

PUBLIC HEALTH ASSESSMENT

WILLIAMS AIR FORCE BASE
MESA, MARICOPA COUNTY, ARIZONA

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LIST OF ABBREVIATIONS

ACGIH	American Conference of Governmental Industrial Hygienists
ADEQ	Arizona Department of Environmental Quality
ADWR	Arizona Department of Water Resources
AFB	Air Force Base
AFBCA	Air Force Base Conversion Agency
ASTs	Aboveground storage tanks
ASU	Arizona State University
ATSDR	Agency for Toxic Substances and Disease Registry
BEHP	Bis(2-ethylhexyl)phthalate
DDE	Dichlorodiphenyldichloroethene
DDT	Dichlorodiphenyltrichloroethane
EPA	United States Environmental Protection Agency
FFA	Federal Facilities Agreement
HBGL	Health Based Guidance Level
IRP	Installation Restoration Program
JP-4	Jet petroleum grade 4

MEK	Methyl ethyl ketone
MRL	Minimal Risk Level
NPL	National Priorities List
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
OWS	Oil/water separator
PAH	Polynuclear aromatic hydrocarbons
PCB	Polychlorinated biphenyls
PCE	Tetrachloroethylene
PEL	Permissible Exposure Limit
PHA	Public Health Assessment
PHAP	Public Health Action Plan
POL	Petroleum, oil, and lubricant
PRG	Preliminary Remediation Goal
PVC	Polyvinyl chloride
RAB	Restoration Advisory Board
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
SVE	Soil vapor extraction
SVOCs	Semivolatile organic compounds
TCE	Trichloroethylene
TLV	Threshold Limit Value
TPH	Total petroleum hydrocarbons
USAF	United States Air Force
USTs	Underground storage tanks
VEMUR	Voluntary Environmental Mitigation Use Restriction
VOCs	Volatile organic compounds

PUBLIC HEALTH ASSESSMENT

WILLIAMS AIR FORCE BASE MESA, MARICOPA COUNTY, ARIZONA

SUMMARY

Williams Air Force Base (Williams AFB) is in Mesa, Maricopa County, Arizona, approximately 30 miles southeast of Phoenix and just east of Chandler. Williams AFB, constructed in 1941, operated primarily as a flight training school from 1942 until the base closed on September 30, 1993. A variety of hazardous wastes have been handled, stored, and disposed of at Williams AFB, resulting in soil and groundwater contamination at a number of locations.

The Air Force has identified 32 areas of potential concern at Williams AFB. These sites include landfills, fire protection training areas, pesticide burial areas, former skeet ranges and firing ranges, and hazardous materials storage areas. The Agency for Toxic Substances and Disease Registry (ATSDR) conducted a site visit in February 1997. ATSDR staff examined all 32 areas for potential [exposure](#) pathways but identified only one potential exposure pathway of concern associated with Williams AFB--exposure to soil at the Former Skeet Range (Site SS-19). This public health assessment (PHA) focuses on the evaluation of this pathway.

Potential Exposure to Contaminated Soil at the Former Skeet Range

The Former Skeet Range *does not pose a current [public health hazard](#)* because people are unable to access areas that contain high lead [concentrations](#) (greater than 400 milligrams per kilogram [mg/kg]) and therefore are not exposed to contaminated soil. Future exposures will not pose a public health hazard because corrective activities will (1) reduce [contaminant](#) concentrations and (2) ensure that exposures to soil with lead at concentrations above 400 mg/kg are prevented. ATSDR has further ensured the safety of future residents by preparing an educational fact sheet that will inform future residents of the area's former use and actions being taken to clean up the area. Past exposures to lead-containing soil at the Former Skeet Range are unlikely because the area was covered by lawns, foundations, roadways, and sidewalks.

Exposure to the Other 31 Sites

An analysis of available information for the other 31 sites at Williams AFB indicates that these sites are not associated with past, current, or future public health hazards because (1) no site-related contaminants are present, (2) contaminant concentrations detected are too low to pose a public health hazard, (3) past and current exposures have been prevented by strict security measures, or (4) affected areas have been or will be remediated.

BACKGROUND

Site Description and History

Site Description

Williams Air Force Base (Williams AFB) is in Mesa, Maricopa County, Arizona, approximately 30 miles southeast of Phoenix and just east of Chandler (see [Figure 1](#)). A variety of hazardous wastes have been handled, stored, and disposed of at Williams AFB, resulting in soil and groundwater contamination at a number of locations. Thirty-two potentially contaminated sites have been identified at Williams AFB (see [Figure 2](#)).

Operational Activities

Williams AFB, constructed in 1941, operated primarily as a flight training school from 1942 until the base closed on September 30, 1993. Additional training programs for bombardiers, bomber pilots, instrument bombing specialists, and fighter gunnery were also housed on base. A variety of activities, such as maintenance of aircraft (e.g., T-36, T-38, and F-5 planes) and firefighter training involved the use of hazardous materials ([IT, 1989](#)). Industrial solvents, jet fuels, oils, lubricants, plating rinse waters, aircraft washing solutions, paint strippers, caustics, and pesticides were used at the base. Many of these materials contain [volatile organic compounds \(VOCs\)](#) (e.g., benzene, toluene, xylene, methyl ethyl ketone [MEK], and trichloroethylene [TCE]); [semi-volatile organic compounds \(SVOCs\)](#) (e.g., polynuclear aromatic hydrocarbons [PAHs]); metals (e.g., lead, zinc,

and copper); and total petroleum hydrocarbons (TPHs) ([AFBCA, 1994](#); [IT, 1990, 1996a](#)).

Remedial and Regulatory History

The U.S. Air Force (USAF) began evaluating Williams AFB in 1983 through its Installation Restoration Program (IRP). The IRP is designed to identify, evaluate, and clean up [environmental contamination](#) resulting from past waste management practices. Investigators discovered soil and groundwater contamination during these investigations. As a result, Williams AFB was placed on the [Environmental Protection Agency's \(EPA\) National Priorities List \(NPL\)](#) on November 21, 1989. The USAF, the EPA, the Arizona Department of Environmental Quality (ADEQ), and the Arizona Department of Water Resources entered a federal facilities agreement (FFA) on September 21, 1990. The FFA prioritizes and schedules investigation and remedial activities, establishes a cooperative relationship between federal and state agencies, defines the roles and responsibilities of the different agencies, and resolves disputes ([AFBCA, 1994](#); [IT, 1996c](#)).

More than 100 potentially contaminated areas have been investigated at Williams AFB. Characterization studies (e.g., an initial assessment study, remedial investigations, a facilities assessment study, and an evaluation/assessment study) have been conducted to determine whether these sites are actually contaminated, and, if so, the extent of the contamination. Based on the results of these investigations, concern over the majority of sites was quickly eliminated ([IT, 1993](#)). Thirty-four sites (the IRP sites) were considered to pose potential hazards and were investigated more extensively. Today, there are 32 IRP sites; 1 noncontiguous site (ST-14) was transferred to Luke AFB, Arizona, and another site (SD-15) has been incorporated into IRP Site SD-09 ([USAF, 1996b](#)). The 32 IRP sites (listed in [Appendix A](#)) have been investigated under 6 operable units. Many of these sites contained contamination at concentrations requiring remedial action. Remedial activities have been completed at the majority of sites and are ongoing at others.

Local Demographics

Before its 1993 closure, Williams AFB supported a staff of approximately 870 to 1,600 civilian employees and 3,029 military personnel, 2,700 of whom lived on site ([AFBCA, 1994](#); [EPA, 1992](#); [IT, 1990, 1996c](#)).

Williams AFB, Maricopa County, is in the city of Mesa which has a population of 313,649. Phoenix, which has a population of 1,048,949, is 30 miles northwest of the base ([IT, 1996c](#); see [Table 1](#)).

The Agency for Toxic Substances and Disease Registry (ATSDR) used 1990 census data to compile demographic information in [Tables 2](#) and [3](#). The census tract that surrounds the base covers over 119 square miles, but it had only 107 persons per square mile in 1990. The base, which has since closed, had a density of 419 persons per square mile. The somewhat higher proportion of males in both areas is typical of locations near military sites. The high percentage of persons of Hispanic origin in the nearby area is also typical for Arizona, due largely to its proximity to the Mexican border. There are relatively high percentages of children under age 10 and very low percentages of persons age 65 and older in both areas (See [Figure 3](#)).

Only one household in the base area was owner occupied in 1990, while more than three-quarters off site were owner occupied; a high percentage of owner-occupied households suggests a relatively stable, nontransient population. More than 20% of households off site were mobile homes, which is quite high. The median value of off-site owner-occupied households was relatively high at more than \$126,000, while median rent was considerably more moderate.

Land Use

Upon closing, Williams AFB was transferred to the Air Force Base Conversion Agency (AFBCA) ([IT, 1996a](#)). AFBCA assumed responsibilities for the restoration and reuse of the base and is working with the Restoration Advisory Board and Williams redevelopment partnership to maximize reuse. For redistribution purposes, the base has been divided into 42 parcels ([USAF, 1996a](#)). To date, 77% of the base's 4,043 acres have been transferred for reuse ([USAF, 1996a](#))--mostly to the Williams Gateway Airport Authority and Arizona State University (ASU). Land has also been transferred to the Maricopa County Community College District, Maricopa County Accommodation School District, the Department of Health and Human Services, and the U.S. Army Reserve Center.

AFBCA will make additional transfers to ASU, the National Weather Service, the City of Mesa, the Salt River Project, the Gila River Indian Community, and the Maricopa County Flood Control District in the future. The USAF will retain several on-base buildings ([USAF, 1996a](#)).

Williams AFB is in a valley that has a long history of intensive agricultural use. Predominant crops are citrus, cotton, and alfalfa ([EPA, 1992](#)). Over the next 25 years, proposed commercial and residential development plans could dramatically alter the demographics and land use of areas surrounding the base. The East Mesa Subarea Plan proposes to develop portions of Mesa, Gilbert, Apache Junction, and land to the north of Williams AFB. Under this plan, land would be developed within 2 miles of the base's southern border, but areas developed to the north of the base would be more than 4 miles away. The Queen Creek-Chandler Heights Plan proposes to develop land immediately adjacent to the base's southern border ([IT, 1996a](#)).

ATSDR Involvement

In February 1997, ATSDR staff members conducted a site visit at Williams AFB. They toured the base and met with personnel from Williams AFB, Brooks AFB, ADEQ, and the Arizona Department of Health Services. ATSDR staff did not identify any community health concerns during the site visit. ATSDR identified the Former Skeet Range (Site SS-19) as the only area that poses a potential health concern ([ATSDR, 1997a](#)). Exposure to contaminated soil at the Former Skeet Range will be evaluated and discussed in this public health assessment (PHA). [Appendix A](#) describes

the remaining 31 IRP sites.

Quality Assurance and Quality Control

In preparing this PHA, ATSDR relied on the information provided in the referenced documents and contacts. The agency assumes adequate quality assurance and control measures were followed with regard to chain-of-custody, laboratory procedures, and data reporting. The validity of the analyses and conclusions drawn in this document are determined by the availability and reliability of the referenced information.

PUBLIC HEALTH ASSESSMENT

WILLIAMS AIR FORCE BASE
MESA, MARICOPA COUNTY, ARIZONA

EVALUATION OF ENVIRONMENTAL CONTAMINATION AND POTENTIAL EXPOSURE PATHWAYS

Introduction

In this section, exposure pathways are evaluated to determine whether people accessing or living near Williams Air Force Base (Williams AFB) could have been (past scenario), are (current scenario), or will be (future scenario) exposed to site-related contaminants. In evaluating exposure pathways, the Agency for Toxic Substances and Disease Registry (ATSDR) determines whether exposure to contaminated media has occurred, is occurring, or will occur through ingestion, dermal (skin) contact, or inhalation of vapors. When exposure to contaminated media occurs, the exposure pathway is regarded as "complete." To determine whether completed pathways pose a potential health hazard, ATSDR compares contaminant concentrations to health-based comparison values. Comparison values are calculated from scientific literature available on exposure and health effects. These values, which are derived for each of the media, reflect the estimated contaminant concentration for a given chemical that is *not* likely to cause adverse health effects, given a standard daily ingestion rate and standard body weight. If contaminant concentrations are above comparison values, ATSDR further analyzes exposure variables (for example, duration and frequency) and the toxicology of the contaminant. [Figure 4](#) summarizes this exposure evaluation process.

ATSDR analyzed all 32 Installation Restoration Program (IRP) sites at Williams AFB to determine whether there are past, current, or future public health hazards associated with them. ATSDR identified exposure to contaminated soil at the Former Skeet Range as the only pathway that could potentially cause a health hazard ([ATSDR, 1997a](#)). Information on the Former Skeet Range is summarized in [Table 1](#), the text following, and [Appendix A](#). An analysis of available information for the other 31 sites, which is summarized in [Appendix A](#), indicates that these sites are not associated with public health hazards either because (1) no site-related contaminants were present, (2) contaminant concentrations detected are too low to pose a health hazard, (3) past and current exposures have been prevented by strict security measures, or (4) affected areas have been or will be remediated ([AFBCA, 1994, 1997a, 1997b](#); [ATSDR 1996, 1997b, 1997c, 1997d](#); [EPA, 1992](#); [IT 1996a, 1996b, 1996c](#)).

Former Skeet Range

Approximately 33 acres of Williams AFB's property were used as a skeet range between 1942 and 1952 ([IT, 1996d](#)). While the range was in operation, considerable lead shot was deposited on the ground. In 1953, an on-base housing development, the South Desert Village, was built on top of the Former Skeet Range. The lead shot was mixed in with subsurface soils and buried during development and landscaping activities ([IT, 1996d](#)). While residents lived in the housing development, the lead shot remained in subsurface soils, covered by lawns, foundations, roadways, and sidewalks. No records indicate that residents discovered or were affected by lead shot in soil ([ATSDR, 1996](#); [IT, 1996d](#)).

The housing development was vacated in 1993 when the base closed. Neglect of the properties caused lawns to die and allowed rodents, such as ground squirrels, to establish dens in the area. These burrowing animals brought the lead shot to the surface and Williams AFB representatives discovered lead shot immediately outside the rodent dens, during the 1995 IRP field investigation ([IT, 1996d](#)). Once base personnel became aware of the lead shot problem, they placed a fence around the *entire* South Desert Village to limit the potential for exposure. In 1995 and 1996, four thousand nine hundred twenty-four (4,924) soil samples were collected from one thousand two hundred twenty-six (1,226) boreholes to characterize the extent of lead contamination. The number of intact lead pellets were counted for each of the soil samples. An additional twenty-two (22) samples were collected between 1993 and 1995 and analyzed for total lead to assess lead contamination and to evaluate the potential for lead leaching. Twelve (12) of these samples were analyzed in a treatability study via EPA Toxicity Characteristic Leaching Procedure. No sample was found to exceed the lead EPA toxicity limit of five (5) mg/L. Total lead concentrations ranged from 360 to 70,000 milligrams (mg)/kilogram (kg) in the top 5 inches of soil ([IT, 1996d](#)).

According to Environmental Protection Agency (EPA) Region IX preliminary remediation goals and Arizona's health-based guidance levels, areas containing less than and including 400 mg/kg of lead do not cause excessive health hazards and are acceptable for future residential use. Using this guideline, Williams AFB reduced the amount of fenced land so that it now includes only those areas with lead concentrations greater than 400 mg/kg. About 100 to 120 vacated houses are still within the fenced area (see [Figure 5](#)). Arizona State University plans to use these houses for graduate student housing in the future.

On April 22, 1997, EPA Region IX, the Arizona Department of Environmental Quality (ADEQ), the Air Force Base Conversion Agency (AFBCA), and the Arizona Department of Water Resources signed a consensus statement that addresses the planned remedial activities for the portions of the Former Skeet Range with lead concentrations in excess of 400 mg/kg ([AFBCA, 1997c](#), [1997d](#)). The statement contains the following agreements:

- The top 6 inches of accessible soil (soil that is not covered by foundations, roadways, and sidewalks) will be removed and replaced with clean fill. This will reduce the soil lead concentrations to below 400 mg/kg in the top six inches of soil.
- Areas covered by foundations, roadways, and sidewalks will be considered capped. This cap prevents exposure to underlying soils. A Voluntary Environmental Mitigation Use Restriction (VEMUR) will be issued for these capped areas. The Arizona Amended Soil Remediation Rule requires that this property be classified as non residential however it can be inhabited provided that frequent and repeated contact with the soil has been limited through the use of a protective cap thereby eliminating unacceptable risk to the inhabitants.
- Provisions will be made to ensure that the cap remains intact. An operation and maintenance plan will be drafted to address cap monitoring and cap repair. Additionally, future residents will be notified that they are not allowed to disturb the cap.
- A plan will be drafted to identify clean-up measures that will be necessary if the cap is removed.

Current Exposure

Soil at the Former Skeet Range does not pose a current public health hazard. There are no current residents in the South Desert Village. Although non-residents could access unfenced portions of the site, contact with soil in these areas will not pose a health hazard because the lead concentrations are too low (400 mg/kg and less). A fence prevents access to areas with higher lead concentrations, and warning signs are posted.

Future Exposure

Soil at the Former Skeet Range will not pose a future health hazard. According to ADEQ and EPA Region IX standards, areas with lead concentrations less than and including 400 mg/kg do not pose a health hazard to future residents. Additionally, areas where concentrations currently exceed 400 mg/kg will not pose a health hazard to future residents because the activities outlined in the consensus agreement will (1) reduce contaminant concentrations to safe levels and (2) ensure that exposures to areas contaminated with lead at levels greater than 400 mg/kg are prevented ([AFBCA, 1997c](#), [1997d](#)). An Operation and Maintenance plan will outline provisions to ensure that the caps remain intact. To provide further insurance of the safety of future residents, ATSDR prepared an educational fact sheet that will inform residents of the area's former use and actions being taken to clean up the area.

Past Exposure

Soil at the Former Skeet Range did not pose a health hazard in the past. Although residents had access to the Former Skeet Range between 1953 and 1993, they were isolated from the lead contaminated soil because the soil was covered by lawns, foundations, roadways, and sidewalks ([ATSDR, 1996](#); [IT, 1996d](#)). As a result, residents were not continually and repeatedly exposed to lead shot. ATSDR can not conclusively state that no exposures occurred in the past. If exposures did occur when residents were digging or gardening in their yards, exposures would have been infrequent and of short duration. Such intermittent exposures are unlikely to be associated with a health hazard.

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WILLIAMS AIR FORCE BASE MESA, MARICOPA COUNTY, ARIZONA

CONCLUSIONS

Based on a thorough evaluation of available environmental information, ATSDR has reached the following conclusions.

1. Soil at the Former Skeet Range does not pose a current public health hazard because people are unable to access areas that contain high lead concentrations (greater than 400 milligrams per kilogram [mg/kg]).
2. Future exposures to soil at the Former Skeet Range will not pose a public health hazard because corrective activities will (1) reduce contaminant concentrations and (2) ensure that exposures to areas contaminated with lead at levels greater than 400 mg/kg are prevented. An Operation and Maintenance plan will outline provisions to ensure that the cap remains intact. To provide further insurance of the safety of future residents, ATSDR prepared an educational fact sheet that will inform residents of the area's former use and actions being taken to clean up the area.
3. Soil at the Former Skeet Range did not pose a health hazard in the past. Past exposures to lead-containing soil at the Former Skeet Range are unlikely because the area was covered by lawns, foundations, roadways, and sidewalks. Because there was no continued and repeated contact with lead shot in subsurface soil, past exposures did not pose a public health hazard. ATSDR can not conclusively state that no exposures occurred in the past. If exposures did occur when residents were digging or gardening in their yards, exposures would have been infrequent and of short duration. Such intermittent exposures are unlikely to be associated with a health hazard.
4. The other 31 IRP sites pose no public health hazard or no apparent public health Hazard.

PUBLIC HEALTH ACTION PLAN

The public health action plan (PHAP) for Williams Air Force Base (Williams AFB) contains a description of actions taken and those to be taken at and in the vicinity of the base subsequent to the completion of this public health assessment (PHA). The purpose of the PHAP is to ensure that this PHA not only identifies potential and ongoing public health hazards but also provides a plan of action designed to mitigate and prevent adverse human health effects resulting from exposure to hazardous substances in the environment. The following public health actions at Williams AFB are completed, ongoing, or planned:

Completed Actions

Former Skeet Range

1. Samples have been collected to determine the extent of lead contamination at the Former Skeet Range.
2. Upon first becoming aware of the lead problem, the base personnel erected a fence around the entire South Desert Village. After contamination at the site was better delineated, fencing was limited to those areas with lead contamination greater than 400 milligrams per kilogram (mg/kg).
3. ATSDR prepared an educational fact sheet that will inform future residents about the area's former use and actions being taken to clean up the area.

The Other 31 IRP Sites

1. Base personnel used one or more of the following approaches to remediate areas with soil contamination: soil vapor extraction (SVE) treatment, excavation, and/or capping.
2. Base personnel have used a pump and treat system, soil vapor extraction, and natural attenuation to reduce concentrations of groundwater

contaminants at the Liquid Fuels Storage Area (ST-12).

3. The findings of this PHA were reviewed by the other Divisions of ATSDR and no follow-up health activities are recommended for Williams AFB at this time. If additional information becomes available that may indicate a public health risk, this information will be evaluated by ATSDR.

Ongoing and Planned Actions

Former Skeet Range

1. As agreed in the April 22, 1997, consensus statement, the following activities will be conducted for those portions of the Former Skeet Range with lead contamination greater than 400 mg/kg:
 - The top 6 inches of accessible soil (soil that is not covered by foundations, roadways, or sidewalks) will be removed and replaced with clean fill.
 - Future use of the entire capped area will be restricted to non-residential use.
 - Provisions will be made to ensure that the cap remains intact. An operation and maintenance plan will be drafted to address cap monitoring and cap repair. Additionally, future residents will be notified that they are not allowed to disturb the cap.
 - A plan will be drafted to identify clean-up measures that will be necessary if the cap is disturbed in the future.

The Other 31 IRP Sites

1. Remedial activities, further characterization, and/or maintenance activities will continue at a number of Williams AFB's Installation Restoration Program sites: the Landfill (LF-04), the Liquid Fuels Storage Area (ST-12), the Fire Protection Training Area (FT-02), the Firing Range/Skeet Range (Site SS-20), and the Old Pesticide/Paint Shop (Site SS-17).

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WILLIAMS AIR FORCE BASE MESA, MARICOPA COUNTY, ARIZONA

Table 1
Location and Population Data for Communities Located Near Williams Air Force Base

City	Direction Relative to Williams AFB	Distance From Williams AFB (miles)	Population ^a
Phoenix	Northwest	30	1,048,949
Apache Junction	North/Northeast	10	21,354
Chandler	West	10	119,227
Gilbert	Northwest	5	51,074
Mesa	North/Northwest	15	313,649
Queen Creek	South	5	3,082
Tempe	Northwest	20	144,289

a. Based on July 1, 1994, census data.

Source: Table adapted from *IT, 1996c*.

Table 2: Population Data, Williams Air Force Base and Nearby Area

	Williams AFB#	Nearby Area#
Total persons	2,490	12,756
Total area, square miles	5.95	119.27
Persons per square mile	419	107
% Male	56.1	52.4
% Female	43.9	47.6
% White	79.8	77.9

% Black	10.1	0.9
% American Indian, Eskimo, or Aleut	1.0	1.3
% Asian or Pacific Islander	4.5	0.6
% Other races	4.5	19.3
% Hispanic origin	6.1	27.4
% Under age 10	26.2	19.4
% Age 65 and older	0.1	5.1

Williams AFB is Census Tract 5228, The nearby area is Census Tract 5227.03.

Source: Census of Population and Housing, 1990: Summary Tape File 1A (Arizona) [machine-readable data files]. Prepared by the Bureau of the Census. Washington, DC: The Bureau [producer and distributor], 1991.

Table 3: Housing Data, Williams Air Force Base and Nearby Area

	Williams AFB#	Nearby Area#
Households*	648	3,520
Persons per household	3.36	3.49
% Households owner-occupied	0.2	76.9
% Households renter-occupied	99.8	23.1
% Households mobile homes	0.0	20.7
% Persons in group quarters	12.6	3.8
Median value, owner-occupied households, \$	162,500	126,600
Median rent paid, renter-occupied households, \$	442	343

Williams AFB is Census Tract 5228, the nearby area is Census Tract 5227.03.

* A household is an occupied housing unit, but does not include group quarters such as military barracks, prisons, and college dormitories.

Source: Census of Population and Housing, 1990: Summary Tape File 1A (Arizona) [machine-readable data files]. Prepared by the Bureau of the Census. Washington, DC: The Bureau [producer and distributor], 1991.

Table 4

Exposure Pathways

Pathway Name	Source of Contamination	Environmental Medium	Point of Exposure	Route of Exposure	Exposed Population	Comment
Soil at the Former Skeet Range	Lead shot, fired at the Former Skeet Range	Soil	Soil in the yards of the South Desert Village	Ingestion Dermal contact	<p>Past: There are about 350 houses located in the Former Skeet Range. Residents living in these homes may have contacted soil.</p> <p>Current: No residents are exposed (the houses are currently vacant).</p> <p>Future: ASU graduate students will occupy the homes in the South Desert Village in the future.</p>	<p>Past:</p> <ul style="list-style-type: none"> Past exposures to lead shot at the Former Skeet Range did not occur because the lead was buried and covered by lawns, foundations, roadways, or sidewalks. Because there was no exposure, no health hazards occurred. <p>Current:</p> <ul style="list-style-type: none"> Currently, no residents live in the South Desert Village. Non-residents could access unfenced portions of the site. Exposures to these areas do not pose a health hazard because the lead concentrations are too low (less than 400 mg/kg). Exposure to areas with higher lead concentrations are prevented by a fence. <p>Future:</p> <ul style="list-style-type: none"> Future exposures to soil at the Former Skeet Range will not pose a health hazard because corrective activities will (1) reduce contaminant concentrations and (2) ensure that exposures to areas contaminated with lead above 400 mg/kg are prevented. To further ensure the safety of future residents, ATSDR prepared an educational fact sheet that will inform residents of the area's former use and actions being taken to clean-up the area.



Figure 1. Area Map



Figure 2. Site Map of 32 IRP Sites



Figure 3. Demographics Within 1-Mile Radius of Williams Air Force Base

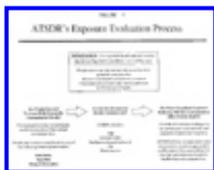


Figure 4. ATSDR's Exposure Evaluation Process



Figure 5. Former Skeet Range (Site SS-19)

Appendix A. Evaluation of Potential Health Hazards Associated With the 32 Installation Restoration Program (IRP) Sites at Williams AFB

Williams AFB Sites	Site Description/ Waste Disposal History	Investigation Results/ Environmental Monitoring Results	Corrective Activities and Current Status	ATSDR's Evaluation of Public Health Hazards
Operable Unit 1				
Landfill (LF-04)	Between 1941 and 1976, wastes were disposed of in the landfill. Wastes included domestic trash and garbage, wood, metal, construction debris, brush, and dried sludge from the sewage treatment plant. Solvents and chemicals may have been disposed of as well.	Soil: SVOCs, pesticides, and metals were detected in surface soil. With the exception of dieldrin (0.25 mg/kg), beryllium (3.8 mg/kg), and lead (117 mg/kg), all contaminants were detected below acceptable health guidelines ¹ or background concentrations. Groundwater: VOCs, SVOCs, TPH, metals, and three radioactive constituents were detected. Several of the contaminants were above ATSDR's drinking water comparison values.	Corrective Activities: <ul style="list-style-type: none"> • The landfill was leveled, contoured, capped with 2 feet of soil, and covered with river rock. • An interceptor trench was constructed around the landfill perimeter. • A fence and warning signs were erected in 1992. • A 30-year post-closure maintenance program is ongoing and includes the following: <ul style="list-style-type: none"> -- landfill cap maintenance (conducted weekly), -- annual soil monitoring, and -- semiannual groundwater monitoring (more monitoring wells will be installed in the future). • A 5-year review will be written in 2000. • Deed restrictions will be drafted to (1) prevent future installation of production wells and future residential land use and (2) to ensure that the cap remains intact. Current Status: <ul style="list-style-type: none"> • Sampling activities and maintenance are ongoing. 	Soil: <i>No public health hazard is associated with soil at this site.</i> Before 1992, on-base residents and base employees could access the landfill, however, the Commander restricted access. No exposures to workers or trespassers occurred frequently enough to pose a health hazard. Current exposures are prevented by a barbed-wire fence and a landfill cap. Future exposures are highly unlikely because deed restrictions will ensure that the landfill cap remains intact and will prevent future residential land use. Groundwater: <i>No public health hazard is associated with groundwater at this site.</i> No drinking water production wells are located in this area; therefore, there were (past scenario) and are (current scenario) no exposures to groundwater. Deed

				restrictions will prevent future exposures by preventing the installation of new drinking water production wells.
Fire Protection Area No. 1 (FT-03)	Between the early 1940s and 1958, this area was used as a fire protection training area. Fuel, waste oils, solvents, paint strippers, and other flammables were burned.	<p>Soil: VOCs, SVOCs, TPH, and metals were detected. With the exception of bis(2-ethylhexyl) phthalate (BEHP) (750 mg/kg in subsurface soil) and beryllium (1.7 mg/kg in surface soil), all contaminants were detected below acceptable health guidelines¹ or background concentrations.</p> <p>Groundwater: Four VOCs and three metals were detected, but at concentrations below acceptable health guidelines¹ or background concentrations.</p>	<p>Current Status:</p> <ul style="list-style-type: none"> • No remedial action required. 	<p>Soil: <i>No public health hazard is associated with soil at this site.</i> Contaminant concentrations are too low to pose a public health hazard to residential populations, employees, or construction workers.</p> <p>Groundwater: <i>No public health hazard is associated with groundwater at this site.</i> No production wells are located in this area; therefore, there were (past scenario) and are (current scenario) no exposures to groundwater. The installation of a new well is highly unlikely. Even if a well is installed in the future, contaminant concentrations are too low to pose a public health hazard.</p>
Radioactive Instrumentation Burial Area (RW-11)	Concrete cylinders were buried in this area. The cylinders may have contained dials painted with radium-luminous paint and electron tubes containing radium-bearing parts.	<p>Soil:</p> <ul style="list-style-type: none"> • <i>Surface radioactivity count (1984):</i> -- No radioactivity detected. • <i>Samples collected before 1992:</i> -- Radium-226 and gross alpha and beta were detected slightly above background. • <i>Samples collected in 1992:</i> -- Radium and radionuclide activity was consistent with background levels. 	<p>Corrective Activities:</p> <ul style="list-style-type: none"> • Concrete cylinders were removed in 1992. <p>Current Status:</p> <ul style="list-style-type: none"> • No further remedial action required. 	<p>Soil: <i>No public health hazard is associated with soil at this site.</i> Before 1992, access was restricted by a barbed wire fence. Past exposures to the general public, therefore, were highly unlikely. Current and future exposures will not pose a public health hazard because remedial activities have reduced the radioactivity to levels that do not exceed background concentrations.</p> <p>Groundwater: <i>No public health hazard is associated with groundwater at this site.</i> No evidence suggests that subsurface contaminants migrated to the underlying</p>

				groundwater. (Soil contaminants were relatively shallow, and the groundwater underlying Operable Unit (OU) -1 is deep [first encountered at 150-250 feet]. Additionally, the net precipitation in the area is negative, indicating that infiltration is an unlikely transport mechanism to groundwater.)
Northwest Drainage System (SD-10)	SD-10, constructed in the 1950s, received drainage from the flight line. Aircraft washing solutions and shop wastes may have entered the drainage system.	Soil: VOCs, SVOCs, TPH, and metals were detected. All VOCs and SVOCs were detected below acceptable health guidelines ¹ . Some metals were detected above ATSDR's soil comparison values and background concentrations. TPH (200 mg/kg) was detected above Arizona's UST regulatory guidelines.	Current Status: <ul style="list-style-type: none"> • No remedial action required. 	Soil: <i>No public health hazard is associated with soil at this site.</i> Contaminant concentrations are too low to pose a public health hazard to residential populations or employees. Groundwater: <i>No public health hazard is associated with groundwater at this site.</i> No evidence suggests that subsurface contaminants migrated to the underlying groundwater. (Soil contaminants were relatively shallow, and the groundwater underlying OU-1 is deep [first encountered at 150-250 feet]. Additionally, the net precipitation in the area is negative, indicating that infiltration is an unlikely transport mechanism to groundwater.)
Pesticide Burial Area (DP-13)	Between 1968 and 1972, drums with unused or outdated pesticides were buried in this area.	Soil: VOCs, SVOCs, pesticides, and metals were detected. With the exception of BEHP (65 mg/kg), dieldrin (0.52 mg/kg), and antimony (52 mg/kg), all contaminants were detected below acceptable health guidelines ¹ or background concentrations.	Corrective Activities: <ul style="list-style-type: none"> • Drums were removed in 1991. Current Status: <ul style="list-style-type: none"> • No further remedial action required. 	Soil: <i>No public health hazard is associated with soil at this site.</i> Contaminant concentrations are too low to pose a public health hazard to residential populations or employees. Additionally, current exposures are prevented by a fence. Groundwater: No evidence suggests that subsurface contaminants migrated to the

				underlying groundwater. (Soil contaminants were relatively shallow, and the groundwater underlying OU-1 is deep [first encountered at 150-250 feet]. Additionally, the net precipitation in the area is negative, indicating that infiltration is an unlikely transport mechanism to groundwater.)
Hazardous Materials Storage Area (SS-01)	Paints, caustics, solvents, and other materials were stored in this area between 1959 and 1983.	Soil: VOCs, SVOCs, TPH, and metals were detected. With the exception of TPH (400 mg/kg), beryllium (2.1 mg/kg), and copper (380 mg/kg), all of the contaminants were detected below acceptable health guidelines ¹ or background concentrations.	Current Status <ul style="list-style-type: none"> No remedial action required. 	Soil: <i>No public health hazard is associated with soil at this site.</i> Contaminant concentrations are too low to pose a public health hazard to residential populations or employees. Groundwater: <i>No public health hazard is associated with groundwater at this site.</i> No evidence suggests that subsurface contaminants migrated to the underlying groundwater. (Soil contaminants were relatively shallow, and the groundwater underlying OU-1 is deep [first encountered at 150-250 feet]. Additionally, the net precipitation in the area is negative, indicating that infiltration is an unlikely transport mechanism to groundwater.)
UST at Building 789 (ST-05)	Five carbon-steel USTs were located in this area: four 12,000-gallon gasoline and diesel tanks and one 1,000-gallon waste oil tank. These tanks were installed in 1941 and abandoned in the 1950s.	Soil: High boiling fuel hydrocarbons (1,660 mg/kg) were detected. Three VOCs were detected, but at concentrations below ATSDR's soil comparison values.	Corrective Activities: <ul style="list-style-type: none"> Five tanks were removed in 1990. Current Status: <ul style="list-style-type: none"> No further remedial action required. 	Soil: <i>No public health hazard is associated with soil at this site.</i> Because the contaminated soil is isolated to the subsurface, no exposures have occurred (past scenario) or are occurring (current scenario). Even if the subsurface soil is brought to the surface in the future, the contaminant concentrations are too

				<p>low to cause a public health hazard. Groundwater: <i>No public health hazard is associated with groundwater at this site.</i> No evidence suggests that subsurface contaminants migrated to the underlying groundwater. (Soil contaminants were relatively shallow, and the groundwater underlying OU-1 is deep [first encountered at 150-250 feet]. Additionally, the net precipitation in the area is negative, indicating that infiltration is an unlikely transport mechanism to groundwater.)</p>
<p>USTs at Building 725 (ST-06)</p>	<p>Two carbon-steel USTs were located in this area: one 12,000-gallon gasoline tank and one 1,000-gallon waste oil tank. Both tanks were installed before 1938 and abandoned around 1954.</p>	<p>Soil: Two VOCs were detected, but below ATSDR's soil comparison guidelines.</p>	<p>Corrective Activities:</p> <ul style="list-style-type: none"> • Two tanks were removed in 1990. <p>Current Status:</p> <ul style="list-style-type: none"> • No further remedial action required. 	<p>Soil: <i>No public health hazard is associated with soil at this site.</i> Because the contaminated soil is isolated to the subsurface, no exposures have occurred (past scenario) or are occurring (current scenario). Even if the subsurface soil is brought to the surface in the future, the contaminant concentrations are too low to cause a public health hazard. Groundwater: <i>No public health hazard is associated with groundwater at this site.</i> No evidence suggests that subsurface contaminants migrated to the underlying groundwater. (Soil contaminants were relatively shallow, and the groundwater underlying OU-1 is deep [first encountered at 150-250 feet]. Additionally, the net precipitation in the area is negative, indicating that infiltration is an unlikely transport</p>

				mechanism to groundwater.)
USTs at Building 1086 (ST-07)	Two concrete 5,000-gallon USTs were located in this area. They contained wastes from the paint stripping shop. In 1987, the tanks were documented as leaky.	Soil: TPH (1,130 mg/kg) was detected above Arizona's UST regulatory guidelines. Methylene chloride was detected, but at concentrations below ATSDR's soil comparison guidelines.	Corrective Activities: <ul style="list-style-type: none"> • Two tanks were removed in 1987. Current Status: <ul style="list-style-type: none"> • No further remedial action required. 	Soil: <i>No public health hazard is associated with soil at this site.</i> Because the contaminated soil is isolated to the subsurface, no exposures have occurred (past scenario) or are occurring (current scenario). Even if the subsurface soil is brought to the surface in the future, the contaminant concentrations are too low to cause a public health hazard. Groundwater: <i>No public health hazard is associated with groundwater at this site.</i> No evidence suggests that subsurface contaminants migrated to the underlying groundwater. (Soil contaminants were relatively shallow, and the groundwater underlying OU-1 is deep [first encountered at 150-250 feet]. Additionally, the net precipitation in the area is negative, indicating that infiltration is an unlikely transport mechanism to groundwater.)
USTs Building 1085 (ST-08)	Three USTs were located in this area: one 280-gallon carbon-steel tank contained cutting oil and solvents, and two 600-gallon concrete tanks contained wastes from the metal plating shop.	Soil: VOCs, SVOCs, TPH, and metals were detected. With the exception of TPH (5,800 mg/kg), benzo(a)pyrene (0.37 mg/kg), benzo(a)anthracene (0.68 mg/kg), and antimony (31 mg/kg), all contaminants were detected below acceptable health guidelines ¹ and background concentrations.	Corrective Activities: <ul style="list-style-type: none"> • Three tanks removed in 1990. • Deed restrictions will be drafted to prevent future installation of production wells and future residential land use. Current Status: <ul style="list-style-type: none"> • No further remedial action required. 	Soil: <i>No public health hazard is associated with soil at this site.</i> As an isolated area located near the flight line, it is highly unlikely that this area was (past scenario) or is (current scenario) accessed by anyone other than employees. In the future, use of this area will be restricted to industrial purposes and access will be limited to employees. Future exposures will not pose a health hazard because contaminant

concentrations are too low.
Groundwater: *No public health hazard is associated with groundwater at this site.* No evidence suggests that subsurface contaminants migrated to the underlying groundwater. (Soil contaminants were relatively shallow, and the groundwater underlying OU-1 is deep [first encountered at 150-250 feet]. Additionally, the net precipitation in the area is negative, indicating that infiltration is an unlikely transport mechanism to groundwater.)

Operable Unit 2

Liquid Fuels Storage Area (ST-12)

Beginning in 1942, fuels (e.g., AVGAS and Jet petroleum grade 4 [JP-4]) were stored in various USTs and aboveground storage tanks (ASTs) within the Liquid Fuels Storage Area. The majority of the storage area was closed in August 1988.

Surface Soil: VOCs, SVOCs, TPH, and metals were detected. With the exception of beryllium (3.5 mg/kg), all contaminants were detected within acceptable health guidelines¹ or background concentrations.
Subsurface Soil: VOCs, SVOCs, TPH, and metals were detected. Several organics (e.g., benzene, 1,4-dichlorobenzene, and toluene); TPH; and two metals (lead and antimony) were detected above health guidelines¹.
Groundwater: About 0.65-1.4 million gallons of free product were on top of the aquifer. VOCs, SVOCs, TPH, and metals were detected. TPH (800,000 micrograms [μg]/ liter [L]); several organics (e.g., benzene, naphthalene, and toluene); and metals (antimony and beryllium) were detected above health guidelines¹.

Corrective Activities:

- Fourteen USTs, associated distribution lines, and five tanks were removed in 1990 and 1991.
- 30,000 gallons of free product were removed by a pump and treat groundwater treatment system.
- The first 25 feet of soil were remediated via soil vapor extraction (SVE). Confirmation samples have been collected, and the area has been deemed clean. A final report was issued in December 1996.
- Deep soil is currently being remediated via SVE. An average of 500-600 gallons of volatiles are removed per day.
- A record of decision (ROD) amendment will be issued in December 1997. The amendment will change the remedial activities specified for deep soil and groundwater from pump and treat to SVE plus natural attenuation.
- A 5-year review will be issued in 2002.
- Deed restrictions will be drafted to prevent future installation of production wells and future residential land use.

Current Status:

Soil: *No public health hazard is associated with soil at this site.* This area has always been surrounded by a fence. Access was (past scenario) and is (current scenario) highly restricted. Past and current exposures to the general public, therefore, are highly unlikely. Exposures to surface soil and the first 10 feet of subsurface soil could occur in the future. However, contaminant concentrations are too low for such exposures to be associated with a public health hazard.
Groundwater: *No public health hazard is associated with groundwater at this site.* No production wells have been impacted by the contaminants in the ST-12 plume; therefore, there were (past scenario) and are (current scenario) no exposures to groundwater. Because corrective activities will

			<p><i>Soil (0-25 feet):</i> No further remedial action is required.</p> <p><i>Subsurface Soil (25 feet to the groundwater table):</i></p> <ul style="list-style-type: none"> • A ROD amendment will address the cleanup of soil extending from 25 feet deep to the groundwater table. <p><i>Groundwater:</i></p> <ul style="list-style-type: none"> • Groundwater will be addressed by intrinsic remediation. 	<p>(1) prevent future exposures (by installing restrictions to prevent future production well installations) and (2) prevent future migration of subsurface contamination to the groundwater table (by remediating subsurface soil), this plume will not pose a public health hazard in the future.</p>
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Operable Unit 3

<p>Fire Protection Training Area No. 2 (FT-02)</p>	<p>From 1958 to 1991, this area was used as a fire protection training area. Waste solvents, hydraulic fluids, oils, and aircraft fuel wastes were burned. Protein foam, chloromethane, aqueous film-forming foam, halon, and dry chemicals were used as extinguishers.</p>	<p>Soil: VOCs, SVOCs, and metals were detected. Some organics (e.g., benzene, chloroform, and 1,4-dichlorobenzene) were detected above health guidelines¹. With the exception of lead, all metals were detected within background concentrations or below ATSDR's soil comparison values. Contamination is generally isolated to the subsurface, but slight contamination is detected in surface soil.</p> <p>Groundwater: Three VOCs (acetone, carbon disulfide, and methylene chloride) and two metals (lead and zinc) were detected. Methylene chloride and zinc were detected above ATSDR's drinking water comparison values</p>	<p>Corrective Activities:</p> <ul style="list-style-type: none"> • 5,000 gallons of fluid from the oil/water separator, sump, and associated piping were removed in 1994. • All surface structures (two concrete fire pits, one sump, one fuel/water separator, pump house and slab, and piping) were removed in 1994. • Two steel ASTs containing JP-4 were removed in 1994. • The area was backfilled with clean fill in 1994. • Subsurface soil will be remediated with an SVE system. • A fence is currently erected around the area. • Deed restrictions will be drafted to prevent the future installation of production wells and future resident land use. <p>Current Status:</p> <ul style="list-style-type: none"> • Corrective activities ongoing. 	<p>Soil: <i>No public health hazard is associated with soil at this site.</i> Contaminant concentrations are too low to pose a public health hazard to residential populations or employees.</p> <p>Groundwater: <i>No public health hazard is associated with groundwater at this site.</i> No production wells have been impacted by contaminants associated with FT-02; therefore, there were (past scenario) and are (current scenario) no exposures to groundwater. Deed restrictions will prevent future exposures by preventing the installation of new production wells.</p>
<p>Southwest Drainage System (SD-09)</p>	<p>SD-09 was connected to the storm sewer and received (1) plating shop rinse water waste (containing chromium, cadmium, and copper); (2) aircraft washing wastes (containing MEK, toluene,</p>	<p>Soil (Before corrective activities):</p> <ul style="list-style-type: none"> • Methyl ethyl ketone, phenol, and metals were detected. All contaminant were detected below health guidelines¹ except cadmium (44-90 mg/kg), chromium (470 mg/kg) and lead (1,500 mg/kg). <p>Soil (after corrective activities):</p> <ul style="list-style-type: none"> • VOCs and SVOCs were detected, but below health guidelines¹. Some metals were detected above ATSDR soil comparison values. 	<p>Corrective Activities:</p> <ul style="list-style-type: none"> • Soil along the upper 350 feet of the drainage ditch was cemented and covered with a 4-inch concrete cap in 1988. • Storm line, the 350 feet of cement, four oil/water separators (OWS), associated piping, and soil were excavated and removed in 1993 and 1994. <p>Current Status:</p> <ul style="list-style-type: none"> • No further remedial action required. 	<p>Soil: <i>No public health hazard is associated with soil at this site.</i> Given the proximity of this area to base housing, on-base residents could have accessed this area in the past. Analysis of surface soil data collected before corrective activities indicates that some metals were detected above health guidelines. Because exposures to the soil would have been infrequent and of short</p>

polyurethane, paint thinners, and sludges); (3) spills from miscellaneous aircraft and vehicle maintenance operations; (4) fuels, lubricants, and hydraulic fluids; and (5) possibly drainage from SS-01.

duration, ATSDR believes that, these contaminants do not pose a past public health hazard. (This area was not used for recreational purposes.) The contaminant concentrations are too low for current and future exposures to be associated with a public health hazard.
Groundwater: *No public health hazard is associated with groundwater at this site.* No evidence suggests that subsurface contaminants migrated to the underlying groundwater. (Soil contaminants were relatively shallow, and the groundwater underlying OU-1 is deep [first encountered at 150-250 feet]. Additionally, the net precipitation in the area is negative, indicating that infiltration is an unlikely transport mechanism to groundwater.)

Operable Unit 4

Electroplating/
 Chemical
 Cleaning
 (Facility 1085,
 Site SS-16)

The electroplating facility has been in use since 1961. The floor of the facility has extensive staining.

Soil: VOCs and metals were detected under the cement floor. With the exception of arsenic (5.8 mg/kg) and tetrachloroethylene (PCE) (49 mg/kg), all contaminants were detected below acceptable health guidelines¹ or background concentrations.
Air: Employee exposures to PCE, TCE, and methylene chloride are well below Occupational Safety and Health Administration's (OSHA) permissible exposure limit (PEL) and American Conference of Governmental Industrial Hygienists' (ACGIH) threshold limit value (TLV).

Corrective Activities:

- Three USTs associated with the facility were removed (see Site ST-08).
- OWS was removed in 1993.
- Deed restrictions will be drafted to prevent the installation of future production wells and future residential land use.

Current Status:

- No further remedial action anticipated.

Soil: *No public health hazard is associated with soil at this site.* Contaminated soil associated with the operational practices of this site are located under the concrete foundation. Access to these soils, therefore, has always been restricted, and exposures have not occurred. In the future, the area will be used by the Williams Gateway Airport, and access to the general public will continue to be highly restricted. If the slab is removed during future development, soil could be exposed, but the PCE and arsenic

				<p>concentrations are too low to pose a health hazard to future employees or construction workers.</p> <p>Groundwater: <i>No public health hazard is associated with groundwater at this site.</i> Based on the nature and concentration of contaminants at OU-4 sites, there is no reason to suspect impacts to groundwater.</p>
<p>Oil/Water Separator-Petroleum, Oil, and Lubricant (POL) (Facility 550, Site SD-18)</p>	<p>This site was used to refuel aircraft and to wash refueling tanks. Wash streams included water, oil, grease, and detergents. A 200-gallon POL OWS was located near the wash area.</p>	<p>Soil: VOCs and SVOCs were detected. All contaminants were detected below acceptable health guidelines¹.</p>	<p>Corrective Activities:</p> <ul style="list-style-type: none"> • OWS was removed in 1993. <p>Current Status:</p> <ul style="list-style-type: none"> • No further remedial action required. 	<p>Soil: <i>No public health hazard is associated with soil at this site.</i> Contaminant concentrations are too low to pose a health hazard.</p> <p>Groundwater: <i>No public health hazard is associated with groundwater at this site.</i> Based on the nature and concentration of contaminants at OU-4 sites, there is no reason to suspect impacts to groundwater.</p>
<p>Aboveground Storage Tanks (AST) 556 and 557 (Site ST-22)</p>	<p>AST 556 (capacity 420,000 gallons) and AST 557 (capacity 840,000) formerly contained JP-4. They are now empty and out of service.</p>	<p>Soil: JP-4, VOCs, and SVOCs were detected. All contaminants were detected below acceptable health guidelines¹.</p>	<p>Current Status:</p> <ul style="list-style-type: none"> • No remedial action required. 	<p>Soil: <i>No public health hazard is associated with soil at this site.</i> Contaminant concentrations are too low to pose a health hazard.</p> <p>Groundwater: <i>No public health hazard is associated with groundwater at this site.</i> Based on the nature and concentration of contaminants at OU-4 sites, there is no reason to suspect impacts to groundwater.</p>

<p>Former Skeet Range (Site SS-19)</p>	<p>Before the 1950s, this area was used as a skeet range. The South Desert Village (on-base housing) was built on top of this area in the 1950s.</p>	<p>Soil: Total lead concentrations ranged from 360-70,000 mg/kg in the top 5 inches of soil. Lead concentrations are above EPA Region IX PRGs (400 mg/kg) and Arizona HBGL (400 mg/kg) in many locations.</p>	<p>Corrective Activities:</p> <ul style="list-style-type: none"> • A fence was erected around the entire South Desert Village when the problem was first discovered. When the area of contamination was better delineated, the fence was reduced to include only those areas with soil concentrations exceeding 400 mg/kg. • As agreed in an April 22, 1997, consensus statement, the following activities will be conducted for portions of SS-19 with lead contamination above 400 mg/kg: <ul style="list-style-type: none"> -- The top 6 inches of accessible soil (soil that is not covered by foundations, roadways, or sidewalks) will be removed and replaced with clean fill. -- Inaccessible areas (soil covered by foundations, roadways, or sidewalks) will be considered capped. A VEMUR will be issued to restrict future residential land use of these capped areas. -- Provisions will be made to ensure that the "cap" remains intact. -- A plan will be drafted to identify necessary clean-up measures if the cap is disturbed in the future. • ATSDR prepared an educational fact sheet that will inform future residents about the area's former use and actions being taken to clean up the area. <p>Current Status:</p> <ul style="list-style-type: none"> • Corrective activities are ongoing. 	<p>Soil: Because the lead was buried and covered by lawns, foundations, roadways, or sidewalks, past exposures to lead shot at the Former Skeet Range were not likely. The South Desert Village has no current residents. Non-residents could access unfenced portions of the site, but the lead concentrations are too low (400 mg/kg and less) for exposures to these areas to pose a health hazard. Exposure to areas with higher lead concentrations are prevented by a fence. Because corrective activities will (1) reduce contaminant concentrations and (2) ensure that exposures to areas contaminated with lead above 400 mg/kg are prevented, future exposures to soil at the Former Skeet Range will not pose a health hazard. To provide further insurance of the safety of future residents, ATSDR prepared an educational fact sheet that will inform residents of the area's former use and actions being taken to clean up the area.</p> <p>Groundwater: Based on the nature and concentration of contaminants at OU-4 sites, there is no reason to suspect impacts to groundwater.</p>
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<p>Firing Range/ Skeet Range (Facility 927, Site SS-20)</p>	<p>This area was used as a target practice area for small arms.</p>	<p>Soil: Lead (5,930 mg/kg) was detected above EPA Region IX PRGs (400 mg/kg) and Arizona HBGL (400 mg/kg).</p>	<p>Corrective Activities:</p> <ul style="list-style-type: none"> • A removal action is scheduled to begin in January 1998. All soil at the backstop containing lead bullets will be removed. • Five to seven borings (depths up to 15 feet) will be drilled to ensure that leaching has not occurred. <p>Current Status:</p> <ul style="list-style-type: none"> • Corrective activities are ongoing. 	<p>Soil: <i>No public health hazard is associated with soil at this site.</i> Past, current, and future exposures were highly restricted. Although this area is not fenced, exposures to non-base personnel were highly unlikely in the past. Trespassers would have been severely reprimanded and could easily be spotted from the watch tower. Although base employees used the area on a daily basis, they were unlikely to come into contact with the contaminated area near the backstop. Base employees and remedial workers who currently have access to the site take necessary precautions to avoid direct contact. Trespassing still remains highly unlikely because trespassers would need to cross active runways to access the site. Corrective activities will remediate the area to levels protective of human health. The area will most likely be transferred to the City of Gilbert and be reused as a firing range.</p> <p>Groundwater: <i>No public health hazard is associated with groundwater at this site.</i> Based on the nature and concentration of contaminants at OU-4 sites, there is no reason to suspect impacts to groundwater.</p>
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<p>Facilities 1020 and 1051 (Site SS-21)</p>	<p>Facility 1020 (the Firing-in-Buttress) and Facility 1051 (the Bore Sighting Bunker) previously contained hazardous materials.</p>	<p>Soil: SVOCs and lead were detected. With the exception of benzo(a)pyrene, all contaminants were detected below acceptable health guidelines¹.</p>	<p>Current Status:</p> <ul style="list-style-type: none"> • No remedial action required. 	<p>Soil: <i>No public health hazard is associated with soil at this site.</i> Contaminated soil associated with the operational practices of this site are located under the concrete foundation. Access to this soil, therefore, has always been restricted, and exposures have not occurred. In the future, the area will be used by the Williams Gateway Airport and access to the general public will continue to be highly restricted. If the slab is removed during future development, soil could be exposed, but the benzo(a)pyrene concentrations are too low to pose a health hazard to future employees or construction workers.</p> <p>Groundwater: <i>No public health hazard is associated with groundwater at this site.</i> Based on the nature and concentration of contaminants at OU-4 sites, there is no reason to suspect impacts to groundwater.</p>
<p>Building 1069 (Site SS-23)</p>	<p>Four ASTs were located in this area: two 550-gallon unleaded gas tanks, one 650-gallon diesel tank, and one 1,000-gallon diesel tank. In 1991, the contents of the 1,000-gallon tank spilled.</p>	<p>Soil: BEHP, di-n-octylphthalate, phenanthrene, and toluene were detected. All contaminants were detected below acceptable health guidelines¹.</p>	<p>Corrective Activities:</p> <ul style="list-style-type: none"> • 1,000-gallon UST was removed. • 550-gallon UST was removed. <p>Current Status:</p> <ul style="list-style-type: none"> • No further remedial action required. 	<p>Soil: <i>No public health hazard is associated with soil at this site.</i> Contaminant concentrations are too low to pose a health hazard.</p> <p>Groundwater: <i>No public health hazard is associated with groundwater at this site.</i> Based on the nature and concentration of contaminants at OU-4 sites, there is no reason to suspect impacts to groundwater.</p>

<p>Building 1010 (Site SS-24)</p>	<p>Building 1010 (the Pesticide Shop) contained various hazardous materials, including nonfriable asbestos material, polychlorinated biphenyls (PCBs), and pesticides.</p>	<p>Soil: One VOC, two SVOCs, and several pesticides were detected, some at concentrations above acceptable health guidelines¹.</p>	<p>Current Status:</p> <ul style="list-style-type: none"> • No remedial action required. 	<p>Soil: <i>No public health hazard is associated with soil at this site.</i> The past, current, and future use of this area will be industrial. Contaminants are too low to pose a health hazard to employees, construction workers, or school-age trespassers (the site is located near a high school).</p> <p>Groundwater: <i>No public health hazard is associated with groundwater at this site.</i> Based on the nature and concentration of contaminants at OU-4 sites, there is no reason to suspect impacts to groundwater.</p>
<p>Concrete Hardfill Area (Site LF-26)</p>	<p>This area was designated for concrete disposal. Other materials, such as vinyl asbestos, tile asbestos, concrete pipe, several drums, empty paint cans, roofing tar buckets, and construction debris, were disposed in this area as well.</p>	<p>Soil:</p> <ul style="list-style-type: none"> • SVOCs and pesticides were detected, some of them , above health guidelines¹. • Asbestos-containing materials were analyzed and deemed nonfriable. 	<p>Corrective Activities:</p> <ul style="list-style-type: none"> • The area was surveyed. Polyvinyl chloride (PVC), tires, PCB transformers, wood, and all inerts have been removed from this area. Contaminated soil was also removed. Inerts that cannot be removed will be identified and brought to the attention of future owners. • A 55-gallon drum and associated soil was removed during a removal action. <p>Current Status:</p> <ul style="list-style-type: none"> • No further remedial action required. 	<p>Soil: <i>No public health hazard is associated with soil at this site.</i> Although this area is not fenced, exposures to non-base personnel were highly unlikely in the past. Trespassers would have been severely reprimanded and spotted by security personnel. Current and future exposures do not cause a health hazard because corrective activities have removed the majority of potentially hazardous materials. Hazardous materials that can not be removed will be brought to the attention of future owners so that they do not inadvertently expose themselves.</p> <p>Groundwater: <i>No public health hazard is associated with groundwater at this site.</i> Based on the nature and concentration of contaminants at OU-4 sites, there is no reason to suspect impacts to groundwater.</p>

<p>Facility 1004 (Site SS-33)</p>	<p>Facility 1004 consisted of a storage igloo that was used to store outdated pesticides. The igloo was located on a concrete pad.</p>	<p>Surface contamination (pulverized concrete): Several SVOCs, PCBs, and pesticides were detected, some at concentrations exceeding acceptable health guidelines¹.</p>	<p>Corrective Activities:</p> <ul style="list-style-type: none"> • The igloo and concrete pad were removed. <p>Current Status:</p> <ul style="list-style-type: none"> • No further remedial action required 	<p>Surface Area (pulverized concrete): <i>No public health hazard is associated with exposure to the concrete surfaces in this area.</i> In the past, base employees accessed this area and could have been exposed to contaminants spilled on the concrete pad. The contaminant concentrations detected, however, were too low to pose a public health hazard. Because the pad has been removed, there are no current exposures and no anticipation of future exposures.</p> <p>Soil: <i>No public health hazard is associated with soil at this site.</i> Because the concrete pad did not have a drain, no contaminants could escape to the soil.</p> <p>Groundwater: <i>No public health hazard is associated with groundwater at this site.</i> Based on the nature and concentration of contaminants at OU-4 sites, there is no reason to suspect impacts to groundwater.</p>
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Operable Unit 5

<p>Airfield USTs (ST-25)</p>	<p>Reports suggest that USTs were located near Taxiway No. 6. No USTs were identified during geophysical searches, but one buried drum (filled with soil) was discovered.</p>	<p>Soil (Before corrective activities):</p> <ul style="list-style-type: none"> • No visual evidence of soil contamination appeared, within the drum. • No samples were collected. <p>Soil (after corrective activities):</p> <ul style="list-style-type: none"> • One VOC (methylene chloride) was detected, but at concentrations below acceptable health guidelines¹. 	<p>Corrective Activities:</p> <ul style="list-style-type: none"> • Drum removed. • Soil surrounding drum was excavated. • Excavation was backfilled with clean soil. <p>Current Status:</p> <ul style="list-style-type: none"> • No further remedial activity required. 	<p>Soil: Access to this area was (past scenario), is (current scenario), and will continue to be (future scenario) highly restricted. Additionally, soil potentially contaminated by USTs is isolated to the subsurface. Even if the soil is brought to the surface in the future, contaminant concentrations are too low to cause a problem.</p> <p>Groundwater: Based on the nature and concentration of contaminants at OU-5 sites, there is no reason</p>
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				to suspect impacts to groundwater.
Paint Shop Leach Field (WP-27)	Wastes from the paint shop (primarily latex paint) were drained through a PVC pipe and disposed in this leach field.	<p>Soil (after first excavation): One SVOC (di-n-butyl-phthalate) and TPH (135 mg/kg) were detected. Seven metals were detected above background concentrations.</p> <p>Soil (after second excavation): Some metals were detected above ATSDR's soil comparison values.</p>	<p>Corrective Activities:</p> <ul style="list-style-type: none"> • Two excavations were conducted: <ul style="list-style-type: none"> -- First excavation: Rock leach bed was removed. -- Second excavation: contaminated soil, gravel, drain pipe, and plastic sheeting were removed. <p>Current Status:</p> <ul style="list-style-type: none"> • No further remedial action required. 	<p>Soil: <i>No public health hazard is associated with soil at this site.</i> Past exposures to the general public are unlikely because the area was highly restricted. Contaminant concentrations in residual soil are too low to pose a hazard.</p> <p>Groundwater: <i>No public health hazard is associated with groundwater at this site.</i> Based on the nature and concentration of contaminants at OU-5 sites, there is no reason to suspect impacts to groundwater.</p>
Sewage Sludge Trenches (DP-28)	Between 1973 and 1979, undigested sludge was disposed in three trenches.	<p>Soil: SVOCs; pesticides (e.g., dieldrin); and metals were detected. Some contaminants were detected above acceptable health guidelines¹.</p>	<p>Corrective Activities:</p> <ul style="list-style-type: none"> • Trenches were capped as part of LF-04's remedial activities. <p>Current Status:</p> <ul style="list-style-type: none"> • No further remedial action required. 	<p>Soil: <i>No public health hazard is associated with soil at this site.</i> Before 1992, on-base residents and base employees could access the landfill. Neither exposures to workers nor trespassers occurred frequently enough to pose a health hazard. Current exposures are prevented by a barbed-wire fence and a landfill cap. Future exposures are highly unlikely because deed restrictions will ensure that the landfill cap remains intact and will prevent future residential use.</p> <p>Groundwater: <i>No public health hazard is associated with groundwater at this site.</i> Based on the nature and concentration of contaminants at OU-5 sites, there is no reason to suspect impacts to groundwater.</p>

<p>Prime Beef Yard (SS-29)</p>	<p>This area was listed as the storage facility in the Base's Resource Conservation and Recovery Act (RCRA) Part A Permit but has never been used for this purpose. Instead, this area was used to store construction materials. Building 766 (located on top of a monolithic concrete pad) was used to store PCB-contaminated transformers.</p>	<p>Soil (prior to corrective activities): One PCB (Aroclor 1260); pesticides (dieldrin, 4,4-dichlorodiphenyldichloroethene [DDE], 4,4-Dichlorodiphenyltrichloroethane [DDT], beta-hexachlorocyclohexane); and TPH (46,000 mg/kg) were detected. Soil (after corrective activities): Methylene chloride was detected, but at concentrations below ATSDR's soil comparison guidelines. Some metals were detected above background.</p>	<p>Corrective Activities:</p> <ul style="list-style-type: none"> • Soil northwest of Building 766 was excavated. • Soil surrounding the concrete pad was excavated. • Excavated areas were backfilled with clean soil. <p>Current Status:</p> <ul style="list-style-type: none"> • The site was formally closed under the RCRA closure plan. (RCRA closure report issued May 1996). • No further remedial action required. 	<p>Soil: <i>No public health hazard is associated with soil at this site.</i> Past exposures to the general public are unlikely because the area was highly restricted. Contaminant concentrations in residual soil are too low to pose a hazard. Additionally, current exposures are prevented by a fence. Groundwater: <i>No public health hazard is associated with groundwater at this site.</i> Based on the nature and concentration of contaminants at OU-5 sites, there is no reason to suspect impacts to groundwater.</p>
<p>Sewage Sludge Stockpile Area (SS-30)</p>	<p>Between 1979 and 1992, sludge from the waste water treatment plant was stockpiled in this area.</p>	<p>Soil (pre-removal): SVOCs, pesticides/PCBs, and metals were detected, but all contaminants were detected below acceptable health guidelines¹ or background concentrations. Soil (post-removal): No samples were collected.</p>	<p>Corrective Activities:</p> <ul style="list-style-type: none"> • Piles were graded and leveled in 1993. • Piles were excavated in January 1996. <p>Current Status:</p> <ul style="list-style-type: none"> • No further remedial action required. 	<p>Soil: <i>No public health hazard is associated with soil at this site.</i> Contaminant concentrations were (past scenario) and are (current and future scenarios) too low to pose a health hazard. Groundwater: <i>No public health hazard is associated with groundwater at this site.</i> Based on the nature and concentration of contaminants at OU-5 sites, there is no reason to suspect impacts to groundwater.</p>
<p>Golf Course Maintenance Area (SS-31)</p>	<p>This area is used to park, maintain, and refuel mowers, tractors, and other golf course vehicles. Two USTs (one containing diesel fuel and the other unleaded gasoline) are located on a</p>	<p>Soil (Before corrective activities): SVOCs and TPH (260 mg/kg) were detected. All SVOCs were detected below acceptable health guidelines¹. Soil (after corrective activities): No contaminants were detected.</p>	<p>Corrective Activities:</p> <ul style="list-style-type: none"> • Contaminated soil was excavated. • Excavated area was backfilled with clean soil. <p>Current Status:</p> <ul style="list-style-type: none"> • No further remedial action required. 	<p>Soil: <i>No public health hazard is associated with soil at this site.</i> Contaminant concentrations were (past scenario) and are (current and future scenarios) too low to pose a health hazard. Groundwater: <i>No public health hazard is associated with groundwater at this site.</i> Based on the nature and concentration of</p>

	concrete pad. An area that previously housed an AST has been identified. An area of stained soil was identified near the pad.			contaminants at OU-5 sites, there is no reason to suspect impacts to groundwater.
Building 1070 (SS-32)	This area consists of offices and a storage yard. Equipment and vehicles are stored in this area. Stains were noted in the gravel parking area.	<ul style="list-style-type: none"> When remedial workers revisited the site to excavate the stained area, the stain had disappeared. Investigators concluded that the apparent "stain" resulted from a rainfall event and disappeared when the rain evaporated. In July 1995, a technical working group inspected the area and determined that there was no evidence of contamination. 	Current Status: <ul style="list-style-type: none"> No remedial action required. 	<i>No apparent health hazard is associated with this site.</i> There is no evidence that the site ever contained hazardous constituents.
Munitions Incinerator (Facility 1119, SS-34)	The Munitions Incinerator began operating in 1979 but it is no longer in use. Dark stained soil is located immediately to the south and east of the incinerator. A 2-inch diameter fuel line leads to the incinerator but disappears into the ground. A small bermed area with a protruding pipe is located in this area.	Soil (Before corrective activities): One SVOC (phenanthrene) was detected, but below contract-required detection limit. Four metals (lead, cadmium, copper, and zinc) were detected above background. Soil (after corrective activities): Two metals (arsenic and beryllium) were detected above background concentrations.	Corrective Activities: <ul style="list-style-type: none"> The bermed area was excavated to ensure that a UST was not present. Dark stained soil was excavated. 	Soil: <i>No public health hazard is associated with soil at this site.</i> Past exposures to the general public are unlikely because the area was highly restricted. Because contaminant concentrations in residual soil are too low to pose a hazard, current and future exposures are not associated with a health hazard. Additionally, current exposures are prevented by a fence. Groundwater: <i>No public health hazard is associated with groundwater at this site.</i> Based on the nature and concentration of contaminants at OU-5 sites, there is no reason to suspect impacts to groundwater.

OPERABLE UNIT 6

<p>Old Pesticide/ Paint Shop (Facility 742, Site SS-17)</p>	<p>Pesticides were mixed and stored in Facility 742. Paints were also stored in this facility. Between 1965 and 1975, pesticides were reportedly disposed of on the ground outside the building. The building has been removed, and landscape gravel covers the area.</p>	<p>Soil: Pesticides and metals were detected. Many contaminants were detected above ATSDR's soil comparison values. Groundwater: Dieldrin (0.076 µg/L) was detected above health guidelines in one grab sample.</p>	<p>Corrective Activities:</p> <ul style="list-style-type: none"> • Additional soil and groundwater sampling is planned. Once the site is fully characterized, AFBCA will decide whether remedial activities are required. (Soil excavation and/or groundwater treatment will be conducted if contaminants are above health guidelines.) • Deed restrictions will be drafted to prevent the installation of future production wells. If soil contaminants are above residential health-based guidelines, future residential use will also be prohibited. <p>Current Status:</p> <ul style="list-style-type: none"> • Corrective activities ongoing. 	<p>Soil: <i>No public health hazard is associated with soil at this site.</i> Access was (past scenario) and is (current scenario) highly restricted by a fence. Past and current exposures to the general public, therefore, are highly unlikely. In the future, the area will be used for industrial purposes and access to the general public, therefore, will continue to be highly restricted. Because the AFBCA plans to excavate any areas identified with contaminants above health guidelines, future health hazards to employees are highly unlikely.</p> <p>Groundwater: <i>No public health hazard is associated with groundwater at this site.</i> In the past, an active drinking water well was located near SS-17. Because (1) contamination was detected in the perched aquifer rather than in the deeper aquifer where the well is drilled, and (2) the production well was monitored on a regular basis, there is no evidence that this well was ever impacted by groundwater contaminants from this site. The production well has been abandoned, and deed restrictions will prevent installation of new wells.</p>
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Reference: [AFBCA, 1994](#), [1997a](#), [1997b](#), [1997c](#), [1997d](#); [ATSDR 1996](#), [1997a](#), [1997b](#), [1997c](#), [1997d](#); [EPA, 1992](#); [IT 1996a](#), [1996b](#), [1996c](#), [1996d](#)

¹Contaminants are considered within "acceptable guidelines" if they are detected below the following:

- ATSDR'S comparison values, or
- EPA Region IX's PRGs/calculated PRGs (in cases where ATSDR comparison values are not available), or
- Arizona's underground storage tank (UST) regulatory guidelines (in the case of TPH).

[Appendix B: Glossary](#)

Background Level

A typical or average level of a chemical in the environment. *Background* often refers to naturally occurring or uncontaminated levels.

CERCLA

The Comprehensive Environmental Response, Compensation, and Liability Act of 1980, also known as Superfund. This is the legislation that created ATSDR.

Comparison Values

Estimated contaminant concentrations in specific media that are not likely to cause adverse health effects, given a standard daily ingestion rate and standard body weight. The *comparison values* are calculated from the scientific literature available on exposure and health effects.

Concentration

The amount of one substance dissolved or contained in a given amount of another. For example, sea water contains a higher concentration of salt than fresh water.

Contaminant

Any substance or material that enters a system (the environment, human body, food, etc.) where it is not normally found.

Dermal

Referring to the skin. *Dermal* absorption means absorption through the skin.

Environmental contamination

The presence of hazardous substances in the environment. From the public health perspective, *environmental contamination* is addressed when it potentially affects the health and quality of life of people living and working near the contamination.

Exposure

Contact with a chemical by swallowing, by breathing, or by direct contact (such as through the skin or eyes). *Exposure* may be short term (acute) or long term (chronic).

Hazard

A source of risk that does not necessarily imply potential for occurrence. A hazard produces risk only if an exposure pathway exists, and if exposures create the possibility of adverse consequences.

Ingestion

Swallowing (such as eating or drinking). Chemicals can get in or on food, drink, utensils, cigarettes, or hands where they can be ingested. After *ingestion*, chemicals can be absorbed into the blood and distributed throughout the body.

Inhalation

Breathing. Exposure may occur from inhaling contaminants because they can be deposited in the lungs, taken into the blood, or both.

Media

Soil, water, air, plants, animals, or any other parts of the environment that can contain contaminants.

Minimal Risk Level (MRL)

An *MRL* is defined as an estimate of daily human exposure to a substance that is likely to be without an appreciable risk of adverse effects (noncancer) over a specified duration of exposure. *MRLs* are derived when reliable and sufficient data exist to identify the target organ(s) of effect or the most sensitive health effect(s) for a specific duration via a given route of exposure. *MRLs* are based on noncancer health effects only. *MRLs* can be derived for acute, intermediate, and chronic duration exposures by the inhalation and oral routes.

National Priorities List (NPL)

The Environmental Protection Agency's (EPA) listing of sites that have undergone preliminary assessment and site inspection to determine which locations pose immediate threat to persons living or working near the release. These sites are most in need of cleanup.

No Apparent Public Health Hazard

Sites where human exposure to contaminated media is occurring or has occurred in the past, but the exposure is below a level of health hazard.

Plume

An area of chemicals in a particular medium, such as air or groundwater, moving away from its source in a long band or column. A *plume* can be a column of smoke from a chimney or chemicals moving with groundwater.

Potentially Exposed

The condition where valid information, usually analytical environmental data, indicates the presence of contaminant(s) of a public health concern in one or more environmental media contacting humans (that is, air, drinking water, soil, food chain, surface water), and there is evidence that some of

those persons have an identified route(s) of exposure (that is, drinking contaminated water, breathing contaminated air, having contact with contaminated soil, or eating contaminated food).

Public Health Assessment

The evaluation of data and information on the release of hazardous substances into the environment in order to assess any current or future impact on public health, develop health advisories or other recommendations, and identify studies or actions needed to evaluate and mitigate or prevent human health effects; also, the document resulting from that evaluation.

Public Health Hazard

Sites that pose a public health hazard as the result of long-term exposures to hazardous substances.

Risk

In risk assessment, the probability that something will cause injury, combined with the potential severity of that injury.

Route of Exposure

The way in which a person may contact a chemical substance. For example, drinking (ingestion) and bathing (skin contact) are two different *routes of exposure* to contaminants that may be found in water.

Superfund

Another name for the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), which created ATSDR.

Superfund Amendments and Reauthorization Act (SARA)

The 1986 legislation that broadened ATSDR's responsibilities in the areas of public health assessments, establishment and maintenance of toxicologic databases, information dissemination, and medical education.

Voluntary Environmental Mitigation Use Restriction (VEMUR)

A VEMUR is a written document that indicates that remediation to less than residential standards has been completed, and that the property will not be used for residential purposes in the future.

Volatile organic compounds (VOCs)

Substances containing carbon and different proportions of other elements such as hydrogen, oxygen, fluorine, chlorine, bromine, sulfur, or nitrogen; these substances easily become vapors or gases. A significant number of the VOCs are commonly used as solvents (paint thinners, lacquer thinner, degreasers, and dry cleaning fluids).

Appendix C: Public Comments On the Williams Air Force Base Public Health Assessment

The Williams Air Force Base Public Health Assessment was released for public comment on September 30, 1997. The comment period ended on November 10, 1997. Comments were received from the Air Force Base Conversion Agency (AFBCA).

1. **Comment:** According to Arizona health-based guidance levels, areas containing less than and including 400 mg/kg of lead do not cause excessive health hazards and are acceptable for future residential use.

Response: The text was changed throughout the document.

2. **Comment:** p.6, paragraph 4, bullet 1, lines 2 & 3: Soil below a depth of six (6) inches will still contain lead pellets and lead concentrations above 400 mg/kg. Soil lead concentrations below the cap (clean fill) will not be reduced.

Response: The text was changed to specify the top six inches.

3. **Comment:** The entire 400 mg/kg area will be considered capped at the conclusion of the remedial action. Please make reference to only one (1) cap throughout the document.

Response: The text was changed accordingly.

4. **Comment:** p. 7, bullet 1, lines 4 through 6: It may be useful to use the language from Consensus Statement #97-02, April 22, 1997.

Response: A portion of the language was used for clarification.

5. **Comment:** p.11, Item 1, bullet 2: Future use of the entire capped area will be restricted to non-residential use.

Response: The text was changed accordingly.

6. **Comment:** p.11, The Other 31 IRP Sites Section: Delete the Concrete Hardfill Area (LF-26) from the list. The removal action in the hardfill is complete, and the Air Force considers this a No Further Action (NFA) area.

Response: The site was deleted and the text in Appendix A was changed accordingly.

7. **Comment:** p. A-8, Corrective Action & Current Status, bullet 3- "A Final Report will be issued in Oct. 1997." Should read- A Final Report was issued in December 1996.

Response: The text was changed accordingly.

8. **Comment:** p. A-8, Corrective Action & Current Status, bullet 6: A 5 year review will be issued in 2002.

Response: The text was changed accordingly.

9. **Comment:** p. A-9, CA & Current Status, bullet 1: "5,000 gallons of fluid from the fire pits and associated piping were removed in 1994." The fluid was removed from the oil/water separator, sump, and associated piping and not from the fire pits.

Response: The text was changed accordingly.

10. **Comment:** p. A-9, CA & Current Status, bullet 6: The fence currently erected on-site is to protect the SVE system and will be removed once the SVE operations are complete.

Response: The text was changed accordingly.

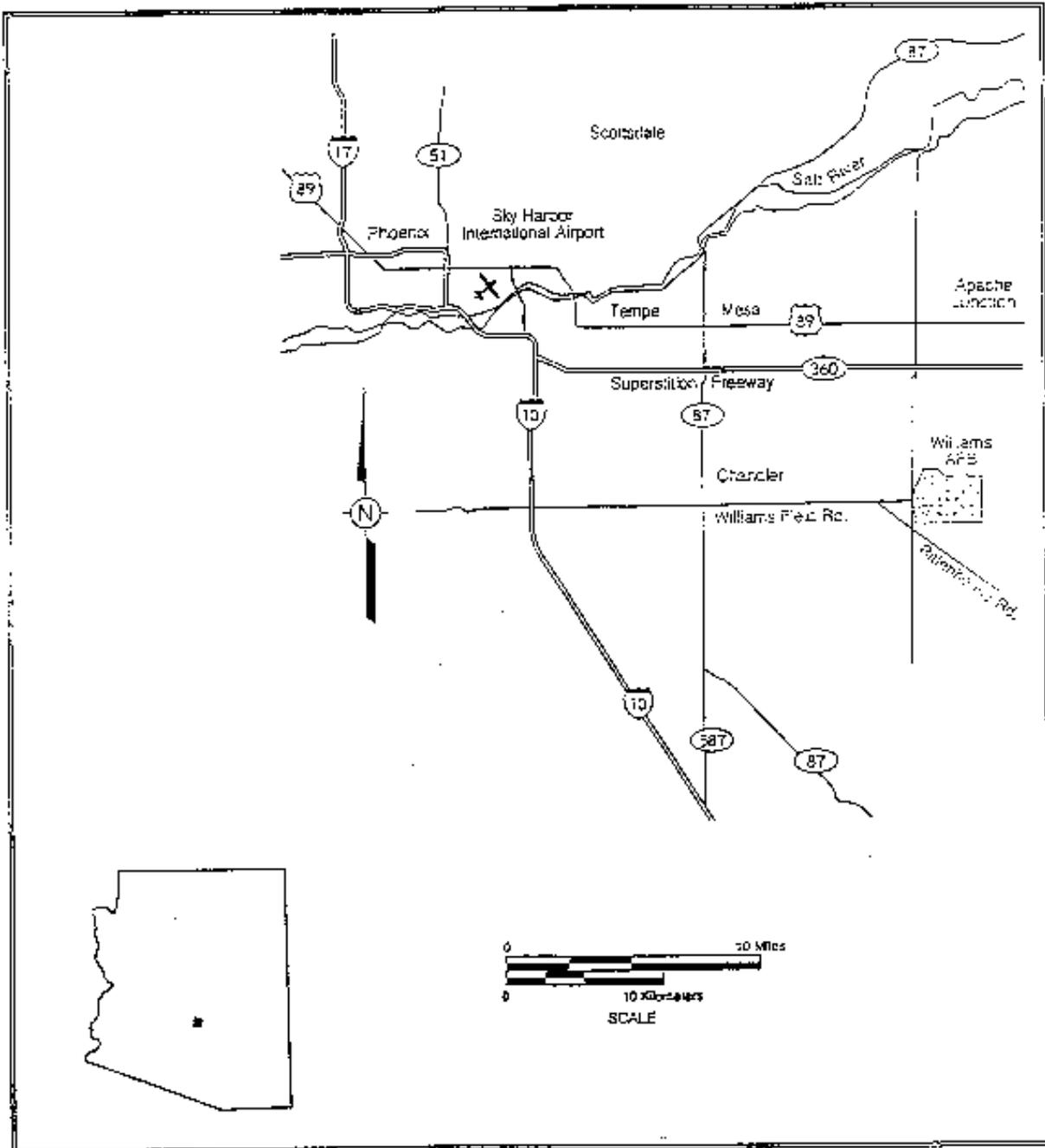
11. **Comment:** p. A-10, CA & Current Status, bullet 2: During the 1993 storm line removal action, the 350 feet of cement was also removed.

Response: The text was changed accordingly.

12. **Comment:** p.A-13, CA & Current Status: "Soil near the fire range backstop will be removed up to a depth of 5 feet." All soil at the backstop containing lead will be removed.

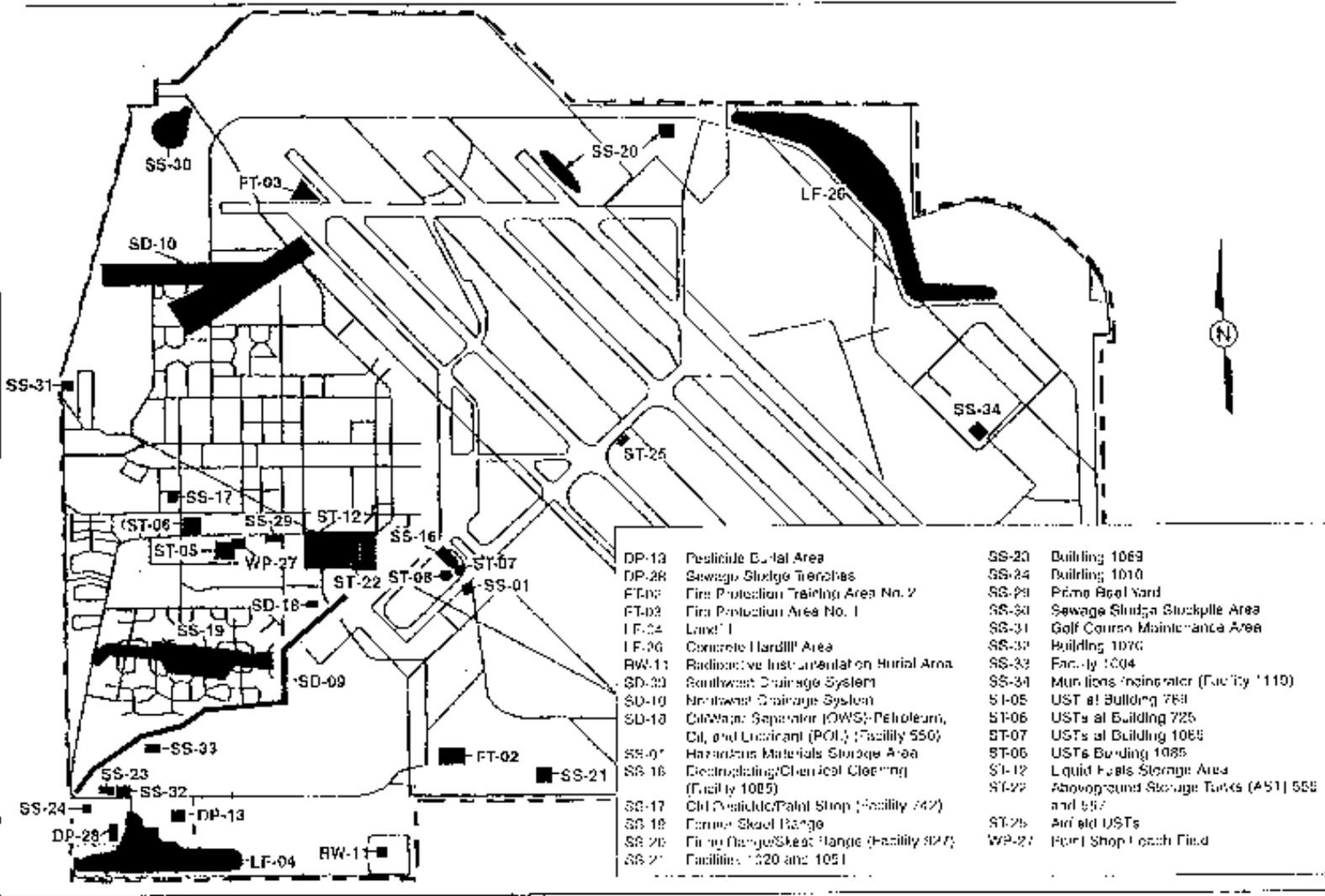
Response: The text was changed accordingly.

Figure 1
Area Map
Williams Air Force Base, Arizona



Source: Figure adapted from IT, 1996d.

Figure 2
Site Map Of The 32 IRP Sites
Williams Air Force Base, Arizona



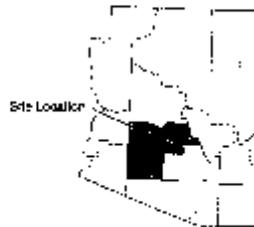
Williams Air Force Base

Mesa, Arizona

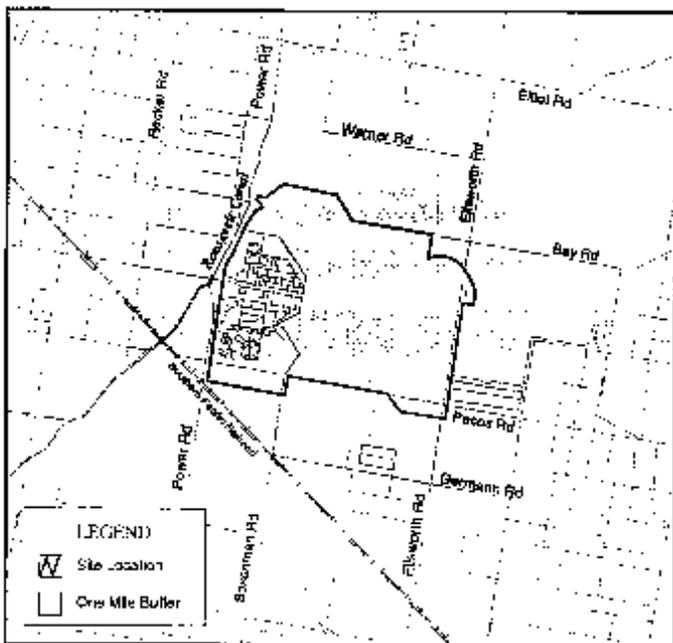
CERCLIS No. AZ7570028582

INTRO MAP

Figure 3



Maricopa County, Arizona

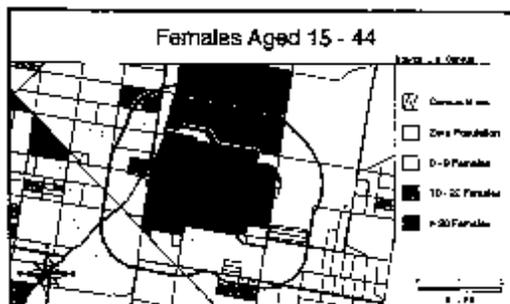
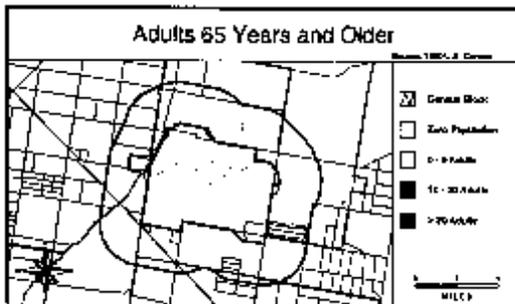
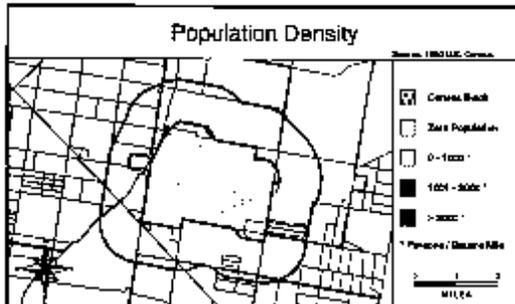


Base Map Source: 1996 TIGER/Line Files

Demographic Statistics Within One Mile of Site*

Total Population	2895
White	2252
Black	272
American Indian, Eskimo, Aleut	38
Asian or Pacific Islander	118
Other race	215
Hispanic origin	304
Children Aged 6 and Younger	571
Adults Aged 65 and Older	13
Females Aged 15 - 44	795
Total Housing Units	852

Demographic Point of Source: 1990 U.S. Census
*Data based using an area-proportion spatial analysis technique

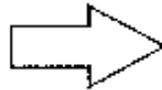


ATSDR's Exposure Evaluation Process

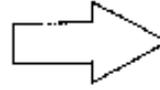
REMEMBER: For a public health threat to exist, the following three conditions must all be met:

- People must come into contact with areas that have potential contamination
- Contaminants must exist in the environment
- The amount of contamination must be sufficient to affect people's health

Are People Exposed To Areas With Potentially Contaminated Media?



Are the Environmental Media Contaminated?



For Each Completed Exposure Pathway, Will the Contamination Affect Public Health?

For exposure to occur, contaminants must be in locations where people can contact them.

ATSDR considers:

ATSDR will evaluate existing data on contaminant concentration and exposure duration and frequency.

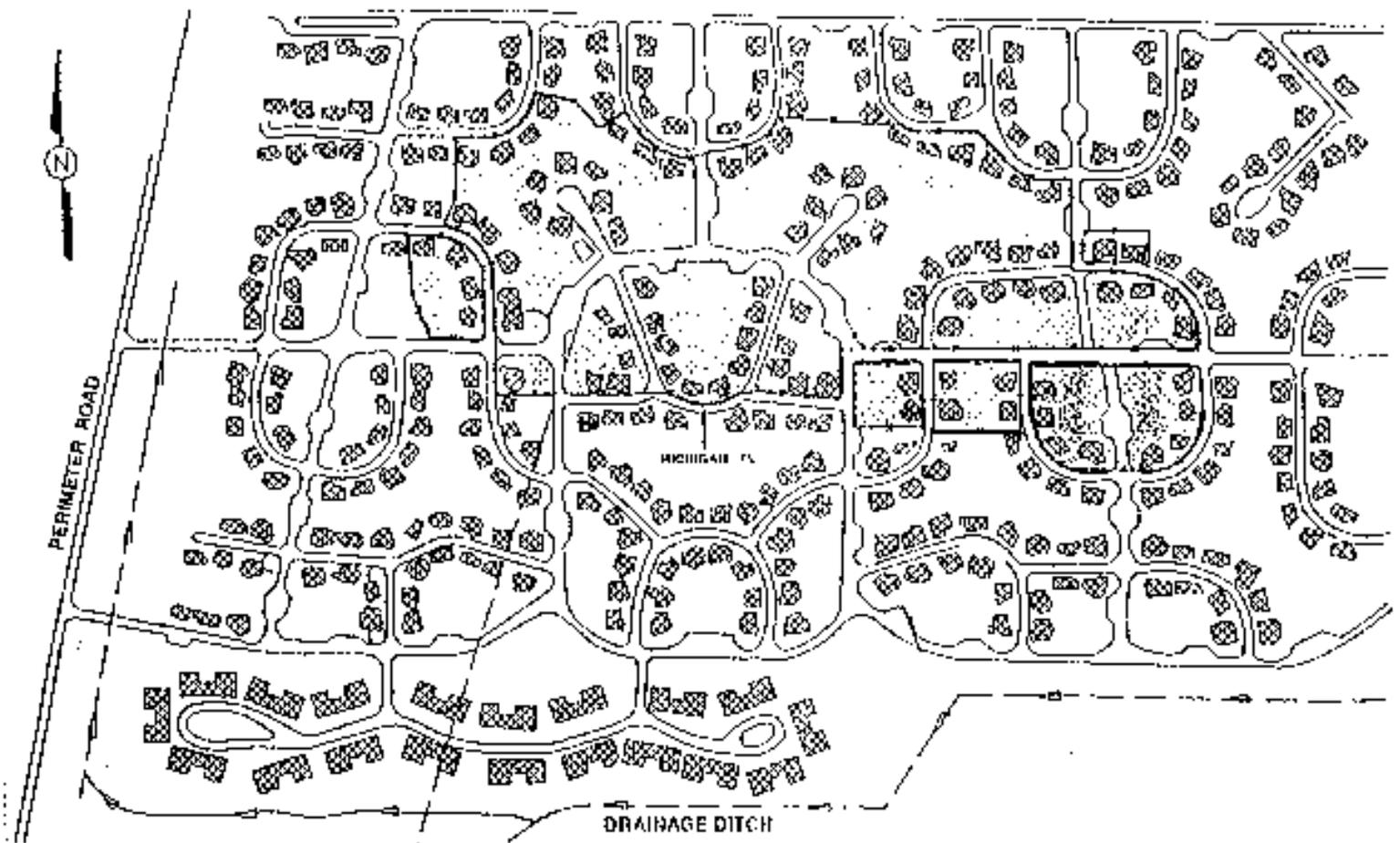
People may contact contaminants by any of the following three exposure routes:

- Soil
- Ground water
- Surface water and sediment
- Air
- Food sources

ATSDR will also consider individual characteristics (such as age, gender, and lifestyle) of the exposed population that may influence the public health effects of contamination.

- Inhalation**
- Ingestion**
- Dermal absorption**

Figure 5
Former Skeet Range (Site SS-19)
Williams Air Force Base, Arizona



LEGEND

-  HOUSE
-  FENCED BOUNDARY
-  AREA TO BE EXCAVATED

NOTE:

LEAD CONCENTRATIONS OUTSIDE OF FENCED PROPERTY ARE LESS THAN 400MG/KG