

TECHNICAL MEMORANDUM

To: Mary Rasmussen
U.S. Forest Service – Tonto National Forest
2324 East McDowell Road
Phoenix, Arizona 85006

From: Adrienne Tremblay, Principal Investigator

Date: May 21, 2020

Re: **Assessment of Effects on the Built Environment of Superior, Globe, Miami, and Top-of-the-World from the Resolution Copper Project, Pinal and Gila Counties, Arizona / SWCA Project No. 30951**

PROJECT BACKGROUND

Resolution Copper Mining, LLC (Resolution Copper), is proposing to conduct mining operations on U.S. Forest Service (Forest Service) Tonto National Forest (TNF), Arizona State Land Department (ASLD), and private land near Superior, Gila County, Arizona. Resolution Copper submitted an initial draft of its General Plan of Operations (GPO) for the proposed project in November 2013 with a revised submittal in September 2014 and again in May 2016. The GPO was determined by the Forest Service to be complete in December 2014 but was revised in 2016 to include the details of the land exchange (see below). The GPO details Resolution Copper's proposed mining operations as consisting of five locations: East Plant Site (EPS), West Plant Site (WPS), Tailings Facility and Tailings Corridor, Magma Arizona Railroad Company (MARRCO) corridor, and Filter Plant and Loadout Facility. The proposed project will disturb a total of 6,951 acres of National Forest System (NFS), ASLD, and private land (Figures A-1 and A-2).

On December 12, 2014, the U.S. Congress passed the Southeast Arizona Land Exchange and Conservation Act (Section 3003 of Public Law 113-291), which authorizes a land exchange between the U.S. Government (U.S. Department of Agriculture and U.S. Department of the Interior) and Resolution Copper. This exchange includes some lands that are covered by the GPO. Under the exchange, Resolution Copper would receive 2,442 acres of land managed by the Forest Service (Selected Lands) in exchange for approximately 5,376 acres of private land owned by Resolution Copper (Offered Lands). The 2,422 acres (Selected Lands) to be acquired by Resolution Copper is known as the Oak Flat Federal Parcel and is located east of Superior in the TNF. The 5,376 acres (Offered Lands) consists of eight parcels: the Apache Leap South End Parcel (142 acres) near Superior; Tangle Creek Parcel (148 acres) in Yavapai County; Turkey Creek Parcel (147 acres) in Gila County; Cave Creek Parcel (149 acres) near Cave Creek; East Clear Creek Parcel (640 acres) near Payson; Lower San Pedro River Parcel (3,050 acres) near Mammoth; Appleton Ranch Parcel (940 acres) near Elgin; and Dripping Springs Parcel (160 acres) near Kearny. The land exchange was added to the GPO in 2016 but did not alter the overall project area since the Selected Lands were part of the 2014 GPO.

The Southeast Arizona Land Exchange and Conservation Act directs the Forest Service to analyze the impacts of both the land exchange and the approval of the GPO in a single environmental impact statement (EIS) in accordance with the National Environmental Policy Act (NEPA). Tailings location alternatives to be analyzed in the EIS include Alternative 2 – Near West Proposed Action, Alternative 3 – Near West – Ultrathickened, Alternative 4 – Silver King, Alternative 5 – Peg Leg, and Alternative 6 – Skunk Camp.

The land exchange and the implementation of the GPO together constitute a federal undertaking (the undertaking) as defined by 36 Code of Federal Regulations (CFR) 800.16(y), which requires compliance with Section 106 of the National Historic Preservation Act. As part of the fulfillment of its Section 106 requirements, the TNF must assess the potential adverse effects on historic properties, including those that are part of the built environment, from the undertaking. This memorandum is intended to assess the potential adverse indirect and cumulative effects from noise, vibrations, and socioeconomic factors on known built environment resources in the towns of Superior, Globe, Miami, and Top-of-the-World.

AREA OF POTENTIAL EFFECTS

The area of potential effects (APE) consists of a buffer around the Oak Flat Federal Parcel, the GPO project areas, and tailings alternatives. The buffer is 6 miles wide, except where it has been extended outward to include Top-of-the-World and two discontinuous areas consisting of the historic districts in Globe and Miami, to take into consideration potential direct, indirect, and cumulative effects of the undertaking (see Figure A-2). Within the APE, there are three zones: the APE for physical effects, the APE for auditory effects, and the APE for visual/atmospheric and cumulative effects. Of concern for this document are the APE for auditory effects and the APE for visual/atmospheric and cumulative effects. The APE for auditory effects, including noise and vibrations, consists of a 2-mile buffer around all project components. The APE for visual/atmospheric and cumulative effects consists of a buffer around any project component that is 6 miles, except where it has been extended outward to include Top-of-the-World and the historic districts in Globe and Miami. The APE for visual/atmospheric and cumulative effects encompasses most of what is known as the “Copper Triangle” (Figure A-3).

KNOWN BUILT ENVIRONMENT RESOURCES

Several historic building surveys have been conducted in Superior, Globe, and Miami. No surveys have been conducted for Top-of-the-World. These surveys, along with records from the National Register of Historic Places (NRHP), provide the information included herein.

Two historic building surveys conducted in Superior have resulted in the identification of the proposed Superior Commercial Historic District and the Magma Height Historic District¹ (Table B-1; Figure A-4). An additional 14 NRHP-listed or eligible properties not part of the two proposed districts have been identified in Superior (see Table B-1). The NRHP-listed historic properties within or near Superior include the Hotel Magma,² the Boyce Thompson Southwest Arboretum,³ and two bridges under the Vehicular Bridges in Arizona Multiple Property Submission (MPS).⁴

¹ Bernard Deutsch Associates, Inc. 1988. *Historic Resource Survey Superior, Arizona*. Phoenix: Bernard Deutsch Associates, Inc.

² Anderson, M.F. 1994. Magma Hotel NRHP Nomination Form. Strawberry: Michael F. Anderson.

³ Wilson, M. 1975. Boyce Thompson Southwest Arboretum NRHP Nomination Form. Phoenix: Arizona State Parks.

⁴ Fraser, C.B. 1987a. Queen Creek Bridge. In Vehicular Bridges of Arizona Multiple Property Submission NRHP Nomination Form. Loveland: Fraser Design.

Fraser, C.B. 1987b. Devil's Canyon Bridge. In Vehicular Bridges of Arizona Multiple Property Submission NRHP Nomination Form. Loveland: Fraser Design.

A survey of the Fairview Cemetery in Superior was conducted as part of the Resolution Copper Project inventories;⁵ however, the cemetery was recommended not eligible. In addition, 16 buildings and/or structures were recorded as part of the proposed Magma Copper Company Smelter Historic District, all of which were on Resolution Copper's property.⁶ All of those have since been demolished. Full documentation of all buildings and structures existing in 2011 was completed prior to their demolition.⁷

In Globe, two historic districts have been surveyed and listed in the NRHP: the Globe Downtown Historic District and the Globe Commercial and Civic Multiple Resource Area (MRA)⁸ (Table B-2; Figure A-5). The Globe Commercial and Civic MRA includes the Globe Downtown Historic District. Another nine historic properties are listed individually within the MRA or are found outside the MRA. The individually listed properties consist of La Santa Cruz de Globe,⁹ Gila County Courthouse,¹⁰ St. John's Episcopal Church,¹¹ Gila Pueblo (South of Globe),¹² Dominion Hotel,¹³ Holy Angels Church,¹⁴ Besh-Ba-Gowah (south of Globe),¹⁵ Globe Post Office and Courthouse,¹⁶ and Globe Mine Rescue Station.¹⁷ In addition, the Pinal Ranger Station (south of Globe) is listed as part of the Depression-Era Forest Service Administrative Complexes in Arizona MPS.¹⁸

One historic building survey has been completed in Miami, which resulted in three potential historic districts (Table B-3; Figure A-6): the Miami Historic District, Chisholm-Roosevelt Historic District, and Bullion Plaza Historic District.¹⁹ None of the districts have been listed in the NRHP. Four buildings have been listed individually: Bullion Plaza School,²⁰ Miami Community Church,²¹ Our Lady of the Blessed Sacrament Church,²² and the Soderman Building.²³ In addition, five bridges in Miami are listed under the Vehicular Bridges in Arizona MPS.

No surveys have been completed in Top-of-the-World, and there are no previously recorded historic buildings or structures in the town.

⁵ Brown, S.A., and A. Buckles. 2019. *A Cultural Resource Inventory of the Fairview Cemetery, Superior, Pinal County, Arizona*. Cultural Resources Report 2016-49. Tucson: WestLand Resources, Inc.

⁶ Alliance Architects, LLC. 1998. *A Historic Resource Survey of the BHP Superior West Plant Site, Superior, Arizona*. Project 1049. Phoenix: Alliance Architects, L.L.C.

Steely, J. 2011. *Documentation of the 1911-1971 Magma Copper Company Mine, Superior, Pinal County, Arizona*. Cultural Resources Report No. 2011-541. Phoenix: SWCA Environmental Consultants.

⁷ Steely, 2011.

⁸ Weisinger, M. 1986. Globe Commercial and Civic Multiple Resource Area. NRHP Nomination Form. Midwest City: Weisinger and Associates.

Weisinger, M. 1986. Globe Downtown Historic District. NRHP Nomination Form. Midwest City: Weisinger and Associates.

⁹ Marin, C. 2010. La Santa Cruz de Globe NRHP Nomination Form. Mesa: Hayden Library.

¹⁰ Wilson, M. 1975. Gila County Courthouse NRHP Nomination Form. Phoenix: Arizona State Parks Board.

¹¹ St. John's Episcopal Church NRHP Nomination Form is missing.

¹² No author. 1977. Gila Pueblo NRHP Nomination Form. Unknown.

¹³ Wilson, M. 1977. Dominion Hotel NRHP Nomination Form. Phoenix: Arizona State Parks.

¹⁴ Doyle, G.A. 1983. Holy Angels Church NRHP Nomination Form. Phoenix: Gerald A. Doyle and Associates, P.C.

¹⁵ Hohmann, J.W. 1984. Besh-Ba-Gowah NRHP Nomination Form. Tempe: Arizona State University.

¹⁶ Secord, P.R. 1985. Globe Post Office NRHP Nomination Form. Spokane: Beland Associates, Inc.

¹⁷ Graham, R.G. 1989. Globe Mine Rescue Station NRHP Nomination Form. Phoenix: Don W. Ryden AIA Architects, Inc.

¹⁸ Sullivan, M.A. 1989. Pinal Ranger Station NRHP Nomination Form. Phoenix: Tonto National Forest.

¹⁹ Pry, M.E. 1997. *Historic Resource Survey: Miami, Arizona*. Tempe: Mark E. Pry.

²⁰ Pry, M.E. 2000a. Bullion Plaza School NRHP Nomination Form. Tempe: Southwest Historical Services.

²¹ Pry, M.E. 2005. Miami Community Church NRHP Nomination Form. Tempe: Southwest Historical Services.

²² Pry, M.E. 2007. Our Lady of the Blessed Sacrament Church NRHP Nomination Form. Tempe: Southwest Historical Services.

²³ Pry, M.E. 2000b. Soderman Building NRHP Nomination Form. Tempe: Southwest Historical Services.

POTENTIAL EFFECTS

National Environmental Policy Act Analysis Areas and the Section 106 Area of Potential Effects

Data to assess indirect and reasonably foreseeable effects on built environment historic properties within the Section 106 APE were supplied by the draft EIS (DEIS) analysis and supporting reports on noise/vibrations, transportation, socioeconomics, and recreation. Within the DEIS, separate analysis areas were developed that were appropriate to the subject matter.²⁴ These analysis areas do not necessarily correspond to the Section 106 APE. For noise and vibrations, a buffer of 2 miles around each GPO project location and alternative was used for the analysis area, the predicted distance from which noise would be noticeable; this is similar to the Section 106 auditory effects APE. The analysis area for transportation consisted of 141 miles of state highways, 418 miles of Pinal County roads, and 533 miles of NFS roads (NFSRs); many of these roads are outside the 6-mile APE. The analysis area for socioeconomics is the Copper Triangle. Most but not all of the Copper Triangle is found within the 6-mile APE.

Superior

The administrative offices for Resolution Copper and access to the WPS are currently located north of Superior off Magma Heights.²⁵ The offices are accessed from U.S. Route (U.S.) 60 by taking the State Route (SR) 177 exit north onto Magma Avenue and continuing north to Magma Heights; the address is 102 Magma Heights. During construction, increased traffic is expected along Magma Avenue from Main Street north to the current entrance to the mine.²⁶ Three buildings that have been recommended eligible for the NRHP are located along Magma Avenue: La Olla Hotel at 38 South Magma Avenue, First Presbyterian Church at 100 North Magma Avenue, and a house at 209 North Magma Road. Magma Avenue also crosses the proposed Superior Commercial District at Main Street. Two of the buildings at the intersection of Magma Avenue and Main Street are considered to be contributing properties to the proposed Superior Commercial District: Hotel Magma at 100 Main Street and the Superior Commercial and Trust building at 101 Main Street. Two contributing properties to the proposed Magma Heights Historic District are located along Magma Heights Road and within Resolution Copper's property: the Magma Administrative Offices (currently Resolution Copper administrative offices) and the Magma Hospital.

Increased traffic along Magma Avenue does have the potential to cause noise or vibration effects. The increased traffic is expected to last for up to 18 months during construction; because it is short term, it is not expected to adversely affect the three properties along Magma Avenue and the two properties at the intersection of Magma Avenue and Main Street. Both properties on Magma Heights are within Resolution Copper's property; as with the traffic along Magma Road, the noise and vibrations from construction and additional traffic will be short term and are not expected to adversely affect those two properties.

After construction, the main access to the WPS will be via a new entrance off Main Street west of town.²⁷ It is anticipated that most of the mine workers will be coming from Maricopa County to the west. Project-generated trips are expected to originate mostly (85 percent) from the Phoenix/Mesa metropolitan area via

²⁴ U.S. Forest Service (Forest Service). 2019. *Draft Resolution Copper Project and Land Exchange Environmental Impact Statement*. Phoenix: U.S. Forest Service.

²⁵ Resolution Copper Mining, LLC (Resolution Copper). 2016. *General Plan of Operations Resolution Copper Mining*. Superior: Resolution Copper.

²⁶ Forest Service, 2019, Table 3.5.4-3.

²⁷ Resolution Copper, 2016.

U.S. 60 and the San Tan Valley/Florence area via SR 79.²⁸ Traffic will turn off U.S. 60 onto Main Street to access the WPS during operations. A second entrance to the WPS will be via NFSR 229 (Silver King Mine Road), which is north of the WPS. Because these entrances are west and north of the historic portions of town, haul truck traffic and other mine-related traffic increases through the historic portions of Superior are not expected to continue after construction.

Noise and vibration studies for the Resolution Copper Project show that general noise will increase near the entrance to WPS at Main Street in Superior. However, because of the proximity to U.S. 60, the noise increase will be less than 10 A-weighted decibels (dBA).²⁹ The entrance is west of the main part of town, and no previously recorded historic buildings or structures are present near the entrance. Construction noise is not expected to be a major factor, as it will only be produced for up to 18 months and will be created only during daytime hours. Blasting is not expected to be a contributor to noise or vibrations in the WPS because it would occur only underground in the EPS, which is approximately 4 miles to the east. Vibrations from heavy equipment that may affect structures will only be present at 25 feet from the source of the vibrations. It is unlikely that these vibrations will reach any of the historic buildings in Superior.

The proposed mine will have indirect socioeconomic impacts to the community of Superior. However, there are several constraints on growth in Superior, and most of the workforce would live to the west in Maricopa County.³⁰ Resolution Copper Project–related workers living in Superior are projected to total 455 people. Assuming that each worker has one dependent and that all are new to the area, the population of Superior would increase by about 910 people. However, Superior has a limited supply of currently available housing. The town has 380 unoccupied housing units, but only about 300 of them are inhabitable. In addition, Superior has limited local services and amenities like restaurants, entertainment, and stores. Also, although the schools are not at capacity, potential new residents may not consider the local school system adequate. Because of the low number of available housing units and lack of services and amenities, the number of people moving to Superior in the beginning may be low.³¹ In the future, new housing, along with new amenities, may be constructed. However, the availability of areas for development is limited, as Superior is landlocked by the TNF and mine-owned properties. The Town of Superior is creating a “land bank” to facilitate development by repurposing existing commercial buildings and is looking at annexations to increase available land.³²

The socioeconomic analysis concludes that “the proposed mine would create substantial ‘multiplier effects’ in Arizona.”³³ Multiplier effects are also known as indirect and induced economic effects such as indirect and induced jobs and labor income. The indirect and induced economic effects would occur mostly outside the Copper Triangle. The Copper Triangle includes the towns of Globe, Miami, Top-of-the-World, Hayden, Kearny, and Winkelman.³⁴ Superior itself would only see about 11 percent of the multiplier effects, whereas Maricopa County, Pinal County outside the Copper Triangle, and Pima County would see 80 percent of the multiplier effect.

²⁸ Forest Service, 2019.

²⁹ Tetra Tech, Inc. (Tetra Tech). 2019. *Sound and Vibration Report, Resolution Copper Mine Project, Pinal County, Arizona*. Boston: Tetra Tech, Inc.

³⁰ BBC Research and Consulting (BBC Research). 2019. *Socioeconomic Effects Technical Report, Resolution Copper Mine Environmental Impact Statement*. Denver: BBC Research and Consulting.

³¹ BBC Research, 2019.

³² BBC Research, 2019.

³³ BBC Research, 2019.

³⁴ BBC Research, 2019.

Because of their short-term nature and distance from the historic portions of Superior, noise from construction or vibrations from heavy equipment are not expected to adversely affect historic properties in Superior. Some short-term auditory effects may occur along Magma Avenue and Magma Heights during construction as a result of increases in traffic. However, these are not expected to adversely impact the three historic properties along Magma Avenue, the two buildings considered contributing properties of the Superior Commercial District, or the two buildings on Magma Heights. Adverse effects on historic properties may occur as a result of socioeconomic changes brought on by the proposed mine. Increased population, demand for more and new amenities, and demand for new housing because of the influx of new workers may lead to adverse indirect or cumulative effects on historic properties if they are torn down to make room for newer buildings or are changed enough to alter or remove the characteristics that make them eligible for the NRHP. The Town of Superior's "land bank" may reduce some of those adverse effects; however, it is not possible to know the extent and nature of any adverse effects at this time.

Globe, Miami, and Top-of-the-World

Globe, Miami, and Top-of-the-World are east of the proposed project along U.S. 60. Globe is approximately 24 miles from Superior; Miami is approximately 18 miles from Superior. Both are outside the 2-mile analysis area for noise and vibrations and the APE for auditory effects. Top-of-the-World is approximately 5 miles northeast of the Oak Flat Federal Parcel and the EPS. It is outside the analysis area for noise and vibrations but in the APE for atmospheric and cumulative effects. In general, because of the nature of the ore extraction, noise and vibrations from blasting and ore removal would be underground, are not expected to be audible on the surface, and would only take place in the EPS.³⁵ Noise and vibrations are expected from construction and operation because of facility construction, haul trucks, and employee vehicles. However, because of their distance from the proposed project, adverse noise or vibration effects from construction and operation are not anticipated for Globe, Miami, and Top-of-the-World.

Major access to the project components for trucks, employees, and other people is not anticipated from the east through Globe, Miami, and Top-of-the-World. As stated above, project-generated trips are expected to originate mostly from the Phoenix/Mesa metropolitan area via U.S. 60 and the San Tan Valley/Florence area via SR 79.³⁶ From Globe and Miami on U.S. 60, only 10 percent of the total number of trips are expected to occur; 5 percent of total trips would occur from the south along SR 177. Traffic from the east would consist mainly of employee vehicles from those who live in the Globe/Miami area; haul trucks are not expected to be traveling to and from the Globe/Miami area. Therefore, noise and vibrations from traffic are not expected to significantly impact towns east of the project area and are not anticipated to adversely affect historic properties in Globe and Miami. No indirect adverse effects on historic properties from noise or vibrations are expected in the communities east of the proposed project.

As noted above, the Copper Triangle would see limited indirect and induced economic effects.³⁷ Only 9 percent of the proposed project's "multiplier effects" would occur within the Copper Triangle outside Superior. This includes the towns of Globe, Miami, Top-of-the-World, Hayden, Kearny, and Winkelman.

The increase of Resolution Copper Project-related workers in the Copper Triangle outside Superior is estimated at 276 people.³⁸ The current population of Globe and Miami, combined, in 2019 is estimated at 9,329. Between 2000 and the present day, the population of the two towns peaked in 2008 at 9,707.

³⁵ Tetra Tech, 2019.

³⁶ Forest Service, 2019.

³⁷ BBC Research, 2019.

³⁸ BBC Research, 2019, Figure 1-7.

Assuming that all of the 276 people would live in Globe and Miami, that all of them are new residents, and that each of them has one dependent, the population increase in the two towns is estimated to total 552, which is an increase of less than 6 percent over the 2019 population (9,881) and only a small increase in size from the 2008 peak. Growth in both these towns would also be constrained by available housing. In addition, development of the proposed mine would lead to less local spending overall, including in Globe and Miami, by tourists, hunters, and outdoor recreators who currently visit the Oak Flat area,³⁹ which may actually hamper growth. Because growth in Globe and Miami is predicted to be fairly low, pressures on the local housing stock and services would also be low, leading to less development. Therefore, indirect and cumulative effects on historic properties caused by socioeconomic factors are not anticipated.

Oak Flat Recreation (All Communities)

Oak Flat is a special natural environment resource for the communities of Superior, Top-of-the-World, Globe, and Miami. The project will impact Oak Flat through three venues: 1) the land transfer of the Oak Flat parcel to Resolution Copper and out of federal jurisdiction; 2) the subsidence of the land over time as the ore body is mined; and 3) increased industrial facilities and associated noise from the East Plant Site. Oak Flat is also adjacent to and connected to the Apache Leap Special Management Area. The effects of these actions/events can be looked at using the recreation analysis for Oak Flat in the DEIS.

The transfer of the Oak Flat Parcel out of federal jurisdiction will eliminate several recreation opportunities from public use including the Oak Flat bouldering area which has been used in climbing and bouldering competitions in the past, camping at the Oak Flat Campground, hiking, picnicking, hunting, and nature viewing such as birding⁴⁰. Several motorized roads at Oak Flat will also be closed preventing general and motorized recreation access. The development of the mine at the East Plant Site (which includes the Oak Flat Parcel) will further reduce recreation opportunities in the area⁴¹.

The removal of the ore body from under Oak Flat will create a subsidence area of about 1,560 acres which would permanently remove that area from use regardless of land ownership. The development of the facilities of the East Plant site would result in an increase in noise especially for those recreators who are using adjacent areas for camping or hiking. Visitors to Apache Leap would encounter varying amounts of increased noise from mining, equipment operations, and other industrial sources depending on landscape features and level of activity at the East Plant Site. In addition, users of Apache Leap will have unobstructed views of the East Plant Site⁴². It is assumed the some of the users of Oak Flat and vicinity will use adjacent areas instead, however, the loss of Oak Flat may reduce the number of nature-based tourists to the area and in turn reduce spending in the local communities. The largest loss of nature-based tourism revenue is expected to be Superior⁴³.

The loss of Oak Flat and its recreation opportunities, as well as the impacts to recreation opportunities in the general area, may have an adverse indirect and/or cumulative effects on historic properties in the surrounding communities through decreasing opportunities for recreation and the enjoyment of outdoors for locals and tourists which would may decrease the desirability of those communities to residents. This loss will especially be felt by Superior because of its closeness and reliance on Oak Flat for nature-based tourism but may also be felt in Top-of-the-World, Globe, and Miami.

³⁹ BBC Research, 2019.

⁴⁰ Forest Service, 2019.

⁴¹ Forest Service, 2019.

⁴² Forest Service, 2019.

⁴³ Forest Service, 2019.

SUMMARY AND RECOMMENDATIONS

Adverse indirect and/or cumulative effects on historic properties may occur in Superior as a result of a population increase associated with the increased workforce needed at the proposed mine. An increased population will strain existing housing stock and amenities and services. It is expected that new housing, amenities, and services will be needed in the future; however, when, how much, and where they will be needed is not known. On the other hand, the loss of Oak Flat may decrease the town's desirability to current residents. In preparation for the anticipated need for new housing, amenities, and services, an updated historic building survey is recommended. This may consist of a windshield survey or pedestrian survey to ascertain the condition of historic buildings assessed during the survey conducted in 1988 and to inventory any buildings or structures that reached the historic age criterion after 1988 and were not assessed in the 1988 survey.

Adverse effects from traffic, noise, or socioeconomic factors are not expected in the communities east of Superior: Top-of-the-World, Miami, and Globe. Increased mine haul traffic or commuting traffic is not expected from these towns. The expected population increase is slight over the area's peak population in 2008, and demand for housing and services is not expected to increase substantially. These towns may also see some adverse indirect or cumulative effects from the loss of Oak Flat. However, the lack of data on built environment resources in Top-of-the-World and the age of the surveys from Globe (1986) and Miami (1997) precludes a recommendation of no adverse effects to historic properties for those communities. It is recommended that a windshield survey be conducted for Top-of-the-World and that the Globe and Miami surveys be updated to facilitate the evaluation.

APPENDIX A

Figures

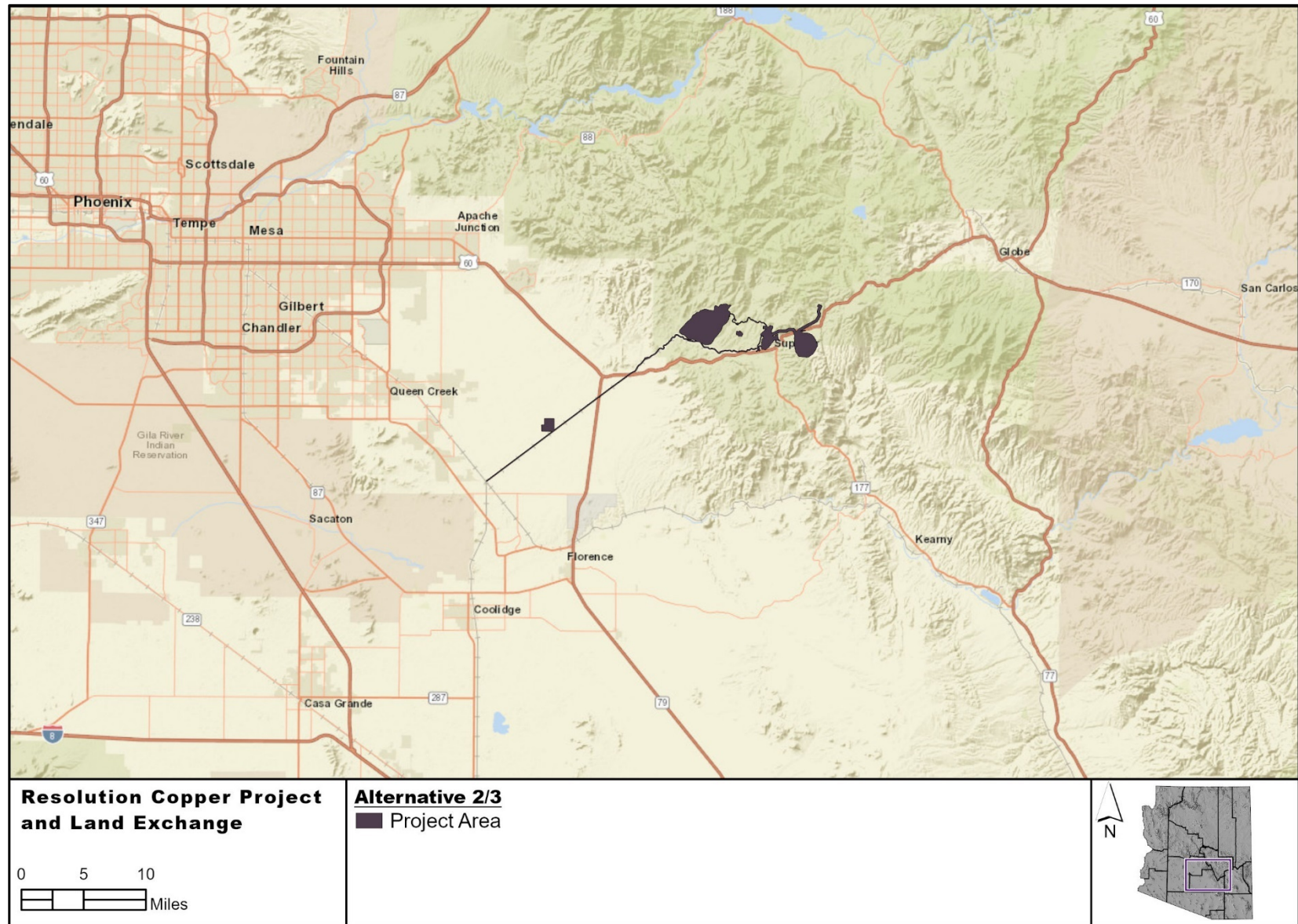


Figure A-1a. General location of the Resolution Copper Project.

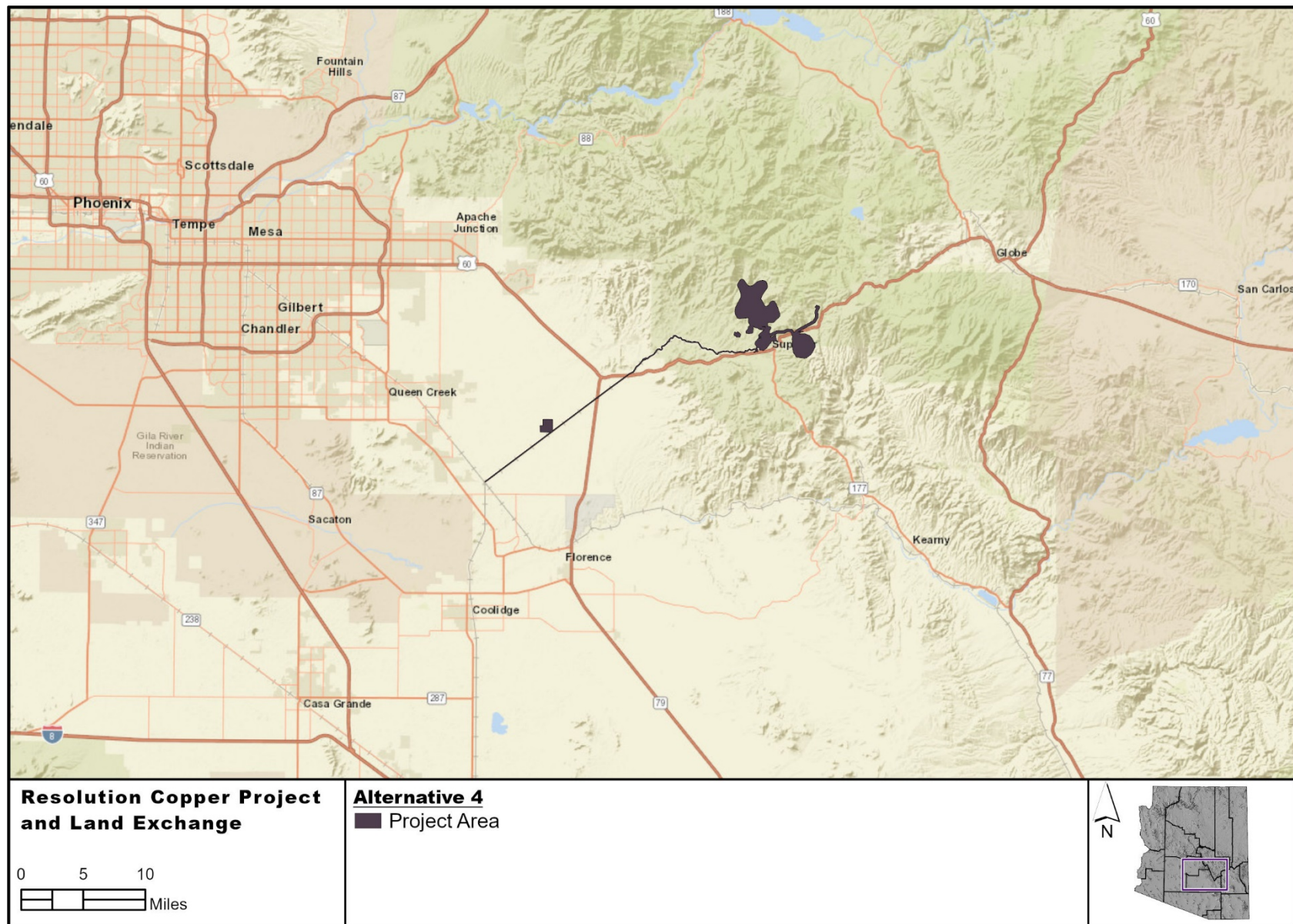


Figure A-1b. General location of the Resolution Copper Project.

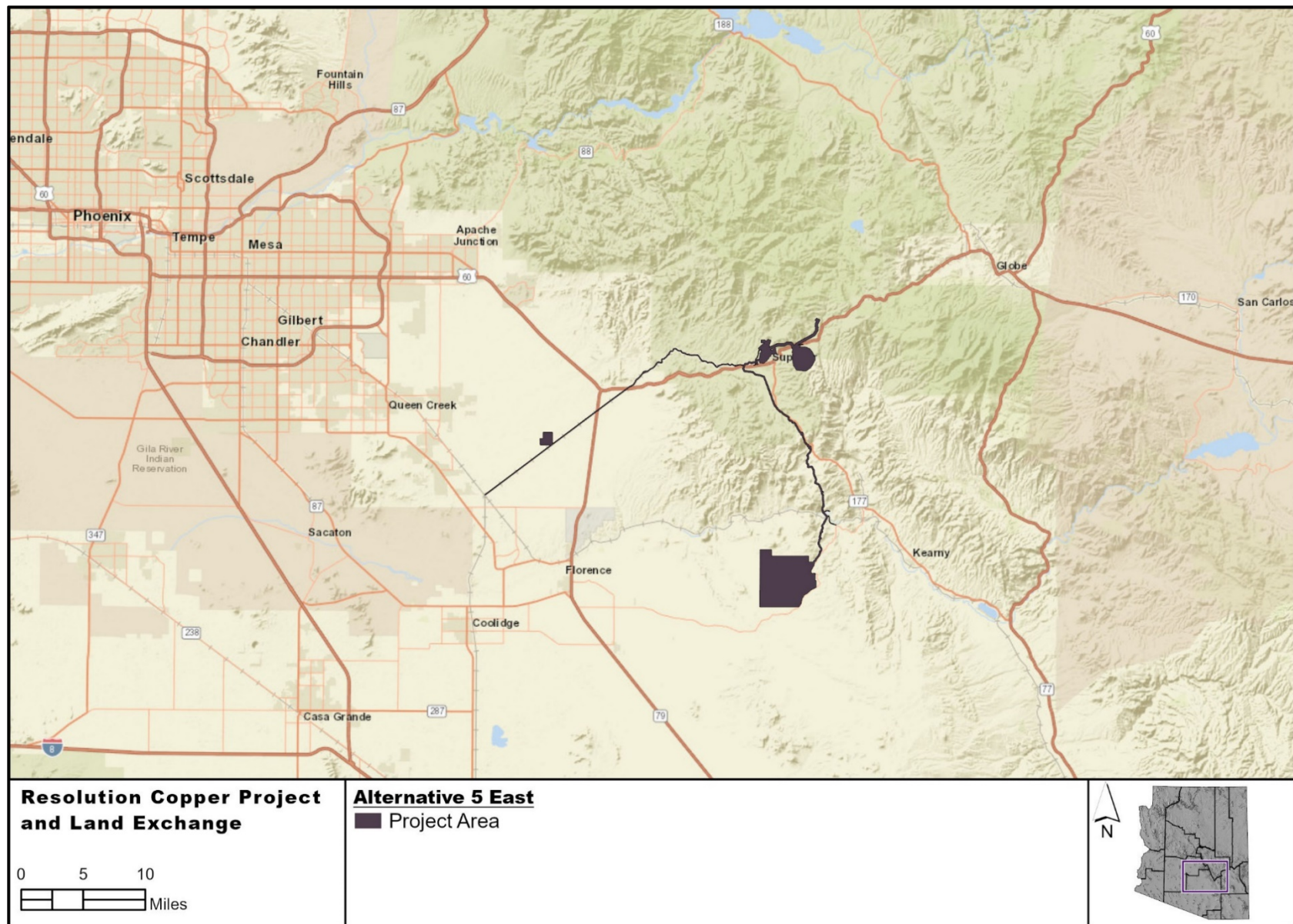


Figure A-1c. General location of the Resolution Copper Project.

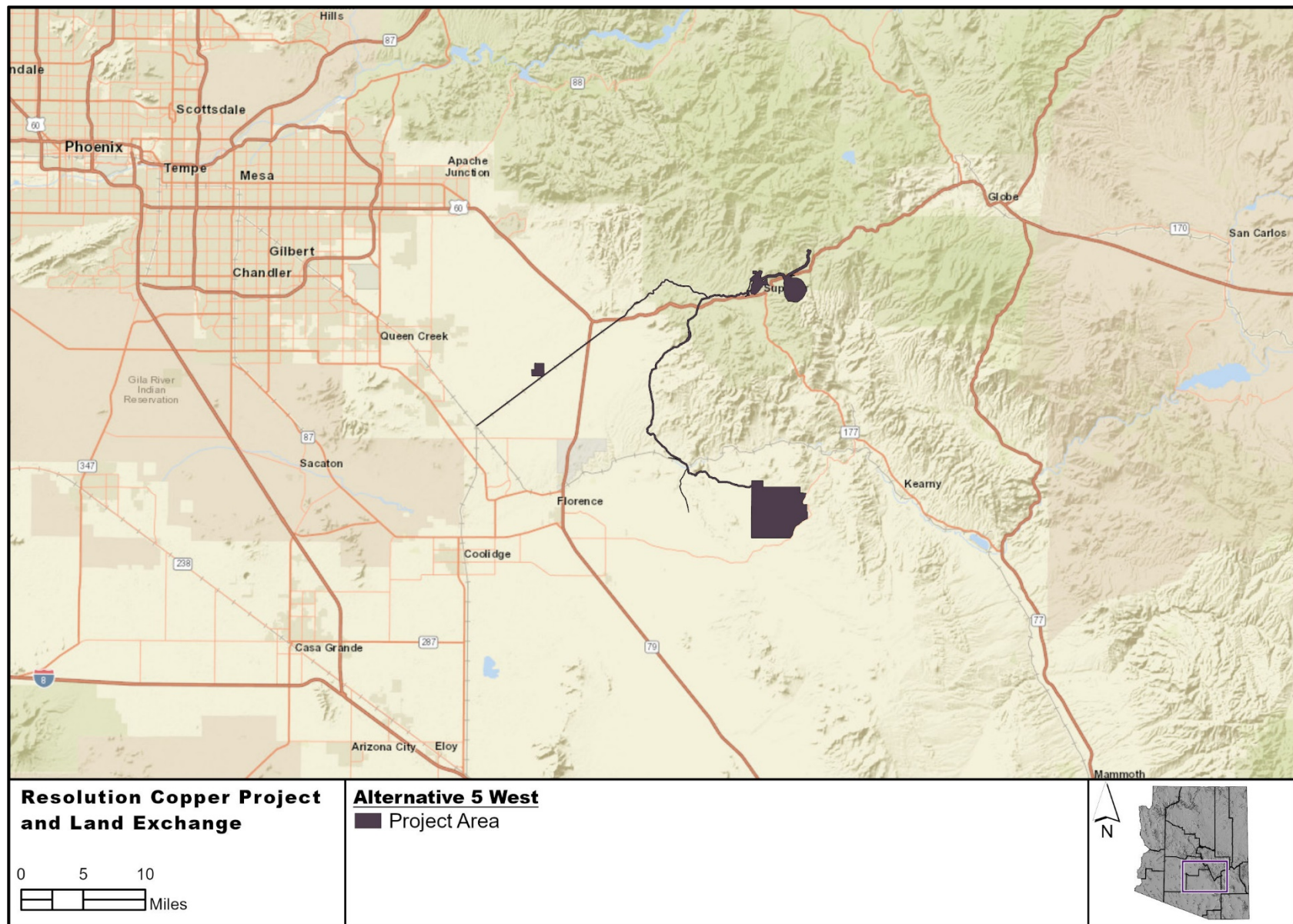


Figure A-1d. General location of the Resolution Copper Project.

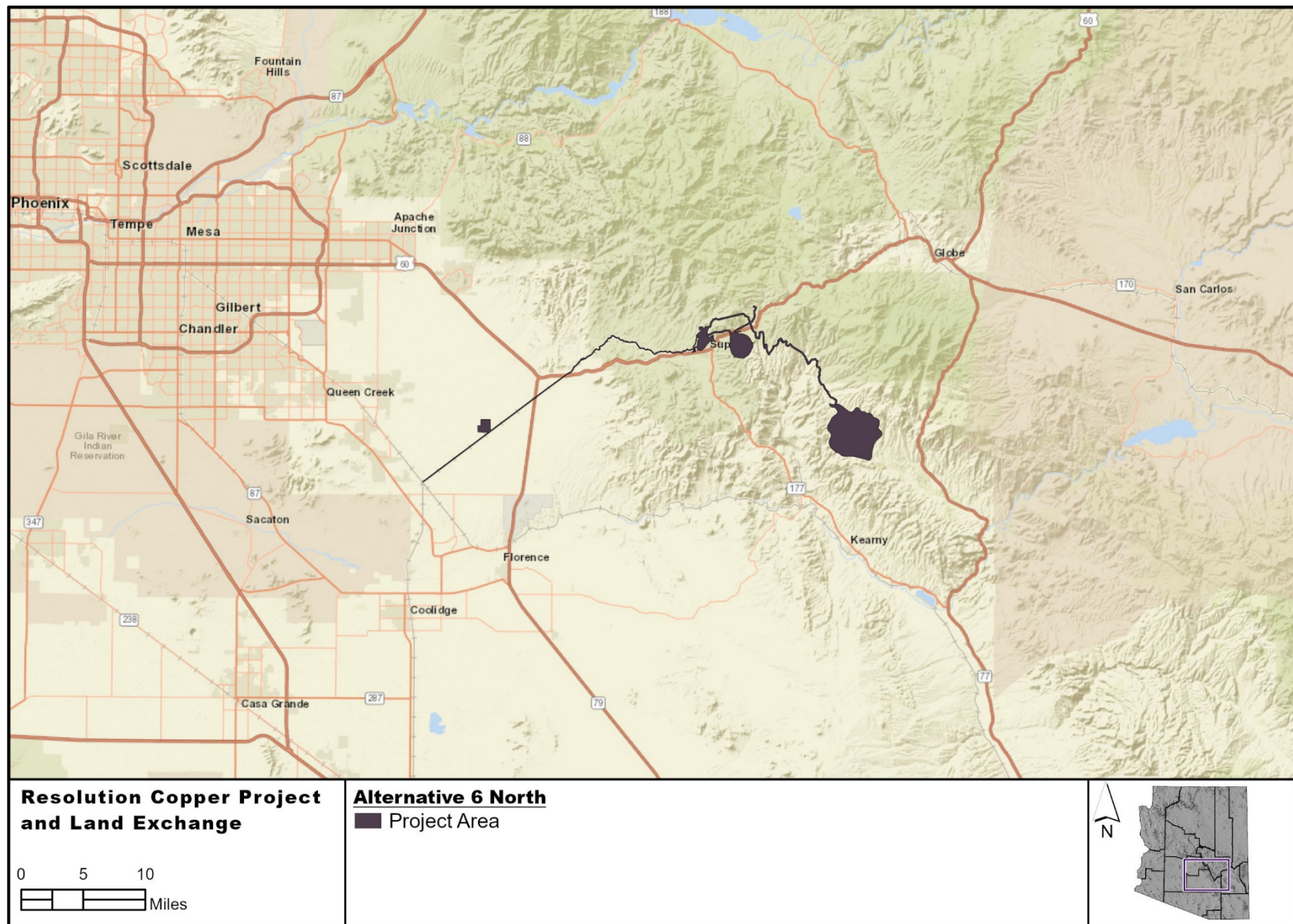


Figure A-1e. General location of the Resolution Copper Project.

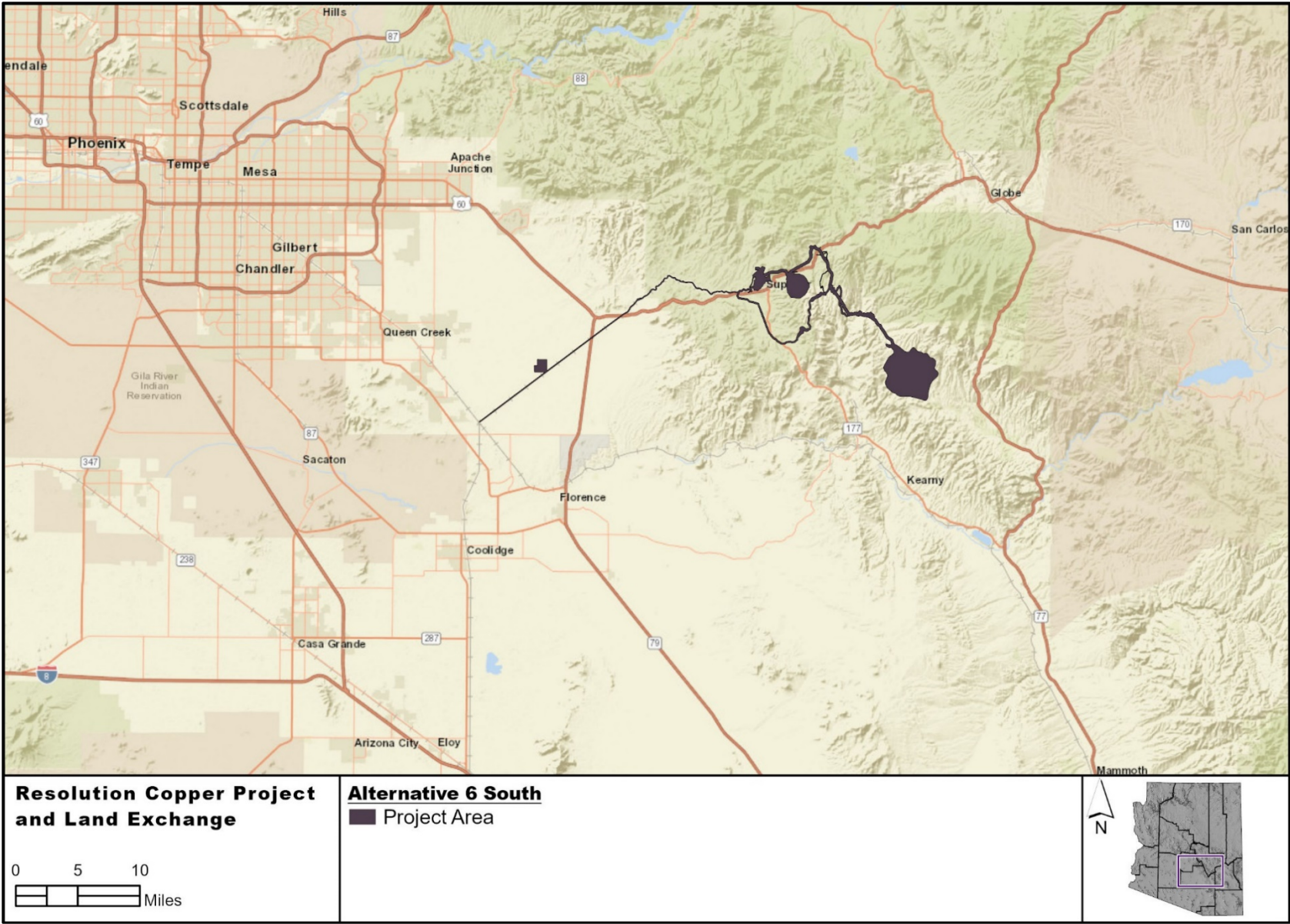


Figure A-1f. General location of the Resolution Copper Project.

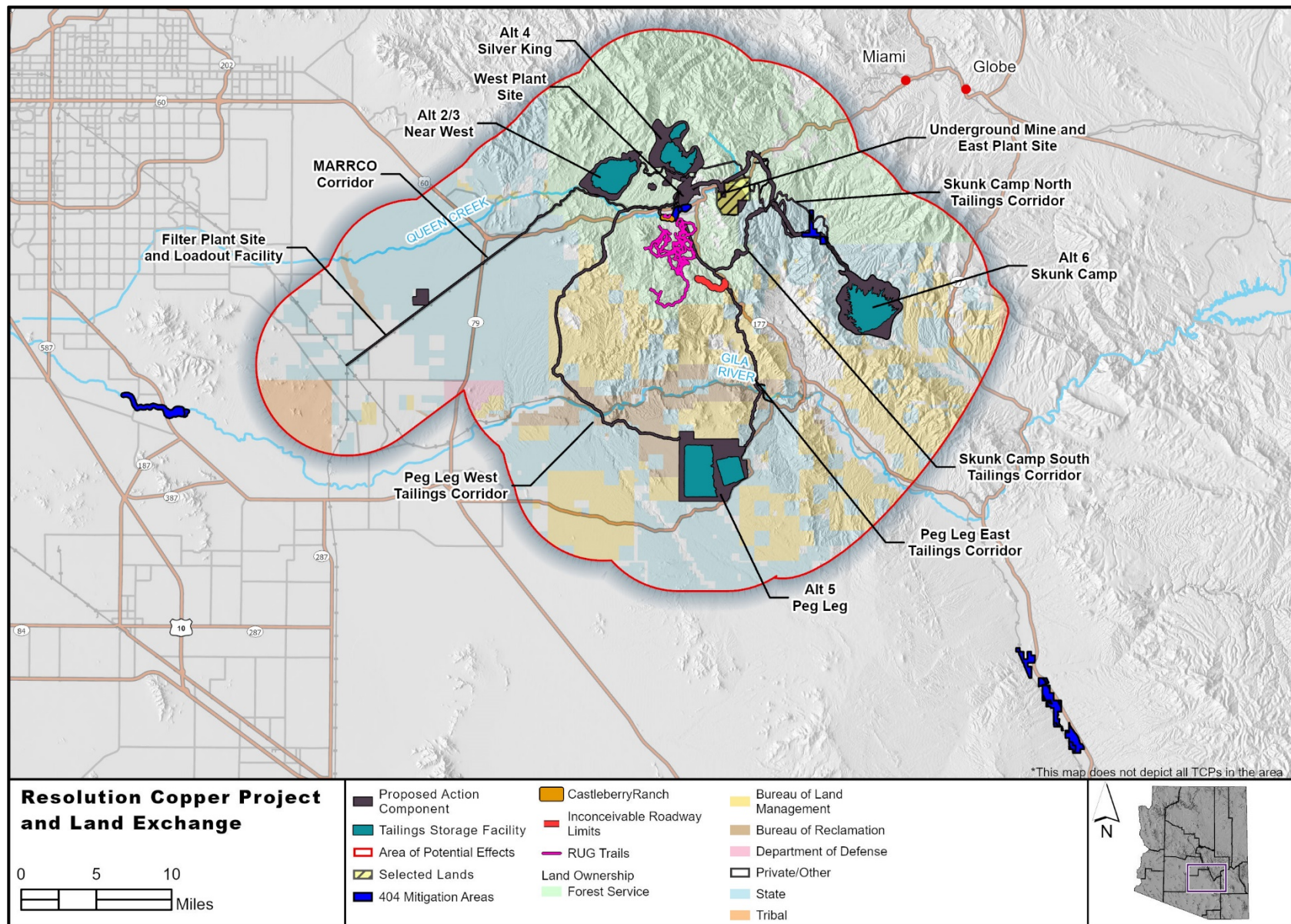


Figure A-2. Resolution Copper Project and the area of potential effects.

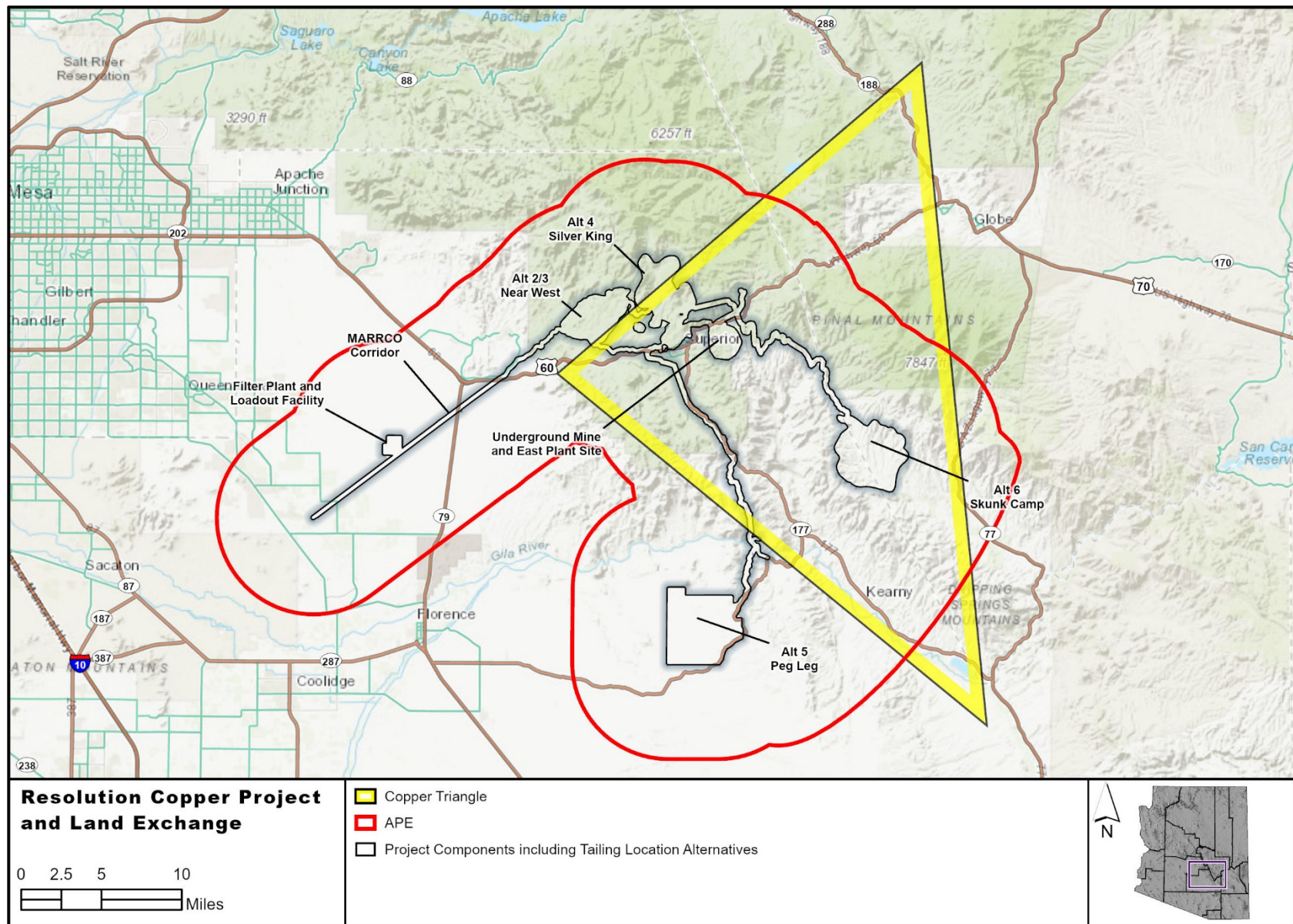


Figure A-3. Resolution Copper Project showing the APE and Copper Triangle.

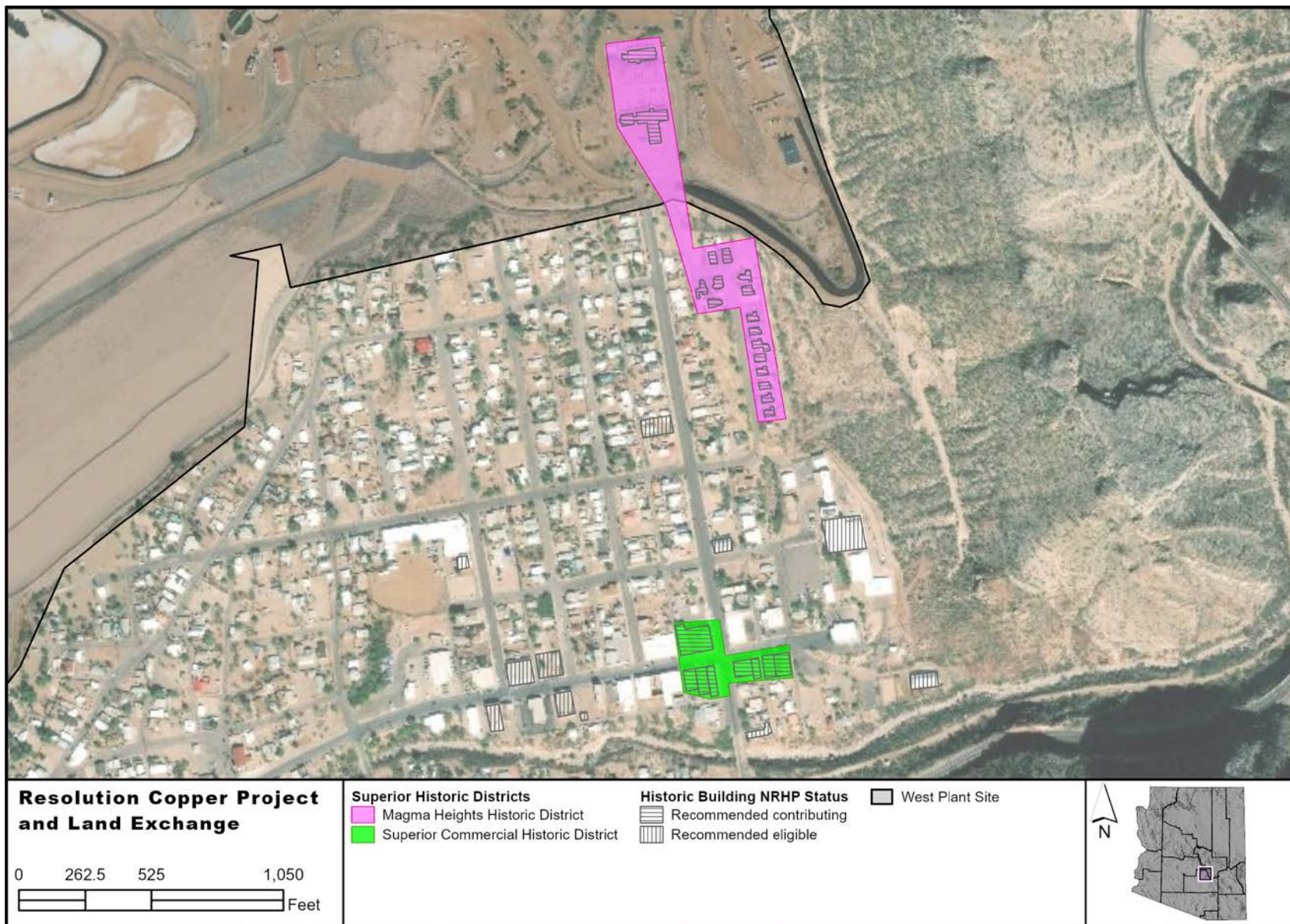


Figure A-4. Previously recorded historic buildings in Superior.

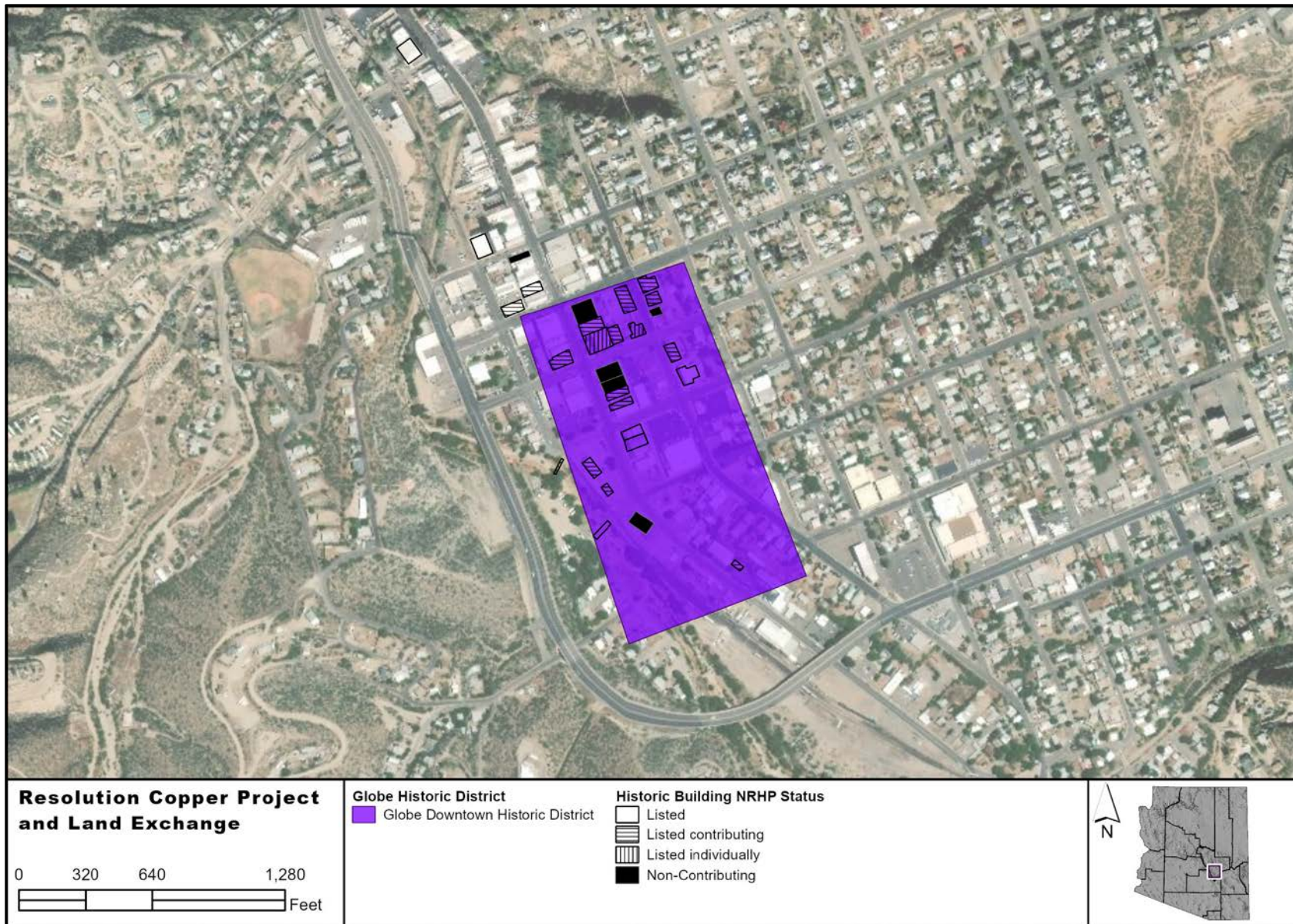


Figure A-5. Previously recorded historic buildings in Globe.

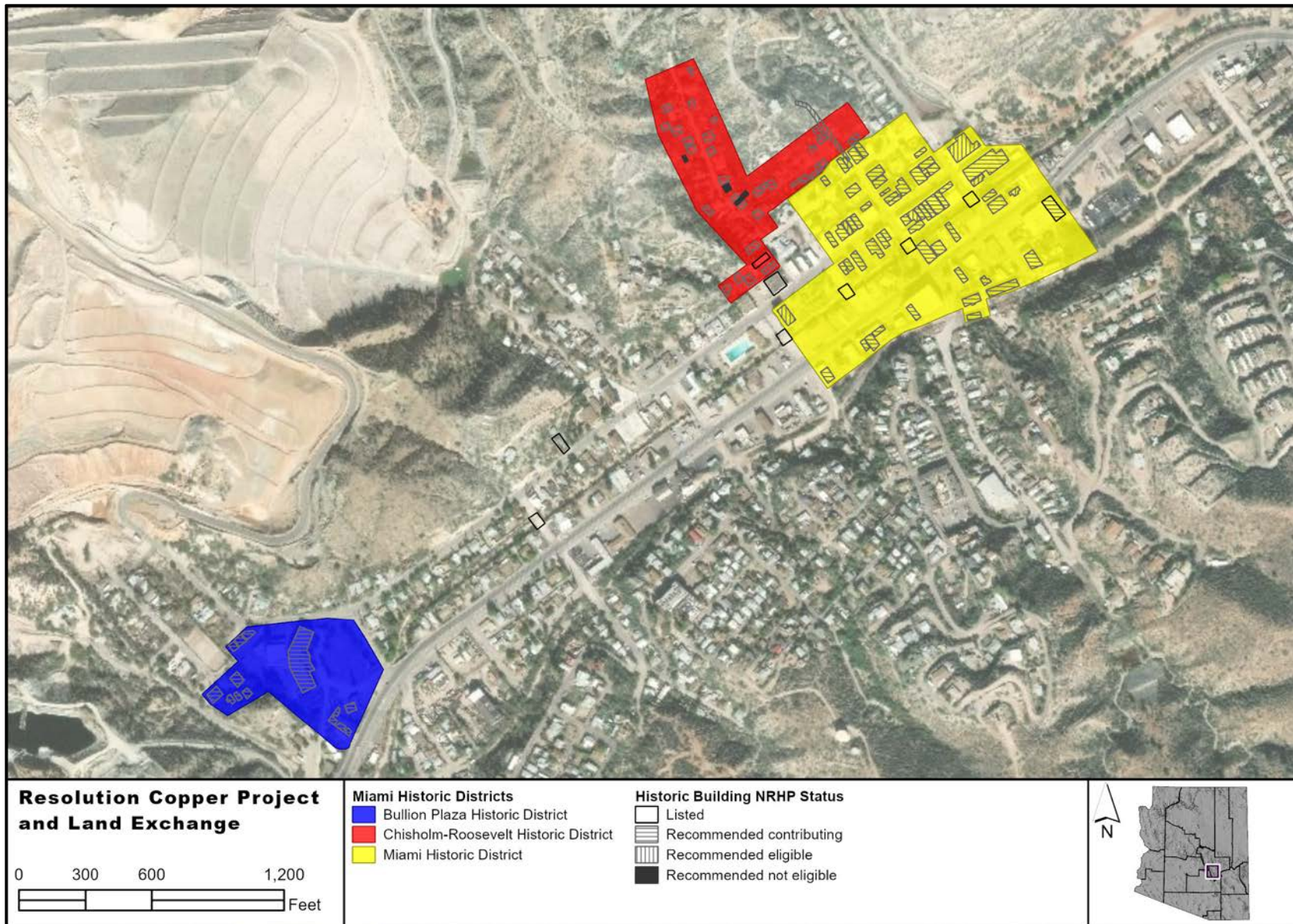


Figure A-6. Previously recorded historic buildings in Miami.

APPENDIX B

Historic Built Resources in the Resolution Copper Project

Table B-1. Historic Built Environment Resources in Superior

Name	Address	District or Multiple Property Listing	NRHP Status (NRHP Reference No.)
Kellner Building	145/149 Main Street	Superior Commercial Historic District	Recommended contributing
Mauk Theatre	125 Main Street	Superior Commercial Historic District	Recommended contributing
Superior Commercial and Trust	101 Main Street	Superior Commercial Historic District	Recommended contributing
The Bank Building	99 Main Street	Superior Commercial Historic District	Recommended non-contributing
The Superior Sun Office	89 Main Street	Superior Commercial Historic District	Recommended contributing
Coleman Hotel	73 Main Street	Superior Commercial Historic District	Recommended contributing
Tom Dowling Building	71 Main Street	Superior Commercial Historic District	Recommended contributing
Hotel Magma	100–130 Main Street	Superior Commercial Historic District	Listed (94000981)
Magma Hospital	100 Magma Heights	Magma Heights Historic District	Recommended contributing
Magma Administrative Office	102 Magma Heights	Magma Heights Historic District	Recommended contributing
House	68 Copper Street	Magma Heights Historic District	Recommended contributing
House	70 Copper Street	Magma Heights Historic District	Recommended contributing
House	71 Copper Street	Magma Heights Historic District	Recommended contributing
House	73 Copper Street	Magma Heights Historic District	Recommended contributing
House	298 High School Avenue	Magma Heights Historic District	Recommended contributing
House	283 (or 283) High School Avenue	Magma Heights Historic District	Recommended contributing
House	284 High School Avenue	Magma Heights Historic District	Recommended contributing
House	268 High School Avenue	Magma Heights Historic District	Recommended contributing
House	260 High School Avenue	Magma Heights Historic District	Recommended contributing
House	252 High School Avenue	Magma Heights Historic District	Recommended contributing
House	244 High School Avenue	Magma Heights Historic District	Recommended contributing
House	236 High School Avenue	Magma Heights Historic District	Recommended contributing
House	228 High School Avenue	Magma Heights Historic District	Recommended contributing
House	220 High School Avenue	Magma Heights Historic District	Recommended contributing
House	212 High School Avenue	Magma Heights Historic District	Recommended contributing
El Garcia Furniture Store	377 Main Street	None (individual)	Recommended eligible
Commercial	325/327/333 Main Street	None (individual)	Recommended eligible
Belmont House	287 Main Street	None (individual)	Recommended eligible
Magma Clubhouse	Kumkie Court Area	None (individual)	Recommended eligible
Bob Jones House	300 Main Street	None (individual)	Recommended eligible
Commercial	350/360 Main Street	None (individual)	Recommended eligible
La Olla Motel	38 S. Magma Avenue	None (individual)	Recommended eligible
First Presbyterian Church	100 N. Magma Avenue	None (individual)	Recommended eligible
House	209 N. Magma Avenue	None (individual)	Recommended eligible
Superior High School	98 High School Avenue	None (individual)	Recommended eligible
Central School Building	199 Lobb Avenue	None (individual)	Recommended eligible

Name	Address	District or Multiple Property Listing	NRHP Status (NRHP Reference No.)
Devil's Canyon Bridge	Abandoned U.S. 60 over Devil's Canyon	Vehicular Bridges in Arizona MPS	Listed (88001681)
Queen Creek Bridge	Abandoned U.S. 60 over Queen Creek	Vehicular Bridge in Arizona MPS	Listed (88001679)
Boyce Thompson Southwestern Arboretum	2 miles west of Superior	None (individual)	Listed (76000381)

Notes: MPS = Multiple Property Submission; NRHP = National Register of Historic Places.

Table B-2. Historic Built Environment Resources in Globe

Name	Address	District or Multiple Property Listing	NRHP Status (NRHP Reference No.)
U.S. Post Office and Courthouse—Globe Main	Hill and Sycamore Streets	Historic U.S. Post Offices in Arizona	Listed (85003106)
First Baptist Church	Oak and Hill	Globe Downtown Historic District	Listed (contributing)
St. Paul's Methodist Episcopal Parsonage	S. of 141 Hill Street	Globe Downtown Historic District	Listed (contributing)
St. Paul's Methodist Episcopal Church	141 Hills Street	Globe Downtown Historic District	Listed (contributing)
Unknown	196 E. Cedar	Globe Downtown Historic District	Listed (contributing)
St. John's Episcopal Church	173 Oak Street	Globe Downtown Historic District	Listed (individually) (77000234)
Holy Angels Church	231 S. Broad Street	Globe Downtown Historic District	Listed (individually) (83003448)
Holy Angels Rectory	N. of 231 Broad Street	Globe Downtown Historic District	Listed (contributing)
Van Wagenen/Fiske Building	147 S. Broad Street	Globe Downtown Historic District	Listed (contributing)
Unknown	147 S. Broad Street	Globe Downtown Historic District	Listed (contributing)
Unknown	127 S. Broad Street	Globe Downtown Historic District	Listed (contributing)
Federal Building/Upton's Confectionary	109–127 S. Broad Street	Globe Downtown Historic District	Listed (contributing)
Gila County Jail	149 E. Oak	Globe Downtown Historic District	Listed (contributing)
Gila County Courthouse	Oak and Broad Street	Globe Downtown Historic District	Listed (individually) (75000347)
Sultan Building/Woolworth & Co.	127 N. Broad Street	Globe Downtown Historic District	Listed (contributing)
Trust Building/European Building	189 N. Broad Street	Globe Downtown Historic District	Listed (contributing)
Arizona Silver Belt/Ryan's Drug	200 N. Broad Street	Globe Downtown Historic District	Listed (contributing)
Old Dominion Commercial Co. Office	190 S. Broad Street	Globe Downtown Historic District	Listed (contributing)
Masonic Temple/Hanna Building	180 N. Broad Street	Globe Downtown Historic District	Listed (contributing)
Hamill Building	150–154 N. Broad Street	Globe Downtown Historic District	Listed (contributing)
Amster Building	104 N. Broad Street	Globe Downtown Historic District	Listed (contributing)
Arizona Eastern/Southern Pacific Depot	230 S. Broad Street	Globe Downtown Historic District	Listed (contributing)

Assessment of Effects on the Built Environment of Superior, Globe, Miami, and Top-of-the-World from the Resolution Copper Project, Pinal and Gila Counties, Arizona

Name	Address	District or Multiple Property Listing	NRHP Status (NRHP Reference No.)
Arizona Eastern/Southern Pacific Restaurant	230 S. Broad Street	Globe Downtown Historic District	Listed (contributing)
Wells Fargo Express Office	230 S. Broad Street	Globe Downtown Historic District	Listed (contributing)
Old Dominion Commercial Co. Warehouse	409 S. Broad Street	Globe Downtown Historic District	Listed (contributing)
Tebbs St. Bridge	Tebbs Street west of railroad tracks	Globe Downtown Historic District	Listed (contributing)
Concrete Footbridge	Sycamore west of railroad tracks	Globe Downtown Historic District	Listed (contributing)
Globe Fire/Police Station	131 W. Cedar Street	Globe Downtown Historic District	Listed (contributing)
Dodge Brothers Motor Cars	157 W. Cedar Street	Globe Downtown Historic District	Listed (contributing)
Unknown	207 E. Oak	Globe Downtown Historic District	Non-contributing
Unknown	137 N. Hill	Globe Downtown Historic District	Non-contributing
Unknown	139 N. Hill	Globe Downtown Historic District	Non-contributing
Pay 'N' Takit	149 S. Broad Street	Globe Downtown Historic District	Non-contributing
Valley National Bank	101 S. Broad Street	Globe Downtown Historic District	Non-contributing
Unknown	177 E. Oak Street	Globe Downtown Historic District	Non-contributing
Globe Theater	141 N. Broad Street	Globe Downtown Historic District	Non-contributing
Mountain Bell Building	196 E. Cedar	Globe Downtown Historic District	Non-contributing
IOOF Lodge House	112 N. Broad Street	Globe Downtown Historic District	Non-contributing
Mine Supply and Hardware Co.	100-112 S. Broad Street	Globe Downtown Historic District	Non-contributing
Unknown	300 S. Broad Street	Globe Downtown Historic District	Non-contributing
Globe Downton Historic District	Globe	Globe Commercial and Civic MRA	Listed (87000862)
Elks Building	155 W. Mesquite	Globe Commercial and Civic MRA	Listed (87000860)
Gila Valley Bank and Trust	292 N. Broad Street	Globe Commercial and Civic MRA	Listed (87000861)
International House	636-638 N. Broad Street	Globe Commercial and Civic MRA	Listed (88000233)
Dominion Hotel	S. Broad Street	None (individual)	Listed (78000545)
Globe Mine Rescue Station	1330 N. Broad Street	None (individual)	Listed (90000875)
La Santa Cruz de Globe	Hilltop in Ruiz Canyon, east of Navarro Drive and west of Side Canyon	None (individual)	Listed (11000205)
Pinal Ranger Station	South of Globe, TNF	Depression-Era USDA Forest Service Administrative Complexes in Arizona MPS	Listed (93000526)
Besh-Ba-Gowah	South of Globe	None (individual)	Listed (84000648)
Gila Pueblo	South of Globe	None (individual)	Listed (77000235)

Notes: MPS = Multiple Property Submission; MRA = Multiple Resource Area; NRHP = National Register of Historic Places.

Table B-3. Historic Built Environment Resources in Miami

Name	Address	District or Multiple Property Listing	NRHP Status (NRHP Reference No.)
Cordova Avenue Bridge	Cordova Avenue over Bloody Tanks Wash	Vehicular Bridges in Arizona MPS	Listed (88001690)
Inspiration Avenue Bridge	Inspiration Avenue over Bloody Tanks Wash	Vehicular Bridges in Arizona MPS	Listed (88001691)
Keystone Avenue Bridge	Keystone Avenue over Bloody Tanks Wash	Vehicular Bridges in Arizona MPS	Listed (88001692)
Miami Avenue Bridge	Miami Avenue over Bloody Tanks Wash	Vehicular Bridges in Arizona MPS	Listed (88001693)
Reppy Avenue Bridge	Reppy Avenue over Bloody Tanks Wash	Vehicular Bridges in Arizona MPS	Listed (88001689)
Bullion Plaza School	1000 Plaza Avenue	Bullion Plaza Historic District	Listed (individually)(00001591)
Miami Community Church	305 Live Oak	Miami Historic District	Listed (individually)(05000137)
Our Lady of the Blessed Sacrament Church	914 Sullivan Avenue	None (individual)	Listed (07001332)
Soderman Building	55 Chisholm	Chisholm-Roosevelt Historic District	Listed (individually) (00000465)
Gila Valley Bank and Trust	426 Gibson	Miami Historic District	Recommended eligible
Mexican YMCA	28 Miami	Miami Historic District	Recommended eligible
The Popular Building	512 Sullivan	Miami Historic District	Recommended eligible
419–423 Sullivan Street	419–423 Sullivan Street	Miami Historic District	Recommended eligible
Lazovich Building	621–623 Sullivan	Miami Historic District	Recommended eligible
Fitzpatrick Building	55–57 Keystone	Miami Historic District	Recommended eligible
Miami YMCA	40–44 Miami	Miami Historic District	Recommended eligible
90 Chisholm Street	90 Chisholm Street	Chisholm-Roosevelt Historic District	Recommended eligible
Skyline Trail	Downtown Miami	Miami Historic District	Recommended eligible
420 Gibson (commercial)	420 Gibson	Miami Historic District	Recommended contributing
422–424 Gibson (commercial)	422–424 Gibson	Miami Historic District	Recommended contributing
500 Gibson (commercial)	500 Gibson	Miami Historic District	Recommended contributing
510 Gibson (commercial)	510 Gibson	Miami Historic District	Recommended contributing
26 Miami (commercial)	26 Miami	Miami Historic District	Recommended contributing
32–38 Miami (commercial)	32–38 Miami	Miami Historic District	Recommended contributing
41–43 Miami (commercial)	41–43 Miami	Miami Historic District	Recommended contributing
45–47 Miami (commercial)	45–47 Miami	Miami Historic District	Recommended contributing
51 Miami (commercial)	51 Miami	Miami Historic District	Recommended contributing
30 Keystone (commercial)	30 Keystone	Miami Historic District	Recommended contributing
47 Keystone (commercial)	47 Keystone	Miami Historic District	Recommended contributing
46 Keystone (commercial)	46 Keystone	Miami Historic District	Recommended contributing
42 Keystone (commercial)	42 Keystone	Miami Historic District	Recommended contributing
50–52 Keystone (commercial)	50–52 Keystone	Miami Historic District	Recommended contributing
54–56 Keystone (commercial)	54–56 Keystone	Miami Historic District	Recommended not eligible

Name	Address	District or Multiple Property Listing	NRHP Status (NRHP Reference No.)
401–405 Sullivan (commercial)	401–405 Sullivan	Miami Historic District	Recommended contributing
406–408 Sullivan (commercial)	406–408 Sullivan	Miami Historic District	Recommended contributing
407 Sullivan (commercial)	407 Sullivan	Miami Historic District	Recommended contributing
411 Sullivan (commercial)	411 Sullivan	Miami Historic District	Recommended contributing
413 Sullivan (commercial)	413 Sullivan	Miami Historic District	Recommended contributing
414–416 Sullivan (commercial)	414–416 Sullivan	Miami Historic District	Recommended contributing
415 Sullivan (commercial)	415 Sullivan	Miami Historic District	Recommended contributing
417 Sullivan (commercial)	417 Sullivan	Miami Historic District	Recommended contributing
418–420 Sullivan (commercial)	418–420 Sullivan	Miami Historic District	Recommended contributing
425 Sullivan (commercial)	425 Sullivan	Miami Historic District	Recommended contributing
505 Sullivan (commercial)	505 Sullivan	Miami Historic District	Recommended contributing
508 Sullivan (commercial)	508 Sullivan	Miami Historic District	Recommended contributing
509 Sullivan (commercial)	509 Sullivan	Miami Historic District	Recommended contributing
510 Sullivan (commercial)	510 Sullivan	Miami Historic District	Recommended contributing
511 Sullivan (commercial)	511 Sullivan	Miami Historic District	Recommended contributing
514 Sullivan (commercial)	514 Sullivan	Miami Historic District	Recommended contributing
517 Sullivan (commercial)	517 Sullivan	Miami Historic District	Recommended contributing
520 Sullivan (commercial)	520 Sullivan	Miami Historic District	Recommended contributing
521 Sullivan (commercial)	521 Sullivan	Miami Historic District	Recommended contributing
525 Sullivan (commercial)	525 Sullivan	Miami Historic District	Recommended contributing
307 Live Oak (church)	307 Live Oak	Miami Historic District	Recommended contributing
314 Live Oak (commercial)	314 Live Oak	Miami Historic District	Recommended eligible
320 Live Oak (commercial)	320 Live Oak	Miami Historic District	Recommended contributing
410 Live Oak (commercial)	410 Live Oak	Miami Historic District	Recommended contributing
418 Live Oak (commercial)	418 Live Oak	Miami Historic District	Recommended contributing
511 Live Oak (commercial)	511 Live Oak	Miami Historic District	Recommended contributing
525–527 Live Oak (commercial)	525–527 Live Oak	Miami Historic District	Recommended contributing
623 Live Oak (commercial)	623 Live Oak	Miami Historic District	Recommended contributing
605 Live Oak (commercial)	605 Live Oak	Miami Historic District	Recommended contributing
601 Live Oak (commercial)	601 Live Oak	Miami Historic District	Recommended contributing
Railroad Depot (1)	Railroad at Adonis	Miami Historic District	Recommended contributing
Railroad Depot (2)	Railroad at Adonis	Miami Historic District	Recommended contributing
Warehouse	Railroad at Miami	Miami Historic District	Recommended contributing
322–324 Cactus (warehouse)	322–324 Cactus	Miami Historic District	Recommended contributing
410 Cactus (residence)	410 Cactus	Miami Historic District	Recommended contributing

Name	Address	District or Multiple Property Listing	NRHP Status (NRHP Reference No.)
72 Chisholm (rooming house)	72 Chisholm	Chisholm-Roosevelt Historic District	Recommended contributing
74 Chisholm (rooming house)	74 Chisholm	Chisholm-Roosevelt Historic District	Recommended not eligible
76 Chisholm (residence)	76 Chisholm	Chisholm-Roosevelt Historic District	Recommended contributing
79 Chisholm (apartments)	79 Chisholm	Chisholm-Roosevelt Historic District	Recommended contributing
80 Chisholm (residence)	80 Chisholm	Chisholm-Roosevelt Historic District	Recommended not eligible
82 Chisholm (rooming house)	82 Chisholm	Chisholm-Roosevelt Historic District	Recommended contributing
93 Chisholm (residence)	93 Chisholm	Chisholm-Roosevelt Historic District	Recommended not eligible
94 Chisholm (rooming house)	94 Chisholm	Chisholm-Roosevelt Historic District	Recommended contributing
95 Chisholm (apartments)	95 Chisholm	Chisholm-Roosevelt Historic District	Recommended contributing
97 Chisholm (residence)	97 Chisholm	Chisholm-Roosevelt Historic District	Recommended contributing
98 Chisholm (residence)	98 Chisholm	Chisholm-Roosevelt Historic District	Recommended contributing
101 Chisholm (rooming house)	101 Chisholm	Chisholm-Roosevelt Historic District	Recommended contributing
103 Chisholm (residence)	103 Chisholm	Chisholm-Roosevelt Historic District	Recommended contributing
107 Chisholm (rooming house)	107 Chisholm	Chisholm-Roosevelt Historic District	Recommended contributing
420 Gibson (commercial)	420 Gibson	Chisholm-Roosevelt Historic District	Recommended contributing
30 Keystone (commercial)	30 Keystone	Chisholm-Roosevelt Historic District	Recommended contributing
507a Roosevelt (rooming house)	507b Roosevelt	Chisholm-Roosevelt Historic District	Recommended contributing
507b Roosevelt (rooming house)	507b Roosevelt	Chisholm-Roosevelt Historic District	Recommended contributing
508 Roosevelt (residence)	508 Roosevelt	Chisholm-Roosevelt Historic District	Recommended contributing
510 Roosevelt (residence)	510 Roosevelt	Chisholm-Roosevelt Historic District	Recommended contributing
513 Roosevelt (rooming house)	513 Roosevelt	Chisholm-Roosevelt Historic District	Recommended contributing
1510 Laurel, #1-2-3 (apartments)	1510 Laurel, #1-2-3	Bullion Plaza Historic District	Recommended contributing
1510 Laurel, #4-5 (apartments)	1510 Laurel, #4-5	Bullion Plaza Historic District	Recommended contributing
1510 Laurel, #6-7 (commercial)	1510 Laurel, #6-7	Bullion Plaza Historic District	Recommended contributing
1526 Laurel (apartments)	1526 Laurel	Bullion Plaza Historic District	Recommended contributing
1526 Laurel (residence)	1526 Laurel	Bullion Plaza Historic District	Recommended contributing
1526 Laurel (residence)	1526 Laurel	Bullion Plaza Historic District	Recommended contributing
1526 Laurel (residence)	1526 Laurel	Bullion Plaza Historic District	Recommended contributing
1526 Laurel (apartments)	1526 Laurel	Bullion Plaza Historic District	Recommended contributing
1302 Live Oak (commercial)	1302 Live Oak	Bullion Plaza Historic District	Recommended contributing

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