

Estes Landfill

Water Quality Assurance Revolving Fund ([WQARF](#)) Site

Boundaries:

The Estes Landfill WQARF Site (Site) is located in Phoenix, Arizona. The groundwater contamination plume is bounded approximately by the Salt River to the north, the Sky Harbor Expressway (Hwy. 153) to the east, Magnolia Street to the south, and S. 37th Street to the west. Groundwater contamination from the landfill extends in an oval shape for approximately one-half mile to the west and north of the landfill.

The plume boundaries depicted on the [Site map](#) represent the Arizona Department of Environmental Quality's (ADEQ) interpretation of data available at the time the map was constructed. The map is intended to provide the public with basic information as to the estimated extent of known contamination as of the date of map production. The actual extent of contamination may be different. Therefore, the plume may change in the future as new information becomes available.

Site Status Update:

ADEQ put a Task Assignment Offer out for bid for groundwater sampling and water level measurements of 19 wells in October 2010. A contractor has been selected (MACTEC) and the groundwater sampling will be completed in the first quarter of 2011.

ADEQ is currently finalizing the [Responsiveness Summary](#) and preparing the [Record of Decision](#) (ROD) for the site.

Community Involvement Activities:

A [community advisory board](#) (CAB) has been formed for the Site. These meetings are open to the public. The CAB is not currently meeting regularly. Past CAB meeting agendas and minutes can be viewed at the Information Repositories listed below. The most recent [Fact Sheet](#) can be found on the ADEQ Web site.

Site History:

1953-1973: The Estes Landfill was privately owned and operated from 1953 until 1973 when it was permanently closed. The unregulated landfill was reported to have accepted industrial, commercial, residential and liquid wastes. Liquid wastes which would now be considered hazardous were discharged into ponds excavated in the refuse pits.

1980-1982: Groundwater contamination was discovered in two industrial supply wells located [down gradient](#) of the landfill between 1980 and 1982. One of these wells was located on the Bradley Landfill and one on the former Tanner property west of 40th Street. The primary contaminants detected were 1,2-DCE and vinyl chloride, which are degradation products of

[trichloroethene](#) (TCE). Groundwater sampling of eight wells, four on the Estes Landfill and four on the Bradley Landfill through the mid-1980s, confirmed the presence of groundwater contamination in the area. The greatest contaminant concentrations were in the vicinity of a former liquid waste disposal pit on Estes Landfill.

1982: The [COP](#) acquired the landfill in 1982 by eminent domain in response to repeated flooding of Sky Harbor Airport and other property in 1978-1980. The COP, in conjunction with local, state and federal flood control and transportation agencies, completed a river channelization project adjacent to the landfill. To complete the project, approximately 30 acres of refuse in the riverbed were excavated and moved to the top of the landfill existing along the southern boundary of the river. The landfill materials were screened before and during excavation for possible hazardous materials, and several cubic yards of material were removed and sent to a hazardous waste landfill in California.

1997: The COP submitted a Draft [Remedial Investigation](#) (RI) Report for ADEQ's review in September.

1998-1999: The Site was placed on the [WQARF Registry](#) in April 1998 with an eligibility and evaluation score of 45 out of a possible 120. Until 1999, ADEQ provided regulatory oversight and technical review of Site investigations and activities performed by the COP. In March 1999, ADEQ took over responsibility of completing the RI, [feasibility study](#) (FS) and other Site activities. After ADEQ took over responsibility for the Site, ADEQ completed a RI Report on July 30, 1999. The report defined the extent of soil and groundwater contamination emanating from the landfill.

2001-2003: The Land and Water Use Study was issued on July 9, 2001 as a supplement to the July 30, 1999 RI Report. With the issuance of the [Remedial Objectives](#) Report in January 2002, the RI Report for the Site was considered final. After completion of the FS for the Site, the [Proposed Remedial Action Plan](#) (PRAP) was issued for public comment on June 30, 2002. On February 25, 2003, the PRAP public comment period ended.

2007: Bi-annual groundwater monitoring was performed in March and August to evaluate groundwater flow patterns and chemical migration patterns. Depth-to-water measurements were collected in September. A Site visit was conducted in November to evaluate the current status of the Site.

2008: In January, landfill vapor samples were collected. The samples were analyzed for [volatile organic compounds](#) (VOCs) and [methane](#). Groundwater elevation measurements were collected in February and September to evaluate groundwater flow and chemical migration patterns. Groundwater samples were collected on February 12-14, 2008. TCE concentrations ranged from <0.5 micrograms per liter ($\mu\text{g/l}$) to 2.8 $\mu\text{g/l}$. Well EW-6 was the only [monitor well](#) where cis-1,2-DCE concentrations exceeded the [Aquifer Water Quality Standard](#) (AWQS) of 70 $\mu\text{g/l}$. The highest concentration of vinyl chloride was detected in on-site Well EW-6 at a concentration of 510 $\mu\text{g/l}$. Other VOCs detected in the groundwater samples did not exceed their respective AWQSS.

2009: ADEQ personnel met with the COP on August 24, 2009 to discuss the Responsiveness Summary and ROD.

2010: ADEQ put out a Task Assignment Offer for groundwater elevation and sampling of 19 wells in October 2010. A contractor has been selected (MACTEC) and it is anticipated that groundwater sampling will occur in the first quarter of 2011.

Contaminants:

The current contaminants of concern in soil include [arsenic](#), [lead](#) and [thallium](#). The contaminants of concern in groundwater include [vinyl chloride](#), [cis-1,2-dichloroethene](#) (cis-1,2-DCE), [trichloroethene](#) (TCE), [benzene](#), [bis\(2-ethylhexyl\)phthalate](#), [arsenic](#), [barium](#), [chromium](#), [lead](#), and [manganese](#). Contaminants of concern at the Site may change as new data become available.

Public Health Impact:

Although the groundwater beneath the landfill is contaminated, there are no known drinking water wells within the area of contamination. Drinking water provided by the [COP](#) is tested regularly to ensure that it meets all state and federal water quality standards.

Site Hydrogeology:

The Site is underlain by approximately 115 to 175 feet of [heterogeneous alluvial](#) sediments and several hundred feet of consolidated sedimentary [bedrock](#). The alluvium beneath the Site contains sediments (cobbles, gravel, sand and fines) of similar composition with differing hydraulic properties. Three distinct alluvial hydrostratigraphic units have been identified in the following order:

- Unit F1, an unconfined, highly permeable [aquifer](#) where saturated, from the surface to approximately 60 feet below ground surface (bgs);
- Unit F2, a semi-confined, low permeability aquitard from approximately 60 to 90 feet bgs;
- Unit F3, a semi-confined, medium permeability [aquitard](#) from approximately 90 feet bgs to the underlying sedimentary bedrock (Unit F4);
- Unit F4 is well consolidated and appears to correlate with the tertiary Tempe Beds and (older) Tertiary Camelshead Formation. Unit F2 is not continuous throughout the Site, and where the Unit F2 is absent, Units F1 and F3 are considered to be one unconfined alluvial aquifer.

The major hydrologic feature in the study area is the Salt River immediately adjacent to the Site. The Salt River is normally dry, but periods of above average precipitation and/or releases from upstream reservoirs have caused river flows to occur that have exceeded 100,000 cubic feet per second. These river flows cause rapid recharge to the underlying aquifer.

Groundwater flow is generally west to northwest across the Site during “dry” river conditions and west to southwest during sustained river flow events. Water levels have fluctuated historically between 25 to 80 feet below ground surface (bgs) at the Site and are significantly

influenced by recharge from river flow events. Depth to groundwater is currently approximately 60 feet bgs at the Site.

Contacts:

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*In Arizona, but outside the Phoenix area, call toll-free at (800) 234-5677.

Information Repository:

Interested parties can review select Site documents at the information repositories at the [Ocotillo Library](#) located at 102 W. Southern Avenue, (602) 262-6694 and the [Burton Barr Central Library](#) located at 1221 N. Central Avenue in Phoenix, (602) 262-4636.

The complete official Site file can be reviewed at the ADEQ Main Office located at 1110 W. Washington Street, in Phoenix. Please contact (602) 771-4380 or (800) 234-5677 to schedule an appointment with 24-hour notice to review these documents. Once all documents requested have been collected, you will be contacted for a review Monday through Friday from 8:30 a.m. to 4:30 p.m. at the ADEQ Records Management Center, 1110 W. Washington Street in Phoenix, AZ.