

APPENDIX D - REGIONAL ACTIVITY

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1.0 INTRODUCTION

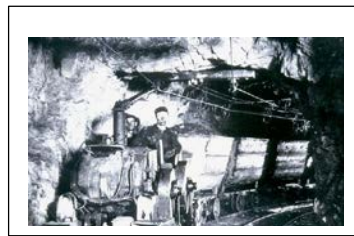
This appendix presents an overview of past, present and reasonable foreseeable regional activities that have, are, or will occur in the areas within and adjacent to the proposed tailings storage facility (TSF) at the Ray Mine. These activities involve mining, milling, copper smelting, electric transmission, transportation, recreation, community, and agricultural activities.

The purpose of this appendix is to provide the individual resource discipline specialists with information about regional activities to assist in the assessment of cumulative impacts (see Section 4.0, Cumulative Impacts, in the draft EIS). Cumulative impacts vary by resource, and the area that influences cumulative impacts can also vary for each resource area. Each resource discipline specialist can use this appendix to help determine the extent of the area to assess for the cumulative effects, as well as establish what surrounding or regional activities will contribute to the cumulative effects of their discipline.

Cumulative effects for the Project are discussed for each resource discipline in Section 4.0, Cumulative Impacts, in the draft EIS.

2.0 MINING

Copper was first discovered and claim locations were made at the site of the present-day Ray Mine in the 1880s. Since that time, the area has experienced exploration, mining and milling activities by numerous mining companies. Early mining at the site was underground.



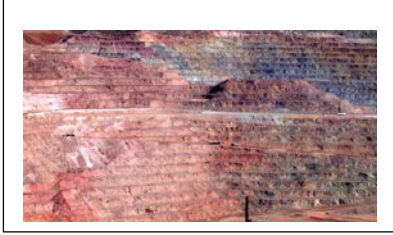
Early underground mining activities in the area of the present-day Ray Mine.

In 1933, the Kennecott Copper Corporation (Kennecott) acquired all mining interests in the area. By 1945, underground mining at the site had become difficult with a limited economic future. Investigations began about the possibility of surface mining, and, in 1952, Kennecott initiated open pit mining at an operation that is today known as the Ray Mine. By 1955, all underground mining had ceased in the area of the Ray Mine. In 1986, ASARCO LLC (Asarco) purchased the Ray Mine from Kennecott.

2.1 RAY MINE

The Ray Mine is an existing copper mine, having been in open-pit operations for over 60 years and with a resource base that would allow mining well into the future. The mine is owned and operated by Asarco, and employs approximately 850 people. The open pit involves a series of benches from which

waste rock¹ and ore² are extracted. Asarco uses conventional open-pit, surface mining techniques and equipment that include blast-hole drills, shovels, front-end loaders, off-highway trucks, motor graders, and water trucks.



Benches at the Ray Mine.



Shovel loading a truck at Ray Mine.

Asarco currently moves approximately 260,000 tons of rock material per day (this includes waste rock and ore material) using large mining shovels and/or front end loaders. Waste rock and ore material are hauled from the pit via off-highway trucks.

Waste rock is placed in permanent disposal facilities surrounding the pit. Leach ore is deposited in designated facilities, and copper is leached from these stockpiles, with the leach solution pumped to the on-site solvent extraction and electrowinning (SX-EX) facility, where cathode copper is produced.

Sulfide ore is hauled from the pit to a crushing facility.³ After crushing, the ore is conveyed to the Ray Concentrator for grinding and processing through a milling process known as froth flotation.⁴

¹ Waste rock (also commonly referred to as overburden or development rock) is the uneconomic rock material that must be broken, removed and disposed of to gain access to and excavate ore.

² Ore is the naturally occurring material from which copper bearing minerals can be extracted at a reasonable profit.

³ Some sulfide ore from the Ray Mine is also transported by the Copper Basin Railroad to the Hayden Concentrator for processing.

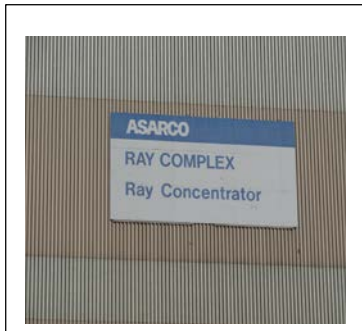
⁴ Froth flotation is the process used to separate copper minerals from other non-economic rock material in the ore. After crushing and grinding, the copper ore is mixed with: milk of lime (water and pulverized limestone) to give a basic pH; pine oil (a by-product of paper mills) to make bubbles; an alcohol (to strengthen the bubbles); and a collector chemical (a salt in the form of sodium ethylxanthate or potassium amyl xanthate).

The xanthates are added to the slurry in relatively small quantities. Xanthate is a long hydrocarbon chain molecule. One end of the chain is polar and sticks to the sulfide minerals, while the other end is non-polar and hydrophobic (which means lacking an affinity for being in water) and is attracted to the nonpolar hydrocarbon pine oil molecules.

Raising the pH causes the polar end to ionize and to stick to the copper-bearing minerals (such as chalcopyrite - CuFeS_2) and to leave pyrite (FeS_2) alone. Air is blown into the tanks and agitated like a giant blender, producing a foamy froth. The copper-bearing mineral grains become coated with xanthate molecules, which make these grains hydrophobic.

The coated copper-bearing grains attach to the oily air bubbles, which rise to the surface and flow over the edge of the tank. In this manner, the copper ore is concentrated to an eventual value of nearly 30% copper. Rock particles do not adhere to the bubbles and drop to the bottom of the tank and become tailings.

The Ray Concentrator produces a copper concentrate⁵ that is loaded into railroad cars and shipped to the Hayden Smelter, where anode copper is made and shipped to Asarco's Amarillo (Texas) copper refinery, where copper products are produced.



Flotation Cells in Ray Concentrator



Flotation "Bubbles"

Tailings are the finely-ground rock materials that remain after the copper ore has been concentrated at the Ray Concentrator. Tailings are pumped via a pipeline to a thickener, which is a large circular concrete holding tank that allows separation of tailings from the water stream by gravity settling. The purpose of thickening is to increase the solids concentration of the tailings. The overflow from the thickener is water that is recycled back to the Ray Concentrator. The underflow from the thickener (which includes both tailings and water) is pumped via pipeline to the existing Elder Gulch TSF.

Asarco currently uses the upstream method for tailings embankment construction at the Elder Gulch TSF, and this facility is currently permitted under a Section 404 Permit from the Corps and an Aquifer Protection Permit (APP) from the Arizona Department of Environmental Quality (DEQ).

The original Section 404 and APP permits were issued to Asarco in 1991, and Asarco initiated construction of the Elder Gulch TSF in 1992. The Corps approved modifications to the original permit in 1996, 1997 and 1998. In 2011, the Corps issued a new Section 404 permit for the Elder Gulch TSF that authorized:

- (1) Continued operation and expansion of the TSF to the elevation of 2,590 feet (amsl);
- (2) Construction of a stormwater diversion up-gradient of the TSF, as required in the original 1991 Section 404 and APP permits; and,
- (3) Continued placement of rock into rock deposition areas previously authorized by the Corps in the 1991 Section 404 permit, as modified.

As part of current operations, Asarco pumps the tailings slurry from the Ray Concentrator (approximately 40-50% solids by weight) through an existing pipeline to an existing thickener facility, where the tailings are "thickened" (around 60% solids by weight). Adjacent to the thickener is an existing pumping station where the tailings slurry is routed and pumped to a booster pump station and then up the embankment for storage in the impoundment portion of the Elder Gulch TSF.

⁵ Concentrates are the valuable fraction of the ore that is left after the non-economic material is removed in the milling process.

Tailings are discharged from spigots that surround the perimeter of the Elder Gulch TSF and tailings “beaches” are created using thin-layer, sub-aerial deposition techniques. The tailings discharge operations focuses on directing water to the rear of the facility to allow a pool of water to form, from which water is reclaimed and pumped to an existing water tank (identified as “Tank 34”).

From Tank 34, water is pumped to existing concrete-lined open tank, where it is combined with fresh water from Asarco’s Hayden well field. From this open tank, water is routed via pipeline to the Ray Concentrator. Asarco operates the Elder Gulch TSF as a zero-discharge facility for surface water runoff.

The Elder Gulch TSF is designed and operated as a closed circuit (zero surface water discharge) facility. Tailings are discharged from spigots that surround the perimeter of the tailings areas to form a “beach” using thin-layer, sub-aerial deposition techniques. The tailings discharge operations focuses on directing the water toward pump reclaim systems, from which water is returned to the Ray Concentrator via pipelines for reuse in the milling process.

Asarco would continue the operation of its existing Elder Gulch TSF until it reaches full capacity, expected to occur in approximately five to seven years (2019-2021)

No changes to the mining or milling (concentration) processes are being considered in this EIS analysis; alternatives focus on tailings storage. The ongoing Ray Mine open-pit mining and ore processing operations would remain the same under all action alternatives, and each TSF alternative would be supported by the existing operation, which includes continued mining, development rock removal and storage, leaching and operation of the SX-EW facility, mineral processing at the Ray Concentrator, and concentrate transport to the Hayden smelter by railroad. Many of the on-site facilities and infrastructure associated with the existing Elder Gulch TSF would continue to be used in the future for the proposed action and any other alternative.

2.2 RESOLUTION COPPER PROJECT

The Resolution Copper Project is an advanced exploration project, near the town of Superior, about seven miles northeast of the Ray Mine and along and to the west of US Highway 60. This project is operated by Resolution Copper Mining, LLC (Resolution Copper), which is a limited liability company owned 55% by Resolution Copper Company (a Rio Tinto PLC subsidiary) and 45% by BHP Copper Inc. (a BHP Billiton PLC subsidiary).

In November 2013, Resolution Copper filed a plan of operations with the Forest Service to construct and operate an underground copper mine and associated facilities, that will include multiple shafts to access the ore zone, a concentrator (mill), a tailings facility, a filtration plant and rail road load-out facility, conveyor system from the mine to the concentrator, and a pipeline infrastructure to route tailings and water. This plan of operation remains under Forest Service administrative review and must be determined “administratively-complete” before the Forest Service can undertake a NEPA compliance review.

2.3 OTHER MINES AND EXPLORATION ACTIVITIES

The areas within and surrounding the proposed Ripsey Wash TSF site and the Hackberry Gulch alternative have experienced past mining and exploration activities, but most of the disturbances caused by these activities are very limited in nature. The area has numerous small adits, shafts and test pits.

These are probably remnants of the annual work that was historically required by the government on each claim to hold possessory right or to maintain title to the claim.

3.0 HAYDEN CONCENTRATOR

Approximately 30,000 tons of ore per day is loaded into ore cars at the Ray Mine and hauled by the Copper Basin Railroad to the Hayden concentrator, which is owned and operated by Asarco near the town of Hayden, Arizona. This concentrator has been in operation since 1914 and performs the same copper processing function as the Ray Concentrator. The ore passes through a grinding circuit, followed by froth flotation. The copper concentrate from the Hayden Concentrator is then conveyed to the Hayden Smelter for further processing activity. Tailings from the Hayden Concentrator are pumped west/southwest across State Highway 177 and the Gila River for placement in existing TSFs.

4.0 HAYDEN COPPER SMELTER

The Hayden Smelter, located near the town of Hayden, Arizona, is owned and operated by Asarco, and consists of a series of furnaces and an acid plant. This smelter is only one of three remaining copper smelters in the United States⁶ and processes approximately 720,000 tons of copper concentrates per year, which are received from Asarco's Ray and Hayden Concentrators, Asarco's Mission Mine, and some third party suppliers. The Hayden Smelter is located in a SO₂ non-attainment area based on 2010 EPA SO₂ standards under the current National Ambient Air Quality Standards (NAAQS).

In June 2014, Asarco proposed plans for a \$110 million upgrade of the Hayden Smelter that will bring the facility into compliance with the new federal regulations regarding SO₂ emissions. Rules issued by EPA require that SO₂ emissions from the Hayden Smelter be reduced from 0.14 parts per million to 0.075 parts per million during a 24-hour period. The Hayden Smelter has until October 2018 to meet this standard. To meet the new EPA SO₂ standards, Asaroc plans a converter retrofit, along with installation of improved primary and secondary hoods and an electrostatic precipitator for removal of emissions prior to SO₂ capture at the smelter's existing acid plant. The plan aims to reduce SO₂ emissions at the Hayden Smelter by 85%, with a planned total SO₂ capture rate of 99.7% of what is produced during the copper smelting process.

4.1 SMELTER FURNACES

The **oxygen flash furnace** is heated with natural gas, and copper concentrates are blown into the furnace along with oxygen and a silica-bearing flux. The silica flux binds with the iron and other impurities and separates them from the copper. Liquid copper and iron fall to the bottom of the furnace, while the sulfur combines with oxygen to form sulfur dioxide gas. The copper, iron, and silica form two layers at the bottom of the furnace. The lighter, top layer is known as slag, which is composed mostly of iron and silica. The bottom layer is primarily copper and some iron and is known as matte. The matte is transferred to a converter furnace, while the slag is transported to an outside storage area to cool. Once cooled, a portion of the slag is recycled back through the Hayden Concentrator to recover any remaining copper.

⁶ The other U.S. copper smelters are located near Miami, Arizona and west of Salt Lake City, Utah.

Matte being tapped from a hole at the bottom of the oxygen flash furnace.

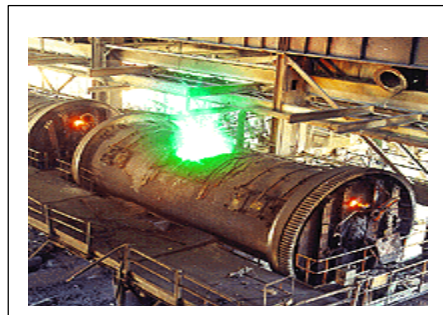


Slag being dumped to cool. The pouring of slag resembles a man-made lava flow and can be quite spectacular at night.

In the **converter furnace**, air is combined with the matte to burn away any iron and remaining sulfur, which are trapped as gases. The remaining molten metal, known as blister copper, is more than 98% pure copper, and is transferred to the **anode furnace** to remove any remaining oxygen.



Blister copper being poured



The blue-green flame from the anode furnace signifying that most of the oxygen in the copper has been burned away.

The remaining product from the anode furnace is nearly pure copper (~99.4%) that is poured into molds. Once cooled using water sprays, the copper can be lifted from the mold and is known as anode copper. The anodes are basically two-inch thick slabs of copper approximately three feet wide and three-and-a-half feet tall.

Anode copper is then loaded into rail cars or bundled on flatbed trucks for shipment to Asarco's Amarillo (Texas) copper refinery, where copper products are produced.



Copper being poured into anode molds.



Anode copper ready for shipment to Amarillo.

4.2 ACID PLANT

Sulfur dioxide gas from the oxygen flash furnace is captured and combined with water in the acid plant to produce sulfuric acid. The acid is sold as a by-product to chemical manufacturers in the United States and is transported in tanker cars to the Ray Mine for use in the leaching operations. The Hayden Smelter produces approximately 2,500 tons of high-purity sulfuric acid every day.



Acid Plant at the Hayden Smelter.

5.0 ELECTRIC TRANSMISSION LINES

The SCIP (San Carlos Irrigation Project) owns and maintains a 69 kV electric transmission line that crosses through the area of the proposed Ripsey Wash tailings storage facility. Approximately four miles of the 69 kV transmission line would be re-constructed around the north side of the Ripsey Wash TSF. The proposed relocation would meet the required standards of SCIP.

Arizona Public Service owns and operates a 500 kV electric transmission line that crosses through an area west and north of the Ripsey Wash tailings storage facility.

6.0 TRANSPORTATION

The region is served by U.S. Route 60, State Highway 77, State Highway 177 and the Florence-Kelvin highway. The Copper Basin Railroad supports the Ray Mine, the Hayden Concentrator and the Hayden Copper Smelter.

6.1 U.S. ROUTE 60

U.S. Route 60 (US 60) is an east-west United States Highway, traveling 2,670 miles from southwestern Arizona to the Atlantic coast in Virginia. The westernmost stretch of US 60 in Arizona has been replaced by U.S. Interstate 10. The western terminus of US 60 is near Brenda, Arizona, where it travels northeast to Wickenburg. US 60 bears southeast and enters the Phoenix metropolitan area, where it becomes Grand Avenue. The highway joins Interstate 17 and Interstate 10 in Phoenix for approximately 14 miles before it exits Interstate 10 onto the Superstition Freeway. Here, US 60 is a significant part of the local commuter freeway system, serving cities such as Mesa, Gilbert and Apache Junction. East of the Phoenix area, US 60 bears roughly east-northeast passing through the town of Superior where it has a junction with State Highway 177. East of Superior, US 60 runs through mountainous areas, passing through Globe, Show Low and Springerville before exiting the state at the border with New Mexico.

6.2 STATE HIGHWAY 77

State Highway 77 (SR 77) is a long route (mostly two-lane and asphalted) that begins in the Navajo Nation north of Interstate 40 and travels south to Holbrook and Show Low. Meeting up with U.S. 60, it connects to Globe, and then follows U.S. 70 for a short distance before branching off to continue south to Winkelman. After meeting State Highway 79 at Oracle Junction, the road continues south to Tucson, where it connects to U.S. Interstate 10 at the Miracle Mile interchange.

6.3 STATE HIGHWAY 177

State Highway 177 (SR 177) is a two-lane, asphalt, 32-mile long state highway that connects the towns of Superior on the north and the communities of Hayden/Winkelman on the south. SR 177 passes adjacent the communities of Kelvin, Riverside and Kearny. The Ray Mine is accessed from SR 177.

A 15-mile long stretch of SR 177 (between mileposts 149 and 164) is designated as the Copper Corridor Scenic Road West, which is an Arizona scenic road. This scenic corridor was established in October 2008 and offers views of high desert ecology and the Ray Mine open pit operations.

6.4 FLORENCE KELVIN HIGHWAY

The Florence-Kelvin highway is a 32-mile long, two-lane road that connects State Highway 79 south of the town of Florence to State Highway 177 near the community of Kelvin and near the entrance to the Ray Mine. Approximately 12 miles of this highway is paved with asphalt from its junction with State Highway 79 (near Florence) but the remaining portion is a graveled surface roadway. Pinal County maintains this road.

In late 2014, Pinal County plans to begin construction of a new 2-lane bridge for the Florence-Kelvin highway over the Gila River. This new bridge is being funded by the Arizona Department of

Transportation and will be completed in 2015. The new Gila River Bridge will replace the current bridge, which will remain and become part of the Arizona National Trail.

6.5 COPPER BASIN RAILROAD

The Copper Basin Railroad is a 54-mile long Arizona short-line railroad that operates from a connection with the Union Pacific Railroad at Magma Junction to an interchange connection with the San Manuel Railroad near the town of Hayden. The railroad principally parallels the Gila River but has an approximate seven mile branch line that connects to the Ray Mine.

The original railroad line was constructed by the Atchison, Topeka and Santa Fe Railway between 1902 and 1904 to serve mining activities in the area. The railroad passed through various ownership interests until it was purchased by Asarco in 2006. The railroad today serves the Ray Mine, transporting ore material to the Hayden Concentrator and copper concentrates to the Hayden Smelter and returning sulfuric acid from the Hayden Smelter to the Ray Mine. The railroad also hauls concentrates and acid to the main line railroad for other customers.

7.0 RECREATION

The dominant recreational use in the area of the Ray Mine is dispersed and includes hunting, off-road vehicle driving, driving for pleasure and sight-seeing, horseback riding, target shooting, mountain biking and hiking. The Arizona National Scenic Trail (Arizona Trail) and the White Canyon Wilderness area are located in the area and are addressed below. A portion of State Highway 177 is designated as an Arizona scenic road (the "Copper Corridor Scenic Road West") as addressed in Section 6.3, State Highway 177, in this appendix.

7.1 ARIZONA NATIONAL SCENIC TRAIL

The Arizona Trail is a recreational and scenic trail that is approximately 800 miles long and crosses Arizona from Mexico to Utah. A segment of the Arizona Trail is located within the area of the proposed Ripsey Wash TSF and must be relocated to allow construction activities. The Arizona Trail is included in the Pinal County Open Space and Trails Plan.

A working group comprised of representatives of Pinal County, Arizona Trail Association, BLM, Forest Service, Corps (through its EIS third-party contractor), and Asarco was formed to assess possible relocation alternatives for the Arizona Trail around the proposed Ripsey Wash TSF. This working group held numerous discussions in 2013 and 2014 about the relocation issue, and a trail contractor (Southwest Trail Solutions) was retained to scout possible bypass routes on both the east and west side of the proposed Ripsey Wash TSF. Southwest Trail Solutions provided recommendations to the Arizona Trail working group for a bypass. After considering the findings presented by the trail contractor and internal deliberations, the working group decided to recommend to the Corps that if a TSF is conducted in the Ripsey Wash area, then a bypass to the east of the Ripsey Wash TSF should be selected as the bypass option because such a routing would conform to the original objectives of establishing and maintaining a diverse and scenic trail across the state of Arizona. Bryce Thomson Arboretum

The Boyce Thompson Arboretum is the largest and oldest botanical garden in the state of Arizona. It is one of the oldest botanical institutions west of the Mississippi. Founded in 1924 as a desert plant

research facility and “living museum”, the Arboretum is located on U.S. Highway 60, about three miles west of the town of Superior.

The Arboretum has a visitor’s center, gift shop, research offices, greenhouses, and demonstration garden, picnic area, and a looping 1.5-mile primary trail that leads visitors through various exhibits and natural areas. Over 2,600 species of arid land plants from around the world grow at the Arboretum.

7.2 SUPERSTITION WILDERNESS

The Superstition Wilderness area is approximately 160,000 acres in size and is located in about 12 miles northwest of the proposed Ripsey Wash TSF. The Superstition Mountains were named as a Primitive Area in 1939, and the U.S. Congress established this area as a wilderness area in 1964. Elevations in this wilderness range from approximately 2,000 feet on the western boundary to around 6,262 feet on Mound Mountain. In the western portion, rolling land is surrounded by steep, even vertical terrain. Weaver’s Needle, a dramatic volcanic plug, rises to 4,553 feet. Vegetation is primarily that of the Sonoran Desert, with semi-desert grassland and chaparral higher up. Dense brushland covers hundreds of acres. A few isolate pockets of ponderosa pine are found at the highest elevations. Recreational activities in this area include hiking, rock climbing and photography.

7.3 WHITE CANYON WILDERNESS

The White Canyon Wilderness area is approximately 5,800 acres in size and is located in Pinal County, about four miles west of the Ray Mine. This wilderness area was established by the U.S. Congress in 1970 and includes the southeast portion of the Mineral Mountains. The two major topographic features of the area are White Canyon, with its numerous side canyons, and the Rincon, a large escarpment that towers above the valley floor. Recreational activities in this area include hiking, rock climbing and photography. Some lands around the White Canyon Wilderness area are not federally administered, so visitors to the wilderness area must seek permission to cross these non-federal lands; Asarco is one of these landowners. Some of these legal access issues may be resolved under the Ray Land Exchange.

Battle Axe Road with the White Canyon Wilderness in the background.



7.4 NEEDLE’S EYE WILDERNESS

The Needle’s Eye Wilderness area is approximately 8,760 acres in size and is located in Gila County, about 22 miles east of the Ray Mine. This wilderness area is managed by the Bureau of Land Management (BLM).

The Mescal Mountains trend northwest across the center of the area, and its southwest flank forms a spectacular striped dip-slope of Paleozoic limestone over 2,500 feet high. Slicing through this range is the Gila River, which enters three canyon segments with 1,000-foot walls known as the Needle’s Eye. A deep, entangled riparian zone covers the narrow river channel, forming the southern boundary of this area. Several small slick-rock canyons bisect the area and wind to the Gila River.

Currently, there is no legal access to the Needle’s Eye Wilderness area. The area can be accessed from the Coolidge Dam, but visitors must obtain a recreation permit from the San Carlos Apache Indian Tribe in advance. From Highway 77, about 26 miles south of the town of Globe, this wilderness area can be accessed from near Dripping Springs Wash. Visitors must obtain permission to cross State Trust lands and private lands in advance.

7.5 ARAVAIPA WILDERNESS

The Aravaipa Canyon Wilderness area is approximately 19,410 acres in size and is located in Graham and Pinal counties, approximately 33 miles southeast of the Ray Mine. This wilderness area is managed by the Bureau of Land Management (BLM). This wilderness includes the 11-mile long Aravaipa Canyon, as well as surrounding tablelands and side canyons. A BLM permit is required to enter this wilderness. The Nature Conservancy’s Aravaipa Canyon Preserve protects 7,000 acres of private land and is contiguous with the BLM wilderness area. Pedestrian access to the preserve is allowed only with prior authorization from Preserve staff.

8.0 COMMUNITIES

8.1 APACHE JUNCTION

Apache Junction is an incorporated city in Maricopa and Pina Counties, east of the city of Phoenix. It has a population of nearly 40,000 people. Apache Junction is named for the junction of the Apache Trail and U.S. Route 60.

8.2 GOLD CANYON

Gold Canyon is an unincorporated city in Pinal County about eight miles southeast of Apache Junction and about 25 miles northwest of Superior. Many of the homes in Gold Canon have been built since 2000, and the community has an estimated population of approximately 10,000 people, but this number swells to about double that number in the winter as “snow-birds” come to enjoy the area. There are five 18-hole championship golf courses within Gold Canyon.

8.3 HAYDEN

Hayden is an incorporated town located in Pinal and Gila counties about 18 miles southeast of the Ray Mine on SR 177. The town has an estimated population of slightly more than 800 people.

8.4 KEARNY

Kearny is an incorporated town located in Pinal County about ten miles southeast of the Ray Mine and south and west of State Route (SR) 177. The town has a population of approximately 2,800 people.

Kearny was named for U.S. Army General Stephan Kearny, who camped in this area along the Gila River in the late 1880s. The town was created and established in the mid-1950s. At that time, Kennecott Mining Company operated the Ray Mine, and they funded the development of Kearny as a planned community for the residents of Sonora, Ray and Barcelona, towns which would be engulfed by continuation of the Ray Mine open pit operations. Kearny has many services and amenities, including a grocery store, hardware store, auto parts store, post office, banking, pharmacy, medical facilities, a motel, gas station, and restaurants.

8.5 KELVIN

Kelvin is an unincorporated community located in Pinal County about one mile south-southwest of the Ray Mine, west of SR 177 on the Florence-Kelvin highway. Kelvin's exact population is unknown but is less than 50.

Kelvin was allegedly named for Lord Kelvin, an English or Scottish physicist who was a large investor in the early mining activities in this area. The town that became Kelvin was originally a stage coach stop that was known as Riverside, and Riverside itself was moved a short distance up the Gila River.

8.6 RIVERSIDE

Riverside is an unincorporated community located in Pinal County about two miles south-southwest of the Ray Mine, south SR 177 and the Florence-Kelvin highway. Riverside's exact population is unknown but is less than 100.

8.7 SUPERIOR

Superior is an incorporated town located in Pinal County about 17 miles northwest of the Ray Mine at the junction of SR 177 and State Highway 60. The town has a population of approximately 2,800 people. Mining and exploration have occurred in and around this area since 1870s, when a number of claims were filed, collectively became known as the Silver Queen Mine.

The town of Superior was founded in 1902 and was named after the Lake Superior and Arizona Mining Company (LS&A). William Boyce Thompson, a mining engineer from Montana, formed the Magma Copper Company, purchased mining claims in the area in 1910 (including LS&A) holdings and changed the Silver Queen Mine to the Magma Mine. Mr. Thompson established the Boyce Thompson Arboretum to study plants and to help educate the public. The Arboretum is today a renowned sanctuary with a diverse plant collection.

Magma Copper Company became part of Newmont Mining Corporation in 1969, but again became an independent company in 1987 when Newmont spun it off. The Magma Mine was closed in 1995 due to economic reasons, and the property was purchased by BHP Copper Inc. in 1996.

Superior has hosted numerous Hollywood filmmakers and served as the location for several films, including *How the West Was Won*, *The Prophecy*, *U-Turn*, and *The Fugitive*.

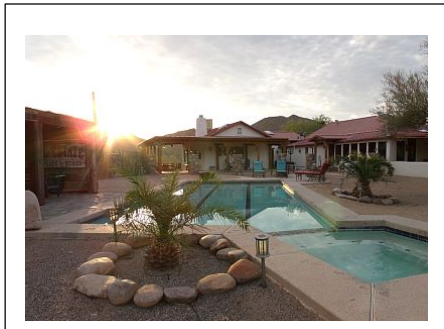
8.8 WINKELMAN

Winkelman is a town mostly located in Gila County about 20 miles southeast of the Ray Mine at the junction of SR 177 and State Highway 77. The town has a population of approximately 600 people.

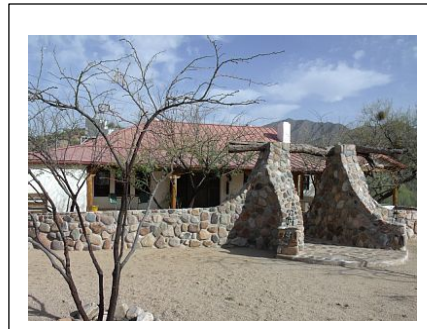
9.0 AGRICULTURE

9.1 A DIAMOND RANCH

The A Diamond Ranch is located on the south side of the Gila River between Ripsey Wash and Zelleweger Wash and north of the Florence-Kelvin highway and the Copper Basin Railroad. This ranch property covers approximately 68 acres of private surface estate, but holds grazing right leases on roughly 21,000 acres of State of Arizona and the BLM administered lands. The Ranch manages about 300 head of cattle.



Swimming pool in the back yard of the ranch.



Front entry to the ranch headquarters.

The owners of the A Diamond Ranch offer the main ranch house (3,200 ft²) as a vacation rental where visitors can stay and enjoy the property, which includes a swimming pool, or partake in outdoor activities such as bird watching along the Gila River, horseback riding, or off-road vehicle (ORV) recreational uses .

Asarco has an option to purchase this property. The ranch buildings are located north of the proposed Ripsey Wash TSF.

9.2 OTHER RANCHES

Other ranches in the area include Rafter 6, Battleaxe, Crescent and Sleeping Beauty; these ranches also hold grazing right leases on State of Arizona and BLM administered lands.

9.3 FARMING

Most farming in the region is conducted in western Pinal County, down-drainage of the Ashurst-Hayden Diversion Dam which is located east of the community of Florence. Much of the farming is for cotton harvest, although farms in this region raise wheat, barley, and forage for hay and silage.

10.0 DAMS AND RESERVOIRS

10.1 SAN CARLOS RESERVOIR

The San Carlos Reservoir is located approximately 40 miles upstream of the Ray Mine and impounds the Gila River behind the Coolidge Dam for the benefit of the San Carlos Irrigation Project (SCIP), which is administered by the US Bureau of Indian Affairs. The average annual flow in the Gila River below the Coolidge Dam for 2013 was approximately 231 cubic feet per second (cfs).

SCIP operates the Coolidge Dam and typically releases natural flow of the Gila River and stored water in the San Carlos Reservoir in response to SCIP's downstream water demands. The San Carlos Irrigation and Drainage District (SCIDD) includes approximately 50,000 acres of private and public lands.

10.2 ASHURST-HAYDEN DIVERSION DAM

Water from the Gila River is diverted for irrigation from the Ashurst-Hayden Diversion Dam that is located about 10 miles east of the town of Florence. Asarco also has certain rights to call for a release of water from the dam's reservoir, pursuant to its Globe Equity Decree rights.

11.0 ASARCO-BLM RAY LAND EXCHANGE

The Ray Land Exchange began in 1994 with a proposal from Asarco to acquire Bureau of Land Management (BLM) lands near or adjacent to Asarco's Ray Mine operations and in the Casa Grande vicinity, in exchange for private parcels of land that Asarco owns and which have been identified by the BLM as desirable for public ownership. This land exchange is separate and distinct from the Ray Mine tailings storage facility (TSF) and the Asarco permitting work for a new TSF, but a portion of the lands to be used for the Hackberry Gulch TSF alternative is included in the proposed land exchange.⁷

Asarco would acquire approximately 8,196 acres of public lands (where both the surface and mineral estate are administered by the BLM) and approximately 2,143 acres of mineral estate lands (where the surface estate is owned by Asarco and the mineral estate is administered by the BLM). In addition, Asarco identified approximately 637 acres of BLM mineral estate lands near Casa Grande, Arizona, where Asarco owned the surface estate. All of these lands, referred to as the "selected lands", total approximately 10,976 acres.

In exchange for the selected lands, Asarco has offered 7,304 acres of private land that they own that the BLM has identified as desirable for public ownership and management. These "offered lands" possess resource qualities considered to be of significant value to the public and have been identified for acquisition by the BLM the highly valuable resource lands include parcels within or adjacent to wilderness areas and Areas of Critical Environmental Concern (ACEC), lands containing riparian areas, and lands that serve as habitat for endangered species and other special status wildlife species, such as the desert tortoise.

⁷ If the Ray Land Exchange is not consummated, and the Hackberry Gulch TSF alternative is selected, Asarco would be required to submit a plan of operations to the BLM for the construction, operation and closure of the TSF in compliance with 43 CFR subpart 3809 regulations.

The BLM issued a final EIS in 1999 regarding the land exchange, followed by a Record of Decision (ROD) on April 27, 2000, which approved the land exchange. The final EIS and ROD were challenged by three environmental groups, both administratively and in federal court, ultimately prevailing in the Ninth Circuit Court of Appeals in September of 2010. The Ninth Circuit concluded that the BLM violated the National Environmental Policy Act (NEPA) and the Federal Lands Policy and Management Act (FLPMA) in "assuming without explanation that Asarco would perform mining operations on the selected lands in the same manner regardless of the land exchange." The court recognized that Asarco has the right to conduct mining and related activities under the General Mining Law, based on Asarco's mining and mill site claims on the selected lands. But, the court believed that the manner and extent of mining was likely to differ depending on whether the selected lands are owned by the United States as public lands subject to BLM's surface use regulations at 43 CFR subpart 3809 or by Asarco as private lands in fee simple, in which case the BLM surface use regulations would not apply.

Given that the deficiencies identified by the Ninth Circuit Court of Appeals were narrow in scope, the BLM determined that conducting the requested analysis would be completed in a Supplemental EIS as the appropriate tool. The BLM plans to issue a Draft supplemental EIS in late 2015 or early 2016 and will probably set forth a 45 day public comment period following publication.

The BLM is supportive of the Ray Land Exchange because the offered lands include lands that the BLM has identified as having significant resource value and are beneficial for public acquisition. From Asarco's perspective, the primary purpose of the land exchange is to acquire simple fee title to the selected lands to consolidate Asarco's landholdings and permanently secure Asarco's rights through private ownership. This will prevent future title disputes or problems related to land ownership that often arise in connection with unpatented mining claims in similar interests. Private ownership is important to protect Asarco's current and future investment in its mining and mineral processing facilities.

A portion of the selected lands are to be developed and used for mining activities. A substantial portion of the selected lands would serve as buffer lands or have no specific use currently identified. The offered lands will be acquired by the federal government for their natural resource values and because parcels within or adjacent to wilderness areas and ACEC, lands containing riparian areas, and lands that serve as habitat for endangered species and other special category wildlife species. The offered lands are not comparable to the selected lands in any way except that they will be adjusted in size to have close to comparable monetary value before the exchange is finalized. Separate and specific appraisals will be done for each property component and evaluation results will be calculated for each side of the exchange. The BLM's initial estimate is that the values of the offered lands are close to being equal to those of the selected lands.

12.0 BLM PROPOSED SPECIAL MANAGEMENT AREAS

In its December 1988 Proposed Phoenix Resource Management Plan (RMP) and Final EIS, the BLM proposed several areas for special management. There are two of these areas (the Middle Gila Cultural Resource Management Area and the Gila River Riparian Management Area) that are located adjacent or within the northernmost portion of the area to be used for the proposed Ripsey Wash TSF. Information about these two BLM management areas is set forth in **Table D-1, BLM Special Management Areas within or adjacent to Proposed Ripsey Wash TSF.**

Table D-1, BLM Special Management Areas within or adjacent to Proposed Ripsey Wash TSF⁽¹⁾

| BLM Special Management Area (SMA) | Federal, State and Private Estate (Acres) | Current Designation | BLM Management Goals | BLM Planned Actions |
|---|---|--|--|--|
| Middle Gila Cultural Resource Management Area | Federal: 21,940 State: 7,240 Private: 1,520 Total: 30,700 ⁽²⁾ | Under withdraw for federal water projects | Manage for information, public and conservation values | Develop an activity plan. Limit motorized vehicles to existing roads and trails. Acquire lands |
| Gila River Riparian Management Area | Federal: 15 miles ⁽³⁾ | Under withdrawal for federal water projects. | Improve conditions of riparian vegetation and aquatic habitat for native fish; enhance water quality; limit salinity discharges. | Develop an activity plan. Limit motorized vehicles to existing roads and trails; prohibit surface occupancy for oil/gas development in riparian zone |
| Notes: | | | | |
| <p>(1) See Table 2-4, Areas Proposed for Special Management, Bureau of Land Management, Phoenix District, Arizona, on pages 24 and 25 of the December 1988 Proposed Phoenix Resource Management Plan and Final EIS.</p> <p>(2) The area of tailings storage at the Ripsey Wash TSF is located on state and private ground. Asarco is working with Arizona State Lands Department to purchase the state lands. Less than 1% of the proposed disturbance for the Ripsey Wash TSF would be located on BLM-administered lands. See Table 2-1, Summary of Ripsey Wash TSF Alternative, in Chapter 2 of the draft EIS. The proposed disturbance on BLM-administered lands would involve a portion of tailings/return water pipelines and a portion of the relocated SCIP powerline.</p> <p>(3) The tailings/water return line bridge over the Gila River is the only encroachment with the Gila River Riparian Management Area.</p> | | | | |