

Silverbell Landfill Water Quality Assurance Revolving Fund Site Summer 2010

SITE DESCRIPTION

The Arizona Department of Environmental Quality (ADEQ) is overseeing the City of Tucson's investigation of groundwater and soil contamination at the Silverbell Landfill Water Quality Assurance Revolving Fund (WQARF) Site. The ADEQ WQARF program, which is also known as state Superfund, investigates and cleans up contaminated groundwater and soil sites throughout the state.

The Silverbell Landfill WQARF Site is located in west Tucson at 3200 N. Silverbell Road, and is bounded approximately by Sweetwater Drive to the north, Interstate 10 to the east, Grant Road/Ironwood Hill Drive to the south and Silverbell Road to the west. The City of Tucson, owner and operator of this now-closed municipal solid waste landfill, conducts site investigations and cleanup operations with ADEQ oversight.

Groundwater at the site is contaminated with tetrachloroethene (PCE) and trichloroethene (TCE) occurring over regulatory limits. Depth to groundwater is about 145 feet below ground surface.

SITE HISTORY

The Silverbell Landfill is made up of two cells which comprise a total of 40 acres. The landfill received wastes between 1966 and 1977, and did not accept hazardous waste, although landfill access was not strictly controlled. The south cell of the landfill has been covered with four feet of soil. The north cell has been covered and revegetated and now lies next to the Silverbell Golf Course.



Homes have been built in close proximity to the old landfill site.



The Silverbell Landfill is a closed municipal solid waste landfill owned and operated by the City of Tucson.

The city began conducting subsurface investigations in 1985 and submitted a cleanup proposal to ADEQ. PCE and TCE were found at levels that exceeded regulatory limits in both private production and groundwater monitor wells.

The Silverbell Landfill site was placed on the WQARF Registry in April 1999.

SITE INVESTIGATION/CLEANUP ACTION

The city, with oversight by ADEQ, prepared a Remedial Action Plan (RAP) for the Silverbell Landfill in 1995. The city proposed a pump and treat system to extract contaminated groundwater from the aquifer, treat it to remove the contaminants, and then reinject it into the aquifer or use it to water the Silverbell Golf Course.

In 1996, ADEQ approved the city's request to conduct a pilot study to evaluate the effectiveness of recirculation well technology at the WQARF site to replace or enhance the approved pump and treat system. The city concluded that the recirculation well technology would not be an effective remedy for the site. With ADEQ oversight, the city also evaluated a groundwater remedy consisting of monitored natural attenuation with enhanced bioremediation for the source areas. The pilot test, using sodium benzoate and/or sodium lactate injections to stimulate indigenous microbes, did demonstrate decreases in total volatile organic compound (VOC) concentrations; however, the city determined that use of this technology for the final remedy would be cost-prohibitive.

In 2008, the city submitted to ADEQ a Draft RAP Implementation Evaluation of Remedial Alternatives

report which focuses on contaminated groundwater beneath and immediately around the landfill. Based on the results of this evaluation, the city plans to install a groundwater pump and treat system to address the central part of the landfill with the highest VOC concentrations. The plan includes four extraction wells, an air stripping treatment plant with a granular activated carbon system to capture VOCs in the vapor phase, and four injection wells.

In April 2001 the city began full-scale operation of a soil vapor extraction (SVE) system to remove VOCs from the soil. This system operated until December 2006 and removed 2,089 pounds of VOCs, including 748 pounds of PCE. From December 2006 until April 2008, it was operated intermittently to control methane migration. In April 2008, the system was shut down and the equipment removed; however, the city continues to perform periodic rebound testing to determine whether system operation is warranted.

Kinder Morgan Gasoline Pipeline Spill

In July 2003, a gasoline pipeline operated by Kinder Morgan Energy Partners broke near the WQARF site. Soil borings and groundwater monitoring wells have been installed to assess the extent of contamination. Gasoline-impacted soils have also been removed and replaced with clean soil. Thousands of gallons of gasoline were recovered from the Silvercroft Wash and have been removed from the groundwater since the initial pipeline break. Groundwater production wells do not show impacts from gasoline.

In 2004, Kinder Morgan identified the presence of VOCs in the soil vapors within the Silver Creek subdivisions. VOCs were also detected during sampling of groundwater monitor wells. ADEQ conducted additional soil vapor testing in October 2004 within the Silver Creek I and II subdivisions to confirm and expand upon the Kinder Morgan findings. ADEQ's sampling also detected compounds in shallow soil vapors of the subdivision. In early summer 2007, Kinder Morgan began operation of a SVE system to remediate contaminated soil. As of June 2009, the SVE system has removed over 140,000 pounds of petroleum hydrocarbons. Approximately 64,000 gallons of hydrocarbons also have been removed through free product recovery.

The Arizona Department of Health Services (ADHS) conducted a health consultation to evaluate whether soil vapors from VOCs in the subsurface near the Silver Creek Subdivision posed any health effects to residents. The report, released in June 2005, concluded that the observed concentrations of compounds in soil vapors pose no apparent public health hazard.

HEALTH/WATER QUALITY

ADHS also completed a Draft Baseline Human Health Risk Assessment in November 1993 of the Silverbell Landfill site. Even though no significant health risks were identified, the risk assessment expressed concern for possible exposure routes for PCE and TCE through privately owned wells.

Public and semi-public wells are regulated and are required to be sampled periodically. Private well owners are not required by the state to sample their wells, and may be at risk of exposure in the vicinity of this site.

There are potential risks associated with exposure to VOCs, principally through drinking contaminated groundwater. No one is known to be drinking contaminated water from this site; however, if you are drinking water from a private well within the boundaries of the site, please contact the ADEQ Project Manager. Cleanup activities are important to ensure the quality of future drinking water supplies.

FOR MORE INFORMATION:

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Complete public files regarding the site are located at ADEQ's Phoenix office. Call 1(800) 234-5677 for information. Hearing impaired persons may call ADEQ's TDD line at (602) 771-4829.

For more information on this WQARF site or other WQARF sites in the State of Arizona, please visit the ADEQ Web site at: www.azdeq.gov. In the left-hand column, click on Waste Programs, then on Superfund/WQARF. Look for the Site Information and Maps Link.

Para información en español sobre este sitio, se puede contactar a Melissa Hayes al (520) 770-3309.