U.S. OPERATING COPPER MINES:

FAILURE TO CAPTURE & TREAT WASTEWATER

BY BONNIE GESTRING, MAY 2019

In 2012, Earthworks released a report documenting the failure to capture and treat mine wastewater at U.S. operating copper mines accounting for 89% of U.S. copper production.[1] The report found that 92% failed to capture and control mine wastewater, resulting in significant water quality impacts. This is an update to that effort. We reviewed government and industry documents for fifteen operating open-pit copper mines, representing 99% of U.S. copper production in 2015 – the most recent data on copper production available from the U.S. Geological Survey (see Table 1). **Our research found similar results: 14 out of 15 (93%) failed to capture and control wastewater, resulting in significant water quality impacts (see Table 2).** These unauthorized wastewater releases occurred from a number of different sources including uncontrolled seepage from tailings impoundments, waste rock piles, open pits, or other mine facilities, or failure of water treatment facilities, pipeline failures or other accidental releases.

TABLE 1:
Copper production from top 15 (as of 2015) U.S. open-pit copper mines (most recent data available from USGS).[2]

MINE	PRODUCTION (metric tons)
Morenci	481,000
Chino	142,000
Safford	91,600
Bagdad	95,300
Bingham Canyon	92,000
Sierrita	85,700
Ray	75,100
Pinto Valley	60,400
Mission Complex	68,300
Robinson	56,800
Tyrone	38,100
Continental pit	31,000
Phoenix	21,100
Miami	19,500
Silver Bell	19,300
Total (99% of U.S. production)	**1,377,000**
U.S. Total Copper Production	**1,380,000**

TABLE 2:
Wastewater capture and treatment failures at top 15 (as of 2015) producing U.S. open-pit copper mines.

MINE	DOCUMENTATION OF WASTEWATER CAPTURE AND TREATMENT FAILURE
Morenci	In 2012, the US Department of Justice and Department of Interior jointly announced that Freeport McMoRan agreed to pay $6.8 million to settle federal and state natural resource damages related to the Morenci Mine.[3] According to the complaint, the hazardous substance release, which included sulfuric acid and metals, injured, destroyed or led to the loss of "surface waters, terrestrial habitat and wildlife, and migratory birds."[4] The 2012 consent decree concluded that "mine tailings exposed to air and precipitation released hazardous substances on the surface of the tailings or that can percolate through the tailings to groundwater."[5] The consent decree found that "releases of hazardous substances at or from the Morenci Mine site have occurred and allege that such releases have caused injuries to natural resources at and in the vicinity of the site including surface water, sediments, soils, terrestrial habitats and terrestrial receptors." The investigation in support of the consent decree found that the main ore minerals are sulfide minerals, which have resulted in the development of acid mine drainage. According to the report, "Surface water has been, and most likely continues to be, exposed to hazardous substances released from the Morenci Mine through a variety of pathways."[6] It also found that "Concentrations of total and dissolved zinc have exceeded 1,000 ug/l in the Gila River and concentration of dissolved copper have exceeded 100 ug/l in the San Francisco River."[7] Contaminated groundwater is also released to surface water via seeps and springs. In 2011, the State of Arizona reached a settlement of $150,000 with the Morenci Mine for the release of acidic solution directly into Lower Chase Creek from a stormwater pipe.[8] The material travelled more than two miles, in violation of the mine's discharge permit. The discharge occurred due to an operator error, in which the process solution pipeline was connected to the stormwater pipeline. Pollutants in the discharge exceeded surface water quality standards for copper, zinc and pH in Lower Chase Creek.
Chino	In 2019, the Chino Mine released 2 million gallons of tailings slurry due to a failed coupling on the pipeline that carries tailings from the concentrator to the tailings pond.[9] The tailings flowed into a diversion of Whitewater Creek upstream from James Canyon Reservoir, and the report found that it was "likely that an unknown volume of the aqueous portion of the tailings slurry, some of the tailings solids entered the reservoir."[10] The reservoir is being pumped down to determine what volume of tailings solids entered the reservoir. In 2011, the U.S. Department of Justice and State of New Mexico issued a consent decree for damages to natural resources from hazardous substances from the Chino Mine.[11] The settlement followed an investigation of natural resource injuries related to the release of hazardous substances into the environment from acid mine drainage and process solution, among other sources. It found that, "surface water and associated sediments are exposed to hazardous substances released from the Chino Mine through a variety of pathways, including leaks and spills of process water, tailings spills; runoff, and infiltration or percolation from tailings and waste stockpiles."[12] Groundwater contamination from tailings pond #7, which became active in 1988, has occurred to the east, west and south of impoundment. It also found that hazardous substances have been released into groundwater at the Chino mine from multiple source areas.[13] Concentrations of hazardous substances in groundwater in exceedance of water quality standards confirm release to groundwater throughout the Chino Mine. Groundwater flow modeling for the North Mine area indicates that contaminated groundwater in four of these areas is not captured by dewatering in

MINE	DOCUMENTATION OF WASTEWATER CAPTURE AND TREATMENT FAILURE
Chino (cont'd)	the main pit. In the South Mine area, groundwater has exceeded standards for manganese and cadmium at Middle Whitewater Creek, Hurley and Lake One, and has exceeded standards for copper at Lake One. A 2012 assessment of groundwater impacts concluded that contaminated seepage from the mine will require water treatment in perpetuity.[14] In 2009, the State of New Mexico reached a settlement of $279,000 with the Chino Mine after the release of one million gallons of process solution that overflowed a containment sump and travelled more than 2 ½ miles down a surface water tributary near the mine in 2007.[15]A 2003 ecological risk assessment reported elevated concentrations of the hazardous substances copper and zinc in surface water from five different drainages at the Chino Mine, including Hanover/Whitewater Creek, Bayard Canyon, Bolton Draw, the unnamed drainage between Bolton Draw and Lampbright Draw and Lambright Draw.[16] The areal extent of injured alluvial and regional groundwater at the Chino Mine is 13,935 acres.
Safford	No documentation of unauthorized seepage or releases of unauthorized wastewater.
Bagdad	There have been numerous spills, including a broken pipeline in 2009 causing a release of 2.3 million gallons of sulfuric acid into the surrounding soils,[17] and a 1999 report of 12,000 gallons of process water with residual chlorine spilled into Bridle Creek.[18] According to a 2006 study, a tailings impoundment at the Bagdad Mine failed in 1991 and discharged to Copper Creek. Elevated concentrations of mercury, phenols, ammonia, copper and acidity occurred in Boulder and Copper creeks, resulting in a fish kill.[19] Water quality monitoring from 1998-2002 in Boulder Creek found water quality exceedances for arsenic, lead, mercury, and selenium. In Burro Creek, there were water quality exceedances for copper and mercury. In Butte Creek, there were water quality exceedances for mercury and selenium. In 1996, the EPA and the state of Arizona announced that Cyprus Bagdad Copper Corp., a subsidiary of Cyprus Mineral Corp., paid penalties totaling $760,000 for discharging contaminated water from the Bagdad Copper Mine.[20] The discharges involved various facilities including tailings ponds, leach dumps, and a sewage treatment plant.[21] According to an EPA report, seepage of pregnant leach solution from the Copper Creek Leaching System was discovered in a receiving pool in Boulder Creek in 1991.[22] Studies indicated that instead of being contained by the Copper Creek Flood Basin, the heavily contaminated solution seeped under the dam. The concentration of total copper in samples collected in the pool in Boulder Creek were as high as 76.4 mg/l. On March 29, 1993, U.S. EPA issued a Finding of Violation and Order against Cyprus.[23]
Bingham Canyon	Wastewater from the mine has escaped the site's collection system, contaminating groundwater with acid, metals and sulfates. The groundwater plume extends towards the Jordan River and covers and extensive area – contaminating the drinking water aquifer used by Salt Lake City residents.[24] Water treatment will be required in perpetuity.[25] In February 2008, the United States Fish and Wildlife Service took legal action against Kennecott for the release of hazardous substances from the mine's facilities, including selenium, copper, arsenic, lead, zinc and cadmium.[26] Groundwater contaminated by mine operations has been released from the mine site through artesian springs into areas that serve as fish and wildlife habitats. According to the federal biologists, the release of these hazardous pollutants has harmed natural resources, including migratory birds and their support ecosystems, which includes wetlands, marshes, freshwater wildlife habitats, playas and riparian areas and freshwater ponds.[27] The 2002 Record of Decision for the Kennecott North Zone Site, which includes the Magma tailings impoundment, describes leaching of contaminants through the berm and into

MINE	DOCUMENTATION OF WASTEWATER CAPTURE AND TREATMENT FAILURE
Bingham Canyon (cont'd)	groundwater and surface water, with adverse effects on biota.[28] The 2002 ROD also indicates that there were several incidences when poor-quality water was discharged from the south tailings pond into the Great Salt Lake in violation of state's water quality permit (UPDES). The 2002 ROD also documents discharges from the newer North tailings dam in violation of the discharge permit (UPDES permit).
Sierrita	Seepage from the 3,600-acre tailings pond at the Sierrita mine has sent a plume of contaminated groundwater toward the city of Green Valley, Arizona, causing drinking water wells to record high levels of sulfates.[29] The collection system failed to completely capture the contaminated mine seepage. Public water supply wells owned and operated by the Community Water Company and serving the community of Green Valley have been affected by the sulfate contamination. In 2006, the company signed a mitigation order on consent with the State of Arizona to address sulfate in drinking water. According to an ADEQ fact sheet, sulfate levels in monitoring wells have been about 1,000 – 2,000 mg/l.[30] High sulfate levels are known to cause diarrhea and harm the digestive system. From 1992-1994, the Sierrita Mine discharge contaminated process water and stormwater run-off to Demetrie Wash and its tributaries from various overflows, seepages and pipeline leaks and breaks.[31] In January 1993, a leak in a pipeline transporting process water discharged approximately 200,000 gallons of a mixture of process water and stormwater run-off to an unnamed tributary of Demetrie Wash.[32] Also in July 1993, a report of a discharge of approximately 2,700,000 gallons into the same wash as a result of another pipeline break.[33] Approximately 450,000 gallons were released to the wash in October 1993 by a broken pipeline. Each release involved contaminated water derived from a mixture of tailings reclaim water and groundwater pumped from an interceptor well.[34]
Ray	In 2012, seepage from the tailings impoundment was released into two catch basins and into a tributary of the Gila River.[35] At the time of the report, seepage into the tributary was estimated at 75 gpm.[36] The incident occurred as a result of operator error during the initiation of a new upstream construction method at its Elder Gulch Tailings Impoundment in 2011.[37] A delay in the completion of the tailings distribution line resulted in the uneven distribution of the tailings, which in turn caused the ponded water to migrate, and eventually be released from the impoundment into drainages. The seep was discovered on January 30, 2012, and seep flow from the embankment was observed to have stopped on February 7, 2012. All four surface water samples exceeded the limits for selenium. In 2011, a report of 6,000 to 8,000 tons of copper ore tailings released from one of the tailings ponds due to a breach in the dike. The company failed to operate and maintain all listed permitted facilities in its Aquifer Protection Permit No. P-100507 to prevent the unauthorized discharge of copper ore tailings.[38] In April 2009, the Department of the Interior and the State of Arizona, acting as natural resource trustees (Trustees) received a monetary settlement and three parcels of land from ASARCO, L.L.C. through the Natural Resource Damage Assessment and Restoration (NRDAR) program to account for injuries to trust resources incurred through multiple releases of hazardous substances by ASARCO L.L.C. into Mineral Creek and the Gila River in Pinal County, Arizona.[39] In 2007, a leak from a coupling in a tailings pipeline spilled tailings onto the banks and into the Gila River.[40] A $20,000 civil penalty was paid. According to the report, the pipeline had been in use since the construction of "d" tailings impoundment (about 1985), was in good condition, and was visually inspected on a frequent basis.

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Ray Mine (cont'd)	According to a 2012 ecological risk assessment by the State of Arizona, "The site of injury stretches from the Ray Mine and the Hayden Facility, to the Gila River from the Ashurst- Hayden Diversion Dam, upstream past the confluence of the San Pedro and Gila Rivers, and for a distance of 5 miles up each of those rivers beyond the confluence and to Mineral Creek from its confluence with the Gila River upstream to a point one mile above the Big Box Canyon Dam."[41] The most substantial injuries occurred in the reach of Mineral Creek that extends from the tunnel outlet to the Gila River. The report finds that, "Dissolved copper concentrations in the surface water of this reach have been recorded up to 130 times surface water quality standards that will sustain aquatic life, and sediment copper concentrations have been recorded to exceed up to 22 times the level beyond which injury is inflicted on sediment-dwelling organisms (MacDonald et al. 2000)."[42] These concentrations of copper caused a complete loss of aquatic life in this reach. Overall, the report found that, "ecosystem services lost in the 117 acres that include Mineral Creek and its associated riparian habitat were estimated to be 100% from 1981- 2005, and up to 50% from 2005 to the present (Lipton 2009). Hazardous releases also affected the aquatic and riparian portions of the Gila River near the Ray Mine/Hayden Smelter Complex, including approximately 2,930 acres upstream of Mineral Creek to the confluence with the San Pedro River, and approximately 1,620 acres downstream of Mineral Creek to the Ashurst-Hayden Dam. The most substantial loss of ecosystem services in these areas occurred during the three years following the release of 300,000 tons of tailings in 1993, when ecosystem service losses were estimated at 10-25% (Lipton 2009)."[43]
Pinto Valley	In 2010, a report of a storm event that caused 5,362 tons of tailings to spill onto soil and Pinto Creek, including 214 pounds of arsenic and 11 pounds of lead.[44] According to the report, 500 cubic yards were released into water. Pinto Creek is a tributary to Roosevelt Lake. In 2007, a release of impounded storm and seepage water occurred due to a flange separation in a tailings line. The unexpected release washed out a section of the secondary containment, which allowed it to escape. An estimated 45,000 gallons of stormwater and tailings seepage reported to an unnamed tributary of Pinto Creek.[45] In 2007, the facility noticed that the action leakage rate for the Gold Gulch pond had been exceeded, documenting a leak in the pond. In February 2008 a wind and storm event ripped the top portion of the liner, requiring major repair, which was completed in February – March 2008.[46] The ALR exceedances continued on an intermittent basis throughout the remainder of 2008 and 2009. The leak rate was 26 gallons/minute on the day of the inspection. Since 1989, extreme storm events caused releases of copper bearing sediments and liquids to Pinto Creek from Pinto Valley operations. These releases resulted from partial tailings dam failures, pipeline breaks, seepage flows, conveyance blockages, and storm water overflows. Recent significant release events occurred in August 1989, July 1990, January 1991, August to September 1991, January to February 1993, and October 1997. In each of these events, materials were released in quantities sufficient to impact Pinto Creek or its tributaries."[47] Based on EPA's review of discharge monitoring reports between January 1990 and September 1991, Magma (now Pinto Valley) reportedly discharged effluent to Pinto Creek or its tributaries in excess of allowable effluent limitations on numerous occasions, and/or did not collect and analyze samples, in violation of permit conditions.[48] According to the report, during the first episode, approximately 3,000 gallons of effluent containing total suspended solids and copper of unknown concentrations was discharged from the ditch. A similar discharge of 24,000 gallons occurred on September 5, 1991. An estimated 39,000 gallons of effluent in exceedance of Arizona Surface Water Quality Standards and Aquifer Water Quality Standards for copper, zinc, and lead were discharged from the ditch on September 23, 1991.[49]

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Pinto Valley (cont'd)	In 1997, a partial tailings failure deposited an estimated 276,000 cubic yards of tailings in Pinto Creek.[50] It buried 8.1 acres of creek bed and surrounding upland with material as deep as 42 feet.[51]
Mission Complex	In 2011, a report of a backup of a tailings line resulting in a release of tailings to a dry wash.[52] A news report stated that the release involved 811 cubic yards of tailings, containing 145 pounds of lead sulfide.[53] It travelled underneath the Interstate and onto private property. According to an EPA fact sheet released in 2008, the Mission Mine received a notice of violation in 2002 involving the discharge of primarily copper laden stormwater runoff and process water discharge to ephemeral tributaries of the Santa Cruz river near Tucson in violation of the facilities Multi Sector General Permit Case # 09-2002-0064. Discharges from mine (outfall 001A) contain significant levels of copper and lead, and TSS, which have been out of compliance since October, 2003.[54] Outfalls from the Mission complex discharge to ephemeral streams that are tributaries to the Santa Cruz River. Three large tailings ponds and several mine dumps are located on land leased from the Indian landowners approximately 1 mile south of the Arroyos project area. According to a report by the Bureau of Reclamation, leachate from these tailings has contributed to elevated levels of sulfate, TDS, and hardness in the aquifer below and adjacent to the ponds.[55]
Robinson	In 2015, the Robinson Mine in Nevada experienced seepage from its Tailings Storage Facility – resulting in groundwater degradation from sulfate at levels above the 500 mg/l requirement and resulting in the issuance of a Finding Of Alleged Violation and Order in April 2015.[56] In late May 2016, a 0.8 gpm flow of tailings solution was observed emanating from a small area of bedrock in a road-cut exposure immediately downslope of the downstream face of the Eastern Embankment Extension.[57] During the 2010 Permit renewal, the Liberty Pit lake exhibited poor water quality in the form of elevated metal concentrations and low pH (2-3 SU), which is out of compliance with requirements. To come into compliance the company was required to dewater the pit lake. NDEP also documents acid rock drainage seeps and puddles associated with the late-1990s to current Liberty Waste Rock Dump (WRD).[58] The mine experienced eight reported spills during 1996.[59] Most of these spills involved tailings solution and reclaim water releases due to equipment failures. The five spills resulting in releases of copper flotation tailings had spill volumes ranging from 1,500 gallons to 66,000 gallons. Four of these spills resulted in contamination of relatively small areas of soil. The largest spill resulted in contamination of a downstream drainage bed for 2.3 miles with an average flow path width of 3 ft. Two spills resulted in a combined release of 76,000 gallons of reclaim water.
Tyrone	In 2011, the U.S. Department of Justice and State of New Mexico issued a consent decree for damages to natural resources from hazardous substances from the Tyrone Mine.[60] The settlement followed an investigation of natural resource injuries related to the release of hazardous substances into the environment from acid mine drainage and process solution, among other sources. According to the investigation, "groundwater in both the regional aquifer and the perched groundwater aquifers at the site have been exposed to hazardous substances through a variety of pathways."[61] The assessment at the Tyrone Mine identified 14 different mine area sources that have affected water quality, including seepage from tailings impoundments, leach stockpiles and waste rock stockpiles. The areal extent of the contaminated groundwater plume at the Tyrone Mine is 6,280 acres. Groundwater seepage will require water treatment in perpetuity. A 2012 groundwater assessment concluded that contaminated seepage from the mine will require water treatment in perpetuity.[62] According to a 2013 report by the U.S. Fish and Wildlife Service and the State of New Mexico, "Riparian habitat resources have been exposed to hazardous substances through numerous

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Tyrone (cont'd)	pathways at the Sites, including process water leaks and spills; tailings spills; dryfall from smelter emissions; windblown materials; runoff, infiltration, or percolation from tailings and waste stockpiles; and transport through erosional processes. Whitewater Creek and Mangas Creek are two important waterways at the Chino and Tyrone mines, respectively, where the riparian and associated streambed habitats have been exposed to hazardous substances from multiple sources. Those sources include direct inputs of contaminated water from the mines, tailings pond breaches during high-volume storm events, and deposition or spills of tailings directly into the streambed areas.[63] There have been multiple spills of tailings, releasing hazardous substances. The largest event occurred at the No. 3 tailings dam in 1980, releasing 2.6 million cubic yards of tailings into the Mangas Valley.[64] Tailings flowed 8 kilometers downstream and inundated farmland. The failure occurred as the result of a dam wall breach. In 2001, 5 tons of tailings spilled into the Mangas Wash from the stormwater containment dike at the tailings dam.[65]
Continental Pit	According to the Butte groundwater injury assessment report for the State of Montana's Natural Resource Damage Program, the walls of the Berkeley and Continental Pits were a source of groundwater contamination in the Butte Mine Flooding Operable Unit of the Superfund Site along with leaking solutions from the Yankee Doodle Tailings Pond.[66] Groundwater contamination is extensive, requiring the City of Butte to pipe its drinking water in from other watersheds. At current operations, mine tailings from the Continental Pit mine are placed in the Yankee Doodle tailings impoundment, which also contains the mine waste from previous mining at the Berkeley Pit. The tailings impoundment is unlined, and seepage from the impoundment travels through faults and fractures into the Berkeley Pit. When mining ceases, seepage from the tailings impoundment will continue to contribute contaminated water to the Berkeley pit. A consent decree requires contaminated water from the Berkeley Pit to be collected and treated in perpetuity.[67]
Phoenix	In 2002, groundwater from the gold tailings facility contain elevated concentrations of chloride, sodium, and sulfate, which is the result of a solute plume originating from the Gold Tailings facility – a copper and gold tailings storage facility.[68] In 2005, seepage of low pH and poor-quality solution emanating from a portion of the southern toe of the North Fortitude Waste Rock Facility was identified in June and formally inspected in August. Flow emanates from two locations along a 300-foot width of the toe and ultimately migrates to a natural drainage and eventually into the pit. In 2006, seepage of a small quantity of low pH and poor-quality water was discovered at the toe of the Box Canyon Waste Rock Facility following an intense precipitation event. Flow was estimated at 2 gallons per minute.
Miami	The Miami Mine, currently owned by Freeport McMoran, was formerly the Inspiration Mine owned and operated by the Inspiration Consolidated Copper Co. In 1986, the U.S. EPA issued a finding of violation and order under the Clean Water Act to the Inspiration Consolidated Copper Co. for discharges of acidic process solutions from Webster Lake (a large process solution impoundment) to Miami Wash and for acidic, metal contaminated groundwater surfacing near the confluence of Miami Wash and Pinal Creek.[69] Acidic water from this lake and other mining related sources generated a 15-kilometer-long plume of acidic groundwater in the alluvial aquifer.[70] In 1989, the Pinal Creek Site, which includes the Miami Mine, was placed on the WQARF Priority list.[71] The WQARF program is the state equivalent of the Federal "superfund" program. The Pinal Creek site was listed under the Arizona Water Quality Assurance Revolving Fund program for contamination in the shallow alluvial aquifers within the Pinal Creek drainage. According to the State of Arizona, "Releases of contaminants have occurred from all of the major mining sites from a variety of different sources, including, but not limited to, process solution

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	impoundments, tailings piles, leach dumps, various spills, and as storm water runoff from waste and tailings piles."[72]
Silver Bell	In 2013, Asarco agreed to pay $110,000 to settle a spill in 2010 resulting from a rupture in a welded pipeline seam that allowed 70,000 gallons of process solution to escape from the Silver Bell Mine. The solution travelled more than a mile. Pollutants in the discharge exceed water quality standards for fluoride, arsenic, beryllium, cadmium, chromium, nickel and selenium.[73] In 2009, Silver Bell was fined $170,000 for three spills totaling 340,000 gallons of wastewater containing sulfuric acid and heavy metals into dry washes.[74] The pollutants seeped into soil, which endangered the groundwater in the aquifer below the mine and exceeded water quality standards. Two of the spills are described as such: Between Nov. 6 and Dec. 11, 2006, 150,000 gallons of leach solution containing sulfuric acid and metals escaped from a leaking impoundment. And between Nov. 11 and Dec. 13, 2006 another 100,000 gallons of stormwater containing sulfuric acid and heavy metals escaped from a storage pit. The EPA reports that a site inspection by the Arizona Department of Environmental Quality (ADEQ) in 1993 found water flowing in three unnamed washes below Silver Bell Mine. Samples taken from the two streams flowing under the waste rock dump showed violations of standards for total selenium, with one stream also violating standards for dissolved copper.[75] According to a 2000 report on native fish populations by Pima County, "The loss of native fish along Cocio Wash is a good example of the potentially damaging effects that mining can have on aquatic ecosystems. Summer floods in July and August 1981 swept gray clay sediments from a Silverbell Mine tailings pond into the wash. BLM biologist Bill Kepner later reported, "Our studies indicate that the Cocio Wash topminnow population is now extinct in that habitat due to recurrent mine spills and inundations by mine tailings... (Fonseca, 2000)."[76]

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[5] United States and State of Arizona v. Freeport McMoran Corporation and Freeport McMoran Morenci Inc, Consent Decree, Case 4:12lcvl00307lHCE, April 2012.
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[7] Id.
[8] Arizona Department of Environmental Quality, Press Release: Freeport McMoran Morenci Inc. Agrees to $150,000 Settlement to Resolve Water Quality Violations from 2008 Spill, July 14, 2011.
[9] New Mexico Environmental Department, Corrective Action Response, DP-213, January 5, 2019 Unauthorized Discharge of Tailings Slurry from Tailing Spare Train Pipeline.
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[21] Id.
[22] US EPA, Damage Cases and Environmental Releases from Mine and Mineral Processing sites, 1997.
[23] Id.
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[33] Id.
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[59] US EPA, Damage Cases and Environmental Releases from Mines and Mineral Processing Sites, 1997, p. 170. The Robinson Mine was formerly owned by BHP Copper, Magma Nevada Mining Company.
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[61] Stratus Consulting, Preassessment Screen for the Chino, Tyrone, and Morenci Mine Sites, Grant County, New Mexico, and Morenci, Arizona, Prepared for US Fish and Wildlife Service, June 18, 2003.
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