

## 2.2.6 Hazardous Materials

Hazardous waste is a waste with properties that make it dangerous or potentially harmful to human health or the environment, such as ignitability, corrosivity, reactivity, or toxicity. It can be a byproduct of manufacturing processes or simply a discarded commercial product. The Remedial Projects Section of the ADEQ uses the Arizona Water Quality Assurance Revolving Fund (WQARF) to support hazardous substance cleanup efforts in the state. The program identifies sites that are most in need of cleanup and adds them to the WQARF Registry. Some sites in Arizona are governed and funded by the federal Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), commonly known as Superfund. Sites that pose the greatest potential threat to human health and the environment are put on the National Priorities List (NPL).

Parties responsible for contamination at sites in the WQARF and Superfund programs are identified and notified of potential liability, and legal and technical information is gathered for recovery of costs and enforcement of cleanup requirements. The parties ultimately found responsible in WQARF and Superfund actions are liable for paying costs of remediation activities or monitoring.

There are seven hazardous waste contaminated sites either on NPL or the WQARF registry within the three focus areas of the study area. The study area contains numerous Formerly Used Defense Sites (FUDS), which are real properties that were formerly owned by, leased to, possessed by, or otherwise under the jurisdiction of the Secretary of Defense or its components prior to October 17, 1986.

### **Mogollon Rim Focus Area**

Two WQARF sites are located in this focus area, and there is one delisted NPL site.

#### ***Mountain View Mobile Home Estates***

This is a delisted NPL site located on the east side of Globe in Gila County. The 17-acre mobile home subdivision, which is now owned by the State of Arizona, was developed in 1973 at the Site of the Metate Asbestos Corporation asbestos mill. The site was discovered to be contaminated with asbestos in the late 1970s and listed as an EPA Superfund site. Residents were permanently relocated, and the site was remediated by 1985 by capping the contaminated soil and fencing off the property for stability of the cover. The site was delisted from the NPL in 1988.

#### ***Payson Tetrachloroethane (PCE) Site***

This site is located in Payson in Gila County, and is bounded approximately by Frontier Street to the north, Beeline Highway (SR 87) to the east, Aero Drive to the south, and McLane Road to the west. In 1990, the town of Payson detected PCE in two potential production wells. Old Payson Dry Cleaners, which operated at the 904-906 South Beeline Highway location from 1976 to 1984, was identified as a potential source of contamination. Several underground storage tanks were removed from the site, and remediation systems were put in place at the site in 1996 for treatment of the contaminated groundwater and soils. Several treatment systems were decommissioned in January 2003; however, the Expanded Groundwater Treatment System, located at 204 West Aero Drive, continues to operate at the site.

### ***Tonto and Cherry Site***

This site is located in Payson in Gila County, approximately 150 feet from Colcord Road just north of Frontier Street, near the Payson PCE site. The site boundary is a northwest-trending oval, extending approximately 850 feet from the intersection of Colcord Road and Frontier Street. From 1994 until 1998, ADEQ conducted several preliminary assessments and site inspections near Grand Way Cleaners after PCE was discovered in nearby private wells. In June 2000, the Tonto and Cherry site was added to the WQARF Registry. In November 2001, ADEQ installed three nested vapor points at the suspected source areas. ADEQ determined that, at this time, there appears to be no risk associated with contamination in the soil vapor beneath the building. Groundwater continues to be monitored for PCE levels biannually from the site while a final remedy for the contamination is selected. No groundwater wells are located within the plume.

### **Copper Country Focus Area**

There are two sites in this focus area listed on the WQARF registry.

#### ***Pinal Creek Site***

This site is located in the Globe-Miami area of Gila County and has irregular boundaries. The boundary follows and includes the mine sites of Phelps Dodge Miami, Inc. and BHP Copper, Inc. within the southern portion of the site. The southern boundary follows the southern margin of the floodplain of Bloody Tanks Wash through the Town of Miami and the community of Claypool, and then turns south to include the BHP Solitude Tailings. The boundary follows the eastern margin of the floodplain of Russell Gulch and Miami Wash northward to the confluence with Pinal Creek. The boundary parallels both sides of upper Pinal Creek to the City of Globe, including the Old Dominion Mine and related mine properties in the Globe Hills. North of the confluence of Miami Wash and Pinal Creek, the boundary parallels Pinal Creek on both sides including the floodplain of Pinal Creek plus a margin approximately 1,000 feet wide surrounding the floodplain as far north as Inspiration Dam. The boundary follows the floodplain of Pinal Creek north of Inspiration Dam, terminating at the Salt River.

Groundwater contamination with an acid-metal plume was first discovered in the 1930s in the alluvial aquifer of Miami Wash. In the 1940s, groundwater contamination was discovered in the alluvial aquifer of Bloody Tanks Wash. Public supply wells were discovered to be contaminated in the late 1940s, and private wells along lower Pinal Creek were discovered to be impacted in the 1970s. Initial source-control remedial investigations and associated feasibility studies were completed by 1998. Numerous source and exposure control actions have been implemented at the various sites, including facility upgrades, groundwater extraction, groundwater containment, decommissioning of solution impoundments, capping of tailings piles, and stormwater controls. As of April 2006, capping and revegetation of tailings and slag piles was completed. Approximately 105 million pounds of heavy metals has been removed from aquifers at the site, and the perennial and ephemeral reaches of Pinal Creek, Miami Wash, and Bloody Tanks Wash were removed from the state's list of impaired water bodies.

#### ***Klondyke Tailings Site***

This tailings site is located on the north bank of Aravaipa Creek, approximately 4.5 miles upstream of the Aravaipa Canyon Wilderness Area in Graham County. The boundaries of this site are irregular. The site consists of two piles of mine tailings, the soil between and

adjacent to these piles, and the area approximately 50 feet into the streambed of Aravaipa Creek, directly adjacent to the tailings piles. The site is bounded to the east and north by the Klondyke County Road.

From the 1870s through the 1950s, lead, zinc, copper, silver, and gold mining was conducted in the Klondyke area of the Aravaipa Mining District. In 1948, the Athletic Mining Company constructed a flotation mill next to Aravaipa Creek that operated until about 1958 and generated, in part, the tailings at the site. In 1993, an investigation of the site by ADEQ revealed high levels of lead and arsenic in the tailings piles and surrounding soils, and acidic runoff emanating from the site. The site was placed on the WQARF Registry in September 1998. Quarterly monitoring and analyses of groundwater samples indicated no impacts to the groundwater beneath the site from metals above aquifer water quality standards. ADEQ has evaluated proposed early response action (ERA) alternatives for stabilizing the contaminated soils and tailings. Following flooding that altered the channels of Aravaipa and Laurel Creeks in 2006, the floodplain was analyzed and the impacts of the most recent flood were evaluated assuming that the proposed ERA remedy and possible alternative options were in place at the time of the flood. In August 2007, an erosion protection alternatives analysis was completed, and design of the erosion protection for the upper tailings pile was begun in October 2007.

### **Cochise-Santa Cruz Focus Area**

Two hazardous materials sites are located in this focus area, including one NPL site, and one Department of Defense site.

#### ***Apache Powder Site***

This site is located in Cochise County, approximately 7 miles southeast of the incorporated Town of Benson and 2.5 miles southwest of the unincorporated Town of St. David. The site study area covers approximately 9 square miles and includes 945 acres of land owned by Apache Nitrogen Products, Inc., formerly known as the Apache Powder Company. The San Pedro River bounds the eastern side of the site, running from the southeast corner of the property toward the northwest.

Apache Powder began manufacturing dynamite in 1922 for mining and construction projects. Later, Apache Powder began manufacturing ammonium nitrate, nitrogen-based fertilizer products, blasting agents, and nitric acid as well. Today, the company manufactures various forms of ammonium nitrate and nitric acid. Prior to 1971, manufacturing wastewater was discharged on site into dry washes, which flow directly into the San Pedro River. After 1971, wastewater was discharged into unlined evaporation ponds, resulting in the contamination of a perched groundwater zone. This discharge of wastewaters to the perched groundwater also resulted in contamination of the shallow aquifer, as well as the San Pedro River. The Arizona Department of Health Services identified potential groundwater contamination problems in 1979. In 1980, the EPA found high levels of heavy metals in some of the onsite ponds, and 10 shallow-aquifer wells downgradient from Apache Powder were found to contain nitrate at elevated concentrations. The EPA completed a preliminary investigation of the site in June 1988. This investigation confirmed the state's earlier findings of nitrate contamination, as well as heavy metals contamination of site soils. The site was formally listed on the NPL on August 30, 1990.

EPA's 1994 Record of Decision (ROD) for cleanup of the site included groundwater remedies that consisted of pumping and treating the perched groundwater zone by forced evaporation using a brine concentrator, and pumping and treating the shallow aquifer by use of

constructed wetlands and then recharging the treated water back into the shallow aquifer. The ROD also included soil excavation, removal, and treatment at a permitted offsite disposal area, the removal and treatment of drums containing hazardous materials, and capping of any contaminated soils left on site.

Between November 1999 and June 2000, contaminated soils and drums containing hazardous materials were removed from the site. In the northern portion of the site, a wetland was constructed in 2004 to treat nitrate-N-contaminated groundwater. Treatment of the contaminated groundwater continues, as well as further characterization of the nitrate-N plume. Native soil covers for the abandoned pond areas in the southern area of the site were completed in late 2007. Completion of the design and implementation of the monitored natural attenuation of groundwater contamination in the southern area was completed in September 2007.

### ***Fort Huachuca Department of Defense Site***

This site is located west of Sierra Vista, in southeastern Cochise County, on the western flank of the San Pedro River valley. The site consists of an irregularly shaped area of 115 square miles bisected by Arizona State Highway 90. Fort Huachuca contains many FUDS.

Fort Huachuca has been an active U.S. Army Post since 1877. In 1971 the post became home of the U.S. Army Intelligence Center and School. Now the U.S. Army Intelligence Center operates the post. The current primary mission is intelligence training and activities involving electronic and communication signals.

The South Range Landfill is located along Garden Canyon Road approximately 1.5 to 2 miles west of Sierra Vista and 2 miles south of Winrow Ave. The South Range Landfill consists of two landfills that were used intermittently from 1940 to 1975. While in use, pesticides and herbicides were deposited in the landfills. In 1990, two leachate wells were drilled and have been sampled off and on since then. The contaminants of concern in soils at the South Range Landfill and East Range Mine Shaft include organochlorine pesticides, several metals, several volatile organic compounds, and petroleum hydrocarbons. Contaminants of concern may change as new data become available. Initial environmental assessments in the early 1990s identified 36 sites for further investigation under the Department of Defense Environmental Restoration Program.

The Military Munitions Response Program Site investigation at closed and/or transferring ranges was completed in 2007. Three groundwater monitoring wells and two leachate wells are sampled semiannually at the South Range Landfill. Inspections of the East Range Mine shaft are conducted annually. The South Range Landfill is being monitored by three groundwater monitoring wells and two leachate wells. The wells are sampled on a semiannual basis. No contaminants above the aquifer water quality standards have been detected in recent sampling from the two leachate wells and three groundwater monitoring wells.