

North Indian Bend Wash EPA National Priorities List (NPL) Site

Boundaries:

The [North Indian Bend Wash](#) (NIBW) Site (Site) is the northern portion of the area designated as the Indian Bend Wash (IBW) Superfund Site. The Site is located in Scottsdale, Arizona, and the Site is bounded by McDonald Drive to the north, Pima Road to the east, 68th Street to the west, and the Salt River to the south. The plume boundary varies and may extend beyond the Site boundary but remains part of the Superfund site in its entirety.

Site Status Update:

The [consent decree](#) that the [U.S. Environmental Protection Agency](#) (EPA) has entered into with those responsible for the groundwater contamination at the Site identified [Motorola](#) as the main [responsible party](#). The majority of the cleanup activities are being addressed by a combination of responsible companies referred to as the “Participating Companies” (PCs).



Miller Road Treatment Facility

The Miller Road Treatment Facility (MRTF) Long-Term Operating Plan has been conditionally approved. Stakeholders have agreed to have the treated water from PCX-1 be re-injected and/or be discharged to the adjacent SRP canal. The installation of an injection well should commence in early 2011. The treatment of Well PCX-1 continues under the supervision of the NIBW PCs through a third-party contractor on a 24-hour per day, seven-day per week basis. The PCX-1 conveyance and treatment systems are physically separated from the Arizona American Water company drinking water system. The NIBW PCs have worked with the EPA, SRP, the [City of Scottsdale](#), [Maricopa County](#), the [Arizona American Water Company](#) (AAWC), and the Arizona Department of Environmental Quality (ADEQ) and developed a plan which addresses the cleanup of the aquifer and protectiveness to the water supply. The most recent revision to the plan was submitted in September 2010 and conditional approval was granted to the PCs in November 2010.

On April 20, 2009 the NIBW PCs, working with the AAWC, EPA and ADEQ, began a rehabilitation of the MRTF. This work included complete cleaning of all three towers at the facility as well as repacking. The work was completed in 2010 and a report detailing the activities is currently under review.

In mid 2010, ADEQ and EPA began the [Five Year Review](#) (FYR) process for the Indian Bend Wash Superfund Site. This process requires the Agencies to critically evaluate the operation and protectiveness of the remedy every five years. A draft report is expected by spring 2011 with the final report available in the fall of 2011.

Community Involvement Activities:

A [community information group](#) (CIG) has been formed and meets periodically. [Agendas](#) for 2008 and 2009 can be viewed at the ADEQ Web site. EPA has hosted numerous CIG meetings over the years. The most recent [fact sheet](#) for the Site can be viewed at the ADEQ Web site. The next CIG meeting is expected to take place in early 2011.

Site History:

1981-1983: The IBW Site was listed on EPA's [National Priorities List](#) (NPL) on [September 8, 1983](#) after the City of Scottsdale detected volatile organic compounds in municipal wells in the Scottsdale area in 1981.

1984-1991: The EPA began a [remedial investigation](#) (RI) of the Site in two phases, referred to as [operable units](#). The RI and the [feasibility study](#) (FS) for Operable Unit 1 (OU1) (middle and lower [aquifers](#)) began in July 1984 and were completed in April 1988. The RI/FS for Operable Unit 2 (OU2) (shallow aquifer and soil contamination) was completed in 1991.

1988: In September, a [Record of Decision](#) (ROD) was made and EPA selected a remedy for the middle and lower [alluvial](#) units of the groundwater. The OU1, also designated the Scottsdale Operable Unit, involved operation of a groundwater treatment facility located at Pima Park (Thomas Road and 88th Street), and known as the City of Scottsdale Central Groundwater Treatment Facility (CGTF). The facility treats groundwater from four City of Scottsdale production wells by [air-stripping](#). The treated water is added to Scottsdale's public water distribution system.

1991: In September, EPA issued a ROD for OU2 to address contamination in the upper alluvial unit (UAU) of groundwater and contaminated soils. This ROD required [soil vapor extraction](#) and groundwater treatment systems at several source areas, particularly Areas 7 and 12. The OU1 remedy failed to contain the lower alluvial unit (LAU) groundwater plume. [Hydrogeologic](#) data indicated that the plume was migrating to the north and would threaten the Paradise Valley well field.

1994: The PCs, in cooperation with the Paradise Valley Water Company, constructed the MRTF at the northern end of the groundwater plume. The MRTF [pumps and treats](#) groundwater, and supplies treated water to the SRP Arizona Canal and to the Paradise Valley distribution system. Additionally, Motorola and Siemens voluntarily installed on-site groundwater treatment systems at both Areas 7 and 12 to treat middle alluvial unit (MAU) groundwater at the source areas.

1995-2000: The OU1 Consent Decree required the PCs to conduct a feasibility study addendum (FSA) to determine the effectiveness of the OU1 remedy and to recommend a final remedy. In 1995, the PCs initiated the FSA process including the completion of a site-wide groundwater flow and transport model. The final FSA was received in November 2000.

2001: In April, the EPA issued a proposed plan. The proposed plan announced the required public meeting which took place on May 9. EPA formally selected a remedy in the amended

ROD which was received by ADEQ in July. ADEQ concurred with the remedy as described in the amended ROD, and the EPA signed the ROD in September.

2001-2003: The Amended Consent Decree (ACD) became final with the approval of the federal court on June 5, 2003. The ACD was the result of an Amended Record of Decision (AROD) which was prescribed during 2001. The AROD resulted in EPA, ADEQ and the PCs negotiating the ACD. The purpose of the ACD was to include treatment facilities which were constructed by Motorola outside of the authority of the RODs (MRTF, Area 7 & Area 12). The ACD serves as the implementation vehicle of the ROD.

2002: In October, negotiation and approval of the final ACD were completed. All of the parties have signed the ACD for the final groundwater remedy. The ACD was lodged with the district court in Phoenix, Arizona on October 31. On November 19 and 20, EPA and ADEQ conducted inspections of the MRTF, CGTF, Area 7 and Area 12 remediation sites. The inspections were conducted in order to certify the treatment facilities are operational and functional. No determination was made as a result of the referenced inspection.



Central Groundwater Treatment Facility

2004: In February, the PCs and the agencies entered an informal dispute relating to the requirements to maintain air emission control systems at the NIBW ground water treatment facilities.

2006: [EPA announced](#) that all physical construction of cleanup systems was complete. Soil cleanup is expected to be complete in the next five years and groundwater cleanup an additional 30 years. Since the finalization of the AROD and the ACD, the PCs have been submitting documents, plans and reports as required. EPA and the PCs independently conducted risk assessments to determine the relative risk associated with the possibility of removing the air emission controls that are part of the current groundwater treatment systems. EPA and ADEQ determined that the air emission control systems must remain in service at that time, and agreed to look at the air emission data in March 2007.

2007: The City of Scottsdale began demolition of buildings at the former Rolamech facility at Area 7. This demolition was completed by the end of 2007. EPA and ADEQ worked with [Maricopa County Air Quality Department](#) (MCAQD) to determine if air emission controls for the air stripping groundwater treatment systems could be removed and still be protective for human health and the environment. ADEQ and MCAQD issued letters stating that the air emission controls cannot be removed. The PCs submitted to MCAQD (citation for the risk assessment document) and the Reasonably Available Control Technology for the Central Groundwater Treatment Facility, NIBW Superfund Site, in Scottsdale, Arizona dated September 11.

In early 2007, the [Agency for Toxic Substances and Disease Registry](#) (ATSDR) agreed to conduct a public health evaluation of potential past exposures to contaminants in the municipal drinking water system in the Site that may have occurred before the system's contaminated wells were closed in 1981. ATSDR is a federal public health agency, part of the U.S. Department of Health and Human Services. ATSDR serves the public by using the best science to respond to public health concerns and provide health information to prevent harmful exposures to toxic substances. ATSDR completed a public health assessment of the Site in 1989 in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act ([CERCLA](#)) of 1980, as amended. ATSDR gathered additional relevant and applicable data about the Site's groundwater and municipal water to further evaluate the past exposures. When the evaluation was completed, ATSDR issued a report called a public [health consultation](#) describing whether the exposures have any public health implications. The lead environmental health scientist for this Site was Dr. Jane Zhu. If you have a question or need more information, please contact her at 800-CDC-INFO, or visit the ATSDR Web site.

In October, water treated at the MRTF from Well PCX-1 was directed to Tower 2 for nine days while the normally-used Tower 3 was under inspection. On October 16, 2007 a [trichloroethene](#) (TCE) exceedence occurred from the MRTF. On this date samples were taken which contained 14 parts per billion (ppb) of TCE exiting the treatment facility. Water from the treatment facility was mixed with water coming from the AAWC's arsenic treatment facility, and so it was calculated that the contamination entering the drinking water system met safe drinking water standards. Due to laboratory communications and equipment failures this exceedence was not reported to the EPA or ADEQ until November 9. Samples taken of the water leaving the MRTF on October 8 and October 22 showed no detection of TCE. EPA and ADEQ directed the NIBW PCs to conduct a thorough third-party review of the plant and its operations.

2008: On the morning of January 16, an operator returning to the MRTF found that the blower operating in the treatment tower was not operating. The operator re-started the blower but the plant was shut down at approximately 9:00 a.m. It was found that the plant had been running without the blower operating since approximately 2:30 p.m. on January 15. Between the times that the blower turned off and the time the plant was shut down, approximately 3,639,000 gallons of water was delivered from the MRTF to the AAWC. Water with up to 22 ppb of TCE was delivered to the Paradise Valley customers of AAWC. In agreement with the EPA, ADEQ, and Maricopa County the MRTF was shut down pending an investigation and modifications to the plant. The plant was examined by a third-party consultant who re-evaluated both the plant infrastructure and its operating methods. The plant was re-started on April 25, with concurrence from EPA, Maricopa County, and ADEQ following important modifications to the plant and its operations. Principally these were:

- The PCX-1 Well and its treatment train were totally isolated from the drinking water system using physical separations. Water from Well PCX-1 is treated and placed in the Arizona Canal and is sampled on a daily basis during the initial start-up phases.
- The MRTF is now manned on a 24-hour per day, 7-day per week basis when operating.
- Malfunctioning electrical equipment including instrumentation and alarms was repaired or replaced.
- Sampling frequency was expanded.
- A complete third-party engineering evaluation of the MRTF was conducted.

The [Arizona Department of Health Services](#) stated that there was no public health hazard because of the low rate of exposure to the tap water.

In July, a study was conducted at the Hohokam Elementary School to determine if past irrigation had resulted in contamination to the school grounds. Two separate sampling events occurred; one on July 3 and the other on October 10. Sampling was conducted by the NIBW PCs through a contractor with oversight by ADEQ and consultants for the EPA. Sampling was done of both soil and soil gas at the Site. No threat to public health was found in a [review](#) completed by the ATSDR. Also in July, the NIBW PCs presented a draft Long-Term Operations Work Plan which was revised using comments from the EPA, ADEQ, SRP, the City of Scottsdale, Maricopa County, and AAWC. A revised work plan was submitted in November 2008 and is currently undergoing review.

A complete third-party engineering review and rehabilitation of the CGTF was completed. No significant concerns were found and modifications to the plant operating system were completed to bring the technology up to current levels.

2009: On April 29 the NIBW PCs, working with the AAWC, EPA and ADEQ, began rehabilitation of the MRTF.

2010: Rehabilitation of the MRTF was completed by the NIBW PCs. This work included numerous electrical, safety, and alarm system upgrades, and complete cleaning, repair, resurfacing, and repacking of all three treatments towers. The FYR process began which includes interviews with stakeholders and community members as well as site inspections to aid in the assessment of the remedy effectiveness.

Contaminants:

The current contaminants of concern in groundwater include [volatile organic compounds](#) (VOCs). VOCs were used as degreasing agents and [solvents](#) at various industrial facilities located in the study area. Contaminants of concern at the Site may change as new data become available.

Six City of Scottsdale wells are affected by VOCs including [trichloroethene](#) (TCE) and lower levels of [tetrachloroethene](#) (PCE), 1,1-[dichloroethene](#) (1,1- DCE) and [chloroform](#). TCE is the only VOC quantified in samples from these wells at levels that exceed primary drinking water standards. As mentioned earlier, six of the seven affected wells are not currently operating and the seventh (City of Scottsdale No. 6) is equipped with a VOC treatment system.

Public Health Impact:

Groundwater at the Site is used to irrigate various crops and feed livestock. In addition, contaminated groundwater is being treated at the CGTF to drinking water standards and supplied to the [City of Scottsdale](#)'s municipal water supply. Water from the MRTF well PCX-1 is currently treated to remove TCE and is then discharged to the SRP canal for irrigation use.

Site Hydrogeology:

The Site is underlain by alluvial sediments which can be divided into three hydrostratigraphic units. These units consist of the UAU, the MAU, and the LAU.

The UAU varies in thickness; however, in the vicinity of the study area, the thickness of the UAU is approximately 120 to 160 feet. The UAU consists primarily of sand, coarse gravel, cobbles, and boulders in this area. Groundwater occurs at depths ranging from approximately 90 feet to approximately 130 feet, with up to 40 feet of saturated thickness. The saturated thickness of the unit changes with the time of year, but generally decreases to the north. Groundwater in the UAU appears to be flowing in a west-northwest direction.

The MAU primarily consists of silt, clay, and interbedded fine sands. Relatively thin layers of coarser deposits are scattered throughout the unit. The thickness of the MAU ranges from approximately 360 to 660 feet. Groundwater flow in the MAU appears to be toward the north-northwest in the study area. Water levels in wells perforated in the MAU occur at depths of 140 to 180 feet.

The LAU is less well defined. Samples collected during [monitor well](#) installation indicate the unit consists of moderately to well-cemented sands and gravel. The depth of the unit is not well defined; however, it is known that the LAU is underlain by the red unit which consists primarily of fanglomerate, conglomerate, and sandstone. The direction of ground water flow in the LAU is thought to be similar to that of the MAU.

Water level data indicate that there is a downward-directed, vertical hydraulic gradient between the UAU and the MAU, and between the MAU and the LAU. Groundwater quality data indicate contamination at NIBW has occurred from various organic solvents, particularly TCE, PCE, 1,1-DCE, and 1,1,1-trichloroethane (1,1,1-TCA). All of these chemicals have been found in monitor wells at concentrations exceeding state action levels. TCE is the most widespread contaminant with a maximum reported concentration of 2,500 parts per billion (ppb) from a UAU monitor well. The maximum concentration reported from a MAU or LAU monitor well is 700 ppb. TCE has been detected in several municipal wells at concentrations up to 390 ppb and from depths as great as 1,100 feet below land surface.

Contacts:

Name	Phone/Fax	E-mail
Wendy Flood, ADEQ Project Manager	(602) 771-4654*/ (602) 771-4272 fax	flood.wendy@azdeq.gov
Rachel Loftin, EPA Project Manager	(415) 972-3253**/ (415) 947-3528 fax	loftin.rachel@epa.gov
Felicia Calderon, ADEQ Community Involvement Coordinator	(602) 771-4167*/ (602) 771-4272 fax	fmc@azdeq.gov
Vicki Rosen, EPA Community Involvement Coordinator	(415) 972-3244**/ (415) 947-3528 fax	rosen.vicki@epa.gov

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

**Call EPA's toll-free message line at (800) 231-3075.

Information Repository:

Interested parties can review select Site documents at the [Scottsdale Civic Center Library](#) located at 3839 Drinkwater Boulevard in Scottsdale, Arizona, (480) 312-2474.

Site files are also located at the ADEQ Main Office located at 1110 W. Washington Street, 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.

The complete official Site file can be reviewed at the EPA Region IX, [Records Center](#), Mail Stop SFD-7C, 95 Hawthorne Street, Room 403, San Francisco, CA 94105, (415) 536-2000.