Overview

Large mines can be a boon to local economies through the influx of employees, spending on products and services, and increased tax revenue. These same increases can also stress basic services like hospitals, water and sewer systems, local housing stock, and roads and infrastructure. A large mine (or tailings facility) can also fundamentally change the quality of life of the surrounding communities, affect property values, and affect other industries, such as tourism and recreation. Historically, mining in Arizona has followed a "boom and bust" cycle, which potentially leads to great economic uncertainty.

3.13 Socioeconomics

3.13.1 Introduction

The analysis for social and economic concerns includes a discussion of current social and economic data relevant to the proposed project, including population, housing, financial resources, facilities and services, and quality of life. These elements are considered to help analyze potential impacts from the proposed project and alternatives to social and/or economic conditions. Further detail regarding the social and economic information is provided in "Socioeconomic Effects Technical Report: Resolution Copper Mine Environmental Impact Statement" (BBC Research and Consulting 2018). Potential socioeconomic impacts analyzed in this section include employment, earnings, state and local government revenue, demands for public services, risk of a mining boom/bust cycle, tourism, and property values.

3.13.2 Analysis Methodology, Assumptions, and Uncertain and Unknown Information

3.13.2.1 Analysis Area

The socioeconomic analysis focused primarily on the region informally known as the "Copper Triangle," which encompasses the location of the proposed mine, and most closely examined potential effects in the town of Superior, which is the closest community. Other communities within the Copper Triangle include the Queen Valley Census Designated Place (CDP), Cutter CDP, city of Globe, town of Hayden, town of Miami, San Carlos CDP, Bylas CDP, Peridot CDP, Top-of-the-World CDP, and town of Winkelman. Whereas most of the Copper Triangle is located in Pinal and Gila Counties, Maricopa County was also included in the socioeconomic analysis because a substantial portion of the workforce for the proposed mine would be expected to commute from the Phoenix metropolitan area. Pima County is farther from the proposed mine and unlikely to be substantially affected by construction or operations but was included in the regional economic impact analysis (section 3.13.4) based on information indicating suppliers in Pima County would likely provide goods and services to support mining activity.

3.13.2.2 Analysis Methodology

Information regarding the social and economic affected environment was obtained from various sources, including the following: the U.S. Census Bureau; the State of Arizona; Impact Analysis for Planning (IMPLAN) data files;[70] Gila, Graham, Maricopa, Pima, and Pinal Counties; and the Town of Superior. Information on the potential social and economic effects of the proposed alternatives was based primarily on IMPLAN economic input-output analysis. This modeling incorporated the proposed GPO provided by Resolution Copper, current tax rates and tax policies of the relevant jurisdictions, interviews with local information

70. IMPLAN is a widely used economic model and is used to quantify the direct and indirect economic effects of a project.

Primary Legal Authorities Relevant to the Socioeconomics Effects Analysis

- National Forest Management Act
- Tonto National Forest Land and Resource Management Plan
- Forest Service Economic and Social Analysis Handbook (FSH 1909.17)
- Chapter 1970, Social and Economic Evaluation (FSM 1970.1)

sources, and information provided by the AGFD. The temporal bounds of analysis for socioeconomic resources is the three phases of activity associated with the mine: construction, operations, and closure/reclamation. The spatial analysis area for socioeconomics includes the communities most likely to be affected by the proposed project (figure 3.13.2-1).

Where the employees of the proposed mine would choose to reside is an important uncertainty in this evaluation. The future price of copper over the projected life of the proposed mine is unknown, as well. Both of these issues are evaluated in detail in BBC Research and Consulting (2018).

3.13.3 Affected Environment

One of the planning principles in the National Forest Management Act is "responsiveness to changing conditions in the land and changing social and economic demands of the American people" (U.S. Forest Service 1985b). Forest Service guidelines for socioeconomic analyses are outlined in the Forest Service "Economic and Social Analysis Handbook" (U.S. Forest Service 1985a). The handbook provides guidelines for evaluating socioeconomic impacts that may result from policy, program, plan, or project decisions on NFS lands. Forest Service Manual 1970.1 directs how economic and social analyses should be conducted to aid Forest Service decision-making.

3.13.3.1 Relevant Laws, Regulations, Policies, and Plans

A complete listing and brief description of the legal authorities, reference documents, and agency guidance applicable to socioeconomics may be reviewed in Newell (2018f).

3.13.3.2 Existing Conditions and Ongoing Trends

Demographic and Socioeconomic Characteristics

Population. The population of the State of Arizona was approximately 6.9 million in 2016. In 2016, the counties closest to the proposed mine site (Pinal, Graham, and Gila Counties) had populations of 417,540 (Pinal), 37,407 (Graham), and 53,556 (Gila). Between 2000 and 2016, Pinal County's population grew at an average annual rate of 5.4 percent, compared with a rate of 0.3 percent in Gila County and 0.7 percent in Graham County. The population of Maricopa County, which lies approximately 60 miles west of the town of Superior, was 4.2 million in 2016 and grew at an average annual rate of 2.0 percent between 2000 and 2016.

The town of Superior had 2,999 residents in 2016, which represents an increase of 166 residents since 2010 (5.9 percent growth), but a decline of 525 residents since 2000 (14.9 percent reduction). In total, the Copper Triangle had approximately 50,000 residents in 2016.

Housing. The characteristics of the housing stock in the analysis area are shown in table 3.13.3-1. Maricopa County had the largest housing stock in the socioeconomic analysis area (an average of 1.7 million homes between 2011 and 2015). Of the remaining counties, Pinal County had the second largest housing stock (163,490 housing units), followed by Gila County (32,952 housing units), and Graham County (13,128

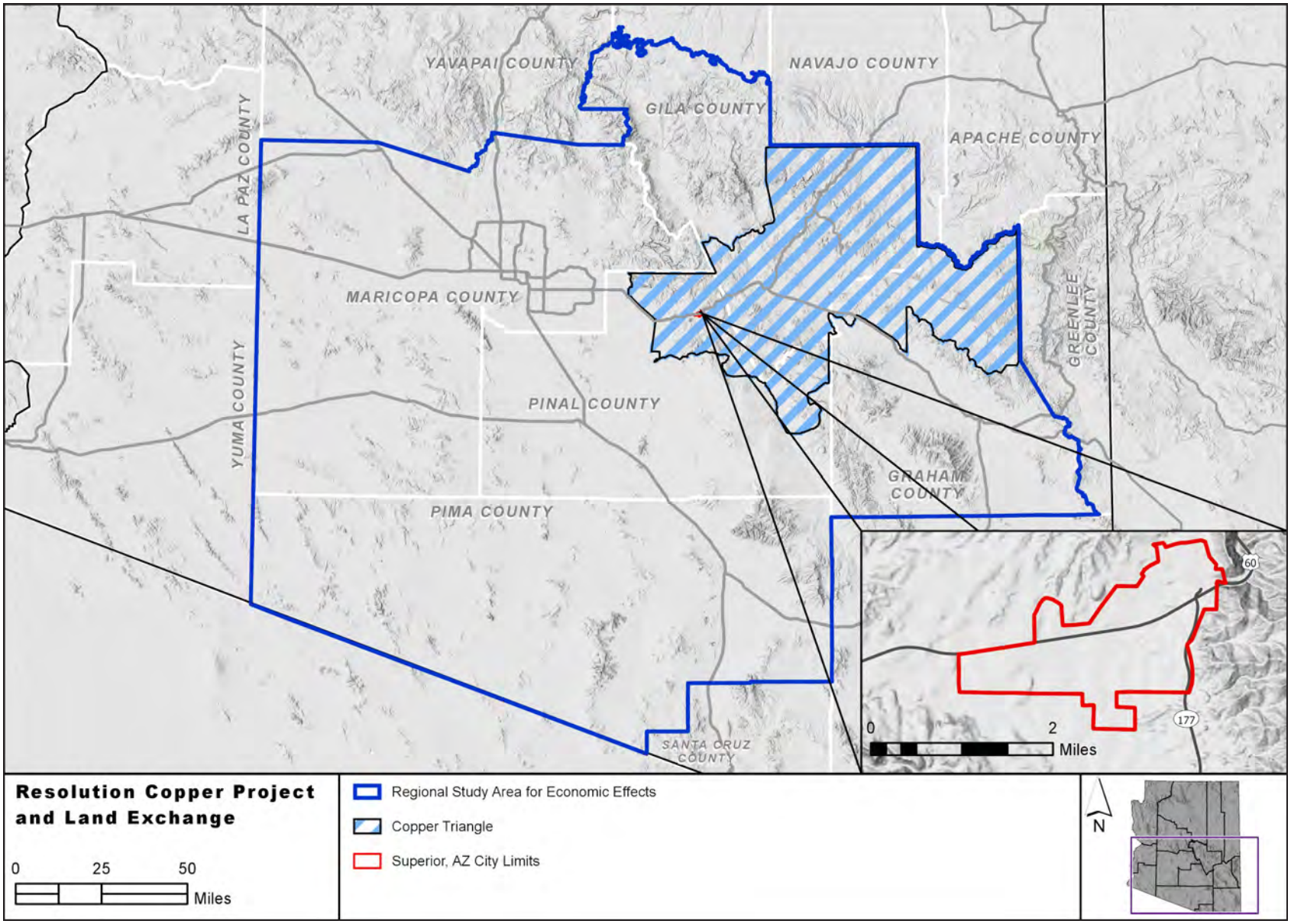

Figure 3.13.2-1. Socioeconomic resource analysis area

Table 3.13.3-1. Housing characteristics of the socioeconomic analysis area, 2011–2015

Area	Average Housing Stock	Change in Housing Stock (%)*	Average Vacant Units	Average Vacancy Rate (%)
Gila County	**32,952**	**16.9**	**12,043**	**36.5**
Cutter	19	–	0	0.0
Globe	3,356	5.8	516	15.4
Hayden	301	−9.9	85	28.2
Miami	988	6.2	195	19.7
San Carlos	1,160	16.7	178	15.3
Graham County	**13,128**	**14.9**	**2,169**	**16.5**
Bylas	474	–	78	16.5
Peridot	395	9.1	63	15.9
Maricopa County	**1,668,555**	**33.5**	**226,037**	**13.5**
Pinal County	163,490	101.5	35,891	22.0
Superior	1,284	−12.7	319	24.8
Top-of-the-World	128	−44.7	55	43.0
Winkelman	152	−21.6	39	25.7
Arizona	***2,890,664***	***32.0***	***478,452***	***16.6***

Sources: U.S. Census Bureau (2000); U.S. Census Bureau ACS 5-year estimates, 2011 to 2015 (U.S. Census Bureau 2015b).

* Percentage change was calculated with data from the 2000 U.S. Census and the ACS 5-year estimates from 2011 to 2015. Information on the housing stocks of Cutter and Bylas was not available for the year 2000.

housing units). The town of Superior had an average housing stock of 1,284 units between 2011 and 2015.

Between 2011 and 2015, there was an average of 226,037 vacant housing units in Maricopa County, compared with 35,891 in Pinal County, 12,043 in Gila County, and 2,169 in Graham County. The town of Superior had an average of 319 vacant housing units during this time. The vacancy rate in Superior (24.8 percent) was about 8 percentage points higher than the average vacancy rate across Arizona (16.6 percent).

Maricopa County had the highest median home values between 2011 and 2015 ($187,100), followed by Gila County ($134,200) and Pinal County ($128,700). Of the cities and towns in the socioeconomic analysis area, Globe had the highest median home values between 2011 and 2015 ($116,500), followed by Superior ($78,200) and Miami ($65,800). Hayden had the lowest median home values between 2011 and 2015 ($32,900), followed by Bylas ($46,700).

Employment. In 2015, there were approximately 2.4 million jobs in Maricopa County, compared with 90,119 jobs in Pinal County, 21,382 jobs in Gila County, and 11,921 jobs in Graham County. The retail trade sector was the largest source of employment in all four counties. While the mining industry is not among the largest employers in the socioeconomic analysis area, the industry still employed a total of 10,670 people across all four counties in 2015. In percentage terms, Pinal County saw the largest change in employment between 2001 and 2015 (approximately 65 percent), followed by Maricopa County (28 percent), Graham County (23 percent), and Gila County (7 percent).

Labor force, unemployment, and income characteristics. The labor force in each county, city, and town in the socioeconomic analysis area is shown for the year 2000 and the period from 2011 to 2015 in table 3.13.3-2. Between 2011 and 2015, there was an average of approximately 2.0 million workers in Maricopa County, compared with 150,351 workers in Pinal County, 20,607 workers in Gila County, and 13,919 workers in Graham County. Between 2011 and 2015, the average unemployment rate was 6.1 percent in Gila County, 6.9 percent in Graham County, 4.9 percent in Maricopa County, and 5.3 percent in

Table 3.13.3-2. Average labor force, unemployment rate, and median household income in the socioeconomic analysis area, 2011–2015

Area	Labor Force	Unemployment Rate (%)	Median Household Income ($)
Gila County	**20,607**	**6.1**	**39,751**
Cutter	40	18.9	–
Globe	3,539	5.3	42,405
Hayden	244	13.6	38,167
Miami	897	5.6	40,602
San Carlos	1,304	15.5	25,363
Graham County	**13,919**	**6.9**	**45,964**
Bylas	727	31.7	24,028
Peridot	767	25.8	40,500
Maricopa County	**1,977,494**	**4.9**	**54,229**
Pinal County	150,351	5.3	49,477
Superior	1,238	5.6	41,367
Top-of-the-World	111	10.8	77,689
Winkelman	136	5.6	41,250
Arizona	***3,106,324***	***5.3***	***50,255***

Source: U.S. Census Bureau (2015a).

Pinal County. The average unemployment rate in the town of Superior was 5.6 percent during this time. Between 2011 and 2015, the median household income in Graham County was $45,964, compared with $54,229 in Maricopa County. During the same period, the median household income in Pinal County was $49,477. In Gila County, the median household income was $39,751. The town of Superior had a median household income of approximately $41,000 between 2011 and 2015.

County taxes, revenues, and public expenditures. Table 3.13.3-3 shows the sources of revenue for Gila, Graham, Maricopa, and Pinal County Governments for the most recent fiscal years for which data are available. Taxes, including property, income, sales, and vehicle license taxes, accounted for 52.1 percent of Gila County's tax revenues in fiscal year (FY) 2014, compared with 44.8 percent in Graham County, 87.4 percent in Maricopa County in FY 2015, and 60.9 percent in Pinal County in FY 2015. Grants, including unrestricted and operating grants, and other sources of revenue were the other primary contributors of county government tax revenues. General government expenses, public

Table 3.13.3-3. General revenues and expenditures for Gila, Graham, Maricopa, and Pinal County governments

General Revenues	FY 2014 Gila County (%)	FY 2014 Graham County (%)	FY 2015 Maricopa County (%)	FY 2015 Pinal County (%)
Taxes	52.1	44.8	87.4	60.9
Intergovernmental	0.0	0.0	0.0	31.1
Charges for services	4.9	12.0	0.0	5.1
Grants	31.1	28.7	0.2	0.0
Other	11.9	14.5	12.4	2.9
Total (Millions, $)	**$62.2**	**$30.7**	**$1,385.4**	**$148.3**
General Expenditures				
General government	34.2	30.4	14.9	22.9
Public safety	26.4	34.4	55.2	62.7
Highway and streets	10.4	13.5	3.8	0.2
Health, welfare, and sanitation	19.1	12.2	21.2	13.5
Culture and recreation	2.4	2.8	2.9	0.0
Education	6.9	6.7	1.5	0.6
Interest	0.5	0.0	0.4	0.0
Total (Millions, $)	**$60.3**	**$32.3**	**$2,000.0**	**$153.3**

Sources: Arizona Auditor General (Arizona Auditor General 2017a, 2017b); Maricopa County (2017); and Pinal County (2016).

Note: Tax revenues include property, income, sales, and vehicle license taxes.

Table 3.13.3-4. General revenue and expenditures for the Town of Superior

General Revenues	Percentage of Total	General Expenditures	Percentage of Total
Taxes	53.2	General government	32.2
Intergovernmental	41.1	Public works	47.8
Charges for services	1.8	Welfare	5.2
Grants	0.0	Culture and recreation	4.9
Other	3.9	Other	9.9
Total (Millions, $)	**$2.0**	**Total (Millions, $)**	**$1.8**

Source: HintonBurdick CPAs and Advisors (2017)

safety, highways and streets, and health, welfare, and sanitation were the primary categories of expenditures in all four counties.

Town of Superior taxes, revenues, and public expenditures. Table 3.13.3-4 shows the sources of revenue for the Town of Superior government during FY 2015 (July 1, 2015–June 30, 2016). During that time, the Town of Superior received approximately $2.0 million in revenue. The largest share of revenue collected came from taxes (53.2 percent). The largest expenditures made were for public works, which accounted for 47.8 percent of the Town's expenditures.

Public Facilities and Services

Transportation and road maintenance. The town of Superior can be accessed by road via U.S. 60, which is a major east-west transportation route through the region, and SR 177, which is a north-south route that runs between Superior and the town of Winkelman. Superior also has 25.6 miles of local streets that connect the town's different neighborhoods. A 2009 study commissioned by ADOT found that the 16-mile stretch of U.S. 60 between Superior and Miami/Globe was operating at capacity and expected the level of service to decline over time unless improvements were made to accommodate future demand (Logan Simpson Design Inc. 2009). A 2016 assessment of Superior's roads found that of the 25.6 miles of roads maintained by the Town, 17 miles were in poor or serious condition (Arizona Department of Transportation 2016). Estimates suggest it would cost the Town $1.25 million to repair all the roads in need of improvements.

Utility services. The Town of Superior contracts with the Arizona Water Company to supply the Town's municipal water. Arizona Water Company supplies Superior with municipal drinking water from Arizona Water Company's groundwater resources located near Florence Junction. Arizona Water Company recently petitioned the Arizona Corporation Commission to raise water rates in the town of Superior, citing the need to raise revenue to cover investments in infrastructure as well as increasing operating and maintenance expenses. The Town of Superior provides sewer and wastewater treatment services for its residents. A recent study of the Town's wastewater treatment plant, originally built in 1974, found several inadequacies and noted that the plant may not meet State inspection standards (Duthie Government Advisors 2016). The Town has recently received a grant from the USDA to upgrade the wastewater treatment system (Jeavons 2018). Electricity is provided by APS.

Emergency and medical services. The Town of Superior funds and operates both fire and police departments. According to conversations with the Town's Fire Chief, the fire department has six full-time staff and 24 reserve staff that are paid on a per-call basis. The fire department has two type-1 engines, which are used for structure fires, one 1,800-gallon water tender, a type-6 brush truck used for fighting wildfires, and two rescue vehicles. The Town's police department has nine full-time officers, seven reserve officers, and one office manager that serve Superior's population.

Travel and Tourism

In Pinal County, tourists and visitors spent a total of $207.6 million in 1998, but by 2016, visitor spending had grown to $571.6 million, an increase of 175 percent (figure 3.13.3-1). During this same period, visitor spending grew by 75 percent across the state of Arizona, while

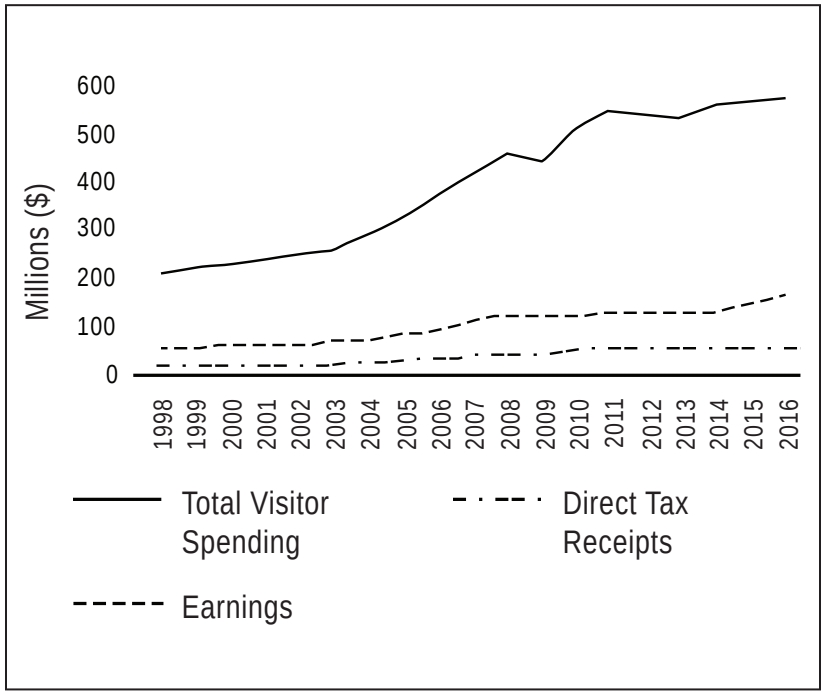

Figure 3.13.3-1. Total visitor spending, earnings, and direct tax receipts in Pinal County ($, millions). Source: reproduced from Dean Runyan Associates (2017)

visitor spending growth in Gila, Graham, Pima, and Maricopa Counties amounted to 41, 82, 36, and 88 percent, respectively. The growth in visitor spending has been supported by an increase of out-of-state air travel arrivals in Arizona. Between 2015 and 2016, air travel arrivals in the state increased by 7 percent. The growth in visitor spending helped businesses in Pinal County earn $168.4 million from visitor spending in 2016, compared with $53.7 million in 1998. Visitor spending in the county also supports county and local governments by generating tax revenues. Estimates from Dean Runyan Associates (2017) show that visitor spending generated approximately $53.2 million in tax revenue in Pinal County in 2016, which is a 197 percent increase from the tax revenue generated from visitor spending in 1998. Overall, visitor spending supports an estimated 6,840 jobs in Pinal County (Dean Runyan Associates 2017). As a result, changes in visitation numbers or visitor spending in the county could have effects on the county's economy.

Table 3.13.3-5. Activity participation in Tonto National Forest, 2016

Activity	% Participation	% Main Activity
Hiking/walking	29.3	15.3
Viewing wildlife	25.1	1.2
Relaxing	22.6	5.3
Viewing natural features	22.2	5.7
Fishing	17.9	11.8
Non-motorized water	14.9	13.6
Some other activity	14.5	10.9
Motorized water activities	12.5	8.5
Other non-motorized	11.1	6.7
Driving for pleasure	10.5	3.3
Developed camping	7.9	2.9
Picnicking	7.7	2.5
OHV use	7.5	5.8
Nature study	5.9	0
Primitive camping	4.1	1.1

Source: U.S. Forest Service (2016d)

The tourism economy of the Copper Triangle, which includes Pinal and Gila Counties as well as the town of Superior, is dependent on natural amenities to draw visitors to the area. The southern portion of the Tonto National Forest includes areas around the town of Superior. Table 3.13.3-5 shows the primary activities of visitors to the Tonto National Forest.

In 2016, approximately 2,580,000 people visited Tonto National Forest to participate in recreation activities (U.S. Forest Service 2016d). Visitors to the Tonto National Forest spent an average of $115 per party per day on an average trip lasting approximately 4 days (U.S. Forest

Service 2016d). The Tonto National Forest is also one of the most heavily used National Forests for motorized recreation (Arizona Game and Fish Department 2018e). Statewide, OHV user spending adds $1.6 billion in value to the state's economy and sustains more than 21,077 jobs (Arizona State University 2016). In Pinal County, wildlife viewing contributes approximately $89.5 million annually to the county's economy (Arizona Game and Fish Department 2018e).

3.13.4 Environmental Consequences of Implementation of the Proposed Mine Plan and Alternatives

3.13.4.1 Alternative 1 – No Action Alternative

Under the no action alternative, the mine would not be developed, and existing socioeconomic conditions and trends would continue, as described in the "Affected Environment" part of this resource section.

3.13.4.2 Direct and Indirect Effects Common to All Action Alternatives

Effects of the Land Exchange

The land exchange would have limited effects on socioeconomics. The Oak Flat Federal Parcel would leave Federal jurisdiction and would result in a reduction of wildlife-related recreation spending and expenditures by visitors to the Oak Flat Campground, although the exact amount lost from visitors to Oak Flat has not been quantified. Another expected effect on socioeconomics could stem from slight changes in the tax base, but overall this would be limited. The admission of eight new parcels into Federal jurisdiction may increase recreational spending in those areas; however, it is likely to result in minimal overall effects. One of the planning principles in the National Forest Management Act is "responsiveness to changing conditions in the land and changing social and economic demands of the American people" (U.S. Forest Service 1985b). As such, the offered lands parcels entering NFS jurisdiction would then be managed under those principles.

Effects of Forest Plan Amendment

The Tonto National Forest Land and Resource Management Plan (U.S. Forest Service 1985b) provides guidance for management of lands and activities within the Tonto National Forest. It accomplishes this by establishing a mission, goals, objectives, and standards and guidelines. Missions, goals, and objectives are applicable on a forest-wide basis. Standards and guidelines are either applicable on a forest-wide basis or by specific management area.

A review of all components of the 1985 forest plan was conducted to identify the need for amendment due to the effects of the project, including both the land exchange and the proposed mine plan (Shin 2019). No standards and guidelines were identified as applicable to socioeconomics. For additional details on specific rationale, see Shin (2019).

Summary of Applicant-Committed Environmental Protection Measures

Resolution Copper has entered into a number of agreements that would result in socioeconomic benefits within the analysis area. These are included here and their effects are accounted for in the analysis of environmental consequences.

- In February 2019, Resolution Copper entered into an Entrepreneurship and Innovation Center Gift Agreement with the Town of Superior, to fund a number of programs meant to diversify the economic base of the community.
- In February 2019, Resolution Copper entered into a Multigenerational Center Development Gift Agreement with the Town of Superior, to help fund the final studies, design, and construction of a multigenerational center. The goal of the center is to improve the overall quality of life for Superior

residents, local employers, and their employees, expand the quality of life amenities and services that are essential to retraining and attracting residents and employers, allow for consolidation of Town services and decrease the overall administrative burden of the Town, and further develop public, private, civic, and educational sectors of the community.

- In February 2019, Resolution Copper entered into an Education Funding Agreement with the Superior Unified School District, dedicating funding to a number of classroom enhancements and educational programs over the next 4 years.
- In February 2019, Resolution Copper entered into a Park Improvement Agreement with the Town of Superior, to fund improvements to the U.S. 60 Caboose Park.
- In March 2016, Resolution Copper entered into an Emergency Response Services agreement with the Town of Superior, to fund the provision of fire and other emergency services to the mine facilities by the Town.
- Resolution Copper has committed at a corporate level to hiring qualified candidates locally, and will track progress by employee proximity to the mine.
- Resolution Copper has committed at a corporate level to using local suppliers and services wherever possible.

Socioeconomic Impacts

Most of the direct and indirect effects are based on the proposed mine plan, including employment, earnings, output, and fiscal impacts, and do not differ in nature or magnitude between the action alternatives. Two indirect effects (effects on the tourism economy and property values) are similar in nature between alternatives but differ in magnitude. The differences between each action alternative are summarized in the following tables.

Impact on employment, earnings, and value added. Table 3.13.4-1 summarizes the annual average economic and fiscal effects of the proposed mine based on projected employment and purchases of goods and services over the life of the mine. On average, the mine is projected to directly employ 1,523 workers, pay about $134 million per year in total employee compensation, and purchase about $546 million per year in goods and services (not shown in table 3.13.4-1). The IMPLAN results indicate that the proposed mine would create substantial "multiplier" effects (technically known as indirect and induced economic effects) in Arizona, supporting almost 2,200 indirect and induced jobs and about $135 million per year in indirect and induced labor income. Including direct and multiplier effects, the proposed mine is projected to increase average annual economic value added in Arizona by about $1.0 billion (not shown in table 3.13.4-1). However, most of the multiplier effects would occur outside of the "Copper Triangle." While all of the direct mine employment is expected to be based in the ZIP code encompassing Superior, only 11 percent of the multiplier effects are projected to occur within that ZIP code. About 8 percent of the multiplier effects are projected to occur in other parts of Pinal County, about 6 percent in Gila County, and about 7 percent in Pima County. The majority of the multiplier effects are projected to occur in Maricopa County (68 percent).

Projected employment and procurement activity associated with the proposed mine is anticipated to vary over the life of the project. The largest direct employment at the proposed mine is projected to occur during the approximately 15-year period encompassing mine construction and the ramp-up to full production (potentially 2021–2035). The smallest direct employment levels, and the lowest spending on goods and services, are projected to occur during the latter years of production and the closure and reclamation phases (potentially 2056–2079), as shown in figure 3.13.4-1.

Where the mine's employees would live is important in evaluating impacts on Superior and the Copper Triangle area in terms of demographics, demands for public services, and other social and economic effects. Based on current commuting patterns and the residence choices of the mine's employees to date, it appears likely that

Table 3.13.4-1. Summary of IMPLAN labor results based on projected average annual activity from proposed Resolution Copper Project

Geographic Area	Employment	Labor Income
Superior (ZIP code 85173)		
Direct Effect	1,523	$133,873,199
Indirect Effect	121	$7,222,045
Induced Effect	177	$4,425,516
Total Effect	**1,820**	**$145,520,760**
Rest of Copper Triangle (Indirect and Induced Effects Only)		
Other Pinal County areas	98	$1,045,321
Gila County areas	171	$5,569,895
Graham County areas	0	$0
Total Rest of Copper Triangle	**269**	**$6,615,216**
Effects Outside of Copper Triangle *(Indirect and Induced Effects Only)*		
Pinal County (remainder)	128	$6,858,380
Gila County (remainder)	0	$0
Graham County (remainder)	0	$0
Maricopa County	1,336	$101,273,756
Pima County	149	$8,538,230
Total Effect	**1,613**	**$116,670,366**
Total Regional Effects		
Direct Effect	1,523	$133,864,394
Indirect Effect	1,175	$93,446,967
Induced Effect	1,004	$41,494,980
Total Effect	**3,702**	**$268,806,341**

Note: Rounded to nearest whole number

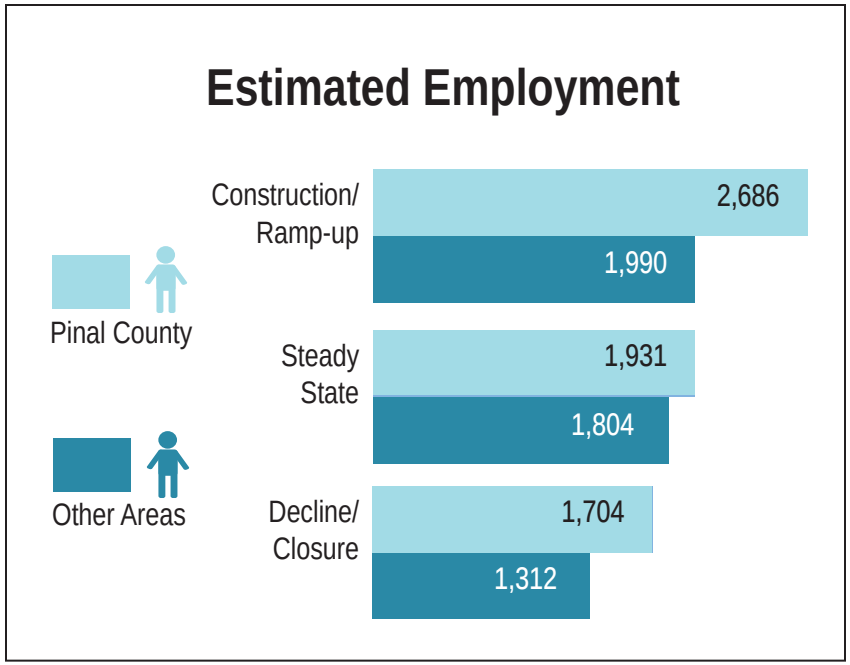

Figure 3.13.4-1. Comparison of projected total employment effects (direct and indirect/induced) during different phases of the proposed Resolution Copper Project

approximately 25 percent of the workforce would seek to live in or near Superior, and about 10 percent would choose to live in or near other communities within the Copper Triangle. The remainder would likely commute primarily from eastern portions of Maricopa County.

During the first few years, the actual number of mine-related employees who would live in Superior is likely to be constrained by the size and condition of the town's available housing supply and the availability of local services. While an estimated 455 of the new workers projected to result from the proposed mine might prefer to live nearby, given current conditions in Superior, it is more likely that these new workers would absorb about one-half of the available, move-in-ready housing stock during the early years of mine construction and operations. This implies about 150 new households would move to Superior in the relatively near term. Additional housing demand from mine-related workers is likely to provide upward pressure currently on home prices in Superior (which are currently very low), and could create affordability challenges for some existing Superior residents.

Projected fiscal effects. Operation of the proposed mine would produce both direct revenues to state and local governments (paid by Resolution Copper) and secondary revenues for those governments (which would be paid by employees and vendors). While there are numerous minor government revenues that would be generated by operation of the proposed mine, more than 95 percent of the revenues that would accrue to the State of Arizona and the most affected local governments (those within Pinal and Gila Counties) would stem from six revenue sources—some of which would produce revenues for both the State government and local governments:

- Resolution Copper property taxes (property taxes on the mine itself, paid to Pinal County and other local taxing entities)
- Resolution Copper severance taxes (paid to the State of Arizona, with a portion shared to local governments based on population)
- Resolution Copper corporate income taxes (paid to the State of Arizona, with a portion shared to cities based on population through Urban Revenue Sharing Fund)
- Transaction privilege taxes (sales taxes paid to local governments and the State of Arizona, with a portion of the State revenues shared to local governments based on population)
- Employee income taxes (paid to the State of Arizona, with a portion shared to cities based on population through Urban Revenue Sharing Fund)
- Employee property taxes (paid to the jurisdictions in which the employees would reside)

State and local government revenue summary. Combining estimated revenues from the six primary revenue sources just described, the proposed mine is projected to generate an average of between $88 and $113 million per year in State and local tax revenues, as shown in table 3.13.4-2. The reported range of annual revenues reflects differences between tax revenue projections developed by consultants for Resolution Copper and revenue projections developed for the Forest Service, as described in BBC Research and Consulting (2018). The State of Arizona would be the largest recipient of tax revenues from the proposed mine, with projected average receipts of about $34 million per year. Pinal County Junior College and Pinal County would also receive large amounts of tax revenues (ranging from about $8 million to over $18 million), primarily from property tax revenues on the proposed mine. While the Superior Unified School District would receive the largest amount of property tax revenue based on its current mill levy, the Arizona school finance equalization system would likely require the School District to either reduce its mill levy, distribute the additional tax revenues across other districts, or a combination of both. Although Superior is by far the closest municipality to the proposed mine, the Town is projected to receive a small share of the total tax revenues (less than $0.4 million per year) in the near term, but this would increase

Table 3.13.4-2. Projected average annual State and local government revenues related to the proposed Resolution Copper Project

Location	Total by Jurisdiction	
	Low Estimate ($)	High Estimate ($)
Town of Superior		
Near term	$372,529	$372,705
Longer term	$695,484	$695,660
Superior Unified School District*	19,238,311	30,087,882
Pinal County Junior College	7,605,420	11,894,545
Pinal County	11,941,974	18,507,156
Gila County	97,273	102,658
Graham County	26,737	30,481
Other Arizona jurisdictions†		
Near term	15,036,899	17,724,324
Longer term	14,713,944	17,401,369
State of Arizona	33,520,225	34,464,398
Total‡	**87,839,367**	**113,184,149**

* School district revenues based on current mill levy. Arizona school finance equalization formula would likely result in either a reduction in the mill levy or a redistribution of revenues to other districts, or both.

† Includes all Arizona municipalities other than Superior; all Arizona counties other than Pinal, Gila, and Graham; and all property-taxing entities in Pinal County other than those identified in this table.

‡ Totals shown exclude the longer term estimates for Town of Superior and other Arizona jurisdictions.

to $0.7 million per year if future development accommodates the full housing demand estimate of 455 workers living in Superior.

The proposed mine would also produce substantial revenues for the Federal Government, estimated at more than $200 million per year (Elliot D. Pollack and Company 2011). The revenues shown in table 3.13.4-2 would directly result from mine activity. However, growth in population resulting from mining activity would also lead to additional revenues from the State of Arizona's revenue sharing formulas, particularly in the town of Superior. In the near term, when current constraints would limit the number of new employees living in Superior, projected growth in Superior's population would result in an increase in intergovernmental revenue sharing from the State of approximately $125,000 per year. If and when housing and commercial development in Superior can accommodate the full mine-related housing demand (455 households), annual intergovernmental revenues from the State of Arizona would increase by about $380,000, relative to current conditions.

The Arizona State Land Department would also receive royalty payments from the proposed mine for a small area of ASLD lands that would be mined. The minimum ASLD royalty payment is 2 percent of the gross value of the minerals produced from their lands, but ASLD royalties average between 5 and 6 percent of the value (Arizona State Land Department 2019b). With ASLD owning the rights to approximately 2 percent of the overall copper resource, average annual royalty payments to ASLD over the life of the proposed mine are projected to be between $0.5 million and $1.5 million.

Mine-related demands and costs for public services. The Town of Superior anticipates that its costs of providing services related to public safety (police and fire protection) would increase by about 50 percent if and when the proposed mine becomes fully operational. Based on Superior's current expenditures to provide these services, this would represent an increase of about $375,000 per year in costs for the Town. The proposed mine would also use the wastewater services provided by the Town, but these services are provided on an enterprise basis (based on volumetric billing rates) and any effects on the cost of wastewater

Table 3.13.4-3. Projected effects of the project on Town of Superior general government costs

		Projected Conditions with Mine		Projected Mine Effect	
Metrics	**Current Conditions**	**Near Term**	**Longer Term**	**Near Term**	**Longer Term**
Resident population	2,999	3,389	4,182		
Employees*	707	2,527	2,527		
Employee weight†	0.33	0.33	0.33		
Effective service population	3,232	4,223	5,016	991	1,784
Expenditures/effective service population	$550	$550	$550		
General government costs‡ (millions, $)	$1.78	$2.32	$2.76	$0.54	$0.98

Sources: Minnesota IMPLAN Group Inc. (2016); Arizona Department of Transportation (2016); U.S. Census Bureau (2016)

* Employees based within ZIP code encompassing town of Superior.

† Approximate demand on Town services per local employee relative to a local resident.

‡ Excludes costs of self-funded enterprise funds such as wastewater services and ambulance services.

services should be offset by corresponding revenues. Construction and operations of the proposed mine could also affect the Town of Superior's costs to maintain its network of streets and roads, though this impact is more difficult to project (Jeavons 2018).

An alternative way to evaluate the effects of the proposed mine on the cost of providing services for the Town of Superior is based on the change in the effective population the Town would need to serve—including both new residents and the large number of in-commuting employees spending at least 8 hours per day in or adjacent to the town. On that basis, the total costs for Superior of providing general government services are projected to increase by about $540,000 per year in the near term and by about $980,000 per year in the longer term, as shown in table 3.13.4-3. This estimate reflects the additional demands the mine could place on street maintenance and general government activities for the Town. Overall, the proposed mine is projected to increase annual direct and indirect revenues for the Town of Superior by about $0.50 million in the near term, while adding about $0.54 million in annual costs for the Town. Longer term, if future development can accommodate the projected 455 new households in Superior resulting from mining activity, annual Superior revenues are projected to increase by about $1.08 million per year, while annual Superior costs are projected to increase by about $0.98 million per year (relative to current conditions). In addition, Resolution Copper has entered into an agreement with the Town of Superior to provide $1.65 million to support the Town's emergency response services over the period from 2016 to 2021, and other agreements to fund amenities and education.

Development and operations of the proposed mine would increase the demand for K–12 education services. However, schools in the Superior Unified School District are currently operating well below their designed capacity. Pinal County would also provide services to the proposed mine, including road maintenance, additional public safety services, and other county government activities. Based on projected changes in the

effective population served by Pinal County, the proposed mine could increase the costs of county service provision by about $3 million to $6 million per year. As shown in table 3.13.4-2, the proposed mine is projected to increase Pinal County's revenues by an annual average of between $12 million and $19 million, which is likely to substantially exceed the increase in the costs of service provision for the county.

Vulnerability to boom-bust cycles. Presuming that Resolution Copper's projections of operational employment, labor costs, non-labor operating costs, and output prove reasonably accurate, the proposed Resolution Copper Mine would have lower operating costs than the typical conventional copper mines in the region. It is unlikely that the proposed mine would have to suspend or substantially cut back its operations for purely economic reasons during either the 10-year ramp-up period or the following 20 years of full production. During the last 10 years of the mine's anticipated production life, the operational economics of the mine could be less advantageous, and there may be a greater likelihood that operations could be reduced or suspended for economic reasons.

Potential effects on the nature-based tourism economy. The proposed mine would have operations located east and west of the town of Superior. The tailings produced by the proposed mine would be stored at one of four sites currently being considered as alternatives. The activities at each of the proposed sites would affect the region's nature-based tourism economy, which includes the economic activity of both local and non-local users of the area's natural amenities for tourism and recreation. Nature-based tourists may participate in one or more activities, including OHV use, camping, hiking, rock climbing, hunting, fishing, and picnicking.

Most of the effects would occur in the town of Superior and Pinal and Gila Counties. The proposed mine and its associated facilities would be distributed across a large amount of land in Pinal and Gila Counties, where nature-based tourism is the primary tourism activity. As a result, the proposed mine's effects on nature-based tourism would vary by location and activity. AGFD projects that the tailings storage facilities would reduce wildlife-related recreation expenditures during the potential 60-year period[71] of construction, operations, and closure/reclamation of the proposed mine (Arizona Game and Fish Department 2018e). As shown in table 3.13.4-4, the magnitude of the effect varies by the location of the tailings storage facility. Other impacts are summarized in the following sections: transportation and access (see section 3.5), scenic resources (see section 3.11), noise and vibration (see section 3.4), and air quality (see section 3.6). Many of the potential economic effects on nature-based tourism are not quantified because of a lack of visitation data but are discussed in qualitative terms in the following text. If the proposed mine causes visitation and spending patterns to shift, it may result in lower tourism spending receipts for local businesses, which in turn could reduce tourism-related earnings and employment in the analysis area.

Table 3.13.4-4. Total projected reduction in direct wildlife-related recreation expenditures under each tailings alternative

Tailing Alternatives	Projected Annual Reduction in Visitor Spending ($)	Projected Reduction in Visitor Spending over 60-year Period ($)
Alternative 2 – Near West Proposed Action	66,920	4.0 million
Alternative 3 – Near West – Ultrathickened	66,920	4.0 million
Alternative 4 – Silver King	60,368	3.6 million
Alternative 5 – Peg Leg	12,254	735,269
Alternative 6 – Skunk Camp	70,554	4,200,000

Source: AGFD (2018e)

71. The impacts disclosed in this section are based in part on an analysis conducted by the AGFD (a cooperating agency on the project) and provided to the Tonto National Forest. In that analysis, the AGFD used a mine life span of 60 years, which differs slightly from the mine life described in chapter 2 of 51 to 56 years.

East Plant Site. The operations at the East Plant Site would affect some of the natural amenities that attract tourists to the area. The East Plant Site is located on approximately 1,544 acres of land managed by the Forest Service, including 1,500 acres of land that would subside, ending the use of the area by the general public. The East Plant Site and subsidence area would affect the Oak Flat Campground, an area that is popular with campers, picnickers, hikers, and rock climbers. OHV activities would also be affected by the proposed mine's operations. Portions of NFS Road 315, a popular off-road loop between U.S. 60 and SR 177, would be eliminated by the activities at the East Plant Site and the eventual subsidence of the area. In total, AGFD estimates that about 6 miles of public access motorized routes would be lost in addition to 421 acres of dispersed camping. The loss of this area would have potentially large effects on nature-based tourism patterns around the town of Superior. The impact on the site could result in a loss of tourism spending in and around the town, depending on the location of substitute sites. The site is also used for hunting, although according to AGFD the area does not contain a disproportionate amount of habitat favoring any particular species of interest to hunters. In total, AGFD estimated that the effects of the proposed mine at the East Plant Site would result in 188 fewer hunter days per year. This would lead to a direct reduction of $10,510 annual wildlife-related recreation spending in the local economy, which would equal a nominal value of $630,480 over the 60-year life of the proposed mine (Arizona Game and Fish Department 2018e).

West Plant Site. The West Plant Site is located on private land near the town of Superior's northwest edge. The West Plant Site was formerly used by the Magma Mine as the site of its copper concentrator. The proposed mine would increase the scale of industrial activity at the site, but the proposed activities would be consistent with the site's historical use. The increased industrial activity could create beneficial effects on the town's tourism economy for tourists interested in mining activity.

Alternatives 2 and 3 – Near West. The area on and around the Near West tailings alternative is used for a variety of activities, including OHV use, camping, and hunting, by visitors from outside Pinal County. AGFD estimates that the Near West tailings alternative would affect about 23 miles of motorized off-road trails and eliminate 1,737 acres of dispersed camping (Arizona Game and Fish Department 2018e). This would lead to more crowding and congested conditions with the potential to increase competition and conflict between activities. This could negatively impact the number of nature-based tourist visits and tourism spending, resulting in lower tourism spending, earnings, and employment.

The area is popular with hunters due to its populations of mule deer, white-tailed deer, javelina, quail, dove, and coyotes and other predators. According to a survey and mapping exercise conducted by AGFD, the site has some of the highest rates of use amongst hunters. The Near West tailings alternative would reduce the number of hunting days on the site by approximately 1,200 hunter-days per year, amounting to a reduction in direct expenditures of $66,920 per year, or $4.0 million over the 60-year operational time horizon of the proposed mine (Arizona Game and Fish Department 2018e).

Alternative 4 – Silver King. The alternative would affect the aesthetics of the area, particularly for users of OHV routes and other tourists who value the views and vistas of the Superstition Mountains. The aesthetic effects could change people's desire to visit and recreate in the area, thereby shifting visitation and spending patterns and potentially reducing nature-based tourism expenditures in the region. In total, AGFD estimates that there are about 20 miles of public access motorized routes and 1,434 acres of dispersed camping that would be affected. The site at the proposed Silver King alternative receives a moderate to high number of hunters who use the area to hunt mule deer and predatory animals. The higher elevation areas of the site are the most valued by hunters because the quality of mule deer habitat increases with altitude at the site. According to AGFD, the proposed alternative would have a negative effect on mule deer populations, which would reduce the number of hunting days by about 1,078 per year. This would reduce the amount of direct expenditures of hunters by about $60,368 per year, or $3.6 million over the 60-year operational time horizon of the proposed mine (Arizona Game and Fish Department 2018e).

Alternative 5 – Peg Leg. Development of this alternative would have a negative effect on the aesthetics of the area, particularly for visitors driving from the Florence-Kelvin Highway and for outdoor enthusiasts who value pristine view of the Mineral Mountains and the Gila River. AGFD estimates that there are about 45 mile of public access motorized routes and 1,009 acres of disperse camping within the tailings footprint (excluding pipeline corridors). The Peg Leg alternative site also contains a variety of species that are popular with hunters, including predators and small game. This also makes the site popular with wildlife-watchers. The AGFD estimates that the site supports about 219 hunting-days each year. Under this alternative, the hunting activity would be lost, resulting in a loss of direct economic activity amounting to $12,254 per year, or $735,269 over the 60-year life of the proposed mine (Arizona Game and Fish Department 2018e).

Alternative 6 – Skunk Camp. This alternative would have the largest negative effect on tourism and recreation of any of the proposed alternatives. AGFD estimates that there are about 32 miles of public access motorized routes and 861 acres of dispersed camping within the tailings footprint (excluding pipeline corridors). Hunting is permitted on State Trust lands within the proposed location of the Skunk Camp alternative, and the site is also popular with people who enjoy watching wildlife. Private lands at the site may or may not be open to public access at the discretion of the landowner. The area is characterized as excellent mule deer, javelina, and Gambel's quail habitat, and transitional white-tailed deer habitat. This area is one of three major areas most frequently hunted in this Game Management Unit and hunters tend to concentrate within these few areas to camp and stage for travel to nearby hunting destinations. Key to recreation in this area is access via Dripping Springs Road. According to a survey and mapping exercise conducted by AGFD, the Skunk Camp alternative would reduce the number of hunting days on the site by approximately 1,269 hunter-days per year, amounting to a reduction in direct expenditures of $70,554 per year, or $4.2 million over the 60-year operational time horizon of the proposed mine (Arizona Game and Fish Department 2018e).

Potential property value effects. While the proposed mine facilities at the East Plant Site and the West Plant Site could have some adverse effects on property values in Superior due to creating a more industrialized setting, those effects would likely be more than offset by the increased demand for housing and commercial space in the town. The primary adverse effects on property values from the proposed mine would likely be associated with the tailings storage facilities.

The proposed mine would likely affect residential property values within at least a 5-mile radius of the proposed location of the tailings facilities under each alternative. Table 3.13.4-5 summarizes the proposed mine's estimated effects on residential property values based on current development near the proposed locations of the mine tailings under each alternative and the current value of those properties. Estimates in

Table 3.13.4-5. Total projected property value reduction under each tailings alternative

Tailing Alternatives	Number of Residential Parcels within 5 Miles of Tailings Perimeter	Total Projected Property Value Reduction ($)	Change in Value (%)
Alternative 2 – Near West Proposed Action	1,370	3,059,395	−4.1
Alternative 3 – Near West – Ultrathickened	1,370	3,059,395	−4.1
Alternative 4 – Silver King	1,181	5,472,374	−10.6
Alternative 5 – Peg Leg	8	69,178	−6.3
Alternative 6 – Skunk Camp	31	57,575	−4.0

Sources: Pinal County Assessor's Office (2017); Gila County Assessor's Office (2017); BBC Research and Consulting (2018)

Note: GIS data for residential parcel data were obtained from standard Pinal County and Gila County coverages.

table 3.13.4-5 indicate the magnitude of potential property value effects but are based on a limited body of directly relevant research. For some alternatives, it is possible that Resolution Copper may purchase some residential parcels; this possibility was not incorporated into the figures shown later in this section.

3.13.4.3 Cumulative Effects

The Tonto National Forest identified the following reasonably foreseeable future actions as likely, in conjunction with development of the Resolution Copper Mine, to contribute to cumulative changes to socioeconomic conditions in the Town of Superior and in other nearby communities, particularly those in northern Pinal County, southwestern Gila County, and eastern Maricopa County. As noted in section 3.1, past and present actions are assessed as part of the affected environment; this section analyzes the effects of any RFFAs, to be considered cumulatively along with the affected environment and Resolution Copper Project effects.

- **Pinto Valley Mine Expansion.** The Pinto Valley Mine is an existing open-pit copper and molybdenum mine located approximately 8 miles west of Miami, Arizona, in Gila County. Pinto Valley Mining Corporation is proposing to expand mining activities onto the Tonto National Forest and extend the life of the mine to 2039.
- **Florence Copper In-Situ Mining Project.** This mining project, located on the northwestern outskirts of the town of Florence, is an underground copper leaching, recovery, and processing operation that is now in a production testing phase. The operational life of the mine is estimated at approximately 20 years. The mine owner, Florence Copper, estimates the operation would create and support an annual average of 796 direct and indirect jobs in Arizona, with approximately 480 of those jobs in Pinal County.
- **Ray Land Exchange and Proposed Plan Amendment.** ASARCO is also seeking to complete a land exchange with the BLM by which the mining company would gain title to approximately 10,976 acres of public lands and federally owned mineral estate located near ASARCO's Ray Mine in exchange for transferring to the BLM approximately 7,304 acres of private lands, primarily in northwestern Arizona. It is known that at some point ASARCO wishes to develop a mining operation in the "Copper Butte" area west of the Ray Mine; however, no details are currently available as to potential future employment numbers or mineral production rates at this possible future facility.
- **Tonto National Forest Travel Management Plan.** The Tonto National Forest is currently in the process of developing a Supplemental EIS to address certain court-identified deficiencies in its 2016 Final Travel Management Rule EIS. This document and its implementing decisions are expected within the next 2 years. This document is likely to have substantial impacts on current recreational uses of Tonto National Forest lands and transportation routes, which in turn would have socioeconomic ramifications with local recreation spending, road maintenance, or displacement of recreation to other locations.
    - More specifically, the Supplemental EIS proposes a total of 3,708 miles of motorized routes open to the public, a reduction from the 4,959 miles of motorized open routes prior to the Travel Management Rule. Limiting availability of motorized routes open to the public would result in reduced access to recreational activities currently practiced on the Tonto National Forest, including sightseeing, camping, hiking, hunting, fishing, recreational riding, and collecting fuelwood and other forest products. The proposed action would designate 2,341 miles of motorized trails. Currently, there are no designated motorized trails on the Tonto National Forest.

Other public infrastructure development and commercial economic activity is likely to occur in this area of south-central Arizona during

the foreseeable future life of the Resolution Copper Mine (50–55 years), including developments that have yet to be imagined or planned. In aggregate, these foreseeable and as-yet unknown actions would contribute to general socioeconomic conditions in the region in both positive and potentially negative terms. Large-scale mining development, in particular, tends to infuse relatively quick economic stimulus to local economies but can also create pressures on local infrastructure such as roads, schools, medical services, and the availability and affordability of housing. Large-scale mining projects such as the Resolution Copper Mine and the mining developments described here may also adversely affect tourism, recreational opportunities, and what are considered desirable but less-tangible qualities of a rural setting and lifestyle.

3.13.4.4 Mitigation Effectiveness

The Forest Service is in the process of developing a robust mitigation plan to avoid, minimize, rectify, reduce, or compensate for resource impacts that have been identified during the process of preparing this EIS. Appendix J contains descriptions of mitigation concepts being considered and known to be effective, as of publication of the DEIS. Appendix J also contains descriptions of monitoring that would be needed to identify potential impacts and mitigation effectiveness. As noted in chapter 2 (section 2.3), the full suite of mitigation would be contained in the FEIS, required by the ROD, and ultimately included in the final GPO approved by the Forest Service. Public comment on the EIS, and in particular appendix J, will inform the final suite of mitigations.

At this time, no mitigation measures have been identified that would be pertinent to socioeconomics. Applicant-committed environmental protection measures have already been detailed elsewhere in this section, will be a requirement for the project, and have already been incorporated into the analysis of impacts.

Unavoidable Adverse Impacts

Loss of jobs in the local tourism and outdoor recreation industries cannot be avoided or fully mitigated. Likewise, loss in property values for property close to the mine would constitute an impact that cannot be avoided or fully mitigated. The applicant-committed measures would be effective at expanding the economic base of the community and improving resident quality of life, and could partially offset the expected impacts, although many of the current agreements would expire prior to full construction of the mine.

3.13.4.5 Other Required Disclosures

Short-Term Uses and Long-Term Productivity

Socioeconomic impacts are both positive and negative and are primarily short term. The project would provide increased jobs and tax revenue from construction through final reclamation and closure. However, this would be offset by potential impacts on local tourism and outdoor recreation economies, and a decrease in nearby property values; as these effects are largely the result of the tailings storage facility, which is a permanent addition to the landscape, they could persist over the long term.

The long-term continued population and economic growth in areas of the Copper Triangle with existing copper mines indicates that these impacts are in the magnitude of being decades long and would not be permanent.

Irreversible and Irretrievable Commitment of Resources

Some changes in the nature of the surrounding natural setting and landscape would be permanent, including the tailings storage facility and the subsidence area. The action alternatives would therefore potentially cause irreversible impacts on the affected area with regard to changes in the local landscape, community values, and quality of life.