

Forest

# National Environmental Policy Act of 1969 (NEPA)

EPA requires federal agencies to assess how proposed actions may impact the environment. Using the NEPA process, agencies evaluate the environmental and related social and economic impacts of their proposed actions.

### What is an EIS?

An Environmental Impact Statement (EIS) is a document, prepared in accordance with NEPA, that discloses environmental impacts of a proposed action.

The Tonto National Forest prepared the Draft EIS to evaluate the Resolution Copper Project and Land Exchange. The Draft EIS discloses effects and analyzes the No Action, the Proposed Action, and another four action alternatives. The proposed action consists of these two elements:

### Land Exchange

In December 2014, Congress directed the Forest Service to exchange 2,422 acres of public land (known as the Oak Flat parcel) with Resolution in return for 5,344 acres of private land in Arizona. The Draft EIS also presents analysis of the land exchange proposal.

### Mining Proposal

Resolution Copper Mining (LLC) proposed construction of a large scale mine on a mixture of Forest Service, private, and state lands. The Tonto National Forest is required to respond to Resolution's proposal. A Draft EIS has been completed to present the environmental analysis of the mining proposal.





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**Resolution Copper Project and Land Exchange** Environmental Impact Statement

# What is the Land Exchange?

Section 3003 of the Carl Levin and Howard P. 'Buck' McKeon National Defense Authorization Act for Fiscal Year 2015 (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 Oak Flat Federal Parcel (2,422 acres) would be transferred from the National Forest Service to Resolution Copper and would become private lands 60 days after publication of the Final EIS.





COCONINO COUNTY

In exchange for the transfer of the Oak Flat Federal Parcel out of Federal ownership, Resolution Copper would convey private land parcels to the Federal Government consisting of approximately 5,376 acres of private land (offered lands) on eight parcels located elsewhere in Arizona.





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### Resolution Copper Project and Land Exchange Environmental Impact Statement

### Land Exchange Overview

Transfer from Resolution Copper Mining, LLC to Transfer from federal government to **Resolution Copper Mining, LLC Bureau of Land Management** Lower San Pedro River **Dripping Springs** 8 **Appleton Ranch** 9 3.050 acres 940 acres 160 acres Oak Flat Parcel: 2,422 acres 1 **Oak Flat Parcel** Transfer from United States to Town of Superior (if requested) **Fairview Cemetary Parcels Near Superior Airport Superior Airport Reversionary** Interest, 265 acres 30 acres 250 acres **Oak Flat Campground Oak Flat Parcel** Transfer from Resolution Copper Mining, LLC to Forest Service **Apache Leap South End Tangle Creek** Cave Creek East Clear Creek **Turkey Creek** 3 6 5 2 640 acres 110 acres 147 acres 148 acres 149 acres



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### Resolution Copper Project and Land Exchange Environmental Impact Statement

### **Proposed Action - Alternative 2**



1 Removal of 1.4 billion tons of ore and production of 40 billion pounds of copper using a mining technique known as panel caving at the underground mine and East Plant Site Area. Access to underground infrastructure from the East Plant Site that would be developed adjacent to the Oak Flat Parcel. Removing the underground 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.

Crushed ore delivered underground to the West Plant Site for ore processing (the old Magma Mine site).

Transport of thickened tailings from West Plant Site to tailings facility. Thickened tailings solid content ranging from 50 to 65 percent solid content.

Near West Tailings Facility would house the waste material left over after ore processing. Tailings facility constructed with a modified centerline dam embankment (rather than upstream embankment as originally proposed by Resolution Copper).

Copper concentrate would be pumped as a slurry about 22 miles to a filter/loadout facility. The slurry pipelines would lie along existing right-ofway known as the Magma Arizona Railroad Company (MARRCO) corridor.

From filter/loadout facility, copper concentrate would be sent to market using rail or trucks. Molybdenum concentrate trucked to market directly from the West Plant Site.

Power to the project would be supplied by Salt River Project. New 230-kV power lines would be located along new and existing rights-of-way.



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**USDA** 

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# **Tailings Alternatives**



Alternative	Tailings Storage Facility and Tailings Corridor (acres)	Embankment Length, Type, and Height	Distance for Tailings slurry (miles)	Tailings Type	Total Groundwater Pumped from Desert Wellfield (acre-feet*)	Tailings Facility Area Land Ownership
Alternative 2 Near West Proposed Action	4,981	10-mile-long modified centerline embankment 521 feet high	5.3	Thickened Slurry (NPAG and PAG**)	600,000	Tonto National Forest
<b>Alternative 3</b> Near West – Ultrathickened	Alternative 3 Jear West – 4,981 Itrathickened		5.3	Ultrathickened NPAG Slurry; thickened PAG slurry	500,000	Tonto National Forest
Alternative 4 Silver King	5,691	No embankment. The maximum height of the filtered facility is between 750 and 1,040 feet.	0.2	Filtered	180,000	Tonto National Forest
Alternative 5 Peg Leg West Tailings Corridor Option	12,455	455 7-mile-long centerline embankment 310 feet		Thickened Slurry (NPAG and PAG)	550,000	Bureau of Land Management; Arizona State Land Department; Private
<b>Alternative 5</b> Peg Leg East Tailings Corridor Option	12,122	7-mile-long centerline embankment 310 feet	22.7	Thickened Slurry (NPAG and PAG)	550,000	Bureau of Land Management; Arizona State Land Department; Private
Alternative 6 Skunk Camp North Tailings Corridor Option***	10,112	3-mile-long centerline embankment 490 feet		Thickened Slurry (NPAG and PAG)	550,000	Arizona State Land Department; Private
Alternative 6 Skunk Camp South Tailings Corridor Option	10,591	3-mile-long centerline embankment 490 feet	25.2	Thickened Slurry (NPAG and PAG)	550,000	Arizona State Land Department; Private

\*For comparison, the capacity of Roosevelt Dam on the Salt River is 1,653,043 acre-feet (source: SRP) \*\*During processing, the tailings are separated into two separate streams: Non-Potentially Acid Generating (NPAG) tailings that represent about 84% of the tailings, and Potentially Acid Generating (PAG) tailings that represent about 16% of the tailings. During processing, sulfide minerals are concentrated in the PAG tailings which have a greater potential to oxidize and generate acidic seepage to groundwater or surface waters. \*\*\*Forest Service Draft EIS Preferred Alternative

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United States Department of Agriculture



Resolution Copper Project and Land Exchange Environmental Impact Statement

## Preferred Tailings Alternative Skunk Camp North





Location	In Dripping Spring Wash approximately 13 miles north of confluence with the Gila River				
Land ownership	ASLD, private				
Distance from West Plant Site	15 miles				
Tailings type and disposal	Thickened slurry tailings placed subaqueously for PAG tailings from barge in one of two cells, NPAG placed hydraulically from perimeter At disposal—PAG tailings would be 50% solids content; thickened cyclone overflow (NPAG) would be 60% solids content; and thickened NPAG stream sent directly from the mill would be 60% solids content.				
Tailings embankment	Earthen starter dams raised with compacted cyclone sand. The NPAG facility would be a centerline construction approach with a 3H:1V slope and the PAG cells would be a downstream construction approach with a 2.5H:1V slope.				
Lining and other seepage controls	Engineered, low-permeability layers would be installed on PAG cell foundation and the upstream slope of the embankment.				
Approximate size at fence line of tailings storage facility	10,072 acres				
Approximate embankment height	490 feet				
Pipelines / conveyance	Thickened slurry pumped in two streams (PAG and NPAG) to the tailings storage facility and recycled water pipeline to return water to processing loop at West Plant Site. North Option: 19.78 miles of corridor from West Plant Site to tailings storage facility				
Auxiliary facilities	Surface water diversions would be large due to the steep surrounding terrain and need to surround the tailings facility on northern, eastern, and western sides with extensive stormwater diversion structures.				
Other design considerations	No NFS roads are expected to be decommissioned or lost due to the tailings storage facility at Skunk Camp, although BLM has identified loss of access to mining activities and grazing facilities.				
Closure and reclamation	Reclamation of the NPAG tailings embankment face would begin as soon as the slope reaches its final extent starting at approximately mine year 10–15. The top of the tailings storage facility would not be reclaimed until after mining is complete.Closure of the tailings recycled water pond is estimated to take up to 5 years after closure. Until that time, excess seepage in seepage ponds would be pumped back to the recycled water pond, and reclamation would take place on the embankment and tailings beaches. After the recycled water pond is closed, seepage ponds would be used to evaporate seepage, and the remaining reclamation of the tailings surface would occur.				



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## What is in the Draft EIS?

Chapter 3 of the Draft EIS presents the detailed study of the social, cultural, physical, and biological issues. These issues are based upon concerns presented to the Forest Service during Scoping. The Chapter 3 resource analysis sections are presented below.

<b>DEIS Section</b>	Analysis
Section 3.2 Geology, Minerals, and Subsidence	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."
Section 3.3 Soils and Vegetation	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.
Section 3.4 Noise and Vibration	Provides a detailed analysis of estimated impacts from noise and vibration under the GPO-proposed mine plan and each of the alternatives
Section 3.5 Transportation and Access	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.
Section 3.6 Air Quality	Analyzes potential impacts from an increase in dust, windborne particulates, and transportation- related emissions as a result of construction, mining, and reclamation activities at the mine and along transportation and utility corridors.
Section 3.7 Water Resources	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.
Section 3.8 Wildlife and Special Status Species	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.
Section 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.
Section 3.10 Public Health and Safety	Addresses three areas of interest: tailings embankment safety, fire risks, and the potential for releases or public exposure to hazardous materials.
Section 3.11 Scenic Resources	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.
Section 3.12 Cultural Resources	Analyzes potential impacts on all known cultural resources within the project area.
Section 3.13 Socioeconomics	Examines the social and economic impacts on the quality of life for neighboring communities near the proposed mine.
Section 3.14 Tribal Values and Concerns	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.
Section 3.15 Environmental Justice	Examines issues in the context of the Resolution Copper Project and Land Exchange that have the potential to harm vulnerable or disadvantaged communities.
Section 3.16 Livestock and Grazing	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.



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## Cultural Resources and Tribal Values and Concerns

- The project is opposed by the Tribes
- Consultation with Tribes has been ongoing and will continue on the project.
- Development of the Resolution Copper Mine would directly and permanently damage the National Register of Historic Placeslisted *Chí'chil Biłdagoteel* Historic District Traditional Cultural Property. 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 8 and 13 sacred springs are anticipated to be impacted by dewatering or through direct disturbance. 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.
- All alternatives would require data recovery for archaeological sites (prehistoric and historic).
- Resolution has proposed mitigation to lessen the impacts to tribes. Such programs include the Tribal Monitor Training and Emory Oak Restoration.









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## **Recreation and Access**

- The exchange of the Oak Flat Federal Parcel would remove internationally recognized rock climbing areas from public access, as well as Oak Flat Campground. Both of these would be partially mitigated by replacement areas.
- Loss of off-highway-vehicle (OHV) routes on the Tonto National Forest.
- Alternatives 2, 3, and 4 would result in 4,900 to 5,700 acres of public 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.
- 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.
- Impact to hunting areas inside Units 24A, 24B, and 37B would occur under all alternatives.
- Alternative 6 contains the lowest level of impact to public dispersed recreation of the alternatives considered. There are no designated recreation sites or scenic trails within the Tailings Storage Facility, nor would the Tailings Storage Facility be visible from any designated wilderness areas. There are no known or documented climbing resources within the Skunk Camp Tailings Storage Facility fenceline. The north pipeline corridor crosses Upper Devil's Canyon and shortterm impacts would impact recreationists during construction activities.
- Resolution has proposed mitigation to partially offset recreation impacts, specifically, creation of new OHV routes and trails, climbing areas, and campground.









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### **Scenic Resources**

- 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 offhighway 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.













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## Geology, Minerals, and Subsidence

- Proposed mining method is known as "block caving" or "panel caving". With this method, the ore is fractured and extracted from below the ore body, using gravity.
- As ore is extracted, the ground surface above the ore body slowly collapses, creating a "subsidence crater".
- The subsidence crater that would develop on Oak Flat would begin about year 6 of active mining, would be up to 1,100 feet deep, and would be about 1.8 miles in diameter.
- No damage is expected to occur to Apache Leap, Devil's Canyon, or U.S. Highway 60 because of the subsidence.
- Resolution Copper has proposed an extensive monitoring program to ensure that the extent of subsidence is tracked once mining begins. Resolution Copper has stated they would cease mining additional subsurface panels if through ongoing monitoring it appears areas like Apache Leap would be impacted. While the Forest Service generally has concluded that the monitoring proposed by Resolution Copper would be effective at identifying potential effects of subsidence in time to inform a response to prevent damage to sensitive areas or infrastructure, the Forest Service is requiring a final subsidence monitoring plan be completed and approved by the Forest Service prior to signing a decision."



Subsidence Zone of Influence

Conceptual cross section of the blockcave and subsidence zone



Generalized geological cross section



Subsidence area visual simulation from aerial perspective at end of mining using Google Earth imagery



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### Water Resources

#### Impacts to springs and seeps

- Groundwater pumping has been ongoing since 2009 and would continue in order to keep the mine workings dewatered. About 87,000 acre-feet of water is anticipated to be pumped from below Oak Flat over the life of the mine.
- Eight springs are anticipated to be impacted by this dewatering; most of these would be impacted even without the mine being built (due to the ongoing pumping). Mitigation has been proposed to partially offset these impacts.
- An additional 2 to 5 springs are anticipated to be lost due to the subsidence crater or buried by the tailings.

#### Impacts to perennial streams

- No perennial streams are anticipated to be impacted by dewatering to the point of losing all flow
- However, several stream segments are anticipated to be impacted by reductions in stormwater runoff, due to the subsidence crater and tailings facilities. Under Alternative 6:
  - \* Queen Creek: ~19% less flow at Magma Avenue Bridge; ~13% less flow at Boyce Thompson Arboretum; ~4% less flow at Whitlow Ranch Dam
  - \* Devil's Canyon: ~4% less flow at the confluence with Mineral Creek
  - \* Gila River: ~0.5% less flow at the confluence with Dripping Springs Wash

#### Water use

- The mine water supply would be pumped from the East Salt River Valley, south of Florence Junction.
- Under Alternative 6, 540,000 acre-feet would be pumped.
- Resolution Copper has acquired long-term storage credits to offset about half of this water, although not necessarily from the same location.

#### Water quality

- The mine facilities—including the tailings are designed to be zero-discharge facilities for stormwater. No surface runoff water quality problems are anticipated from stormwater runoff.
- Poor water quality is anticipated to occur in the block-cave zone after closure; there are no exposure points anticipated for this deep groundwater, even hundreds of years in the future after groundwater levels have recovered after pumping is stopped.
- Water would seep from the tailings facilities, not only during operations but for many years or decades after closure; this tailings seepage represents a water quality concern.
- Alternatives 2, 3, and 4 all either have anticipated impacts on water quality or have a high risk to water quality because of the extreme seepage control measures that must be implemented, and the difficulty of adding more measures, given the proximity to Queen Creek.
- Water quality problems are not anticipated from Alternatives 5 and 6, and these locations offer more flexibility in responding to potential problems by adding more seepage controls.



Modeled groundwater drawdown—proposed action, 200 years after start of mine.

	Alternatives 2/3	Alternative 4	Alternative 5	Alternative 6	
Dewatered even	Bitter Spring	Bitter Spring	Bitter Spring	Bitter Spring	
under No Action	Bored Spring	Bored Spring	Bored Spring	Bored Spring	
	Hidden Spring	Hidden Spring	Hidden Spring	Hidden Spring	
	McGinnel Mine Spring	McGinnel Mine Spring	McGinnel Mine Spring	McGinnel Mine Spring	
	McGinnel Spring	McGinnel Spring	McGinnel Spring	McGinnel Spring	
	Walker Spring	Walker Spring	Walker Spring	Walker Spring	
Dewatered after block-caving occurs	DC-6.6W (provides about 5% of flow to Devil's Canyon)	DC-6.6W (provides about 5% of flow to Devil's Canyon)	DC-6.6W (provides about 5% of flow to Devil's Canyon)	DC-6.6W (provides about 5% of flow to Devil's Canyon)	
	Kane Spring	Kane Spring	4Alternative 5AlterBitter SpringBitter SpringBored SpringBored SpringBored SpringHidden SpringHidden SpringMcGinnel Mine SpringMcGinnelMcGinnel SpringMcGinnel SpringWalker SpringWalker SpringWalker SpringDC-6.6W (provides about 5% of flow to Devil's Canyon)DC-6.6W about 5% Devil's Canyon)Kane SpringKane SpringKane SpringThe GrottoThe GrottoThe GrottogRancho Rio SpringRancho Rio Springd)Queen Creek (below Superior)Queen Creek (at Whitlow Ranch Dam)Devil's CanyonDevil's Cm)Gila RiverGila River	Kane Spring	
Lost to the	The Grotto	The Grotto	The Grotto	The Grotto	
subsidence crater	Rancho Rio Spring	Rancho Rio Spring	Rancho Rio Spring	Rancho Rio Spring	
Covered by	Bear Spring	Iberri Spring			
tailings	Benson Spring	McGinnel Spring (already dewatered)			
	Perlite Spring				
Stormwater reductions due to subsidence crater	Queen Creek (below Superior)	Queen Creek (below Superior)	Queen Creek (below Superior)	Queen Creek (below Superior)	
	Queen Creek (at Whitlow Ranch Dam)	Queen Creek (at Whitlow Ranch Dam)	Queen Creek (at Whitlow Ranch Dam)	Queen Creek (at Whitlow Ranch Dam)	
	Devil's Canyon	Devil's Canyon	Devil's Canyon	Devil's Canyon	
Stormwater reductions due to tailings	Queen Creek (at Whitlow Ranch Dam)	Queen Creek (at Whitlow Ranch Dam)	Gila River	Gila River	
TOTAL	16	14	14	14	



## Air Quality, Noise and Vibration

### **Air Quality**

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 National air quality standards are met at the fenceline of the project for "criteria pollutants" that are regulated under the Clean Air Act, which include particulate matter, sulfur dioxide, carbon monoxide, lead, and nitrogen dioxide. There would be some visibility impacts caused by project emissions. For instance, a hiker in the Superstitions Wilderness looking out towards the mine could perceive a visible plume about 5 percent of the time.



• Based on public concerns raised during scoping, a separate health

assessment for metals in dust was conducted. Risk thresholds were not exceeded, either for cancer and non-cancer illnesses.

				-		
Pollutant	Model Result/Form of Standard	Proposed Action Impact Only (µg/m³)	Background (µg/m³)	Total Maximum Impact (μg/m³)	Standard (µg/m³)	Total Maximum Impact as a Percentage of Standard
CO_1H	3rd high over 2 years	4,531	3,550	8,081	40,500	20
CO_8H	3rd high over 2 years	1,040	2,519	3,559	10,000	36
NO2_1H	98th percentile over 2 years	138	9	146	188	78
NO2_AN	Max annual over 2 years	2	3	5	100	5
PM10_24H	3rd high over 2 years	26	71	97	150	65
PM10_AN*	Max annual over 2 years	7	17	25	50	49
PM25_24H	98th percentile over 2 years	11	6	18	35	51
PM25_AN	Average annual over 2 years	2	4	6	12	49
SO2_1H	99th percentile over 2 years	92	24	117	196	59
SO2_3H	2nd high over 2 years	56	31	86	1,300	7
SO2_24H*	2nd high over 2 years	9	11	20	365	6
SO2_AN*	Max annual over 2 years	1	2	3	80	4
Note: µg/m3 = micrograms per cubic meter						

Maximum air quality impacts for proposed operations and Alternative 2 - Near West Proposed Action

\* Not a Federal standard

### Noise

- Under most conditions, the predicted noise and vibration levels at sensitive receptors are below thresholds of concern. This is true for both construction and operation and for blasting and non-blasting activities.
- Resolution Copper has proposed road realignments/alternative routes to reduce noise impacts to residents on Dripping Springs Road.



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# Wildlife, Special Status Species, and Vegetation

### Wildlife and Special Status Species

- Habitat would be impacted in the analysis area for 50 special status wildlife species under any alternative. 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.
- 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.

### Vegetation

- Between 10,000 and 17,500 acres of soil and vegetation would be disturbed by the project. 16,557 acres would be disturbed by Alternative 6 Skunk Camp - North option
- 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.
- Reclamation of disturbed areas would decrease but not eliminate the likelihood of noxious weeds becoming established or spreading.





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## **Public Health and Safety**

- Worldwide, several large tailings facilities have failed, most recently in Brazil in January of 2019.
- During these events, the released tailings tend to act as a liquid and can flow long distances downstream. The consequences of a catastrophic failure of the tailings embankment and the downstream flow of tailings would include possible loss of life, 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.
- **Tailings Embankment Types** Starting axis Final axis Final axis Starting axis Downstream Upstream Tailings Tailings Constant axis Final axis Starting axis Modified Centerline centerline Tailings Tailings
- For these reasons, the risk of the tailings embankment failure must be minimized.
  - \* "Upstream" embankment construction has been eliminated from all alternatives. These types of embankments are inherently less resilient than other types of embankments like "centerline" embankments, and have less ability to accommodate unexpected operational problems if they occur.
  - \* Resolution Copper would adhere to all National Dam Safety Program and Arizona-specific design standards.
  - \* Resolution Copper has also incorporated other international standards and best practices into the design of the tailings embankment; for some design criteria, these international standards and best practices are more stringent than Federal or Arizona standards.
  - \* The final embankment design will be informed by a collaborative multi-agency "failure modes and effects analysis", to be conducted prior to the Final EIS, to identify potential risks and ensure the design accounts for those risks.
  - \* Alternative 6 the Preferred Alternative provides the most resilient embankment design due to:
    - The unique cross-valley construction
    - The use of a centerline-type dam
    - The relatively short embankment length compared to the other alternatives
    - The distance from major infrastructure and populations.

#### Differences between alternatives pertinent to tailings and pipeline safety

	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
Embankment type	Modified centerline	Modified centerline	Filtered tailings; structural zone, but no embankment. Most resilient alternative.	True centerline. Improved resilience, compared with Alternatives 2 and 3.	True centerline Improved resilience, compared with Alternatives 2 and 3.
Embankment size and design	Freestanding; 10-mile length	Freestanding; 10-mile length	No embankment	Freestanding; 7-mile length	Cross-valley construction; 3-mile length. Improved resilience, compared with Alternatives 2, 3, and 5.
Potential for PAG release	PAG deposition inside NPAG facility, no separate embankment (at buildout)	PAG deposition inside NPAG facility, no separate embankment (at buildout)	Separate PAG facility. Downstream risk for PAG release less, due to localized failure.	Separate PAG facility; multiple cells; separate downstream embankment. Less risk for release of PAG tailings during catastrophic failure than Alternatives 2 and 3.	Separate PAG facility; multiple cells; separate downstream embankment. Less risk for release of PAG tailings during catastrophic failure than Alternatives 2 and 3.
Downstream population (within 50 miles)	600,000	600,000	700	32,000	3,200
Nearest population	Within 10 miles	Within 10 miles	Within 10 miles	Over 20 miles	Within 10 miles



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# Socioeconomics and Environmental Justice

### **Socioeconomic Impacts**

- On average, 1,500 direct employees, with \$134 million per year in compensation
- The mine would support a total of 3,700 jobs (direct, indirect, and induced)
- Purchases of \$546 million per year in goods and services
- \$1 billion in annual economic value added to Arizona
- \$88 to \$113 million per year in State and local tax revenues
- Increased infrastructure costs for Superior and Pinal County
- Loss of hunting revenue
- Property values may decline near tailings facility

### **Environmental Justice**

- There are five environmental justice communities in the area, as well as Native American communities, that would be impacted by cultural impacts. 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.
- Resolution proposes several measures to reduce a number of these project-related impacts. These are described in the Draft EIS.







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## **Mitigation Summary**

- Environmental impacts caused by the proposed mine would be offset in several ways.
- The mine design itself includes a number of "applicantcommitted environmental protection measures". These are inherent in the project and would be required.
- However, impacts still exist and if possible it is desirable to identify mitigation to address these impacts. Mitigation can:
  - \* Avoid impacts
  - \* Minimize or reduce impacts
  - \* Repair or rectify impacts after they occur, or
  - \* Compensate for impacts
- The Forest Service is seeking input from the public on mitigation ideas that are specific to impacts caused by the mine.
- Several major pieces of mitigation are being considered and are discussed in the DEIS for their effectiveness. These include:
  - \* A plan to monitor and then provide replacement water to any springs anticipated to be impacted by dewatering.
  - \* This plan also includes replacement of any private wells or water supplies that are anticipated to be impacted by dewatering.
  - \* Compensatory mitigation is required under the Clean Water Act Section 404 permit that must be obtained from the U.S. Army Corps of Engineers. The draft mitigation plan is included in the DEIS, and identifies a number of possible projects for riparian and wetland restoration to compensate for the impact to waters of the U.S. filled by the tailings facility.
  - \* A mitigation proposal brought forth by the Recreation Users Group is being considered that would replace recreation opportunities lost on Oak Flat, through a network of new trails and roads, primarily south of Superior.



**Recreation User Group Conceptual Plan** 



\* Mitigation has been proposed to provide alternative access for camping (due to the eventual loss of Oak Flat Campground) and climbing areas.







Tonto

National Forest Resolution Copper Project and Land Exchange Environmental Impact Statement

## **Army Corps of Engineers 404 Process**





National Forest

## Public Comment

### Please provide comments on the Draft EIS The Draft EIS comment period is from August 10, 2019 to November 7, 2019.

### Comment Submittal Options

- Fill out the **comment form** provided and drop in box or mail in at a later date
- Provide a verbal comment tonight during the public hearing or individually with the court reporter
- Fill out comment form on website: www.ResolutionMineElS.us
- Send mail to : Resolution EIS Comments P.O. Box 34468 Phoenix, AZ 85067-4468

Public participation is an important part of developing an EIS under the National Environmental Policy Act (NEPA). Submitting substantive and concise comments during the public comment period is an important role the public plays in the NEPA process, and can influence the analysis in the Final EIS. Substantive comments do one or more of the following:

- Question, with reasonable basis, the accuracy of information in the EIS;
- Question, with reasonable basis, the adequacy of, methodology for, or assumptions used for the environmental analyses;
- Present new information relevant to the analyses;
- Present reasonable alternatives other than those analyzed in the EIS;
- Suggest changes or revisions in one or more of the alternatives.

For Further Information and to download the Draft EIS visit: http://www.ResolutionMineEIS.us/