites, including: grasses, forbs, shrubs, and trees. Species considered would be capable of being self-sustaining and would include species with the ability to provide soil stability, achieve desired future conditions, and provide wildlife habitat and may include species that are culturally important to tribes.</p> <p>Reference site data would be used to calculate native species' occurrence, density, and cover and to set revegetation success criteria. Aspect, elevation, and topographic location would be considered when selecting reference sites and when quantifying comparisons between reference and revegetated sites.</p> <p>The presence of any noxious or invasive plants species would trigger treatment.</p> <p>Effectiveness: Growth medium characteristics and soil stability would be sufficient to meet revegetation objectives. ESDs, test plots, and previously revegetated reclamation areas would be used to establish appropriate plant species to be revegetated and set success criteria. Seeding and planting would be successful in establishing desired plant species and communities in location zones specified in the final reclamation plan. Vegetation species and density would be similar to reference sites as determined by the adaptive management data feedback loop by the monitoring group.</p> <p>Visits after invasive plant species treatments would determine the effectiveness of treatments and whether additional treatments are required.</p>
Responsible Party	<p>Implementation and Effectiveness: The Forest Service is responsible to ensure that the requirements of the BO to provide for threatened and endangered species habitats are met. The Forest Service is responsible for consultation with tribes regarding culturally important plant species.</p> <p>Rosemont Copper is responsible for conducting monitoring and reporting to the Forest Service. The Forest Service is responsible for establishing success criteria and revegetation objectives based on similarity to reference sites and the adaptive management process. The Forest Service would spot check revegetation success and site stability on NFS lands throughout the year. The Forest Service would conduct annual (at a minimum) site inspections to review monitoring results in cooperation with Rosemont Copper to: determine whether success criteria have been met and cause/effect for better or worse results than predicted; if data (from reference sites, test plots and revegetated plots) indicates the need for adjustments to seed/plant mix, seed/plant application rates, site preparation; determine whether acceptable soil stability has been achieved; and determine the need for additional mitigation measures for revegetation and soil stability. The Forest Service would evaluate monitoring results to determine and document compliance with NEPA decision and effectiveness of mitigation.</p> <p>Rosemont Copper is responsible for monitoring, treatment, follow-up treatments, and reporting to the Forest Service. Reports would include: species, maps, population estimates, treatment method(s), and the amount of chemical herbicide used.</p>

MITIGATION MEASURE	
Timing	FS-SR-02 - Revegetate disturbed areas with native species
	<p>Implementation: Monitoring would begin when salvage of soil (growth media) begins during the premining phase and would continue until the Forest Service determines that no further revegetation efforts (seeding, planting, site stabilization, etc.) are necessary to meet the revegetation plan and final reclamation and closure plan and objectives during final reclamation and closure or postclosure phases. Activities near known lesser long-nosed bat roosts would occur when lesser long-nosed bats are not present, typically during the period from November 1 to July 1 each year.</p> <p>Invasive plant monitoring would begin immediately and follow agreed-upon protocols.</p> <p>Effectiveness: Revegetation effectiveness monitoring would begin with initial seeding or planting during the active mining phase and would continue until the Forest Service determines that final reclamation objectives for revegetation and site stability have been met during final reclamation and closure or postclosure phases.</p> <p>All action alternatives.</p>
Applicable Alternatives	
MITIGATION MEASURE	
Description	FS-SR-03 - Concurrent placement of perimeter buttress
	<p>This mitigation involves constructing a buttress formed of waste rock surrounding and encapsulating the compacted tailings. Conservation measures related to known lesser long-nosed bat roost protection measures would be followed.</p> <p>This is a design feature that was contained in the preliminary MPO and is required by the APP. The BO specifies that conservation measures to protect lesser long-nosed bat roosts be followed (see Terms and Conditions for lesser long-nosed bat).</p> <p>Would reduce impacts to surface water due to erosion potential by beginning reclamation and vegetation recovery earlier and concurrently with mining operations; would reduce impacts to visual quality by eventually blocking the view of most of plant site and structures; would reduce risk of impacts to groundwater from potential acid generation through proper placement of neutralizing waste rock materials.</p> <p>Completely surrounding the dry-stack tailings and waste rock/heap leach facilities (heap leach is not included in Alternative 4 – Barrel Alternative).</p>
Source	
Impacts Mitigated	
Location	
Monitoring / Reporting Action	<p>Implementation: Weekly visual inspections and quarterly reporting to ensure that: (1) placement is within the footprint specified in the FEIS, ROD, and final MPO; (2) geometry of facility adheres to specifications in the final MPO; (3) waste rock placement in facility is placed according to APP and stacking plan from the final MPO; and (4) facilities are stable. Slopes would be configured to support successful revegetation.</p> <p>Effectiveness: Weekly visual inspections and quarterly reporting of status and condition of perimeter buttress construction, including excessive erosion, if any; and results of acid rock drainage monitoring. Annual monitoring of effectiveness of perimeter buttress in blocking the view of the plant site from selected viewpoints.</p>
Performance Criteria	<p>Implementation: Perimeter buttress would be located within the footprint depicted in the FEIS, ROD, and final MPO; benched waste rock buttresses would be generally no less than 150 feet wide at the crest and would have an overall crest-to-toe slope of about 3.5:1 (horizontal: vertical); slopes would generally be 3:1 between benches; slopes would be stable with no major failures or erosion. Surface deformation, slides, sloughs, and settlement would not affect stability; materials would be placed according to ADEQ approved waste rock segregation plan (APP).</p> <p>Effectiveness: Monitoring would indicate that acid rock drainage meets predictions in FEIS and ROD and does not contaminate ground or surface waters; surfaces would be stable and excessive erosion would not occur; view of plant site would be reduced from most viewpoints.</p>

FS-SR-03 - Concurrent placement of perimeter buttress	
MITIGATION MEASURE	
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for conducting monitoring of perimeter buttress construction, location, and condition and reporting to the Forest Service. Rosemont Copper is responsible for conducting water quality monitoring and reporting to the Forest Service and ADEQ. ADEQ is responsible for determining compliance with APP. The Forest Service is responsible for conducting and reporting monitoring of visual screening.
Timing	Implementation and Effectiveness: Would commence when construction of perimeter buttress begins and would continue until buttress construction has been completed. Activities near known lesser long-nosed bat roosts would occur when lesser long-nosed bats are not present, typically during the period from November 1 to July 1 each year.
Applicable Alternatives	All action alternatives.

Other Monitoring Items for Soils and Revegetation

FS-SR-04 - Slope stability monitoring	
MONITORING MEASURE	
Description	Rock slopes within the mine pit would be remotely monitored for movement.
Source	Coronado ID team.
Purpose	Would determine whether mine pit geometry is within the range specified in the final MPO and would assess the risk of collapse of the high wall and alteration of the Santa Rita ridgeline.
Location	Mine pit.
Monitoring / Reporting Action	Implementation: Appropriate reflectors/monitoring points would be installed as pit progresses in depth. Effectiveness: Potential movement of the high wall would be monitored remotely using survey equipment/reflectors, as is typically conducted for safety considerations. Rosemont Copper would provide results on a quarterly basis to ensure compliance with specifications in the final MPO.
Performance Criteria	Implementation: The monitoring plan and specific monitoring points are sufficient for assessing the potential for movement or collapse of high wall. Effectiveness: Movement would show no potential for collapse of high wall.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for conducting monitoring and reporting to the Forest Service on a quarterly basis.
Timing	Implementation: Continuously throughout life of mine as pit deepens. Effectiveness: Monitoring would begin when pit construction advances past the first horizontal bench.
Applicable Alternatives	All action alternatives.

FS-SR-05 – Sediment transport monitoring	
MONITORING ITEM	
Description	This monitoring item would monitor the movement of sediment within the channel of Barrel Canyon, including any aggradation or scour.
Source	Coronado ID team.
Purpose	Would determine whether erosion and downstream geomorphological changes are within the range of impacts described in the NEPA decision.
Location	Barrel Canyon from compliance point dam downstream to SR 83 bridge. Would include assessment of scour/aggradation at bridge itself.

MONITORING ITEM	
Monitoring / Reporting Action	FS-SR-05 – Sediment transport monitoring
	Implementation and Effectiveness: Baseline conditions would be established prior to mine construction (before premining phase), and periodic comparison monitoring would be conducted every 5 years. Baseline condition determination and subsequent monitoring would use techniques that are sufficient to describe areas along the sandy wash bottom of Barrel Canyon where the surface elevation has increased from baseline, decreased from baseline, or remained the same.
Performance Criteria	Implementation and Effectiveness: Monitoring would be performed and reported to Coronado every 5 years. Reporting would include comparison of current conditions to baseline measurement and assess trends of any geomorphological changes.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for conducting monitoring and reporting to the Forest Service.
Timing	Implementation and Effectiveness: Premining through final reclamation and closure phases.
Applicable Alternatives	All action alternatives.

Groundwater Quantity and Quality

MONITORING MEASURE	
Description	FS-GW-01 - Monitoring of waste rock for seepage
	The waste rock facility is not predicted to allow infiltration of precipitation and subsequent seepage. Monitoring equipment (such as collection pans or lysimeters) would be encapsulated within the waste rock in order to remotely assess the moisture content of the waste rock, and allow for collection and analysis of seepage if any is generated.
Source	Coronado ID team.
Purpose	Would determine whether seepage is occurring, which would be outside the effects predicted in the NEPA analysis.
Location	Lower lifts of the waste rock facility. Monitoring would include at least two monitoring locations within the waste rock buttresses surrounding the tailings facility, and at least two monitoring locations within the waste rock facility itself.
Monitoring / Reporting Action	Implementation: Rosemont Copper would provide detailed locations of seepage monitoring equipment and would present a detailed methodology for monitoring.
	Effectiveness: Rosemont Copper would monitor moisture content on a quarterly basis to ensure lack of seepage from waste rock facility. In the event seepage occurs, leachate would be collected and sampled on a quarterly basis.
Performance Criteria	Implementation: Monitoring equipment would be installed in lower lift of waste rock facility. Effectiveness: Moisture content of waste rock would indicate that seepage is not occurring, and sampling and analysis of leachate if seepage occurs.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for conducting monitoring and reporting to the Forest Service on a quarterly basis.
Timing	Implementation: Installation would be conducted during the construction of the initial lifts of the waste rock facility. Effectiveness: Monitoring would begin upon installation and would continue throughout the active mining phase.
Applicable Alternatives	All action alternatives.

B. Mitigation and Monitoring Plan

MONITORING MEASURE	
Description	FS-GW-02 – Water Quality Monitoring beyond Point-of-Compliance Wells
Source	Groundwater quality sampling at locations other than required under the Arizona APP. Required by the Coronado.
Purpose	Determine in-situ changes in the quality of Forest groundwater resources, beyond the capture zone of the mine pit, potentially triggered by groundwater drawdown.
Location	Up to 10 springs, and up to 16 wells (15 existing wells, 1 proposed new well [see FS-BR-24])
Monitoring / Reporting Action	Implementation: The Forest has provided Rosemont with a potential list of monitoring wells, piezometers, or boreholes that may be able to be sampled. Rosemont will conduct field investigations to determine the ability to collect applicable and pertinent water samples from these locations, and based on these results Forest would determine a final monitoring list. The final monitoring list must have appropriate geographic coverage sufficient to monitor changes in the quality of Forest groundwater resources. The Forest would coordinate with Rosemont to produce a detailed sampling plan, including: 1) quality assurance protocol, 2) sampling protocol, 3) detailed analyte list, 4) sampling frequency and criteria for future reduction or modification of sampling frequency, 5) criteria for defining baseline or ambient groundwater quality, 6) definition of non-regulatory water quality thresholds against which to compare results, 7) reporting requirements, 8) protocol to be followed in the event a water quality threshold is exceeded (i.e., increased sampling frequency, other investigative approaches, or remedial action), 9) criteria for determining conclusion of monitoring, and 10) a procedure to review and request changes to the level of monitoring. Effectiveness: Rosemont would conduct groundwater sampling at the specified wells and springs. Samples would only be required from flowing springs, and from wells able to be sampled (i.e., not dry, obstructed, etc.). Frequency would be determined in detailed sampling plan. A likely scenario would be to require quarterly sampling to establish baseline or ambient groundwater quality, which would also take into account existing water quality samples already collected by Rosemont, followed by annual sampling at wells and semi-annual sampling at springs, unless major changes in water quality occur associated with observed water table drawdown or reduced flow in springs. Specific analytes would be determined in the detailed sampling plan, but would in general include metals and inorganic analytes. Rosemont would report results of sampling annually to Forest as a part of the annual reporting and electronically in a format acceptable to the Forest.
Performance Criteria	Implementation: Ability to sample wells is determined, final list of wells is determined, and detailed sampling plan is prepared. Effectiveness: Sampling and reporting is conducted as per detailed sampling plan.
Responsible Party	Implementation: The Forest is responsible for providing a list of potential wells, evaluating Rosemont field investigation data, and for determining final well locations and providing this list to Rosemont. Rosemont is responsible for conducting field investigations on final potential list of wells. Rosemont is responsible for preparing detailed sampling plan, with review and approval by Forest as a part of the plan of operations Effectiveness: Rosemont is responsible for sampling and reporting. The Forest is responsible for review and interpretation of sampling results.
Timing	Implementation: Selection of wells and detailed sampling plan to be included as part of final MPO. Effectiveness: Baseline sampling would begin during or before ground disturbance. Sampling would continue through operations, closure, and post-closure period (as per criteria determined in detailed sampling plan).
Applicable Alternatives	All action alternatives.

Wells and Springs to Be Potentially Monitored in Relation to FS-GW-02

Well or Spring	Cadastral Location	Well Name
Well	(D-18-16) 20dbc	HC-4A and HC-4B
Well	(D-18-15) 35abc	DH-1445
Well	(D-18-16) 28aba	RP-2B and RP-2C
Well	(D-18-16) 29bbd	P-899
Well	(D-18-16) 30bab	HC-5A and HC-5B
Well	(D-19-16) 04ddb	DH-1541
Well	(D-19-16) 06cca	RP-5
Well	(D-19-16) 01bab	HC-1A and HC-1B
Well	(D-18-16) 30bd	C-1
Well	(D-19-15) 01aac	HC-6
Well	To be determined	Proposed New Well [See FS-BR-24]
Spring	(D-19-15) 1dbd	Deering Spring
Spring	(D-18-16) 32bbc	Rosemont Spring (until buried)
Spring	(D-18-16) 9dbb	Lower Mulberry Spring
Spring	(D-18-16) 9abc	Mulberry Spring
Spring	(D-18-16) 29bda	McCleary Dam
Spring	(D-18-16) 27ddd	Questa Spring
Spring	(D-18-16) 19ccd	MC-2 Spring
Spring	(D-18-16) 19abb	Fig Tree Spring
Spring	(D-18-15) 14dba	Helvetia Spring
Spring	(D-18-15) 12dba	Sycamore Spring

MONITORING MEASURE		FS-GW-03 – Additional operational waste rock and tailings characterization
Description	Waste rock characterization and segregation is required during operations under the APP [see OA-GW-02]. This supplementary monitoring measure involves additional waste rock and tailings characterization analysis during operations.	
Source	Required by the Coronado.	
Purpose	The characterization required under the APP, though compliant with ADEQ methodologies for segregating potentially acid-generating material and for providing information on metals reactivity, may not provide detailed information on the composition and potential long-term, post-closure behavior of waste materials with respect to acid generation and metals leaching. This would better inform the Forest's long-term management of the waste rock and tailings facilities, including management responsibilities that would continue after release of bonding and after discontinuation of surface and groundwater quality monitoring under the APP.	
Location	Blast face; waste rock facilities and waste rock perimeter buttress locations; tailings facility.	

B. Mitigation and Monitoring Plan

FS-GW-03 – Additional operational waste rock and tailings characterization	
MONITORING MEASURE	
Monitoring / Reporting Action	<p>Implementation: The Forest would coordinate with Rosemont to produce a detailed waste rock/tailings characterization sampling plan, including: 1) quality assurance protocol, 2) compositing methodology, 3) sampling protocol, 4) detailed analyte list, 5) completion requirements for kinetic testing, and 6) reporting requirements.</p> <p>Effectiveness: Monitoring would consist of five general components: 1) collection of samples, 2) additional analysis on potentially acid generating waste rock, 3) additional analysis on non acid-generating waste rock, 4) analysis of tailings and process water, and 5) reporting.</p>
Monitoring / Reporting Action	<p>Sample Collection Rosemont would already be collecting composite samples from potentially acid-generating waste rock, and random samples from all waste rock, as required under the Waste Rock Segregation Plan (OA-GW-02). The additional analysis required under FS-GW-05 would make use of the same samples already being collected.</p> <p>As described under Waste Rock Segregation Plan, “Sample selection will be distributed based on the rock types/lithologies encountered during the sampling period/increment.” Rosemont would ensure that the samples provided for additional analysis are representative of the majority of waste rock excavated during the sampling period.</p>
Monitoring / Reporting Action	<p>Additional Analysis of Potentially Acid-Generating Waste Rock</p> <ul style="list-style-type: none"> - One sample would be collected for every 250,000 tons of potentially acid-generating (PAG) waste rock. This sample would be collected in conjunction with the composite sampling of potentially acid-generating waste rock already being conducted under the Waste Rock Segregation Plan. This sample would be analyzed for: <ul style="list-style-type: none"> o Whole rock chemical analysis o Detailed visual descriptions of mineralogy present o Quantitative mineralogical analysis - One sample would be collected every 6 months for humidity cell testing. Humidity cell testing would be initiated on this sample and would continue running until completion criteria are met (as defined in the detailed waste rock/tailings characterization sampling plan). Upon completion, cells would be disassembled using an established procedure designed to clarify the conditions in the cell. - Petrographic analysis is not required. In the event a problem is identified that requires such analysis, the Forest will request Rosemont investigate the potential of obtaining it from existing cores.
Monitoring / Reporting Action	<p>Additional Analysis of Non Acid-Generation Waste Rock</p> <ul style="list-style-type: none"> - One sample would be collected for every 5,000,000 tons of non acid-generating (NAG) waste rock. This sample would be collected in conjunction with the weekly random sampling of waste rock already being conducted under the Waste Rock Segregation Plan. This sample would be analyzed for: <ul style="list-style-type: none"> o Whole rock chemical analysis o Detailed visual descriptions of mineralogy present o Quantitative mineralogical analysis

MONITORING MEASURE	
Monitoring / Reporting Action	FS-GW-03 – Additional operational waste rock and tailings characterization
	<p>Additional Analysis of Tailings and Process Water</p> <ul style="list-style-type: none"> - One grab sample of tailings would be collected monthly, to be collected from a location that does not interfere with normal operation of the mine. This sample would be analyzed for: <ul style="list-style-type: none"> o Whole rock chemical analysis o Quantitative mineralogical analysis - One sample would be collected annually for humidity cell testing. Humidity cell testing would be initiated on this sample and would continue running until completion criteria are met (as defined in the detailed waste rock/tailings characterization sampling plan). Upon completion, cells would be disassembled using an established procedure designed to clarify the conditions in the cell. - One sample of process water would be collected quarterly. The intent is to analyze water that is similar in nature to that entrained with the tailings; the collection location would be consistent with that intent. Quarterly, process water would be analyzed for inorganics and metals (exact analytes would be determined in the detailed waste rock/tailings characterization plan). Annually, process water would also be analyzed for organic and radiochemical constituents.
Monitoring / Reporting Action	<p>Reporting: Reporting would be conducted annually. Exact reporting requirements would be identified in the detailed waste rock/tailings characterization plan. In general, reporting would summarize the analysis conducted during the previous year, including the most recent results from humidity cells that might still be running and not yet completed and the results from the completed cells disassembled that year. Reporting would also make use of the geologic descriptions and mineralogical analysis conducted to cross-reference the samples collected during the previous year with waste rock characterization tests conducted during prior years and those conducted prior to operations. The goal is to develop an ongoing comprehensive data set of the reactivity of specific geologic units that spans both pre-operation and operational time frames.</p>
Performance Criteria	<p>Implementation: Detailed waste rock/tailings characterization plan is produced and approved prior to the final MPO. Effectiveness: Sampling and reporting is conducted as per detailed waste rock/tailings characterization sampling plan. This plan will include an opportunity to request changes to the level of the sampling and the criteria to determine the appropriateness of the request.</p>
Responsible Party	<p>Implementation: Rosemont is responsible for preparing detailed waste rock/tailings characterization sampling plan, with review and approval by Forest. Effectiveness: Rosemont is responsible for sampling, reporting, and evaluation. The Forest is responsible for review and interpretation of sampling results.</p>
Timing	<p>Implementation: Active mining phase. Effectiveness: Active mining phase.</p>
Applicable Alternatives	<p>All action alternatives.</p>

Surface Water Quantity and Quality

MITIGATION MEASURE	
FS-SW-01 - Location, design, and operation of facilities and structures intended to route stormwater around the mine and into downstream drainages	
Description	<p>This mitigation involves the design, location and operation of stormwater diversion facilities in order to maintain flow downstream and avoid contact with processing facilities and ore stockpiles.</p>

B. Mitigation and Monitoring Plan

FS-SW-01 - Location, design, and operation of facilities and structures intended to route stormwater around the mine and into downstream drainages	
MITIGATION MEASURE	FS-SW-01 - Location, design, and operation of facilities and structures intended to route stormwater around the mine and into downstream drainages
Source	This is a design feature of the preliminary MPO that has been revised for the various action alternatives. The Arizona Pollutant Discharge Elimination System Multi-Sector General Permit does not require but does encourage consideration of diversion structures.
Impacts Mitigated	Would reduce risk of flooding damage to mine facilities; would allow noncontact stormwater to flow into natural drainages. Diversions designed and operated to route stormwater through or around project facilities would reduce loss of surface water and groundwater flows in drainage downstream of mine facility.
Location	Pit and permanent diversion channels; flow-through drains and drainage basins (proposed action, Phased Tailings, and Barrel Trail Alternative only); drop structures, compliance point pond and dam (sediment control structures).
Monitoring / Reporting Action	Implementation: Complete inspection would be performed when these facilities are constructed to ensure consistency with location and specifications contained in the final MPO. Effectiveness: Quarterly visual inspections would be performed to identify physical conditions that could reduce the ability of the facilities and structures to function properly, and appropriate actions would be taken. Quarterly and during/after significant rainfall/surface water flow events, a visual inspection would be performed of all structures to ensure proper routing of water and identify corrective actions as needed. Permanent facilities may need postclosure monitoring for a period of time to be determined to ensure continued effectiveness.
Performance Criteria	Implementation: Facilities would be constructed in locations and to specifications contained in final MPO. Effectiveness: Structures would be stable and would show no excessive erosion, settling, slumping, or deformation that could affect water routing. Water would be routed to desired natural features (washes) in an efficient manner. Permanent facilities would be designed to minimize the need for long-term maintenance postclosure.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for conducting monitoring and reporting to the Forest Service.
Timing	Implementation: During construction (premining phase) to ensure compliance with final MPO.
Applicable Alternatives	Effectiveness: Throughout premining, active mining, and final reclamation and closure phases. All action alternatives. Note that not all structures apply to all alternatives. Refer to alternative descriptions in chapter 2 for further information.
FS-SW-02 - Stormwater diversion for Barrel Alternative designed to route more stormwater into downstream drainages postclosure	
MITIGATION MEASURE	FS-SW-02 - Stormwater diversion for Barrel Alternative designed to route more stormwater into downstream drainages postclosure
Description	This mitigation reflects the results of an effort to apply the concepts of geomorphic reclamation to the Barrel Alternative. The result is a design that would route more stormwater into downstream drainages postclosure than previous designs.
Source	Coronado ID team.
Impacts Mitigated	Would reduce impacts to surface flows and groundwater in drainages downstream by allowing more stormwater delivery into natural drainages (washes). Design grades the tops of facilities to shed water to lower benches, where water would move laterally until reaching concrete drop structure and/or discharged into a diversion channel and then into a natural drainage. Channel would be built to drain plant site to McCleary Canyon. Postclosure, no water would be stored on waste rock or tailings facilities.
Location	Tailings, waste rock, and plant facilities; benches designed to move stormwater laterally; diversion channels; and concrete drop structures.

MITIGATION MEASURE	
Monitoring / Reporting Action	FS-SW-02 - Stormwater diversion for Barrel Alternative designed to route more stormwater into downstream drainages postclosure
	<p>Implementation: Complete inspection would be performed when these facilities are constructed to ensure consistency with location and specifications contained in the final MPO.</p> <p>Effectiveness: Quarterly visual inspection would be performed of facility integrity and to ensure water delivery is occurring efficiently and sufficient channel capacity exists; additional inspections would be performed during and following significant rainfall events (0.5 inch or greater precipitation within 24-hour period).</p>
Performance Criteria	<p>Implementation: Monitoring would ensure that construction adheres to final MPO.</p> <p>Effectiveness: Facilities would be stable over time without excessive erosion and would effectively deliver stormwater into natural drainages.</p>
Responsible Party	<p>Implementation and Effectiveness: Rosemont Copper is responsible for conducting monitoring and reporting to the Forest Service.</p>
Timing	<p>Implementation: During construction (premining phase) to ensure compliance with final MPO.</p> <p>Effectiveness: During active mining phase to ensure water delivery is effective and complies with final MPO. Monitoring postclosure for a period of time to be determined ensures that facilities would operate with no or minimal maintenance.</p>
Applicable Alternatives	Alternative 4 – Barrel Alternative only.

Seeps, Springs and Riparian

MITIGATION MEASURE	
Description	FS-SSR-01 - Purchase of water rights, to be used for compensating for impacts in the Cienega Creek watershed
	<p>This mitigation would require the following actions in the Cienega Creek Watershed:</p> <p>Rosemont Copper would purchase approximately 1,122 acre-feet of surface water rights held by Del Lago Golf Course, to be used to enhance aquatic habitat values in the Cienega Creek watershed for Federal threatened and endangered species and for riparian resources. This would include the severance and transfer of portions of surface water rights to appropriate entities to become in-stream flow rights on Lower Cienega Creek and Davidson Canyon within the Cienega Creek Natural Preserve; and in-stream flow rights on Upper Cienega Creek within the Las Cienegas National Conservation Area. This would also include the discharge of a portion of the water right below Pantano Dam in order to establish groundwater recharge credits, which would also create an enhanced riparian corridor below Pantano Dam within the Cienega Creek Natural Preserve. These water rights would be transferred to the Arizona Game and Fish Department (AGFD) and Pima County, or another entity authorized under Arizona law to hold a surface water right for recreation and wildlife purposes, in accordance with the BO.</p> <p>Rosemont Copper would also acquire and retire a groundwater well on lands associated with Pantano Dam in order to eliminate impacts to surface water in Cienega Creek from the withdrawal of groundwater.</p> <p>Refer to the Conservation Measures in the BO for further detail.</p>
Source	<p>Rosemont Copper identified this mitigation measure as a component of the Clean Water Act Section 404 permitting process; it is also required by the BO.</p>
Impacts Mitigated	<p>Would partially mitigate for potential impacts to jaguar, ocelot, Chiricahua leopard frog, Gila chub, Gila topminnow, Huachuca water umbel, western yellow-billed cuckoo, and southwestern willow flycatcher, as well as aquatic and riparian vegetation.</p>
Location	Cienega Creek watershed.
Monitoring / Reporting Action	<p>Implementation and Effectiveness: In accordance with requirements in the BO.</p>

MITIGATION MEASURE	FS-SSR-01 - Purchase of water rights, to be used for compensating for impacts in the Cienega Creek watershed
Performance Criteria	Implementation and Effectiveness: In accordance with requirements in the BO.
Responsible Party	Implementation: Rosemont Copper is responsible for purchasing water rights and assigning them in the manner specified in the BO. Effectiveness: In accordance with requirements in the BO.
Timing	Implementation and Effectiveness: Throughout the life of the project (premining through final reclamation and closure phases) and for 5 years following mine closure.
Applicable Alternatives	All action alternatives.

Other Monitoring Items for Seeps, Springs, and Riparian Areas

MONITORING ITEM	FS-SSR-02 - Spring, seep, and constructed/enhanced waters monitoring
Description	A suite of 25 seeps and springs has been monitored for baseline conditions since 2007 and would continue to be monitored to identify any impacts that may occur due to dewatering of the regional aquifer in the vicinity of the mine pit. Rosemont Copper has committed to enhancing or replacing up to 30 water sources to offset potential impacts to surface waters (see FS-BR-05), and the performance and success of these waters would be monitored as well. The Cienega Creek Watershed Conservation Fund (FS-BR-16) could be used for monitoring of success of replacement or enhanced water features. If springs levels decrease, mitigation could come from this fund.
Source	Monitoring of constructed waters as required under BO Conservation Measures; monitoring of seeps and springs was proposed by Rosemont Copper.
Purpose	To measure effects of groundwater drawdown and to determine whether decreased water levels are due to mine activities. Surface water level is monitored in a variety of locations.
Location	As specified in the BO. Suite of springs shown in table below. Prior to implementation all available data, including prior spring surveys, would be reviewed and sites agreed upon for usefulness for inclusion in the monitoring list.
Monitoring / Reporting Action	Implementation: Baseline condition of springs would be assessed, including extent of riparian habitat, presence/absence of water, extent of standing or flowing water, photographs, and flow measurements if possible. Effectiveness: Measurement of spring condition (presence/absence of water, photographs, flow measurements if possible) twice per year, with results reported to the Forest Service. Up to 3 springs may be monitored more frequently using automated equipment, pending the ability to install such equipment without interfering with spring function or cultural significance of springs (Sycamore Spring, Questa Spring, Deering Spring). Discontinuation of monitoring of individual springs may be considered if observations indicate the absence of standing water, flowing water, or other indications of subsurface water (damp ground riparian vegetation).
Performance Criteria	Implementation: Baseline condition of springs and other water resources would be accurately documented. Effectiveness: Monitoring would accurately record spring condition.
Responsible Party	Implementation: Rosemont Copper is responsible for baseline monitoring of springs. Forest Service is responsible for determining spring locations and obtaining access for any springs not located on public lands.
Timing	Effectiveness: Rosemont Copper is responsible for conducting monitoring and reporting to the Forest Service. Implementation: During premining to establish baseline conditions. Effectiveness: From issuance of the ROD to 5 years postclosure.

MONITORING ITEM		FS-SSR-02 - Spring, seep, and constructed/enhanced waters monitoring	
Applicable Alternatives	All action alternatives.		
<i>Springs to be Monitored in relation to SSR-02</i>			
Cadastral Location		Spring Name	
(D-19-15)1dbd		Deering Spring	
(D-19-15)1bdb		Locust Spring	
(D-18-16)32bbc		Rosemont Spring	
(D-19-15)1bbb		SW	
(D-18-16)9d1bb		Lower Mulberry Spring	
(D-18-16)9cbd		Crucero Spring	
(D-18-16)9abc		Mulberry Spring	
(D-18-16)30abc		MC-1 Spring	
(D-18-16)29bda		McCleary Dam	
(D-18-16)27ddd		Questa Spring	
(D-18-16)19ccd		MC-2 Spring	
(D-18-16)19abb		Fig Tree Spring	
(D-18-16)17acc		SC-2 Spring	
(D-18-16)16ccc		Scholefield Spring (SC-1)	
(D-18-16)16bba		Papago Spring	
(D-18-16)14cab		Barrel Spring	
(D-18-15)35bdc		Ruelas Spring	
(D-18-15)24dcc		Peligro Adit	
(D-18-15)14dba		Helvetia Spring	
(D-18-15)13aab		SS-2	
(D-18-15)12dba		Sycamore Spring	
(D-17-17)6bdd		Reach 2 Spring	
(D-16-17)30abd		Escondida Spring	
(D-18-15)14bcd		Shamrod Spring	
(D-18-15)14ada		Zackendorf Spring	

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FS-WUS-01 – Recordation of a restrictive easement on private land parcels in Davidson Canyon to compensate for impacts to WUS and to provide other benefits	
MITIGATION MEASURE	
Description	This mitigation would require Rosemont Copper to record restrictive covenants on the Davidson Canyon Watershed Parcels. These parcels total 383 acres in Davidson Canyon. The restrictive covenant would preclude real-estate development and similar land use activities and would restrict grazing activities. The parcels include ephemeral wash and riparian habitat along approximately 5,000 feet of Davidson Canyon and approximately 3,000 feet of Barrel Canyon and portions of Mulberry Canyon and the East Fork of Davidson Canyon. Approximately 15.5 acres of ephemeral drainages are included, including three springs, 40 acres of riparian habitat, and 190 acres of upland buffer habitat adjacent to riparian. Managed grazing, cultural, and some low-impact public use (hiking, bird watching, minor forms of hunting, etc.) would be allowed in some locations.
Source	Clean Water Act Section 404 Permit Habitat Mitigation and Monitoring Plan (HMMP); BO Conservation Measures; and Term and Condition for lesser long-nosed bats.
Impacts Mitigated	Would compensate for loss of WUS; loss of habitat for listed species (including Chiricahua leopard frog, jaguar, and ocelot); loss of riparian habitat; loss of upland buffer habitat; and loss of recreational use. Potentially compensates for cultural impacts to Native Americans by allowing reasonable access to culturally important areas.
Location	Davidson Canyon Watershed Parcels (see Section 404 HMMP in this appendix).
Monitoring / Reporting Action	Implementation: Recordation of a restrictive covenant in accordance with the BO and the 404 permit would be required. A copy of said restrictive covenant would be provided to the Forest Service. Effectiveness: In accordance with requirements in the 404 permit and/or BO, if any.
Performance Criteria	Implementation: Restrictive covenant would restrict and allow land uses in accordance with requirements specified in BO and/or 404 permit. Such restrictive covenant would be recorded in the time frame specified in the BO and 404 permit process. Effectiveness: In accordance with requirements in the 404 permit and/or BO, if any.
Responsible Party	Implementation: Rosemont Copper is responsible for crafting and recording a restrictive covenant that meets the requirements specified in the 404 permit and/or BO. Effectiveness: In accordance with requirements in the 404 permit and/or BO, if any.
Timing	Implementation: In accordance with requirements in the 404 permit and/or BO. Effectiveness: In accordance with requirements in the 404 permit and/or BO, if any.
Applicable Alternatives	All action alternatives.

Biological Resources

FS-BR-01 - Plant site location and design adjustments to reduce impacts to biological resources	
MITIGATION MEASURE	
Description	The entire plant site is sited and designed to reduce its size and overall footprint and to use gravity instead of pumping to move process water where possible. Specific plant site details are contained in the preliminary MPO and chapter 2 alternatives descriptions.
Source	This is a design feature of the preliminary MPO.

FS-BR-01 - Plant site location and design adjustments to reduce impacts to biological resources	
MITIGATION MEASURE	
Impacts Mitigated	Reduced footprint would avoid some impacts to cultural resources, native plants, and wildlife habitat. Design uses gravity for supply of process water where possible, reducing energy needs. Reduced footprint would minimize impact to biological core areas identified in "Sonoran Desert Conservation Plan."
Location	Plant site (see alternative maps in chapter 2).
Monitoring / Reporting Action	Implementation and Effectiveness: Initial review of plans and weekly visual inspections would be performed during construction of plant facilities and during removal of plant facilities. The intent is to inspect the plant site and the building construction review periodically during construction to make sure they are built according to the plans and the final MPO; and during closure and final reclamation when the plant site is removed and restored, to make sure that areas that were avoided during construction are not destroyed or directly impacted by building removal and plant site restoration activities. Inspection results that find disturbance outside the area depicted in approved plans and the final MPO would be reported to the Coronado within 24 hours. Otherwise, the results of inspections would be summarized and reported in quarterly and annual monitoring reports.
Performance Criteria	Implementation and Effectiveness: Facilities would be located and designed in compliance with the final MPO.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for conducting monitoring and reporting to the Forest Service.
Timing	Implementation and Effectiveness: During premining (construction) and final reclamation and closure (plant facility removal) phases to ensure adherence to final MPO decision; periodically during operations if modifications are proposed.
Applicable Alternatives	All action alternatives.

FS-BR-02 - Redesign of the coarse ore stockpile dome and pebble crusher/ball loading facility to avoid a subpopulation of sensitive plants	
MITIGATION MEASURE	
Description	This facility redesign involves enclosure of the stockpile by a domed structure and reorientation of the crusher/ball loading facility conveyers to avoid a population of Coleman's coral-root, which is a Forest Service sensitive species. A complete inventory of the NFS land disturbance footprint for Coleman's coral-root and beardless chinch-weed would be completed prior to ground disturbance.
Source	Rosemont Copper. Also included in the biological evaluation (BE).
Impacts Mitigated	Would avoid impact to sensitive orchid subpopulations of Coleman's coral-root and possibly other sensitive plant species through reduction of the originally proposed footprint and angled arrangement of building and conveyers; would reduce impacts to air quality by reducing dust generation; dome would be less visually evident than conventional structure, thereby reducing impacts to visual quality.
Location	Plant site (see alternative maps in chapter 2).
Monitoring / Reporting Action	Implementation: Same as FS-BR-01. Effectiveness: Semiannual inspection and reporting would be performed to ensure protections are effective. Air quality monitoring would be conducted in accordance with air quality permit requirements. The Forest Service would assess completed dome from representative viewpoints to determine effectiveness in reducing visual impacts.
Performance Criteria	Implementation and Effectiveness: Facilities would be constructed according to specifications in final MPO. Protected plant populations would not be impacted by plant site and facility construction or operations. Air quality standards would be met.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for conducting monitoring and reporting to the Forest Service. See monitoring requirements in "Air Quality and Climate Change" and "Visual Resources" sections for further information.

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FS-BR-02 - Redesign of the coarse ore stockpile dome and pebble crusher/ball loading facility to avoid a subpopulation of sensitive plants	
MITIGATION MEASURE	
Timing	Implementation and Effectiveness: Predominantly during premining (construction of facilities) and final reclamation and closure (removal of facilities) phases. Monitoring during active mining phase to ensure that plants are not indirectly impacted.
Applicable Alternatives	All action alternatives with the exception of the proposed action.
FS-BR-03 - Measures to exclude wildlife, livestock, and the public from water ponds and other areas	
MITIGATION MEASURE	
Description	Specific ponds, basins, and other facilities would be enclosed, fenced, or otherwise managed to exclude wildlife, livestock, and the public. Includes construction of barriers to exclude Chiricahua leopard frogs, if needed. Rosemont Copper would affix frog barrier fencing to the security fence to limit the ability of Chiricahua leopard frogs to disperse into the active operations area.
Source	This is a design feature from the preliminary MPO. Barriers to exclude Chiricahua leopard frogs are specified in the BO (see Terms and Conditions for Chiricahua leopard frogs).
Impacts Mitigated	Would avoid or reduce potential impacts to wildlife such as amphibians, birds, and bats; livestock; and public safety.
Location	Process water temporary storage pond; primary settling basin; raffinate pond; heap leach pad, pregnant leach solution pond; stormwater pond; primary settling basin; any other location where process water may be ponded; and chemical and fuel storage areas. Note that not all these facilities occur in all action alternatives.
Monitoring / Reporting Action	Implementation: Visual inspection at time facilities are constructed would be performed to ensure that covers or devices have been installed and facilities have been enclosed or fenced. Installation of frog barrier to the security fence would be completed prior to survey and removal activities within the security fence. Effectiveness: Daily visual inspection would be performed to ensure enclosures, fences, covers, or devices are functioning properly to exclude wildlife, livestock, and the public. Inspection results that find measures ineffective at exclusion would be reported to the Coronado and rectified within 24 hours. Otherwise, the results of inspections would be summarized and reported in quarterly and annual monitoring reports.
Performance Criteria	Implementation: All accumulations of process water and other noted facilities would be enclosed or would have covers or devices installed that operate to effectively exclude wildlife. Effectiveness: Enclosures, fences, covers, or devices would be effective in protecting wildlife, livestock, and the public.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for conducting monitoring and reporting to the Forest Service.
Timing	Implementation: During construction (premining phase) to ensure that enclosures, fences, covers, and devices adhere to final MPO. Effectiveness: During active mining to ensure that measures are effective; and at final closure of the facilities to ensure that process water or other facilities do not present hazards to wildlife, livestock, or the public.
Applicable Alternatives	All action alternatives, for the listed facilities that apply.

MITIGATION MEASURE	
Description	<p style="text-align: center;">FS-BR-04 - Salvage, growing, planting, and monitoring of Palmer's Agave</p> <p>Revegetation includes BO requirements to plant and monitor agave, study suitability of Palmer's agave seeds gathered locally for use in reclamation seed mix, and plant native tree species.</p> <p>BO requirements for Palmer's agave would be included in the final reclamation and closure plan. Rosemont Copper would plant (transplanted or nursery-grown stock) at least 35,850 Palmer's agaves as specified in the BO. Palmer's agave seed would be included in the seed mix, provided such seeds are commercially available.</p> <p>During the life of the project, Rosemont Copper would work with the Forest Service to identify potential restoration areas outside of the security fence and within 2 miles of the perimeter fence that are suitable for Palmer's agave. Using the seed mix being employed for concurrent reclamation, Rosemont Copper would assist the Forest Service with the revegetation of these areas. In addition to seeding, revegetation efforts would include planting Palmer's agave transplants or nursery-grown Palmer's agave. This effort would include portions of the segment of the Arizona National Scenic Trail being abandoned under the action alternatives.</p> <p>Prior to submittal of proposed modification of the allotment management plan (see RC-BR-17), Rosemont Copper would refine existing estimates of Palmer's agave that would be impacted within the security fence area and conduct studies sufficient to identify and establish baseline conditions of pastures that would be proposed in the allotment management plan modification for seasonal grazing restrictions to increase flowering success of agave.</p> <p>BO monitoring requirements regarding Palmer's agave are also incorporated into the monitoring of FS-SR-02.</p> <p>BO and Coronado ID team. See BO Conservation Measures K1, K3, and K11; Reasonable and Prudent Measure 5, Term and Conditions 3 for lesser long-nosed bat.</p>
Source	BO and Coronado ID team. See BO Conservation Measures K1, K3, and K11; Reasonable and Prudent Measure 5, Term and Conditions 3 for lesser long-nosed bat.
Impacts Mitigated	Would rectify impacts to wildlife habitat by rehabilitating and restoring this component of the affected environment. Revegetation of Palmer's agave would provide habitat for lesser long-nosed bat and would meet the requirements of the BO.
Location	All disturbed areas except the mine pit. Includes linear features such as utilities, pipelines, and the abandoned segment of the Arizona National Scenic Trail.
Monitoring / Reporting Action	<p>Implementation: Annual monitoring of activities to ensure compliance with specifications in final MPO and sufficient to meet the requirements of the BO. A final reclamation and closure plan would be developed by Rosemont Copper and approved by the Forest Service prior to issuance of the final MPO; it would meet all of the stipulations of the BO. The terms and conditions and conservation measures of the BO would be addressed in the final revegetation plan.</p> <p>Similar to FS-SR-02, revegetation efforts, including maps, GIS data, and acreage of initial seeding, seed/plant mix, seeding/planting application rate, propagation, and transplanting, would be reported on an annual basis. Specific information would include data on shrub and tree species and agaves. Information would be reported as required by the BO. Revegetation would be conducted following an adaptive management process and would ensure compliance with the BO.</p> <p>Effectiveness: Annual quantitative monitoring of revegetation and site stability would be required, including whether shrub/tree and agave objectives have been met. Vegetation measurements may include: species richness, canopy cover, density/frequency, and plant community structure. Additional surveys would be conducted to track agave planting and survivorship. A record of the agave transplanted and planted from nursery grown stock during concurrent reclamation efforts and the general location and density of transplants would be maintained and reported in accordance with BO requirements.</p>
Performance Criteria	<p>Implementation: As part of the USFWS consultation, the BO requires a minimum number of agaves species to be planted and survival criteria to remediate lesser long-nosed bat habitat (the BO proposes an average density of plantings of 10.3 per acre). Revegetation monitoring requirements would be contained in the final reclamation and closure plan, and all monitoring activities would be designed to meet the requirements of the BO.</p> <p>Effectiveness: Seeding and planting would be successful in establishing agave and meeting the survival criteria and minimum numbers established in the BO.</p>

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MITIGATION MEASURE	
Responsible Party	FS-BR-04 - Salvage, growing, planting, and monitoring of Palmer's Agave
	Implementation and Effectiveness: Rosemont Copper is responsible for salvaging agave from areas prior to disturbance; gathering seed locally; growing agave from gathered seed; transplanting and seeding agave according to the BO; and monitoring both planting/seeding efforts and survival.
Timing	Implementation: Rosemont Copper is currently experimenting with agave salvage and transplanting associated with their greenhouse and growth plot studies. This effort is expected to continue. Salvage would begin prior to any ground-disturbing activities (premining phase). Activities would end at completion of the final reclamation and closure phase, or at an unknown time during postclosure, depending on the success of agave planting and seeding efforts.
	Effectiveness: Effectiveness monitoring would continue until the terms and conditions specified in the BO have been met, either at completion of the final reclamation and closure phase, or at an unknown time during postclosure.
Applicable Alternatives	All action alternatives.

MITIGATION MEASURE	
Description	FS-BR-05 - Construction, management, and maintenance of water features to reduce potential impacts to wildlife and livestock from reduced flow in seeps, springs, surface water, and groundwater
	Existing water features, including stock ponds, would be enhanced, and additional water features would be added as needed. Seven water features would be managed for sustainability of surface water. Up to 23 additional water features would be managed or constructed if needed for threatened and endangered species. Includes a requirement that Rosemont Copper establish a long-term management and maintenance fund to maintain the water features constructed. These include tank/water feature construction or renovation to support Chiricahua leopard frogs from metapopulations in the Greaterville area. Relocation of Chiricahua leopard frogs, if present, would precede any physical tank renovation. Restored or replaced springs within jaguar proposed critical habitat would be constructed in accordance with jaguar primary constituent elements for surface water. Location and selection of tanks for improvement would be a collaborative decision between the Coronado, AGFD, USFWS, and direct stakeholders.
	In addition, Rosemont Copper would establish a long-term management and maintenance fund to maintain the water features constructed in furtherance of this BO requirement.
Source	BO. Originally proposed by Rosemont Copper, Conservation Measures and Term and Condition for Chiricahua leopard frogs.
Impacts Mitigated	Would partially compensate for potential impacts to Chiricahua leopard frogs, jaguar, and other wildlife and to livestock grazing from decreased water availability.
Location	Forest Service allotments currently leased by Rosemont Copper: Thurber, DeBaud, Greaterville, and Rosemont grazing allotments; and seven tanks in the Greaterville area that are specified in the BO.
Monitoring / Reporting Action	Implementation: Water levels would be monitored annually to determine whether and when artificial waters need to be enhanced, modified, or constructed to meet the needs of threatened and endangered species. Construction and improvement of water sources would be conducted in accordance with the BO. Effectiveness: In accordance with requirements in the BO.
Performance Criteria	Implementation and Effectiveness: In accordance with requirements in the BO.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for constructing or improving the water sources as specified; and for all monitoring and reporting.
Timing	Implementation and Effectiveness: In accordance with the BO. See Conservation Measure G4.
Applicable Alternatives	All action alternatives.

MITIGATION MEASURE	
Description	FS-BR-06 – Location of the electrical power line that provides power to the pit area so that it avoids talus slopes to the extent practicable
Source	The electrical power line that provides electricity to the pit would be constructed on the west side of pit operations and within the disturbance perimeter of the pit and diversion structures. Rosemont Copper.
Impacts Mitigated	Would reduce disturbance to talus slopes and talussnail habitat. Would reduce impacts to visual resources by avoiding construction on the ridgeline.
Location	Powerline from Rosemont substation to the pit and surrounding areas.
Monitoring / Reporting Action	Implementation and Effectiveness: Daily visual inspections would be performed during construction and removal of this facility to ensure that disturbances to the talus areas are minimized. Inspection results that identify disturbance in areas not included in approved plans and the final MPO would be reported to the Coronado within 24 hours. Otherwise, the results of inspections would be summarized and reported in quarterly monitoring reports until the powerline construction is completed.
Performance Criteria	Implementation and Effectiveness: Location would avoid talus areas as practicable and would comply with specifications contained in final MPO.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for conducting monitoring and reporting to the Forest Service. The Forest Service is responsible for spot-checking monitoring activities; and for evaluating monitoring results to determine compliance with the final MPO.
Timing	Implementation and Effectiveness: During construction of the pit power loop and during removal of these facilities to ensure avoidance of talus slopes to the extent practicable.
Applicable Alternatives	All action alternatives.

MITIGATION MEASURE	
Description	FS-BR-07 – Recordation of a restrictive easement on the private Helvetia Ranch Annex North Parcel to compensate for impacts to species listed as threatened or endangered
Source	This mitigation requires the following actions for the Helvetia Ranch Annex North Parcel: A restrictive covenant that precludes real estate development and similar land uses would be recorded by Rosemont Copper. This parcel contains about 940 acres of semidesert grassland on the west side of the northern Santa Rita Mountains near the proposed Rosemont utility corridor. The property contains Pima pineapple cactus. The property directly links Santa Rita Experimental Range to Bureau of Land Management (BLM) land, which could benefit habitat and connectivity for ocelot and jaguar. It provides limited late-summer foraging habitat for lesser long-nosed bat. Management of the parcel would include modification of grazing practices to reduce grazing pressure on native vegetation. The Helvetia Ranch Annex North Parcels would be included as available land for the establishment of water features beneficial to listed species and to provide general wildlife benefits.
Impacts Mitigated	BO Conservation Measures and Terms and Conditions for lesser long-nosed bat.
Location	Would partially compensate for impacts to habitat for ocelot, jaguar, lesser long-nosed bat, and Pima pineapple cactus. Helvetia Ranch Annex North Parcel.
Monitoring / Reporting Action	Implementation: Recordation of a restrictive covenant in accordance with the BO would be reported. A copy of said restrictive covenant would be provided to the Forest Service. Effectiveness: In accordance with requirements in the BO.

MITIGATION MEASURE	FS-BR-07 – Recordation of a restrictive easement on the private Helvetia Ranch Annex North Parcel to compensate for impacts to species listed as threatened or endangered
Performance Criteria	Implementation: The restrictive covenant would restrict and allow land uses in accordance with requirements specified in the BO. The restrictive covenant would be recorded in the time frame specified in the BO. Effectiveness: In accordance with requirements in the BO.
Responsible Party	Implementation: Rosemont Copper is responsible for crafting and recording a restrictive covenant that meets the requirements specified in the BO. Effectiveness: In accordance with requirements in the BO.
Timing	Implementation: In accordance with requirements in the BO. Effectiveness: In accordance with requirements in the BO.
Applicable Alternatives	All action alternatives.
MITIGATION MEASURE	FS-BR-08 – Conveyance of private Sonoita Creek Ranch parcel to in lieu fee sponsor
Description	Rosemont would purchase the 1,200-acre Sonoita Creek Ranch and an estimated 590 acre-feet per annum of certificated water rights, and convey the property and the water rights to a Corps-approved In Lieu Fee (ILF) sponsor. The land and water rights would establish the resource framework and opportunity for the development of an ILF project, which would include the discontinuation of agriculture irrigation and the use of the perennial flows from Monkey Spring to establish wetland and riparian habitat. Based on preliminary designs, the Sonoita Creek Ranch ILF project would incorporate riparian and/or wetland establishment, restoration, and preservation components. The mitigation credits generated by the ILF project would be available for purchase by Rosemont. Per current Corps guidance, Rosemont would receive some compensatory mitigation credit for the conveyance of Sonoita Creek Ranch and appurtenant water rights to the Corps-approved ILF sponsor. Credit for the conveyance would be calculated as if Rosemont were preserving the site features in place. The number of credits received for the purchase is yet to be determined, though it is anticipated to provide only a portion of the overall mitigation credit requirement for the Rosemont Project. The mitigation credit accrued by Rosemont would not encumber any future ILF project proposal. Long-term site protection would be provided by the ILF sponsor. Costs associated with site-protection, financial assurances, long-term maintenance and monitoring, and any other expected design, construction, and/or contingency associated with initiating an ILF project at Sonoita Creek Ranch would be included in the costs calculated by the ILF sponsor while determining the cost per mitigation credit.
Source	Habitat Mitigation and Monitoring Plan (HMMP); BO
Impacts Mitigated	Would partially compensate for impacts to wildlife habitat and habitat connectivity, including jaguar, ocelot, Mexican spotted owl, lesser long-nosed bat, Gila chub, Gila topminnow, Chiricahua leopard frog, western yellow-billed cuckoo, and Huachuca water umbel. Currently, most or all of these species are absent and invasive, nonnative species are present. The site is currently managed for agricultural uses, and water diversions are not well-suited for wildlife needs. The site needs to be restored to accommodate colonization or transplanting of threatened and endangered species. The parcel and water rights would provide an opportunity to develop an in-lieu fee mitigation program for impacts to WUS.
Location	Sonoita Creek Ranch.
Monitoring / Reporting Action	Implementation and Effectiveness: Report conveyance as described in the HMMP and BO.
Performance Criteria	Implementation and Effectiveness: Ownership transfers in accordance with requirement in the HMMP and BO.

MITIGATION MEASURE	FS-BR-08 – Conveyance of private Sonoita Creek Ranch parcel to in lieu fee sponsor
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for purchasing the property and conveying ownership to Corps approved ILF sponsor. Sponsor is responsible for any habitat projects and site protection. The Forest Service is responsible for ensuring that requirements from the BO are met, and reporting such to U.S. Fish and Wildlife Service
Timing	Implementation and Effectiveness: In accordance with HMMP and BO.
Applicable Alternatives	All action alternatives.
MONITORING ITEM	FS-BR-09 - Funding to support camera studies for large predators, including jaguar and ocelot
Description	Rosemont Copper would contribute \$50,000 to AGFD for camera studies for large predators.
Source	BO Conservation Measures.
Purpose	Would provide information on travel corridors and habitat use of the Santa Rita and Whetstone Mountains, as well as prey base travel corridors. This is information needed to determine locations where road crossing structures may be warranted in the future.
Location	Santa Rita and Whetstone Mountains and areas between.
Monitoring / Reporting Action	Implementation and Effectiveness: Funding would be provided to AGFD or other suitable entity approved by the Coronado and USFWS for monitoring.
Performance Criteria	Implementation and Effectiveness: N/A
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for making the contribution.
Timing	Implementation and Effectiveness: N/A
Applicable Alternatives	All action alternatives.
MITIGATION MEASURE	FS-BR -10 - Measures to reduce and rectify impacts to Pima pineapple cactus
Description	This mitigation would mitigate impacts to Pima pineapple cactus mitigation by minimizing surface disturbance in the utility corridor; surveying and monitoring; and transplanting those cacti that cannot be avoided. Predisturbance surveys for the cactus would occur, and plants would be marked and avoided where possible.
Source	BO Conservation Measures.
Impacts Mitigated	Would avoid or reduce impacts to the listed Pima pineapple cactus. See also the Helvetia North Parcel (FS-BR-07) mitigation for this species.
Location	Utility corridor.
Monitoring / Reporting Action	Implementation and Effectiveness: Criteria specified in the BO would be met.
Performance Criteria	Implementation and Effectiveness: Criteria specified in the BO would be met.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for surveying, identifying, avoiding, and transplanting cactus. Rosemont Copper is further responsible for conducting monitoring and reporting the results to the Forest Service.
Timing	Implementation: Premining phase (construction of utility facilities) and final reclamation and closure phase (removal of utility facilities). Effectiveness: In accordance with BO.

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<p>MITIGATION MEASURE Applicable Alternatives</p>	<p>FS-BR -10 - Measures to reduce and rectify impacts to Pima pineapple cactus All action alternatives.</p>
<p>MITIGATION MEASURE</p>	<p>FS-BR-11 - Monitoring and control of actions to reduce or prevent impacts to Chiricahua leopard frog from invasive aquatic species</p>
<p>Description</p>	<p>This mitigation includes specific actions to monitor, identify, and remove invasive species (including American bullfrogs, northern crayfish, tiger salamanders, and warm-water fish species) that could impact the Chiricahua leopard frog. Rosemont Copper has prepared a preliminary invasive species management plan (Rosemont Copper, July 2012). This is a brief report that outlines some invasive species and general management plans. It states that the plan “will be updated to address aquatic invasive species, including bullfrogs and northern crayfish, in wetland and riparian habitats, as well as selected stock tanks once Section 7 consultation is complete.” Methods for implementation of this program would be outlined in the final invasive species management plan.</p>
<p>Source</p>	<p>BO. See Conservation Measures and Terms and Conditions for Chiricahua leopard frog.</p>
<p>Impacts Mitigated</p>	<p>Would reduce impacts to Chiricahua leopard frog from invasive species such as American bullfrogs, northern crayfish, tiger salamanders, and warm-water fish species.</p>
<p>Location</p>	<p>The seven tanks renovated as part of the Chiricahua leopard frog BO stipulations near Greaterville (see FS-BR-05); new tanks constructed as part of these stipulations during the life of the project; and at other suitable Chiricahua leopard frog habitats within the perimeter fence. See the BO for further detail.</p>
<p>Monitoring / Reporting Action</p>	<p>Implementation: Commencing in the first year copper is produced, annual monitoring of disturbed areas within perimeter fence would be conducted to determine occurrence of invasive plant species and implement best management practices to prevent introduction and spread. The observed occurrence, or the discovery, of nonnative species would be reported to the USFWS within 3 days of observation. Effectiveness: Monitoring of effectiveness of treatment efforts after invasive species are identified.</p>
<p>Performance Criteria</p>	<p>Implementation: Best management practices would be implemented for all equipment. Effectiveness: Invasive species would remain at levels similar to or less than those observed prior to construction.</p>
<p>Responsible Party</p>	<p>Implementation and Effectiveness: Rosemont Copper is responsible for conducting monitoring, implementing control activities, and reporting to the Forest Service.</p>
<p>Timing</p>	<p>Implementation and Effectiveness: Commencing the first year copper is produced and continuing in accordance with the BO.</p>
<p>Applicable Alternatives</p>	<p>All action alternatives.</p>
<p>MITIGATION MEASURE</p>	<p>FS-BR-12 - Relocation of Chiricahua leopard frogs from areas in the immediate vicinity of the project area</p>
<p>Description</p>	<p>Survey, monitor, capture, and relocation of Chiricahua leopard frogs; disinfection methods; testing for chytridiomycosis.</p>
<p>Source</p>	<p>BO Conservation Measures.</p>
<p>Impacts Mitigated Location</p>	<p>Would avoid or minimize impacts to Chiricahua leopard frogs. Methods prevent spread of disease, especially chytridiomycosis. Predisturbance surveys would be conducted within the footprint of proposed construction and a 0.25-mile buffer of the security fence. Annual surveys would be conducted within the perimeter fence and within suitable habitat within 1 mile of the perimeter fence.</p>

MITIGATION MEASURE	FS-BR-12 - Relocation of Chiricahua leopard frogs from areas in the immediate vicinity of the project area
Monitoring / Reporting Action	Implementation and Effectiveness: In accordance with BO.
Performance Criteria	Implementation and Effectiveness: In accordance with BO.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for surveys, monitoring, and reporting as specified in the BO. Rosemont Copper is responsible for testing any captured frogs prior to relocation, in accordance with the requirements of the BO.
Timing	Implementation and Effectiveness: Predisturbance surveys would be conducted the season prior to initiation of construction activities. Annual surveys would occur from premining through final reclamation and closure, commencing the first spring after construction activities begin.
Applicable Alternatives	All action alternatives.

MITIGATION MEASURE	FS-BR-13 – Measures to ensure relocation of lesser long-nosed bat and other bat species in the immediate vicinity of the mine
Description	Rosemont Copper would fence and/or close abandoned mine features that may be impacted by mine activities. This is in part a predisturbance survey and implementation measure to ensure that roosting bats are not trapped in abandoned adits or that they do not succumb to mining activities. Fencing or closing mines not within the mine footprint (or immediate vicinity) would help reduce human influences (such as keeping people out of the Helena Mine complex). Rosemont Copper would also conduct a monitoring program to evaluate the effectiveness of protection measures implemented at known lesser long-nosed bat roosts.
Source	BO Conservation Measures, Reasonable and Prudent Measures, and Terms and Conditions for lesser long-nosed bats.
Impacts Mitigated	Would reduce impacts to lesser long-nosed bats and other bat species. This measure would keep bats that are roosting in the vicinity of the mine (including the footprint) from onsite mortality by forcing bats to relocate.
Location	Chicago mine; R2 mine, Helena Mine complex, and other sites as specified in the BO.
Monitoring / Reporting Action	Implementation and Effectiveness: In accordance with BO.
Performance Criteria	Implementation and Effectiveness: In accordance with BO.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for closure, fencing, monitoring, and reporting as specified in the BO.
Timing	Implementation and Effectiveness: To be determined. Refer to the BO.
Applicable Alternatives	All action alternatives.

MITIGATION MEASURE	FS-BR-14 – Measures to reduce impacts to western yellow-billed cuckoo
Description	Limitation on vegetation clearing during western yellow-billed cuckoo nesting season. Includes monitoring for nesting western yellow-billed cuckoo and limitation on clearing while nesting is occurring.
Source	BE; and BO Conservation Measures.
Impacts Mitigated	Would reduce or avoid impacts to western yellow-billed cuckoo.

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FS-BR-14 – Measures to reduce impacts to western yellow-billed cuckoo	
MITIGATION MEASURE	
Location	Any area where vegetation clearing is proposed within 50 meters of an active western yellow-billed cuckoo nest or the center of an active western yellow-billed cuckoo territory, including disturbance in riparian areas with suitable habitat (riparian, including xeriparian).
Monitoring / Reporting Action	Implementation and Effectiveness: Rosemont Copper would survey for western yellow-billed cuckoo in potential nesting areas within the perimeter fence in the season prior to vegetation clearing. Vegetation clearing would not occur within 50 meters of an active western yellow-billed cuckoo nest or the center of an active western yellow-billed cuckoo territory.
Performance Criteria	Implementation and Effectiveness: In accordance with BE and BO.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for predisturbance surveys and for ensuring that clearing activities are appropriately monitored.
Timing	Implementation and Effectiveness: During the nesting season prior to ground-disturbing activities.
Applicable Alternatives	All action alternatives.

FS-BR-15 – Measures to protect two occurrences of Coleman's coral-root during road decommissioning	
MITIGATION ITEM	
Description	Coleman's coral-root (Forest Service sensitive) occurs on two locations on NFSRs 4051 and 4051A, which are scheduled for decommissioning. These locations would be identified on the ground before decommissioning activities occur, and disturbance would be avoided.
Source	Coronado ID team.
Impacts Mitigated	Would avoid direct impacts to specific locations of Forest Service sensitive plants.
Location	NFSRs 4051 and 4051A.
Monitoring / Reporting Action	Implementation: Pre-activity surveys would occur during blooming season (typically April through May) to identify or confirm and locate vulnerable populations on the ground (flagging or other method would be used to identify area to be avoided by disturbance). Effectiveness: Daily inspections would occur while decommissioning activities were taking place in the vicinity of identified plant populations to ensure that they are avoided. Inspection results that identify disturbance to Coleman's coral-root from road decommissioning would be reported to the Coronado within 24 hours. Otherwise, the results of inspections would be summarized and reported in quarterly and annual monitoring reports.
Performance Criteria	Implementation and Effectiveness: Plant populations to be protected would be located on the ground in advance of ground-disturbing activities; plants would ultimately be protected by avoiding conducting ground-disturbing activities near their occurrence.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for confirming populations of protected plants that could be impacted by road decommissioning activities; and for monitoring implementation of such activities to ensure that plants are not impacted.
Timing	Implementation and Effectiveness: During road decommissioning activities (premining phase).
Applicable Alternatives	All action alternatives.

MITIGATION MEASURE	FS-BR-16 – Establishment of the Cienega Creek Watershed Conservation Fund, be used for future mitigation to in the Cienega Creek watershed
Description	<p>Rosemont Copper would establish an endowment, the Cienega Creek Watershed Conservation Fund, and provide \$2,000,000 of funding. This fund would essentially be established as: (1) a resource to help restore the watershed to a functioning ecosystem; and (2) a mechanism to promote adaptive management and allow flexibility in mitigation to achieve desired outcomes in light of future uncertainties.</p> <p>Funds would be used to increase water flows and enhance wetlands in the Cienega Creek watershed and to implement future mitigations and management strategies to offset unanticipated effects resulting from groundwater drawdown from the mine, if necessary. Up to 15 percent of the funds could be used for administrative costs. Monies would be spent for on-the-ground restoration (except for the 15 percent mentioned above), rather than inventory, monitoring, and research.</p> <p>The conservation fund would be managed by AGFD or other to-be-designated third party with recommendations by partners with regulatory authority, with input by partners to recommend projects designed to preserve and enhance aquatic and riparian ecosystems and to protect and maintain habitat for federally listed aquatic and riparian species in the watershed.</p>
Source	BO Conservation Measures.
Impacts Mitigated	Would potentially compensate for or offset impacts to Chiricahua leopard frog, Gila chub, Gila topminnow, Huachuca water umber, southwestern willow flycatcher, and western yellow-billed cuckoo.
Location	Use of funds from the Cienega Creek Watershed Conservation Fund would be limited to the Cienega Creek watershed beyond the Rosemont Copper permitted grazing allotments on NFS lands.
Monitoring / Reporting Action	Implementation and Effectiveness: In accordance with BO.
Performance Criteria	Implementation and Effectiveness: In accordance with BO.
Responsible Party	<p>Implementation and Effectiveness: Rosemont Copper would be responsible for funding the conservation fund at the rate of \$200,000/year for 10 years beginning on April 1 of the year following the year in which copper concentrates are initially produced. The Forest Service is responsible for determining whether the fund has been established as required by the BO.</p> <p>The BLM and AGFD would be responsible for identifying potential mitigation actions; coordinating those actions with the Forest Service, USFWS, and other key stakeholders; overseeing expenditures of the fund; and all monitoring and reporting.</p>
Timing	Implementation and Effectiveness: In accordance with BO.
Applicable Alternatives	All action alternatives.

B. Mitigation and Monitoring Plan

MITIGATION MEASURE	FS-BR-17– Future modification of allotment management plans
Description	<p>Rosemont Copper would prepare and submit to the Coronado a request to modify the allotment management plans for the Thurber, DeBaud, Greaterville, and Rosemont Forest Service grazing allotments within 1 year of issuance of the ROD. The modifications would be developed in consultation, cooperation, and coordination with the Coronado range staff, with input from the AGFD, and would include the following:</p> <ul style="list-style-type: none"> • To compensate for the loss of flowering agaves for the lesser long-nosed bat due to the proposed mine, grazing by cattle would be restricted during the April 1 to June 15 period through rotation to alternative pastures on approximately 8,000 acres of portions of the Thurber, DeBaud, Greaterville, and Rosemont allotments that currently are permitted to be grazed during the agave bolting period. This could increase foraging resources for the lesser long-nosed bat. • Portions of pastures within these grazing allotments would be put on a winter rotation to limit grazing during the growing season within riparian areas. This could enhance riparian vegetation. Key pastures would be rested for extended periods of time and made available for grazing when forage production on active pastures is reduced because of drought or other factors. This “grass bank” element could enhance overall production within the allotments without the reduction of current cattle stocking rates. <p>In addition, Rosemont Copper would conduct a scientifically designed study to document the efficacy of seasonal grazing restrictions to enhance agave flowering success. The study would be implemented annually for 5 years following approval of the allotment management plan and implementation of grazing management practices. Also see FS-BR-04.</p>
Source	Rosemont Copper; BO Conservation Measures.
Impacts Mitigated	To be determined, depending on final decision of allotment management plans.
Location	Thurber, DeBaud, Greaterville, and Rosemont Forest Service grazing allotments.
Monitoring / Reporting Action	Implementation and Effectiveness: To be determined.
Performance Criteria	Implementation and Effectiveness: To be determined.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible preparing and submitting a request to modify allotment management plans. The Forest Service is responsible for determining when allotment management plans are revised; and for making the final decision on plan modifications.
Timing	Implementation and Effectiveness: To be determined.
Applicable Alternatives	All action alternatives.

MITIGATION MEASURE	
Description	<p style="text-align: center;">FS-BR-18– Predisturbance surveys for Forest Service sensitive species</p> <p>This mitigation includes predisturbance survey for a subset of Forest Service sensitive species, and cooperative development and implementation of a survey plan. Rosemont would conduct a complete habitat-specific inventory of the NFS land disturbance footprint within suitable habitat as outlined in an approved plan for the following Forest Service sensitive species (10 plants and 1 invertebrate) at least 30 days prior to ground disturbance:</p> <ul style="list-style-type: none"> • Plants <ul style="list-style-type: none"> ○ Arizona coralroot* ○ Arizona giant sedge* ○ Arizona manihot* ○ Bartram stonecrop* ○ Beardless chinchweed* ○ Chiricahua mountain brookweed ○ Huachuca golden aster ○ Lemon lily ○ Santa Rita yellowshow* ○ Southwestern muhly* • Invertebrate <ul style="list-style-type: none"> ○ Cestus skipper <p>These species were identified by the Coronado as species that need additional mitigation because they are present (or likely to be present) within the project and/or analysis area and are Imperiled, Critically Imperiled, and/or Proposed for Federal Listing.</p> <p>Rosemont would work cooperatively with the Coronado, Arizona Game and Fish Department, U.S. Fish and Wildlife Service (for species proposed for federal listing), and other conservation partners to develop a survey plan that will include survey protocols for the 11 species, as well as an overall plan or strategy for addressing species that are found in disturbance areas, such as but not limited to documentation, collection, translocation, seed collection, etc. The survey plan would address surveys which have already been conducted within the Rosemont Project Area (previously surveyed species are marked with an asterisk (*) in the list above). Survey will be conducted within suitable habitat and during appropriate season for each species at least 30 days prior to ground disturbance. The written plan will be included with the Plan of Operations.</p> <p>Also see FS-BR-02 for preconstruction survey requirements for Coleman’s coralroot.</p>
Source	Coronado IDT. Also included in the biological evaluation (BE).
Impacts Mitigated	This would avoid or reduce impacts to Forest Service sensitive plant species and one invertebrate species.
Location	NFS habitat-specific lands disturbed by project.
Monitoring / Reporting Action	<p>Implementation: Rosemont would report results of surveys in post-survey monitoring reports.</p> <p>Effectiveness: Rosemont would report any species located in disturbance areas to the Biological Monitor within 72 hours of the discovery. Measures or strategies contained for addressing the located species would be carried out according to the previously developed plan. Should Forest Service sensitive species be translocated, subsequent monitoring would be determined on a case-by-case basis.</p>
Performance Criteria	Implementation and Effectiveness: The survey plan would be developed prior to predisturbance survey, and would include applicable protocols and survey seasons that are approved by the Coronado, in consultation with Arizona Game and Fish Department and other conservation partners as applicable.

FS-BR-18 – Predisturbance surveys for Forest Service sensitive species	
MITIGATION MEASURE	
Responsible Party	Implementation and Effectiveness: Rosemont is responsible for coordinating preparation of a plan or strategy for dealing with located species; and for conducting and reporting pre-disturbance surveys. The Forest Service is responsible for approving the plan or strategy, and for coordinating with AGFD and other conservation partners as deemed appropriate.
Timing	Implementation and Effectiveness: Predominantly during premining (construction of facilities; also requires surveys of areas that have been recovered from initial disturbance that will undergo further disturbance during the final reclamation and closure (removal of facilities) phases, such as the utility corridor on NFS lands.
Applicable Alternatives	All action alternatives.

Other Monitoring Items for Biological Resources

FS-BR-19 – Monitoring to determine impacts from pit dewatering on downstream sites in Barrel and Davidson Canyons	
MONITORING ITEM	
Description	This measure consists of monitoring in Barrel and Davidson Canyons to evaluate impacts from groundwater drawdown to surface water features following the conceptual monitoring plan prepared by Water and Earth Technologies (2012). This also includes a BO requirement to monitor geomorphic changes to Davidson Canyon. Refer to FS-SR-04 for further details about geomorphic design and monitoring.
Source	BO Conservation Measures.
Purpose	To determine existence and extent of impacts to groundwater drawdown to surface water features from pit dewatering.
Location	For pit dewatering monitoring – a minimum of two sites in Barrel and Davidson Canyons identified in the report; and potentially others if authorization to install and access proposed monitoring sites is obtained. For geomorphic changes to Davidson Canyon – four sample sites would be established.
Monitoring / Reporting Action	Implementation and Effectiveness: In accordance with BO.
Performance Criteria	Implementation and Effectiveness: In accordance with requirements in the BO.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for all monitoring and reporting.
Timing	Implementation and Effectiveness: In accordance with BO.
Applicable Alternatives	All action alternatives.

FS-BR-20 – Monitoring to determine the extent of road-kill near the project area	
MONITORING ITEM	
Description	This monitoring involves regular field surveys to determine motor vehicle caused mortality of jaguar or ocelot or their prey base. In addition, Rosemont Copper would be required to immediately report all sightings of jaguar and ocelot to the Forest Service.
Source	BO Conservation Measure.
Purpose	To determine impacts from traffic related mortality to jaguar, ocelot, and the jaguar prey-base (white-tailed and mule deer, collared peccary, and white-nosed coati, in particular) and to any Forest Service or BLM sensitive species.
Location	Between the north end of jaguar proposed critical habitat and Gardner Canyon on State Route (SR) 83 and Box Canyon road.
Monitoring / Reporting Action	Implementation and Effectiveness: Annual reporting, as specified in the BO.

MONITORING ITEM	
Performance Criteria	FS-BR-20 – Monitoring to determine the extent of road-kill near the project area
Responsible Party	Implementation and Effectiveness: As specified in the BO.
Timing	Implementation and Effectiveness: Rosemont Copper is responsible for ensuring this is carried out. Implementation and Effectiveness: This would be conducted for 4 years after the mining activity has started; it would then be reevaluated to determine whether additional monitoring needed to be conducted.
Applicable Alternatives	All action alternatives.

MONITORING ITEM	
Description	FS-BR-21 – Surveying and monitoring for lesser long-nosed bats Rosemont Copper would monitor the Helena Mine complex, Adit R2, and other large lesser long-nosed bat roost sites (>100 bats) within 1 mile of the perimeter fence annually for lesser long-nosed bat following stipulations described in the BO.
Source	BO Conservation Measures.
Purpose	To determine impacts to lesser long-nosed bats, determine site fidelity during mining activities, and ascertain whether shielding from artificial night light emitted by the mine is possible or prudent.
Location	Helena Mine, Adit R2, and other large lesser long-nosed bat roost sites within 1 mile of the perimeter fence.
Monitoring / Reporting Action	Implementation and Effectiveness: As specified in the BO.
Performance Criteria	Implementation and Effectiveness: As specified in the BO.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for monitoring and reporting.
Timing	Implementation and Effectiveness: Active life of the mine (premining through final reclamation and closure phases). Monitoring would be conducted annually until 5 years after final mine closure. Monitoring surveys are anticipated to commence in 2013.
Applicable Alternatives	All action alternatives.

MONITORING ITEM	
Description	FS-BR-22 – Surveying for bats in the vicinity of the project area Rosemont Copper would conduct reconnaissance-level surveys of other known cave and mine features capable of supporting bats within in the perimeter fence and within 1 mile of the perimeter fence for lesser long-nosed bat and other bat species following stipulations described in the BO.
Source	BO Conservation Measure.
Purpose	Assessment of impacts to lesser long-nosed bats and Forest Service and BLM sensitive bat species.
Location	Known mine and cave features capable of supporting bats within the perimeter fence and within 1 mile of the perimeter fence.
Monitoring / Reporting Action	Implementation and Effectiveness: Monitoring of each site would occur once per year, on an annual basis, during the late summer lesser long-nosed bat survey period: July, August, and September. Reporting of monitoring results would be made within 10 working days of each monitoring effort. Actions to be taken to protect species, if any, would be determined by the Forest Service and USFWS, based on monitoring results.
Performance Criteria	Implementation and Effectiveness: As specified in the BO.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for monitoring and reporting.
Timing	Implementation and Effectiveness: Active life of the mine (premining through final reclamation and closure phases).

B. Mitigation and Monitoring Plan

MONITORING ITEM	
Applicable Alternatives	All action alternatives.
FS-BR-22 – Surveying for bats in the vicinity of the project area	
MONITORING ITEM	
Description	This involves surveying and testing procedures for Chiricahua leopard frog that would provide population information and trends.
Source	BO Conservations Measures and Terms and Conditions for Chiricahua leopard frog.
Purpose	To provide information on the status of Chiricahua leopard frog.
Location	To be determined.
Monitoring / Reporting Action	Implementation and Effectiveness: In accordance with requirements in the BO.
Performance Criteria	Implementation and Effectiveness: In accordance with requirements in the BO.
Responsible Party	Implementation: Rosemont Copper is responsible for conducting monitoring for Chiricahua leopard frogs and reporting results to the Forest Service. Effectiveness: In accordance with requirements in the BO.
Timing	Implementation and Effectiveness: Commencing from the first spring survey period after construction activities begins through final reclamation and closure.
Applicable Alternatives	All action alternatives.
MONITORING ITEM	
FS-BR-24 – Periodic validation and rerunning of groundwater model throughout life of mine	
Description	Collection of information needed to conduct periodic validation of groundwater model, including collection of basic data needed as input to model. In addition to the monitoring actions described below, three contingency areas have been identified. Rosemont Copper could be required to install additional piezometers if the following criteria were met. Prior to requiring any new piezometer installation, the Forest would review with Rosemont the feasibility of access, the logistics and cost involved, and whether there is a need for continued water level measurements in that location based on the entirety of the water level data collected to date: Sycamore Canyon: HC-5B is no longer functional for water level measurements; West of mine pit: DH-1445 is no longer functional for water level measurements; and South of mine pit: RP-5 is no longer functional for water level measurements.
Source	Coronado ID team; required by the BO.
Purpose	Monitor groundwater levels and whether there is a decrease of groundwater availability in surface features such as springs for groundwater model validation.
Location	Mine pit, wellheads of dewatering wells; meteorological stations; existing wells as shown on the following table; one new monitoring well constructed beyond the security fence.
Monitoring / Reporting Action	Implementation: Measurement of the volume of dewatering, preferably by installation of flow monitoring devices on any dewatering wells, but other volumetric or flow measurement procedures may be implemented. Operation of two meteorological stations to represent high and low elevations on the site. It is acceptable that the lower meteorological station be associated with the SR 83 U.S. Geological Survey (USGS) gage on Barrel Canyon and that the higher meteorological station be required under the air quality permit, depending on the final location of that station. Quarterly water level monitoring on up to 27 existing wells, piezometers, or boreholes.

MONITORING ITEM	FS-BR-24 – Periodic validation and rerunning of groundwater model throughout life of mine
	<p>Drilling, construction, development, and instrumentation of one new monitoring well at a location specified by the Coronado.</p> <p>Effectiveness: Rosemont Copper would quarterly report to the Coronado the total amount of water pumped by dewatering wells or otherwise removed from the pit. Rosemont Copper would collect continual meteorological measurements, conduct all appropriate maintenance and calibration, and report a summary of meteorological measurements annually. Rosemont Copper would collect water levels from new and existing wells at least quarterly, if not continually using data loggers, and would report results of water level monitoring annually. Every 5 years, Rosemont Copper would use collected data to verify the results of groundwater model and provide revised predictions of groundwater level changes and a comparison of how these changes differ from the same model used to predict impacts in the EIS.</p>
Performance Criteria	<p>Implementation: Monitoring devices would be installed and calibrated. Well construction and installation records would be provided to the Coronado.</p> <p>Effectiveness: Hydrologic monitoring data would be reported quarterly. Model validation report would be provided every 5 years.</p>
Responsible Party	<p>Implementation: Rosemont Copper is responsible for installation of all equipment and wells; the Coronado is responsible for selecting well locations and construction details, conducting appropriate NEPA compliance, and spot-checking drilling performance. If there is disagreement as to the accessibility of a proposed well location, officials from Rosemont Copper would meet with Coronado National Forest personnel in the field to determine if the problem can be resolved, either by moving the proposed well location or by modification of existing roads.</p> <p>Effectiveness: Rosemont Copper is responsible for all monitoring and reporting. The Coronado is responsible for determining whether contingency wells need to be installed and for conducting any necessary NEPA compliance documentation. The Coronado will work with Rosemont prior to making any decision regarding contingency wells, to ensure that installation is technically and logistically feasible.</p>
Timing	
Applicable Alternatives	<p>Implementation and Effectiveness: Premining phase through 5 years after closure.</p> <p>All action alternatives.</p>

Wells to Be Monitored in Relation to FS-BR-24

Cadastral Location	Well Name
(D-18-16) 15aaa	RP-7
(D-18-16) 15dbc	RP-6
(D-18-16) 20dbc	HC-4B
(D-18-15) 35abc	DH-1445
(D-18-16) 23dba	RP-8
(D-18-16) 27ddc	RP-9
(D-18-16) 28aba	RP-2C
(D-18-16) 29bbd	P-899
(D-18-16) 30bab	HC-5B
(D-18-16) 33bbc	RP-3B
(D-19-16) 02ccd	Oaktree Windmill

Cadastral Location	Well Name
(D-19-16) 04ddb	DH-1541
(D-19-16) 06cca	RP-5
(D-19-16) 18ddb	18ddb
(D-19-16) 01bab	HC-1B
(D-18-16) 30bd	C-1
(D-19-16) 16cbb	16cbb
(D-19-16) 17bdb	17bdb
(D-19-15) 01aac	HC-6
(D-19-16) 17ddd	Rosemont Ranch
(D-18-15) 22daa	22daa

Landownershship and Boundary Management

MITIGATION MEASURE	
Description	A BLM administered land resurvey and control network has been completed.
Source	Coronado ID team.
Impacts Mitigated	Would rectify impacts to survey monuments and landownership boundaries from mining and related actions.
Location	Approximately 202 mineral survey corner monuments that control approximately 19.5 miles of property boundary between NFS lands and private land owned by Rosemont Copper within or very near the footprint of the proposed action on the Coronado National Forest.
Monitoring / Reporting Action	Implementation and Effectiveness: Implementation by the BLM has been completed. No further monitoring is required.
Performance Criteria	Implementation and Effectiveness: BLM criteria have been met.
Responsible Party	Implementation and Effectiveness: Rosemont Copper funded dependent resurvey efforts.
Timing	Implementation and Effectiveness: Completed.
Applicable Alternatives	All action alternatives.

MITIGATION MEASURE	
Description	Upon reclamation, survey monuments would be restored, and landownership boundaries would be properly marked.
Source	Coronado ID team.
Impacts Mitigated	Would rectify impacts to survey monuments and landownership boundaries by restoring survey monuments and landownership boundaries.
Location	Currently, approximately 19.5 miles of property boundary between NFS lands and private land owned by Rosemont Copper within or very near the footprint of the proposed action on the Coronado National Forest. (Exact locations are not known at this time.)

FS-LO-02 – Reestablishment of survey monuments and surveyed land line upon completion of final reclamation	
MITIGATION MEASURE	
Monitoring / Reporting Action	Implementation and Effectiveness: Monitoring and reporting protocol would be determined by the Forest Service, following standard procedures in place at that time for reestablishing survey monuments and land lines.
Performance Criteria	Implementation: Upon reclamation and closure, Rosemont Copper would use the BLM's "Field Notes of the Dependent Resurvey" to restore survey monuments referring to global positioning system (GPS) Control Network. Effectiveness: Closure actions would result in conditions that meet specifications in the final reclamation and closure plan.
Responsible Party	Implementation: Rosemont Copper would fund a Forest Service approved Arizona licensed surveyor to oversee the reclamation and restoration of survey monuments and boundaries. Rosemont Copper would provide personnel, equipment, and materials to restore physical monuments where needed. Monitoring: Rosemont Copper is responsible for conducting monitoring and reporting to the Forest Service.
Timing	Implementation: Closure.
Applicable Alternatives	Effectiveness: Final closure and postclosure until surveying and boundary management objectives have been met. All action alternatives.

Dark Skies

FS-DS-01 – Implementation of an outdoor lighting plan that would reduce potential impacts from artificial night lighting	
MITIGATION MEASURE	
Description	This mitigation involves following Rosemont Copper's outdoor lighting mitigation plan (Monrad et al. 2012) during construction and operation of the mine. Following construction of the mine and during the initial year of operation, Rosemont Copper would work with the Forest Service to review the efficacy of light mitigation measures at key resource areas around the mine, such as the Helena Mine. If additional shielding could be placed to further reduce lighting effects without adverse consequences to safety and unreasonable operational expectations, Rosemont Copper would implement the additional requested shielding in a manner consistent with safe mining practices.
Source	Rosemont Copper; BO Conservation Measure.
Impacts Mitigated	Compared with the initial MPO, this lighting mitigation plan would reduce potential impacts from artificial night lighting to commercial and recreational astronomy and to wildlife species, including lesser long-nosed bats and Mexican spotted owls. See the Monrad et al. (2012) "Rosemont Copper Project Light Pollution Mitigation Recommendation Report, Revision 1," dated June 18, 2012, for details, as well as the "Mitigation Recommendation Report Addendum," dated August 17, 2012. WestLand Resources Inc. (2012) further analyzed the Monrad et al. (2012) findings to interpret effects on wildlife.
Location	All areas requiring outside night lighting, including facilities, pit, plant site, and equipment mounted light systems and extending out at least 12 miles (WestLand Resources Inc. 2012).

B. Mitigation and Monitoring Plan

MITIGATION MEASURE	
Monitoring / Reporting Action	<p style="text-align: center;">FS-DS-01 – Implementation of an outdoor lighting plan that would reduce potential impacts from artificial night lighting</p> <p>Implementation: Fixtures would be inspected before installation to ensure that lighting equipment complies with the final MPO, which would incorporate the Monrad et al. (2012) “Rosemont Copper Project Light Pollution Mitigation Recommendation Report” (June 18, 2012) and addendum (August 17, 2012). Effectiveness: Baseline data monitoring would occur at a frequency to be determined that represents periods of maximum outside night light use during the active mining phase. Monitoring would duplicate the baseline monitoring that is described in the Monrad et al. (2012) “Rosemont Copper Project Light Pollution Mitigation Recommendation Report,” dated June 18, 2012, pages 23–24 (which would be incorporated into the final MPO), and the “20 Year Monitoring Plan: Light at Night – Measurements at Rosemont Copper Project,” dated May 20, 2012. Includes mobile aerial, mobile ground-based, and static ground-based measurements. If additional shielding could be placed to further reduce lighting effects without adverse impacts to safety and unreasonable operational expectations, Rosemont Copper would implement that additional shielding in a manner consistent with safe mining.</p>
Performance Criteria	<p>Implementation: Lighting used would comply with the final MPO, which would incorporate the Monrad et al. (2012) “Rosemont Copper Project Light Pollution Mitigation Recommendation Report” (June 18, 2012) and addendum (August 17, 2012), except as personal safety or operational requirements necessitate modifications to this plan (30 Code of Federal Regulations (CFR) Part 56.17001). Effectiveness: Monitoring would provide for review and comparison of lighting emissions of the Rosemont Copper Mine and other new developments. Effectiveness monitoring would demonstrate that all site lighting lumen emissions is 15 percent or less of the amount allowed by the Pima County Outdoor Lighting Code lumen per acre table for Zone 1a (Monrad et al. (2012) “Rosemont Copper Project Light Pollution Mitigation Recommendation Report,” dated June 18, 2012, page 5). The intent is to fully comply with the Pima County Outdoor Lighting Code; however, deviations may be required to comply with Mine Safety and Health Administration (MSHA) regulations.</p>
Responsible Party	<p>Implementation and Effectiveness: Rosemont Copper is responsible for conducting monitoring and reporting to the Forest Service.</p>
Timing	<p>Implementation: During premining phase to ensure compliance with final MPO. Effectiveness: Annual or semiannual monitoring (in accordance with the “20 Year Monitoring Plan: Light at Night – Measurements at Rosemont Copper Project,” dated May 20, 2012). Monitoring localized and regional quantitative trends in sky-brightness changes due to on-site lighting systems to establish current sources and allow for comparison of Rosemont Copper Mine and all other new developments would determine whether predictions of lumens are accurate; would include direct measurement of sky brightness using over flights and land-based measurements. Monitoring every 5 years during later years of operations phase (in accordance with the “20 Year Monitoring Plan: Light at Night – Measurements at Rosemont Copper Project,” dated May 20, 2012). Review of the efficacy of light mitigation measures would occur following construction of the mine.</p>
Applicable Alternatives	<p>All action alternatives with the exception of the proposed action.</p>

Visual Resources

MITIGATION MEASURE	
Description	<p style="text-align: center;">FS-VR-01 - Color of mine related buildings be selected to blend into the natural landscape</p> <p>Rosemont Copper would submit for approval and the Forest Service would approve colors for mine related buildings to reduce potential color contrasts. A dark, neutral color is recommended.</p>
Source	<p>Coronado ID team.</p>
Impacts Mitigated	<p>Would reduce contrast and related visual impact associated with plant buildings.</p>

FS-VR-01 - Color of mine related buildings be selected to blend into the natural landscape	
MITIGATION MEASURE	
Location	Plant site.
Monitoring / Reporting Action	Implementation: Rosemont Copper would receive Forest Service approval of color selection prior to selecting or applying final color in order to ensure that buildings are painted or stained in compliance with the final MPO. Effectiveness: The Forest Service would reevaluate finished results from representative viewpoints to determine effectiveness.
Performance Criteria	Implementation: Rosemont Copper would use approved colors for buildings. Effectiveness: Colors would be effective in reducing contrast of plant site buildings with natural environment.
Responsible Party	Implementation: Rosemont Copper is responsible for obtaining Forest Service approval before selecting colors or applying paint or stain to buildings, during construction and maintenance, and during mine life if facilities are added or repainted. Effectiveness: The Forest Service is responsible for effectiveness monitoring.
Timing	Implementation and Effectiveness: Premining phase when buildings are constructed and during mine life if facilities are added or repainted.
Applicable Alternatives	All action alternatives.

FS-VR-02 - Removal of unneeded facilities during closure	
MITIGATION MEASURE	
Description	This mitigation involves the removal of mining facilities that would not be needed for future management of the land. These facilities include buildings, the plant site, some roads, the perimeter and security fence (if not incorporated into allotment management plans), power supply line, and piping systems (consistent with Forest Service requirements, as well as requirements specified in the Certificate of Environmental Compatibility and Arizona State Land Department right-of-way permit); and water supply pipeline. The plant site would be recontoured and revegetated with native vegetation. Building foundations would either be removed or broken up and buried.
Source	This is a design feature from the preliminary MPO, and a requirement of the Coronado. Requirements regarding this mitigation are also contained in the Arizona Corporation Commission Certificate of Environmental Compatibility, Arizona State Land Department right-of-way permit.
Impacts Mitigated	Would reduce visual impacts; would reduce potential impacts to surface water from erosion; would restore ability to allow public access.
Location	Plant site, roads, fences, utility corridor.
Monitoring / Reporting Action	Implementation: Weekly inspections during plant site decommissioning to ensure that closure actions comply with final MPO, ACC Certificate of Environmental Compatibility and Arizona State Land Department right-of-way permit. Refer to the FS-BR-01 for additional details on reporting of plant site decommissioning. Effectiveness: Quarterly inspection and reporting to ensure that closure activities are achieving specifications in final reclamation and closure plan, which is contained in the final MPO. Monitor for revegetation progress and success quarterly, including mapping general areas of vegetation species, density, and location. Monitor disturbed and revegetated areas for noxious and invasive weeds quarterly; map such locations and take action to prevent, eliminate, or control weeds should they occur, in accordance with the final MPO.

B. Mitigation and Monitoring Plan

MITIGATION MEASURE	
Performance Criteria	<p>FS-VR-02 - Removal of unneeded facilities during closure</p> <p>Implementation: Sites that contain structural improvements would be reclaimed by removing all unneeded ore processing facilities, ancillary facilities (including foundations unless Coronado indicates breaking and burial is appropriate), roads, fences, and utility lines on NFS lands, and consistent requirements specified in Certificate of Environmental Compatibility and Arizona State Land Department right-of-way permit. Growth media would be placed on reclaimed areas and revegetated with native grasses, trees, and/or shrubs to meet desired conditions, to be determined by the Forest Service.</p> <p>Effectiveness: Closure actions would result in conditions that meet specifications in final reclamation and closure plan, including revegetation objectives of the final reclamation and closure plan. If foundations are broken and buried, specifications for size of remnant pieces and depth of burial would comply with those identified in the final MPO.</p>
Responsible Party	<p>Implementation and Monitoring: Rosemont Copper is responsible for conducting monitoring and reporting to the Forest Service. The Forest Service is responsible for spot-checking monitoring activities; and for evaluating monitoring results to determine compliance with the final MPO.</p>

MITIGATION MEASURE	
Timing	<p>FS-VR-02 - Removal of unneeded facilities during closure</p> <p>Implementation: During final reclamation and closure.</p> <p>Effectiveness: During final reclamation and closure and postclosure until revegetation objectives of the final reclamation and closure plan have been met.</p>
Applicable Alternatives	<p>All action alternatives.</p>

MITIGATION MEASURE	
Description	<p>FS-VR-03 – Measures to reduce color contrasts from cuts, fills, and concrete structures associated with the mine</p> <p>Rosemont Copper would ensure that concrete drop structures for applicable alternatives are colored to reduce impacts to visual resources. Additionally, light colored areas resulting from cut and fill of the highly visible southern diversion channel would be covered with growth medium and revegetated (see FS-SR-01 and 02).</p>
Source	<p>Coronado ID team.</p>
Impacts Mitigated	<p>Would reduce visual impacts by reducing color contrast.</p>
Location	<p>Southern diversion channel and concrete drop structures.</p>
Monitoring / Reporting Action	<p>Implementation: Visual inspection and report to ensure that implementation has occurred.</p> <p>Effectiveness: Visual inspection from selected viewpoints to determine effectiveness.</p>
Performance Criteria	<p>Implementation: Color is applied as early in the premining or active mining phase as feasible, in accordance with manufacturer's instructions.</p> <p>Effectiveness: Results would be effective in reducing color contrast.</p>
Responsible Party	<p>Implementation: Rosemont Copper is responsible for implementing this action in accordance with the final MPO.</p> <p>Effectiveness: The Forest Service is responsible for conducting effectiveness monitoring.</p>
Timing	<p>Implementation: Premining through early active mining.</p> <p>Effectiveness: From implementation of coloring through final closure.</p>
Applicable Alternatives	<p>All action alternatives – Drop structure is unique to Barrel Alternative; all alternatives contain the southern diversion channel.</p>

FS-VR-04 – Measures to reduce the visual impact of the mining pit	
MITIGATION MEASURE	
Description	This mitigation involves using commercially available technology to reduce the visual impacts of the mine pit, including visual contrast resulting from exposed light colored rock in the upper mine pit and horizontal lines resulting from benches within the upper portions of the pit. Rosemont Copper would cooperatively work with the Coronado to identify and implement actions such as the use of weathering products to reduce color contrast as the pit is developed, and address visual impacts associated with horizontal lines as it is technically feasible to do so.
Source	Coronado ID team.
Impacts Mitigated	Could potentially reduce visual impacts by reducing color contrast and linear features.
Location	Portions of the mine pit that are visible from concern level 1 and 2 travelways as identified in the “Visual Resources” section in chapter 3 of the FEIS.
Monitoring / Reporting Action	Implementation and Effectiveness: To be determined.
Performance Criteria	Implementation and Effectiveness: To be determined
Responsible Party	Implementation and Effectiveness: Rosemont Copper and the Coronado are equally responsible for investigating available technologies for reducing the visual impact of the mine pit, and for working together to implement appropriate actions.
Timing	Implementation and Effectiveness: Investigation of applicable technologies would occur during premining and mitigation would be applied as the pit wall is developed and as soon as mine access onto benches is no longer needed (when access to the benches is still safe and mitigation would be most effective). The Coronado would monitor the effectiveness in a manner that would be determined at that time.
Applicable Alternatives	All action alternatives.

Recreation and Wilderness

FS-RW-01 – Relocation of a segment of the Arizona National Scenic Trail and construction of trailheads	
MITIGATION MEASURE	
Description	Rosemont Copper would fund relocation of a section of the Las Colinas portion of the Arizona National Scenic Trail away from Rosemont Copper Mine facilities and trailheads. The trail relocation would result in moving the trail farther away from the Helena Mine complex than its current location.
Source	Relocation of the trail is a design feature from the preliminary MPO. The Forest Service has mapped the alternative locations. Locating the trail farther away from the Helena Mine complex is included in a BO Conservation Measure related to known lesser long-nosed bat roost protection.
Impacts Mitigated	Would reduce impacts to recreational users of the Arizona National Scenic Trail. Potential impacts to lesser long-nosed bats at the Helena Mine complex would be reduced by funneling hikers farther away from the adit entrances.
Location	Section of Arizona National Scenic Trail that would be relocated. See alternative maps in chapter 2 for locations.
Monitoring / Reporting Action	Implementation: Field evaluations during trail construction would indicate that trail is built to Forest Service furnished specifications. Effectiveness: User surveys would be conducted periodically to identify user experience.

B. Mitigation and Monitoring Plan

FS-RW-01 – Relocation of a segment of the Arizona National Scenic Trail and construction of trailheads	
MITIGATION MEASURE	
Performance Criteria	<p>Implementation: Trail would be constructed in location and to specifications specified by the Forest Service. Relocated trail segment would be pioneered and available for public use at the time the existing trail segment is closed to public use. The Forest Service would approve, in advance, any activity that would restrict the trail to public use, with the intent of maintaining the trail in an open condition during the “through hiking” season. Construction of relocated trail and associated facilities would be completed within 1 year of the NEPA decision.</p> <p>Effectiveness: Trail user experience would meet those specified in the FEIS.</p>
Responsible Party	<p>Implementation: Rosemont Copper is responsible for providing funds to the Arizona Trail Association to ensure that trail relocation occurs according to Forest Service specifications and is completed before mine related activities close existing trail to public use. Details of the agreement for fund disbursement and trail construction are contained in an agreement between Rosemont Copper and the Arizona Trail Association.</p> <p>Effectiveness: The Forest Service is responsible for maintenance and effectiveness monitoring.</p>
Timing	<p>Implementation and Effectiveness: Commences with approval of final MPO; concludes when relocated trail segment and associated facilities are constructed and open for public use. Activities near known lesser long-nosed bat roosts would occur when lesser long-nosed bats are not present, typically during the period from November 1 to July 1 each year.</p>
Applicable Alternatives	<p>All action alternatives. Location of relocated segments, associated facilities, and level of mitigation differs by alternative.</p>
FS-RW-02 – Arizona National Scenic Trail: easement to allow the trail to be constructed across Rosemont Copper’s private land	
MITIGATION MEASURE	
Description	<p>The relocation of the Arizona National Scenic Trail would require locating the trail across two private parcels of land owned by Rosemont Copper. A trail easement would be required before trail relocation construction could commence. These are the same land parcels described in FS-WUS-01 that would compensate for impacts to WUS. Coordination between future land uses allowed under the restrictive covenant developed for FS-WUS-01 and those appropriate for the National Scenic Trail corridor would occur.</p>
Source	<p>Coronado ID team.</p>
Impacts Mitigated	<p>Would reduce impacts to recreational users of the Arizona National Scenic Trail.</p>
Location	<p>Davidson Canyon private land parcels (see FS-WUS-01).</p>
Monitoring / Reporting Action	<p>Implementation and Effectiveness: Recordation of an easement, a copy of which would be provided to the Forest Service.</p>
Performance Criteria	<p>Implementation and Effectiveness: An easement would be recorded that allows a segment of the Arizona National Scenic Trail to be constructed to Forest Service standards. The easement would comply with stipulations contained in the National Trail Systems Act (United States Code, Volume 16, Sections 1241-1251).</p>
Responsible Party	<p>Implementation: Rosemont Copper is responsible for providing an easement allowing trail construction, use, and management across their private land.</p> <p>Effectiveness: The Forest Service is responsible for any effectiveness monitoring deemed appropriate.</p>
Timing	<p>Implementation and Effectiveness: Prior to relocation construction of the Arizona National Scenic Trail (see FS-RW-01).</p>
Applicable Alternatives	<p>All action alternatives.</p>

FS-RW-03 – Mitigate loss of off-highway vehicle use opportunities	
MITIGATION MEASURE	
Description	Rosemont Copper would provide funding for efforts to produce a plan for developing facilities and managing OHV use that would be displaced from the project area. Rosemont would enter into a collection agreement to provide funding that would include \$100,000 to be used for a NEPA analysis and decision process to determine where additional facilities are warranted and appropriate. Subsequent to the NEPA decision to implement OHV mitigation, Rosemont would contribute \$700,000 to the Coronado for additional work, which could include, but not limited to construction of OHV facilities; public outreach and education; management and enforcement.
Source	The Coronado as negotiated with Rosemont.
Impacts Mitigated	Once implemented, this would compensate for the loss of OHV opportunities in the project area by creating or improving similar facilities and opportunities in other areas of the Coronado.
Location	Coronado National Forest, primarily on the Nogales Ranger District.
Monitoring / Reporting Action	Implementation and Effectiveness: To be determined as part of the Forest Service NEPA process.
Performance Criteria	Implementation: Rosemont provides the agreed amount of funding to the Coronado. The Coronado completes NEPA analysis, and implements the decision. Effectiveness: OHV opportunities are provided to off-set the loss of these opportunities within the Rosemont project area.
Responsible Party	Implementation and Effectiveness: Rosemont would be responsible for providing funds as agreed. The Coronado would be responsible for all planning, implementation, management, and monitoring.
Timing	Implementation and Effectiveness: Rosemont would provide \$100,000 for NEPA planning to the Forest within 6 months following approval of the ROD. Rosemont would provide the remainder of funding within 6 months of the OHV NEPA decision for a total contribution of \$800,000.
Applicable Alternatives	All action alternatives.

Hazardous Materials

FS-HM-01 - Hazardous materials containment and management	
MITIGATION MEASURE	
Description	This mitigation involves handling, storage, use, and communication information about hazardous materials, in accordance with laws and regulations. A variety of agencies have regulations defining what materials are classified as hazardous, and how they should be transported, handles and stored. These include the U.S. Environmental Protection Agency (EPA), U.S. Department of Transportation, ADEQ, Pima County Department of Environmental Quality, and MSHA. Table 3 in chapter 2 provides a summary of some of these regulations.
Source	This is a design feature of the preliminary MPO.
Impacts Mitigated	Would reduce potential impacts to human health and environmental risks (such as impacts to surface and groundwater quality) from transportation, use, and storage of hazardous materials. Would reduce potential for residue from explosive use.
Location	Area within the perimeter fence and any other area where hazardous materials are under the direct control of Rosemont Copper, its employees, or contractors.
Monitoring / Reporting Action	Implementation: As required by applicable regulations. An explosives and blasting management procedure would be required to be implemented to ensure best management practices are applied. Effectiveness: As required by applicable regulations.

FS-HM-01 - Hazardous materials containment and management	
MITIGATION MEASURE	
Performance Criteria	Implementation: Inspections during construction to ensure that facility construction adheres to final MPO and complies with applicable laws and regulations. Frequency would comply with applicable regulations. Effectiveness: Inspections during operation and reclamation and closure phases to determine whether operation and maintenance during operations is effective and complies with laws and regulations related to transporting, use, and storage of hazardous materials. Frequency would comply with applicable regulations.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for conducting monitoring and reporting to the Forest Service.
Timing	Implementation and Effectiveness: Premining through final reclamation and closure phases.
Applicable Alternatives	All action alternatives.

FS-HM-02 – Maintaining of material safety data sheets in accordance with 30 CFR 47	
MITIGATION MEASURE	
Description	This mitigation involves maintaining material safety data sheets onsite; and providing this information to emergency service providers. Regulations require material safety data sheets to be available to workers and that notification of potential hazards be provided to site visitors. Access to material data safety sheets would also be provided to as appropriate emergency response departments and hospitals.
Source	This is a design feature of the preliminary MPO.
Impacts Mitigated	Would reduce impacts to worker and public health and safety in the case of exposure by allowing appropriate treatment to be implemented more rapidly.
Location	Project area; emergency response departments and local hospitals.
Monitoring / Reporting Action	Implementation and Effectiveness: The MSHA would monitor material safety data sheet availability during their scheduled inspections. Rosemont Copper would report to the Forest Service when material data safety sheets have been provided to emergency response departments and hospitals.
Performance Criteria	Implementation: The Rosemont Copper Project is in compliance with regulations specified in 30 CFR 47. Effectiveness: Information on hazardous materials would be readily available to employees and visitors to the site. Rosemont Copper would provide copies of all pertinent material data safety sheets provided to emergency response departments and hospitals.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for making material data safety sheets available to employees and site visitors; providing access to emergency response departments and local hospitals; and reporting to the Forest Service. MSHA is responsible for ensuring compliance with 30 CFR 47.
Timing	Implementation and Effectiveness: Premining through final reclamation and closure phases.
Applicable Alternatives	All action alternatives.

Transportation/Access

FS-TA-01 – Development of a comprehensive transportation plan	
MITIGATION MEASURE	
Description	The transportation plan would address maintenance standards; levels of appropriate use; methods to maintain the roadways sufficiently to prevent washboard, rutting, and drainage problems; commitment to replace surfacing lost to drainage; commitment to repair roads damaged by use; commitment to restore temporary roads to natural preoperation conditions during reclamation/closure; and installation and maintenance of wildlife crossing structures (e.g., corrugated metal pipes) under the primary access road at locations of known wildlife concentration. Details would be contained in the transportation plan.

FS-TA-01 – Development of a comprehensive transportation plan	
MITIGATION MEASURE	
Source	This is a design feature from the preliminary MPO.
Impacts Mitigated	Would reduce impacts to surface water from erosion; would reduce impacts to wildlife from vehicle-caused injury and mortality.
Location	All project related roads on NFS lands.
Monitoring / Reporting Action	Implementation and Effectiveness: To be determined in transportation plan, which would be completed and approved by the Forest Service prior to approval of the final MPO.
Performance Criteria	Implementation and Effectiveness: Completion of a plan approved by the Forest Service; and compliance with the stipulations of the approved plan.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for developing the transportation plan; for following its direction once it is approved and incorporated into the final MPO; and for monitoring implementation and effectiveness as agreed to with the Forest Service. The Forest Service is responsible for reviewing and approving the plan.
Timing	Implementation and Effectiveness: The transportation plan would be developed after issuance of the ROD and prior to approval of the final MPO. Implementation monitoring would occur during the premining phase; effectiveness monitoring would occur from the premining through the final reclamation and closure phase.
Applicable Alternatives	All action alternatives.

Noise

FS-N-01 – Management techniques to reduce potential noise impacts from blasting	
MITIGATION MEASURE	
Description	This mitigation is focused on noise management techniques, including generally limiting blasting to once per day, during daylight hours; and sequenced blasting using time-delay technology. Explosive usage is limited to 52 tons per day as consistent with the limits contained in the air quality permit.
Source	Design feature of preliminary MPO; aspects required by the air quality permit.
Impacts Mitigated	Would reduce impacts from noise to humans and wildlife.
Location	Mine pit.
Monitoring / Reporting Action	Implementation and Effectiveness: Daily recording of when blasting occurs.
Performance Criteria	Implementation and Effectiveness: Blasting would be generally limited to once per day, during daylight hours, and sequenced using time-delay technology.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for conducting monitoring and reporting to the Forest Service.
Timing	Implementation and Effectiveness: Premining through active mining phases.
Applicable Alternatives	All action alternatives.

FS-N-02 – Actions to reduce potential noise impacts from vehicles	
MITIGATION MEASURE	
Description	This mitigation would reduce potential noise from certain vehicles by requiring backup alarms on vehicles to be attuned to reduce noise. MSHA standards for backup alarms would be met (56/57.1432 (a) and (b); 56/57.14132(a) and (b) Horns and Backup Alarms For Surface Equipment Standard 56/57.14132(a)).

B. Mitigation and Monitoring Plan

MITIGATION MEASURE	
Source	Coronado ID team.
Impacts Mitigated	Would reduce human impacts associated with noise pollution.
Location	All mining related vehicles equipped with backup alarms.
Monitoring / Reporting Action	Implementation: Inspection of each vehicle equipped with backup alarm at the time of initial use to determine that backup alarms comply with final MPO. Effectiveness: Quarterly inspections to ensure that backup alarms are attuned to levels that reduce noise as permissible by MSHA regulations.
Performance Criteria	Implementation: Equipment inspections demonstrate that backup alarms have been attenuated to reduce noise. Effectiveness: All backup alarms would be attuned to reduce noise; monitoring would demonstrate that noise levels are reduced from those that would occur without attuned backup alarms.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for conducting monitoring and reporting to the Forest Service.
Timing	Implementation and Effectiveness: Premining through final reclamation and closure phases.
Applicable Alternatives	All action alternatives.

Public Health and Safety

MITIGATION MEASURE	
Description	FS-PHS-01 – Construction of a perimeter fence that would exclude the public This mitigation involves construction of a perimeter fence to keep the public from coming into contact with mining operations or potentially hazardous conditions. Construction would use horses and all-terrain vehicles (ATVs). Existing roads and motorized routes would be used to deliver posts and wire to the extent practicable. No road construction or off-road use of vehicles larger than ATVs would be allowed.
Source	This is a design feature of the preliminary MPO.
Impacts Mitigated	Would avoid or reduce public air impacts; would ensure that the public would not come into contact with operations and therefore would reduce the risk of public accident or injury; would use installation methods that would reduce surface disturbance and impacts to cultural sites.
Location	Perimeter fence location; differs by alternative. See alternative maps in chapter 2.
Monitoring / Reporting Action	Implementation: Daily inspections during installation to ensure that location and construction techniques comply with final MPO. Effectiveness: Annual inspections the entire length of the fence to ensure that it is effective in restricting public access.
Performance Criteria	Implementation: Construction would be conducted using techniques that reduce surface disturbance; cultural sites would be avoided; location and fencing materials would meet specifications in final MPO. Effectiveness: Monitoring would indicate that fence is regularly maintained and is effective in restricting public access.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for conducting monitoring and reporting to the Forest Service.
Timing	Implementation and Effectiveness: Premining through final reclamation and closure phases.
Applicable Alternatives	All action alternatives.

FS-PHS-02 – Preparation of emergency response and contingency plans, including a fire plan	
MITIGATION MEASURE	
Description	This mitigation requires Rosemont Copper to coordinate with Emergency Medical Services providers and local fire districts in development of emergency response and contingency planning.
Source	This is a design feature of the preliminary MPO. The Coronado ID team brought the fire plan forward.
Impacts Mitigated	Pre-emergency planning and coordination with Emergency Medical Services providers and local fire districts would reduce response time and improve services of Emergency Medical Services, reducing impacts of wildfires and potential human injuries from accidents.
Location	To be determined in agreement between the Coronado, Rosemont Copper, Emergency Medical Services providers, and local fire districts.
Monitoring / Reporting Action	Implementation: Determination that contingency planning has occurred and has involved the appropriate agencies, with results incorporated into the final MPO. Effectiveness: Annual review to ensure that implementation is occurring according to the plan; and annual determination with applicable parties to determine effectiveness.
Performance Criteria	Implementation: Agreement and plan would be developed and incorporated into the final MPO. Effectiveness: Annual multiparty review to determine whether plan is being implemented according to final MPO, and whether results are effective in reducing response time to wildfires and accidents.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for conducting monitoring and reporting to the Forest Service and applicable fire districts and Emergency Medical Services providers.
Timing	Implementation and Effectiveness: From time of final MPO approval through final closure.
Applicable Alternatives	All action alternatives.

Cultural Resources

FS-CR-01 – Archaeological data recovery on sites that would be adversely affected	
MITIGATION MEASURE	
Description	This involves excavation and recovery at cultural sites that would be directly impacted.
Source	HPTP.
Impacts Mitigated	Would compensate for loss of information important to cultural history and archaeology.
Location	All archaeological sites within the areas of direct impact.
Monitoring / Reporting Action	Implementation and Effectiveness: All testing and data recovery work would conform to the stipulations in the memorandum of agreement and in the HPTP.
Performance Criteria	Implementation and Effectiveness: Testing and data recovery, including reporting and curation, would be completed as specified in the HPTP.
Responsible Party	Implementation and Effectiveness: Forest Service; oversight; Rosemont Copper; funding.
Timing	Implementation and Effectiveness: As specified in the HPTP: No testing or data recovery fieldwork would occur until after the final MPO has been approved by the Coronado; however, testing and data recovery fieldwork for any specific archaeological site would be completed <i>before</i> ground disturbance related to mine construction and operation begins in that specific area.
Applicable Alternatives	All action alternatives.

B. Mitigation and Monitoring Plan

FS-CR-02 - Respectful and appropriate treatment of human remains that would be disturbed by the project	
MITIGATION MEASURE	
Description	This involves removal of human remains from sites that would be directly impacted.
Source	Burial action plan in the HPTP.
Impacts Mitigated	Would partially compensate for disturbance of human remains.
Location	Measure applies to: (1) all known prehistoric and historic sites (some of which are known to have, or likely to have, human remains); and (2) any inadvertent discovery of human remains during project work.
Monitoring / Reporting Action	Human remains would be treated according to the protocols in the burial action plan for Federal lands and the burial agreement for State and private lands. O'odham or Hohokam burials, funerary objects, sacred objects, objects of cultural patrimony, or sacred animal burials would be repatriated directly from the field to the Tohono O'odham Nation via the Tohono O'odham Nation Cultural Resources Office. Any burials, funerary objects, sacred objects, objects of cultural patrimony, or sacred animal burials identified as other than O'odham or Hohokam would be handled according to the affiliated tribes' wishes.
Performance Criteria	All human remains and associated funerary objects that would be disturbed by the project would be repatriated and reburied in accordance with the burial action plan.
Responsible Party	Forest Service: oversight and coordination; representatives of consulting tribes for monitoring and reburial of recovered ancestral remains; Rosemont Copper: funding.
Timing	The most intensive work related to this mitigation measure is expected to occur during the archaeological testing and data recovery, but all parties would be prepared to implement the measure at any time during surface-disturbing activities related to the project.
Applicable Alternatives	All action alternatives.
FS-CR-03 - Curation of archaeological collections in accordance with 36 CFR 79 and the HPTP	
MITIGATION MEASURE	
Description	This involves storage and interpretation of artifacts that are removed from sites that would be directly impacted
Source	HPTP.
Impacts Mitigated	Would partially compensate for damage to integrity and transmission of O'odham culture that would occur with the damage to the Ce:wi Duag Traditional Cultural Property and destruction of ancestral sites in the project area.
Location	A curation facility meeting requirements specified in 36 CFR 79 (either Tohono O'odham Nation Cultural Center and Museum (TONCCM) or Arizona State Museum).
Monitoring / Reporting Action	As detailed in the HPTP.
Performance Criteria	All archaeological materials and associated field notes, photographs, etc., generated during surface collection, mapping, testing, and/or data recovery on the project would be curated at the designated repository.
Responsible Party	Forest Service: oversight and coordination; Repository: care of collections; Rosemont Copper: funding.
Timing	Any required improvements necessary to prepare the museum facility to house the collections would begin concurrently with the approval of the MPO. The Rosemont exhibit would be developed within 18 months of the completion of the data recovery report.
Applicable Alternatives	All action alternatives.

MITIGATION MEASURE	
Description	This involves procedures in the event of discovery during project activities of previously unknown archaeological sites.
Source	HPTP.
Impacts Mitigated	Partial compensation for inadvertent and unplanned impacts to archaeological sites, should they occur.
Location	Within the project area.
Monitoring / Reporting Action	The Coronado, in consultation with the SHPO, may identify areas of project construction within the project area that would require monitoring by a Coronado-approved archaeologist and tribal monitor designated by the consulting tribes. Work in areas so identified cannot proceed without a monitor in place. All work at the site of a discovery would be suspended and the archaeologist and tribal monitor would examine and evaluate the discovery, and follow the procedures in the discovery plan included in the HPTP.
Performance Criteria	Appropriate documentation of cultural resources and repatriation of human remains, as described in the HPTP.
Responsible Party	The Coronado is responsible for consulting with SHPO and identifying sites requiring monitoring, and for approving an archaeological monitor. Rosemont Copper is responsible for suspending work and informing archaeological monitor should an unknown site be discovered; and for funding and oversight of contractors.
Timing	Premining through final reclamation and closure phases.
Applicable Alternatives	All action alternatives.

MITIGATION MEASURE	
Description	Ground-disturbing activities between the perimeter and security fences would be approved in advance by the Forest Service (anticipated to be limited to construction of compliance wells, stormwater drainage facilities, and the perimeter fence and active road decommissioning). Monitors would be present for all ground-disturbing work. Cultural material discovered during monitoring would be dealt with in accordance with the discovery plan in the HPTP. Active road decommissioning would be discussed with the Forest Archaeologist prior to implementation to coordinate areas necessary to avoid due to cultural sites.
Source	HPTP.
Impacts Mitigated	Would avoid or minimize ground disturbance and other physical impacts to archaeological sites and cultural deposits.
Location	Area between security fence and perimeter fence.
Monitoring / Reporting Action	Rosemont Copper would coordinate any proposed ground disturbance in this area with Coronado to identify recorded historic properties, which would be avoided. If historic properties cannot be avoided, treatment would comply with Section 106 testing/data recovery given in the HPTP. Monitoring and reporting ground-disturbing activities would conform to the stipulations in the HPTP.
Performance Criteria	Acceptance of report by the Coronado.
Responsible Party	Coronado oversight; professional archaeologist and designated tribal monitors; Rosemont Copper funding.
Timing	Premining through final reclamation and closure phases.
Applicable Alternatives	All action alternatives.

B. Mitigation and Monitoring Plan

MITIGATION MEASURE	
Description	FS-CR-06 - Cultural resources protection training This requires Rosemont Copper to provide appropriate training to their employees regarding identification, avoidance and protection of cultural sites, and other topics.
Source	HPTP.
Impacts Mitigated	Could potentially avoid inadvertent impacts to cultural resources.
Location	Rosemont Copper headquarters.
Monitoring / Reporting Action	As part of Rosemont Copper's Environmental Training Program, all personnel (including archaeological contractors) would be instructed, to the degree appropriate to their involvement with the project, by the Rosemont Copper qualified cultural resources contractor on identification of cultural resources, site avoidance and protection measures; and the procedures to be followed in the discovery plan. Information on the statutes and regulations protecting cultural resources and respectful treatment of human remains would be provided. Representatives of the consulting tribes would be offered the opportunity to assist in the training according to agreements to be developed between them and Rosemont Copper.
Performance Criteria	Regular report, as specified in the HPTP.
Responsible Party	Rosemont Copper.
Timing	Before project operations begin and throughout premining through final reclamation and closure phases as personnel changes occur.
Applicable Alternatives	All action alternatives.

MITIGATION MEASURE	
Description	FS-CR-07 - Project proponent would allow tribal members access, upon 5 days' advance request, to the project area for cultural practices Requirement to allow reasonable access to the project area for tribal members.
Source	HPTP.
Impacts Mitigated	Would partially reduce impacts of loss of access to sacred sites and collection areas.
Location	1. All springs, vision sites, and other sacred sites within project area; 2. Resource-collecting areas within project area.
Monitoring / Reporting Action	Access would be documented in annual report by Rosemont Copper to the Coronado.
Performance Criteria	Access would be subject to compliance with all safety requirements.
Responsible Party	The Coronado would coordinate requests with Rosemont Copper.
Timing	Throughout premining through final reclamation and closure phases of the project.
Applicable Alternatives	All action alternatives.

MITIGATION MEASURE	
Description	FS-CR-08 - Project proponent would organize tribal members field visits to potentially affected springs This measure requires knowledge of culturally important spring locations and providing tribal members access to conduct desired ceremonies or plant collections.
Source	HPTP.
Impacts Mitigated	Would partially reduce impacts of loss of access to sacred sites and collection areas.

FS-CR-08 - Project proponent would organize tribal members field visits to potentially affected springs	
MITIGATION MEASURE	
Location	Springs within the project area and other springs that may be impacted by changes in the surface water or groundwater due to project activities.
Monitoring / Reporting Action	Once the visits are completed, the Coronado would be notified.
Performance Criteria	Tribal access would be organized and provided to requested springs.
Responsible Party	Forest Service oversight; organized and funded by Rosemont Copper.
Timing	To be completed for each spring before ground disturbance occurs in that area.
Applicable Alternatives	All action alternatives.

FS-CR-09 – Transplanting of critical plant resources and inclusion of species within revegetation mixture	
MITIGATION MEASURE	
Description	This involves incorporating culturally important plants into the revegetation efforts described in the final reclamation and closure plan.
Source	HPTP.
Impacts Mitigated	Would partially rectify the loss of culturally important plants in the portion of the Ce:wi Duag Traditional Cultural Property that is the project area.
Location	Rosemont Copper private land with deed restrictions to protect vegetation.
Monitoring / Reporting Action	Prior to ground disturbance, Rosemont Copper would coordinate plant removal with consulting tribes. Tribes would be offered an opportunity to collect plants for removal to their reservations; other plants would be transplanted to a Rosemont Copper designated area and access provided to members of consulting tribes to collect plants used for medicinal, ceremonial, and craft purposes. Rosemont Copper would incorporate plant species designated by the consulting tribes in its revegetation mix to the extent that those species exist in the area.
Performance Criteria	Successful plant transplantation and propagation as reported in the annual reclamation reporting.
Responsible Party	Rosemont Copper with Coronado oversight.
Timing	Prior to removal of pit overburden and vegetation and soil in the waste rock and tailings area.
Applicable Alternatives	All action alternatives.

FS-CR-10 - Interpretation of the results of the cultural resources investigations for Tribal members, the Hispanic community, and the public	
MITIGATION MEASURE	
Description	This involves compiling and interpreting the results of cultural investigations in a manner that is accessible and understandable to the public.
Source	HPTP.
Impacts Mitigated	Would partially compensate for destruction of archaeological sites; damage to traditional cultural properties; loss of place-based transmittal of cultural values.
Location	Mine Visitor Center; Arizona State Museum; Tribal cultural centers; and online.

B. Mitigation and Monitoring Plan

FS-CR-10 - Interpretation of the results of the cultural resources investigations for Tribal members, the Hispanic community, and the public	
Monitoring / Reporting Action	Information collected as part of the cultural resource studies undertaken for the Rosemont Copper Project would be made available for Tribal youth, local school districts, and the public, to dispel stereotypes by providing accurate and culturally aware information about the history of the project area.
Performance Criteria	Public volumes and brochures describing archaeological and historic interpretations available in print and online; permanent exhibit at Visitor Center and online; presentations or exhibits at local venues as requested; and development of curriculum for local school districts.
Responsible Party	Rosemont Copper with oversight by the Coronado.
Timing	Visitor Center exhibits within 6 months of the Visitor Center establishment. Public volumes, brochures, and online exhibit available for public within 18 months of the mitigation report finalization.
Applicable Alternatives	All action alternatives.

FS-CR-11 – Stabilization of previously excavated historic properties between the security and perimeter fences	
Description	This would include bringing in clean fill to fill the trenches and other excavations left open at sites excavated during the ANAMAX project. All restoration work would be monitored in accordance with the reclamation plan in the HPTP.
Source	Reclamation plan in the HPTP.
Impacts Mitigated	Would eliminate physical impacts to historic properties currently monitored by the Coronado.
Location	In the area between the security and perimeter fences.
Monitoring / Reporting Action	Implementation: Stabilization work would be supervised by archaeologists and designated tribal monitors. Effectiveness: Monitors would be designated by the Coronado to inspect the sites quarterly for the first year after stabilization, and annually for the remainder of mining operations to ensure that refilled holes have stabilized and that no ancillary activities are affecting the sites. If monitoring shows signs of excessive erosion or disturbance, the Forest Archaeologist will be contacted for remediation planning.
Performance Criteria	Implementation: Clean fill sediments would be stable and support native vegetation in densities consistent with natural occurrence. Effectiveness: No signs of excessive erosion or human-caused ground disturbance.
Responsible Party	Forest Service oversight; Rosemont Copper funding.
Timing	Concurrent with data recovery, prior to ground disturbance by project construction.
Applicable Alternatives	All action alternatives.

Mitigation and Monitoring – Other Regulatory and Permitting Agencies

The mitigation and monitoring in this section would be required by permits or approvals issued under the jurisdiction of a permitting agency, such as the ADEQ. As such, these mitigation and monitoring items would be included in the ROD, and implementation would be required. The impact analyses that are disclosed in chapter 3 of the FEIS note this, and final conclusions regarding impacts consider the effectiveness of these mitigation measures.

Soils and Revegetation

MITIGATION MEASURE	
Description	OA-SR-01 - Powerline and water line locations Final location is the shortest route of alternatives considered by the Arizona Corporation Commission and eliminates one waterline pump station.
Source	Arizona Corporation Commission Certificate of Environmental Compatibility.
Impacts Mitigated	Location selected would reduce acres of surface disturbance, acres of plant and animal habitat impacted, and acres of potential cultural resources impacted, compared with other alternative locations considered.
Location	Utility corridor. See map in chapter 2.
Monitoring / Reporting Action	Implementation and Effectiveness: Weekly inspections during construction of power supply line and water supply pipeline to ensure location complies with Arizona Corporation Commission Certificate of Environmental Compatibility and final MPO.
Performance Criteria	Implementation and Effectiveness: Location and acres disturbed would comply with Certificate of Environmental Compatibility and final MPO.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for working with TEP to ensure that construction on lands other than NFS land complies with Certificate of Environmental Compatibility. Rosemont Copper is responsible for monitoring work on NFS lands to ensure compliance with final MPO.
Timing	Implementation and Effectiveness: During construction of electrical supply line and water supply pipeline (premining phase).
Applicable Alternatives	All action alternatives.

Air Quality

MITIGATION MEASURE	
Description	OA-AQ-01 – Paving of mine related roads to reduce dust emissions All routes used by the shipment and delivery vehicles would be paved, including the entrance road (3.1 miles), plus the shipment/delivery light-duty roads within the facility.
Source	Air quality permit.
Impacts Mitigated	Would reduce impacts to air quality from fugitive emissions (dust) that would otherwise be produced by vehicle use of these roads if they were unpaved.
Location	Primary access road and other roads that are not used by haul trucks or heavy mine equipment.

B. Mitigation and Monitoring Plan

OA-AQ-01 – Paving of mine related roads to reduce dust emissions	
MITIGATION MEASURE	
Monitoring / Reporting Action	<p>Implementation: Weekly inspection during road construction and paving activities, including road maintenance or repair, to ensure that applicable MSHA construction requirements and/or Forest Service road specifications are met. Instances where applicable specifications are not met would be reported to the Coronado within 24 hours. Otherwise, inspection results can be summarized in quarterly and annual monitoring reports.</p> <p>Effectiveness: Effectiveness monitoring related to fugitive dust emissions are specified in the air quality permit. Road conditions, including the condition of paved surfaces, would be visually observed monthly and inspected in further detail quarterly to ensure that pavement remains intact and that maintenance is scheduled and implemented in a timely manner. The intent is to identify conditions that require maintenance actions in a timely manner. Routine maintenance needs and actions can be summarized and reported in semiannual reports prepared as specified in the air quality permit and shared with the Coronado.</p>
Performance Criteria	<p>Implementation: Designated roads within the plant site would be constructed and paved to specification following the substantial completion of the plant site facilities for the duration of prior to construction operations of the plant site.</p> <p>Effectiveness: Specifications stated in air quality permit would be met.</p>
Responsible Party	<p>Implementation: Rosemont Copper is responsible for conducting monitoring and reporting to the Forest Service and ADEQ.</p> <p>Effectiveness: Rosemont Copper is responsible for conducting monitoring and reporting to ADEQ and the Forest Service in accordance with to the air quality permit. ADEQ is responsible for determining compliance with the air quality permit and the Clean Air Act and for keeping the Forest Service informed of the results of such determinations.</p>
Timing	<p>Implementation: Begins with construction of the road system (premining phase) and ends at completion of final reclamation and closure phase (due to periodic road maintenance).</p> <p>Effectiveness: Refer to the air quality permit.</p>
Applicable Alternatives	All action alternatives.
OA-AQ-02 - Dust control for unpaved roads	
MITIGATION MEASURE	
Description	This mitigation contains a number of actions that are designed to control at least 90 percent of PM ₁₀ emissions from the unpaved road network. These actions include application and reapplication of chemical dust suppressant and watering as needed.
Source	This is a design feature for the preliminary MPO. The dust control plan contained in the air quality permit.
Impacts Mitigated	Would reduce impacts to air quality from fugitive dust emissions.
Location	The network of unpaved haul roads used for transporting ore and waste rock from the open pit mine to the primary crushing area, leaching area, and waste rock areas, respectively; and any unpaved general roads within and around the perimeter fence surrounding the facility used by support vehicles. Primary roads include: (a) haul roads located in the pit, (b) haul roads for transporting concentrating ore from the pit to the primary crusher/run of mine stockpile, (c) haul roads for transporting leaching ore from the pit to the leach pad, (d) haul roads for transporting waste rock from the pit to the waste rock storage area, waste rock buttresses, or other general areas, and (e) general facility roads around the project area for support vehicles.
Monitoring / Reporting Action	Implementation and Effectiveness: Inspections and dust control measures in accordance with specifications contained in dust control plan, which is included in the air quality permit. Inspection results would be reported in semiannual reports prepared as specified in the air quality permit and shared with the Coronado.

OA-AQ-02 - Dust control for unpaved roads	
MITIGATION MEASURE	
Performance Criteria	Implementation and Effectiveness: In accordance with the dust control plan, during actual operation, Rosemont Copper would evaluate the haul truck traffic rates at different time periods throughout the life of the mine to correctly identify the application intensity needed for road watering to achieve 90 percent control efficiency on haul roads. Also, Rosemont Copper would evaluate the traffic rate of support vehicles to determine the water application intensity needed to control the general unpaved facility roads to 90 percent control efficiency. Other requirements contained in the air quality permit, such as opacity limits, also apply.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for conducting monitoring and reporting to ADEQ and the Forest Service in accordance with the air quality permit. ADEQ is responsible for determining compliance with the air quality permit and the Clean Air Act and for keeping the Forest Service informed of the results of such determinations.
Timing	Implementation and Effectiveness: Premining through final reclamation and closure phases.
Applicable Alternatives	All action alternatives.

OA-AQ-03 - Dust control for open areas and storage piles	
MITIGATION MEASURE	
Description	This mitigation contains a number of actions that are designed to control fugitive dust emissions from open areas and storage piles. These activities include application and reapplication of chemical dust suppressant and water. Open areas and storage piles that are not actively used would be controlled by applying sufficient chemical dust suppressant and/or water to develop and maintain a visible crust. Other means such as use of an adhesive soil stabilizer, paving covering, landscaping, detouring, or other acceptable means of dust control may be used.
Source	The dust control plan contained in the air quality permit.
Impacts Mitigated	Reduces impacts to air quality from fugitive dust emissions.
Location	Open areas and storage piles include mined areas, overburden storage areas, and waste rock storage facility.
Monitoring / Reporting Action	Implementation and Evaluation: Inspections and dust control measures in accordance with specifications contained in dust control plan, which is included in the air quality permit. Inspection results would be reported in semiannual reports prepared as specified in the air quality permit and shared with the Coronado.
Performance Criteria	Implementation and Effectiveness: In accordance with dust control plan, monitoring would demonstrate 90 percent control efficiency.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for conducting monitoring and reporting to ADEQ and the Forest Service in accordance with the air quality permit. ADEQ is responsible for determining compliance with the air quality permit and the Clean Air Act and for keeping the Forest Service informed of the results of such determinations.
Timing	Implementation and Effectiveness: Premining through final reclamation and closure phases.
Applicable Alternatives	All action alternatives.

OA-AQ-04 – Control of particulate emissions from lime slaking process	
MITIGATION MEASURE	
Description	Refinement of the design of the lime slaking system, including the addition of a lime slaker scrubber.
Source	Air quality permit.
Impacts Mitigated	Would reduce impacts to air quality by controlling particulate matter emissions from the lime slaking process.
Location	Lime silo at the plant site area.

B. Mitigation and Monitoring Plan

OA-AQ-04 – Control of particulate emissions from lime slaking process	
MITIGATION MEASURE Monitoring / Reporting Action	Implementation: Inspection and reporting at the time of construction of said facilities to ensure design meets specifications in the air quality permit application and amendment. Effectiveness: In accordance with air quality permit requirements. Inspection results would be reported in semiannual reports prepared as specified in the air quality permit and shared with the Coronado.
Performance Criteria	Implementation: Equipment used would comply with that specified in the air quality permit application and amendment. Effectiveness: Air quality permit processes and specifications would be met.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for conducting monitoring and reporting to ADEQ and the Forest Service in accordance with the air quality permit. ADEQ is responsible for determining compliance with the air quality permit and the Clean Air Act and for keeping the Forest Service informed of the results of such determinations.
Timing	Implementation and Effectiveness: Beginning with installation of specified equipment and continuing in accordance with requirements in the air quality permit.
Applicable Alternatives	All action alternatives.

OA-AQ-05 – Control of particulate emissions from major metallic mineral processing operations	
MITIGATION MEASURE Description	Installation, operation, and maintenance of cartridge dust filters and other measures to control particulate matter emissions from major metallic mineral processing operations.
Source	Air quality permit.
Impacts Mitigated	Would reduce impacts to air quality from particulate matter emissions associated with processing operations.
Location	At all locations specified in the air quality permit; and APP.
Monitoring / Reporting Action	Implementation: Inspection and reporting at the time of construction of said facilities to ensure that the design meets specifications in the air quality permit application and amendments. Effectiveness: In accordance with air quality permit requirements. Inspection results would be reported in semiannual reports prepared as specified in the air quality permit and shared with the Coronado.
Performance Criteria	Implementation: Equipment used would comply with that specified in the air quality permit, application, and amendments. Effectiveness: Air quality permit processes and specifications are met.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for conducting monitoring and reporting to ADEQ and the Forest Service in accordance with the air quality permit. ADEQ is responsible for determining compliance with the air quality permit and the Clean Air Act and for keeping the Forest Service informed of the results of such determinations.
Timing	Implementation and Effectiveness: Beginning with installation of specified equipment and continuing in accordance with requirements in the air quality permit.
Applicable Alternatives	All action alternatives.

OA-AQ-06 - Use of covers on mix tanks and settlers to reduce emissions of volatile organic chemicals	
MITIGATION MEASURE Description	This mitigation involves the installation of covers on specific facilities that could otherwise result in volatile organic chemicals emissions.

OA-AQ-06 - Use of covers on mix tanks and settlers to reduce emissions of volatile organic chemicals	
MITIGATION MEASURE	OA-AQ-06 - Use of covers on mix tanks and settlers to reduce emissions of volatile organic chemicals
Source	Air quality permit.
Impacts Mitigated	Would reduce impacts to air quality by reducing emissions of volatile organic chemicals and hazardous air pollutants from mix tanks and settlers used in the solvent extraction system.
Location	Mix tanks and settlers within the plant site.
Monitoring / Reporting Action	Implementation: Inspection and reporting at the time of construction of said facilities to ensure design meets specifications in the air quality permit application and amendments. Effectiveness: In accordance with air quality permit requirements. Inspection results would be reported in semiannual reports prepared as specified in the air quality permit and shared with the Coronado.
Performance Criteria	Implementation: Equipment used would comply with that specified in the air quality permit application and amendments. Effectiveness: Air quality permit processes and specifications are met.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for conducting monitoring and reporting to ADEQ and the Forest Service in accordance with the air quality permit. ADEQ is responsible for determining compliance with the air quality permit and the Clean Air Act and for keeping the Forest Service informed of the results of such determinations.
Timing	Implementation and Effectiveness: Beginning with installation of specified equipment and continuing in accordance with requirements in the air quality permit.
Applicable Alternatives	All action alternatives.

OA-AQ-07 - Use of drip emitters on heap leach pad to reduce emissions	
MITIGATION MEASURE	OA-AQ-07 - Use of drip emitters on heap leach pad to reduce emissions
Description	This mitigation involves the installation and use of drip emitters to apply solution to the heap leach.
Source	This is a design feature from the preliminary MPO. It is also required by the air quality permit.
Impacts Mitigated	Would prevent or reduce impacts to air quality from aerosol production and losses to wind, thereby reducing release of contaminants into the air; would reduce evaporative losses of water.
Location	Heap leach pad.
Monitoring / Reporting Action	Implementation: Visual inspection at time of construction to ensure that drip emitters have been installed. Effectiveness: Periodic inspection to ensure that emitters are functioning properly. Inspection results would be reported in semiannual reports prepared as specified in the air quality permit and shared with the Coronado.
Performance Criteria	Implementation: Inspection and reporting at the time of construction of heap leach facility. Drip emitters would be installed in accordance with final MPO. Effectiveness: Monitoring of emitter operations would indicate that they are effective in preventing aerosol production and in reducing potential release due to wind. Air quality monitoring results would meet requirements specified in the air quality permit.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for conducting monitoring and reporting to ADEQ and the Forest Service in accordance with the final MPO and air quality permit. ADEQ is responsible for determining compliance with the air quality permit and the Clean Air Act and for keeping the Forest Service informed of the results of such determinations.
Timing	Implementation and Effectiveness: Beginning with installation of specified equipment and continuing in accordance with requirements in the air quality permit.
Applicable Alternatives	All action alternatives except Alternative 4 – Barrel Alternative.

B. Mitigation and Monitoring Plan

OA-AQ-08 – Reduction in air emissions from diesel engines associated with stationary equipment	
MITIGATION MEASURE	
Description	This mitigation requires the use of low-sulfur diesel for all stationary equipment.
Source	Air quality permit.
Impacts Mitigated	Would reduce impacts to air quality from potential air emissions.
Location	All stationary equipment equipped with diesel engines.
Monitoring / Reporting Action	Implementation and Effectiveness: Inspection as required under the air quality permit. Results would be reported in semiannual reports prepared as specified in the air quality permit and shared with the Coronado.
Performance Criteria	Implementation and Effectiveness: Review of delivery data would show that all diesel fuel delivered to stationary equipment within the mine is low sulfur diesel.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for conducting monitoring and reporting to ADEQ and the Forest Service in accordance with the final MPO and air quality permit. ADEQ is responsible for determining compliance with the air quality permit and the Clean Air Act and for keeping the Forest Service informed of the results of such determinations.
Timing	Implementation and Effectiveness: Premining through final reclamation and closure phases.
Applicable Alternatives	All action alternatives.

QA-AQ-9 - Reduction in air emissions from diesel engines associated with mobile sources (haulage equipment, etc.)	
MITIGATION MEASURE	
Description	Use of newer engine designs on haulage equipment and on select mobile sources; includes use of Tier 4 EPA compliant equipment for emission standards on selected non-road engines (all except haul trucks and the 2,000 horsepower front-end loaders); use of Tier 2 diesel engines for haul trucks; and use of Tier 4 engines for large haulage trucks and support equipment purchased after 2014. Note: EPA standards have been changing based on what is technologically available and on equipment production schedules; Rosemont Copper would purchase equipment that meets EPA standards, the dates may change based on EPA requirements.
Source	Air quality permit.
Impacts Mitigated	Would reduce impacts to air quality from internal combustion engine emissions.
Location	Specific equipment listed and addressed in air quality permit, application, and amendments.
Monitoring / Reporting Action	Implementation: Certification and reporting that specified equipment meets requirements before it is put into use. Effectiveness: In accordance with air quality permit requirements. Inspection results would be reported in semiannual reports prepared as specified in the air quality Permit and shared with the Coronado.
Performance Criteria	Implementation: Specified equipment would meet specifications stated in air quality permit application and amendments. Effectiveness: Meets criteria specified in the air quality permit.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for conducting monitoring and reporting to ADEQ and the Forest Service. ADEQ is responsible for determining compliance with the air quality permit and the Clean Air Act and for keeping the Forest Service informed of the results of such determinations.
Timing	Implementation and Effectiveness: Commences with purchase of stated equipment, prior to putting that equipment into service, through closure or as stated in the air quality permit.
Applicable Alternatives	All action alternatives.

OA-AQ-10 – Air pollution control requirements for electrowinning process	
MITIGATION MEASURE	
Description	This mitigation requires several actions and methods to control potential emissions in the electrowinning process, including installation and use of scrubbers to control sulfuric acid emissions; dilution of sulfuric acid and use of drip system to minimize mist emissions; installation, use, and maintenance of covers to control acid emissions; and using foam, dispersion/poly balls, surfactants, or other effective means of controlling sulfuric acid emissions. Locations where these requirements apply are specified in the air quality permit.
Source	Air quality permit.
Impacts Mitigated	Would reduce emissions from electrowinning process.
Location	All equipment and locations specified in the air quality permit.
Monitoring / Reporting Action	Implementation: In accordance with air quality permit requirements. Effectiveness: In accordance with air quality permit requirements. Inspection results would be reported in semiannual reports prepared as specified in the air quality permit and shared with the Coronado.
Performance Criteria	Implementation: In accordance with air quality permit requirements. Effectiveness: In accordance with air quality permit requirements.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for conducting monitoring and reporting in accordance with the air quality permit requirements. ADEQ is responsible for determining compliance with the air quality permit and the Clean Air Act and for keeping the Forest Service informed of the results of such determinations.
Timing	Implementation and Effectiveness: During electrowinning processing.
Applicable Alternatives	All action alternatives except Barrel Alternative.

Other Monitoring Items for Air Quality

OA-AQ-11 - Opacity monitoring	
MONITORING ITEM	
Description	This monitoring describes emission limitations and establishes monitoring, reporting, and recordkeeping requirements regarding opacity.
Source	Air quality permit.
Purpose	To determine whether opacity meets the requirements of the air quality permit.
Location	Locations specified in the air quality permit.
Monitoring / Reporting Action	Implementation and Effectiveness: In accordance with the air quality permit. Inspection results would be reported in semiannual reports prepared as specified in the air quality permit and shared with the Coronado.
Performance Criteria	Implementation and Effectiveness: In accordance with the air quality permit.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for monitoring and reporting in accordance with the air quality permit. ADEQ is responsible for determining compliance with the air quality permit and the Clean Air Act and for keeping the Forest Service informed of the results of such determinations.
Timing	Implementation and Effectiveness: Premining through final reclamation and closure phases.
Applicable Alternatives	All action alternatives.

Groundwater Quantity and Quality

MITIGATION MEASURE	
Description	OA-GW-01 – Location and design of the heap leach facility to reduce potential impacts to groundwater and surface water quality The heap leach facility has been designed and located to reduce the risk of potential contamination of groundwater from seepage. It is designed to collect all possible drainage and solution. It would be located on top of a stable rock location; the liner system is designed to meet requirements of the APP; and the facility would be encapsulated by waste rock at closure to protect from stormwater infiltration.
Source	This is a design feature that was contained in the preliminary MPO. It is also a requirement of the APP (dated April 3, 2012).
Impacts Mitigated	Would avoid impacts to groundwater and surface water quality.
Location	Heap leach pad.
Monitoring / Reporting Action	Implementation: Daily visual inspection at time of construction to ensure that location and design comply with final MPO and APP. Effectiveness: inspections and operational monitoring would occur monthly and quarterly, as specified in the APP.
Performance Criteria	Implementation: Heap leach pad would be constructed at the location specified in the final MPO; design and components would comply with specifications in the final MPO and APP. Effectiveness: Monitoring would indicate that the heap leach is effective in containing solutions, and monitoring would indicate that seepage that could impact groundwater is not occurring. Also see OA-GW-06, Groundwater Quality Monitoring.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for conducting monitoring and reporting to the Forest Service and ADEQ. ADEQ is responsible for spot-checking monitoring activities and for evaluating monitoring results to determine compliance with APP.
Timing	Implementation and Effectiveness: Monitoring would be required from the beginning of heap leach pad construction, through processing until closure of the heap facilities to ensure effectiveness of the facility in avoiding impacts and ensure compliance with applicable laws, regulations, and permits.
Applicable Alternatives	All action alternatives except Alternative 4 – Barrel Alternative.
MITIGATION MEASURE	
Description	OA-GW-02 – Reduction of the potential for acid generation and metal leaching from tailings and waste rock as required under the APP This mitigation involves requirements for the segregation and encapsulation of potentially acid-generating waste rock with rock that has buffering capabilities in order to reduce the risk of potential acid generation.
Source	This is a design feature that was in the preliminary MPO. It is also a requirement of the APP.
Impacts Mitigated	Would avoid or reduce impacts to groundwater and surface water quality by reducing the potential of acid production and characterizing the reactivity of the material for drainage from waste rock areas.
Location	Waste rock facilities and waste rock perimeter buttress locations.

OA-GW-02 – Reduction of the potential for acid generation and metal leaching from tailings and waste rock as required under the APP	
MITIGATION MEASURE	
Monitoring / Reporting Action	<p>Implementation: Monthly monitoring to ensure that placement of waste rock potentially acid generating (PAG) and non-acid generating (NAG) rock types complies with placement requirements and approved Waste Rock Segregation Plan in the APP.</p> <p>Effectiveness: In accordance with APP: after significant rainfall events (0.5 inch or greater precipitation within 24-hour period); waste rock managed by monitoring PAG and NAG in accordance with APP (Required Inspections and Operational Monitoring) and performing SPLP testwork on materials as described in the Waste rock Segregation Plan also referenced in the APP. See also groundwater quality monitoring OA-GW-06, and stormwater monitoring (OA-SW-01) in this section.</p>
Performance Criteria	<p>Implementation: Placement of PAG and NAG materials would comply with stacking plan and waste rock segregation plan and therefore would comply with final MPO and APP.</p> <p>Effectiveness: No consistent, long-term indications of elevated metals concentrations or other characteristics of acid rock drainage would be detected, based on aquifer quality limits to be specified by ADEQ through the APP (Quarterly Compliance Groundwater Monitoring). See also groundwater quality monitoring OA-GW-06 and stormwater monitoring (OA-SW-01) in this section.</p>
Responsible Party	<p>Implementation and Effectiveness: Rosemont Copper is responsible for conducting monitoring and quarterly reporting to the Forest Service and ADEQ. ADEQ is responsible for spot-checking monitoring activities and for evaluating monitoring results to determine compliance with APP.</p>
Timing	<p>Implementation: Beginning when waste rock is segregated and placed and ending when those activities are completed.</p>
Applicable Alternatives	<p>Effectiveness: Until closure of the APP tailings and waste rock facilities. All action alternatives.</p>

OA-GW-03 – Equipment and methods to keep potentially contaminated water from being released into the environment	
MITIGATION MEASURE	
Description	<p>This mitigation measure requires the use of appropriately sized lined ponds; retention of all contact stormwater for reuse as process water; and the installation of overflow alarms to alert operators of a potential overflow situation.</p>
Source	<p>Pond liners and retention and reuse of contact stormwater as process water were contained in the preliminary MPO and are also required by the APP. The installation and use of overflow alarms originated with the Coronado ID team.</p>
Impacts Mitigated	<p>Would avoid or reduce surface water and groundwater contamination.</p>
Location	<p>Process water temporary storage pond, raffinate pond, stormwater pond, primary settling basin, and pregnant leach solution pond.</p>
Monitoring / Reporting Action	<p>Implementation: Complete inspection at time of construction to ensure consistency with location and specifications contained in the final MPO and APP. Effectiveness: Quarterly visual inspection of pond integrity; additional inspections for process upset events or significant rainfall events (0.5 inch or greater precipitation within 24-hour period), in accordance with APP.</p>

B. Mitigation and Monitoring Plan

MITIGATION MEASURE	
Performance Criteria	OA-GW-03 – Equipment and methods to keep potentially contaminated water from being released into the environment
Implementation: Liners meet specifications contained in the APP. Containment structures and liner installation comply with final MPO and APP. Effectiveness: Compliance with the APP. Fluids accumulated in the stormwater pond would be removed within 45 days, in accordance with APP specifications.	
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for conducting monitoring and reporting to the Forest Service and ADEQ. ADEQ is responsible for spot-checking monitoring activities and for evaluating monitoring results to determine compliance with APP.
Timing	Implementation: Monitoring during preconstruction phase to ensure compliance with APP and final MPO, as well as APP BADCT requirements. Effectiveness: During active mining to ensure effectiveness and permit compliance; and during final reclamation and closure phase to ensure that facilities are adequately reclaimed in accordance with the APP requirements.
Applicable Alternatives	All action alternatives. Several facilities may be absent from Alternative 4 due to absence of heap leach pad.
MITIGATION MEASURE	
Description	OA-GW-04 - Control and recycling of process water
Overall reduction of fresh water use and avoidance of potentially contaminated discharges by containing all process water in lined facilities, to be recycled back into the process stream to offset fresh water use; and the installation of overflow alarms to alert operators of a potential overflow situation.	
Source	Pond liners and retention and reuse of process water were a design feature contained in the preliminary MPO and are also required by the APP. The installation and use of overflow alarms originated with the Coronado ID team.
Impacts Mitigated	Would avoid impacts to groundwater and surface water from potential contamination; and would reduce impacts to groundwater quantity used for processing.
Location	Process water temporary storage pond (PWTS); primary settling basin; raffinate pond, heap leach pad, pregnant leach solution (PLS) pond; stormwater pond; primary settling basin.
Monitoring / Reporting Action	Implementation: Daily visual inspections and quarterly reporting during construction to ensure that facilities and processes are constructed in a manner that complies with final MPO and APP. Effectiveness: Inspections and operational monitoring occur daily and quarterly, as specified in the APP.
Performance Criteria	Implementation: Tailings facilities would be located within the footprint depicted in the FEIS, ROD, and APP, and liners and collection systems are installed as described in the APP. Effectiveness: Pump systems, valves, and structures would be functioning properly; overflow pipes and spillway structures would not be blocked; flow rates would be less than the maximum specified in APP; liner(s) integrity would be intact and not impaired; design capacity would not be exceeded. See APP for further details.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for conducting monitoring and reporting to the Forest Service and ADEQ. ADEQ is responsible for spot-checking monitoring activities; and for evaluating monitoring results to determine compliance with APP.
Timing	Implementation: During premining and active mining phases. Effectiveness: For the life of the mine, commencing when production begins; and ending at closure of the APP.
Applicable Alternatives	All action alternatives. Several facilities may be absent from Alternative 4 due to absence of heap leach pad.

OA-GW-05 – Processing and placement of tailings to reduce water content and overall footprint	
MITIGATION MEASURE	
Description	This mitigation requires the use of dry-stack tailings technology, which would eliminate the need for traditional tailings impoundments; would allow tailings to be placed and compacted in a manner that would reduce the overall footprint of tailings facilities; would minimize the amount of water entrained in the tailings (water from filtered tailings is reused), and would reduce the amount of fresh water needed for processing.
Source	This is a design feature that was contained in the preliminary MPO. It is also a requirement of the APP. A dry-stack tailings plan would be required by the Forest Service to be included in the MPO.
Impacts Mitigated	Smaller footprint would avoid impacts to cultural sites; wildlife habitat; soils; WUS; and surface water. Would reduce impacts related to water use; would reduce seepage; would avoid or reduce impacts related to potential groundwater contamination; would reduce evaporation; and would reduce water use. Reclamation can begin earlier, improving vegetative recovery.
Location	Entire tailings facility.
Monitoring / Reporting Action	Implementation: Daily inspections and quarterly reporting to ensure that the footprint of the tailings facility is within the area specified in the FEIS/ROD and that those facilities are constructed in accordance with the final MPO. Effectiveness: Monitoring to determine: (1) the moisture content and compaction of the tailings being placed; (2) that tailings placement adheres to the stacking plan to ensure adequate buffering of potential acid-generating materials; and (3) that it complies with subgrade preparation, grading, and applicable BADCT requirements described in the APP. Accordance with the APP monitoring requirements, daily monitoring relating to ponding of water, dry-stack deformation, excessive erosion, and moisture content. Monitoring results would be compiled into an annual monitoring report and provided to the Forest Service and ADEQ.
Performance Criteria	Implementation: Tailings facilities would be located within the footprint depicted in the FEIS/ROD and final MPO. Effectiveness: Moisture content of tailings would be a maximum of 18 percent coming out of the filter plant and would be in compliance with final stacking plan, which is included in the MPO. Excessive ponding of water would not occur or would be pumped into process water facility before it can infiltrate; excessive erosion would not occur; dry-stack facility would not experience substantial deformation, movement, subsidence, or slope sloughing.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for conducting monitoring and reporting to the Forest Service and ADEQ. The Forest Service is responsible for spot-checking monitoring activities; and for evaluating monitoring results to determine compliance with NEPA decision. ADEQ is responsible for spot-checking monitoring activities; and for evaluating monitoring results to determine compliance with APP.
Timing	Implementation: During the period that tailings are being placed (primarily active mining phase). Effectiveness: For the life of the mine, commencing when tailing stacking begins; and ending when tailings are no longer being placed in the facility.
Applicable Alternatives	All action alternatives.

Other Monitoring Items for Groundwater Quantity and Quality

OA-GW-06 – Groundwater quality and aquifer level monitoring required by the APP	
MONITORING ITEM	
Description	This monitoring requires the construction and operation of point of compliance monitoring wells, groundwater quality monitoring and sampling protocols, and reporting as specified in the APP.
Source	APP; BO Conservation Measure; and requirement of Forest Service.

B. Mitigation and Monitoring Plan

OA-GW-06 – Groundwater quality and aquifer level monitoring required by the APP	
MONITORING ITEM	
Purpose	To determine whether measures designed to avoid or reduce risk of groundwater are effective, and whether applicable laws and regulations are being met.
Location	Point of compliance well locations, as specified in the APP permit (POC Well Locations) and in the ROD. Specific well locations are expected to be amended in APP to reflect selected alternative.
Monitoring / Reporting Action	Implementation and Effectiveness: As specified in the APP.
Performance Criteria	Implementation and Effectiveness: As specified in the APP.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for conducting monitoring and reporting to the Forest Service and ADEQ. ADEQ is responsible for determining compliance with the APP.
Timing	Implementation and Effectiveness: As specified in the APP.
Applicable Alternatives	All action alternatives.

OA-GW-07 – Monitoring quantity of supply water removed from the Santa Cruz Basin	
MONITORING ITEM	
Description	This monitoring item measures the amount of groundwater pumped by the mine water supply wells located near Sahuarita.
Source	Requirement under ADWR mineral extraction permit.
Purpose	To determine whether reduction of groundwater resources within the Upper Santa Cruz Basin are within those projected in the NEPA decision. This information is also needed for ADWR for permit compliance.
Location	At wellhead for all water supply wells.
Monitoring / Reporting Action	Implementation and Effectiveness: As specified by ADWR permit.
Performance Criteria	Implementation and Effectiveness: As specified by ADWR permit.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for conducting monitoring and reporting to the Forest Service and ADWR. ADWR is responsible for determining compliance with the mineral extraction permit.
Timing	Implementation and Effectiveness: Premining through final reclamation and closure phases.
Applicable Alternatives	All action alternatives.

Surface Water Quantity and Quality

OA-SW-01 - Detention and testing of stormwater	
MONITORING ITEM	
Description	This mitigation measure requires detention and testing of stormwater quality from perimeter waste rock buttress areas for water quality testing prior to flowing downstream of the mine site.
Source	AZPDES Multi-Sector General Permit, Specific Rosemont Copper Permit Authorization.
Purpose	Would avoid or reduce impacts to surface water quality by reducing the risk of discharging contaminated water; would control sediment load of water released into downstream drainages. Would potentially reduce impacts to Gila chub, Gila topminnow, and Huachuca water umberl.

OA-SW-01 - Detention and testing of stormwater	
MONITORING ITEM	
Location	Sediment ponds, sediment control structures in Barrel Alternative only, and compliance point pond and dam in other alternatives. Specific locations of sampling would be defined in Stormwater Pollution Prevention Plan (SWPPP) which is required by the AZPDES Multi-Sector General Permit, and would be modified after Forest Service selection of alternative in the ROD; it typically is tied to "outfalls" and in this case is likely to be the proposed sediment control structures and compliance point dam.
Monitoring / Reporting Action	Implementation: Complete inspection at time of construction of these facilities to ensure consistency with location and specifications contained in the final MPO and SWPPP. Effectiveness: Ongoing maintenance inspections would occur and be reported as specified in the final MPO and AZPDES Multi-Sector General Permit.
Performance Criteria	Implementation: Facilities would be constructed in locations and to specifications contained in final MPO and AZPDES SWPPP. Effectiveness: As specified in the final MPO and AZPDES Multi-Sector General Permit.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for conducting monitoring and reporting to the Forest Service and ADEQ. ADEQ is responsible for spot-checking monitoring activities; and for evaluating monitoring results to determine compliance with stormwater permit.
Timing	Implementation: During construction (premining phase) to ensure compliance with final MPO and SWPPP. Effectiveness: During active mining phase to ensure effectiveness and permit compliance; and during final reclamation and closure to ensure that facilities are adequately reclaimed.
Applicable Alternatives	While the concept applies to all action alternatives, the structures and locations differ by alternative. Refer to the alternative descriptions in chapter 2 for further information.

OA-SW-02 - Implementation of stormwater pollution prevention plan	
MITIGATION MEASURE	
Description	This mitigation involves requirements of the Arizona Pollutant Discharge Elimination System Multi-Sector General Permit or Construction General Permit to prepare and implement a SWPPP. The SWPPP identifies methods to reduce potential pollution of stormwater; this plan is site specific, flexible, and constantly updated as needed. It typically includes a variety of ways to reduce potential pollution including structural controls (i.e., sediment basins, silt fences, straw bales); best management practices (i.e., good housekeeping, spill prevention); stabilization practices (i.e., water bars, reseeded, tackification). The plan is implemented by following best practices, installing appropriate structural control measures, continually monitoring those measures and repairing/replacing if needed, and revising or updating the plan to reflect project changes and adapt to changing conditions.
Source	AZPDES Multi-Sector General Permit.
Impacts Mitigated	Would reduce impacts to surface quality through potential degradation and loss of soil through erosion, and prevention of contact of stormwater with hazardous materials.
Location	All construction areas, including utility lines and access roads; all operational mine areas within security fence.
Monitoring / Reporting Action	Implementation and Effectiveness: Final monitoring details and locations would be updated in the SWPPP following selection of the preferred alternative in the ROD.
Performance Criteria	Implementation and Effectiveness: Results of this monitoring would be used to evaluate the success of the measures taken to protect the water resources. Any changes in water exceedances of MSGP criteria would be evaluated to determine whether the changes are related to the reclaimed mining features, and appropriate steps would be taken to address the problem by modifying the SWPPP.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for conducting monitoring and reporting to the Forest Service and ADEQ. ADEQ is responsible for determining compliance with AZPDES permit.

B. Mitigation and Monitoring Plan

MITIGATION MEASURE	OA-SW-02 - Implementation of stormwater pollution prevention plan
Timing	Implementation and Effectiveness: Surface water would be monitored as required in the Arizona Pollution Discharge Elimination System program during construction (premining phase), active mining, and following cessation of mining operations (postmining phase).
Applicable Alternatives	All action alternatives.

Transportation/Access

MITIGATION MEASURE	OA-TA-01 - ADOT activities to mitigate impacts of increased traffic on SR 83
Description	This mitigation consists of Rosemont Copper providing funding to ADOT to implement activities to reduce impacts resulting from increased traffic on SR 83. ADOT has indicated the activities it plans to implement include 3-inch pavement overlay from Interstate (I-) 10 to the intersection of the primary access road; striping; raising guardrails and signs to match new pavement height; and paving three existing bus pullouts for school bus use. Rosemont Copper and ADOT are currently negotiating the amount of funding that would be provided.
Source	ADOT.
Impacts Mitigated	Reduction of potential traffic safety hazards.
Location	SR 83 from I-10 to intersection with the primary access road.
Monitoring / Reporting Action	Implementation and Effectiveness: In accordance with agreement between Rosemont Copper and ADOT.
Performance Criteria	Implementation and Effectiveness: In accordance with agreement between Rosemont Copper and ADOT.
Responsible Party	Implementation and Effectiveness: ADOT has jurisdiction over these actions and therefore would determine responsibility for monitoring actions.
Timing	Implementation and Effectiveness: To be determined.
Applicable Alternatives	All action alternatives.

Mitigation and Monitoring Measures – Rosemont Copper

Rosemont Copper has publicly agreed to consider or implement the following mitigation and monitoring items. These mitigation and monitoring items are beyond the authority of the Forest Service or other regulatory and permitting agency. Since the Forest Service and regulatory permitting agencies have no mechanism to require implementation of the remaining mitigation and monitoring items in this category, their implementation is not assured. While the effectiveness of these mitigation measures is included in chapter 3 of the FEIS, environmental impacts are addressed as measures that may occur, as opposed to measures that would occur, with the following exception. For the purposes of impact analysis, the Coronado assumed that those mitigation and monitoring items with legally binding agreements in place (such as RC-GW-01 below) at the time the decision is made (ROD approved) would be implemented, and therefore they are addressed as such in the mitigation effectiveness sections in chapter 3 of the FEIS.

Groundwater Quantity and Quality

MITIGATION MEASURE	
Description	RC-GW-01– Providing of protection for individual private residential well owners against the risk that mine-associated groundwater drawdown could impact their well This mitigation involves implementing a legally binding well owner protection agreement that provides certain protections for potential impacts to individual well owners.
Source	Rosemont Copper.
Impacts Mitigated	May compensate for potential impacts to domestic wells for homeowners who are eligible for and sign up for the plan. Includes water-level monitoring program, water well pump warranty program, residential well deepening, and an in-lieu cash option. Conditions and restrictions apply.
Location	Two distinct agreements. One covers Sahuarita Heights neighborhood near Rosemont Copper’s supply wells; the second covers portions of Hilton Ranch, Helvetia, and Singing Valley.
Monitoring / Reporting Action	Implementation and Effectiveness: Agreements have been executed and are currently in place. No Forest Service or agency monitoring would occur. Involvement of homeowners is voluntary, and the agreement is between the homeowner and Rosemont Copper.
Performance Criteria	Implementation and Effectiveness: In accordance with Rosemont Copper Residential Water Well Warranty Service Agreements. Not applicable to the Forest Service or permitting agencies.
Responsible Party	Implementation and Effectiveness: Rosemont Copper.
Timing	Implementation and Effectiveness: Agreements for the Sahuarita Heights neighborhood are already in place and effective, agreements for the Hilton Ranch, Helvetia, and Singing Valley areas would become effective when Rosemont Copper receives final Forest Service approval for the project.
Applicable Alternatives	All action alternatives.

Other Monitoring Items for Groundwater Quantity and Quality

MITIGATION MEASURE	
RC-GW-02 – Recharging of the aquifer in the Tucson Active Management Area to offset pumping of mine supply water	
Description	This involved regional groundwater mitigation within the Tucson Active Management Area, including using Central Arizona Project water to recharge within the Tucson Active Management Area. This mitigation is dependent on Central Arizona Water Project water being available to Rosemont Copper.
Source	Rosemont Copper.
Impacts Mitigated	Would compensate for some or all of the water removed from the aquifer to supply the mine. Some recharge has occurred since 2007, but not in the Sahuarita area.
Location	Tucson Active Management Area.
Monitoring / Reporting Action	Implementation and Effectiveness: Annual reporting required to ADWR.
Performance Criteria	Implementation and Effectiveness: Recharge would occur as close as possible within the Tucson Active Management Area to the Rosemont supply well field. Central Arizona Project storage credits would be balanced with water to be pumped from mine supply well field, with the intent to maintain a surplus inventory of storage credits prior to pumping groundwater for mineral extraction use. Water storage and use inventory records would be maintained to show that Central Arizona Project recharge credits are balanced against groundwater removed from the Tucson Active Management Area until at least 5 years following completion of the extraction of the ore.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for monitoring and reporting to ADWR.
Timing	Implementation and Effectiveness: Has occurred; would continue as long as source water is available. Rosemont Copper has committed to recharging 105 percent of the groundwater extracted; if the full amount authorized by the ADWR is pumped, this would be up to 126,000 acre-feet.
Applicable Alternatives	All action alternatives.
MITIGATION MEASURE	
RC-GW-03 – Extension of Central Arizona Project pipeline to Green Valley	
Description	Augusta Resources (parent company of Rosemont Copper) would partially fund a 7-mile extension of Central Arizona Project (CAP) to deliver Community Water Company of Green Valley's CAP allotment; and use the extra capacity of that pipeline to recharge in the general vicinity of the mine supply wells.
Source	Rosemont Copper.
Impacts Mitigated	Would reduce impacts of groundwater use for mine supply. Would provide access to CAP water to Community Water Company; would allow recharge by Rosemont Copper in vicinity of pumping; and recharge would compensate for some or all of the mine supply water pumped out of the aquifer.
Location	CAP pipeline extension location.
Monitoring / Reporting Action	Implementation: N/A Effectiveness: N/A
Performance Criteria	Implementation: N/A Effectiveness: N/A
Responsible Party	Implementation: N/A Effectiveness: N/A

MITIGATION MEASURE	RC-GW-03 – Extension of Central Arizona Project pipeline to Green Valley
Timing	Implementation: U.S Bureau of Reclamation completed environmental documentation needed for construction in July 2012; construction was initiated in July 2012. Effectiveness: N/A
Applicable Alternatives	All action alternatives.

Surface Water Quantity and Quality

MONITORING ITEM	RC-SW-01 - Continued operation and data gathering of USGS flow gage that would provide data for surface water flows downstream of the mine site
Description	Rosemont Copper would annually fund the USGS to operate and maintain the existing flow gage at Barrel Canyon.
Source	Rosemont Copper.
Purpose	Would allow for continued baseline data collection and monitoring collection of flows in Barrel Canyon.
Location	Barrel Canyon flow gage at SR 83.
Monitoring / Reporting Action	Implementation and Effectiveness: Rosemont Copper would annually report to the Forest Service on the status of this funding obligation.
Performance Criteria	Implementation and Effectiveness: A fully executed agreement and documentation of funds transferred to USGS before fiscal year cutoff dates would be documented.
Responsible Party	Implementation and Effectiveness: Rosemont Copper would maintain a contract agreement with a government agency to fund the USGS to operate and maintain Barrel Canyon flow gage. Potential agencies include the Pima County Flood Control District, ADWR, and Forest Service.
Timing	Implementation and Effectiveness: Funding would continue for at least 5 years after mining and processing operations cease (postmining phase).
Applicable Alternatives	All action alternatives.

Biological Resources

MITIGATION MEASURE	RC-BR-01 – Recordation of a restrictive easement on private land referred to as the Fullerton Parcel to protect wildlife habitat
Description	This mitigation would result from Rosemont Copper’s recording a restrictive covenant on the Fullerton Parcel. The Fullerton Parcel contains about 1,780 acres of semidesert grasslands in the Sierrita Mountains. Recordation of a restrictive covenant could benefit general wildlife habitat. Management would exclude grazing to enhance habitat values.
Source	Rosemont Copper.
Impacts Mitigated	May partially compensate for losses of habitat for general wildlife species.
Location	Fullerton Parcel.

RC-BR-01 – Recordation of a restrictive easement on private land referred to as the Fullerton Parcel to protect wildlife habitat	
MITIGATION MEASURE	
Monitoring / Reporting Action	Implementation: Recordation of a restrictive covenant would be reported. A copy of said restrictive covenant would be provided to the Forest Service. Effectiveness: N/A
Performance Criteria	Implementation: Recordation of a restrictive covenant. Effectiveness: N/A
Responsible Party	Implementation: Rosemont Copper is responsible for crafting and recording a restrictive covenant. Effectiveness: N/A
Timing	Implementation and Effectiveness: To be determined.
Applicable Alternatives	All action alternatives.

Landownersh ip and Boundary Management

RC-LO-01 – Transferring of ownership of small slivers of land within the mining footprint from the Coronado National Forest to Rosemont Copper	
MITIGATION MEASURE	
Description	A number of small mineral survey fractions are located within the footprint of the mine pit and tailings/waste rock facilities. These small slivers of land are currently NFS lands that would be difficult to manage as public lands post-project. Rosemont Copper has expressed an interest in purchasing these mineral survey fractions from the Coronado. The sale would comply with the Small Tracts Act (36 CFR 254.24). The proponent would pay for surveys of the mineral fractions, appraisals, Commitment of Title for each parcel, and other administrative costs as agreed upon with the Forest Service.
Source	Coronado ID team.
Impacts Mitigated	Would avoid difficulties related to managing slivers NFS lands that are covered by waste rock and tailings as public lands.
Location	Seven known mineral survey fractions with a total of approximately 5.5 acres are completely surrounded by the patented mining claims owned by Rosemont Copper.
Monitoring / Reporting Action	Implementation and Effectiveness: The Forest Service would process the sale following final Forest Service approval of the project; the sale must be finalized prior to mine closure.
Performance Criteria	Implementation and Effectiveness: Sale would be processed and finalized prior to mine closure.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for following through on their commitment to purchase mineral fractions; Forest Service is responsible for processing sale.
Timing	Implementation and Effectiveness: Prior to closure of mine.
Applicable Alternatives	All action alternatives.

RC-LO-02 – Elimination of future development of private lands located on top of waste rock and tailings facilities	
MITIGATION MEASURE	
Description	This mitigation would include recording a restrictive easement or other mechanism intended to avoid future development on private lands located on waste rock and tailings facilities that could compromise stability or reclamation results.

MITIGATION MEASURE	RC-LO-02 – Elimination of future development of private lands located on top of waste rock and tailings facilities
Source	Coronado ID team.
Impacts Mitigated	Would avoid future activities that could compromise reclamation of waste rock and tailings areas over the long term.
Location	Waste rock and tailings facilities.
Monitoring / Reporting Action	Implementation and Effectiveness: The Forest Service would work with Rosemont Copper to implement mechanisms such as restrictive covenants to accomplish goals.
Performance Criteria	Implementation and Effectiveness: Restrictive covenants or other legally binding instruments would be developed and implemented to restrict future development of private lands on or within tailings and waste rock facilities.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for developing and implementing appropriate instruments to accomplish stated goals.
Timing	Implementation and Effectiveness: Restrictive easement or other mechanism would be in place at time of final closure.
Applicable Alternatives	All action alternatives.

Visual Resources

MITIGATION MEASURE	RC-VR-01 – Architectural designs for buildings associated with the water supply line pump stations
Description	Rosemont Copper has stated that they would follow University of Arizona College of Architecture and Landscape Architecture design guidance for buildings associated with four pump stations to ensure that they maintain the tenor of the Santa Rita Experimental Range.
Source	Rosemont Copper.
Impacts Mitigated	Would reduce visual contrast and associated visual impacts of buildings associated with water line pump stations located on the Santa Rita Experimental Range.
Location	Four pump stations along utility corridor.
Monitoring / Reporting Action	Implementation and Effectiveness: N/A
Performance Criteria	Implementation and Effectiveness: N/A
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for obtaining and implementing design guidance.
Timing	Implementation and Effectiveness: Construction of these facilities (premining phase).
Applicable Alternatives	All action alternatives.

Transportation/Access

MITIGATION MEASURE	RC-TA-01 – Scheduling of deliveries to the mine to take place during nonpeak traffic hours to avoid adding to traffic congestion
Description	Deliveries would be scheduled to minimize material delivery on SR 83 during peak traffic hours (6:30 to 7:30 a.m. for northbound traffic; and 5:00 to 6:00 p.m. for southbound traffic).

B. Mitigation and Monitoring Plan

RC-TA-01 – Scheduling of deliveries to the mine to take place during nonpeak traffic hours to avoid adding to traffic congestion	
MITIGATION MEASURE	
Source	This is a design feature of the preliminary MPO.
Impacts Mitigated	Would reduce impacts to the public from mine related traffic on SR 83 during peak traffic hours.
Location	SR 83.
Monitoring / Reporting Action	Implementation: Plan for delivery schedule would be developed and incorporated into the final MPO. Effectiveness: Record-keeping of deliveries would include time of delivery; quarterly reporting of delivery information to ensure that the preponderance of deliveries occur outside of peak traffic hours. The intent of reporting is to determine whether this mitigation is effective in reducing truck traffic during peak traffic periods on SR 83.
Performance Criteria	Implementation: Delivery schedule plan would be developed and incorporated into final MPO. Effectiveness: Review of delivery records would indicate that the preponderance of delivery traffic on SR 83 occurs outside peak traffic hours.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for conducting monitoring and reporting to the Forest Service.
Timing	Implementation and Effectiveness: Premining through final reclamation.
Applicable Alternatives	All action alternatives.

RC-TA-02 – Providing of public access to Rosemont Copper private lands not affected by mine operations through the Arizona Game and Fish Cooperative Landowner Incentive Program	
MITIGATION MEASURE	
Description	Rosemont Copper would enter into the Cooperative Landowner Incentive Program to allow some public access to portions of their private lands.
Source	Rosemont Copper.
Impacts Mitigated	Reduction in loss of public access.
Location	To be determined.
Monitoring / Reporting Action	Implementation and Effectiveness: AGFD would work with Rosemont Copper to identify location and specifics of allowable use.
Performance Criteria	Implementation and Effectiveness: To be determined by AGFD and Rosemont Copper.
Responsible Party	Implementation and Effectiveness: Rosemont Copper in cooperation with AGFD.
Timing	Implementation and Effectiveness: To be determined by AGFD and Rosemont Copper.
Applicable Alternatives	All action alternatives.

Fire and Fuels

RC-FF-01 – Allowing of access to a new water source for firefighting efforts	
MITIGATION MEASURE	
Description	Rosemont Copper has stated it would allow Arizona State Land Department personnel to access the water fill station at #2 booster pump station for firefighting purposes. The #2 booster pump station is located along the water supply pipeline.
Source	Rosemont Copper.

MITIGATION MEASURE	
Impacts Mitigated	RC-FF-01 – Allowing of access to a new water source for firefighting efforts Would potentially reduce impacts from wildfire, particularly on and near the Santa Rita Experimental Range, by providing a new water source to firefighting agencies.
Location	Water line booster pump station #2.
Monitoring / Reporting Action	Implementation and Effectiveness: Arizona State Land Department and Rosemont Copper would enter into agreement to construct pump station that accommodates access by firefighter agencies. This is an agreement between Arizona State Land Department and Rosemont Copper. No Forest Service or other agency monitoring would occur.
Performance Criteria	Implementation and Effectiveness: Arizona State Land Department and Rosemont Copper.
Responsible Party	Implementation and Effectiveness: Arizona State Land Department and Rosemont Copper.
Timing	Implementation and Effectiveness: From the time this facility is constructed through final reclamation.
Applicable Alternatives	All action alternatives.

Cultural Resources

MITIGATION MEASURE	
Description	RC-CR-01 - Conservation lands used for tribal practices This involves using the conservation lands required through the Section 7 and 404 (b)(1) permitting processes to offset losses to the tribal members.
Source	Rosemont Copper.
Impacts Mitigated	Partial compensation of loss of public land for tribal.
Location	Davidson Canyon Parcels, Sonoita Creek Ranch, Helvetia Ranch North, and other Rosemont Ranch Lands, as mapped in Section 7 or 404(b)(1) documents.
Monitoring / Reporting Action	Acquisition of land and recordation of conservation easements.
Performance Criteria	Access would be subject to compliance with conservation lands easements and permit requirements.
Responsible Party	Rosemont Copper.
Timing	As required by other permitting processes.
Applicable Alternatives	All action alternatives.

Power Use

MITIGATION MEASURE	
Description	RC-PU-01 - Use of alternative methods of power generation such as solar and wind to augment power at the mine administration building Rosemont Copper has stated its intent to use alternative energy sources to augment electrical power for its mine administration building.
Source	This is a design feature from the preliminary MPO.
Impacts Mitigated	Reduction in electric power use from TEP.
Location	Administration building.

MITIGATION MEASURE	RC-PU-01 - Use of alternative methods of power generation such as solar and wind to augment power at the mine administration building
Monitoring / Reporting Action	Implementation: Inspection during construction of administration building to ensure that it includes solar or wind power. Effectiveness: Semiannual report to ensure that alternative energy sources are continuing to function.
Performance Criteria	Implementation and Effectiveness: Monitoring would focus on ensuring that facilities include alternative energy sources in compliance with the NEPA decision.
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for following through on its commitment to purchase and install alternative power generating equipment for administration building.
Timing	Implementation and Effectiveness: Premining, active mining, and final reclamation and closure phases when the alternative power sources are operational.
Applicable Alternatives	All action alternatives.

Community Programs

MITIGATION MEASURE	RC-CP-01 – Establishment of the Santa Rita Mountains Community Endowment Trust for the purposes of funding priority community projects
Description	Rosemont Copper intends to establish the Santa Rita Mountains Community Endowment Trust, for the purposes of funding priority community projects that include community recreation, cultural, and environmental conservation. The endowment would comprise assets, commitments, and funding from Rosemont Copper, including conservation easements and restrictive covenants donated in the first year of production (\$6 million), \$500,000 contributed from Rosemont Copper each year for 25 years (\$12.5 million), and up to \$25 million in variable contributions from Rosemont Copper, based on the price of copper (Rosemont Copper Company 2010). Because the trust would be established as an independent charitable trust, with a Board of Trustees and Advisory Council, the projects that the trust would fund would be decided at a later date, upon the board's specific decisions.
Source	This is a design feature from the preliminary MPO.
Impacts Mitigated	Compensation for cultural, environmental, and recreation impacts.
Location	N/A
Monitoring / Reporting Action	Implementation and Effectiveness: N/A
Performance Criteria	Implementation and Effectiveness: N/A
Responsible Party	Implementation and Effectiveness: Rosemont Copper is responsible for establishing the Endowment Trust and funding such trust.
Timing	Implementation and Effectiveness: Unknown.
Applicable Alternatives	All action alternatives.

Potential Future Mitigation Measures

A brief description of mitigation measures that are not currently finalized and may be applied in the future is presented here. While many of these mitigation measures are likely to be implemented, they are not currently developed to the point that effectiveness can be assessed or implementation ensured, or negotiation regarding implementation has not been completed. Therefore, these mitigation measures were not considered in impacts analysis as measures that would avoid, reduce, or compensate for impacts.

- Contribute funding to Perimeter Bicycle Association for possible for bike path from I-10 along Houghton Road to Sahuarita. Details on permitting and approval of this proposed project are currently unavailable; therefore, this project is not foreseeable and cannot be addressed as mitigation at this time.
- Carpooling opportunities for employees would be identified, including establishing a “park and ride program” for workers during all phases of the proposed project to distribute peak travel operations during the morning and evening commute periods to minimize congestion. Manage trucking to reduce impacts to SR 83 and overlap with school traffic to the extent possible.