# West Central Phoenix (WCP) North Plume

Water Quality Assurance Revolving Fund (WQARF) Site

## Boundaries:

The WCP North Plume WQARF Site (Site) is bounded approximately by W. Highland Avenue to the north, 37th Avenue to the east, Indian School Road to the south and 44th Avenue to the west in Phoenix, Arizona.

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 issued the Final Remedial Investigation (RI) Report on April 16, 2009. The report contains investigative data, the Land and Water Use Survey report and the Remedial Objectives (RO) report.

ADEQ continues to operate the soil vapor extraction (SVE) system at the F & B Manufacturing (F&B) facility. To date the system has removed over 41,600 pounds of volatile organic compounds (VOCs). The system removes on average over 25 pounds of tetrachloroethene (PCE) from the soil each month.

**SVE Treatment System at F&B Manufacturing Facility**

The Hill Brothers Chemical Company, a facility in the North Plume project area, has initiated the operation of an SVE system addressing contaminated soil beneath their facility. At the end of 2008 the system had successfully removed over 400 pounds of VOCs.

The aquifer test conducted adjacent to the F&B facility supplied ADEQ with needed information to evaluate the possibility of conducting groundwater treatment.

As the result of recent budget shortfalls, ADEQ has suspended semi-annual groundwater monitoring activities at this Site.

## Community Involvement Activities:

A community advisory board (CAB) has been formed for the Sites. These meetings are open to the public. Details of meeting agendas and minutes for 2008 and 2009 can be viewed at the ADEQ Web site. The most recent fact sheet can be found on the ADEQ Web site.

## Site History:

**1967-1991:** The F&B facility is located near 39th Avenue and Montecito Avenue. Since 1967, F&B has been manufacturing metal aircraft and spacecraft parts and performing sheet metal forming, and assembly. Solvents are used as degreasing agents to clean the surface of the metals. PCE was used as the degreasing solvent until approximately October 1987, when it switched to 1,1,1-trichloroethane (TCA). In April 1991, ADEQ discovered information that PCE had leaked from F&B's degreaser into the soil under the building.

**Aquifer Test**

**1969:** The Hill Brothers facility is located near 42nd Avenue and Turney Avenue. The Hill Brothers facility has operated as a chemical distribution facility at this location since 1969. Chemicals that include acids, bases, solvents, chlorine, and concrete additives were stored in above ground storage tanks on-site prior to transfer into containers for distribution.

**1977-1994:** The former Pyramid Industries, Inc. (Pyramid) facility is also located at near 39th Avenue and Montecito Avenue, across from the F&B facility. Pyramid operated a telephone and television cable riser boxes manufacturing facility from 1977 to 1994. Operations at the facility required the use of acids, caustics, heavy metals, paints, and methylene chloride. Several suspected sources of contamination have been identified on the Pyramid facility, including the loading dock/drywell, paint room, and historic hook cleaner.

**1982-1993:** VOCs were first detected in groundwater in the WCP area in July 1982. The City of Phoenix (COP) detected trichloroethene (TCE) in four municipal public supply wells, COP Wells #70, #71, #151, and #152. The Arizona Department of Health Services , Salt River Project , and the COP confirmed the presence of VOCs in the groundwater with sampling in 1983, 1985, and 1986. Groundwater from COP wells #70 and #71 contained the highest concentrations of TCE and, therefore, were immediately shut down. Wells #151 and #152 were monitored for VOC concentrations from 1982 until 1989. As a result of sampling conducted during February of 1989, COP elected to take both wells #151 and #152 off-line on March 7, 1989.

The former Rinchem facility is located near 41st Avenue and Turney Avenue. Rinchem operated a chemical warehouse and distribution facility that handled solvents, oils, and fuels. Rinchem was the only company that operated at the facility from facility construction in 1982 through June 1993. Several suspected sources were identified on the Rinchem facility, including the former

repackaging area and former tank farm.

**1984:** Field investigation activities for the Site have been conducted between 1984 and the present time. Several contaminants have been detected in soil and groundwater samples collected during field investigations at the four facilities. The primary contaminants of concern were TCE, PCE, and 1,1-dichloroethene (1,1-DCE).

Four facilities were identified as likely sources of the groundwater contamination in the Site. The four facilities were as follows: the F&B facility, Pyramid facility, former Rinchem facility, and Hill Brothers facility. Field investigation activities at the four facilities in the Site have been conducted since 1984.

**1987-1998:** In 1987, the WCP area was designated a WQARF Priority List site. In 1997, ADEQ established a Registry for WQARF sites which replaced the Priority List. The Site was placed on the WQARF Registry in April 1998 with a score of 50 out of a possible 120. The Site score was re-evaluated in 2000 with a revised score of 55.

**1992:** In late 1992, ADEQ entered into a consent decree (CD) with F&B to conduct a RI/feasibility study (FS), remediate PCE-contaminated soil on-site, reimburse past costs and pay oversight costs.

**1995-1999:** From 1995 until 1998, F&B was financially unable to fulfill the requirement under the CD. Between 1998 and 1999, ADEQ and F&B negotiated a new CD, which was approved by the Court in August 1999. As stated under the new CD, ADEQ would complete the RI/FS and conduct the remediation of the facility.

**1999:** ADEQ and F&B entered into a financial hardship CD in Federal Court. Under the CD, ADEQ conducts the RI/FS and remediation. F&B was required to make annual payments for a period of time in amounts calculated as a percentage of net sales.

**2000-2006:** ADEQ operated an SVE system at the F&B facility since August 2001 to remediate the PCE contamination beneath the vapor degreaser. In addition, ADEQ removed approximately 210 cubic yards of soil beneath the vapor degreaser during two excavations in July 2000 and September 2001. As of December 2006, over 41,000 pounds of PCE were removed from the source area by the SVE system.

**2006:** In August, ADEQ issued the Draft RI Report for the Site for public comment to meet the requirements established under Arizona Revised Statutes § 49-287.03 and Arizona Administrative Code R18-16-406. Groundwater samples and water level measurements were collected in September 2006.

**2007:** As of December, over 41,400 pounds of VOCs were captured by the SVE system at the F&B manufacturing facility. ADEQ had a Groundwater Risk Model performed with information available from the former Rinchem facility. Based upon the results of the model it was determined that the concentration of of VOCs in the soil did not merit the placement of a remedial system.

**2008:** Three new wells were installed in the project area. One well was the result of a Prospective Purchasing Agreement with the State of Arizona. In a public benefit arraignment the new well was installed in the western portion of the project area. Additionally, two wells were installed in an effort to evaluate the potential to capture and treat contaminated groundwater.

Hill Brothers Chemical Company installed an SVE treatment system to be operated to remediate potentially contaminated soils beneath the facility.

**SVE Treatment System at Hill Brothers Chemical Company**

## Contaminants:

The current contaminants of concern in groundwater include the chlorinated solvents tetrachloroethene (PCE), trichloroethene (TCE), 1,1-dichloroethene (1,1-DCE), vinyl chloride, and chromium. Other contaminants at the Site include: benzene, toluene, ethylbenzene, total xylenes, methyl tertiary butyl ether (MTBE), and nitrates. Contaminants of concern at the Site may change as new data become available.

## Public Health Impact:

To date, testing in the WCP area indicates no exposure to the contamination. Sampling shows that the contaminated soils are under asphalt parking lots or asphalt-surfaced storage areas, or under the concrete floors of buildings. Contaminated drinking water wells in the area have been shut down. In addition, notices have been sent out to all known residences within the WCP area for the testing of domestic wells for contamination.

## Site Hydrogeology:

The Site is located within the West Salt River Valley sub-basin of the Phoenix Active Management Area . The Salt River Valley is an alluvial filled basin located in the Basin and Range physiographic province.

The Site is underlain by silty sands and sandy silts with interbedded clay layers and gravelly sand zones from ground surface to approximately 80 feet below ground surface (bgs). This unit is referred to as the upper alluvial unit (UAU). Beneath that, a 350 foot thick fine grained unit consisting of primarily silt, clay with silty sand and gravel interbeds exists. This is referred to as the middle alluvial unit (MAU). Within the MAU beneath the Site, there is one prominent, laterally continuous coarse-grained interval that is approximately 30 feet thick. This unit is encountered at a depth of approximately 250-280 feet bgs.

Beneath the MAU, the lower alluvial unit (LAU) is encountered, which overlies bedrock. A bedrock graben has been interpreted to exist beneath the Site. This graben trends northeast -

southwest and dips gradually to the southwest. It is bounded by normal faults that are possibly associated with a large concealed fault known as the Grand Avenue Fault. The Grand Avenue Fault trends northwest and lies northeast of the Site. The LAU is either absent or thin along the up-thrown sides of the normal faults beneath the Site, and can be as much as 200 feet thick in the down-dropped block.

Depth to groundwater has declined in the past several years. This is attributed principally to the ongoing drought. In 1999, the depth to groundwater in the UAU was approximately 122 feet bgs. By 2002, the depth to groundwater was approximately 132 feet bgs. Depth to groundwater as of March 2004 was 120 feet to 145 feet bgs. The Site sits along a groundwater divide in the UAU with groundwater flowing to the northwest across most of the Site and to the southwest in the far southern part of the Site. The gradient was approximately 0.003 to the west-northwest as of March 2004. The coarse grained interval in the MAU acts as a groundwater sink, with water level elevations approximately 30 feet lower than the UAU and approximately 15 feet lower than the LAU. Groundwater flow direction in the coarse grained interval in the MAU is to the west.

## 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 Burton Barr Central Library (Arizona Room) 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, Phoenix. With 24-hour notice, an appointment to review related documentation is available 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. Please contact (602) 771-4380 or (800) 234-5677 to schedule an appointment to review these documents.