

Resolution Copper Project and Land Exchange

DRAFT

Environmental Impact Statement

Pinal County, Arizona

August 2019

LEAD AGENCY:

USDA Forest Service

**COOPERATING
AGENCIES:**

Arizona Department of Environmental Quality, Arizona Department of Water Resources,
Arizona Game and Fish Department, Arizona State Land Department, Arizona State
Mine Inspector, Bureau of Land Management, Pinal County Air Quality Control District,
U.S. Army Corps of Engineers, U.S. Environmental Protection Agency

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ABSTRACT: The purpose of and need for the environmental impact statement includes evaluating the impacts associated with approval of a mine plan, and considering the effects of the exchange of lands between Resolution Copper Mining, LLC, and the United States as directed by Section 3003 of the Carl Levin and Howard P. ‘Buck’ McKeon National Defense Authorization Act for Fiscal Year 2015 (NDAA).

The analysis includes six alternatives: the proposed action, which calls for a new underground mine underneath Oak Flat east of Superior, Arizona, and a tailings storage facility on National Forest System (NFS) lands west of Superior; a no action alternative under which neither the land exchange nor the mine plan would be authorized; an alternative that would allow a modified tailings disposal method at the same Near West tailings storage location as proposed; an alternative that would allow filtered tailings to be stored at another location on NFS lands north of Superior; and two alternatives that would not allow tailings to be stored on NFS lands, but on other agency or private lands. The scoping process identified water quantity, water quality, public health and safety, cultural resources, tribal concerns, and recreation as significant issues.

It is important that reviewers provide their comments at such times and in such a way that they are useful to the Agency’s preparation of the EIS. Therefore, comments should be provided prior to the close of the comment period and should clearly articulate the reviewer’s concerns and contentions. The submission of timely and specific comments can affect a reviewer’s ability to participate in subsequent administrative review or judicial review. Comments received in response to this solicitation,

including names and addresses of those who comment, will be part of the public record for this proposed action. Comments submitted anonymously will be accepted and considered; however, anonymous comments will not provide the respondent with standing to participate in subsequent administrative or judicial reviews.

Send Comments To:

Resolution Copper EIS

P.O. Box 34468

Phoenix, AZ 85067-4468

Date Comments

November 7, 2019

Must Be Received:

Executive Summary

ES-1 INTRODUCTION

This executive summary provides an overview of the draft environmental impact statement (DEIS) for the proposed Resolution Copper Project and Land Exchange (herein called the project). The purpose of the DEIS is to describe the process undertaken by the U.S. Forest Service (Forest Service), a land management agency under the U.S. Department of Agriculture, to evaluate the predicted effects of and issues related to the submittal of a mining General Plan of Operations (GPO) by Resolution Copper Mining, LLC (Resolution Copper), along with a connected, legislatively mandated land exchange of Federal and private parcels in southeastern Arizona (figure ES-1).

This Executive Summary does not provide all details contained in the DEIS. Please refer to the DEIS, its appendices, or referenced reports for more information. The DEIS and supporting documents are available on the project website at <https://www.ResolutionMineEIS.us/>.

ES-1.1 Background

Resolution Copper proposes developing an underground copper mine on unpatented mining claims on National Forest System (NFS) land near the town of Superior in Pinal County, Arizona, approximately 60 miles east of Phoenix. Resolution Copper is a limited liability company that is owned by Rio Tinto (55 percent) and BHP (45 percent). Rio Tinto is the managing member.

Resolution Copper has ties to the century-old Magma Mine located in Superior, Arizona. The Magma Mine began production in 1910. In addition to constructing substantial surface facilities in Superior, the Magma Mine created approximately 42 miles of underground workings.

In 1995, the Magma Copper Company discovered a copper deposit about 1.2 miles south of the Magma Mine through exploration of those underground workings. The ore deposit lies between 4,500 and 7,000 feet below the surface.

In 1996, BHP Copper, Inc., acquired the Magma Copper Company, along with the Resolution Copper Mine deposit. Later that year, BHP

closed operations at the Magma Mine, but exploration of the copper deposit continued.

In 2001, Kennecott Exploration, a subsidiary of Rio Tinto, signed an earn-in agreement with BHP, and initiated a drilling program to further explore the deposit. Based on drilling data, officials believe the Resolution Copper Mine deposit to be one of the largest undeveloped copper deposits in the world, with an estimated copper resource of 1.97 billion tons at an average grade of 1.54 percent copper.

The portion of the Resolution Copper Mine deposit explored to date is located primarily on the Tonto National Forest and open to mineral entry under the General Mining Law of 1872. The copper deposit likely extends underneath an adjacent 760-acre section of NFS land known as the “Oak Flat Withdrawal Area.” The 760-acre Oak Flat Withdrawal Area was withdrawn from mineral entry in 1955 by Public Land Order 1229, which prevented Resolution Copper from conducting mineral exploration or other mining-related activities. Resolution Copper pursued a land exchange for more than 10 years to acquire lands northeast of the copper deposit.

In December 2014, Congress authorized a land exchange pending completion of the environmental impact statement (EIS), as outlined in Section 3003 of the Carl Levin and Howard P. ‘Buck’ McKeon National Defense Authorization Act for Fiscal Year 2015 (NDAA) for fiscal year 2015. The exchange parcel to be conveyed to Resolution Copper includes not only the Oak Flat Withdrawal Area but also the NFS lands above which the copper deposit is located. This collective 2,422-acre tract of land is known as the “Oak Flat Federal Parcel.”

ES-1.2 Project Overview

Resolution Copper is proposing to develop an underground copper mine at a site in Pinal County, about 60 miles east of Phoenix near Superior, Arizona. Project components include the mine site, associated infrastructure, a transportation corridor, and a tailings storage facility.

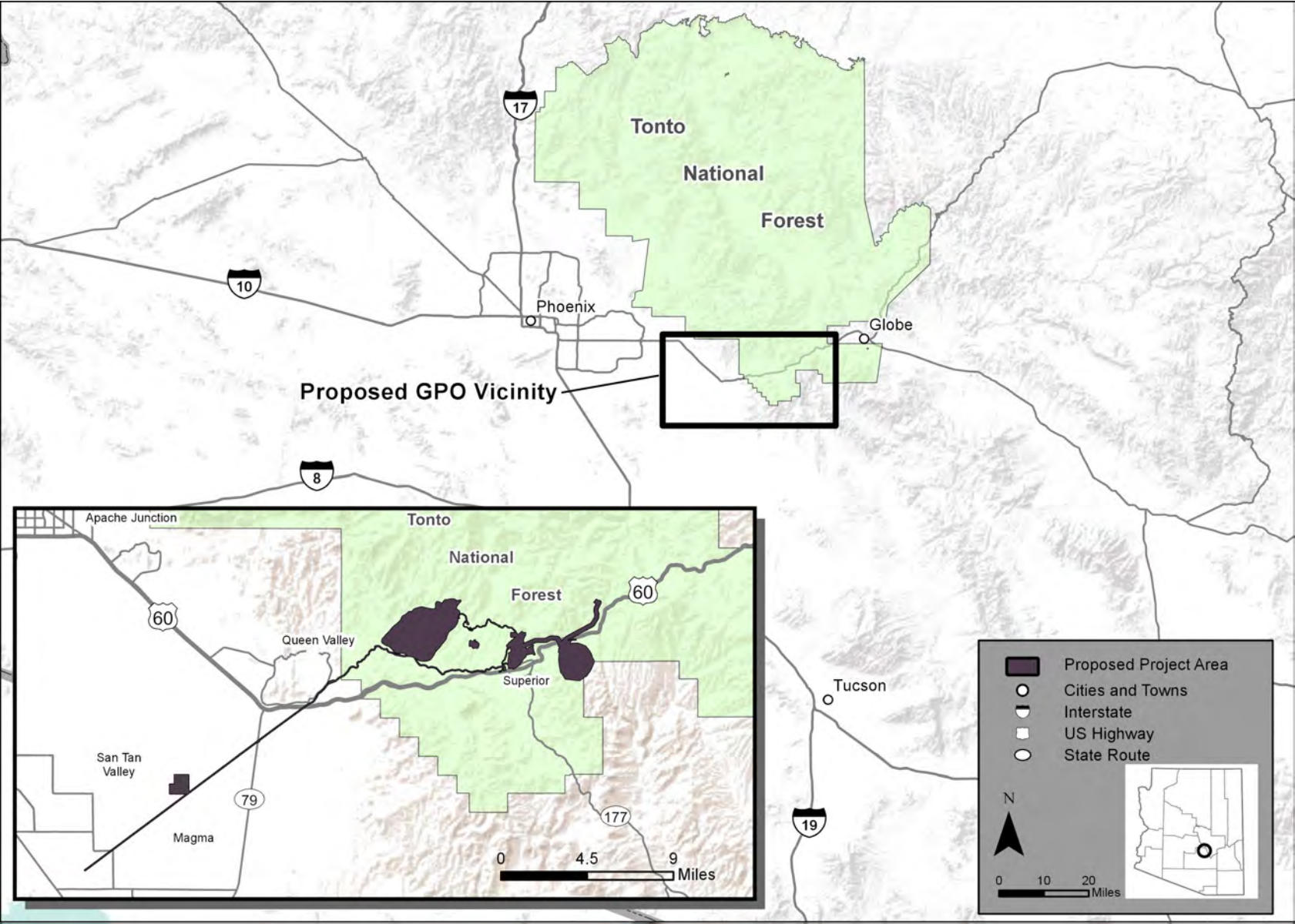


Figure ES-1. Resolution Copper Project vicinity map

The project would progress through three distinct phases: construction (10 years), operations, also referred to as the production phase (40–50 years), and reclamation (5–10 years). At the end of operations, facilities would be closed and reclaimed in compliance with permit conditions.

Operational projections are removal of 1.4 billion tons of ore and production of 40 billion pounds of copper using a mining technique known as panel caving. Using this process, a network of shafts and tunnels is constructed below the ore body. Access to the infrastructure associated with the panel caving would be from vertical shafts in an area known as the East Plant Site, which would be developed adjacent to the Oak Flat Federal Parcel. This area would include mine shafts and a variety of surface facilities to support mining operations. This area currently contains two operating mine shafts, a mine administration building, and other mining infrastructure. Portions of the East Plant Site would be located on NFS lands and would be subject to Forest Service regulatory jurisdiction. Ore processing would take place at the old Magma Mine site in Superior.

Construction of a tailings storage facility would house the waste material left over after processing. The facility footprint would occupy from 2,300 to 5,900 acres, depending on the location and embankment design. Pipelines would be constructed to transport the tailings waste from the ore processing facility to the tailings storage facility.

The estimated total quantity of external water needed for the life of the mine (construction through closure and reclamation) is substantial and varies by alternative (180,000 to 590,000 acre-feet). Resolution Copper proposes to use water either directly from the Central Arizona Project (CAP) canal and/or groundwater pumped from the East Salt River valley. Over the past decade, Resolution Copper has obtained banked water credits for recharging aquifers in central Arizona; the groundwater pumped would be recovery of those banked water credits, or groundwater use authorized by the State of Arizona under a mineral extraction withdrawal permit.

While all mining would be conducted underground, removing the ore would cause the ground surface to collapse, creating a subsidence area at the Oak Flat Federal Parcel. The crater would start to appear in year 6

of active mining. The crater ultimately would be between 800 and 1,115 feet deep and roughly 1.8 miles across. The Forest Service assessed alternative mining techniques in an effort to prevent subsidence, but alternative methods were considered unreasonable.

The workforce during construction/ramp-up is expected to peak at 2,600 personnel in Pinal County and another 1,900 in other areas. During operations, the project would employ an average of approximately 1,900 people annually in Pinal County and another 1,800 in other areas. During the reclamation phase, employment is projected to be 1,700 in Pinal County and 1,300 in other areas.

ES-1.3 Areas of Controversy

The Resolution Copper Project and Land Exchange is controversial for several reasons.

Foremost among them are the expected significant environmental impacts and loss of the Oak Flat area, historically used by Native Americans who hold the land as sacred and use the area for spiritual and traditional uses. Additionally, in March 2016, the Oak Flat area was listed on the National Register of Historic Places (NRHP) as a traditional cultural property (TCP).

There is the potential for some portion of existing yet currently unidentified prehistoric and historic artifacts and resources to be disturbed or destroyed, especially within the Oak Flat subsidence area and the footprint of the tailings storage area. These losses could potentially include human burials within these areas.

Water use is a major concern among the public, other government agencies, and stakeholders. Recycling and reuse would happen extensively throughout the mine operations, but as previously mentioned, additional external water is needed for processing.

There are concerns regarding how public safety may be affected by the project. This includes the physical safety of persons in areas of subsidence and adjacent communities, as well as increased traffic and effects on air and water quality.

There is public apprehension over the creation, and type, of a tailings embankment for the tailings storage facility. The catastrophic collapse of the Brumadinho tailings dam in Brazil in January 2019, resulting in over 100 fatalities, has heightened concerns.

In January 2019, Representative Raul Grijalva, a Democrat from Arizona, and Senator Bernie Sanders, an Independent from Vermont, introduced legislation that would overturn the land exchange described in Section 3003 of the NDAA. Representative Grijalva cited the need to protect Oak Flat and restore some balance to the country’s natural resource policies.

ES-1.4 Lead and Cooperating Agency Roles

In compliance with the National Environmental Policy Act (NEPA), the Forest Service is the lead agency preparing this EIS. The Forest Supervisor, Tonto National Forest, is the primary deciding official for the proposed mining plan of operations submitted by Resolution Copper.

The Forest Service’s role as lead agency includes the following:

- Analyzing and disclosing environmental effects of the proposed mine and the land exchange on private, State, and NFS lands or other Federal lands
- Conducting government-to-government consultations with potentially affected Indian Tribes
- Developing mitigations to protect surface resources of the Tonto National Forest and recommending mitigations for lands not under Forest Service jurisdiction

Authorization of more than 25 permits and plans from various jurisdictions are required for this mine project. Representatives from Federal, State of Arizona, and county governments are serving as cooperating agencies with the Forest Service in developing this EIS. Cooperating agencies have jurisdiction over some part of the project by law or have special expertise in the environmental effects that are

addressed in the EIS. Monthly calls and meetings between the lead and cooperating agencies have occurred since November 2017. The nine cooperating agencies are as follows:

- U.S. Army Corps of Engineers (USACE)
- U.S. Department of the Interior Bureau of Land Management (BLM)
- U.S. Environmental Protection Agency
- Arizona State Land Department
- Arizona Department of Environmental Quality
- Arizona Department of Water Resources
- Arizona Game and Fish Department
- Arizona State Mine Inspector
- Pinal County Air Quality Control District

Pursuant to Section 404 of the Clean Water Act, Resolution Copper has asked for authorization to discharge fill material into waters of the U.S. for the construction of a tailings storage facility at certain proposed locations. Because Congress directed that a single EIS is to support all Federal decisions related to the proposed mine, the USACE is relying on this EIS to support a decision for issuance of a Section 404 permit.

The 404 permitting process includes Resolution Copper’s submittal of a document called a “404(b)1 alternatives analysis” to USACE. The purpose of the 404(b)1 alternatives analysis is to identify the least environmentally damaging practicable alternative. Part of USACE’s permitting responsibility is to identify the least environmentally damaging practicable alternative, as well as to require adequate mitigation to compensate for impacts to waters of the U.S.

While most of the impacts considered under the USACE process are identical to those considered in this EIS, some impacts considered under the USACE process are specific only to that permitting process, which may have a different scope of analysis than the EIS. Because of these

differences, the 404(b)1 alternatives analysis is a document strongly related to the EIS, but also separate.

Accordingly, the 404(b)1 alternatives analysis is attached to the EIS as appendix C.

ES-1.5 Purpose and Need

The purpose of and need for this project is twofold:

1. To consider approval of a proposed mine plan governing surface disturbance on NFS lands—outside of the exchange parcels—from mining operations that are reasonably incident to extraction, transportation, and processing of copper and molybdenum.
2. To consider the effects of the exchange of lands between Resolution Copper (roughly 5,376 acres of private land on eight parcels located throughout Arizona) and the United States (2,422 acres forming the Oak Flat Federal Parcel) as directed by Section 3003 of the NDAA.

The role of the Forest Service under its primary authorities in the Organic Administration Act, Locatable Minerals Regulations (36 Code of Federal Regulations [CFR] 228 Subpart A), and the Multiple-Use Mining Act is to ensure that mining activities minimize adverse environmental effects on NFS surface resources and comply with all applicable environmental laws. The Forest Service may impose reasonable conditions to protect surface resources.

Through the Mining and Mineral Policy Act, Congress has stated that it is the continuing policy of the Federal Government, on behalf of national interests, to foster and encourage private enterprise in

- development of economically sound and stable domestic mining, minerals, and metal and mineral reclamation industries; and

- orderly and economic development of domestic mineral resources, reserves, and reclamation of metals and minerals to help ensure satisfaction of industrial, security, and environmental needs.

Secretary of Agriculture regulations that govern the use of surface resources in conjunction with mining operations on NFS lands are set forth under 36 CFR 228 Subpart A. These regulations require that the Forest Service respond to parties who submit proposed plans to conduct mining operations on or otherwise use NFS lands in conjunction with mining for part or all of their planned actions.

Compliance with other laws and regulations, such as State of Arizona water and air regulations, the Endangered Species Act, the Clean Water Act, and the National Historic Preservation Act (NHPA), also frames the proposed mining activities.

ES-1.6 Proposed Action

The proposed action consists of (1) approval of a mining plan for operations on NFS lands associated with a proposed large-scale mine, which would be on private land after the land exchange, (2) the NDAA-directed land exchange between Resolution Copper and the United States, and, if needed, (3) amendments to the Tonto National Forest Land and Resource Management Plan (forest plan). The next two sections summarize the proposed GPO and the land exchange actions.

ES-1.6.1 General Plan of Operations

A detailed description of the GPO can be found in section 2.2.2.2. The complete GPO is available on the project website, www.ResolutionMineEIS.us.

The type of copper deposit that would be mined at the East Plant Site is a porphyry deposit, a lower-grade deposit that requires higher mine production rates to be economically viable. The copper deposit that

Resolution Copper proposes to mine averages 1.54 percent copper (i.e., every ton of ore would on average contain 31 pounds of copper).

Mined ore would be crushed underground and then transported underground approximately 2.5 miles west to an area known as the West Plant Site, where ore would be processed to produce copper and molybdenum concentrates. Portions of the West Plant Site would be located on NFS lands and would be subject to Forest Service regulatory jurisdiction.

Once processed, the copper concentrate would be pumped as a slurry through a 22-mile pipeline to a filter plant and loadout facility located near Florence Junction, Arizona, where copper concentrate would be filtered and then sent to off-site smelters via rail cars or trucks. The molybdenum concentrate would be filtered, dried, and sent to market via truck directly from the West Plant Site.

The copper concentrate slurry pipeline corridor would be located along an existing, previously disturbed right-of-way known as the Magma Arizona Railroad Company (MARRCO) corridor. The MARRCO corridor would also host other mine infrastructure, including water pipelines, power lines, pump stations, and groundwater wells. A portion of the MARRCO corridor is located on NFS lands and would be subject to Forest Service regulatory jurisdiction.

Tailings produced at the West Plant Site would be pumped as a slurry through several pipelines for 4.7 miles to a tailings storage facility. The tailings storage area would gradually expand over time, eventually reaching about 3,300 acres in size. A fence constructed around the tailings to exclude public access would enclose approximately 4,900 acres. The proposed tailings storage facility is located on NFS lands and would be subject to Forest Service regulatory jurisdiction.

All power to the mine would be supplied by the Salt River Project. Portions of the proposed electrical infrastructure would be located on NFS land and would be subject to Forest Service regulatory jurisdiction. A Forest Service special use permit would be required to approve construction and operation of new power lines on NFS lands by the Salt River Project.

Access to the mine would be provided by existing roads. The Magma Mine Road would eventually be relocated as a result of expected subsidence.

Water for the process would come from a variety of sources. Filtrate from the filter plant, recycled water from the tailings storage facility, and recovered water from the concentrator complex would be recycled back into the mining process. Additional water would be obtained from dewatering of the mine workings, direct delivery of CAP water, and pumping from a well field along the MARRCO corridor.

Reclamation would be conducted to achieve post-closure land use objectives, including closing and sealing the mine shafts, removing surface facilities and infrastructure, and establishing self-sustaining vegetative communities using local species. The proposed tailings storage facility would be reclaimed in place, providing for permanent storage of mine tailings.

An initial review of the consistency of the proposed GPO with the forest plan indicates that approval of the proposed GPO would result in conditions that are inconsistent with the forest plan. An amendment to the forest plan would address the necessary changes to relevant standards and guidelines for managing visual quality and recreation opportunities as determined by the record of decision for the project.

ES-1.6.2 Land Exchange

Section 3003 of the NDAA directs the conveyance of specified Federal lands to Resolution Copper if Resolution Copper offers to convey the specified non-Federal land to the United States. The following summarizes the land parcels that would be exchanged.

- The United States would transfer the 2,422-acre **Oak Flat Federal Parcel** to Resolution Copper
- Resolution Copper would transfer the following parcels to the U.S. Department of Agriculture:

- 142 acres near Superior in Pinal County, Arizona, known as the **Apache Leap South End Parcel**, to be administered by the Tonto National Forest
- 148 acres in Yavapai County, Arizona, known as the **Tangle Creek Parcel**, to be administered by the Tonto National Forest
- 147 acres in Gila County, Arizona, known as the **Turkey Creek Parcel**, to be administered by the Tonto National Forest
- 149 acres near Cave Creek in Maricopa County, Arizona, known as the **Cave Creek Parcel**, to be administered by the Tonto National Forest
- 640 acres north of Payson in Coconino County, Arizona, known as the **East Clear Creek Parcel**, to be administered by the Coconino National Forest
- Resolution Copper would transfer the following parcels to the U.S. Department of the Interior:
 - Approximately 3,050 acres near Mammoth in Pinal County, Arizona, known as the **Lower San Pedro River Parcel**, to be administered by the BLM as part of the San Pedro Riparian National Conservation Area
 - Approximately 940 acres south of Elgin in Santa Cruz County, Arizona, known as the **Appleton Ranch Parcel**, to be administered by the BLM as part of the Las Cienegas National Conservation Area
 - 160 acres near Kearny in Gila and Pinal Counties, Arizona, known as the **Dripping Springs Parcel**, to be administered by the BLM
- An additional NDAA requirement calls for the United States to transfer the following land to Superior, Arizona, if the Town of Superior requests it:
 - 30 acres associated with the Fairview Cemetery

- 250 acres associated with parcels contiguous to the Superior Airport
- 265 acres of Federal reversionary interest associated with the Superior Airport

As of June 2019, the Town of Superior had not requested this land transfer.

ES-1.7 Nature of Lead Agency Decision

With regard to the proposed GPO, the Forest Supervisor, Tonto National Forest, would make the following decisions using the analysis in the EIS and supporting documentation:

- Decide whether to approve the proposed GPO submitted by Resolution Copper or require changes or additions to the proposed GPO to meet the requirements for environmental protection and reclamation set forth in 36 CFR 228 Subpart A before approving a final GPO. The Forest Service decision may be to authorize use of the surface of NFS lands in connection with mining operations under the GPO composed of elements from one or more of the alternatives considered.
- The alternative selected for approval in the final GPO must minimize adverse impacts on NFS surface resources to the extent feasible and must comply with all Federal and State laws and regulations
- Decide whether to approve amendments to the forest plan, which would be required to approve the final GPO
- Decide whether to approve a special use permit for the Salt River Project to authorize construction and operation of power lines on NFS lands

With regard to the land exchange, Section 3003 of the NDAA directs the Secretary of Agriculture to convey to Resolution Copper all right,

title, and interest of the United States in and to identified Federal land if Resolution Copper offers to convey to the United States all right, title, and interest of Resolution Copper in and to identified non-Federal lands.

The Forest Supervisor, Tonto National Forest, has limited discretion to (1) address concerns of affected Indian Tribes; (2) ensure that title to the non-Federal lands offered in the exchange is acceptable; (3) accept additional non-Federal land or a cash payment from Resolution Copper to the United States in the event that the final appraised value of the Federal land exceeds the value of the non-Federal land; or (4) address other matters related to the land exchange that are consistent with Section 3003 of the NDAA.

ES-1.8 Public Participation

The Forest Service sought public input during several phases of the environmental review process prior to publication of the DEIS.

The public scoping period began on March 18, 2016, with the Forest Service publication of a notice of intent to prepare an EIS in the Federal Register. Scoping is the first step in the NEPA process that seeks input from within the agency, from the public, and from other government agencies in order to define the scope of issues to be addressed in depth in the EIS.

The Forest Service planned for a 60-day public scoping period from March 18, 2016, to May 17, 2016.

Numerous individuals and several organizations requested an extension of the public scoping period, as well as additional public scoping meetings. The Forest Supervisor, Tonto National Forest, accommodated these requests by extending the public scoping period through July 18, 2016, resulting in a total overall scoping period of 120 days.

Between March and June 2016, the Forest Service held five EIS public scoping meetings.

A Scoping Report summarizing 133,396 public comments was completed and made available online on the project website on March 9, 2017.

The Forest Service conducted two public workshops to collect information on public opinion in regard to locating a mine tailings storage facility.

Internal scoping efforts included several meetings and field trips with the NEPA interdisciplinary (ID) team. ID team members include Forest Service resource specialists and planners representing anticipated topics of analysis in the NEPA process, managers, and Tonto National Forest line officers.

Cooperating agency scoping was conducted through a kick-off meeting and through comments submitted by cooperating agencies and tribes during the public scoping comment period.

Between May 2017 and May 2019, the Forest Service participated in numerous informal meetings (one or more per month) with key stakeholders, tribes, and cooperating agencies regarding technical feasibility of the project and alternatives, differing environmental impacts and tradeoffs among the alternatives, and mitigations for reducing expected impacts of the proposed mining plan of operations and land exchange.

Additional detail on scoping conducted during tribal consultation can be found in section 1.6.4 of the DEIS.

ES-1.9 Issues Selected for Analysis

Issues help set the scope of the actions, alternatives, and effects to consider in the Forest Service’s analysis (Forest Service Handbook 1909.15.12.4).

Comments submitted during the 2016 scoping period were used to formulate issues concerning the proposed action. An issue is a point of dispute or disagreement with the proposed action based on some anticipated environmental effect.

Table ES-1 presents the social, physical, and biological resources or other concerns that the Forest Service selected for analysis, based on scoping comments.

Section 1.7, Issues, in chapter 1 of the DEIS provides a snapshot of these issues. Detailed information on these issues appears in chapter 3 of the DEIS.

Table ES-1. Issues carried forward for analysis

Social and Cultural Issues	Physical and Biological Issues
• Cultural Resources	• Air Quality
• Environmental Justice	• Geology, Minerals, and Subsidence
• Public Health and Safety	• Livestock and Grazing
• Recreation	• Noise and Vibration
• Socioeconomics	• Scenic Resources
• Transportation and Access	• Soils and Vegetation
• Tribal Values and Concerns	• Water Resources
	• Wildlife and Special Status Species

ES-2 ALTERNATIVES

NEPA requires consideration of a reasonable range of alternatives that can accomplish the purpose of and need for the proposed action. The Forest Service studied a range of alternatives to the Resolution Copper GPO, each of which

- responds to key issues raised during public scoping; project purpose and need; and applicable Federal and State laws and regulations;
- considers input from resource specialists, mining experts (project team), cooperating agency representatives, tribes, and stakeholders; and
- is technically feasible to implement—but with differing environmental impacts and tradeoffs.

The alternatives include five action alternatives (out of 30+ considered) at four separate locations, including one location not on Federal land.

In addition, the Forest Service did the following:

- Assessed alternative mining techniques in an effort to prevent subsidence. No alternative methods were considered reasonable.
- Assessed tailings disposal in brownfield sites (old mine pits). No reasonable brownfield locations were found.
- Identified three separate methods of depositing tailings, including using filtered (dry-stack) tailings.

Environmental impacts and tradeoffs among the five action alternatives vary due to the differences in the tailings embankment design; the tailings deposition method; or the geographic location and affected surroundings of the proposed tailings storage facility (figure ES-2). Ore

extraction and processing activities as proposed in the GPO remain similar between all action alternatives.

Additional alternatives were considered but dismissed from detailed analysis for various reasons; see appendix F of the DEIS for discussion of the other alternatives considered and the rationale for their dismissal.

ES-2.1 No Action Alternative

This alternative is required by regulation (40 CFR 1502.14(d)). Under this alternative, the Forest Service would not approve the GPO, none of the activities in the final GPO would be implemented on NFS lands, and the mineral deposit would not be developed. Additionally, the land exchange would not take place.

However, the nature of the no action alternative for this project was described in the Notice of Intent issued in March 2016, which states:

The EIS will analyze the no action alternative, which would neither approve the proposed GPO nor complete the land exchange. However, the responsible official—the Forest Supervisor, Tonto National Forest—does not have discretion to select the no action alternative, because it would not be consistent with the requirements of 36 CFR 228.5, nor would it comply with the NDAA.

Additional alternatives may be evaluated in the EIS. These alternatives may require changes to the proposed GPO, which are necessary to meet Forest Service regulations for locatable minerals set forth at 36 CFR 228 Subpart A.

Thus, while this alternative cannot be selected by the Forest Service, it serves as a point of comparison for the proposed action and action alternatives.

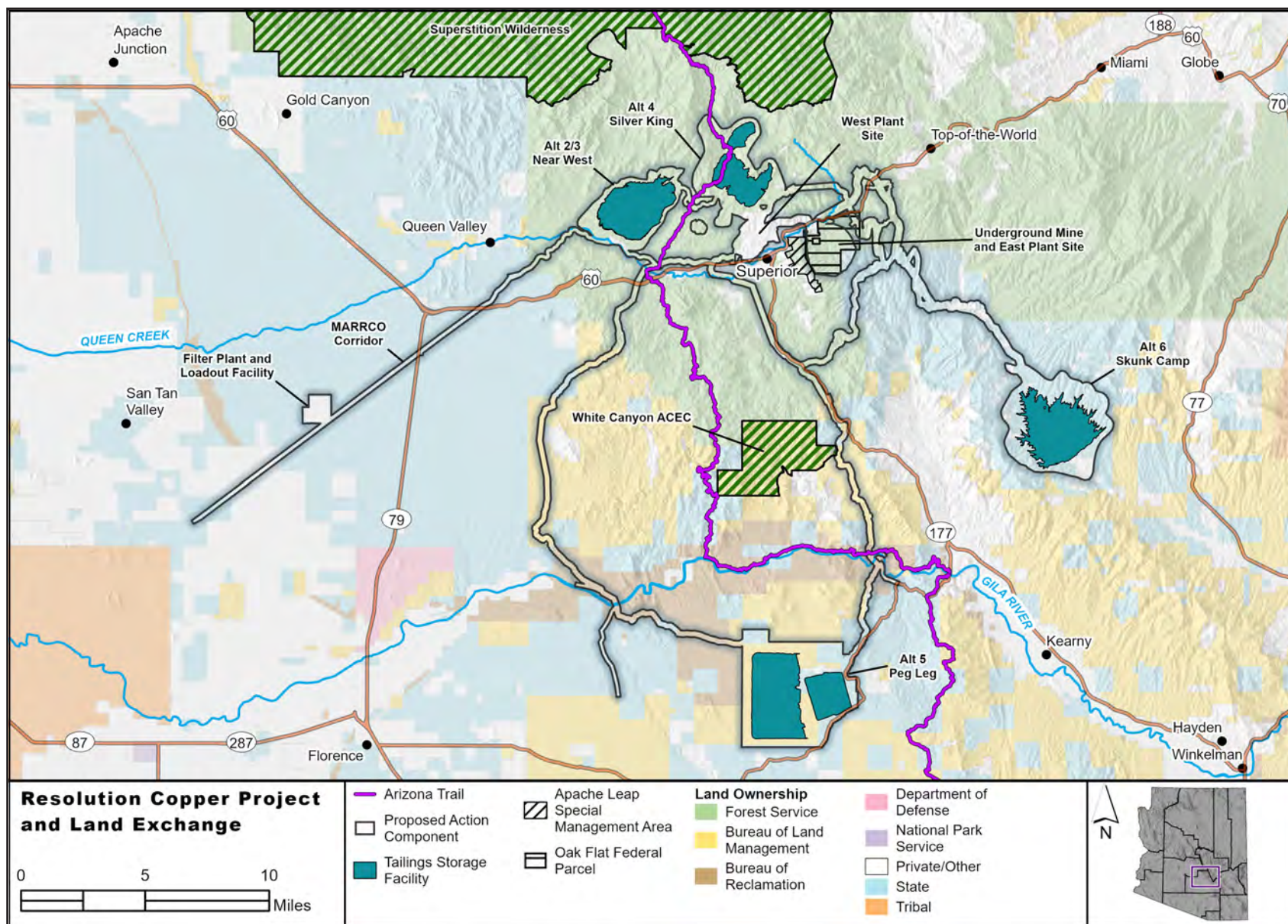


Figure ES-2. Overview of project alternative locations

ES-2.2 Alternative 2 – Near West Proposed Action

This alternative is a variation of the proposed action described in the May 9, 2016, version of the Resolution Copper GPO. In early 2018, Resolution Copper changed its original plan for an “upstream” embankment design to a “modified centerline” configuration for a tailings storage facility.

Alternative 2 would include a split-stream tailings processing method with two tailings types:

- Non-potentially acid generating (NPAG) tailings
- Potentially acid generating (PAG) tailings

PAG tailings have a greater potential to oxidize and generate acidic seepage to groundwater or surface waters. To minimize this potential, PAG tailings would be deposited centrally in the tailings storage facility and surrounded by NPAG tailings. A 5- to 10-foot-deep water cap would keep PAG tailings saturated to reduce exposure to oxygen during tailings storage facility development.

Additionally, the larger NPAG deposit would act as a buffer between the PAG tailings and areas outside the tailings storage facility. Water spigots would keep the NPAG tailings “beach” area wet, ensuring effective dust management during operations.

The modified centerline embankment construction would consist of earthfill and cyclone sand from the NPAG tailings stream. This sand results from tailings processed through one or more dedicated centrifuges to separate larger tailings particles from the finer particles.

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A suite of engineered seepage controls, including engineered low-permeability liners, compacted fine tailings, and/or a “grouting” process

Alternative 2 Facility Details	
Ownership	Tonto National Forest
Tailings facility footprint	3,300 acres
Area excluded from public access during operations	4,900 acres
Embankment height	520 feet
Embankment length	10 miles
Tailings type	Slurry

to seal ground fractures, would limit and contain seepage. Uncontained seepage would be collected in downstream ponds and pumped back to the tailings storage facility. Figure ES-3 provides an overview of Alternative 2.

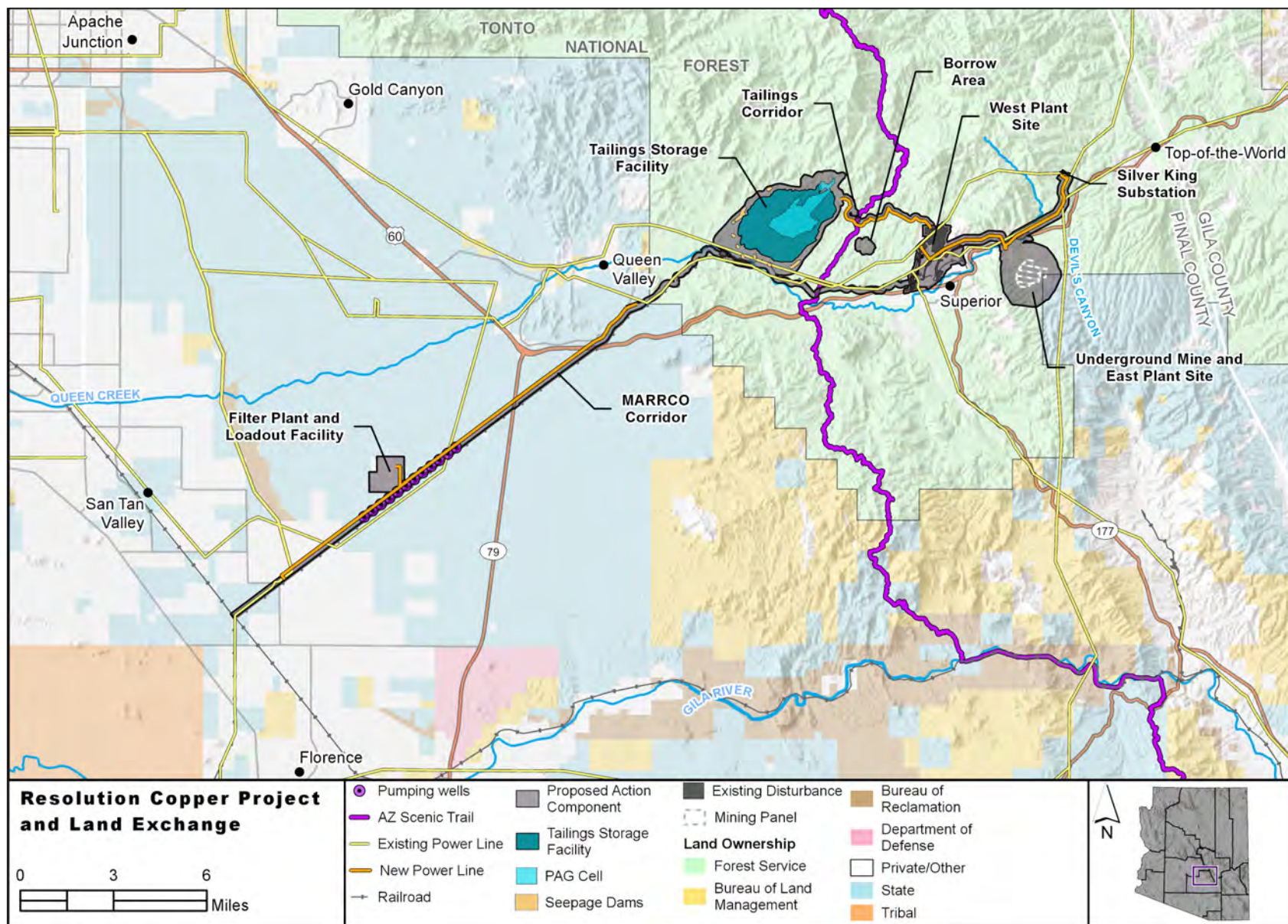


Figure ES-3. Alternative 2 – Near West Proposed Action

ES-2.3 Alternative 3 – Near West – Ultrathickened

ES-2.3.1 Similarities with Alternative 2

This alternative represents a variation of the proposed action described in the May 2016 GPO. It includes a change in embankment design for a tailings storage facility to a “modified centerline” configuration consisting of earthfill and cycloned sand.

Alternative 3 has a split-stream tailings processing method with two tailings types:

- NPAG tailings
- PAG tailings

A suite of engineered seepage controls, including engineered low-permeability liners, compacted fine tailings, and/or a “grouting” process to seal ground fractures, would limit and contain seepage, along with downstream seepage collection ponds.

The location on the Tonto National Forest would be identical. Figure ES-4 provides an overview of Alternative 3.

ES-2.3.2 Differences from Alternative 2

This alternative would use physical barriers to segregate PAG tailings in a separate cell from NPAG tailings. Cycloned sand would be used to build low-permeability “splitter berms” between the two tailings storage areas.

This alternative has a proposal to reduce initial amounts of water retained in NPAG tailings and encourage rapid evaporation, as well as reduce seepage potential, through

Alternative 3 Facility Details	
Ownership	Tonto National Forest
Tailings facility footprint	3,300 acres
Area excluded from public access during operations	4,900 acres
Embankment height	510 feet
Embankment length	10 miles
Tailings type	Thickened slurry

- additional on-site thickening of NPAG tailings, which would increase the thickness by 5 percent, reducing the overall amount of water in the facility; and
- possible use of “thin-lift” (also known as thin layer) deposition, to enhance evaporation and further reduce the amount of water in the facility.

Alternative 3 would require less time to close the recycled water pond, compared with Alternative 2. By using ultrathickening methods that reduce water entering the tailings, officials estimate closure in 5 years, compared with 25 years estimated for Alternative 2.

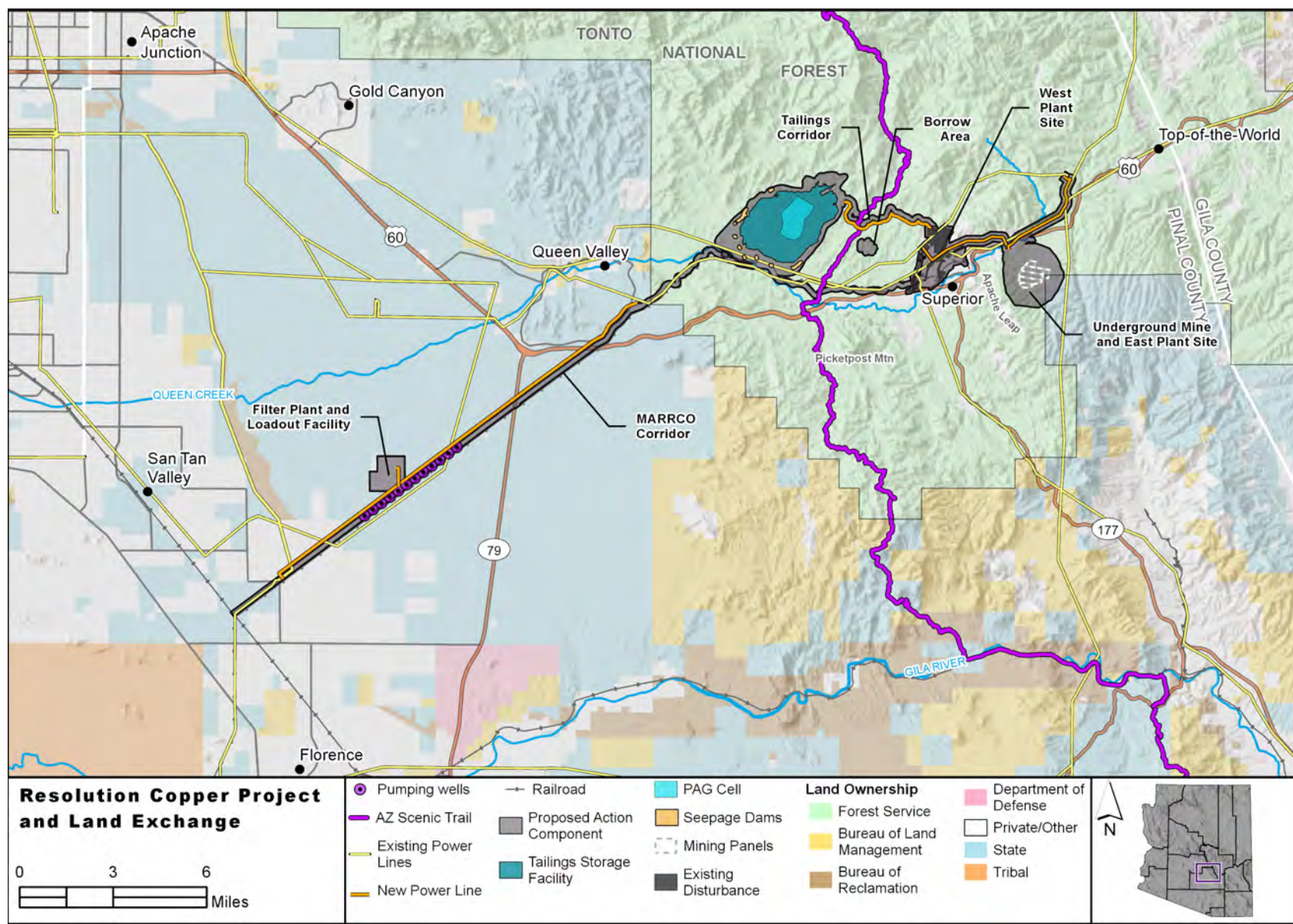


Figure ES-4. Alternative 3 – Near West – Ultrathickened

ES-2.4 Alternative 4 – Silver King

This is the lone alternative proposing to use filtered tailings—instead of slurry tailings—at the tailings storage facility.

As with other alternatives, Alternative 4 would include a split-stream tailings processing method with two tailings types:

- NPAG tailings
- PAG tailings

From the West Plant Site, pipelines would transport the two tailings slurry streams to filter plants at the Silver King location north of the West Plant Site and the town of Superior. Pressure filters would extract about 85 percent of the water from the tailings, resulting in a more solid product and a decrease in water pumped for operations. The water would be recycled in the process water at the West Plant Site.

Conveyors and mobile equipment would mechanically deposit NPAG and PAG tailings in two separate, adjacent tailings storage facilities. Figure ES-5 provides an overview of Alternative 4.

To limit exposure of tailings to water, all runoff would be directed to perimeter ditches, sumps, and/or underdrains. Water coming into contact with exposed tailings would be collected in large ponds located in natural valleys downstream of the tailings storage facility. Large diversions also would be needed to keep upstream stormwater from reaching the tailings storage facility.

ES-2.4.1 Arizona National Scenic Trail

The tailings storage facility and associated auxiliary facilities would impact approximately 5.5 miles of the Arizona National Scenic Trail (Arizona Trail), resulting in the rerouting of that portion of the trail.

Alternative 4 Facility Details	
Ownership	Tonto National Forest
Tailings facility footprint	2,300 acres
Area excluded from public access during operations	5,700 acres
Embankment height	Filtered tailings do not use an embankment to contain tailings; however, for comparison with the other alternatives, the overall height of the facility would be approximately 1,000 feet.
Embankment length	Not applicable
Tailings type	Filtered

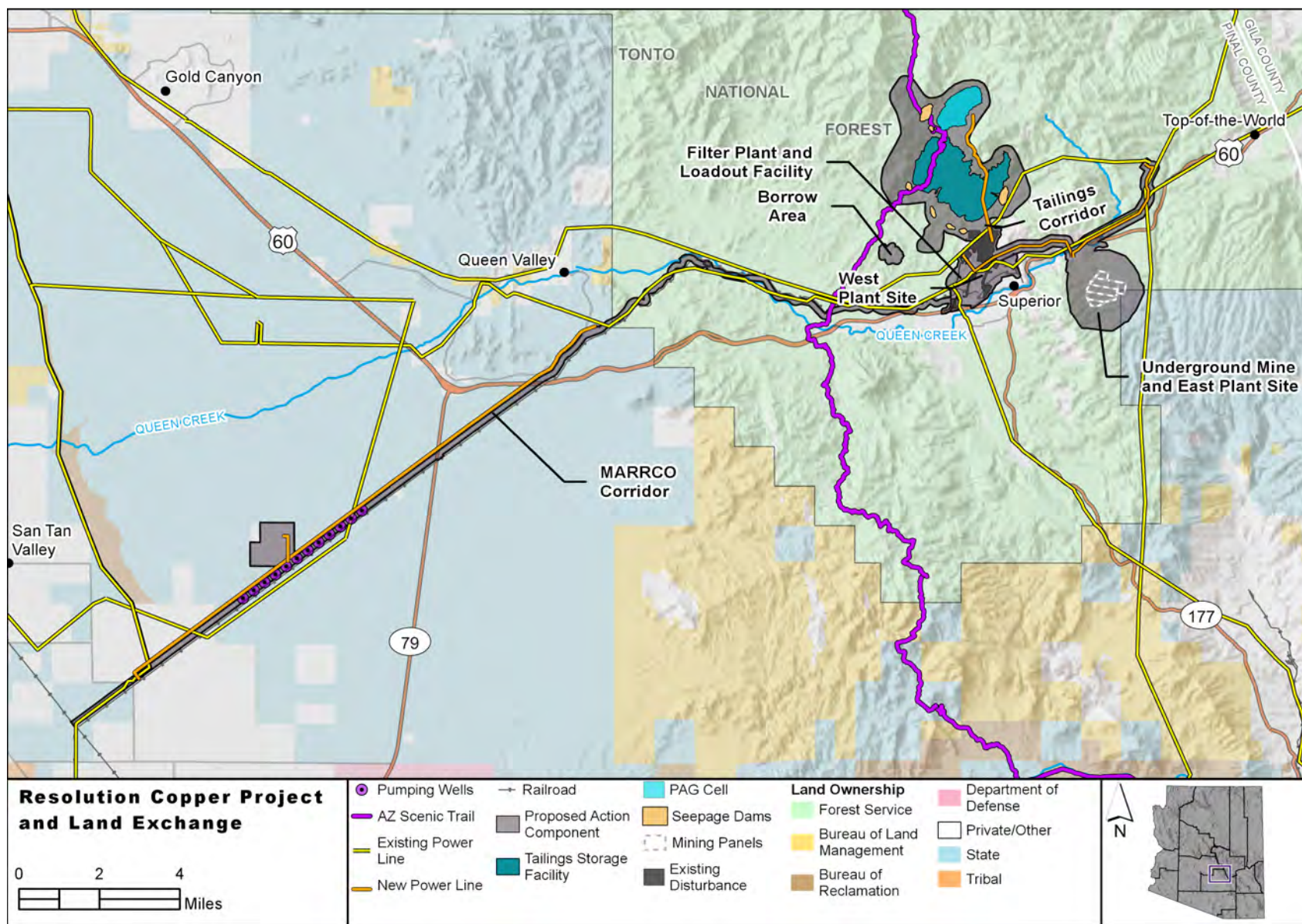


Figure ES-5. Alternative 4 – Silver King

ES-2.5 Alternative 5 – Peg Leg

This alternative allows an evaluation of a tailings site that is more isolated from existing communities while remaining adjacent to areas of active mining on the landscape.

Alternative 5 also provides for a comparison of the impacts of slurry tailings if placed on a flatter, alluvial setting instead of an upland wash or canyon.

As with other alternatives, Alternative 5 would include a split-stream tailings processing method with two tailings types:

- NPAG tailings
- PAG tailings

Two options are analyzed for tailings conveyance from the West Plant Site. Only one option would be selected for use to transport the tailings slurry streams to the Peg Leg tailings storage facility. The west option is approximately 28 miles long, whereas the east option is approximately 23 miles long.

Two separate storage facilities for NPAG and PAG tailings would exist throughout the life of the mine.

The PAG facility would consist of four separate cells. This would reduce the pond size required for operations and allow for progressive reclamation. Only one cell would be operational at a time. A downstream embankment consisting of earthfill and cycloned sand is proposed for the PAG cells.

NPAG tailings would be located primarily on an alluvial soil foundation to the west and slightly downslope from the PAG site. A centerline embankment, also consisting of earthfill and cycloned sand, is proposed for NPAG tailings. Figure ES-6 provides an overview of Alternative 5.

Officials project higher seepage because of the alluvial foundation. A suite of engineered seepage controls, including low-permeability layers

Alternative 5 Facility Details	
Ownership	Bureau of Land Management; Arizona State Land Department
Tailings facility footprint	5,900 acres
Area excluded from public access during operations	10,800 acres
Embankment height	310 feet
Embankment length	7 miles
Tailings type	Slurry

at the PAG facility and low-permeability barriers (liners or fine-grained tailings) for the NPAG tailings, would limit and control seepage. A downstream well field would capture seepage and return it to the tailings storage facility.

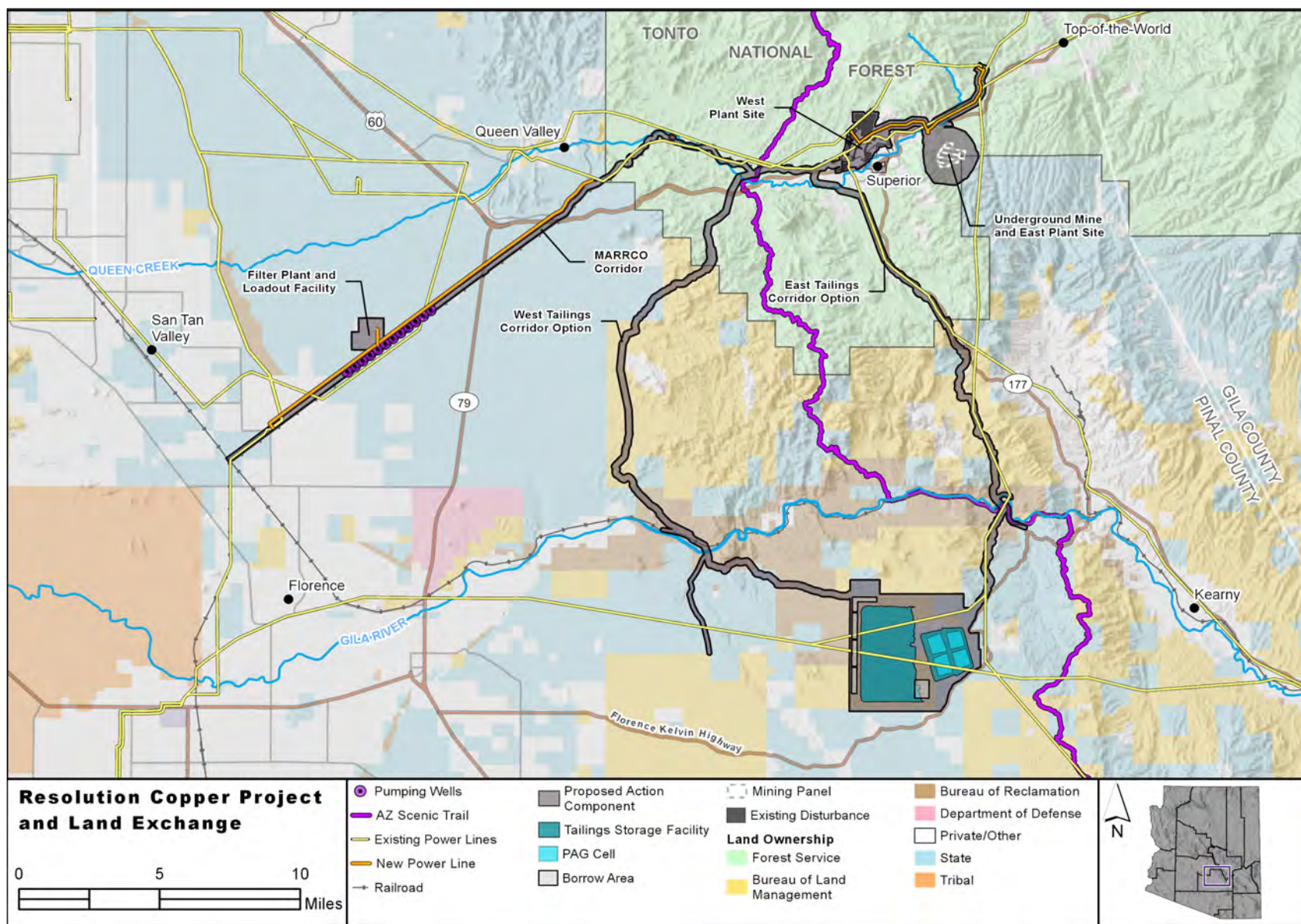


Figure ES-6. Alternative 5 – Peg Leg

ES-2.6 Alternative 6 – Skunk Camp

Preferred Alternative

The Forest Service has identified Alternative 6 (Skunk Camp) – North Option as the Lead Agency’s preferred alternative and seeks public feedback during the 90-day comment period regarding this choice.

The north option for tailings conveyance is the preferred route in the DEIS. Development of this alternative centered on three components:

- Its location is largely isolated from human residences and other infrastructure.
- It is adjacent to an existing mine (Ray Mine).
- Its location enables use of cross-valley embankments, requiring less fill to retain tailings, compared with a ring-like impoundment. This, in turn, simplifies construction and operations.

As with other alternatives, Alternative 6 would include a split-stream tailings processing method with two tailings types:

- NPAG tailings
- PAG tailings

Two options are analyzed for tailings conveyance from the West Plant Site. Only one option would be selected for use to transport the tailings slurry streams to the Skunk Camp tailings storage facility. The north option is approximately 20 miles long, whereas the south option is approximately 25 miles long.

NPAG tailings would be cycloned to produce embankment fill with cycloned overflow—the finer particles—thickened at the tailings

Alternative 6 Facility Details	
Ownership	Private land; Arizona State Land Department
Tailings facility footprint	4,000 acres
Area excluded from public access during operations	8,600 acres
Embankment height	490 feet
Embankment length	3 miles
Tailings type	Slurry

storage facility before discharge into the impoundment. PAG tailings would be deposited in two separate cells, behind a separate cycloned sand downstream-type embankment, to the north (upstream) end of the facility. Only one cell would be operational at a time, providing for early reclamation of the first cell. The much larger volume of NPAG tailings would be behind its own embankment of compacted cycloned sand and deposited immediately south of (downstream) and adjacent to the PAG tailings.

A suite of engineered seepage controls, including engineered low-permeability liners, compacted fine tailings, and/or a “grouting” process to seal ground fractures, would provide a low-permeability layer to limit and control seepage. A seepage collection pond also would be placed downstream. Figure ES-7 provides an overview of Alternative 6.

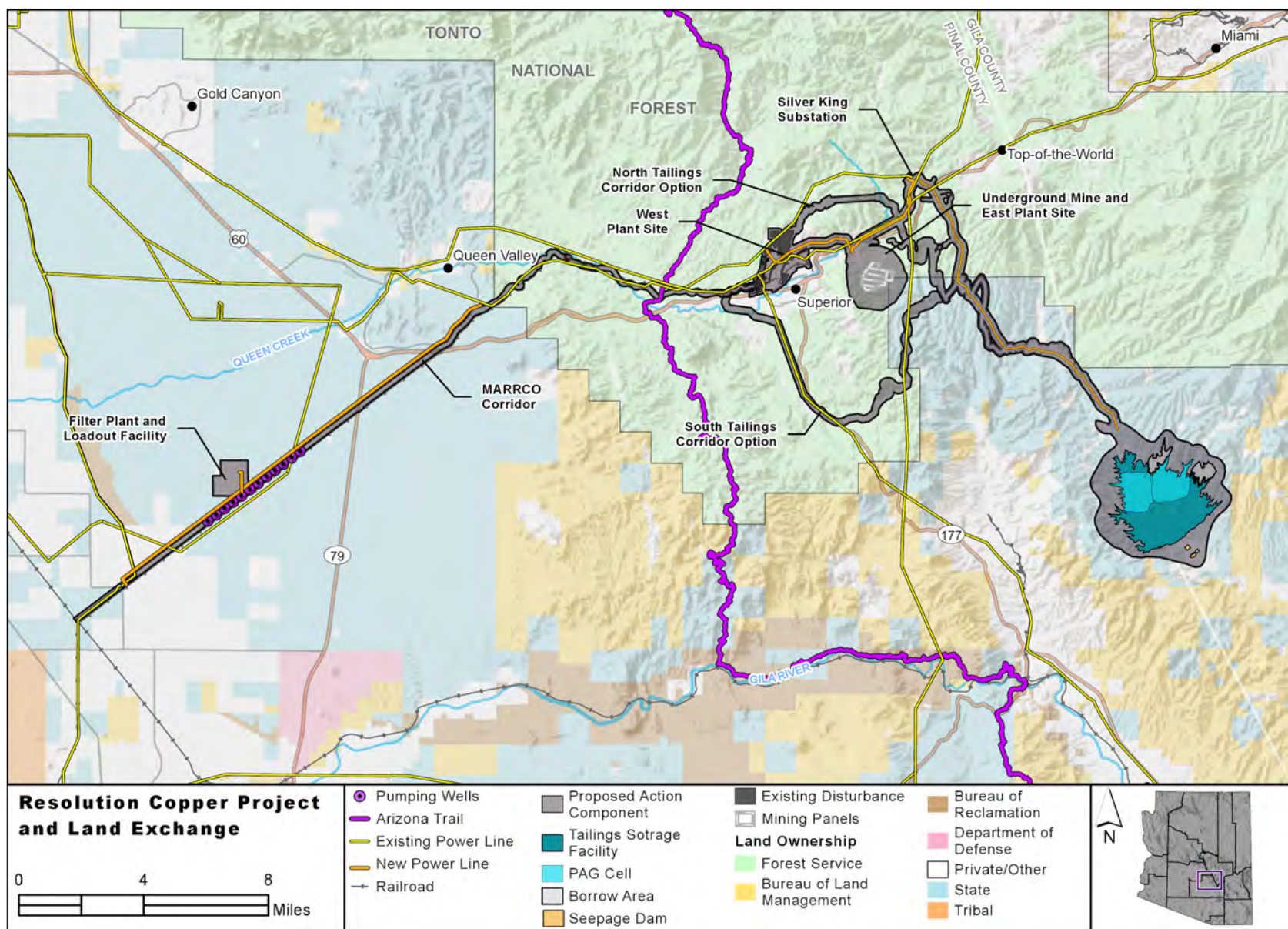


Figure ES-7. Alternative 6 – Skunk Camp (preferred alternative)

ES-3 SUMMARY OF IMPACTS

ES-3.1 Introduction

Information in chapter 3 of the DEIS describes the natural and human environment that may be affected by the proposed action and its alternatives and discloses the direct, indirect, and cumulative impacts that could occur as a result of implementation of the proposed action or alternatives. The effects of the legislated land exchange are also disclosed in the DEIS. Forest Service management regulations would no longer apply on 2,422 acres of the Oak Flat Federal Parcel transferred to Resolution Copper. Approximately 5,376 acres would transfer from private ownership to Federal ownership and regulations.

ES-3.2 Geology, Minerals, and Subsidence

This section describes known geological characteristics at each of the major facilities of the proposed mine—including alternative tailings storage locations—and how the development of the project may impact existing cave and karst features, paleontological resources, area seismicity, and unpatented mining claims. It also outlines subsidence impacts that would result from Resolution Copper’s plans to extract the ore from below the deposit using a mining technique known as “block caving” or “panel caving.” The analysis concludes the following:

- The subsidence crater at the Oak Flat Federal Parcel would break through at mine year 6, would be between 800 and 1,115 feet deep, and would be about 1.8 miles in diameter.
- No damage is expected to Apache Leap, Devil’s Canyon, or U.S. Route 60 because of the subsidence. The mine is also unlikely to induce seismic activity that would cause damage.
- Some unpatented mining claims not belonging to Resolution Copper are located within the project footprint, and access to these claims may be inhibited.

ES-3.3 Soils and Vegetation

This section explains how the proposed mine would disturb large areas of ground and potentially destroy native vegetation, including species given special status by the Forest Service, and encourage noxious or invasive weeds. The analysis concludes the following:

- Between 10,000 and 17,500 acres of soil and vegetation would be disturbed by the project.
- Revegetation success in these desert ecosystems is demonstrated. However, impacts to soil health and productivity may last centuries to millennia, and the ecosystem may not meet desired future conditions. The habitat may be suitable for generalist wildlife and plant species, but rare plants and wildlife with specific habitat requirements are unlikely to return.
- Arizona hedgehog cactus (endangered) may be impacted during operations at the East Plant Site and by ground subsidence. The pipeline corridors associated with Alternative 5 would impact critical habitat for acuña cactus (endangered).
- Reclamation of disturbed areas would decrease but not eliminate the likelihood of noxious weeds becoming established or spreading.

ES-3.4 Noise and Vibration

This section provides a detailed analysis of estimated impacts from noise and vibration under the GPO-proposed mine plan and each of the alternatives. The analysis concludes the following:

- Noise impacts were modeled for 15 sensitive receptors representing residential, recreation, and conservation land uses. Under most conditions, predicted noise and vibration during construction and operations, for both blasting and non-blasting activities, at sensitive receptors are below thresholds of concern; rural character would not change due to noise.

- One exception is that noise along Dripping Springs Road (Alternative 6) is above thresholds of concern; however, mitigation to change the access road would remedy this. After mitigation, no unavoidable adverse impacts are anticipated from noise or vibration from any alternative.

ES-3.5 Transportation and Access

This section discusses how the proposed Resolution Copper Mine would increase traffic on local roads and highways and likely alter local and regional traffic patterns and levels of service. This section also examines NFS road closures, along with accelerated deterioration of local roadways as a result of increased use. The analysis concludes the following:

- Approximately 6.9 miles of NFS roads are expected to be decommissioned or lost from the East Plant Site, West Plant Site, or subsidence area.
- An additional 21.7 miles of NFS roads would be lost as a result of the Alternative 2 and 3 tailings storage facility, and 17.7 miles of NFS roads would be lost as a result of the Alternative 4 tailings storage facility. Approximately 29 miles of BLM inventoried roads would be lost as a result of the Alternative 5 tailings storage facility. The Alternative 6 tailings storage facility would impact only about 7 miles of private roads.
- NFS roads lost to the subsidence area provide access to areas that include Apache Leap and Devil's Canyon; access would still be available to these areas but would require using routes that are not as direct or convenient. Alternative 4 would also change access to the highlands north of Superior, as well as to private inholdings in the Tonto National Forest.

ES-3.6 Air Quality

This section analyzes potential impacts from an increase in dust, wind-borne particulates, and transportation-related emissions as a result of construction, mining, and reclamation activities at the mine and along transportation and utility corridors. The analysis concludes the following:

- Neither daily nor annual maximum impacts for fugitive dust (PM_{2.5} and PM₁₀) would exceed established air quality thresholds.
- None of the predicted results are anticipated to exceed the National Ambient Air Quality Standards (NAAQS) at the project fence line (where public access is excluded).
- Impacts on air quality-related values (deposition and visibility) at Class 1 and other sensitive areas would be within acceptable levels.

ES-3.7 Water Resources

This section analyzes how the Resolution Copper Project could affect water availability and quality in three key areas: groundwater quantity and groundwater-dependent ecosystems (GDEs); groundwater and surface water quality; and surface water quantity. The analysis concludes the following:

- Between 14 and 16 GDEs are anticipated to be impacted: six of these are springs that are anticipated to be impacted by groundwater drawdown under the no action alternative as a result of ongoing dewatering by Resolution Copper; when block-caving occurs, groundwater impacts expand to overlying aquifers, and two more springs are impacted; direct disturbance within the project footprint would impact another two to five springs; and, depending on the alternative, GDEs associated with Queen Creek, Devil's Canyon, and the Gila River would

be impacted as a result of reductions in surface runoff. The loss of water would be mitigated for some GDEs, but impacts to the natural setting would remain.

- Groundwater supplies in Superior and Top-of-the-World could be impacted by groundwater drawdown but would be replaced through mitigation.
- Over the mine life, 87,000 acre-feet of water would be pumped from the mine, and between 180,000 and 590,000 acre-feet of makeup water would be pumped from the Desert Wellfield in the East Salt River valley. Alternative 4, which uses filtered (dry-stack) tailings, requires the least amount of makeup water. The wellfield pumping would incrementally contribute to the lowering of groundwater levels and cumulatively reduce overall groundwater availability in the area.
- After closure, the reflooded block-cave zone could have poor water quality; however, a lake in the subsidence crater is not anticipated, and no other exposure pathways exist for this water.
- Stormwater runoff could have poor water quality, but no stormwater contacting tailings or facilities would be released during operations or post-closure until reclamation is successful.
- All of the tailings facilities would lose seepage with poor water quality to the environment, and all are dependent on a suite of engineered seepage controls to reduce this lost seepage. Modeling indicates that seepage from Alternatives 2 and 4 would result in water quality problems in Queen Creek; Alternative 3 would not, but requires highly efficient seepage control to achieve this (99.5 percent capture). Seepage from Alternatives 5 and 6 does not result in any anticipated water quality problems; these alternatives also have substantial opportunity for additional seepage controls if needed.
- There would be a reduction in average annual runoff as a result of the capturing of precipitation by the subsidence crater and tailings facilities, varying by alternative: 3.5 percent at the mouth of Devil's Canyon, between 6.5 and 8.9 percent in Queen

Creek at Whitlow Ranch Dam, and between 0.2 and 0.5 percent in the Gila River. Alternative 4 also would result in an almost 20 percent loss of flow in Queen Creek at Boyce Thompson Arboretum.

- Under the Clean Water Act, Alternatives 2, 3, and 4 impact zero acres of jurisdictional waters, based on a decision by the USACE that no such waters exist above Whitlow Ranch Dam. Alternative 5 impacts about 180 acres, and Alternative 6 impacts about 120 acres of potentially jurisdictional waters.

ES-3.8 Wildlife and Special Status Wildlife Species

This section describes how impacts to wildlife can occur from habitat loss and fragmentation, as well as from artificial lighting, noise, vibration, traffic, loss of water sources, or changes in air or water quality. The analysis concludes the following:

- Habitat would be impacted in the analysis area for 50 special status wildlife species. General impacts include a high probability of mortality or injury with vehicles or from grading, increased stress due to noise, vibration, and artificial light, and changes in cover. Changes in behavior include changes in foraging efficiency and success, changes in reproductive success, changes in growth rates of young, changes in predator-prey relationships, increased movement, and increased roadkill.
- There would be loss and fragmentation of movement and dispersal habitats from the subsidence area and tailings storage facility. Ground-clearing and consequent fragmentation of habitat blocks for other mine-related facilities would also inhibit wildlife movement and increase edge effects.
- For Tonto National Forest and BLM sensitive wildlife species, the proposed project may adversely impact individuals but is not likely to result in a loss of viability in the analysis area,

nor is it likely to cause a trend toward Federal listing of these species as threatened or endangered.

- Western yellow-billed cuckoo (endangered) could be impacted by general removal of vegetation and increased activity. The potential changes in stream flow and associated riparian vegetation along Devil's Canyon are specific concerns.
- Southwestern willow flycatcher (endangered) could be impacted by pipeline crossings of the Gila River under Alternative 5, including removal of vegetation and increased activity.
- Critical habitat for Gila chub occurs in Mineral Creek above Devil's Canyon. However, no individuals have been identified here during surveys, and this area is not expected to be impacted by groundwater drawdown.

ES-3.9 Recreation

This section quantifies, when possible, anticipated changes to some of the area's natural features and recreational opportunities as a result of infrastructure development related to the project. The analysis concludes the following:

- Public access would be eliminated permanently on 4,900 to 10,800 acres. Alternatives 2, 3, and 4 would result in 4,900 to 5,700 acres of access lost on Tonto National Forest land. Alternative 5 would primarily impact access to 10,800 acres of BLM land, and Alternative 6 would primarily impact access to 10,100 acres, of which 7,700 is Arizona State land.
- There would be changes to the recreation opportunity spectrum acres within the Globe Ranger District, ranging from 13 to 17 percent of semi-primitive non-motorized, 16 to 17 percent of semi-primitive motorized, and 5 to 7 percent of roaded natural.

- Visitors to the Superstition Wilderness, Picketpost Mountain, and Apache Leap would have foreground and background views of the tailings facilities from trails and overlooks, and the recreation setting from certain site-specific views could change. Three miles of the Arizona Trail would be impacted by Alternative 4 and require rerouting, whereas pipeline corridor crossings for Alternatives 2 and 5 would impact the trail.
- The exchange of the Oak Flat Federal Parcel would remove world-recognized rock climbing areas from public access, as well as Oak Flat Campground. Both of these would be partially mitigated by replacement areas.
- The number of Arizona hunting permits that are issued in individual Game Management Units would not change as a result of implementation of any of the action alternatives.

ES-3.10 Public Health and Safety

This section addresses three areas of interest: tailings embankment safety, fire risks, and the potential for releases or public exposure to hazardous materials. The analysis concludes the following:

- The risk of embankment failure for all alternatives would be minimized by required adherence to Federal and Arizona design standards and by applicant-committed environmental protection measures.
- The consequences of a catastrophic failure and the downstream flow of tailings would include possible loss of life and limb, destruction of property, displacement of large downstream populations, disruption of the Arizona economy, contamination of soils and water, and risk to water supplies and key water

infrastructure like the CAP canal. The highest population is downstream of Alternative 2.

- All alternative designs are built to the same safety standards, but they have inherent differences in their resilience when unexpected events or upsets happen. Alternatives 2 and 3 are the least resilient because they use modified-centerline embankments, have long (10-mile) freestanding embankments, and do not use separately contained PAG storage cells. Alternative 6 is the most resilient, using a centerline embankment that is only 3 miles long and anchored on each side, with separate PAG storage cells using downstream embankments.
- Alternative 4, using filtered (dry-stack) tailings, would have the fewest consequences if a failure occurred, collapsing as a slump or landslide, and impacting the local vicinity only.
- With respect to other public safety risks, the risk of inadvertent ignition and resulting wildland fire is considered quite low. However, Alternative 4 includes areas classified with shrub fuels that burn with high intensity in the event of an ignition. As Mine Safety and Health Administration and other regulations and standards govern the transport and storage of explosives and hazardous chemicals, risks of spills or releases are therefore considered possible, but unlikely, with appropriate response plans in place.

ES-3.11 Scenic Resources

This section addresses the existing conditions of scenic resources (including dark skies) in the area of the proposed action and alternatives. It also addresses the potential changes to those conditions from construction and operation of the proposed project. The analysis concludes the following:

- All tailings facilities would be visible from long distances, and the change in contrast caused by land disturbance and vegetation removal, dust, and equipment would strongly impact viewers, including recreationists on scenic highways.
- Alternatives 2 and 3 would impact Arizona Trail users and off-highway vehicle users, as would Alternative 4. Alternative 4 would be the tallest facility when viewed (1,000 feet in height); it would dominate the scene and be viewable from sensitive locations (like Picketpost Mountain). Alternative 5 would also be highly visible and would impact Arizona Trail and off-highway vehicle users. Alternative 6 would be visible from within the valley of Dripping Spring Wash but otherwise would not be as visible on the landscape as the other alternatives.

ES-3.12 Cultural Resources

This section analyzes potential impacts on all known cultural resources within the project area. The analysis concludes the following:

- The NRHP-listed *Chi'chil Bildagoteel* Historic District TCP would be directly and permanently damaged by the subsidence area at the Oak Flat Federal Parcel.
- All alternative areas would have 100 percent pedestrian surveys; the majority of surveys have been completed. From surveyed areas, the number of NRHP-eligible sites are as follows: Alternatives 2 and 3 (101 sites); Alternative 4 (122 sites); Alternative 5 (114–125 sites, depending on pipeline route); and Alternative 6 (318–343 sites, depending on pipeline route).
- Additional sites would be directly impacted but have undetermined eligibility, would be indirectly impacted, or are within a 6-mile buffer area and would be impacted by the change in the landscape as a result of the proposed mine.

ES-3.13 Socioeconomics

This section examines the social and economic impacts on the quality of life for neighboring communities near the proposed mine. The analysis concludes the following:

- On average, the mine is projected to directly employ 1,500 workers, pay about \$134 million per year in total employee compensation, and purchase about \$546 million per year in goods and services. Including direct and multiplier effects, the proposed mine is projected to increase average annual economic value added in Arizona by about \$1 billion.
- The proposed mine is projected to generate an average of between \$88 and \$113 million per year in State and local tax revenues and would also produce substantial revenues for the Federal Government, estimated at more than \$200 million per year. There would be a loss of hunting revenue as a result of the tailings storage facilities; the loss would be highest in the Superior area with Alternatives 2, 3, and 4.
- Construction and operations of the proposed mine could affect costs for both the Town of Superior and Pinal County to maintain street and road networks. A number of agreements between Resolution Copper and the Town of Superior would offset impacts to quality of life, education, and emergency services.
- Property values are expected to decline in close proximity to the tailings storage facilities.

ES-3.14 Tribal Values and Concerns

This section discusses the high potential for the proposed mine to directly, adversely, and permanently affect numerous cultural artifacts, sacred seeps and springs, traditional ceremonial areas, resource gathering localities, burial locations, and other places and experiences of high spiritual and other value to tribal members.

- Development of the Resolution Copper Mine would directly and permanently damage the NRHP-listed *Chi'chil Bildagoteel* Historic District TCP. One or more Emory oak groves at Oak Flat, used by tribal members for acorn collecting, would likely be lost. Other unspecified mineral or plant collecting locations and culturally important landscapes are also likely to be affected.
- Between 14 and 16 GDEs, mostly sacred springs, would be anticipated to be impacted by dewatering. Although mitigation would replace water, impacts would remain to the natural setting of these places.
- Burials are likely to be impacted; the numbers and locations of burials would not be known until such sites are detected as a result of project-related activities.

ES-3.15 Environmental Justice

This section examines issues in the context of the Resolution Copper Project and Land Exchange that have the potential to harm vulnerable or disadvantaged communities. The analysis concludes the following:

- There are five environmental justice communities in the area, as well as Native American communities, that would be impacted by cultural impacts described above. Economic effects from the mine would be most apparent in the town of Superior (an environmental justice community). Housing shortages, pressure on municipal services and schools, and price increases would potentially adversely affect low-income and minority individuals.

ES-3.16 Livestock and Grazing

This section discloses the impacts to currently authorized livestock grazing on lands managed by the Forest Service, BLM, or Arizona State

Land Department that are located within the project area. The analysis concludes the following:

- There would be a reduction in available allotment acreage (BLM, Forest Service, and Arizona State land) ranging from 7,500 to 16,000 acres and a proportional reduction in livestock capacity from 1,300 to 5,300 animal-unit months. The water sources and grazing infrastructure associated with these allotment areas would also be lost.

ES-3.17 Impact Avoidance, Minimization, and Mitigation

The DEIS serves in part to inform the public and review agencies of design features, best management practices, and mitigation measures that are included with the project to reduce or avoid impacts. The Forest Service views these elements as part of the project and considers Resolution Copper’s proposed mitigation measures, described in appendix J of the DEIS, as inherent to the proposed alternative, as well as other action alternatives’ applicable components.

To the extent possible, these measures, including any potential impacts associated with these measures, were considered when assessing the impacts of the project on the resources. Where there is insufficient detail to determine whether an impact can be avoided or minimized, the measure cannot be incorporated into the impact analysis but serves to inform the public of Resolution Copper’s plans.

Additional mitigation measures identified or recommended to date during the NEPA process have been compiled and would be considered by the Forest Service and cooperating agencies as part of their permit decisions to further minimize project impacts. This list will be updated after public review of the DEIS for a comprehensive list of all measures identified during the NEPA process.

All measures will be assessed with the goal of disclosing the likelihood that the measures would be adopted by the applicant or implemented

as a condition in a State, Federal, or local permit by the responsible agencies as part of their permit decisions following completion of the NEPA process. Specific mitigation conditions would be determined following completion of the environmental review and would be included in the record of decision for any permit that may be issued.

Compensatory mitigation for unavoidable impacts to aquatic resources may be required to ensure that activities requiring a permit comply with 404(b)(1) guidelines. Compensatory mitigation is the restoration (reestablishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources to offset unavoidable adverse impacts.

Resolution Copper has developed a draft Conceptual Compensatory Mitigation Plan outlining its proposed approach for compensatory mitigation. The draft Conceptual Compensatory Mitigation Plan would be amended in the future to include proposed mitigation plans. In addition, Resolution Copper proposes to use monitoring measures through construction, operation, and closure of the project to assess predicted project impacts and the effectiveness of mitigation measures.

The draft Conceptual Compensatory Mitigation Plan submitted to the USACE by Resolution Copper is included in the EIS as appendix D.

ES-4 DEIS APPENDICES

The final section of the DEIS provides detailed information on 15 subjects. These appendices are as follows:

- Appendix A: Section 3003 of the NDAA
- Appendix B: Existing Conditions of Offered Lands
- Appendix C: Draft Practicability Analysis in Support of Clean Water Act 404(B)(1) Alternatives Analysis
- Appendix D: Draft Resolution Copper Project Clean Water Act Section 404 Conceptual Compensatory Mitigation Plan
- Appendix E: Alternatives Impact Summary

- Appendix F: Alternatives Considered but Dismissed from Detailed Analysis
- Appendix G: Further Details of East Plant Site, West Plant Site, MARRCO Corridor, and Filter Plant and Loadout Facility Infrastructure
- Appendix H: Further Details of Mine Water Balance and Use
- Appendix I: Summary of Effects of the Land Exchange
- Appendix J: Mitigation and Monitoring Plan
- Appendix K: Summary of Content of Resource Analysis Process Memoranda
- Appendix L: Detailed Hydrographs Describing Impacts on Groundwater-Dependent Ecosystems
- Appendix M: Water Quality Modeling Results for Constituents of Concern
- Appendix N: Summary of Existing Groundwater and Surface Water Quality
- Appendix O: Draft Programmatic Agreement Regarding Compliance with the NHPA on the Resolution Copper Project and Southeast Arizona Land Exchange