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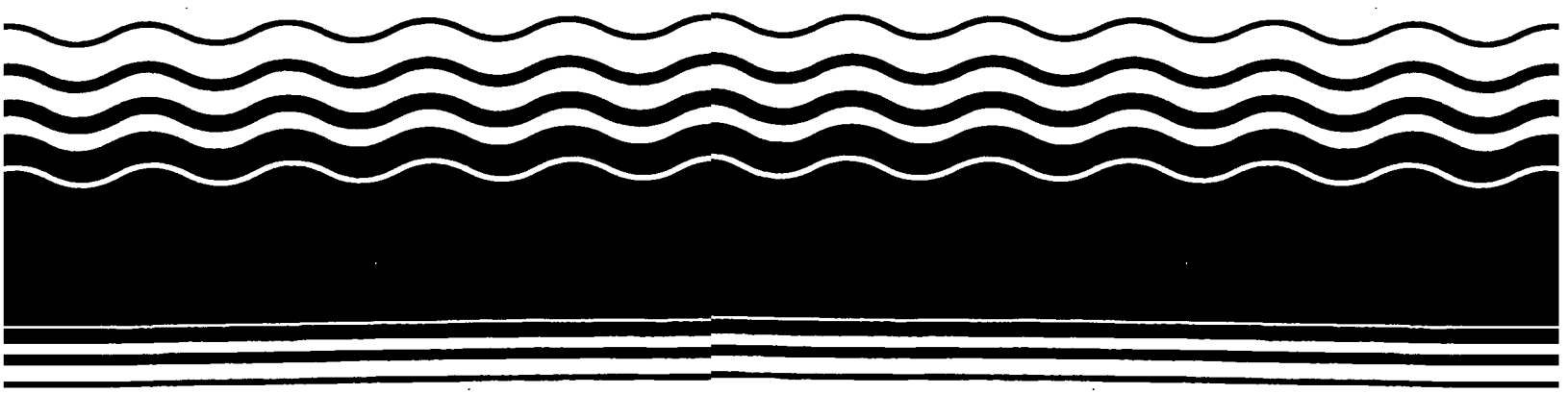
EPA Superfund Record of Decision:

Hill Air Force Base, OU 8
Ogden, UT
9/30/1997



Hill Air Force Base, Utah

Final

Record of Decision for an Interim Remedial Action at Operable Unit 8

May 1997

FINAL RECORD OF DECISION
FOR AN INTERIM REMEDIAL ACTION AT
OPERABLE UNIT 8
HILL AIR FORCE BASE, UTAH

This is a primary document for Operable Unit 8 at Hill Air Force Base. It will be available in the Administrative Record, which is maintained at the following locations:

- Davis County Library
  Central Branch
  155 N. Wasatch Drive
  Layton, Utah 84041

  Hours: Mon - Thurs: 11:00 am - 9:00 pm
  Fri - Sat: 11:00 am - 6:00 pm

- Environmental Management Directorate
  OO-ALC/EMR
  Building 5
  7274 Wardleigh Road
  Hill AFB, Utah 84056-5137

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Submittal Date: May 9, 1997

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Operable Unit 8
Hill Air Force Base, Utah
Weber and Davis Counties, Utah

Statement of Basis and Purpose

This decision document presents the selected remedy for an interim remedial action (IRA) at Hill Air Force Base (Hill AFB) Operable Unit 8 (OU 8) in Weber and Davis Counties, Utah. Five different interim remedial action alternatives were evaluated in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA) and, to the extent practicable, with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The selected remedy for the interim remedial action at Hill AFB OU 8 is Alternative 4: groundwater extraction and discharge to a sanitary sewer. If greater treatment efficiency, cost effectiveness or ease of implementability can be established at a later date, other discharge alternatives would be considered, such as the Industrial Wastewater Treatment Plant (IWTP). This decision is based on the Administrative Record for Hill AFB. This remedial action is only an interim measure and will be followed by the final remedy for OU 8.

Assessment of the Site

Actual or threatened releases of hazardous substances, if not addressed by implementing the response action selected in this Record of Decision, may present an imminent and substantial endangerment to public health, welfare, or the environment.

Current risks to human health associated with the contaminants at OU 8 are below levels considered by the EPA to be significant. An interim remedial action is warranted based on possible future risks to human health and the environment, to contain contaminants while further information is gathered to characterize the site, and to evaluate possible final remedial actions.

Description of the Selected Remedy

Operable Unit 8 is one of nine OUs at Hill AFB and is in the early stages of the CERCLA process. The remaining OUs are at various stages in the CERCLA process. As OU 8 only includes ground water, this action will only address contaminated ground water. Contaminated soil in the OU 8 area is being addressed by other soils–only OUs that include OUs 3 and 7. The selected remedy for an interim action at OU 8 addresses the potential future threat to human health and the environment by preventing the transport of contaminated ground water to off-Base locations where exposure may occur. This interim action is planned to be in operation until the final remedy for OU 8 is implemented (anticipated to be within six years). This area and other areas containing ground-water contamination at OU 8 will be addressed by the final remedy for OU 8. The major components of this interim remedy for OU 8 include:

- Contain contaminated ground water that is in excess of the Maximum Contaminant Levels (MCLs) at the southern boundary of Hill AFB using a series of vertical extraction wells located in the vicinity of the South Gate area
- Discharge ground water to the North Davis County Sanitation District (NDCSD) sanitary sewer.

Statutory Determinations

This interim action is protective of human health and the environment, complies with Federal and State applicable or relevant and appropriate requirements for this limited scope action, and is cost-effective. This action is interim and is not intended to utilize permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable for this operable unit. This interim action does not provide on-site treatment; however extracted ground water will be treated at the NDCSD sanitary sewer, which is a Publicly Owned Treatment Works (POTW). Because this action does not constitute the final remedy for the operable unit, the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element, although partially addressed in this remedy, will be addressed by the final response action. Subsequent actions are planned to address fully the threats posed by the conditions at this operable unit. Because this remedy will result in hazardous substances remaining on site above health-based levels, a review will be conducted to ensure that the remedy continues to provide adequate protection of human health and the environment within five years after commencement of the remedial action.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Max H. Dodson — 9/30/97

Max H. Dodson
Assistant Regional Administrator
Office of Ecosystems Protection and Remediation

Date

STATE OF UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY

Dianne R. Nielson

9/17/97

Dianne R. Nielson, Ph.D.
Executive Director

Date

Hill Air Force Base, Utah
Operable Unit 8

Decision Summary for the Record of Decision

Section 1

1.0 SITE NAME, LOCATION, AND DESCRIPTION

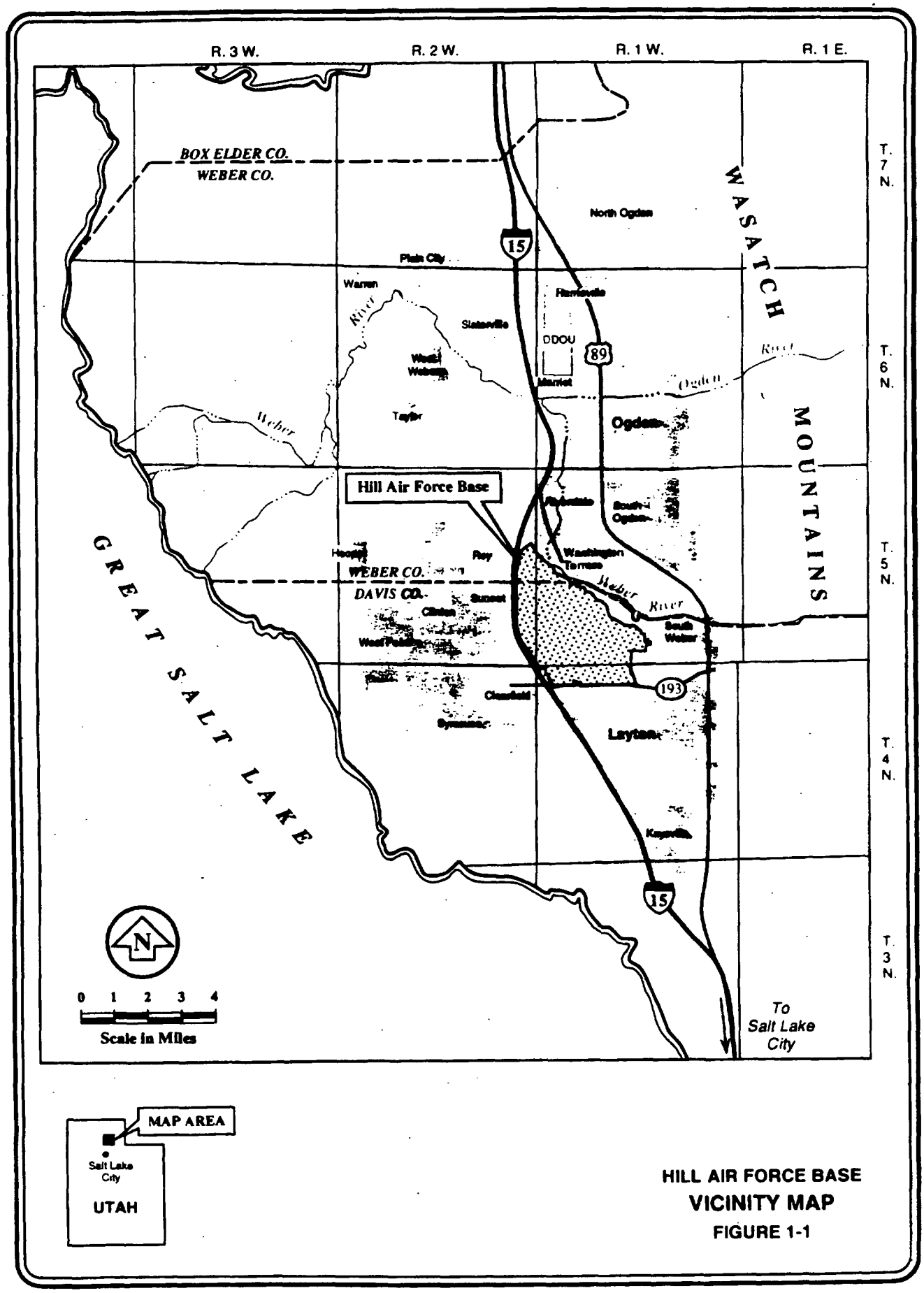
Hill Air Force Base, Utah (Hill AFB) is located in northern Utah, about 25 miles north of Salt Lake City and about five miles south of Ogden, Utah in Weber and Davis counties as illustrated in Figure 1-1. Hill AFB covers an area of about 6,700 acres on the Weber River Delta, a terrace that lies about 300 feet above the surrounding valleys. The delta surface has slight to moderate relief with elevations varying from approximately 4,600 feet above National Geodetic Vertical Datum (NGVD) along the western boundary of Hill AFB to approximately 5,000 feet above NGVD. The Great Salt Lake, approximately 12 miles to the west, is presently at an elevation of approximately 4,200 feet above NGVD.

Most of the southern part of Hill AFB is occupied by industrial facilities, equipment storage areas, and administration buildings related to the aircraft maintenance mission of the Base. By contrast, the northern part of Hill AFB has large open areas with groups of buildings that were constructed as munition manufacturing plants, assembly plants or storage facilities. Although the use of the old facilities has changed in recent years to missile storage, maintenance, and testing, the building and facilities remain. Off-Base land use in the Operable Unit (OU 8) area includes residential, commercial, and agricultural. This area has undergone rapid residential and commercial development over the last five years and agricultural use has declined. Crop production in this area is primarily hay and alfalfa. There is pasture land and in some limited areas livestock are raised.

In July 1987, Hill AFB was placed on the National Priorities List (NPL) under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) to address sites where hazardous liquid and solid wastes generated by installation operations were disposed. These hazardous waste sites have been divided into nine operable units (OUs) in accordance with a Federal Facility Agreement (FFA) executed in 1991 between the U.S. Air Force (USAF), State of Utah Department of Health (now the Utah Department of Environmental Quality [UDEQ]), and the United States Environmental Protection Agency (EPA) Region VIII.

Operable Unit 8 is one of the newest operable units at Hill AFB following reorganization in December 1993. The reorganization was to address existing and additional potential source areas (contaminated soil sites within OUs 3, 7, and 9) separately and to consolidate ground-water response actions beneath the southern industrial complex. Consequently, OU 8 comprises the ground water within a shallow aquifer beneath the on-Base industrial area and in the Layton and Clearfield areas south of the Base. This area is shown on Figure 1-2.

Based on the available data, most of the ground-water contamination occurs in the shallow aquifer beneath the industrial area and in off-Base locations directly south of Hill AFB. Off-Base contamination predominantly occurs beneath the Layton area. Although no ground-water contamination has been found in the Clearfield area, additional investigations will be conducted to confirm that this is the case. For the



HILL AIR FORCE BASE
VICINITY MAP
FIGURE 1-1

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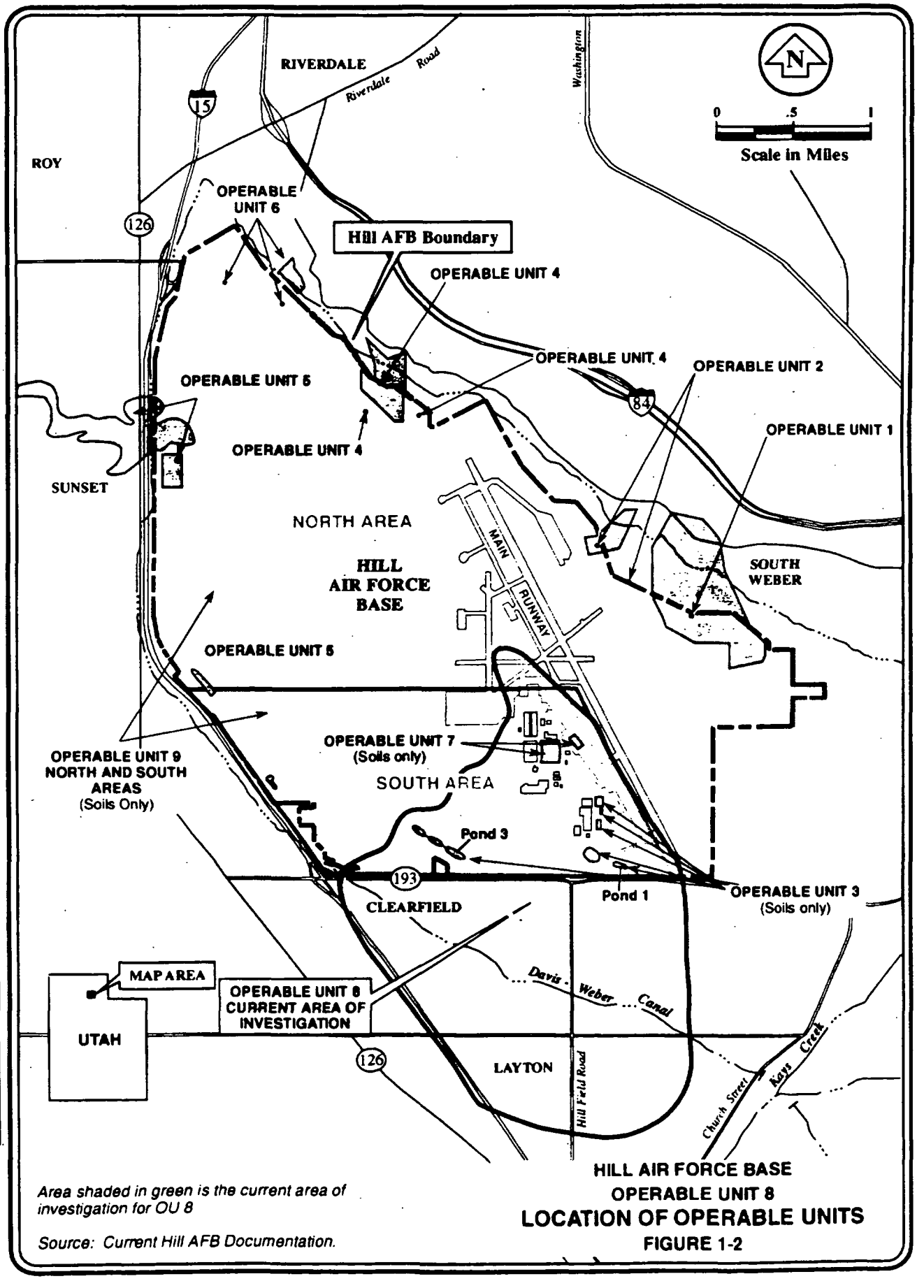

Area shaded in green is the current area of investigation for OU 8

Source: Current Hill AFB Documentation.

HILL AIR FORCE BASE
OPERABLE UNIT 8
LOCATION OF OPERABLE UNITS
FIGURE 1-2

PROJECT NO. 1166076.011801 9/27/95

purpose of this Record of Decision (ROD), the Layton and Clearfield areas will be referred to as the "off-Base areas."

The shallow aquifer beneath the industrial and off-Base areas is the principal hydrostratigraphic unit under investigation. It consists of up to approximately 200 feet of sand interbedded with silt and clay and lies at approximately 65 to 200 feet below the ground surface (bgs) on-Base, and about 1 to 50 feet bgs in off-Base areas. The shallow aquifer overlies two deeper aquifers (Sunset and Delta aquifers) and is separated from them by a thick sequence (over 100 feet) of low-permeability silts and clay (Feth et al, 1966).

The shallow aquifer could be (but has not been) classified as Class II - Drinking Water Quality based on the State of Utah classification criteria and the observed quality of ground water from uncontaminated wells in the vicinity. However, low yield private wells in the shallow aquifer within the plume area are not used for domestic purposes. This was confirmed by a comprehensive water user survey conducted in the Layton area of OU 8 by Hill AFB (Montgomery Watson, 1996a).

The Sunset and Delta aquifers are approximately 300 and 600 feet bgs at OU 8, respectively. These aquifers serve as a source of domestic water supply for Hill AFB and surrounding communities and are classified as Class I - Irreplaceable Source of Drinking Water or Class IIA - Current Source of Drinking Water (USGS, 1992).

According to the Environmental Assessment for OU 8 (Montgomery Watson, 1994a), several wetlands have been identified, including Ponds 1 and 3 along the southern Base boundary, areas along the Davis-Weber canal, and several small areas south of the canal in the city of Layton. These wetlands are not known to be impacted by contamination at OU 8.

Section 2

2.0 SITE HISTORY AND ENFORCEMENT ACTIVITIES

2.1 SITE HISTORY

Hill AFB has been the site of military activities since 1920 when the western portion of what is now the Base was activated as the Ogden Arsenal, an Army Reserve Depot. In 1940 and 1941 four runways were built and the Ogden Air Depot was activated. During World War II, the Ogden Arsenal manufactured ammunition and was a distribution center for motorized equipment, artillery, and general ordnance. The Ogden Air Depot's primary operation was aircraft rehabilitation. In 1948, the Ogden Air Depot was renamed Hill AFB, and in 1955, the Ogden Arsenal was transferred from the U.S. Army to the U.S. Air Force. Since 1955, Hill AFB has been a major center for missile assembly and aircraft maintenance. Currently, Hill AFB is part of the Air Force Materiel Command.

On-Base industrial processes in the OU 8 area associated with aircraft, missile, vehicle, and railroad engine maintenance and repair include metal plating, degreasing, paint stripping, and painting. These processes use numerous chemicals including chlorinated and non-chlorinated solvents and degreasers, petroleum hydrocarbons, acids, bases, and metals. In the past, chemicals and waste products were disposed of at the Industrial Wastewater Treatment Plant (IWTP), in chemical disposal pits and landfills, and off-Base. Disposal in chemical pits and landfills was discontinued by 1980. All waste products are currently treated at the IWTP, recycled on-Base, or sent to off-Base treatment or disposal facilities.

2.2 INVESTIGATION HISTORY

Investigations conducted in the OU 8 area include early investigations of OU 3, OU 7, and the UST sites. Further details can be found in the Final Data Summary and Recommendation Report for OU 8 (DSRR; Montgomery Watson, 1995A). As investigation data became available, the apparent extent of ground-water contamination in on- and off-Base areas was greater than originally expected. Because of this, Hill AFB,EPA, and UDEQ agreed that further ground-water investigation and/or potential remediation efforts in the general area would be best facilitated by forming a separate operable unit (OU8).

Operable Unit 8 (Figure 1-2) is comprised of ground water underlying the southern industrial area of the Base and areas immediately south of the Base. Contaminated ground water occurs in on-Base and in off-Base areas. Some of the sources which likely contributed to ground-water contamination within the Base have been identified, such as the soils at Operable Units 3 and 7, as well as several underground storage tank (UST) sites (Figure 2-1). Other facilities in the southern industrial complex are in the early stages of investigation as part of Operable Unit 9. The contribution of the Operable Unit 9 sites are not fully understood at this time.

Hill AFB is presently conducting ground-water monitoring at OU 8. The results of the first and second round of ground-water monitoring are presented in the *Final First and Second Monitoring Rounds Data Evaluation Report for OU 8* (Montgomery Watson,

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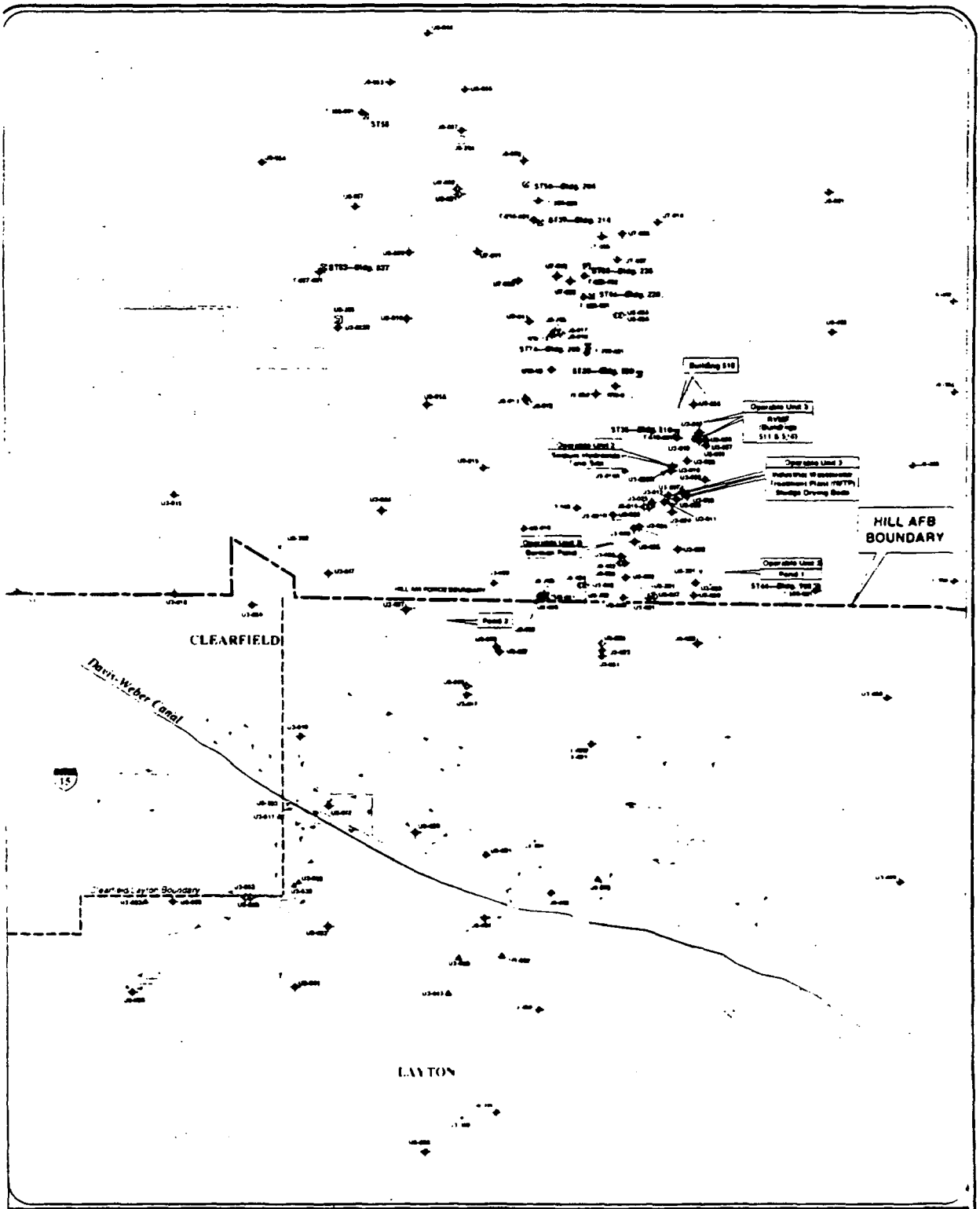


EXPLANATION

- Former pond site presently filled and capped or not in use
- Existing pond site
- u1-01 Well designation
- Extraction well
- Underground storage tank location with existing monitoring wells
- Existing ground
- Existing
- Replacement
- Existing
- Destroyed
- Surface water

HILL AIR FORCE BASE
OPERABLE UNIT 8
SITE MAP
FIGURE 2-1

1995d). More recent efforts have focused on delineating the contaminant plume and defining aquifer characteristics along the southern Base boundary. Investigations have included cone penetrometer testing (CPT) and hydropunch sampling in which water samples are collected directly through CPT rods (this sampling technique is similar to the Hydropunch® procedure and will be referred to as "hydropunch" for consistency with other OU 8 documentation); installing and sampling monitoring wells; installing extraction wells and piezometers; and conducting three constant pumping rate aquifer tests. The results of these activities are summarized in the Interim Remedial Action Field Work Data Summary and Remedial Design Technical Memorandum for OU 8 (IRA Tech Memo; Montgomery Watson, 1996b). Additional work associated with the OU 8 Remedial Investigation (RI) is ongoing.

2.3 ENFORCEMENT ACTIVITIES

In July 1987, Hill AFB was placed on the CERCLA National Priorities List (NPL) by the EPA. In 1991, Hill AFB entered into a Federal Facilities Agreements (FFA) between the U.S. Air Force (USAF), the State of Utah Department of Health (now the UDEQ), and the EPA. The purpose of the agreement was to establish a procedural framework and schedule for developing, implementing, and monitoring appropriate response actions at Hill AFB in accordance with existing regulations. Seven operable units were initially defined under the FFA and two more operable units (OUs 8 and 9) have since been added. This Record of Decision (ROD) is for an interim remedial action for OU 8 that will be performed along the southern boundary of the Base in the vicinity of the South Gate. There have been no removal actions, notices of violation, or other enforcement actions taken at OU 8 prior to this ROD.

2.4 HIGHLIGHTS OF COMMUNITY PARTICIPATION

The public participation requirements of CERCLA Section 113(k)(2)(B)(i-v) and Section 117 have been met for OU 8. Hill AFB has a Community Relations Plan that was completed in February 1992. The community relations activities include: (1) a Restoration Advisory Board (RAB) which meets at least quarterly and includes community representatives from adjacent counties and towns, (2) a mailing list for interested parties in the community, (3) a quarterly newsletter called "EnviroNews," (4) visits to nearby schools to discuss environmental issues, (5) community involvement in a noise abatement program, (6) semi-annual town council meetings, (7) opportunities for public comment on remedial actions, (8) community interviews, and (9) support for the community for obtaining technical assistance grants (TAGs).

The Interim Remedial Action (IRA) Focused Feasibility Study (FS) for the Base Boundary, Operable Unit 8 (Focused FS; Montgomery Watson, 1995b) and the Proposed Plan for an Interim Action at Operable Unit 8 (Montgomery Watson, 1995c) were released to the public and are available in the Administrative Record maintained in the Davis County Library and at the Environmental Management Directorate at Hill AFB. The notices of availability for these documents were published in the Salt Lake Tribune, Ogden Standard Examiner, and Hilltop Times. A public comment period was held from August 8, 1995, through September 7, 1995, and a public Open House was held on

August 17, 1995. At this meeting, representatives from Hill AFB, EPA, and the UDEQ answered questions about the site and the selected remedy. Copies of all written transcripts and verbal public comments received at that Open House are presented in the Responsiveness Summary of this document for inclusion in the Administrative Record (also see Appendices A and B). The decision for this site is based on the Administrative Record.

2.5 SCOPE AND ROLE OF OPERABLE UNIT 8 WITHIN SITE STRATEGY

Operable Unit 8 is one of nine operable units at Hill AFB and is in the early stages of the RI/FS process. The remaining operable units are at various stages in the CERCLA process. The remedial actions planned for the various operable units are independent of one another. This interim remedial action addresses contaminated ground water along the southern boundary of Hill AFB. The interim remedy selected for OU 8 addresses future threats to human health and the environment by preventing ground-water transport of contaminants to off-Base areas, thereby controlling the volume and areal extent of contamination and reducing future potential off-Base risk and cleanup costs. The interim remedy selected for OU 8 would contain the migration of contaminants at the southern boundary of Hill AFB by removing ground water with a series of vertical extraction wells.

Section 3

3.0 SUMMARY OF SITE CHARACTERISTICS

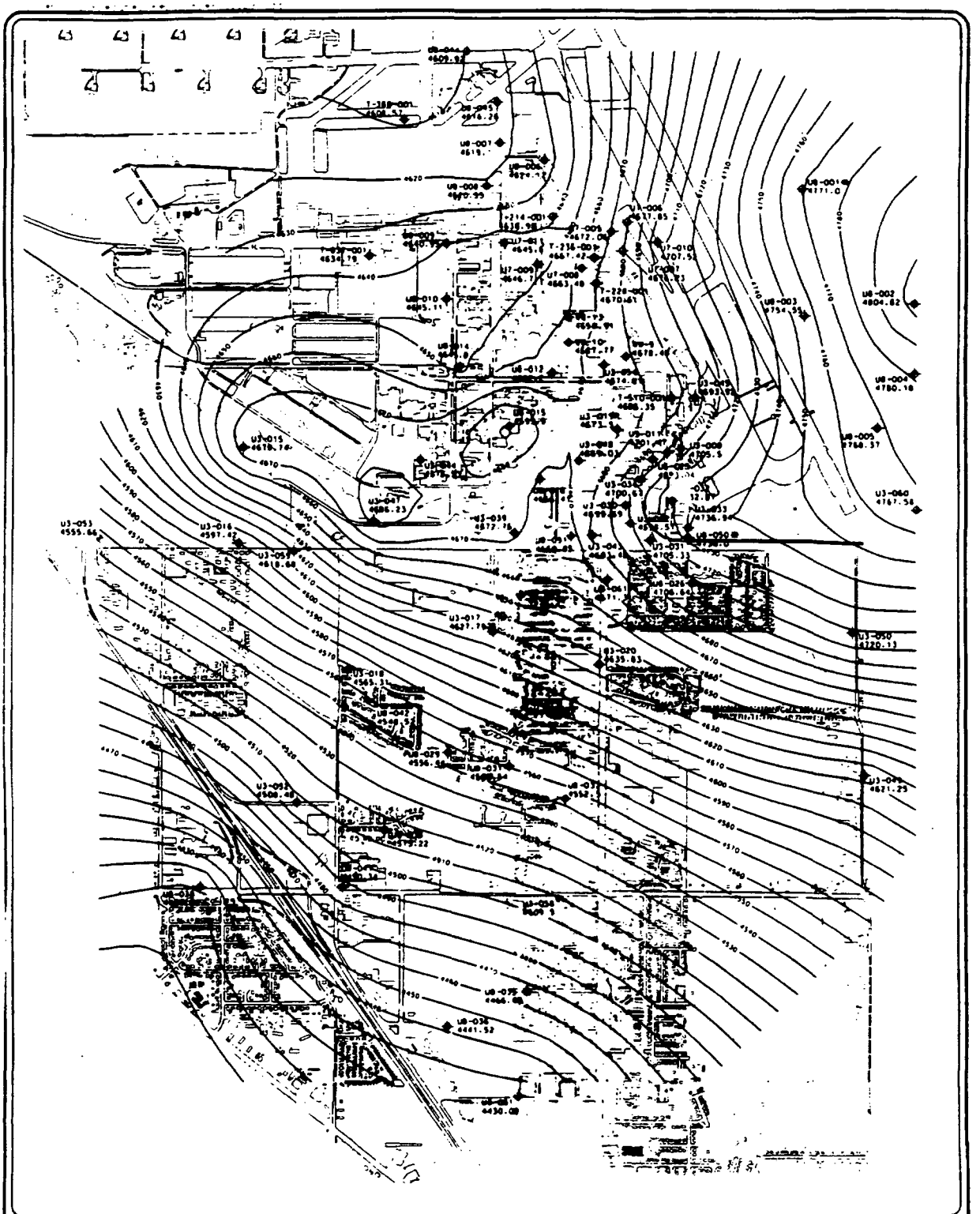
3.1 HYDROGEOLOGIC SETTING

The shallow aquifer at OU 8 generally consists of sand interbedded with silt and clay. Because of lateral discontinuities and the interbedded nature of the sand, silt, and clay layers, ground water occurring in the deeper units of the shallow aquifer is hydraulically connected to the shallower ground water in the overlying units. The interbedded sand units, which have a higher hydraulic conductivity than the surrounding clay and silt units, may provide preferential flow paths for ground-water and contaminant transport. Because the sediments underlying OU 8 were deposited in a deltaic environment, these interbedded sand units probably represent distributary channels of the main ancestral Weber River. If so, they may extend for fairly long distances as discrete units within the finer-grained sediments. Consequently, they may provide preferential pathways for transport of ground-water contaminants to off-Base areas. The heterogeneous nature of the aquifer results in tortuous ground-water flow and contaminant transport paths, leading to irregularly shaped contaminant plumes.

The interbedded nature of the aquifer may also result in the development of locally confined (i.e., artesian) conditions or perched ground water. Localized zones of perched ground water underlie the IWTP Sludge Drying Beds (based on the results of the OU 3 Phase I and II RI studies).

Ground-water recharge of the shallow aquifer at OU 8 is probably from infiltration of precipitation at OU 8 and from ground-water through flow from the east. The ground-water through flow probably originates from infiltration of precipitation in the topographically high areas east of OU 8. Based on ground-water elevation contours (shown on Figure 3-1), Ponds 1 and 3 appear to be significant local sources of recharge to the shallow aquifer beneath OU 8. Discharge of ground water from the shallow aquifer at OU 8 probably occurs via seeps, springs, field drains, streams, low yield private wells (not used for domestic purposes), and evapotranspiration to the south in the cities of Layton and Clearfield.

As of February 1997, ground water beneath OU 8 occurred at depths ranging from 3 feet below ground surface (bgs) in several wells in the off-Base area to 173 feet bgs north of the west ramp area of the 388th Fighter Wing (i.e. northern most portions of the OU 8 contaminant plume, as illustrated in Figure 3-2). Based on ground-water elevation contours illustrated in Figure 3-1, shallow ground water underlying the industrial area is flowing to the west and northwest. Shallow ground water underlying the Berman Pond and Pond 1 areas flows to the northwest, west, and southwest. Shallow ground water beneath Pond 3 flows away from the pond, particularly to the southwest. Based on the configuration of the ground-water surface, both Pond 1 and Pond 3 appear to recharge the shallow aquifer, influencing the shallow ground-water flow system, by creating ground-water divides near both ponds. Ground water on one side of the divide created by Pond 1 flows northwest, while ground water on the other side flows to the southwest. Near Pond 3, ground water east and north of Pond 3 flows northeast, eventually changing to a north-northwesterly flow near the OU 7 sites in the industrial area. Ground water south of



EXPLANATION

◆ US-038 4401.02 — Existing groundwater monitoring well location and piezometric surface elevation, September 1996.

—4400— Water level contours

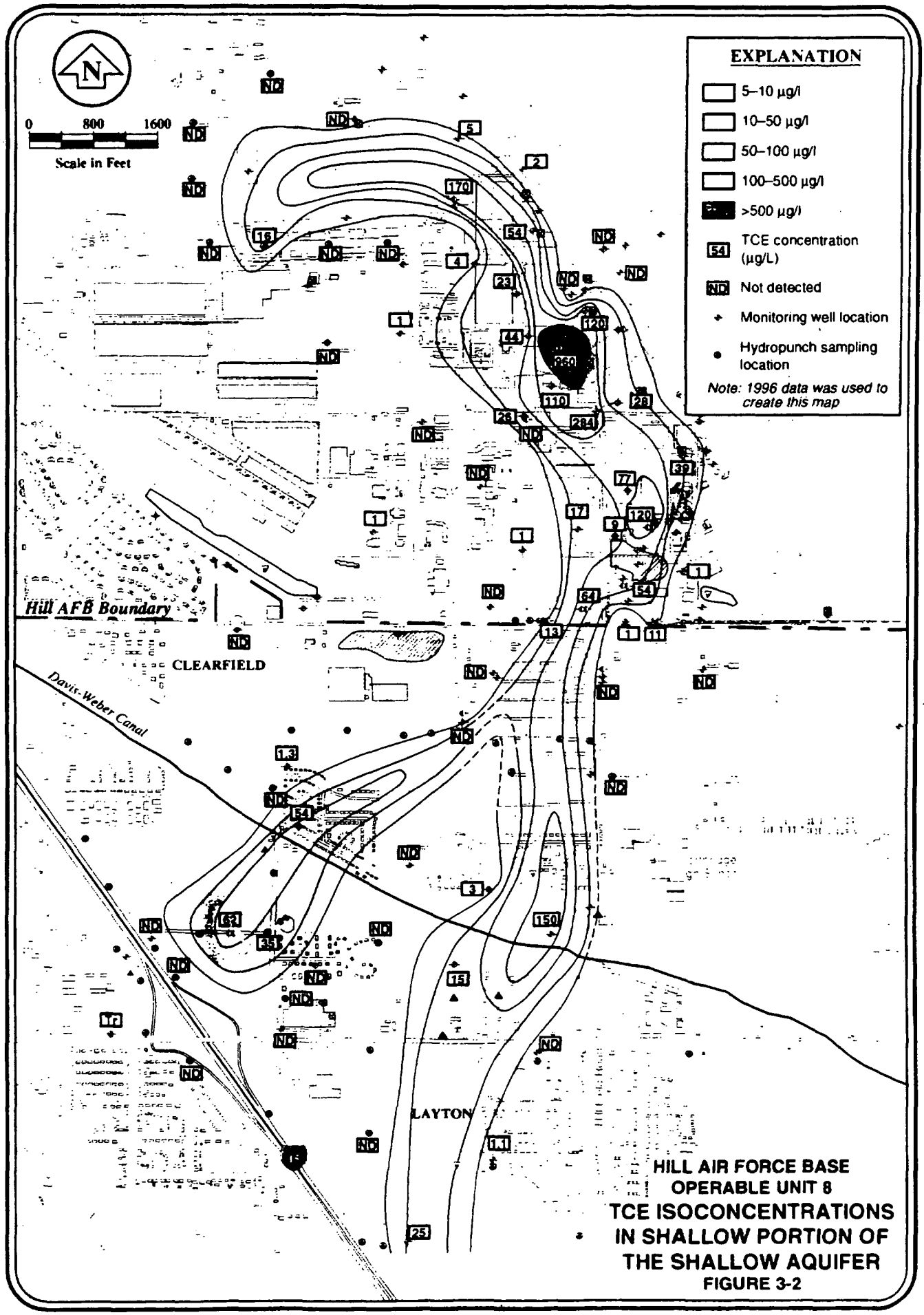
● Water level could not be measured in February 1997. Groundwater elevation for monitoring well US-001 and US-050 is estimated from previous data.

N

0 1400

Scale in Feet

HILL AIR FORCE BASE
OPERABLE UNIT 8
PIEZOMETRIC SURFACE
CONTOUR MAP
(FEBRUARY 1997)
FIGURE 3-1



HILL AIR FORCE BASE
OPERABLE UNIT 8

TCE ISOCONCENTRATIONS IN SHALLOW PORTION OF THE SHALLOW AQUIFER

FIGURE 3-2

PROJECT NO. 1166076.011801 4/11/97

Pond 3 flows essentially to the southwest. The ground-water surface in the Layton area reflects the ground surface topography, with the horizontal hydraulic gradient essentially to the southwest.

Horizontal Hydraulic Conductivity. Horizontal hydraulic conductivity values for the shallow aquifer were calculated based on constant rate aquifer tests conducted in 3 extraction wells along the southern Base boundary. These 3 wells will be included as part of the IRA system. The hydraulic conductivity ranged from 3 feet/day (1×10^{-3} cm/sec) to 38 feet/day (1.3×10^{-2} cm/sec) in these wells. These values of the hydraulic conductivity for the shallow aquifer are typical of published values for clean sands, silty sands, and silts.

Vertical Hydraulic Conductivity. Vertical hydraulic conductivity values were calculated using falling-head permeameter tests for 69 undisturbed soil samples. These data are summarized in the DSRR (Montgomery Watson, 1995a). The vertical hydraulic conductivity values range from 26 feet/day (9×10^{-3} cm/sec) to 1.1×10^{-4} feet/day (4×10^{-8} cm/sec). The permeability tests show that the vertical hydraulic conductivity values are generally directly proportional with grain size. For example, the maximum vertical hydraulic conductivity was measured in a clean sand (SP), while the minimum vertical hydraulic conductivity was measured in a silty clay (CL) and clayey silt (ML). Vertical hydraulic conductivities are generally one to two orders of magnitude less than the horizontal hydraulic conductivities.

Vertical Hydraulic Gradients. Estimates of vertical hydraulic gradients for ground water in the shallow aquifer were calculated using ground-water piezometric surface elevations from monitoring well pairs that were close to each other and that were screened at different depths. The vertical hydraulic gradients were calculated for each well pair by dividing the difference in hydraulic head measured in the two wells by the vertical distance in feet between the centers of the screened intervals of the wells. The calculated values of the vertical hydraulic gradient for the five well pairs in the vicinity of South Gate ranged from 0.3 to -0.1 (negative sign indicates upward vertical gradient). Downward gradients exist at four of the five locations in the shallow aquifer at OU 8.

3.2 OU 8 SOURCE AREAS

The results of the studies associated with OU 3, OU 7, OU 9 and USTs have led to the identification and investigation of potential contaminant source areas within OU 8. Based on these investigations, several historical waste management areas have been identified as sources for volatile organic contaminants (VOCs) and inorganic compounds within OU 8 ground water, and other potential VOC sources may exist that have not yet been identified. The following source areas have likely impacted ground water at OU 8: Buildings 200 and 225 (OU 7); Berman Pond, the IWTP Sludge Drying Beds, the RVMF and Pond 1 (OU 3); and the UST Sites 260 and 280. Pond 2, which is located off Base (Figure 3-2), may also have impacted OU 8 ground water. The DSRR (Montgomery Watson, 1995a) discusses these sites in detail.

3.3 NATURE AND EXTENT OF CONTAMINATION

The following discussion of ground-water contaminants at OU 8 focuses on the contaminants detected beneath the southern boundary of Hill AFB which is in the vicinity of where this interim action will be implemented. Table 3-1 presents a summary of the concentration ranges of volatile organic compounds (VOCs) detected in samples collected from ground-water monitoring wells near the Base boundary. As indicated on Table 3-1, several types of VOCs were detected in ground water at OU 8. The most common and widespread of these compounds is trichloroethene (TCE). For comparison, Federal and State of Utah drinking water standards are presented in the right column of Table 3-1. The area within OU 8 where contaminants in ground water exceed Federal and the State of Utah drinking water standards is shown on Figure 3-2. The area of known contamination in excess of these standards extends from the north end of the industrial complex south to the southern Base boundary. In off-Base areas, several areas with VOC contaminants have been identified. Based on data presented in the IRA Tech Memo (Montgomery Watson, 1996b), VOC contamination above the MCL at the Base boundary is limited to a maximum depth of 140 feet bgs. No metals contamination has been detected at the Base boundary. Maximum contaminant concentrations occurring in on-Base ground water at OU 8 are also presented on Table 3-1. Contaminant concentrations are generally lower in off-Base areas. The source or sources of the off-Base contamination are being investigated. Refer to the DSRR (Montgomery Watson, 1995a) for a detailed description of VOC contamination in OU 8 ground water.

Figure 3-3 illustrates the horizontal and vertical distribution of contaminants at the Base boundary. The analytical results from hydropunch samples may not be quantitatively comparable to results from monitoring/extraction well samples. However, hydropunch samples are considered screening samples, and are distinguished from monitoring/ extraction well samples on Figure 3-3.

Figure 3-3 shows that contaminants were detected along the southern Base boundary above MCLs in Monitoring Well U3-031 east of South Gate Drive, near Extraction Well U8-201, and in Monitoring Wells U8-024, U3-043 and U8-051 west of South Gate Drive near Extraction Wells U8-202 and U8-203. Contaminants were detected above MCLs from the water table to a maximum depth of 140 feet bgs (in Monitoring Well U8-024). The vertical contaminant distribution along the southern Base boundary appears to be lithologically controlled and largely is restricted to the sand unit. Except for the Monitoring Well U8-024, contaminants have not been detected in greater than trace concentrations in the clay unit.

The compound detected most commonly at the highest concentrations in the ground water at the Base boundary is trichloroethene (TCE), which was detected at a maximum concentration of 88 micrograms per liter (µg/l) in the Monitoring Well U8-024 sample. Figure 3-3 depicts the zones in the ground water along the Base boundary where any contaminant was detected at a concentration greater than its MCL.

TABLE 3-1

CONTAMINANTS DETECTED ON BASE IN OU 8 GROUND WATER

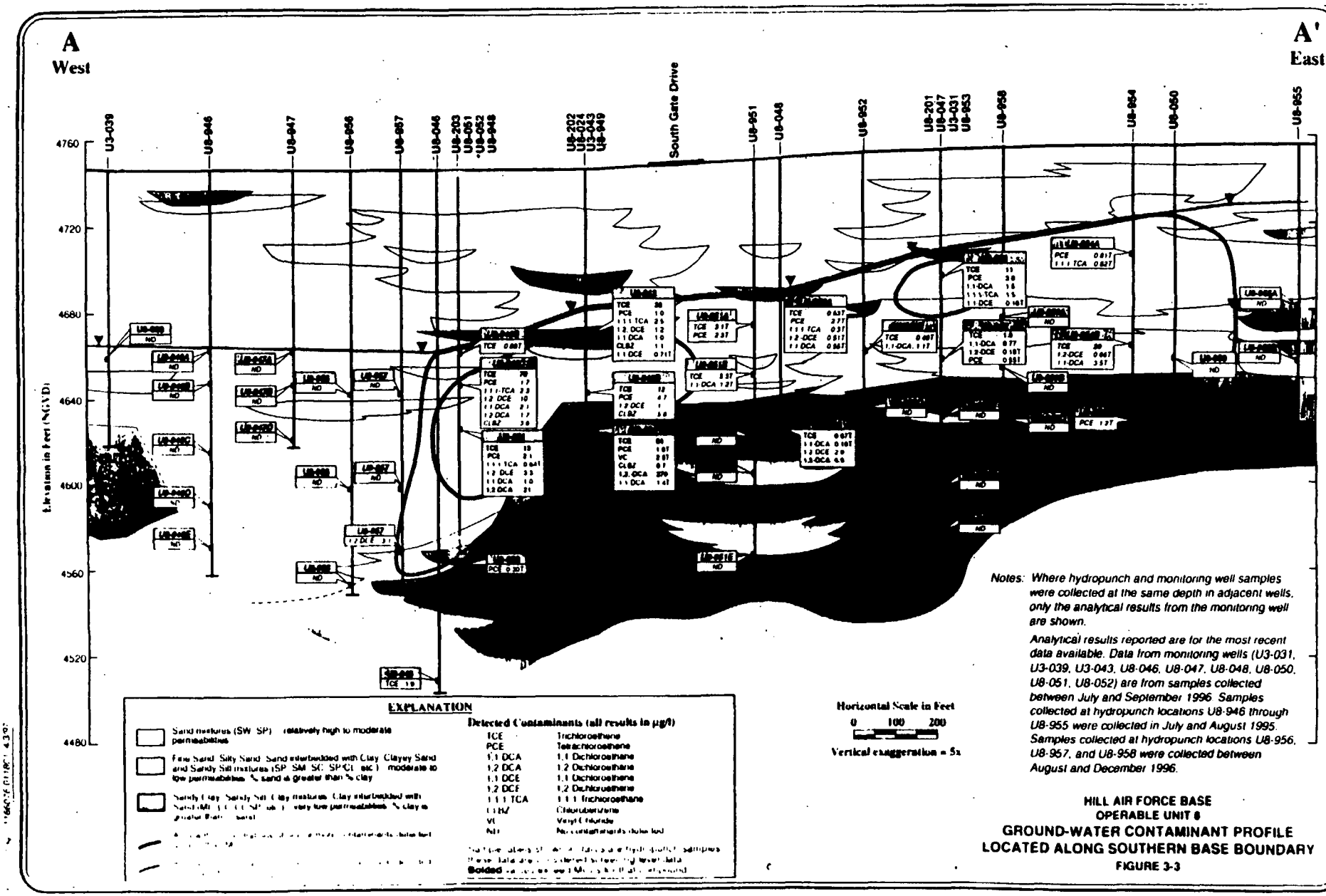
Compound	Max. Chemical Concentrations in OU 8 Ground Water (On-Base) (µg/l)	Max. Chemical Concentrations in Ground Water Beneath Southern Base Boundary[a] (µg/l)	Utah and Federal Standards for Drinking Water (µg/l)
Trichloroethene (TCE)	2,000	88	5
1,1,1-Trichloroethane (1,1,1-TCA)	1,200	3	200
Tetrachloroethene (PCE)	130	6	5
1,2-Dichloroethane (1,2-DCA)	480	480[b]	5
1,1-Dichloroethene (1,1-DCE)	190	1	7
Benzene	23.9	1	5
Chlorobenzene	370	14	100
Arsenic	147	ND	50
Total Chromium	3,460	ND	50
Hexavalent Chromium	2,130	ND	50

µg/L Micrograms per liter
ND Not detected

Only those contaminants that exceed Utah or Federal standards for drinking water are shown on this table.

(a) Analytical results included in this column are from monitoring wells U8-024, U8-047, U8-048, U8-051, U3-031, and U3-043, (see Figure 2-1 for the locations of these wells).

(b) 1,2-DCA has not consistently been detected. 1,2-DCA was detected in Monitoring Well U8-024 at concentrations of 480 µg/L and 270 µg/L in February 1995 and July 1996, respectively, but was not detected (<5 µg/L) in July 1995.



Notes: Where hydropunch and monitoring well samples were collected at the same depth in adjacent wells, only the analytical results from the monitoring well are shown.

Analytical results reported are for the most recent data available. Data from monitoring wells (U3-031, U3-039, U3-043, U8-046, U8-047, U8-048, U8-050, U8-051, U8-052) are from samples collected between July and September 1996. Samples collected at hydropunch locations U8-946 through U8-955 were collected in July and August 1995. Samples collected at hydropunch locations U8-956, U8-957, and U8-958 were collected between August and December 1996.

HILL AIR FORCE BASE
OPERABLE UNIT 8
GROUND-WATER CONTAMINANT PROFILE LOCATED ALONG SOUTHERN BASE BOUNDARY
FIGURE 3-3

Contaminants detected at levels above MCLs are restricted to a zone approximately 200 feet wide near Extraction Well U8-201 and a zone approximately 600 feet wide near Extraction Wells U8-202 and U8-203. Contaminant concentrations are generally higher west of South Gate Drive and extend to approximately 140 feet bgs.

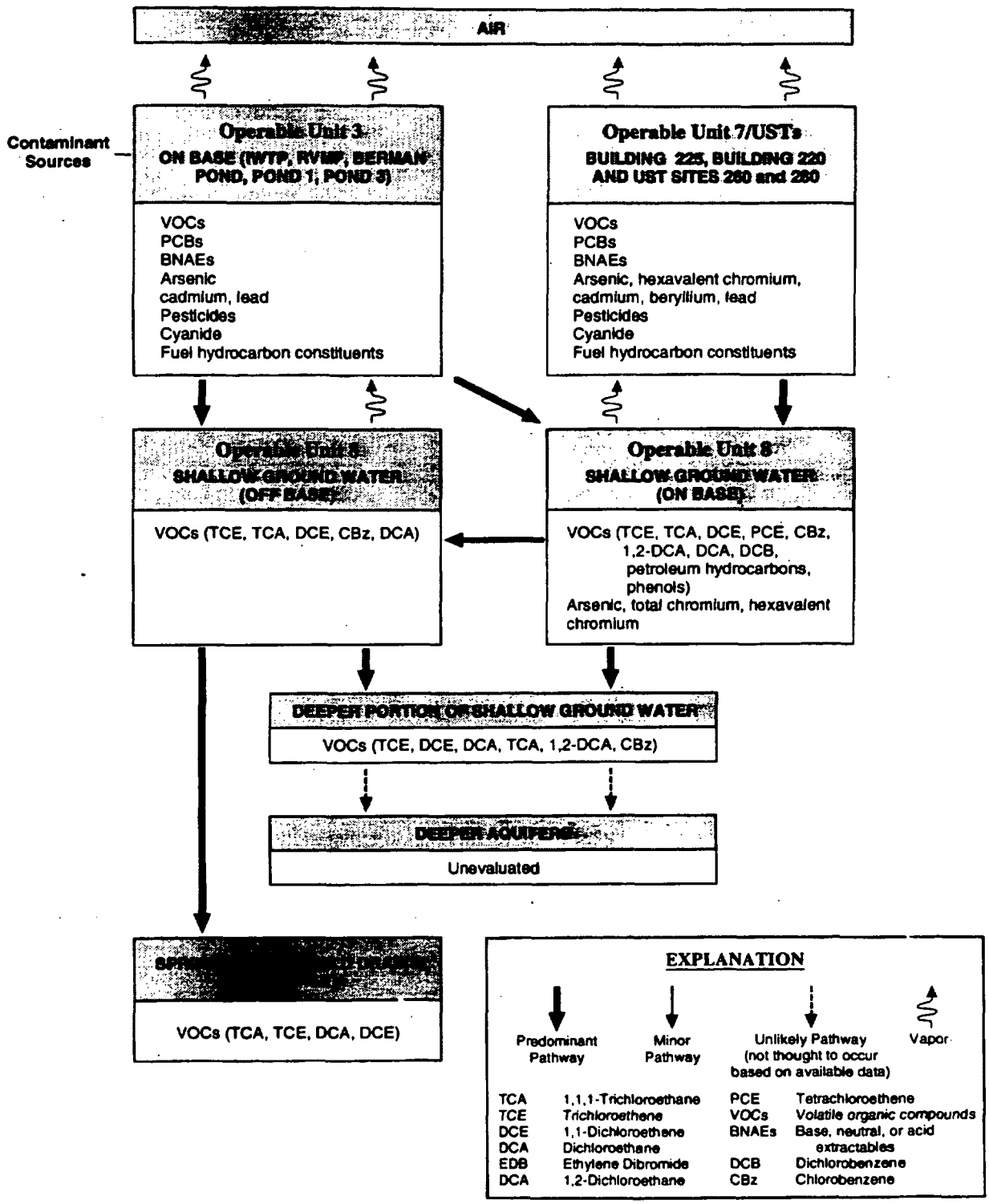
The historical source of contamination in the shallow aquifer near the Base boundary at OU 8 is Berman Pond. However, due to changes in the hydraulic regime at OU 8, this contamination is likely residual. In the past, while Berman Pond was in use as an industrial wastewater and stormwater retention pond, it caused mounding in the water table beneath the pond and drove contaminated ground water to the south and southwest toward the Base boundary. After the use of Berman Pond was discontinued in 1956 and the pond was subsequently capped in the 1970s, the ground-water flow regime assumed the current configuration shown in Figure 3-1. Ground-water mounding associated with Ponds 1 and 3 began to have a stronger influence on ground-water flow near the Base boundary. It now appears that ground-water flow in the general area may at least partially divert residual Berman Pond contaminants north away from the Base boundary toward the interior of the Base. A portion of the contaminants from Berman Pond immediately along the southern Base boundary may also be migrating to the west and ultimately to the south-southwest (off-Base).

3.4 CONCEPTUAL MODEL OF CONTAMINANT TRANSPORT

A conceptual model of contaminant migration, shown in Figure 3-4, has been developed for OU 8. The model was based on the site physical characteristics and on the nature and extent of contamination observed at OU 8 to date. The conceptual model is summarized below. Section 4.0 of the DSRR (Montgomery Watson, 1995a) details the development of this model.

In the area designated for the interim remedial action, the migration route of contaminants is principally through the zones of higher permeability within the shallow aquifer. At the southern Base boundary, the water table occurs at depths of approximately 65 to 80 feet bgs and the aquifer consists of layers of sand and silty sand, interbedded with silt and clay. At approximately 100 to 110 feet bgs a fine-grained unit of silt and clay is present. At locations to the west of South Gate Drive this fine-grained unit does not occur until 180 to 190 feet bgs.

Past waste handling practices at Berman Pond allowed contaminants to enter soil and surface water which eventually migrated downward to the shallow ground water. After entering the shallow ground-water system, contaminants (principally TCE) were transported downward into the aquifer and to the southwest toward the Base boundary. Recent sampling results indicate that VOC contaminants (above MCLs) have migrated downward to a depth of approximately 140 feet bgs on the west side of South Gate Drive at the southern Base boundary. Several hundred feet of low permeability sediments separate the shallow aquifer from the deeper, drinking water aquifers (i.e., the Sunset and Delta aquifers). These low permeability sediments have and should continue to significantly impede deeper transport of contaminants from OU 8 to the drinking water aquifers. Ground-water flow directions in the shallow aquifer indicate that dissolved



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HILL AIR FORCE BASE
OPERABLE UNIT 8
CONCEPTUAL MODEL OF CONTAMINANT TRANSPORT
FIGURE 3-4

contaminants are moving from the southern Base boundary toward off-Base areas in a south-southwest direction. These contaminants are transported by shallow ground water in this direction. Some of this water is intercepted by one or more of the numerous field drains south of the Base (see Figure 2-1). Once the contaminants enter the field drain system, the transport rate is greatly accelerated.

Section 4

4.0 PUBLIC HEALTH AND ENVIRONMENTAL IMPACTS

This section presents a brief and qualitative description of the potential risks associated with ground water at OU 8, particularly contaminated ground water at the southern Base boundary. A qualitative risk assessment was performed because the OU 8 investigation is in the early RI stage and information is not currently available for a full baseline risk assessment. A baseline risk assessment for the entire Operable Unit will be conducted as part of the upcoming RI for OU 8.

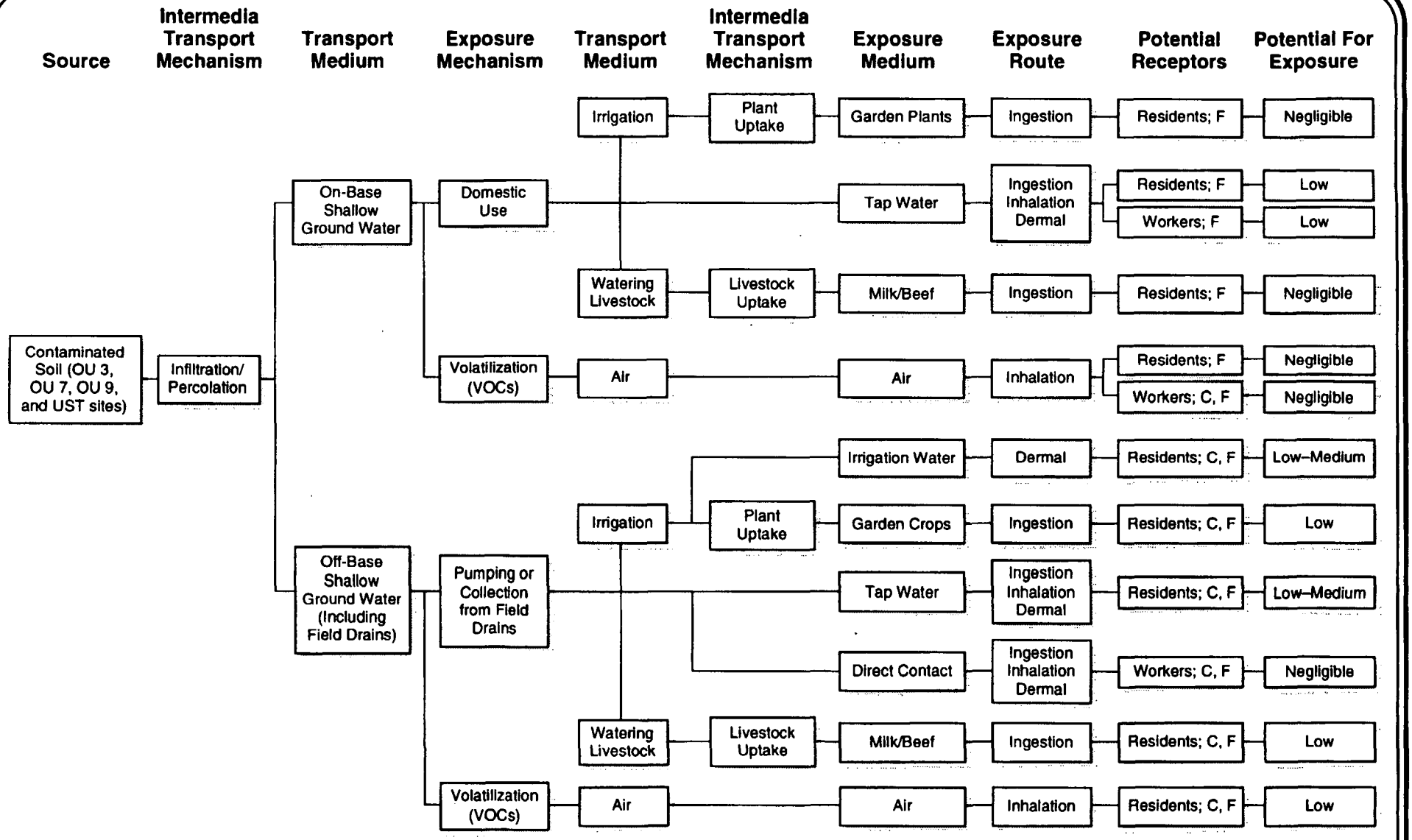
4.1 HUMAN HEALTH RISKS

Based on the conceptual model of contaminant transport, the potentially significant pathways of human or environmental exposure to contaminants at OU 8 under current and future conditions include exposure to shallow off-Base ground water. Figure 4-1 depicts the potential exposure pathways to VOC contaminants that are present at OU 8, both on and off-Base. As shown in Figure 4-1, there is no current potential for exposure and only low to negligible future potential for exposure (based on the combination of the likelihood of pathway completion and the magnitude of exposure if a pathway is completed) associated with contaminated ground water on Base, including ground water at the southern Base boundary. While there is a low potential for pathway completion, there could be significant risks if people were to use the shallow aquifer as their drinking water supply. If contaminated ground water is transported to the off-Base area, current and future (i.e., the near future where contaminated ground water could be used as drinking water) off-Base ground-water users could be exposed to contaminants present in the ground water. As shown in Figure 4-1, off-Base receptors include farmers or landowners who may use or drink contaminated ground water collected in off-Base field drains. Based on a ground-water users survey, all of these potential receptors are connected to municipal water, but some still use ground water collected from field drains for livestock watering and irrigation (Montgomery Watson, 1996b). The potential for use of the water as tap water is considered higher off-Base than on-Base because Hill AFB controls its on-Base water usage. Current and future ecological receptors also may be exposed to contaminated ground water discharging from field drains.

4.2 ENVIRONMENTAL RISK

Air Quality. The VOC emissions from shallow on-Base ground water to the air are not expected to be significant due to the depth of this ground water. VOC emissions from field drains are also not expected to have a significant impact due to their low concentrations.

Surface Water, Ground Water, and Wetlands. No streams, rivers, or lakes exist on Hill AFB. The shallow aquifer is about 65 to 200 feet bgs on-Base and 10 to 50 feet bgs off-Base. This aquifer has been impacted, and is the subject of the proposed interim action. The shallow aquifer is separated by several hundred feet of silts and clays from deeper aquifers. There is no evidence that the deeper aquifers have been affected by VOCs. Numerous wetlands have been identified on Hill AFB and in the surrounding communities. Several of these are within the boundaries of OU 8. Water quality of some



C = Current
F = Future
VOCs = Volatile Organic Compounds

HILL AIR FORCE BASE
OPERABLE UNIT 8
PRELIMINARY EXPOSURE PATHWAY DIAGRAM
FIGURE 4-1

of these wetlands in the Layton area may have been impacted. However, by implementing this proposed interim action, the spread of contamination into this area will be reduced and the net effect will be an improvement of the existing water quality.

Vegetation. All areas of OU 8 are highly modified and do not contain any threatened or endangered plant species. No adverse effects on the local ecosystem are anticipated.

Wildlife. Hill AFB does not provide critical or important habitat for any wildlife species, and no threatened or endangered species are known to inhabit the Base or the off-Base area. Operable Unit 8 and the surrounding areas are developed, and the proposed interim remedial activities and additional human presence will add no significant impact to wildlife.

Archaeological Resources. There are no known cultural or archaeological resources on Hill AFB or in the off-Base area in the vicinity of OU 8.

Section 5

5.0 DESCRIPTION OF INTERIM REMEDIAL ACTION ALTERNATIVES

As part of the Focused FS for OU 8 (Montgomery Watson, 1995b), five specific interim remedial action alternatives were developed for ground-water containment to meet the interim remedial action objectives (RAOs). Under Section 121 of CERCLA, a selected interim remedial action must be protective of human health and the environment, and must comply with (or waive) applicable or relevant and appropriate requirements (ARARs). This interim action is to prevent further environmental degradation. ARARs within that scope have been evaluated. ARARs pertaining to restoration alternatives will be evaluated for the final remedy or remedies. The alternatives were then evaluated for short-term effectiveness, long-term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; technical and administrative implementability; and cost effectiveness. Then the alternatives were compared against these criteria for selecting the recommended remedial measure alternative. Additionally, State and community acceptance must be considered before a remedy is selected. This section summarizes how the remedy selection process for OU 8 addressed these requirements.

5.1 DEVELOPMENT OF ALTERNATIVES

Interim remedial alternatives were developed by assembling technologies into combinations that are applicable for the medium of concern at OU 8 (ground water). The steps that were used to develop remedial alternatives for OU 8 included development of response objectives, remedial action objectives, and general response actions for contaminated ground water, followed by a preliminary screening and evaluation of technologies and process options. Response objectives include prevention of human exposure to contaminated ground water through direct contact or ingestion, and enabling long-term attainment of shallow ground-water remedial action objectives. Remedial action objectives (RAOs) were developed to define the extent of the interim remedial action. Based on the current understanding of the nature and extent of contamination, exposure pathways, and potential risks associated with OU 8, the following RAOs were established for an interim remedial action at OU 8:

- Contain ground water at the southern boundary of Hill AFB to prevent off-Base transport of contaminants in excess of MCLs in the shallow ground water and reduce future potential off-Base risks

- Reduce the spread of contaminants, thereby controlling the volume and areal extent of contaminated ground water at OU 8

- Reduce future cleanup costs by controlling the spread of contamination.

General response actions identify basic actions that might be undertaken as part of an interim remedial action. Several technologies may exist for each general response action. The preliminary screening of technologies for each general response action involved evaluation of technical implementability. In the process option evaluation, technically implementable technologies were evaluated with respect to effectiveness,

implementability, and cost. Details of the technologies evaluated and the evaluation process used are presented in the Focused FS (Montgomery Watson, 1995b).

The technologies and process options that passed the screening criteria were assembled into four alternatives. As required by the NCP process, the "No Action" alternative was retained for the purpose of comparison.

5.2 DETAILED ANALYSIS OF ALTERNATIVES

Each alternative for this interim action uses hydraulic containment as the primary element with different processes for ground-water treatment and disposal.

During the detailed analysis of alternatives for OU 8, each alternative was assessed against nine evaluation criteria defined in the NCP to compare the relative performance of the alternatives and to identify the advantages and disadvantages of each. This approach was designed to provide sufficient information to adequately compare the alternatives, select an appropriate interim remedial action, and satisfy CERCLA remedy selection requirements. The detailed analysis of alternatives included developing and further defining the volumes or areas of contaminated ground water to be addressed, the technologies to be used, and the performance requirements associated with those technologies. Also included in the Focused FS is an assessment and summary profile of each alternative and a comparative analysis among the alternatives.

Alternative 1: No Action

The No Action Alternative involves taking no action until the final remedy for OU 8 is implemented. This alternative is included as a basis of comparison with other alternatives. As is common to all the alternatives, periodic monitoring of ground water is included. Ground-water monitoring would include testing the ground-water quality both upgradient and downgradient of the Base boundary in 10 monitoring wells. There are no capital cost requirements for Alternative 1, but the annual operating and maintenance cost is $74,000. The estimated six-year present-worth cost is $330,000.

Alternative 2: Ground-Water Extraction, Treatment with Carbon Adsorption, Discharge to Storm Drain

Alternative 2 includes the following technologies:

- Ground-water extraction with vertical wells
- Ground-water treatment using carbon adsorption technology to reduce contaminants in the water to acceptable levels
- Discharge of treated water to a storm drain
- Transport the used carbon containing potential hazardous waste to an off-Base facility.

Under this alternative, vertical extraction wells drilled along a 1,200-foot wide area along the southern Base boundary (see Figure 5-1) would supply contaminated ground water to an above-ground carbon adsorption system for treatment. Treated ground water would then be discharged to the storm drain. A ground-water monitoring program like that described for Alternative 1 would be conducted as part of this alternative. In addition, the monitoring program would be used to monitor system performance. Performance would be evaluated with respect to current concentrations as a baseline. If contaminant concentrations downgradient of the extraction system decrease with time, the system would be considered to be performing as designed. However, if contaminant concentrations increase downgradient during system operation, the system would need to be reevaluated.

This alternative would contain ground water along a 1,200-foot long section at the southern Base boundary to depths of approximately 140 feet bgs. This alternative would also meet the objectives of the IRA by containing ground water on Base and preventing it from migrating to off-Base areas and further impacting human health and the environment. No treatability studies are planned for any of the alternatives in this interim action. Operational information gathered during the duration of this IRA would be evaluated with regard to effectiveness as to its potential to be used as part of the final remedy. Alternative 2 would be easy to implement from a technical and administrative standpoint. However, installation of the extraction system and conveyance piping would traverse beneath the south entrance to Hill AFB, which would require coordination with Base Civil Engineering. Off-Base transportation of spent carbon for regeneration and reuse would require manifesting and possibly a modification of the existing State-issued permit for Hill AFB under RCRA.

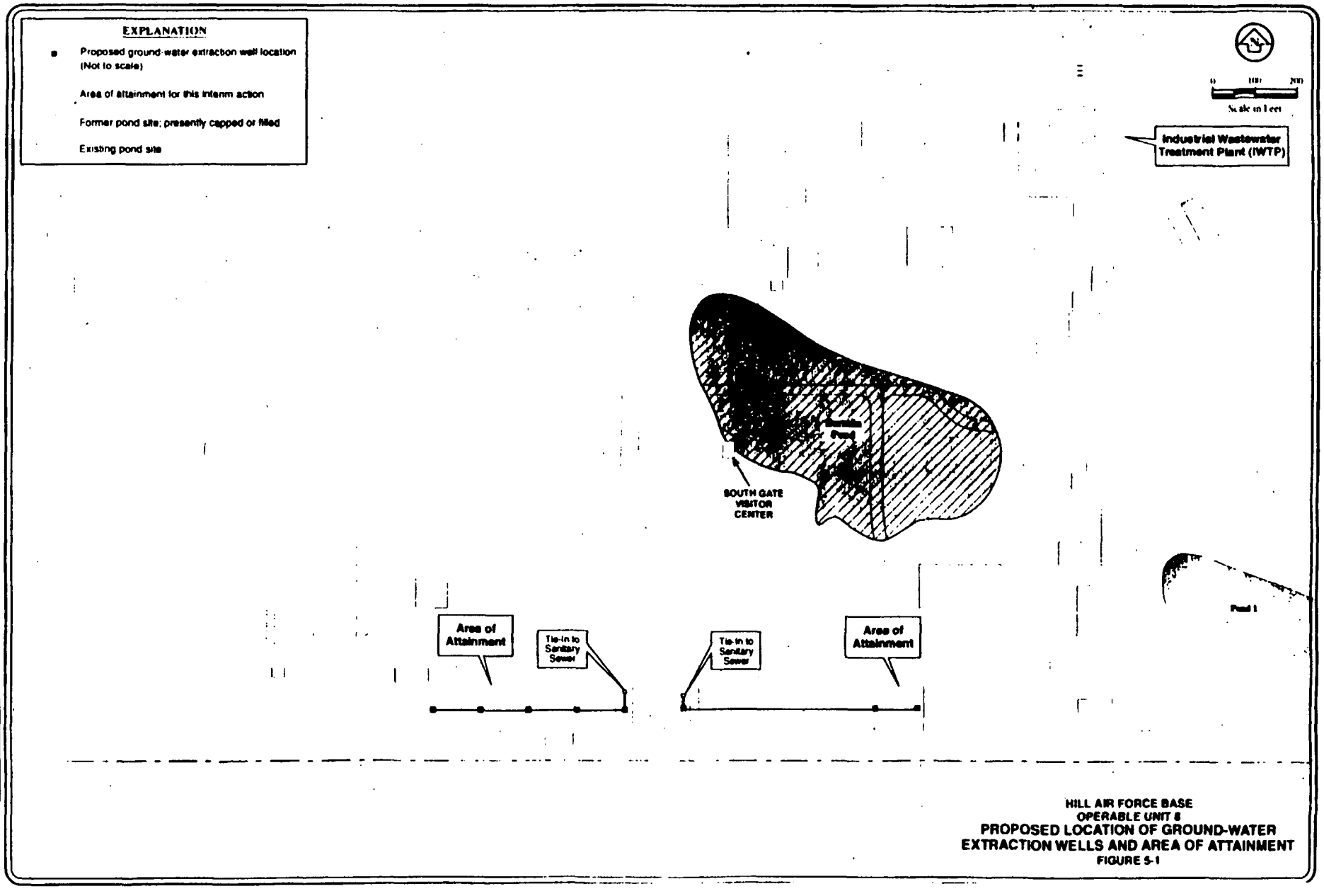
Capital cost requirements for Alternative 2 are $1,041,000, and the annual operating and maintenance cost is $114,000. The estimated six-year present-worth cost is $1,552,000.

Alternative 3: Ground-Water Extraction, Treatment with Air Stripping, Discharge to Storm Drain

Alternative 3 includes the following technologies:

- Ground-water extraction with vertical wells
- Ground-water treatment using an air stripper to reduce contaminants in the water to acceptable levels
- Discharge of treated water to a storm drain.

Under this alternative, the extraction wells (as described in Alternative 2) would discharge contaminated ground water to an above-ground air stripping system for treatment. Treated ground water would then be discharged to the storm drain. A ground-water monitoring and compliance program like that described for Alternative 2 would be conducted as part of this alternative.



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HILL AIR FORCE BASE
OPERABLE UNIT 8
PROPOSED LOCATION OF GROUND-WATER EXTRACTION WELLS AND AREA OF ATTAINMENT
FIGURE 5-1

The SCREEN2 Model was used to estimate air emissions from the treatment system at the Base boundary. In accordance with the UDEQ toxicity screening procedure, the contaminant concentrations in air at the nearest receptor were evaluated. Due to the proximity of the OU 8 interim action to the Base boundary, the nearest receptor point was assumed to be at that boundary. Potential receptors that were considered included: on-Base personnel, residential neighborhoods, and commercial developments. Preliminary modeling results suggest that emissions from the air stripper would be well below the UDEQ requirements, and that no air pollution control device would be necessary for the air stripper off-gas. However, the UDEQ would need to be notified before operating the air stripper.

This alternative would have similar containment and implementability requirements as described for Alternative 2. Capital cost requirements for Alternative 3 are $989,000, and the annual operation and maintenance cost is $110,000. The estimated six-year present-worth cost is $1,481,000.

Alternative 4: Ground-Water Extraction and Discharge to Sanitary Sewer

Alternative 4 includes the following technologies:

- Ground-water extraction with vertical wells
- Discharge of extracted ground water to sanitary sewer.

Under this alternative, extracted ground water would be discharged directly to a sanitary sewer. Previous monitoring results indicate that the volatile organic contaminants are present primarily around Berman Pond and monitoring well U3-025 (Figure 3-1). Since the proposed extraction system would be located at the southern edge of the plume, the extracted ground water would contain dilute concentrations of VOCs. No ex-situ treatment would be required to meet the discharge limits (primarily the total toxic organics limit of 2.04 mg/l) established by the North Davis County Sanitation District (NDCSD). This alternative would also include the ground-water monitoring and performance program described for Alternative 2.

As with Alternative 3, this alternative would have similar containment and implementability requirements as described for Alternative 2. Capital cost requirements for Alternative 4 are $775,000, and the annual operating and maintenance cost is $136,000. The estimated six-year present-worth cost is $1,385,000.

Alternative 5: Ground-Water Extraction, Treatment at IWTP, Discharge to Sanitary Sewer

Alternative 5 includes:

- Ground-water extraction with vertical wells
- Conveyance of extracted ground water to the IWTP for treatment
- Discharge of treated ground water to the sanitary sewer.

Under this alternative, contaminated ground water would be extracted and discharged to an on-Base industrial wastewater pipeline and transported to the IWTP. At the IWTP, extracted ground water would be treated through an existing, above-ground air stripper. Treated water would be discharged to a sanitary sewer through an existing connection. Air quality and local discharge limits would be met under existing permits for the IWTP. This alternative would also include the same ground-water monitoring and performance program described for Alternative 2. The treatment components presented as part of this alternative have been slightly modified from what was reported in the Focused FS (Montgomery Watson, 1995b). The modification includes eliminating carbon treatment of air emissions, which is consistent with the current permitted operation at the IWTP.

This alternative would have similar containment and implementability requirements as described for Alternative 2. Capital cost requirements for Alternative 5 are $776,000, and the annual operating and maintenance cost is $223,000. The estimated six-year present-worth cost is $1,764,000.

5.3 COMPARATIVE ANALYSIS OF ALTERNATIVES

Each of the five alternatives described above was evaluated against nine evaluation criteria to assess their relative advantages and disadvantages, and to identify key tradeoffs that were balanced in selecting an interim action alternative for ground-water containment. Based on this comparison, a preferred alternative was selected for an interim action at OU 8.

5.3.1. Evaluation Criteria

The alternatives were compared with respect to nine evaluation criteria that have been developed under CERCLA to address the technical and policy considerations associated with selecting among the remedial alternatives. The nine evaluation criteria are described below.

Threshold Criteria

Threshold criteria include overall protection of human health and the environment and compliance with ARARs. These threshold criteria must be met by any given alternative before it can be evaluated under the five balancing criteria.

1. **Overall Protection of Human Health and the Environment** describes whether the alternative as a whole achieves and maintains adequate protection of human health and the environment.

2. **Compliance with ARARs** describes whether the alternative complies with ARARs or, if a waiver is required, how it is justified. Other information from advisories, criteria, and the guidance "to be considered" is also addressed.

   Only those ARARs within the scope of this interim action are evaluated in this ROD. Compliance with ARARs for the entire site will be discussed in the feasibility study (FS) for OU 8. Additionally, the final action for OU 8 also will be developed during the FS process.

Balancing Criteria

The five balancing criteria form the basis of the comparative analysis because they allow tradeoffs among the alternatives requiring different degrees of performance.

3. **Short-Term Effectiveness** examines the effectiveness of alternatives in protecting human health and the environment during the construction and implementation of a remedy and until the response objectives have been met.

4. **Long-Term Effectiveness and Permanence** refers to the ability of an alternative to provide reliable protection of human health and the environment over the long term.

5. **Reduction of Toxicity, Mobility, and Volume (TMV) Through Treatment** refers to the preference for treatment technologies that meet this criterion at the site.

6. **Implementability** evaluates the technical and administrative feasibility of the alternatives and the availability of the goods and services needed to implement them.

7. **Cost** refers to the capital, indirect, and operation and maintenance costs of each alternative. Costs are estimated and are expected to provide accuracy of plus 50 percent to minus 30 percent for a six-year period. The six-year period is used as a common point of comparison for evaluating the interim action alternatives (i.e., the time until a final OU 8 remedy is implemented). Cost can only be a deciding factor for alternatives that are equally protective of human health and the environment.

Modifying Criteria

The modifying criteria described below are generally addressed in response to comments from the State and the public after issuance of the Proposed Plan.

8. **State Acceptance** indicates whether the State agrees with, opposes, or has no comment on the preferred alternative.

9. **Community Acceptance** indicates whether the community agrees with, opposes, or has no comment on the preferred alternative.

5.3.2. Comparative Analysis of Alternatives

In this section, the alternatives are compared to evaluate their relative performance according to each of the evaluation criteria. The objective of the comparison is to assess the relative advantages and disadvantages of the alternatives and to identify the key tradeoffs that must be balanced in selecting a preferred alternative. A comparison between alternatives for each criterion is briefly discussed in the following paragraphs.

Overall Protection of Human Health and the Environment. Implementation of ground-water containment alternatives (i.e., Alternatives 2, 3, 4, and 5) would represent a preliminary step in achieving long-term protection of human health and the environment. Each of these alternatives would prevent transport of contaminants to off-Base areas. The no action alternative does not minimize transport of contaminated ground water to off-Base areas or mitigate potential threats to human health and the environment.

Compliance with ARARs. MCLs and State of Utah water quality standards are not ARARs because Alternatives 2 through 5 are designed as interim containment actions (not aquifer restoration actions). However, the area of containment that will be established for each alternative will be defined by the area where contaminant concentrations are in excess of MCLs and State of Utah water quality standards. These ARARs will be addressed as part of the final remedy or remedies selected for OU 8. Because Alternative 1 involves no action except ground-water monitoring, the only ARARs for this alternative are ground-water monitoring ARARs.

The potential ARARs that will be met during implementation of Alternatives 2 through 5 include chemical- and action-specific ARARs. All ARARs that must be met for each alternative are listed in Table 5-1.

All of the alternatives are administratively feasible, but each must comply with ARARs or obtain or revise permits pertaining to discharge of the extracted water and waste handling. In terms of discharge, the treated water would be discharged to a storm drain (Alternatives 2 and 3), sanitary sewer (Alternative 4), or to an industrial sewer (which discharges to the sanitary sewer) that goes to the publicly owned wastewater treatment plant (Alternative 5). For Alternatives 2 and 3, Hill AFB's stormwater discharge permit would need to be revised to include the discharge from the treatment systems for these

TABLE 5-1

SUMMARY OF ARARs FOR EACH ALTERNATIVE
(1 of 4)

Alternative	ARARs With Which the Alternatives Must Comply	ARAR	Type	Will Alternative Meet ARAR? How Will It Comply?
Alternative 1 (No Action)	• R315-8-6 UAC (Ground Water Protection Standards for Owners and Operators of Hazardous Waste TSDFs)	Ap	A	Yes - Complies by providing ground-water monitoring.
	• R655-4 UAC (Standards for drilling and abandonment of wells)	Ap	A	Yes - Design of all monitoring wells will be in accordance to this standard.
	• 40 CFR Part 264, Subpart F (Requirements for detection and containment of releases)	R	A	Yes - Complies by providing ground-water monitoring.
Alternative 2 (Carbon adsorption, Discharge to Storm Drain)	• R307-1-2 UAC (Utah Air Conservation Rules - general requirements)	Ap	A	Yes -Prohibits emission of air contaminants in sufficient quantities to cause air pollution.
	• R307-1-3 UAC (Emission standards for control of installations)	Ap	A, C	Yes - Air emissions during remediation will be controlled to comply with air emissions requirements.
	• R307-1-4 UAC (Emission standards)	Ap	A, C	Yes - Air emissions during drilling would be controlled to comply with air emissions requirements.
	• R307-10 UAC (Utah NESHAPs Standards)	Ap	C	Yes - Air emissions would be controlled to comply with this rule.
	• R307-12 UAC (Fugitive Dust Emission Standards)	Ap	A	Yes -Fugitive dust emissions generated during the IRA construction activities would be controlled to meet the established fugitive dust emission standards.
	• R307-14 UAC Emission Standards for Ozone Non-Attainment Areas, Davis and Salt Lake Counties)	Ap	A	Yes -Air emissions would be controlled to comply with this rule.
	• R315-2 UAC (General requirements - identification and listing of hazardous waste)	Ap	A	Yes - Determines potential waste classification and applicability of land disposal restrictions and other solid and hazardous waste rules.
	• R315-5 UAC (Hazardous waste generator requirements)	Ap	A	Yes - Alternative will meet all requirements involving off-site disposal of hazardous waste.
	• R315-8-2.9 (Standards for Owners and Operators of Hazardous Waste Treatment Storage and Disposal Facilities; General Facility Standards; Location Standards)	Ap	L	Yes -Any newly constructed treatment facilities will be outside 100-year flood plains.
	• R315-8-6 UAC (Ground Water Protection Standards for Owners and Operators of Hazardous Waste TSDFs)	R	A,C	Yes - Complies with ground-water monitoring provision.
	• R317-1 UAC (Definitions for water pollution rules and general requirements)	Ap	A,C	Yes - Alternative will be designed to comply with all rules and general requirements for storm drain discharge.
	• R317-2 UAC (Standards for quality of waters of the State)	Ap	C	Yes - Complies by treating ground water to water quality standards before discharge.
	• R317-6 UAC (Ground-water quality protection rule)		A,C	Yes -The Utah Ground Water Protection Rule establishes numerical clean-up levels and other performance standards for contaminated ground water. Although no determination has been made concerning whether this Rule is an applicable or relevant and appropriate standard at OU 8, the standards required by the Ground Water Quality Protection Rule will be met by complying with drinking water MCLs.
	• R317-8 UAC (Utah pollution discharge elimination system)	Ap	A,C	Yes - Complies by treating ground water to water quality standards before discharge.
	• R655-4 UAC (Standards for drilling and abandonment of wells)	Ap	A	Yes - Design of all extraction and monitoring wells will be in accordance to this standard.
	• 40 CFR Parts 122-125 (National pollution discharge elimination System)	Ap	A,C	Yes - Alternative will be designed so that all discharge effluent will comply with discharge permits issued to Hill AFB.
	• 40 CFR Part 261 (Identification and listing of hazardous waste)	Ap	C	Yes - All hazardous waste will be classified according to this ARAR.
	• 40 CFR Part 264, Subpart F (Requirements for detection and containment of releases)	Ap	A	Yes - Complies by providing ground-water monitoring.

ARAR Applicable or relevant and appropriate requirement
RCRA Resource Conservation and Recovery Act
Ap Applicable
TSDF Treatment, Storage, and Disposal Facility
UAC Utah Administrative Code

A Action-Specific ARAR
L Location-Specific ARAR
R Relevant and Appropriate
C Chemical-Specific ARAR

TABLE 5-1

SUMMARY OF ARARs FOR EACH ALTERNATIVE
(2 of 4)

Alternative	ARARs With Which the Alternatives Must Comply	ARAR	Type	Will Alternative Meet ARAR? How Will It Comply?
Alternative 3 (Air Stripping, Discharge to Storm Drain)	• R307-1-2 UAC (Utah Air Conservation Rules - general requirements)	Ap	A	Yes -Prohibits emission of air contaminants in sufficient quantities to cause air pollution.
	• R307-1-3 UAC (Emission standards for control of installations)	Ap	A, C	Yes - Air emissions during remediation will be controlled to comply with air emissions requirements.
	• R307-1-4 UAC (Emission standards)	Ap	A, C	Yes - Air emissions during drilling would be controlled to comply with air emissions requirements.
	• R307-10 UAC (Utah NESHAPs Standards)	Ap	C	Yes - Air emissions would be controlled to comply with this rule.
	• R307-12 UAC (Fugitive Dust Emission Standards)	Ap	A	Yes -Fugitive dust emissions generated during the IRA construction activities would be controlled to meet the established fugitive dust emission standards.
	• R307-14 UAC Emission Standards for Ozone Non-Attainment Areas, Davis and Salt Lake Counties)	Ap	A	Yes -Air emissions would be controlled to comply with this rule.
	• R315-2 UAC (General requirements - identification and listing of hazardous waste)	Ap	A	Yes - Determines potential waste classification and applicability of land disposal restrictions and other solid and hazardous waste rules.
	• R315-5 UAC (Hazardous waste generator requirements)	Ap	A	Yes - Alternative will meet all requirements involving off-site handling and disposal of hazardous waste.
	• R315-8-2.9 (Standards for Owners and Operators of Hazardous Waste Treatment Storage and Disposal Facilities; General Facility Standards; Location Standards)	Ap	L	Yes -Any newly constructed treatment facilities will be outside 100-year flood plains.
	• R315-8-6 UAC (Ground Water Protection Standards for Owners and Operators of Hazardous Waste TSDFs)	R	A, C	Yes - Complies with ground-water monitoring provisions.
	• R317-1 UAC (Definitions for water pollution rules and general requirements)	Ap	C	Yes - Alternative will be designed to comply with all rules and general requirements for storm drain discharge.
	• R317-2 UAC (Standards for quality of waters of the State)	Ap	C	Yes - Complies by treating ground water to water quality standards before discharge.
	• R317-6 UAC (Ground-water quality protection rule)		A,C	Yes -The Utah Ground Water Protection Rule establishes numerical clean-up levels and other performance standards for contaminated ground water. Although no determination has been made concerning whether this Rule is an applicable or relevant and appropriate standard at OU 8, the standards required by the Ground Water Quality Protection Rule will be met by complying with drinking water MCLs.
	• R317-8 UAC (Utah pollution discharge elimination system)	Ap	A,C	Yes - Complies by treating ground water to water quality standards before discharge.
	• R655-4 UAC (Standards for drilling and abandonment of wells)	Ap	A	Yes - Design of all extraction and monitoring wells will be in accordance to this standard.
	• 40 CFR Part 50 (Primary and secondary air quality standards)	Ap	C	Yes - Air emissions are expected to be well below established standards.
	• 40 CFR Part 61 subpart A (NESHAPs Standards)	Ap	C	Yes - Complies because air emissions of hazardous pollutants will be below the established standards.
	• 40 CFR Parts 122-125 (National pollution discharge elimination System)	Ap	A,C	Yes - Alternative will be designed so that all discharge effluent will comply with discharge permits issued to Hill AFB.
	• 40 CFR Part 261 (Identification and listing of hazardous waste)	Ap	C	Yes - All hazardous waste will be classified according to this ARAR.
	• 40 CFR Part 264, Subpart F (Requirements for detection and containment of releases)	Ap	A	Yes - Complies by providing ground-water monitoring.

ARAR Applicable or relevant and appropriate requirement
RCRA Resource Conservation and Recovery Act
Ap Applicable
TSDF Treatment, Storage, and Disposal Facility
UAC Utah Administrative Code

A Action-Specific ARAR
L Location-Specific ARAR
R Relevant and Appropriate
C Chemical-Specific ARAR

TABLE 5-1

SUMMARY OF ARARs FOR EACH ALTERNATIVE

(3 of 4)

Alternative	ARARs With Which the Alternatives Must Comply	ARAR	Type	Will Alternative Meet ARAR? How Will It Comply?
Alternative 4 (Discharge to Sanitary Sewer)	• R307-1-2 UAC (Utah Air Conservation Rules - general requirements)	Ap	A	Yes -Prohibits emission of air contaminants in sufficient quantities to cause air pollution.
	• R307-1-3 UAC (Emission standards for control of installations)	Ap	A, C	Yes - Air emissions during remediation will be controlled to comply with air emissions requirements.
	• R307-1-4 UAC (Emission standards)	Ap	A, C	Yes - Air emissions during drilling would be controlled to comply with air emissions requirements.
	• R307-1-4 UAC (Emission standards)	Ap	A, C	Yes - Air emissions would be controlled to comply with this rule.
	• R307-10 UAC (Utah NESHAPs Standards)	Ap	C	Yes - Air emissions would be controlled to comply with this rule.
	• R307-12 UAC (Fugitive Dust Emission Standards)	Ap	A	Yes -Fugitive dust emissions generated during the IRA construction activities would be controlled to meet the established fugitive dust emission standards.
	• R307-14 UAC Emission Standards for Ozone Non-Attainment Areas, Davis and Salt Lake Counties)	Ap	A	Yes -Air emissions would be controlled to comply with this rule.
	• R315-2 UAC (General requirements - identification and listing of hazardous waste)	Ap	A	Yes - Determines potential waste classification and applicability of land disposal restrictions and other solid and hazardous waste rules.
	• R315-5 UAC (Hazardous waste generator requirements)	Ap	A	Yes - Alternative will meet all requirements involving off-site disposal of hazardous waste.
	• R315-8-6 UAC (Ground Water Protection Standards for Owners and Operators of Hazardous Waste TSDFs)	R	A	Yes - Complies with ground-water monitoring provisions.
	• R317-1 UAC (Definitions for water pollution rules and general requirements)	Ap	C	Yes - Alternative will be designed to comply with all rules and general requirements for sanitary sewer discharge.
	• R317-2 UAC (Standards for quality of waters of the State)	R	C	Yes - Ground water will be treated at the POTW
	• R317-6 UAC (Ground-water quality protection rule)	Ap	A,C	Yes -The Utah Ground Water Protection Rule establishes numerical clean-up levels and other performance standards for contaminated ground water. Although no determination has been made concerning whether this Rule is an applicable or relevant and appropriate standard at OU 8, the standards required by the Ground Water Quality Protection Rule will be met by complying with drinking water MCLs.
	• R317-8 UAC (Utah pollution discharge elimination system)	R	A,C	Yes - Ground water will be treated at the POTW
	• R655-4 UAC (Standards for drilling and abandonment of wells)	Ap	A	Yes - Design of all extraction and monitoring wells will be in accordance to this standard.
	• 40 CFR Parts 122-125 (National pollution discharge elimination System)	Ap	A,C	Yes - Alternative will be designed so that all discharge effluent will comply with discharge permits issued to Hill AFB.
	• 40 CFR Part 264, Subpart F (Requirements for detection and containment of releases)	Ap	A	Yes - Complies by providing ground-water monitoring.
	• 40-CFR Part 270 (Hazardous waste permit program)	Ap		Yes - All discharged water contaminants will be within the standards established by this ARAR.
	• 40 CFR Part 403 (National pretreatment standards)	Ap	A	Yes - All remedial technology units will be managed in accordance with this ARAR.

ARAR Applicable or relevant and appropriate requirement
RCRA Resource Conservation and Recovery Act
Ap Applicable
TSDF Treatment, Storage, and Disposal Facility
UAC Utah Administrative Code

A Action-Specific ARAR
L Location-Specific ARAR
R Relevant and Appropriate
C Chemical-Specific ARAR

TABLE 5-1

SUMMARY OF ARARs FOR EACH ALTERNATIVE
(4 of 4)

Alternative	ARARs With Which the Alternatives Must Comply	ARAR	Type	Will Alternative Meet ARAR? How Will It Comply?
Alternative 5 (Treatment at IWTP and Discharge to Sanitary Sewer)	• R307-1-2 UAC (Utah Air Conservation Rules-general requirements)	Ap	A	Yes - Prohibits emission of air contaminants in sufficient quantities to cause air pollution.
	• R307-1-3 UAC (Emission standards for control of installations)	Ap	A, C	Yes - Air emissions during remediation will be controlled to comply with air emissions requirements; emission handled under existing IWTP permit.
	• R307-1-4 UAC (Emission standards)	Ap	A, C	Yes - Air emissions during excavation would be controlled to comply with air emissions requirements; emission handled under existing IWTP permit.
	• R307-10 UAC (Utah NESHAPs Standards)	Ap	C	Yes - Air emissions would be controlled to comply with this rule.
	• R307-12 UAC (Fugitive Dust Emission Standards)	Ap	A	Yes -Fugitive dust emissions generated during the IRA construction activities would be controlled to meet the established fugitive dust emission standards.
	• R307-14 UAC Emission Standards for Ozone Non-Attainment Areas, Davis and Salt Lake Counties)	Ap	A	Yes -Air emissions would be controlled to comply with this rule.
	• R315-2 UAC (General requirements - identification and listing of hazardous waste)	Ap	A	Yes - Determines potential waste classification and applicability of land disposal restrictions and other solid and hazardous waste rules.
	• R315-5 UAC (Hazardous waste generator requirements)	Ap	A	Yes - Alternative will meet all requirements involving off-site handling and disposal of hazardous waste.
	• R315-8-6 UAC (Ground Water Protection Standards for Owners and Operators of Hazardous Waste TSDFs)	R	A	Yes - Complies with ground-water monitoring provisions.
	• R317-1 UAC (Definition of water pollution rules and general requirements)	Ap	C	Yes - Ground water will be treated at the IWTP under the permit.
	• R317-2 UAC (Standards for quality of waters of the State)	Ap	C	Yes - Ground water will be treated under the existing IWTP permit.
	• R317-8 UAC (Utah pollution discharge elimination system)	Ap	A, C	Yes- Ground water will be treated under the existing IWTP permit.
	• R655-4 UAC (Standards for drilling and abandonment of wells)	Ap	A	Yes - Design of all extraction and monitoring wells will be in accordance to this standard.
	• 40 CFR Part 50 (Primary and secondary air quality standards)	Ap	C	Yes - Air emissions are expected to be well below established standards; emission handled under existing IWTP permit.
	• 40 CFR Part 61, Subpart A (NESHAPs Standards)	Ap	C	Yes - Ground water will be treated under the existing IWTP permit; emission handled under existing IWTP permit.
	• 40 CFR Part 261 (Identification and listing of hazardous waste)	Ap	C	Yes - All hazardous waste will be classified according to this ARAR.
	• 40 CFR Part 264, Subpart F (Requirements for detection and containment of releases)	Ap	A	Yes - This alternative will be implemented so that it complies with this ARAR.

ARAR Applicable or relevant and appropriate requirement
RCRA Resource Conservation and Recovery Act
Ap Applicable
TSDF Treatment, Storage, and Disposal Facility
UAC Utah Administrative Code

A Action-Specific ARAR
L Location-Specific ARAR
R Relevant and Appropriate
C Chemical-Specific ARAR

alternatives. For Alternatives 4 and 5, Hill AFB would need to contact the North Davis County Sanitary District (NDCSD) and obtain a permit or permit modification to discharge to the sanitary sewer.

In terms of waste handling, off-site regeneration of used carbon (Alternative 2) would require compliance with hazardous waste manifesting regulations and the Federal and State Department of Transportation hazardous materials regulations and hazardous waste generator storage requirements.

One location-specific ARAR (R315-8-2.9) is applicable to implementing the OU8 interim action. In order to comply with this rule, it will be necessary to locate any new treatment facilities outside areas considered to be a 100-year flood plain.

Short-Term Effectiveness. Alternatives 2 through 5 would be designed to protect workers and the community during implementation of the remedial action. Worker protection would be consistent with OSHA requirements in 29 CFR 1910.120, the OU 8 Health and Safety Plan, and the Contingency Plan (to be developed) during construction and operation. The process tanks and pipelines would have secondary containment systems with leak detection to identify and collect accidental spills or leakage. Emissions from the air stripper (Alternatives 3 and 5) would be well below the health-risk based standards and are not expected to pose a threat to the surrounding community or the environment. Since no action would be taken at OU 8, Alternative 1 does not provide any short-term effectiveness.

Long-Term Effectiveness. Alternatives 2 through 5 would prevent transport of contaminants to off-Base areas and reduce potential impact to human health and the environment. Operational information from these interim remedial systems would be useful in evaluating the long-term effectiveness and permanence of a final remedy. Alternative 1 delays any action until the final remedy is selected, so this alternative would provide no long-term effectiveness nor permanence. Ground-water contamination would migrate further off-Base, increasing the volume of contaminated ground water and the subsequent cost of the final remedy.

Reduction of Toxicity, Mobility, and Volume Through Treatment at the Site. Alternatives 2, 3 and 5 are expected to be equally effective in reducing the toxicity, mobility, and volume of ground-water contaminants. The mobility of contaminants would be reduced with Alternatives 2, 3, and 5 as the ground water is extracted; on-site treatment would reduce the volume and toxicity of contaminants. These alternatives would be designed to minimize further migration of contaminated ground water to off-Base areas. For Alternative 4, the ground water is discharged directly to the sanitary sewer without on-site treatment. The mobility of contaminants would be reduced using an on-site extraction system. The toxicity and volume of contaminants would be reduced off site as the ground water is treated at a POTW. Since Alternative 1 does not include any treatment, this alternative would not reduce the toxicity, mobility, or volume of contaminants at OU 8.

Implementability. Alternative 1 would be the easiest to implement from a technical and administrative standpoint as it only involves ground-water monitoring. Alternatives 2 through 5 would also be relatively easy to implement from a technical standpoint. The necessary facilities for the ground-water extraction, treatment, and discharge systems are commercially available, simple to construct, or already exist at Hill AFB. However, Alternatives 4 and 5 would be simplest to construct, as only extraction wells and discharge piping would need to be installed because the sanitary sewer (Alternative 4) and the IWTP (Alternative 5) already exist. For Alternatives 2 and 3, new treatment systems (Carbon Adsorption–Alternative 2; Air Stripper–Alternative 3) would need to be installed in addition to extraction wells and discharge piping. For Alternatives 2 through 5, the ground-water extraction system and piping would have to traverse beneath the south entrance to Hill AFB. These activities would require coordination with traffic and minimizing any impact to underground utilities.

In terms of operation Alternatives 4 and 5 would be simplest to operate because both the IWTP and NDCSD already exist, both operate under existing permits, both can easily treat the contaminant concentrations present in OU 8 ground water, and preliminary arrangements for the discharge of treated water via a permit modification have already been made. The treatment systems under Alternatives 2 and 3 would be simple to operate, but would require more direct oversight and sampling (i.e., increased operation and management costs) to ensure that the systems are operating properly and that contaminant concentrations are in compliance with the discharge standards.

Alternatives 4 and 5 have an implementability advantage over Alternatives 2 and 3, because: (1) the treatment facilities (IWTP and NDCSD) already exist and a new treatment system would not need to be constructed; (2) Hill AFB has an existing agreement with the NDCSD for discharge to the sewer (which would need to be modified to accept the discharge from this action); and (3) the IWTP is currently operating and could easily treat the expected and potential contaminant concentrations in the extracted water. Alternatives 2 and 3 are relatively low on the implementability scale as these alternatives require installation of new treatment technologies and obtaining a permit for discharge to a storm drain.

Costs. Alternative 1 is the least expensive of the five alternatives with a projected present worth cost of $330,000. Among Alternatives 2 through 5, Alternative 4 has the lowest present worth (approximately $1,385,000) and involves the least amount of capital expenditure. Alternative 3 has the next lowest present worth (approximately $1,481,000). The operational costs associated with Alternative 3 are less dependent on changes in contaminant concentrations, but the capital costs are higher than for Alternatives 4 and 5. The cost of Alternative 3 also could significantly increase if air emissions controls are required in the future. Alternative 2 has slightly higher costs than Alternative 3 and has a present worth cost of $1,552,000. However, the treatment cost for this alternative is directly proportional to the mass of contaminants removed. Therefore, an increase in contaminant concentrations could have a significant impact on treatment costs. Alternative 5 has the highest present worth of all the alternatives ($1,764,000). However, if contaminant concentrations increased, the increase in costs for Alternative 5 would be insignificant compared to the increase in costs associated with

Alternatives 2, 3, and 4 because the IWTP is designed to treat concentrated wastes. Additionally, Hill AFB believes that the costs associated with Alternative 5 are more certain and that Hill AFB can more easily control these costs than for Alternatives 2, 3, and 4.

State Acceptance. The State of Utah agrees with the preferred alternative (Alternative 4).

Community Acceptance. All questions and concerns raised by the public were received during an Open House on August 17, 1995. Alternative 5, with discharge to the IWTP was presented as the preferred alternative. The primary concerns were related to health effects of TCE and possible exposures, such as through wells, water in basement sumps, and standing "wet areas" in Layton. Hill AFB's responses are summarized in the Responsiveness Summary.

The public, in general, offered no opposition to the preferred alternative. However, one community member expressed concerns over the cost-effectiveness of using the IWTP. He expressed a preference for direct discharge to the sanitary sewer if it was available (Alternative 4). Based on this, and additional information discussed in Section 6.3, Hill AFB has reconsidered alternatives and is selecting Alternative 4 for the remedy for interim action at OU 8.

Section 6

6.0 SELECTED REMEDY

6.1 DESCRIPTION OF THE SELECTED REMEDY

The selected remedy for an interim remedial action at Hill AFB OU 8 is Alternative 4 - ground-water extraction and discharge to the sanitary sewer. Alternative 4 consists of ground-water extraction using 8 vertical wells, and conveyance of extracted ground water to the sanitary sewer and treatment at the POTW. If greater treatment efficiency, or ease of implementability and cost effectiveness can be established at a later date, discharge of extracted groundwater to the IWTP (Alternative 5) may again be considered.

Figure 6-1 shows the schedule for implementing the selected remedy. The first activities will include design of the extraction wells and ground-water conveyance systems. The design activities will be followed by the system construction and installation. Once the system installation is complete, the individual components of the system and then the entire system will be tested to ensure that the intent of the design was met during the construction, and that the installed system is capable of meeting the performance objectives. System testing will be followed by a start-up and prove-out period. The entire system will then be operated and maintained until the final remedy is implemented. Ground-water quality monitoring is scheduled on a quarterly basis during the initial stage of the interim remedial action system. Ground-water monitoring will continue for the duration of the interim remedial action, but the frequency of monitoring may be reduced based on the observed trends in contaminant concentrations or migration. During this interim action, the system performance will be reviewed to evaluate the effectiveness of the system and to determine if it will be used as part of the final remedy at OU 8.

6.1.1. Remediation Objectives and Performance Standards

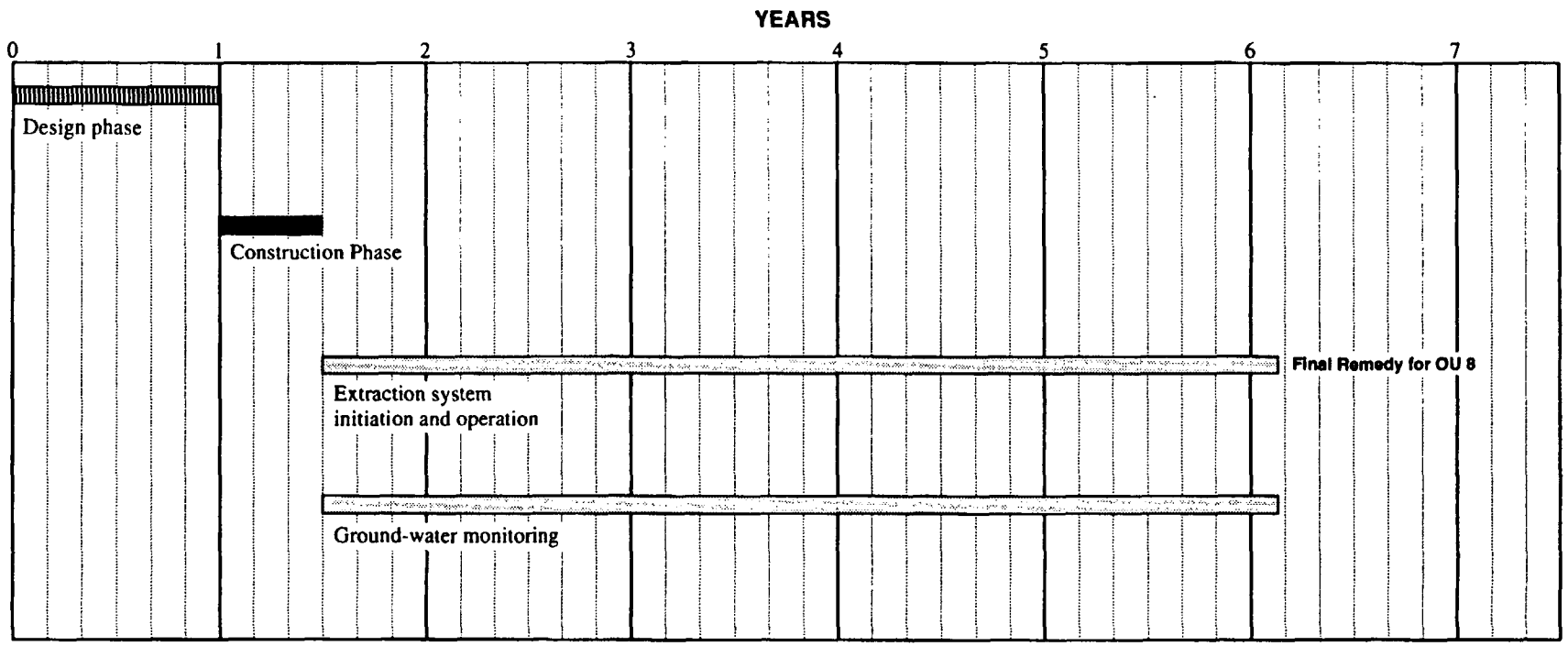
The interim action goals and objectives for OU 8 are to:

- Contain ground water at the southern boundary of Hill AFB to prevent off-Base transport of contaminants above MCLs in the shallow ground water and to reduce future potential off-Base risks

- Reduce the spread of contaminants, thereby controlling the volume and areal extent of contaminated ground water at OU 8

- Reduce future cleanup costs by controlling the spread of contamination.

The area of attainment over which these cleanup goals are to be achieved is defined as the area where ground-water contaminants exceed MCLs in a 600-foot wide section on the west side of Hill Field Road and a 200-foot wide section on the east side of Hill Field Road in the shallow aquifer along the southern boundary of the Base, as shown in Figure 5-1. The extraction well design for the interim remedial action will be such that the full horizontal and vertical extent of contamination exceeding MCLs (estimated to be approximately 140 feet bgs) would be contained.



NOTE: "Time zero" is defined as the beginning of substantial, continuous physical improvement, which will begin not later than 15 months after this ROD is signed.

HILL AIR FORCE BASE
OPERABLE UNIT 8
CONCEPTUAL INTERIM REMEDIAL ACTION IMPLEMENTATION SCHEDULE
FIGURE 6-1

A performance and compliance sampling program (PCSP) will be implemented during the remedial action to monitor performance and compliance with the RAOs. This program will be developed during the implementation of the selected interim remedy and will include locations of performance monitoring points, monitoring frequency, analytical parameters, sampling and analytical methods, and statistical methods for evaluating data. The PCSP will be designed to provide information to evaluate the effectiveness of the interim remedial action. The PCSP will be included as part of the work plans developed for this interim action, and will be reviewed and approved by Hill AFB, UDEQ, and EPA regulators. The PCSP may be modified during the interim remedial action if site conditions change.

6.1.2. Restoration Time Frame

Because this action is an interim solution designed only to contain the ground-water contamination plume, a restoration time frame for cleaning up the ground water is not applicable to this interim action. This interim system will operate until the final remedy is implemented (expected to be within six years) and if it proves to be an effective measure, it may be included as a component of the final remedy.

6.1.3. Costs

The total capital cost of the project is estimated at $750,000. The total capital cost includes: installation of the extraction well network (approximately 8 wells), pumps, conveyance piping to the sanitary sewer, and electrical and instrumentation components. The indirect capital cost for the project is estimated at $220,000 and is included in the estimated total capital cost cited above. Indirect costs include engineering, contingency, and contract administration.

Operation and maintenance (O&M) costs over the duration of the interim remedial action are calculated for a six-year period. Annual O&M is estimated at $135,000 per year. O&M costs include power consumption, labor, well rehabilitation, regular maintenance, sanitary sewer treatment charges, quarterly ground-water monitoring program, and discharge water to the sanitary sewer. It was assumed that rehabilitation of each well will occur once during the duration of this interim remedial action at an estimated cost of $8,000 for 8 extraction wells. The total present worth cost of the selected interim remedy over a six-year period, using an interest rate of ten percent, was estimated at $1,305,000. These cost estimates should be accurate to within +50% to -30% of the actual cost. During the implementation process for the selected alternative, modifications resulting from the engineering design process could change the estimated costs for this alternative.

6.2 STATUTORY DETERMINATIONS

The selected interim action for Hill AFB OU 8 meets the statutory requirements of CERCLA. These statutory requirements include protection of human health and the environment, compliance with ARARs (within the scope of the IRA), cost effectiveness, and utilization of permanent solutions and alternative treatment technologies to the maximum extent practicable. Contaminant treatment is provided at the POTW. The

manner in which the selected interim action for OU 8 meets each of the requirements is presented in the following discussion.

6.2.1. Protection of Human Health and the Environment

The selected interim remedy for OU 8 is protective of human health and the environment. The contaminated ground water currently migrating to off-Base areas contributes to a future threat to human health and the environment. Implementation of the selected interim remedy represents a preliminary step in achieving long-term protection by preventing or minimizing transport of contaminants to off-Base areas.

6.2.2. Compliance with Applicable or Relevant and Appropriate Requirements

Section 121(d)(1) of CERCLA, as amended by SARA, requires that the interim remedial action proposed for OU 8 must attain, to the extent practical under the selected interim remedial action, a degree of cleanup that assures protection of human health and the environment. In addition, remedial actions that leave any hazardous substances, pollutants, or contaminants on the site must, upon completion, meet a level or standard that at least attains legally applicable or relevant and appropriate standards, requirements, limitations, or criteria that are applicable or relevant and appropriate requirements (ARARs) under the circumstances of the release. ARARs include Federal standards, requirements, criteria, and limitations and any promulgated standards, requirements, criteria, or limitations under the State of Utah environmental or facility siting regulations that are more stringent than Federal standards. In addition, the State of Utah ARARs include all promulgated standards and rules associated with delegated State environmental programs, and those State regulations with no corresponding Federal regulations.

"Applicable" requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under Federal or State law that specifically address the hazardous substances, pollutants, or contaminants, remedial action, location, or other circumstance at the OU 8 site. "Relevant and appropriate" requirements are cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under Federal or State law that, while not "applicable" to the hazardous substance, pollutant or contaminant, remedial action, location, or other circumstance at a remedial action site, address problems or situations sufficiently similar to those encountered at the site that their use is well-suited to the particular site.

In evaluating which requirements are applicable or relevant and appropriate, the criteria differ depending on whether the type of requirement is chemical-specific, action-specific, or location-specific. According to the NCP, chemical-specific ARARs are usually health or risk-based numerical values that establish the acceptable amount or concentration of a chemical that may remain in, or be discharged to, the ambient environment. Action-specific ARARs are usually technology or activity-based requirements or limitations on actions taken with respect to hazardous wastes, or requirements to conduct certain actions to address particular circumstances at the site. Location-specific ARARs generally are

restrictions placed upon the concentration of hazardous substances or activities solely because they are in special locations. Some examples of special locations include floodplains, wetlands, historic places, and sensitive ecosystems or habitats.

The interim action selected for OU 8 will meet the ARARs that are applicable or relevant and appropriate to this interim remedial action. Chemical- and action-specific ARARs for the selected interim action are identified in Table 6-1. Federal and State location-specific ARARs are not applicable nor relevant and appropriate to the OU 8 selected interim remedy. A summary of ARARs to be met with alternate discharge options (Alternative 5–IWTP) is presented in Table 6-2. The ARARs listed in Table 6-2 will be applicable only if the IWTP discharge option is selected at a later date and if greater treatment efficiency, cost effectiveness, or ease of implementation can be established for an interim action at Operable Unit 8. Because the principal goal of this interim action is hydraulic containment of ground water at the Base boundary, restoration of the contaminated aquifer to drinking water standards is outside the scope of this interim action. Aquifer restoration will be addressed during the selection of the final remedy for all of OU 8. For this reason, regulations that address restoration of contaminated ground water are not ARARs for this interim action. These ARARs include MCLs, the Utah ground water quality standards, and the Safe Drinking Water Act.

Discharge to the POTW will comply with the national pretreatment standards and limits established by the POTW pretreatment program. Air emission requirements are met by complying with the fugitive dust regulations and the air emissions requirements for the Base air emissions permit. Hazardous waste generator and listing of hazardous waste will comply with all requirements involving off-Base disposal of soils. The ground-water protection rule will be met by complying with the ground-water monitoring provisions. In addition, the design of all monitoring and extraction wells will be completed in accordance to the appropriate drilling and completion standards.

Hill AFB obtained approval at a September 15, 1995, board meeting from the NDCSD to increase the discharge to the sanitary sewer. Hill AFB also will complete amendments to the "CERCLA Wastewater Discharge" clause to the existing utility contract before initiating additional discharge to the sewer. All air quality and local discharge limits are expected to be met with this alternative.

6.2.3. Cost Effectiveness

Overall cost effectiveness can be defined as the overall effectiveness proportionate to cost, such that an action represents a reasonable value. The selected remedy for OU 8 will contain ground water at the Base boundary at a reasonable cost, thus providing protection to human health and the environment. The selected interim action also has a cost that is within the same range as the other action alternatives. If greater treatment efficiency, cost effectiveness or ease of implementability can be established at a later date, other discharge alternatives would be considered, such as the IWTP.

TABLE 6-1

SUMMARY OF ARARs FOR THE SELECTED REMEDY

Alternative	ARARs With Which the Alternatives Must Comply
Alternative 4 (Discharge to Sanitary Sewer)	• R307-1-2 UAC (Utah Air Conservation Rules - general requirements) • R307-1-3 UAC (Emission standards for control of installations) • R307-1-4 UAC (Emission standards) • R307-1-4 UAC (Emission standards) • R307-10 UAC (Utah NESHAPs Standards) • R307-12 UAC (Fugitive Dust Emission Standards) • R307-14 UAC Emission Standards for Ozone Non-Attainment Areas, Davis and Salt Lake Counties) • R315-2 UAC (General requirements - identification and listing of hazardous waste) • R315-5 UAC (Hazardous waste generator requirements) • R315-8-6 UAC (Ground Water Protection Standards for Owners and Operators of Hazardous Waste TSDFs) • R317-1 UAC (Definitions for water pollution rules and general requirements) • R317-2 UAC (Standards for quality of waters of the State) • R317-6 UAC (Ground-water quality protection rule) • R317-8 UAC (Utah pollution discharge elimination system) • R655-4 UAC (Standards for drilling and abandonment of wells) • 40 CFR Parts 122-125 (National pollution discharge elimination System) • 40 CFR Part 264, Subpart F (Requirements for detection and containment of releases) • 40-CFR Part 270 (Hazardous waste permit program) • 40 CFR Part 403 (National pretreatment standards)

ARAR Applicable or relevant and appropriate requirement
CFR Code of Federal Regulations
RCRA Resource Conservation and Recovery Act
TSDF Treatment, storage, and disposal facility
UAC Utah Administrative Code

TABLE 6-2

SUMMARY OF ARARs FOR THE OPTIONAL REMEDY

Alternative	ARARs With Which the Alternatives Must Comply
Alternative 5 (Treatment at IWTP and Discharge to Sanitary Sewer)	• R307-1-2 UAC (Utah Air Conservation Rules-general requirements) • R307-1-3 UAC (Emission standards for control of installations) • R307-1-4 UAC (Emission standards) • R307-10 UAC (Utah NESHAPs Standards) • R307-12 UAC (Fugitive Dust Emission Standards) • R307-14 UAC Emission Standards for Ozone Non-Attainment Areas, Davis and Salt Lake Counties) • R315-2 UAC (General requirements - identification and listing of hazardous waste) • R315-5 UAC (Hazardous waste generator requirements) • R315-8-6 UAC (Ground Water Protection Standards for Owners and Operators of Hazardous Waste TSDFs) • R317-1 UAC (Definition of water pollution rules and general requirements) • R317-2 UAC (Standards for quality of waters of the State) • R317-8 UAC (Utah pollution discharge elimination system) • R655-4 UAC (Standards for drilling and abandonment of wells) • 40 CFR Part 50 (Primary and secondary air quality standards) • 40 CFR Part 61, Subpart A (NESHAPs Standards) • 40 CFR Part 261 (Identification and listing of hazardous waste) • 40 CFR Part 264, Subpart F (Requirements for detection and containment of releases)

ARAR Applicable or relevant and appropriate requirement
CFR Code of Federal Regulations
RCRA Resource Conservation and Recovery Act
TSDF Treatment, storage, and disposal facility
UAC Utah Administrative Code

6.2.4. Utilization of Permanent Solutions and Treatment Alternative Technologies or Resource Recovery Technologies to the Maximum Extent Practical

The selected remedy for OU 8 does not provide on-site treatment; however, extracted ground water will be treated at the POTW. Hence, the selected remedy for OU 8 utilizes permanent solutions to the maximum extent practical. The statutory preference for treatment as a principal element for ground water as a whole will be addressed in the final Record of Decision for OU 8. However, this remedy is only an interim measure and its effectiveness will be evaluated in the final decision document for OU 8. If greater treatment efficiency or cost effectiveness can be established at a later date, discharge of extracted groundwater to the IWTP (Alternative 5) may again be considered.

The selected interim action provides the best balance of tradeoffs among all the alternatives with respect to the five summary balancing criteria which include:

- Long-term effectiveness and permanence
- Reduction of toxicity, mobility, or volume through treatment
- Short-term effectiveness
- Implementability
- Cost.

The criterion most critical in the selection of this remedy was implementability. Alternative 4 will be easy to implement because it will utilize direct discharge to a sanitary sewer, which eliminates the need for constructing an additional treatment facility. To an extent, this alternative is not affected by the changing site conditions (e.g., a decrease in contaminant concentrations). The modifying criteria, which are State and community acceptance, have had an effect on selection of the remedy. The State agrees with the selected remedy. However, one of the community members had expressed cost concerns over selection of Alternative 5 as the preferred remedy. Given additional information suggesting the zone to be contained is smaller with lower concentrations, Hill AFB now concurs with the community member. Hill AFB has, therefore, selected Alternative 4 as the remedy for an interim action at OU 8.

6.3 DOCUMENTATION OF SIGNIFICANT CHANGES

The Proposed Plan for an interim action at Hill AFB OU 8 (Montgomery Watson, 1995c) was released for public comment in July 1995. The Proposed Plan identified Alternative 5 - ground-water extraction, treatment at IWTP, and discharge to a sanitary sewer as the preferred alternative; one modification to the Proposed Plan was made and included eliminating carbon treatment of air emissions. This change was necessary to make this alternative consistent with the current operations at the IWTP.

Further investigation work has been conducted since the Proposed Plan for OU 8 IRA was released. The recent fieldwork focused on further delineation of the contaminant plume and definition of aquifer characteristics along the southern Base boundary. This investigation included CPT (13 locations, 130 to 200 feet bgs) and hydropunch sampling (13 locations at 3 to 5 depths at each location), installation and sampling of monitoring

wells (5 wells), installation of three ground-water extraction wells and piezometers, and the performance of three constant pump rate aquifer tests.

The results of this field investigation indicate that the extent of the contaminant plume is not as extensive as suggested by previous investigations. This has resulted in a much smaller area of attainment. The horizontal extent of the contaminant plume is now believed to extend approximately 800 feet along the Southern Base Boundary, compared to approximately 2,000 feet as indicated in the previous documents. Further, the concentrations of contaminants detected in the OU 8 area are lower than previously understood.

Results of the recent investigation have made Alternative 4 more feasible, both technically and economically. The chances of discharge from the IRA system exceeding the NDCSD discharge permit levels have been reduced significantly. Reduced contaminant loading from the IRA discharge would lower the discharge fee to be levied by the NDCSD. In addition, the smaller horizontal extent of contamination means fewer extraction wells and, thus, less volume of extracted ground water. This will further reduce the cost associated with direct discharge to a POTW.

Written and verbal comments received during the public comment period expressed concerns over the cost effectiveness of Alternative 5 and discharge to the IWTP. Hill AFB agrees with the comment. Changing the preferred remedy for the OU 8 IRA to Alternative 4 addresses those concerns. A copy of the proceedings of the Proposed Plan open house, as well as the comments received, are included as Appendices A and B, respectively.

Selection of Alternative 4 as the preferred remedy does not change the principal element of remedy for the IRA—containment of ground water at the Base boundary of Hill AFB to prevent off-Base transport of contaminants above MCLs. However, Alternative 4 relies on off-site treatment (POTW) to reduce the volume and toxicity of the ground-water contaminants.

The selected remedy for an interim action for Operable Unit 8 is Alternative 4—Ground-Water Extraction and Discharge to Sanitary Sewer. The EPA and UDEQ concur with the selected remedy. If greater treatment efficiency, cost effectiveness or ease of implementability can be established at a later date, discharge of extracted groundwater to the IWTP (Alternative 5) may again be considered.

Hill Air Force Base, Utah
Operable Unit 8

Responsiveness Summary

Overview

This responsiveness summary provides information about the views of the community with regard to the proposed interim remedial action for Hill AFB OU 8, documents how public comments have been considered during the decision making process, and provides responses to concerns.

The public was informed of the selected remedial action in the following ways:

- All items contained within the Administrative Record have been on file at the subject repositories since the final version of each document was issued.
- A copy of the Proposed Plan was sent to all affected and interested parties prior to the public comment period.
- A public comment period was held from August 8, 1995, through September 7, 1995.
- Three thousand flyers were sent to area residences announcing the public Open House.
- A public Open House was held on August 17, 1995, at Northridge High School, Layton, Utah.
- Written comments by the public were encouraged.

The public Open House was well attended, and residents provided written concerns about the proposed action. A copy of the written comments received at the public meeting is attached as Appendix B. As indicated in the Record of Decision, one community member expressed cost concerns over selection of Alternative 5 as the preferred remedy. After further consideration, Hill AFB agrees with the community member and has selected Alternative 4 as the preferred remedy. No verbal comments were received by the court reporter during the Open House. The transcript of the Open House is presented in Appendix A.

Background on Community Involvement

The public participation requirements of CERCLA Sections 113(k)(2)(B)(i-v) and 117 were met. Hill AFB has a Community Relations Plan (Hill AFB, 1992) that is revised as necessary. The community relations activities include: (1) a Restoration Advisory Board (RAB), which meets regularly and includes community representatives from adjacent counties and towns, (2) a mailing list for interested parties in the community, (3) a bi-monthly newsletter called "EnviroNews," (4) visits to nearby schools to discuss environmental issues, (5) community involvement in a noise abatement program, (6) presentations and updates are given at semi-annual town council meetings, (7) opportunities for public comment on remedial actions, (8) community interviews, and (9) support for the community in obtaining technical assistance grants (TAGs).

The Focused FS Report for OU 8 (Montgomery Watson, 1995b), and the Proposed Plan for OU 8 (Montgomery Watson, 1995c) were released to the public, and are available in

the Administrative Record maintained at the Davis County Library and at the Environmental Management Directorate at Hill AFB. The notices of availability for these documents were published in the Salt Lake Tribune, Ogden Standard Examiner, and Hilltop Times. A public comment period was held from August 8, 1995, through September 7, 1995. In addition, a public Open House was held on August 17, 1995. At this meeting, representatives from Hill AFB, EPA, and the State of Utah answered questions about the site and the selected remedy. A court reporter was present to record formal verbal comments or questions, but none were received. Copies of the transcript and all written public comments received during the comment period have been placed in the Administrative Record. Responses to the comments received during the public comment period are included in this Responsiveness Summary, which is part of the ROD. The decision process for this site is based on the Administrative Record.

Summary of Public Comments and Agency Responses

Part I - Summary and Response to Local Community Concerns. The community comments and concerns are discussed in the following sections.

Economics of Treatment Method

One community member expressed his concern that he was not sure that using the existing treatment facility at the IWTP was the most economical method for treating the extracted ground water. The community member was told that the use of the existing facility provides some advantages in terms of implementing the alternative because:

- Hill AFB would not need to construct a new treatment system
- Hill AFB has an existing agreement with the NDCSD for discharge to the sewer
- Hill AFB currently operates the IWTP, and the facility can easily treat the expected and potential contaminant concentrations.

The community member was also told that the costs associated with using the IWTP are relatively close to the estimated costs for other treatment methods, but can be more easily controlled than for other alternatives.

However, recent investigations indicate that the areal extent of the contaminant plume at the southern Base boundary is not as extensive as previously suggested. Further, the concentration of contaminants are lower than previously understood. These factors make Alternative 4 more feasible, both technically and economically. Consequently, Hill AFB concurs with the concern expressed by the community member and proposes to select Alternative 4 as the preferred remedy for an interim action at Operable Unit 8.

Alternative Implementation

One community member expressed concern that the current regulatory environment will eventually lead to cleanup of the site even if this proposed action does not happen, which will then end up costing more. The community member then stated that the proposed interim action should take place, even if the risks are minimal, because it will save money over the long term. The community member was told that Hill AFB plans to implement the interim action as presented in the Proposed Plan and that the community did not raise any objections to the proposed action. Consequently, there currently are no obstacles to implementing this alternative.

General Concerns

One community member indicated that she knew of, within a one-block radius of her house, six cases of Type II diabetes. The community member was told that diabetes is not a symptom of exposure to the chemicals of concern for OU 8 and was sent information regarding TCE exposure.

Two community members expressed their satisfaction with the Open House and Proposed Plan and with Hill AFB's response to their concerns. No response was necessary.

Part II - Comprehensive Response to Specific Legal and Technical Questions

No specific legal and technical questions were raised by the community.

Remaining Concerns

Several concerns, questions, and requests were raised by community members to Hill AFB personnel informally during the Open House and by telephone during the public comment period. These concerns, and Hill AFB's responses, are summarized below:

One community member requested a copy of a report that provides contamination levels of ground water beneath his property in Layton. Hill AFB provided these results to the community member.

A community member indicated that he knew of a well north of his property that is being used, and he provided his address to Hill AFB. This community member also requested information regarding the long-term effects of TCE exposure at high concentrations because he had worked in a shop area for many years; he also indicated that he has some health problems. The community member was contacted to obtain more information about the well, which was found to be used for irrigation and stock watering. The community member was told that the use of the well would be investigated further during the RI for OU 8. Regarding TCE exposure, the community member was referred to the Occupational Health Office at Hill AFB to obtain more information regarding his concern.

One community member requested a copy of the Proposed Plan as well as drinking water MCLs for contaminants. These materials were mailed to the community member.

A community member indicated that he smelled a strong, mold-like odor between Hill Field Road and Fort Lane and requested that Hill AFB investigate the smell. Hill AFB contacted the Davis County Health Department, who then visited the site to check out the odor. The Davis County Health Department personnel did not smell the odor at the indicated location. The community member was contacted and told that the smell was likely due to an agricultural or irrigation source and that he should notify the Health Department if he smells the odor again.

Three community members reported standing water near their homes, of which one member indicated that he had a wet basement. Hill AFB personnel visited the site and observed wet areas near some of the property owners. One soil and two ground-water samples were taken and analyzed for volatile organic compounds. The soil sample was clean, but both water samples contained low levels of TCE (<10 µg/l). Hill AFB personnel contacted the landowners and explained these results and indicated that the concentrations observed did not represent a health concern. Hill AFB personnel also visited the site with personnel from the city of Layton and the U.S. Army Corps of Engineers to evaluate the potential for wetlands. While on site, this group met with landowners and discussed the contamination at the site, indicating that the contamination does not represent a health threat and will be investigated further during the RI.

A Layton resident called Hill AFB and reported that she has a wet spot in her yard and has had drainage problems since the Mitchell Plaza was developed several years ago. She indicated that she just wanted to call to let us know about this. No response was necessary. She will be contacted during the RI.

Another resident called Hill AFB, indicating that her children eat a lot of soil. She was told that no current risk from soil exists as far as contaminants from Hill AFB and that ground water is the medium of concern for OU 8. Hill AFB also confirmed with the resident that there are no wet spots in her yard.

A community member called Hill AFB to request information regarding the health effects of TCE exposure. She indicated that she grew up near the present location of Layton Hills Mall and that she is currently suffering from a list of health problems ranging from an enlarged liver to dizziness. She indicated that the neighborhood obtained its water from a local well near the present location of the Sizzler restaurant. She further stated that the well was tested by the city and found to contain oil and other unidentified constituents that she says were from Hill AFB. She was told that Hill AFB was planning additional investigative work in the area, but it was unlikely the well contained contaminant concentrations that would produce the reported health effects. None of the surrounding wells show signs of contamination. Other health problems like she described have not been reported to the Health Department. Neither Hill AFB, the City of Layton, nor Davis County Health Department were aware of the well, nor the sampling results she referenced.

One community resident telephoned Hill AFB and reported that she was concerned about contamination, particularly with respect to her garden. The community member was told that, based on the available data, there shouldn't be any health effects from the contamination. She was also told that the area where she lives is drained by field drains that transport the water away from her housing development. Hill AFB also sent her the Proposed Plan for the interim action.

Hill Air Force Base, Utah
Operable Unit 8

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PUBLIC MEETING TRANSCRIPT

Appendix A

APPENDIX A

PUBLIC MEETING TRANSCRIPT

The public meeting transcript is attached as Appendix A.

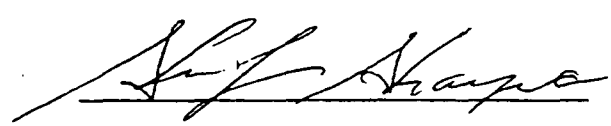
REPORTER'S STATEMENT

I, Shirlyn Sharpe, Certified Shorthand Reporter and Notary Public for the State of Utah, do hereby state;

That I attended the public meeting for the Public Open House for Operable Unit 8 at Hill Air Force Base held at Northridge High School, Hill Air Force Base Road, Layton, Utah on August 17, 1995, from 4:00 p.m. to 9:00 p.m.;

That I was available to record any comments from the attendees there present;

That no one appeared before me to make any such public comment or statement.



Shirlyn Sharpe, CSR, CMR

WRITTEN COMMENTS AND RESPONSES

Appendix B

APPENDIX B

WRITTEN COMMENTS AND RESPONSES

The submittal of written comments from community members was requested at the public Open House and during the public comment period. Forms asking specific questions regarding the Open House format, the RI/FS process, and the preferred alternatives were available at the public Open House, and attendees were encouraged to respond. The following comments were received; where appropriate, Hill AFB's responses are also included.

COMMENTS RECEIVED FROM ANONYMOUS COMMUNITY MEMBER

(See pages following this cover page)

HILL AFB RESPONSE

1. Economics of Treatment Method. Hill AFB screened all available technologies for treating the ground water removed by the proposed hydraulic containment system. Alternative 5, although having the highest cost of the five alternatives, is still within the cost ranges estimated for the other three alternatives involving ground water extraction and treatment. Further, use of the existing system provides advantages for the following reasons:

- Hill AFB would not need to construct a new treatment system
- Hill AFB has an existing agreement with the NDCSD for discharge to the sewer
- Hill AFB currently operates the IWTP, and the facility can easily treat the expected and potential contaminant concentrations.

Additionally, if contaminant concentrations in the extracted ground water increase, the costs associated with Alternatives 2, 3, and 4 would increase significantly, while costs for Alternative 5 would remain essentially the same because the IWTP at Hill AFB is designed to treat highly concentrated wastes.

2. Alternative Implementation. Hill AFB intends to implement the proposed action and agrees that no action now will result in increased costs later due to spread of the contamination. Based on public comments, community members were not against implementing the proposed action. Consequently, there currently are no obstacles to implementing this action as planned.

What do you think?

Preferred Alternative

August 17, 1995

Background

An interim containment action has been proposed by Hill AFB to stop the flow of contaminated groundwater from Hill AFB into Layton. The Air Force, Environmental Protection Agency and Utah Department of Environmental Quality have agreed that some kind of containment action at the base boundary would be prudent. Therefore, Hill AFB has proposed the Preferred Interim Containment Alternative, which is outlined in the Proposed Plan.

According to the preferred alternative, Hill AFB will install a series of extraction wells along the base boundary. These wells will remove contaminated groundwater from the area and will prevent contaminated groundwater north of the base boundary from moving off base in the future. The extracted groundwater will be treated at the base's industrial wastewater treatment plant and discharged into the local sewer system for further treatment.

Questions (Please mark the appropriate response. Use opposite side for writing comments, if necessary)

Overall, does Hill's proposal to contain contaminated groundwater at the base boundary meet your expectations or address your concerns?

☒ Yes ☐ No ☐ Not sure

If you answered "No" or "Not sure," please explain. _____

Are you satisfied with the use of extraction wells to remove contaminated groundwater?

1	2	(3)	4	5
Very Satisfied				Not Satisfied

If you chose 4 or 5, please explain why. yes if they actually do work

Are you satisfied with the method of treating the extracted groundwater, ie. using existing facilities at the base's Industrial Wastewater Treatment Plant?

1	2	3	(4)	5
Very Satisfied				Not Satisfied

If you chose 4 or 5, please explain why. I'm not sure if these methods are the most economical and/or efficient. However this may be because of my lack of knowledge in this area and what methods of clean up are used currently and what is available as alternatives,

Continued on back of page

What do you think?

Preferred Alternative-page 2

Is there anything else about the proposed Interim Containment Action that concerns you? I am concerned that the regulatory environment will ultimately lead to cleanup actions even if this plan does not happen and then it will end up costing even more in the long run. If feel it should be done right the first time - even if the health risks are minimal

Hill is in the process of conducting a detailed investigation in this area. If you have any information that you think may be helpful to us, please either write it down here or write your name and phone number so we can contact you later. Any information is greatly appreciated.

Additional thoughts

What do you think?

Preferred Alternative

August 17, 1995

Background

An interim containment action has been proposed by Hill AFB to stop the flow of contaminated groundwater from Hill AFB into Layton. The Air Force, Environmental Protection Agency and Utah Department of Environmental Quality have agreed that some kind of containment action at the base boundary would be prudent. Therefore, Hill AFB has proposed the Preferred Interim Containment Alternative, which is outlined in the Proposed Plan.

According to the preferred alternative, Hill AFB will install a series of extraction wells along the base boundary. These wells will remove contaminated groundwater from the area and will prevent contaminated groundwater north of the base boundary from moving off base in the future. The extracted groundwater will be treated at the base's industrial wastewater treatment plant and discharged into the local sewer system for further treatment.

Questions (Please mark the appropriate response. Use opposite side for writing comments, if necessary)

Overall, does Hill's proposal to contain contaminated groundwater at the base boundary meet your expectations or address your concerns?

☒ Yes ☐ No ☐ Not sure

If you answered "No" or "Not sure," please explain. _____

_____

Are you satisfied with the use of extraction wells to remove contaminated groundwater?

1	2	3	4	5
Very Satisfied	as I understand the process			Not Satisfied

If you chose 4 or 5, please explain why. _____

_____

Are you satisfied with the method of treating the extracted groundwater, ie. using existing facilities at the base's Industrial Wastewater Treatment Plant?

1	2	3	4	5
Very Satisfied	as I understand the process			Not Satisfied

If you chose 4 or 5, please explain why. _____

_____

Continued on back of page

What do you think?

Preferred Alternative-page 2

Is there anything else about the proposed Interim Containment Action that concerns you?

Hill is in the process of conducting a detailed investigation in this area. If you have any information that you think may be helpful to us, please either write it down here or write your name and phone number so we can contact you later. Any information is greatly appreciated.

My concerns of groundwater [illegible] [illegible] [illegible] [illegible] have been [illegible] to Hazard [illegible] and [illegible] Bureau and I feel certain there will be adequate follow-up

[illegible signature]

Additional thoughts

What do you think?

Hill Air Force Base Operable Unit 8 Open House

August 17, 1995

Thank you for attending tonight's Open House. Its purpose is to present the proposed Interim Action at "Operable Unit 8" at Hill AFB and to hear your comments. We have designed this meeting to be informal, which allows you to move about the room freely, visiting any or all of the stations at your convenience.

As you may have noticed, we have set up several poster stations. Each station presents information on a different topic. Experts are present at each station to answer your discuss your concerns or answer your questions. We encourage you to visit all the stations and carefully review the posters. Copies of the posters are also available as handouts, if you wish to review the information at a later time.

Please be sure to fill out these two sheets before you leave tonight. You may leave them in the white box at the Comment Station. If you wish to fill them out later, you may mail them to the following address:

Ms. Gwen Brewer
Environmental Public Affairs Coordinator
OO-ALC/EM
7274 Wardleigh Road
Hill AFB, UT 84056-5137

Be sure it is postmarked no later than Sept. 7, 1995.

If you would rather express your comments or concerns verbally, a recorder is present to transcribe what you have to say.

Printed name (optional): Myrle Crown

How did you learn of tonight's Open House?

☐ Newspaper ads ☐ Flyer ☒ Proposed Plan mailing ☐ Radio Announcement

☐ Word of mouth ☐ Other ______________

Did you like the way the Open House was organized? ☒ Yes ☐ No

Do you have any suggestions to improve future meetings? If so, please explain.

I was very impressed with the time [illegible] & [illegible] spent [illegible] listening to my concerns

Are there any other groups, companies or individuals you feel should be sent information about the cleanup effort at Hill AFB? (Please provide names and addresses, if possible)

Name: ______________ Name: ______________

Address: ______________ Address: ______________

City, State ZIP: ______________ City, State ZIP: ______________

Additional thoughts?

COMMENTS RECEIVED FROM MS. JENE W. SMITH

(See pages following this cover page)

HILL AFB'S RESPONSE

1. Health Concerns (Diabetes). Diabetes is not a symptom of exposure to the chemicals found in OU 8 ground water.

What do you think?

Hill Air Force Base Operable Unit 8 Open House

August 17, 1995

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Ms. Gwen Brewer
Environmental Public Affairs Coordinator
OO-ALC/EM
7274 Wardleigh Road
Hill AFB, UT 84056-5137

Attn: Gary Mansfield

Be sure it is postmarked no later than Sept. 7, 1995.

If you would rather express your comments or concerns verbally, a recorder is present to transcribe what you have to say.

Printed name (optional): Eric U. Smith, 1725 N Cedar, Provo, UT 84601-1462 ph. 373-6161

How did you learn of tonight's Open House?

☐ Newspaper ads ☒ Flyer ☐ Proposed Plan mailing ☐ Radio Announcement

☐ Word of mouth ☐ Other: _____

Did you like the way the Open House was organized? ☒ Yes ☐ No

Do you have any suggestions to improve future meetings? If so, please explain. _____

Are there any other groups, companies or individuals you feel should be sent information about the cleanup effort at Hill AFB? (Please provide names and addresses, if possible)

Name: _____ Name: _____

Address: _____ Address: _____

City, State ZIP: _____ City, State ZIP: _____

Additional thoughts?

In a one block radius of my home there are [illegible] have been diagnosed type II diabetes that I know of.

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFMC)
HILL AIR FORCE BASE, UTAH

September 5. 1995

Ms. Jene' W. Smith
1708 N. Alder
Layton UT 84041

Dear Ms. Smith

I received your comment sheet from the Open House. We appreciate the feedback. After checking with the medical people on base and the Utah Department of Environmental Quality, we found no known evidence that diabetes results from exposure to the solvent Trichloroethylene (TCE).

Enclosed is a toxicological profile about TCE from the Agency for Toxic Substances and Disease Registry (ATSDR). ATSDR was delegated by Congress to monitor Superfund health issues. The profile includes the phone number and address at the agency.

The Layton investigation is in preliminary stages. Any information you have may speed the process. Please call Howie Aubertin or me with further concerns or questions.

Sincerely

GWEN BREWER
Environmental Public Affairs

COMMENTS RECEIVED FROM MS. MYRLE CROWN

(See pages following this cover page)

HILL AFB'S RESPONSE

None Required.

What do you think?

Hill Air Force Base Operable Unit 8 Open House

August 17, 1995

Thank you for attending tonight's Open House. Its purpose is to present the proposed Interim Action at "Operable Unit 8" at Hill AFB and to hear your comments. We have designed this meeting to be informal, which allows you to move about the room freely, visiting any or all of the stations at your convenience.

As you may have noticed, we have set up several poster stations. Each station presents information on a different topic. Experts are present at each station to answer your discuss your concerns or answer your questions. We encourage you to visit all the stations and carefully review the posters. Copies of the posters are also available as handouts, if you wish to review the information at a later time.

Please be sure to fill out these two sheets before you leave tonight. You may leave them in the white box at the Comment Station. If you wish to fill them out later, you may mail them to the following address:

Ms. Gwen Brewer
Environmental Public Affairs Coordinator
OO-ALC/EM
7274 Wardleigh Road
Hill AFB, UT 84056-5137

Be sure it is postmarked no later than Sept. 7, 1995.

If you would rather express your comments or concerns verbally, a recorder is present to transcribe what you have to say.

Printed name (optional): Scott Paxman

How did you learn of tonight's Open House?

☐ Newspaper ads ☒ Flyer ☐ Proposed Plan mailing ☐ Radio Announcement

☐ Word of mouth ☐ Other _____

Did you like the way the Open House was organized? ☒ Yes ☐ No

Do you have any suggestions to improve future meetings? If so, please explain. _____

Are there any other groups, companies or individuals you feel should be sent information about the cleanup effort at Hill AFB? (Please provide names and addresses, if possible)

Name: _____ Name: _____

Address: _____ Address: _____

City, State ZIP: _____ City, State ZIP: _____

Additional thoughts?

COMMENTS RECEIVED FROM MR. SCOTT PAXMAN

(See pages following this cover page)

HILL AFB'S RESPONSE

None Required.