Site Review and Update

INDIAN BEND WASH AREA

SCOTTSDALE, MARICOPA COUNTY, ARIZONA

CERCLIS NO. AZD980695969

SEPTEMBER 29, 1993

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333

Site Review and Update: A Note of Explanation

The purpose of the Site Review and Update is to discuss the current status of a hazardous waste site and to identify future ATSDR activities planned for the site. The SRU is generally reserved to update activities for those sites for which public health assessments have been previously prepared (it is not intended to be an addendum to a public health assessment). The SRU, in conjunction with the ATSDR Site Ranking Scheme, will be used to determine relative priorities for future ATSDR public health actions.

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Prepared by

Remedial Programs Branch
Division of Health Assessment and Consultation
Agency for Toxic Substances and Disease Registry

SUMMARY OF BACKGROUND AND HISTORY

This Site Review and Update (SRU) is a review of the available data on the North Indian Bend Wash (NIBW) National Priorities List (NPL) site and an update of the health assessment done on this site by the Agency for Toxic Substances and Disease Registry (ATSDR) in 1989. The current public health status of the NIBW site and the need, if any, for public health activities will be identified.

Site Description and History

The Indian Bend Wash Superfund Site, including both the North and South Study Areas, covers approximately 13 square miles in Scottsdale and Tempe, Arizona (Figure 1) (1). The site includes developed land for residential, commercial/industrial use, and developed open land (parks, golf courses, etc.) (2).

The Indian Bend Wash Superfund Site was placed on the U.S. Environmental Protection Agency's (EPA) National Priorities List (NPL) in September 1983 on the basis of volatile organic compounds (VOCs) detected in samples from Scottsdale water supply wells as early as 1981 (2). Scottsdale Well Numbers 6 and 31, and well numbers 71, 72, and 75 formerly owned by Phoenix resulted in detection of the VOCs trichloroethylene (TCE), tetrachloroethylene (PCE), 1,1-dichloroethylene (1,1-DCE), and chloroform above state action levels and federal drinking water standards (1,2,3).

The source of the contamination is from various industrial facilities in NIBW who used or disposed on-site volatile organic compounds (VOCs) in the past, late 1950's to 1960's (2). To protect human health, these domestic water production wells were shut down after the discovery of the contamination. Subsequently, the City of Tempe found groundwater contamination in the northern part of Tempe, in what is now South Indian Bend Wash (4).

In 1988, EPA divided the site into two areas, North Indian Bend Wash (NIBW) and South Indian Bend Wash (SIBW), divided roughly just north of the Salt River. NIBW which took higher priority initially due to the higher contamination levels is bound by Curry Road on the south, Scottsdale Road on the west, Pima Road on the east, and Chapparal Road on the north (Figure 2)(2).

NIBW comprises approximately 10 square miles of the City of Scottsdale, Maricopa County, Arizona (2). Although not part of the study area, water wells in the City of Tempe and the Salt River Pima-Maricopa Indian Community in Maricopa County, Arizona are monitored on a quarterly basis (5).

Groundwater in the NIBW area is a source of drinking water for over 350,000 people. The affected City wells and the IBW study area lie within the Paradise Valley basin, which is divided into Upper, Middle, and Lower Alluvium Units. The Middle and Lower Alluvium Units are reported to be the principal sources of groundwater for many large capacity wells. Most of the drinking water in Scottsdale is supplied by groundwater wells that tap the Middle and Lower Alluvium Units (3).

Municipal water-supply wells with VOC contamination above federal or state standards were taken off-line as they were identified. Scottsdale Well Number 6 was equipped with a VOC treatment facility and returned to potable use in 1985 with water from the well blended with municipal drinking water to meet state and federal standards (1).

Based on preliminary investigations by the State of Arizona, the Cities of Scottsdale and Tempe, and EPA, EPA commenced a Remedial Investigation/Feasibility Study (RI/FS) primarily focused on NIBW in 1984 which led to the 1991 RI/FS (2).

In April 1988, the City of Scottsdale issued a draft Operable Unit Feasibility Study (OUFS) outlining clean-up remedies for groundwater in the Middle and Lower Alluvial Units while EPA's overall study of NIBW continued. In September 1988, after opportunity for public review and comment on various clean-up options, and with the concurrence of the Arizona Department of Environmental Quality (ADEQ) and Arizona Department of Water Resources (ADWR), EPA selected a clean-up plan for the Middle and Lower Alluvial Units which was described in the 1988 Record of Decision (ROD) (1,6).

Since the initial discovery of groundwater contamination in 1981, the Cities of Phoenix, Scottsdale, and Tempe, state of Arizona, Arizona Department of Environmental Quality (ADEQ), Arizona Department of Water Resources (ADWR), and various companies and municipalities have participated in studying the soil and groundwater contamination to characterize the problem and to develop appropriate clean-up actions (2).

ATSDR Health Assessment

The Agency for Toxic Substances and Disease Registry (ATSDR) issued a health assessment of the North Indian Bend Wash site on April 14, 1989 (7). The 1989 ATSDR health assessment of the NIBW site concluded the site was a potential public health concern because of possible human exposure to hazardous substances at concentrations that may result in adverse health effects. In addition, it concluded that human exposure to site contaminants may have occurred in the past, and may currently be occurring.

The health assessment further indicated that this site was being considered for follow-up health studies (7).

The 1989 health assessment recommended soil sampling, pond sampling (sediments, surface water, fish), well inventory within NIBW area, monitoring of private, public, and municipal water wells, and appropriate environmental monitoring and worker safety during remediation to ensure public health (7).

A petition request was received by ATSDR to conduct a health assessment of the North Indian Bend Wash site.

CURRENT CONDITIONS OF SITE

Site Visit

ATSDR Regional Representative and ATSDR Atlanta staff conducted a drive-by of the North Indian Bend Wash area on March 5, 1993 and August 4, 1993 (8,9).

The NIBW area is composed of residential, commercial, industrial and developed open lands (parks, golf courses, ponds, etc.).

The major purpose of the Indian Bend Wash is to provide a buffer system of lakes to control any flood water and move it safely to the Salt River (5). Posted signs in English and Spanish are still in place at McKellip's Pond and Roosevelt Pond with warnings to not swim, fish, or wade because of contamination. On August 4, 1993, ATSDR staff noticed adults fishing at McKellip's Pond and children wading in the Roosevelt pond. However, since the water which currently supplies the McKellip's pond has been meeting drinking water standards, the restrictions for fishing may be removed in the future (10).

EPA and the State of Arizona are overseeing the clean-up work required by the 1988 ROD. The clean-up is being performed by the potentially responsible parties (PRP's) under a November 1991 Consent Decree for NIBW. Construction activities for the NIBW groundwater clean-up system began September 1992, with a completion date of January 1994 (Figure 3). In addition, the 1991 ROD will address the clean-up plan for work on soil contamination and shallow groundwater contamination (upper alluvial unit and soil/vadose zone) as a result of the 1991 RI/FS (Figure 4)(11).

The City of Scottsdale is the only provider of municipal drinking water at the site. There are no exposures currently occurring from any municipal water from the Scottsdale wells. In addition, no private wells are currently used for drinking water purposes (5,10).

CURRENT ISSUES

Public Health Concerns

The 1988 and 1991 EPA ROD clean-up plans rely heavily upon each other for the successful cleanup of the NIBW site (11). The groundwater contamination remains a potential public health concern although there are no current exposure pathways. Institutional controls are in place to monitor drinking water and remediation is currently ongoing.

As a separate issue, EPA has followed with a September 1991 Interim Remedial Investigation/draft Feasibility Study (IRI/FS), and Plug-In ROD for SIBW (12). The Plug-In approach is where EPA does not select a clean-up for a specific facility. This specialized approach will be used to determine which facilities will have to carry out the soil vapor extraction remedy which has been shown to be the best remedy in the feasibility study of NIBW which has similar soil contamination with VOCs. This remedy does not address the heavy metals which will be a separate action, if necessary (12).

Health Outcome Data

As a result of the 1989 Health Assessment, ATSDR Division of Health Studies (DHS) evaluated the NIBW site for follow-up with respect to health effects. After researching available information, DHS stated that a health study was not recommended (13).

As a result of a possible cluster of leukemia in west central and east central Phoenix, the Arizona Department of Health Services (ADHS) has issued two reports entitled Report on Mortality in Maricopa County 1966-86 and Incidence Study of Childhood Cancer In Maricopa County, Final Report (14,15). As part of the conclusions of these reports childhood cancer and leukemia in the Indian Bend Wash area were not elevated in comparison to rates in eight other areas of Maricopa county. And the childhood cancer and leukemia rates in Maricopa county as a whole were comparable to rates in other states and cities participating in the National Cancer Institute Cancer Surveillance, Epidemiology and End Results (SEER) Program (14,15). ADHS continues to monitor childhood cancer mortality and incidence in Phoenix, Arizona.

Community Health Concerns

Several citizens expressed concern about the groundwater contamination related to past exposures (8). During the ADEQ Open House on July 13-15, 1993, ATSDR did not receive any health or environmental concerns either from the community who attended or those for which letters were sent out by the regional

representative informing them of the Open House and ATSDR's review of the NIBW site (16).

CONCLUSIONS

Status of original conclusions

The conclusions from the 1989 ATSDR health assessment explained that human exposure may currently be occurring. Although the groundwater remains a potential public health concern, there are currently no exposures occurring from any municipal wells since these wells must meet state action levels and federal drinking water standards. No private wells are currently in use in the NIBW area. In 1989, DHS determined that no health study was recommended.

Recommendations in the 1989 ATSDR health assessment overlooked that EPA had performed in 1988 sampling of water, fish, and sediment in selected ponds in NIBW. However, those recommendations described in the 1989 health assessment have been carried out through the ongoing characterization and remediation by local, state, and federal agencies.

Current conclusions

1. Groundwater contamination remains a potential public health concern although no exposures are currently known to exist.

2. Remediation activities at the NIBW site are currently ongoing as a result of the 1988 and 1991 EPA RODs.

3. In 1988, EPA sampled the water, fish, and sediment of selected ponds in NIBW and did not detect significant VOC or metals contamination (2).

4. EPA has performed a 1991 IRI/FS and is currently implementing the Plug-In ROD for SIBW (13).

5. ATSDR Community Health Branch has received a petition from the community for a public health assessment for the Indian Bend Wash Area.

RECOMMENDATIONS

Current Recommendations

Appropriate institutional controls to monitor groundwater contamination should be maintained. ATSDR should acquire updates of the NIBW area remediation to determine if a future consultation is necessary.

ATSDR should acquire additional environmental data and updates of the remediation process of the SIBW site when available to determine if a consultation and/or health assessment will be necessary in the future.

During active remediation of NIBW and SIBW appropriate personal protective equipment which meets the Occupational Safety and Health Administration standards and National Institute for Occupational Safety and Health recommendations should be worn. In addition, dust generated during remedial activities should be optimally controlled to protect workers and surrounding community.

ATSDR Community Health Branch will provide the community the final North Indian Bend Wash site SRU as ATSDR's response to the petition. If a future consultation and/or public health assessment is necessary, the Indian Bend Wash community will be informed by ATSDR.

The data and information developed in the Site Review and Update have been evaluated to determine if follow-up actions may be indicated. No further public health actions are indicated at this time.

DOCUMENTS REVIEWED

1. Malcolm Pirnie. Operable Unit Feasibility Study for Remediation of Groundwater in the Southern Scottsdale Area. City of Scottsdale, Arizona. City Project No. W-8501. April, 1988.

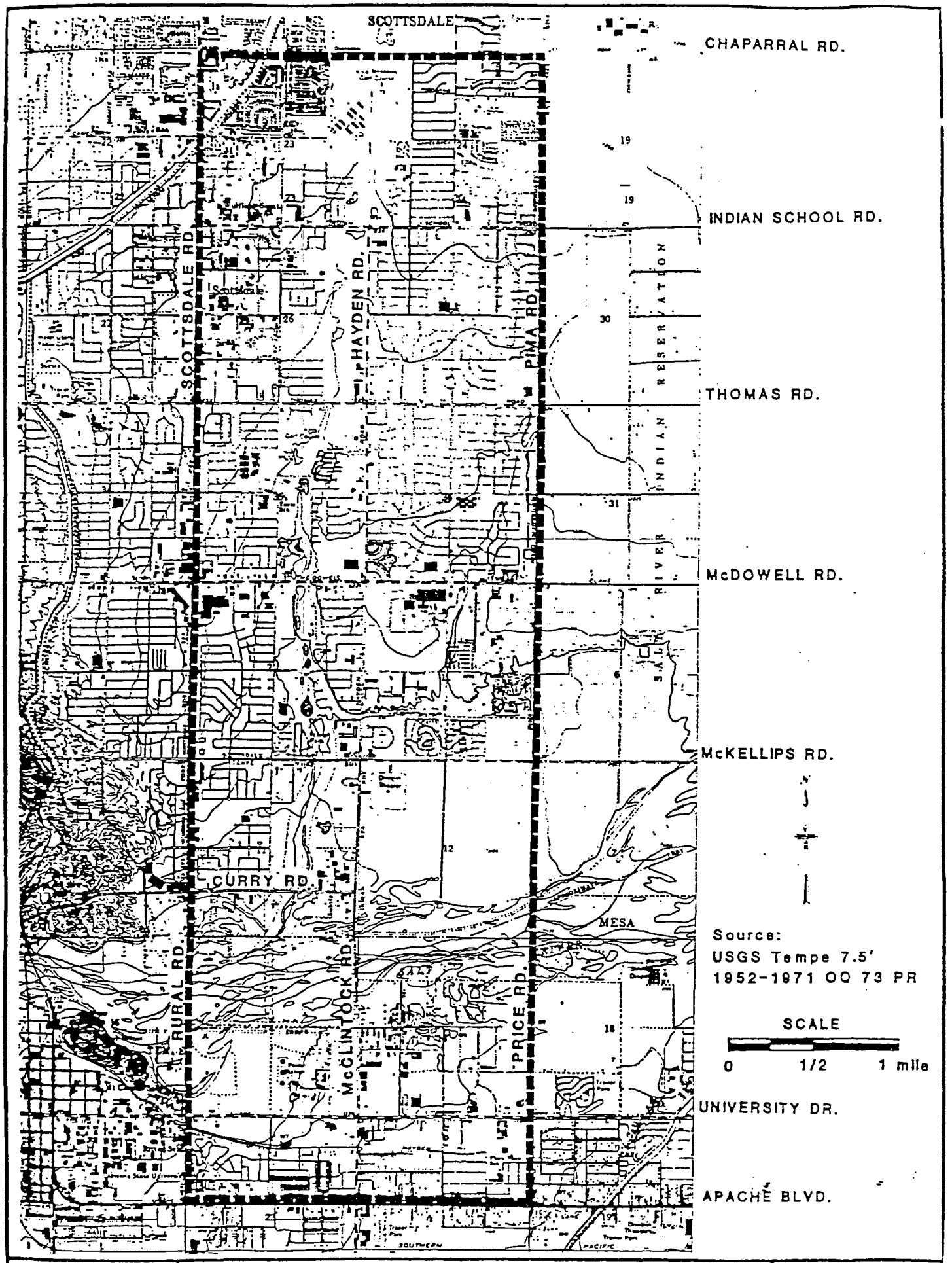
2. CH2M Hill. Public Comment Draft Indian Bend Wash Remedial Investigation/Feasibility Study Report. EPA Contract No. 68-W9-0031. Volumes I-V. April, 1991.

3. U.S. EPA. Indian Bend Wash Superfund Site Fact Sheet, Scottsdale, Arizona. U.S. EPA, Region 9, San Francisco, CA. February, 1992.

4. U.S. EPA. Indian Bend Wash Superfund Site, Tempe, Arizona. Update on Site Activities at South Indian Bend Wash Fact Sheet. U.S. EPA, Region 9, San Francisco, CA. February, 1992.

5. U.S. EPA. Letter from U.S. EPA, Region 9, San Francisco, CA to Director for Health Assessment Coordination. North Indian Bend Wash Health Assessment Comments. February, 1989.

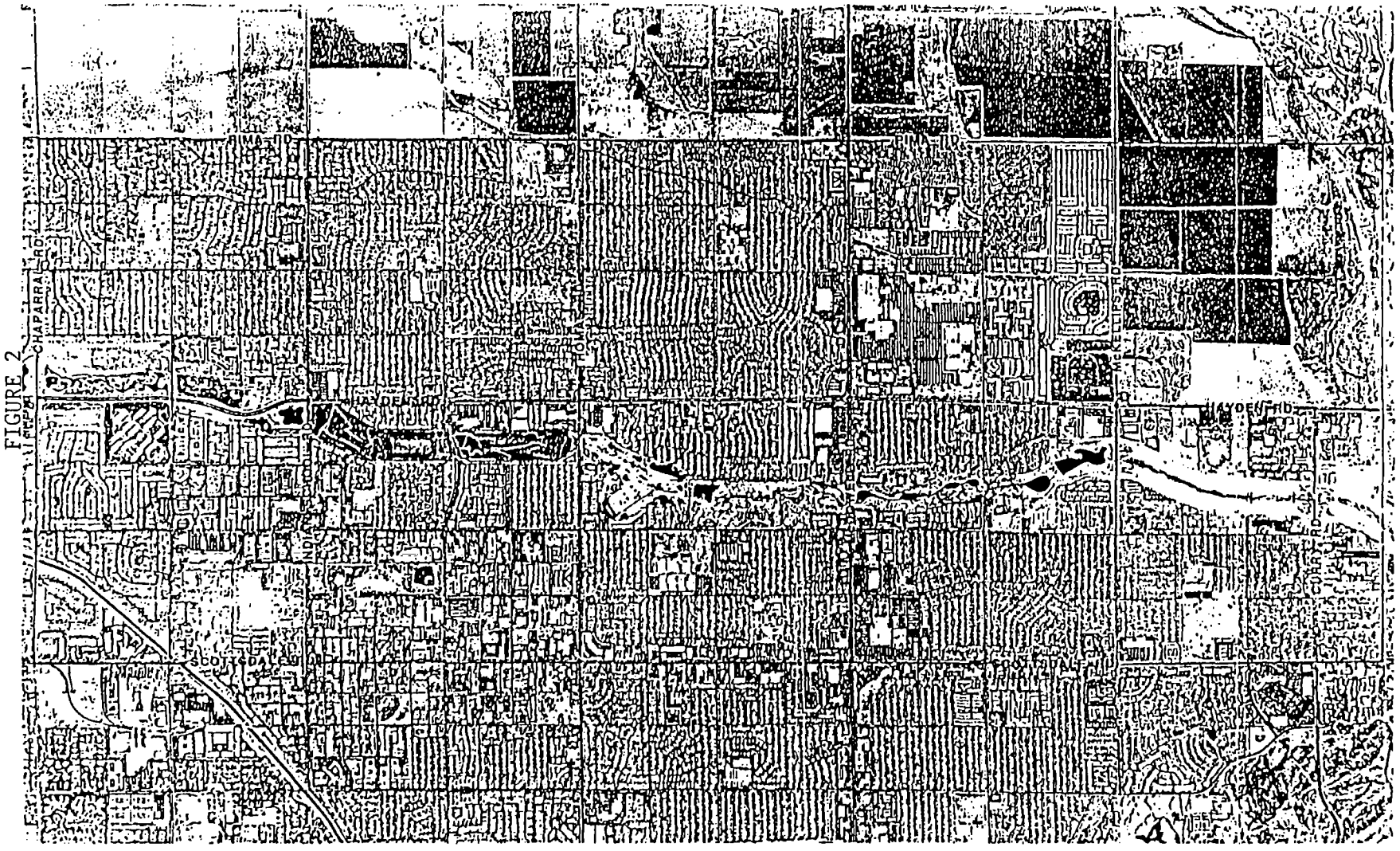
FIGURE 1

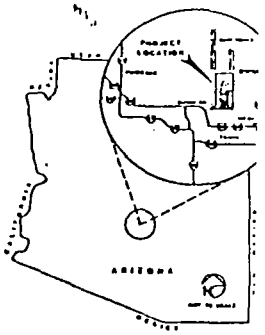


MALCOLM

OPERABLE UNIT FEASIBILITY STUDY FOR REMEDIATION OF GROUNDWATER IN THE SOUTHERN SCOTTSDALE AREA

MALCOLM PIRNIE, INC.





2000 0 2000 4000 FEET

FIGURE 1-2
SITE LOCATION M
NORTH INDIAN BEND WASH

FIGURE 2

9

PREVIOUS CLEAN-UP DECISION AND CONSENT DECREE

EPA studies of the contamination have included developing possible measures for addressing the environmental problems that have been identified. In September 1988, after an opportunity for public review and comment on various clean-up options, and with the concurrence of the ADEQ and ADWR, EPA selected a clean-up plan for the Middle and Lower Alluvial Units. This clean-up plan is contained in a document called a Record of Decision (ROD).

The 1988 ROD requires groundwater pumping from four large currently unused City of Scottsdale wells that will withdraw water from the Middle and Lower Alluvial Units. The water will flow through underground pipes to a treatment facility, where it will be treated by air stripping to reduce the levels of VOCs such as TCE to meet drinking water standards. The treated water will be delivered to existing City of Scottsdale drinking water reservoirs next to the treatment facility site. The 1988 ROD also requires extensive monitoring to evaluate when and where changes to the initial clean-up system may be necessary.

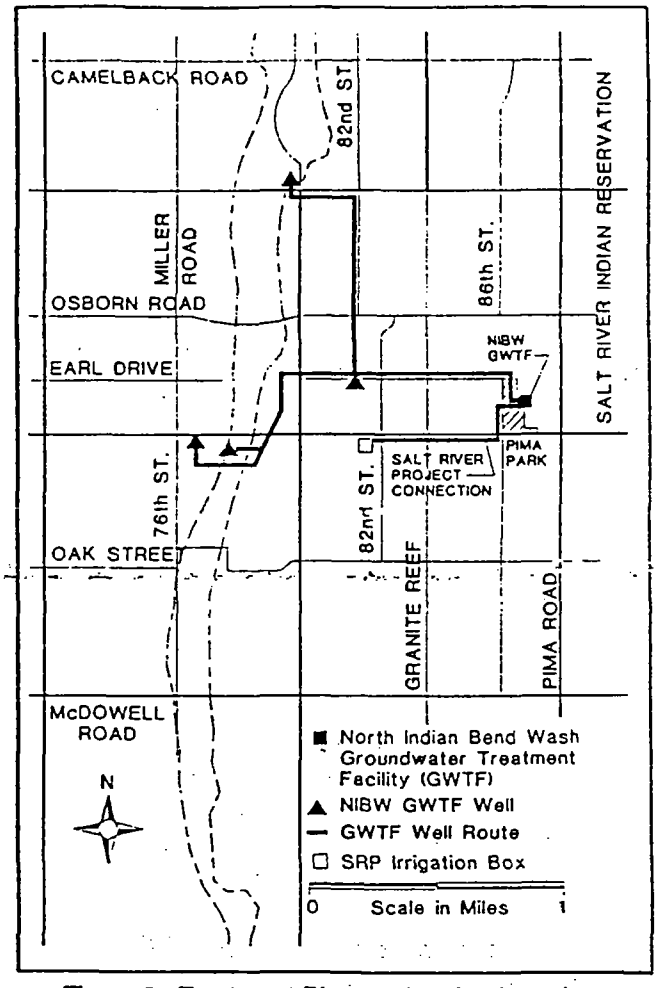


Figure 3: Treatment Plant and Piping Locations

As shown in Figure 3, the treatment facility will be located on the eastern edge of Pima Park, northwest of the intersection of Pima and Thomas Roads. This location provides approximately 200 feet between the treatment facility and the closest residence.

The 1988 ROD requires emission controls to reduce the amount of airborne volatile organic chemicals from the stripping towers. Therefore, air leaving the towers will pass through a filter made of specially prepared carbon that will remove at least 90% of the airborne chemicals. Contaminant concentrations in the exhaust air will be reduced because TCE and similar chemicals tend to cling, or adsorb to, the specially treated carbon (see box, page 4).

Construction activities for the NIBW groundwater clean-up system began the week of September 28, 1992. All construction related to this project is expected to be completed by January 1994. Although all involved parties will try to minimize the impacts of the construction, there are likely to be some local disruptions, especially during installation of piping between the wells and the treatment facility. Late in September, we mailed to our NIBW mailing list a fact sheet that contained more detailed information about the treatment plant construction. If you would like a copy of our September 1992 fact sheet, please contact the EPA personnel listed on page 8 of this fact sheet.

If you have questions and/

FIGURE 4

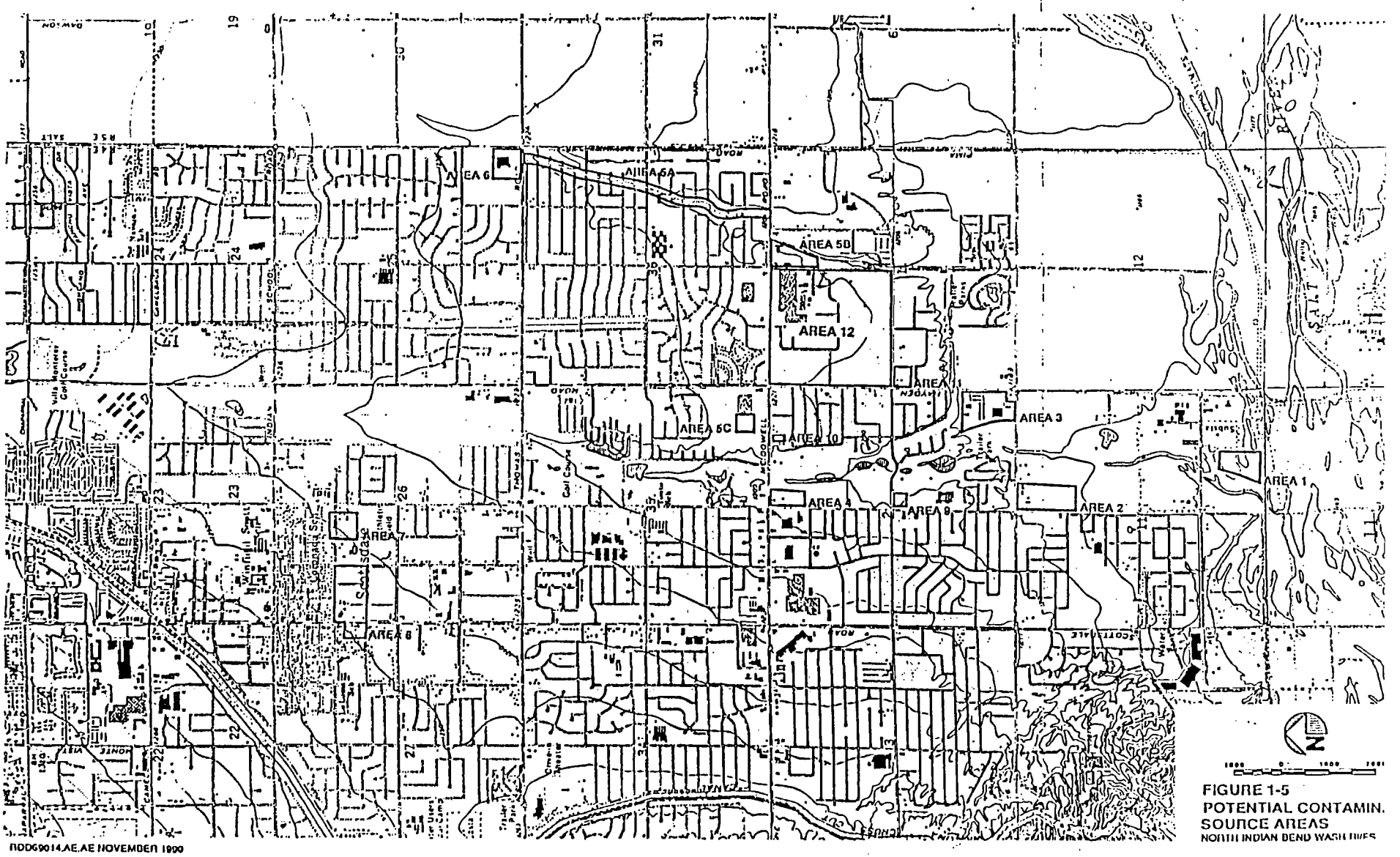


FIGURE 1-5
POTENTIAL CONTAMIN.
SOURCE AREAS
NORTH INDIAN BEND WASH AREA

RODG9014.AE.AE NOVEMBER 1990