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FINAL BASEWIDE GROUNDWATER SAMPLING AND ANALYSIS QUARTERLY MONITORING REPORT JANUARY 1998 EVENT NAS FORT WORTH TX

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HYDRO GeoLogic INC.

432 1

HQ Air Force Center for Environmental Excellence

Final
Basewide Groundwater Sampling and Analysis Program
Quarterly Monitoring Report
January 1998 Event

Contract No.: F41624-95-D-8005-0007
Project No.: W/O 72435

Prepared for:
HQ AFCEE/ERD
NAS Fort Worth JRB
Carswell Field, Texas

July 1998

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HQ Air Force Center for Environmental Excellence

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July 1998

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μg/L	micrograms per liter
AFCEE	Air Force Center for Environmental Excellence
AFP 4	Air Force Plant 4
AOC	area of concern
ASTM	American Society for Testing and Materials
BRAC	Base Realignment and Closure
BTEX	benzene, toluene, ethylbenzene, and xylene
cm/sec	centimeters per second
DERA	Defense Environmental Restoration Account
DO	dissolved oxygen
DQE	data quality evaluation
EPA	U.S. Environmental Protection Agency
ERPIMS	Environmental Resources Program Information Management System
gpd/ft	gallons per day per foot
gpd/ft^2	gallons per day per square foot
GSAP	Groundwater Sampling and Analysis Plan
ICP	inductively coupled plasma
ICS	interference check sample
IDW	investigation-derived waste
JRB	Joint Reserve Base
LCS	laboratory control sample
LTM	long-term monitoring
mg/L	milligrams per liter
mL	milliliter
MSC	Medium Specific Concentrations
MS	mass spectrometry
MS/MSD	matrix spike/matrix spike duplicate
MTBE	methyl tert-butyl ether
mya	million years ago
NAS	naval air station
NFA	no further action
NGVD	National Geodetic Vertical Datum

PCB	polychlorinated biphenyl
PQL	practical quantitation limit
QAPP	Quality Assurance Project Plan
QA	quality assurance
QC	quality control
RCRA	Resource Conservation and Recovery Act
redox	oxidation-reduction
RFA	RCRA facility assessment
RFI	RCRA facility investigation
RRS	risk reduction standard
SVOC	semivolatile organic compound
SWMU	solid waste management unit
TCE	trichloroethene
TNRCC	Texas Natural Resource Conservation Commission
TOC	total organic carbon
TPH	total petroleum hydrocarbons
UTL	upper tolerance limit
VOC	volatile organic compound
WSA	Weapons Storage Area

PREFACE

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This Groundwater Sampling and Analysis Program Third Quarterly Groundwater Monitoring Report was prepared for the Air Force Center for Environmental Excellence (AFCEE) to describe the basewide quarterly groundwater monitoring event conducted at Naval Air Station Fort Worth Joint Reserve Base, Carswell Field, Texas, during January 1998. The work has been conducted under Contract No. F41624-95-D-8005-0007, Delivery Order No. 07, issued to HydroGeoLogic, Inc. (HydroGeoLogic). The AFCEE Contracting Officer's Representative is Joseph Dunkle. HydroGeoLogic's Program Manager is James Costello.

Activities described by this Quarterly Groundwater Monitoring Report were performed in accordance with HydroGeoLogic's pre-draft Groundwater Sampling and Analysis Plan (HydroGeoLogic, 1997b), the draft Basewide Quality Assurance Project Plan (HydroGeoLogic, 1997a), and AFCEE-approved modifications.

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13. ABSTRACT (Maximum 200 words)

This document presents the Final Basewide Groundwater Sampling and Analysis Program Quarterly Monitoring Report for the January 1998 quarterly monitoring event conducted at Naval Air Station Fort Worth JRB (NAS Fort Worth JRB), Carswell Field, Texas.

The objectives of the basewide quarterly monitoring program are to (1) identify potential impacts to off-site receptors through perimeter monitoring, (2) delineate the contaminant source and the dissolved and non-aqueous phase plumes, and (3) establish a process for collecting data to support closure of solid waste management units (SWMUs) and areas of concern (AOCs) at the base. This report summarizes the results of field screening and analytical results of samples collected during the first quarter 1998 event and provides recommendations for adjustments to the basewide program.

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TAB

Section 10

1.0 INTRODUCTION

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Groundwater monitoring at Naval Air Station Fort Worth Joint Reserve Base (NAS Fort Worth JRB), Texas, has been performed to provide a basis for development and implementation of remedial actions under the Air Force Installation Restoration Program. This report summarizes the first of four scheduled quarterly sampling events for 1998, performed in January 1998, in accordance with the pre-draft Groundwater Sampling and Analysis Plan (GSAP) (HydroGeoLogic, 1997b) and the draft Basewide Quality Assurance Project Plan (QAPP) (HydroGeoLogic, 1997a), to characterize the presence and extent of groundwater contamination and potential surface water contamination.

1.1 SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN

Since 1942, most hazardous waste generated through operations and activities at NAS Forth Worth JRB has been disposed of in landfills, reused on base, or processed through the Defense Property Disposal Office for off-base recycling or disposal. Since 1984, many waste management areas, such as landfills, fire training areas, oil/water separators, and other waste accumulation areas, have been investigated. A total of 68 solid waste management units (SWMUs) and one area of concern (AOC) were identified as part of a Resource Conservation and Recovery Act (RCRA) facility assessment (RFA) conducted for the former Carswell Air Force Base (A.T. Kearney, 1989).

In February 1991, the Texas Natural Resource Conservation Commission (TNRCC) (formerly Texas Water Commission) issued Carswell Air Force Base a RCRA Hazardous Waste Part B Permit (HW-50289), which described the requirements and procedures for site investigation (Texas Water Commission, 1991). The permit also required RCRA facility investigations (RFIs) at a number of the previously identified SWMUs. Subsequent site inspections identified an additional 15 AOCs at the site. According to TNRCC correspondence, RFIs were later required for many of these AOCs as well as for additional SWMUs. Many of the AOCs (TNRCC, 1995). In 1995, the TNRCC issued a letter designating which SWMUs and AOCs required no further action. A total of 17 SWMUs and 1 AOC required no further action as long as there was no evidence of releases (TNRCC, 1995). All SWMUs and AOCs currently identified at NAS Fort Worth JRB are listed in Tables 1.1 and 1.2. The locations of the active SWMUs and AOCs are shown on Figure 1.1

Portions of the facility are subject to Air Force Base Realignment and Closure (BRAC) management, while other portions are managed by the Air Force Center for Environmental Excellence (AFCEE) under the Defense Environmental Restoration Account (DERA). These management responsibilities are included in Tables 1.1 and 1.2. The reader should refer to the Site Characterization Summary Informal Technical Information Report (CH_2M Hill, 1996) and the Compliance Plan Application (Waste Policy Institute, 1997) for more information on the description and status of individual SWMUs and AOCs.

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Table 1.1
Solid Waste Management Units (SWMUs) at NAS Fort Worth JRB

SWMU	Description	OPR
1	Pathological Waste Incinerator (NFA)	BRAC
2	Pathological Waste Storage Shed (NFA)	BRAC
3	Metal Cans (NFA)	BRAC
4	Facility Dumpsters (NFA)	BRAC
5	Building 1626 Waste Accumulation Area	DERA
6	Building 1628 Wash Rack and Drain	DERA
7	Building 1628 Oil/Water Separator	DERA
8	Building 1628 Sludge Collection Tank	DERA
9	Building 1628 Work Station Waste Accumulation Area (NFA)	DERA
10	Building 1617 Work Station Waste Accumulation Area (NFA)	DERA
11	Building 1617 Waste Accumulation Area	DERA
12	Building 1619 Waste Accumulation Area	DERA
13	Building 1710 Visual Information Center Work Station Waste Accumulation Areas	DERA
14	Building 1060 Bead Blaster Collection Tray (NFA)	DERA
15	Building 1060 Paint Booth Vault (NFA)	DERA
16	Building 1060 Waste Accumulation Area	DERA
17	Landfill No. 7	DERA
18	Fire Training Area No. 1 (NFA)	BRAC
19	Fire Training Area No. 2	BRAC/DERA
20	Waste Fuel Storage Tank	BRAC/DERA
21	Waste Oil Tank	BRAC/DERA
22	Landfill No. 4	BRAC
23	Landfill No. 5	BRAC
24	Waste Burial Area	BRAC
25	Landfill No. 8	BRAC/DERA
26	Landfill No. 3	DERA
27	Landfill No. 10	DERA
28	Landfill No. 1	DERA
29	Landfill No. 2	DERA
30	Landfill No. 9	DERA
31	Building 1050 Waste Accumulation Area	DERA
32	Building 1410 Waste Accumulation Area	DERA
33	Building 1420 Waste Accumulation Area	DERA
34	Building 1194 Waste Accumulation Area	DERA
35	Vehicle Refueling Shop (Building 1194) Oil/Water Separation System	DERA
36	Building 1191 Waste Accumulation Area	DERA
37	Vehicle Maintenance Shop (Building 1191) Oil/Water Separation System	DERA
38	Building 1269 PCB Transformers Building (NFA)	DERA
39	Building 1643 Waste Accumulation Area	DERA
40	Building 1643 Oil/Water Separation System	DERA
41	Building 1414 Oil/Water Separation System, Field Maintenance Squadron Aerospace Ground Equipment	DERA
42	Building 1414 Waste Accumulation Area	DERA

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Table 1.1 (continued)
Solid Waste Management Units (SWMUs) at NAS Fort Worth JRB

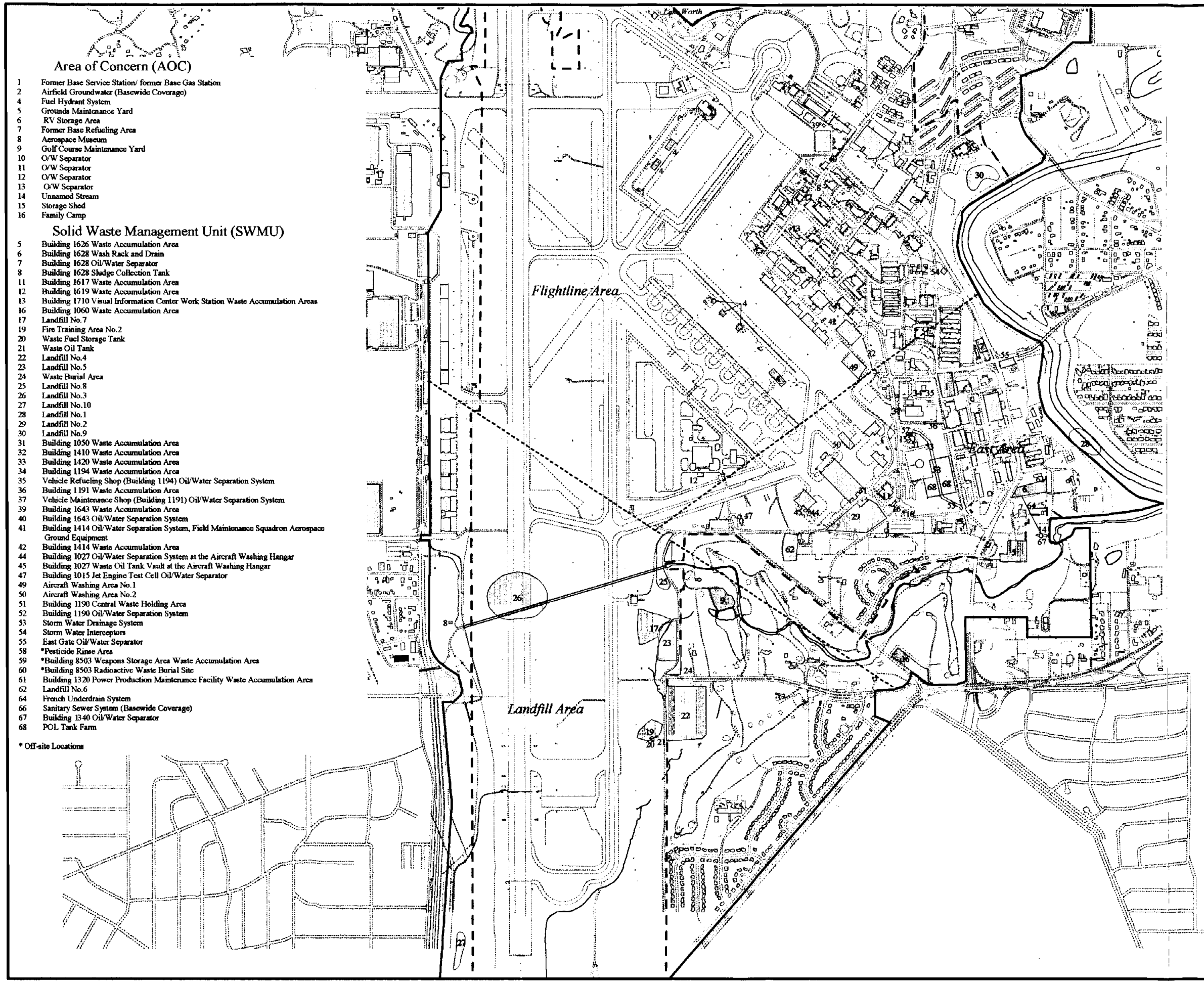
SWMU	Description	OPR
43	Building 1414 Non-destructive Inspection Waste Accumulation Point (NFA)	DERA
44	Building 1027 Oil/Water Separation System at the Aircraft Washing Hangar	DERA
45	Building 1027 Waste Oil Tank Vault at the Aircraft Washing Hangar	DERA
46	Building 1027 Waste Accumulation Area (NFA)	DERA
47	Building 1015 Jet Engine Test Cell Oil/Water Separator	DERA
48	Building 1048 Fuel Systems Shop Floor Drains (NFA)	DERA
49	Aircraft Washing Area No. 1	DERA
50	Aircraft Washing Area No. 2	DERA
51	Building 1190 Central Waste Holding Area	DERA
52	Building 1190 Oil/Water Separation System	DERA
53	Storm Water Drainage System	DERA
54	Storm Water Interceptors	DERA
55	East Gate Oil/Water Separator	DERA
56	Building 1405 Waste Accumulation Area (NFA)	DERA
57	Buildings 1432/1434 Waste Accumulation Area (NFA)	DERA
58	Pesticide Rinse Area	BRAC
59	Building 8503 Weapons Storage Area Waste Accumulation Area	BRAC
60	Building 8503 Radioactive Waste Burial Site	BRAC
61	Building 1320 Power Production Maintenance Facility Waste Accumulation Area	DERA
62	Landfill No. 6	DERA
63	Entomology Dry Well (NFA)	DERA
64	French Underdrain System	BRAC/ DERA
65	Weapons Storage Area Disposal Site (NFA)	BRAC
66	Sanitary Sewer System	BRAC/DERA
67	Building 1340 Oil/Water Separator	BRAC/DERA
68	POL Tank Farm	BRAC/DERA

Notes:
NFA = no further action
OPR = office of primary responsibility
PCB = polychlorinated biphenyls

Table 1.2
Areas of Concern (AOCs) at NAS Fort Worth JRB 432 17

AOC	Description	OPR
1	Former Base Service Station/Former Base Gas Station	BRAC/DERA
2	Airfield Groundwater	DERA
3	Waste Oil Dump (NFA)	DERA
4	Fuel Hydrant System	DERA
5	Grounds Maintenance Yard	BRAC
6	RV Storage Area	DERA
7	Former Base Refueling Area	DERA
8	Aerospace Museum	BRAC
9	Golf Course Maintenance Yard	BRAC
10	Oil/Water Separator	DERA
11	Oil/Water Separator	DERA
12	Oil/Water Separator	DERA
13	Oil/Water Separator	DERA
14	Unnamed Stream	BRAC
15	Storage Shed	DERA
16	Family Camp	BRAC

Notes:
OPR = office of primary responsibility



Area of Concern (AOC)

1 Former Base Service Station/ former Base Gas Station
2 Airfield Groundwater (Basewide Coverage)
4 Fuel Hydrant System
5 Grounds Maintenance Yard
6 RV Storage Area
7 Former Base Refueling Area
8 Aerospace Museum
9 Golf Course Maintenance Yard
10 O/W Separator
11 O/W Separator
12 O/W Separator
13 O/W Separator
14 Unnamed Stream
15 Storage Shed
16 Family Camp

Solid Waste Management Unit (SWMU)

5 Building 1626 Waste Accumulation Area
6 Building 1628 Wash Rack and Drain
7 Building 1628 Oil/Water Separator
8 Building 1628 Sludge Collection Tank
11 Building 1617 Waste Accumulation Area
12 Building 1619 Waste Accumulation Area
13 Building 1710 Visual Information Center Work Station Waste Accumulation Areas
16 Building 1060 Waste Accumulation Area
17 Landfill No.7
19 Fire Training Area No.2
20 Waste Fuel Storage Tank
21 Waste Oil Tank
22 Landfill No.4
23 Landfill No.5
24 Waste Burial Area
25 Landfill No.8
26 Landfill No.3
27 Landfill No.10
28 Landfill No.1
29 Landfill No.2
30 Landfill No.9
31 Building 1050 Waste Accumulation Area
32 Building 1410 Waste Accumulation Area
33 Building 1420 Waste Accumulation Area
34 Building 1194 Waste Accumulation Area
35 Vehicle Refueling Shop (Building 1194) Oil/Water Separation System
36 Building 1191 Waste Accumulation Area
37 Vehicle Maintenance Shop (Building 1191) Oil/Water Separation System
39 Building 1643 Waste Accumulation Area
40 Building 1643 Oil/Water Separation System
41 Building 1414 Oil/Water Separation System, Field Maintenance Squadron Aerospace Ground Equipment
42 Building 1414 Waste Accumulation Area
44 Building 1027 Oil/Water Separation System at the Aircraft Washing Hangar
45 Building 1027 Waste Oil Tank Vault at the Aircraft Washing Hangar
47 Building 1015 Jet Engine Test Cell Oil/Water Separator
49 Aircraft Washing Area No.1
50 Aircraft Washing Area No.2
51 Building 1190 Central Waste Holding Area
52 Building 1190 Oil/Water Separation System
53 Storm Water Drainage System
54 Storm Water Interceptors
55 East Gate Oil/Water Separator
58 *Pesticide Rinse Area
59 *Building 8503 Weapons Storage Area Waste Accumulation Area
60 *Building 8503 Radioactive Waste Burial Site
61 Building 1320 Power Production Maintenance Facility Waste Accumulation Area
62 Landfill No.6
64 French Underdrain System
66 Sanitary Sewer System (Basewide Coverage)
67 Building 1340 Oil/Water Separator
68 POL Tank Farm

* Off-site Locations

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NAS Fort Worth JRB, Texas

Figure 1.1

SWMU/AOC LOCATION MAP
NAS Fort Worth JRB

Air Force Center For
Environmental Excellence
Brooks AFB, Texas

Legend

- - - - NAS Fort Worth JRB (Carswell Field)
——— Former Carswell Air Force Base
Area of Concern (AOC)
68 Solid Waste Management Unit (SWMU)
Groundwater Management Areas

N

500 0 500 1000 1500
Scale in Feet

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Project: AFC001-07GCB
Map Source: Jacobs, 1996

1.2 MONITORING OBJECTIVES

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A basewide groundwater sampling and analysis program was initiated for NAS Fort Worth JRB in April 1995 to address groundwater contamination associated with the SWMUs and AOCs identified on the base. Nine rounds of quarterly sampling have been completed to date: April 1995, July 1995, October 1995, January 1996, January 1997, April 1997, July 1997, October 1997, and January 1998. The monitoring objectives for the four rounds of quarterly sampling proposed for 1998 are described in detail in the pre-draft GSAP for 1998 (HydroGeoLogic, 1997b). These objectives were developed based on the results of the four quarterly sampling rounds conducted as part of the 1997 program.

Short- and long-term objectives established for the 1998 program were delineated to ensure that adequate data are collected for the evaluation of the critical exposure pathways involving groundwater. The objectives also address the mandatory monitoring requirements for the SWMUs and AOCs that have approved remedial or closure plans.

1.2.1 Short-Term Objectives

Based on previous investigations, two critical exposure pathways have been identified that potentially threaten human health and the environment in the area surrounding NAS Fort Worth. They include:

S-1 Off-Site Groundwater - monitor potential migration of contaminated groundwater off-site; and

S-2 On-Site and Off-Site Surface Water - monitor potential on-site and off-site exposure to surface water (i.e., Trinity River and/or Unnamed Stream).

The short-term objectives for the groundwater sampling and analysis program are to monitor these two potential exposure pathways. Wells located near the NAS Fort Worth JRB boundaries, and/or immediately upgradient of surface water bodies where groundwater may discharge to the surface water, will be monitored to meet these objectives.

1.2.2 Long-Term Objectives

The long-term objective of the groundwater sampling and analysis program is to establish a process for collecting data to support closure of SWMUs and AOCs and to identify and/or confirm potential impacts to off-site receptors. The groundwater sampling and analysis program has been structured to provide information to support the following activities in light of the long-term objectives:

L-1 Current Regulatory Requirements - conduct sampling to fulfill current long-term monitoring (LTM) requirements associated with closure of SWMUs and AOCs (discussed in Section 1.3)

L-2 Additional Source and Plume Delineation - define horizontal or vertical migration of contamination associated with miscellaneous hot spots and potential source areas where data are not currently available

L-3 Natural Attenuation - collect data to demonstrate that natural attenuation of trichloroethene (TCE) is occurring

L-4 Compliment Ongoing Remediation/Assessment Activities - support ongoing remediation/assessment monitoring activities

The components of the groundwater sampling and analysis program that were designed to support the long-term objectives are based on a review of existing data from previous investigations and a current understanding of the remediation plans for the SWMUs and AOCs. These components may require modification to accommodate new data resulting from ongoing and future investigations/remedial actions at NAS Fort Worth JRB. If necessary, the GSAP will be amended to reflect modifications to the long-term objectives.

1.3 CURRENT LONG-TERM MONITORING REQUIREMENTS

Currently, LTM is required as part of the remedial action for SWMUs 64, 67, and 68 and AOC 7 (Parsons, 1997) and as part of a corrective action for AOC 1 (IT Corporation, 1997a, 1997b).

As part of the remedial action for SWMUs 64, 67, and 68 and AOC 7 (Sites ST14 and SD13), a total of 22 wells will be used to monitor the nature and extent of dissolved contaminants at these sites (Parsons, 1997). The purpose of these monitoring events is to confirm that source soils are not causing increases in groundwater contaminant concentrations and that no unanticipated downgradient migration is occurring. The remedial action calls for quarterly sampling until the appropriate target concentrations are obtained, and then, an additional 2 years of verification sampling to ensure plume stability and ongoing compliance (Parsons, 1997). Table 1.3 lists all wells designated for sampling as part of this remedial action. Nine of the wells (associated with the SD13 area) will be sampled for RCRA Appendix IX constituents in January 1998. The remaining wells will be sampled for volatile organic compounds (VOCs) using U.S. Environmental Protection Agency (EPA) Method 8260A or benzene, toluene, ethylbenzene, and xylene (BTEX) using EPA Method 8020A. Some monitoring wells will also be sampled for metals, as specified in the Remedial Action Plan (Parsons, 1997). All wells will also be sampled for natural attenuation parameters.

As part of the corrective action for AOC 1 (Base Gas Station/Base Service Station), quarterly groundwater monitoring will be conducted for a period of 1 year, which began in October 1997 (IT Corporation, 1997a, 1997b). The samples are being collected from six wells (SAV-2, BSS-B, MW-10, BGSMW03, BGSMW05, and BGSMW06) and will be analyzed by EPA Method SW8020A for BTEX compounds and methyl tert-butyl ether (MTBE). In addition, field parameters will be measured in the field at the time of sampling and will include pH, temperature, conductivity, dissolved oxygen (DO), and turbidity. The original LTM requirements specified monitoring well MW-1. However, construction of a sewer line in spring 1997 destroyed this

Table 1.3
Wells Designated for Sampling in Remedial Action Plan for SWMUs 64, 67, 68 and AOC 7 (Sites ST14 and SD13)

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Type of Well	Site	Well Designation
Upgradient Wells (3 wells)		ST14-14, ST14-24, ST14-26
Plume Wells (16 wells)	SWMU 68 (10 wells) [Site ST14]	ST14-03, ST14-W16, ST14-W18, 17M, ST14-02, ST14-29, ST14-W21, ST14-04, ST14-28, WHGLTA008
	SWMUs 64 and 67 and AOC 7 (6 wells) [Site SD13]	SD13-01, SD13-02, ST14-W31, SD13-04, SD13-06, WHGLTA007
Downgradient Wells - POC Wells (3 wells)		SD13-07, WHGLTA005, WHGLTA006

monitoring well; monitoring well SAV-2, located 80 feet to the southwest of MW-1, has been monitored as a substitute.

1.4 REPORT ORGANIZATION

132 22

Section 2.0 of this report provides a description of the environmental setting, while Section 3.0 includes a description of the monitoring activities performed during January 1998 as part of the basewide groundwater monitoring program. Section 4.0 discusses the quality assurance/quality control (QA/QC) program. Section 5.0 of this report describes the results of the field and sampling analyses, including well inspections, water level measurements, and analytical results. Section 5.0 provides a summary of the basewide groundwater sampling event conducted in January 1998, and Section 6.0 provides conclusions and recommendations. References are listed in Section 7.0. Appendix A presents water level measurement and inspection sheets, field notes, and field data sampling sheets. Appendix B provides a summary of the analytical data. Appendix C provides the results of LTM conducted at AOC 1 (Base Gas Station/Base Service Station) during the October 1997 and January 1998 sampling events. Appendix D provides the results of LTM at SWMUs 64, 67, and 68 and AOC 7 (Sites ST14 and SD13) during the January 1998 sampling event.

TAB

Section 20

2.0 SITE DESCRIPTION

432 24

NAS Fort Worth JRB is located on 2,555 acres of land in Tarrant County, Texas, 8 miles west of downtown Fort Worth (Figure 2.1). The facility consists of the main base and two noncontiguous parcels, the Instrument Landing System marker beacon and the Weapons Storage Area (WSA), both located west of the city of White Settlement. The main base comprises 2,264 acres and is bordered by Lake Worth to the north, the West Fork of the Trinity River, River Oaks, and Westworth Village to the east, other urban areas of Fort Worth to the northeast and southeast, White Settlement to the west and southwest, and Air Force Plant 4 (AFP 4) to the west (Figure 2.2). The area surrounding NAS Fort Worth JRB is mostly suburban. Land use in the immediate vicinity of the base is industrial, commercial, residential, and recreational (A.T. Kearney, 1989).

2.1 PHYSIOGRAPHY

The NAS Fort Worth JRB area is located along the border zone between two physiographic provinces. The southeastern part of the base is situated within the Grand Prairie section of the Central Lowlands Physiographic Province. The Central Lowlands Physiographic Province is characterized by broad, eastward-sloping terrace surfaces that are interrupted by westward-facing escarpments. The land surface is typically grass covered and treeless except for isolated stands of upland timber. The northwestern part of the NAS Fort Worth JRB area is situated within the Western Cross Timbers Physiographic Province, which is characterized by rolling topography and a heavy growth of post and blackjack oaks (Radian, 1989). Surface elevations for this region range from about 850 feet above national geodetic vertical datum (NGVD) west of the base, to approximately 550 feet above NGVD, along the eastern side of the Base. Figure 2.3 is a section of the Lake Worth, Texas, U.S. Geological Survey topographic map showing the relief of the NAS Fort Worth JRB/AFP 4 region.

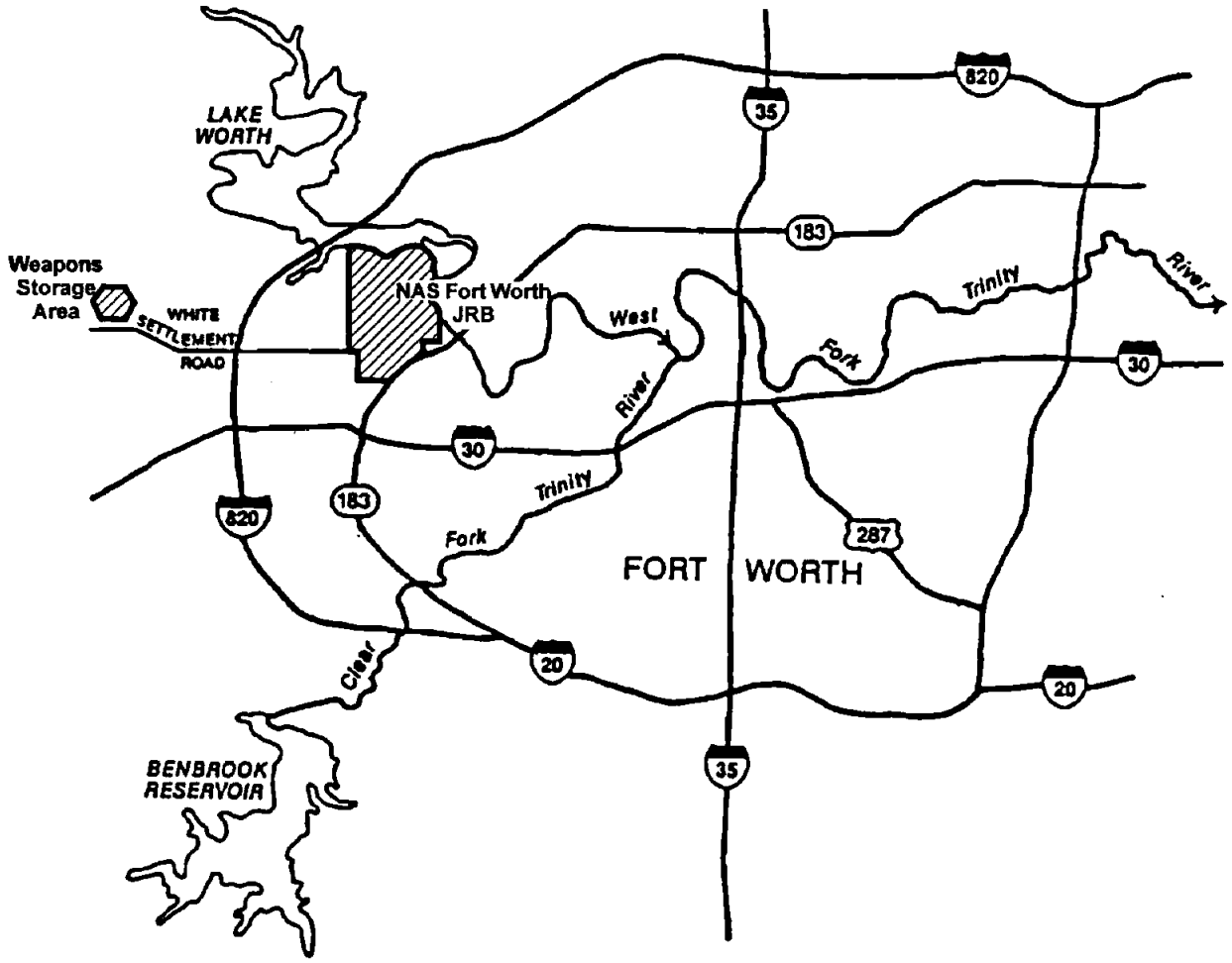
2.2 REGIONAL GEOLOGY

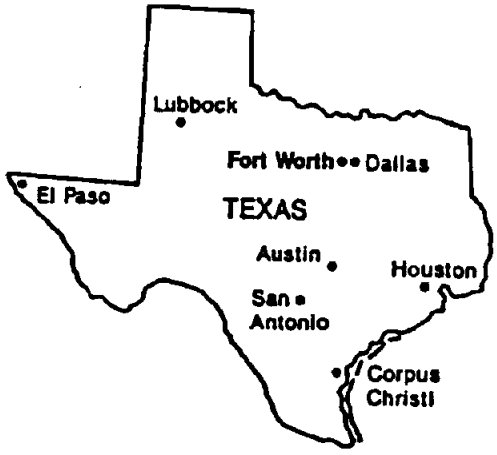
The geologic units of interest for the region, from youngest to oldest, are as follows: (1) the Quaternary Alluvium (including fill material and terrace deposits), (2) the Cretaceous Goodland Limestone, (3) the Cretaceous Walnut Formation, (4) the Cretaceous Paluxy Formation, (5) the Cretaceous Glen Rose Limestone, and (6) the Cretaceous Twin Mountains Formation. A generalized cross-section of the geology beneath NAS Fort Worth JRB is presented in Figures 2.4 and 2.5 (Radian, 1989). The areal limits of surface exposure of these units at NAS Fort Worth JRB are shown in Figure 2.6. The regional dip of these stratigraphic units beneath NAS Fort Worth JRB is between 35 to 40 feet per mile in an easterly to southeasterly direction. NAS Fort Worth JRB is located on the relatively stable Texas Craton, west of the faults that lie along the Ouachita Structural Belt. No major faults or fracture zones have been mapped near the base.

2.3 GROUNDWATER

The following five hydrogeologic units, listed from shallowest to deepest, are located in the NAS Fort Worth JRB area (Figure 2.7): (1) an upper perched-water zone occurring in the alluvial terrace deposits associated with the Trinity River (Terrace Alluvium), (2) an aquitard of

132 25





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HYDRO GeoLogic INC.

N

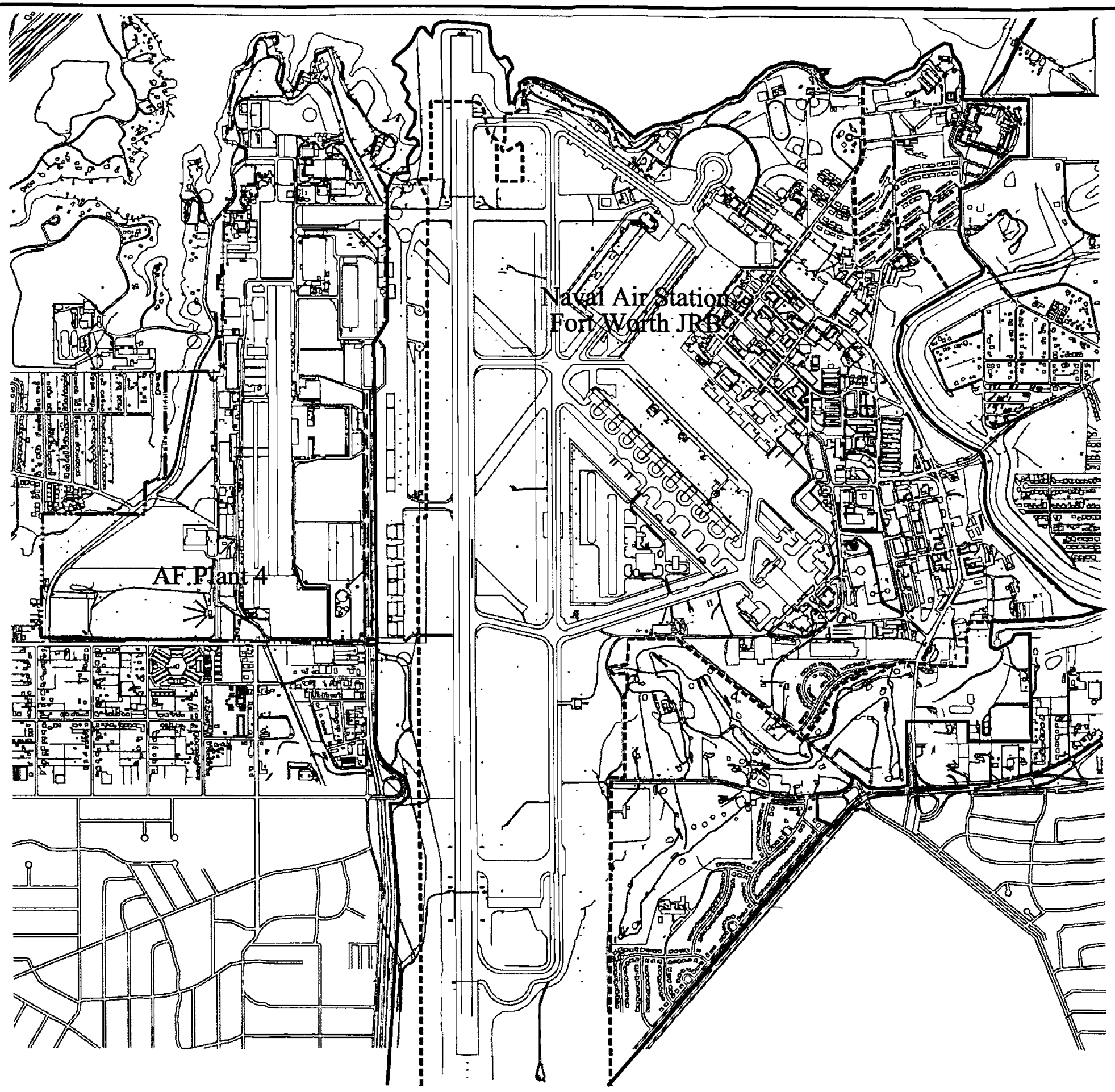
Legend

Site

SCALE IN MILES

0 2 4

Figure 2.1
NAS Fort Worth JRB Site Location Map
[From Radian, 1989]



HydroGeoLogic, Inc. — Final January 1998 Quarterly Report
NAS Fort Worth JRB, Texas

Figure 2.2

Base Boundaries
NAS Fort Worth JRB

Air Force Center
For Environmental Excellence
Brooks AFB, Texas

LEGEND

- NAS Ft. Worth JRB (Carswell Field) Site Boundary
- Former Carswell Air Force Base Property Boundary
- AF Plant 4 Property Boundary

N

0 750 1500 3000
SCALE IN FEET

HYDRO GeoLogic INC.

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Revised: 07/13/98 jb
Project: AFC001-07GCB
Map Source: Jacobs, 1996

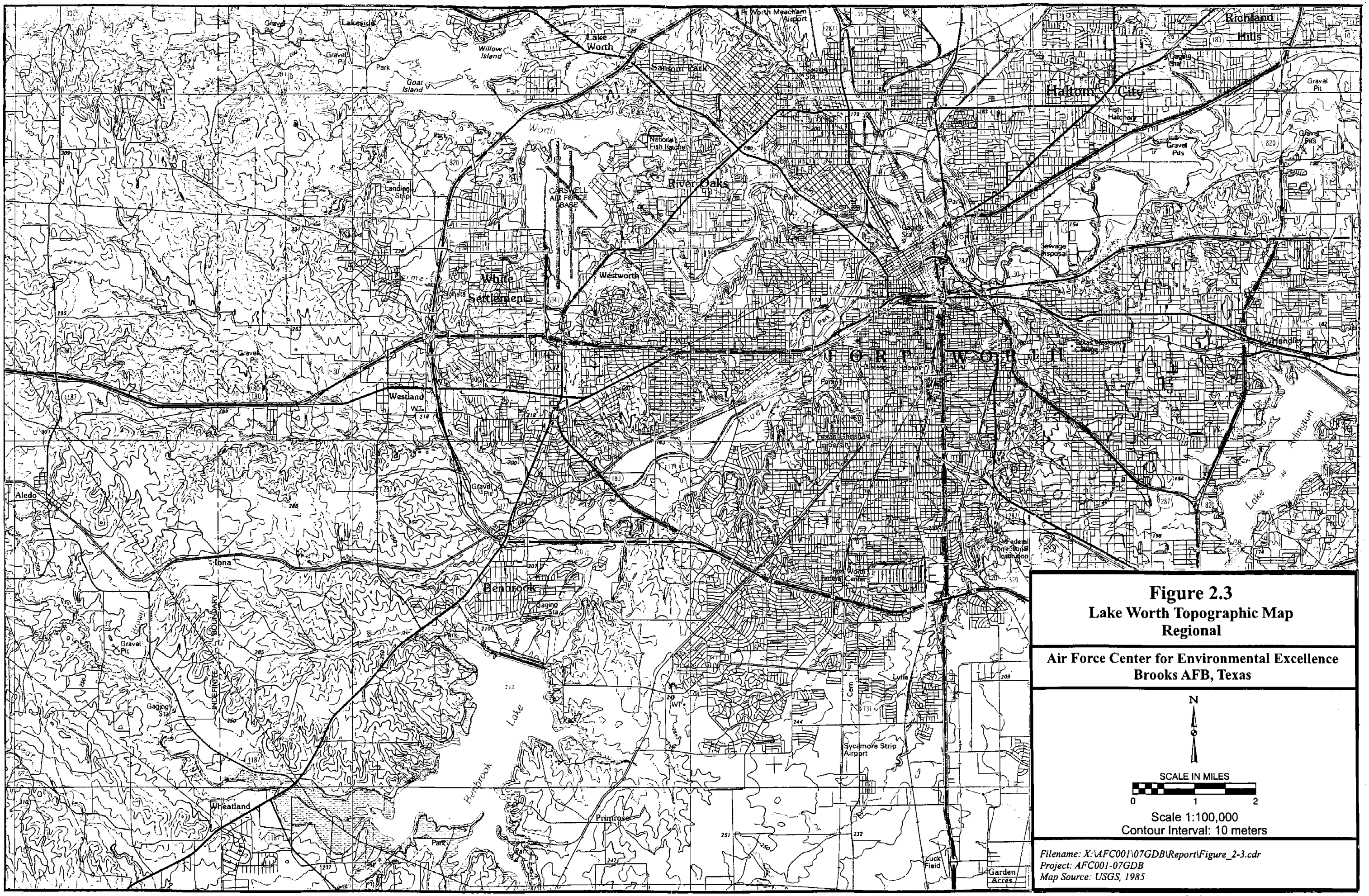

Figure 2.3
Lake Worth Topographic Map
Regional

Air Force Center for Environmental Excellence
Brooks AFB, Texas

N

SCALE IN MILES
0 1 2

Scale 1:100,000
Contour Interval: 10 meters

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Project: AFC001-07GDB
Map Source: USGS, 1985

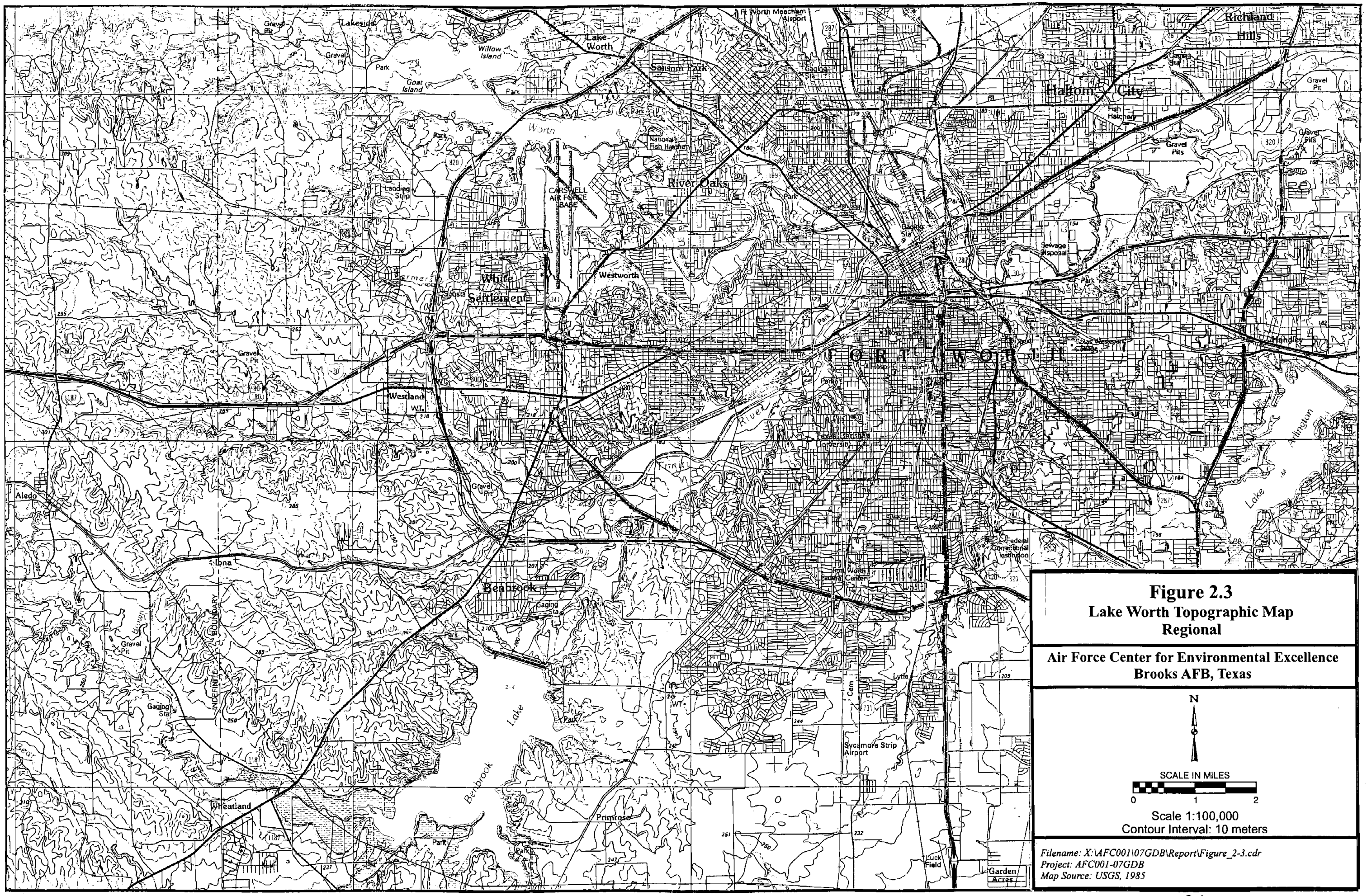

Figure 2.3
Lake Worth Topographic Map
Regional

Air Force Center for Environmental Excellence
Brooks AFB, Texas

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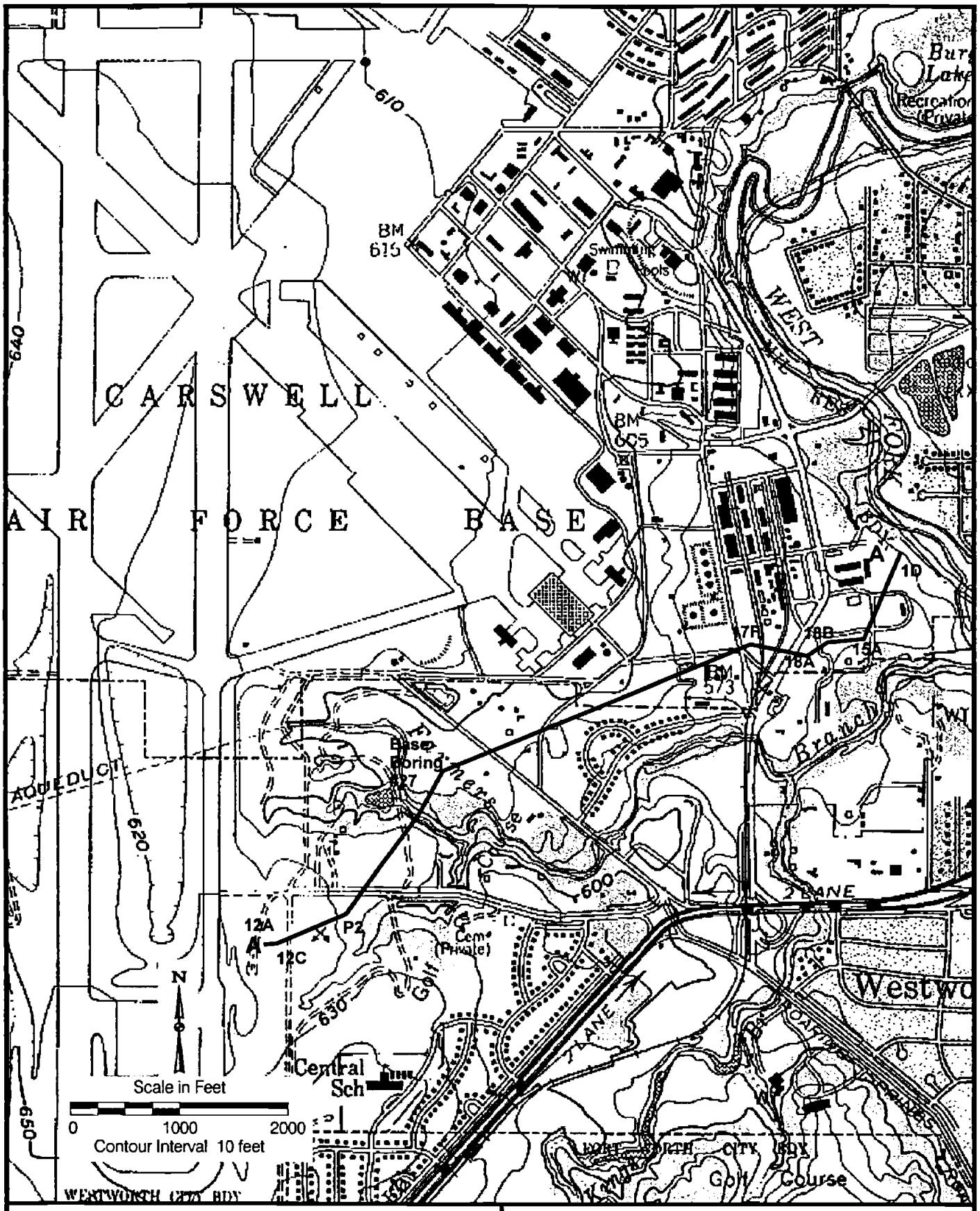
Map Source: USGS, 1985



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Revised: 07/10/98 cf
Project: AFC001-07GCB
Source: Radian, 1986

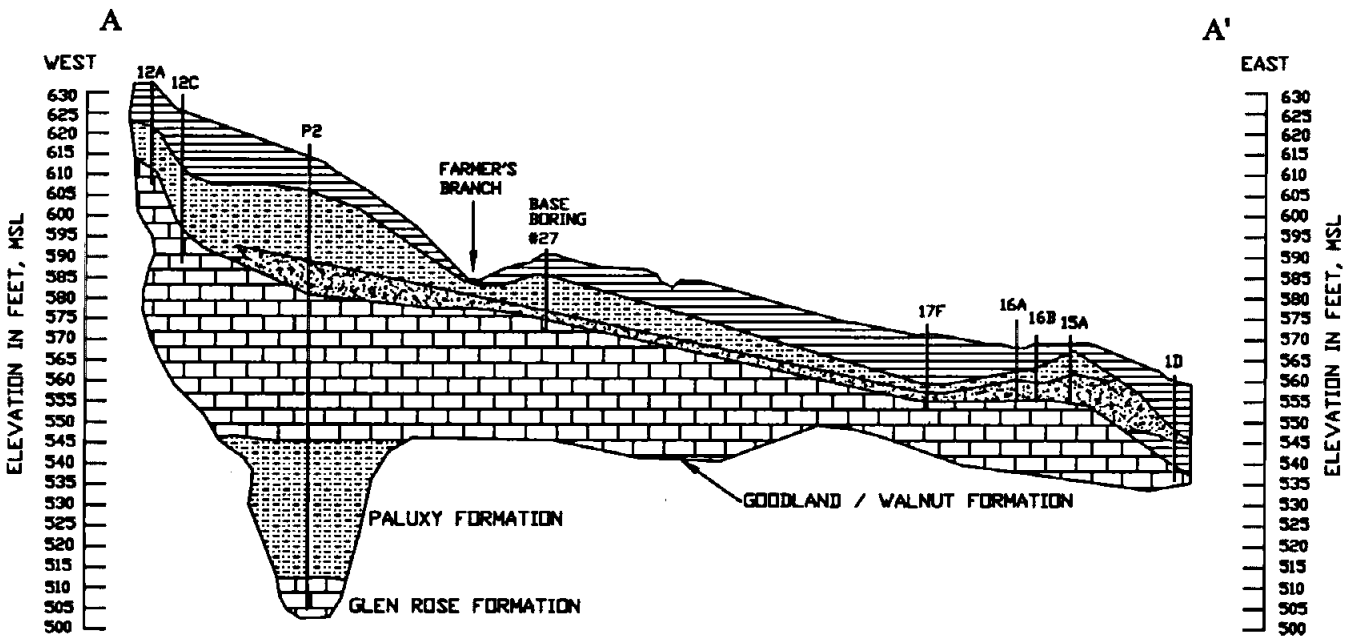
Figure 2.4
NAS Fort Worth JRB
Cross Section Location A - A'

Figure 2.5

Generalized Geologic Cross Section A - A'

NAS Fort Worth JRB

Air Force Center
For Environmental Excellence
Brooks AFB, Texas



NOTES
1. STRATIGRAPHIC CONDITIONS ARE KNOWN ONLY AT THE MONITOR WELLS AND BORINGS; CONTACTS ARE INTERPOLATED BETWEEN CONTROL POINTS.
2. HATCHURED ZONES ALONG MONITOR WELLS REPRESENT THE INTERVAL OF GRAVEL PACK AROUND EACH WELL SCREEN.

LEGEND

- CLAY AND FILL MATERIAL
- SAND
- GRAVEL
- LIMESTONE AND SHALE

N

800 400 0 800
HORIZONTAL SCALE IN FEET
VERTICAL EXAGERATION = 15X

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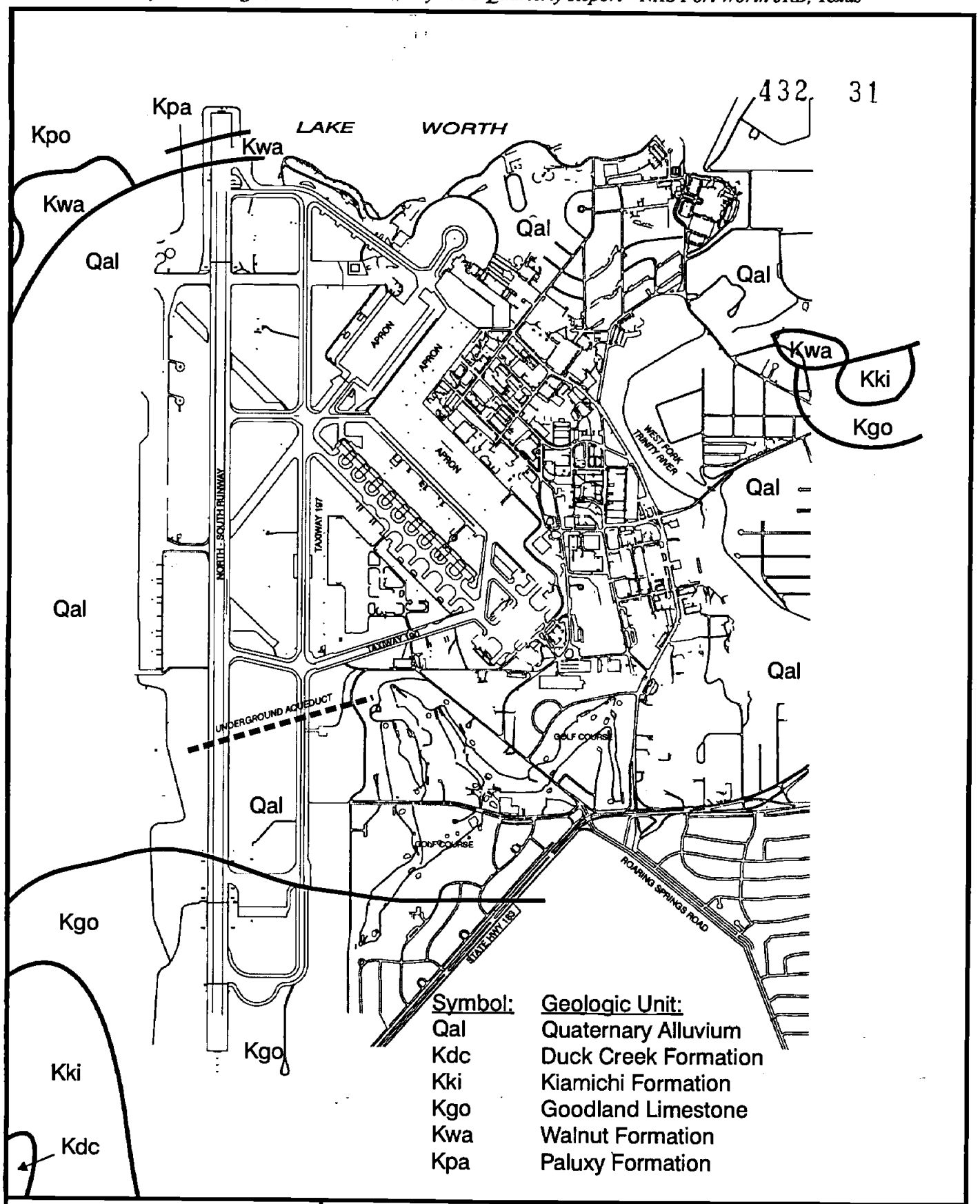
Project: AFC001-07GCB
Map Source: Radian, 1986

432 30



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Project: AFC001-07GCB
Map Source: Radian, 1989

Legend

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0 1000 2000
FEET

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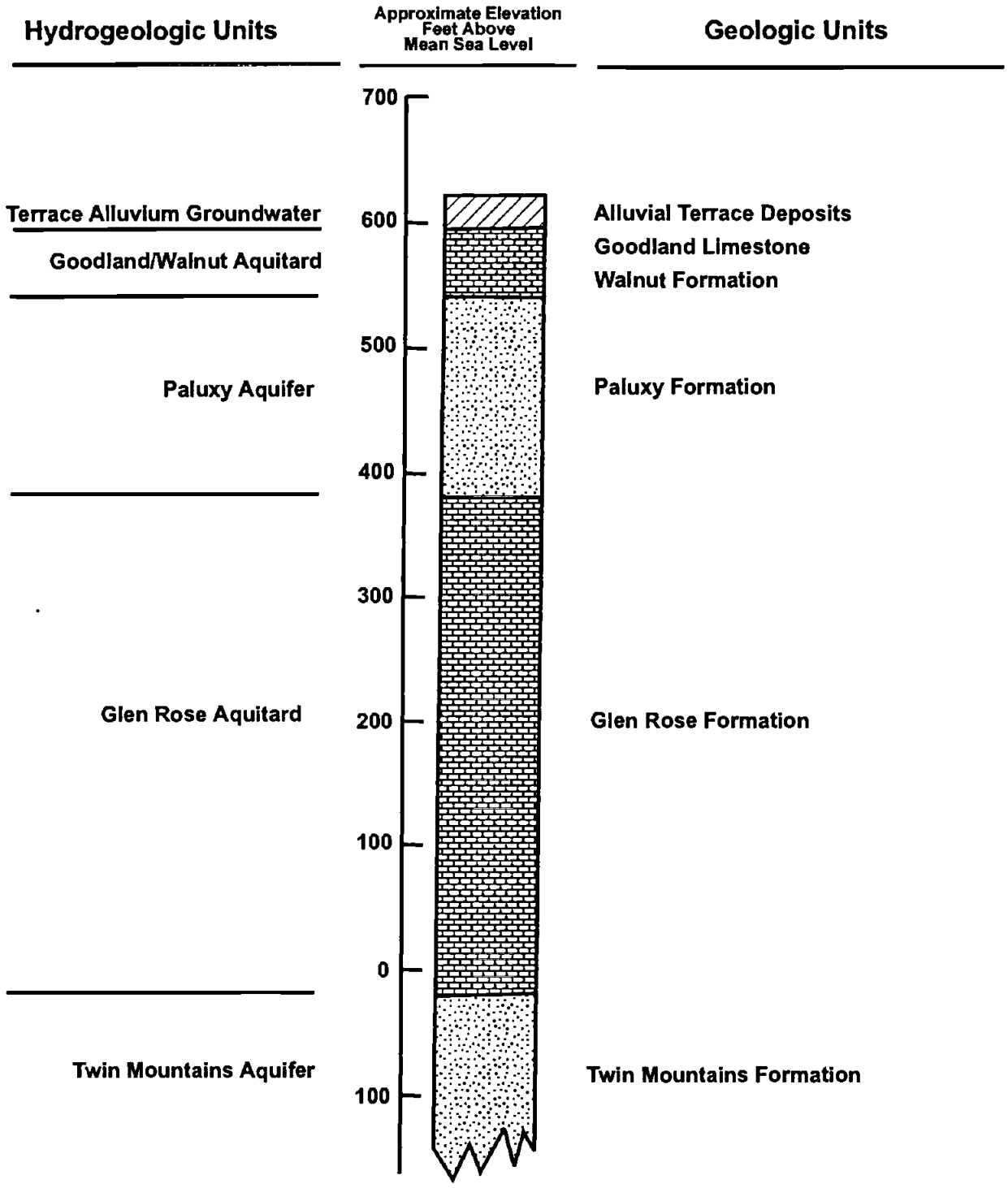
Figure 2.6
NAS Fort Worth JRB
Areal Distribution of Geologic Units

432 32



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Revised: 07/19/98 cf
Project: AFC001-07GCB
Map Source: Radian, 1989

Legend

- Alluvium
- Limestone
- Sandstone

Figure 2.7
NAS Fort Worth JRB
Stratigraphic Column Correlating Hydrogeologic Units and Geologic Units

predominantly dry limestone of the Goodland and Walnut Formations, (3) an aquifer in the Paluxy Formation, (4) an aquitard of relatively impermeable limestone in the Glen Rose Limestone, and (5) a major aquifer in the sandstone of the Twin Mountains Formation. Table 2.1 presents additional information on the stratigraphic units found beneath NAS Fort Worth JRB. Each of these units is examined in more detail in the following paragraphs.

2.3.1 Terrace Alluvium Deposits

The uppermost groundwater in the area occurs within the pore space of the grains of silt, clay, sand, and gravels deposited by the Trinity River. In some parts of Tarrant County, primarily in those areas adjacent to the Trinity River, groundwater from the terrace deposits is used for irrigation and residential use. Groundwater from the terrace deposits is rarely used as a source of potable water due to its limited distribution, poor yield, and susceptibility to surface/storm water pollution (USGS, 1996). No potable water supply wells are completed in the Terrace Alluvium within 0.5 miles of NAS Fort Worth JRB.

Recharge to the water-bearing deposits occurs through infiltration from precipitation and from surface water bodies. Extensive on-site pavement and construction restricts this recharge. Additional recharge, however, comes from leakage in water lines, sewer systems, storm drains, and cooling water systems. This inflow of water to the shallow aquifer locally affects groundwater flow patterns and contamination transport. The estimated hydraulic conductivity of the alluvial aquifer is 4.57 gallons per day per square foot (gpd/ft^2) (Radian, 1989).

Flow between aquifers is restricted by the Goodland/Walnut Formations; therefore, the Terrace Alluvium groundwater has no significant hydraulic connection to the underlying aquifers at NAS Fort Worth JRB. The primary water flow in the terrace deposits is generally eastward toward the West Fork of the Trinity River, although localized variations exist across the base. The hydraulic gradient across the base is variable, reflecting variations in the flow direction and localized recharge. Discharge from the aquifer occurs into surface water located on-site, specifically Farmers Branch Creek.

2.3.2 Goodland/Walnut Aquitard

The groundwater within the terrace deposits is isolated from groundwater within the lower aquifers by the low permeability rocks of the Goodland Limestone and Walnut Formations. The primary inhibitors to vertical groundwater movement within these units are the fine-grained clay and shale layers that are interbedded with layers of limestone. Some groundwater movement does occur between the individual bedding planes of both of these units, but the vertical hydraulic conductivity has been calculated to range between 1.2×10^{09} centimeters per second (cm/sec) to 7.3×10^{-11} cm/sec for the NAS Fort Worth JRB and AFP 4 area. This corresponds to a vertical advective velocity rate that ranges between 1.16×10^{-03} feet per day to 5.22×10^{-03} feet per day (ESE, 1994). At the AFP 4 "window area," the Goodland/Walnut Aquitard is breached, and the alluvial terrace groundwater is in direct communication with the groundwater in the Paluxy Aquifer. A significant number of wells and borings have been advanced on NAS Fort Worth JRB, and no evidence has been found indicating that a similar window exists on the base property.

Table 2.1
Stratigraphic Units at NAS Fort Worth JRB, Texas[1] 432 34

Era	System	Series/Group	Stratigraphic Unit	Thickness (feet)[2]	Lithologic Characteristics[3]	Water-Yielding Characteristics
Cenozoic	Quaternary (1.8 mya to present)	Holocene	Fill material	0	Construction debris	Permeability varies, gravels and sands permeable
			Recent alluvial deposits	0-50	Gravel, sand, silt, clay	
		Pleistocene	Terrace alluvial deposits	0-60	Gravel, sand, silt, clay	Permeability varies, gravels and sands permeable
	Teritary (1.8 to 65 mya)	Eocene/Wilcox		-	-	-
		Paleocene/Midway		-	-	-
Mesozoic	Cretaceous (65 to 140 mya)	Gulfian		-	-	-
		Comanchean/ Washita		-	-	-
		Comanchean/ Fredericksburg		-	-	-
			Goodland limestone	0-40	White fossiliferous limestone, coarsely nodular, resistant, and dense; contains some marl	Impermeable where not weathered, considered confining unit
			Walnut Formation	0.5-30	Medium to dark gray clay and limestone with shell conglomerates, fossiliferous, Gryphaea beds	Very low permeability, considered confining unit
		Comanchean/ Trinity	Paluxy Formation	130-175	Light gray to greenish-gray sandstone and mudstone; fine-grained to coarse-grained sandstone	Considered aquifer, yields small to moderate quantities of water
			Glen Rose Limestone	150, range unknown at AFP 4	Brownish-yellow and gray alternating limestone, marl, shale, and sand	Low permeability, considered confining unit in area of AFP 4
			Twin Mountains Formation[4]	200, range unknown at AFP 4	Fine- to coarse-grained sandstone shale and claystone, basal gravel conglomerate	Coarse sandstones and parts of formation considered aquifer, yields moderate to large quantities of water

[1] Table adapted from U.S. Geological Survey (USGS), 1996.
[2] Thickness determined from site logs, except for Glen Rose Limestone and Twin Mountains Formation (Baker et al., 1990, Figure 4 as cited in USGS, 1996).
[3] Lithologic characteristics determined from field observations and from Winton and Adkins, 1919; University of Texas, Bureau of Economic Geology, 1972; U.S. Army Corps of Engineers, 1986; Baker et al., 1990; Environmental Science and Engineering, Inc., 1994, all as cited in USGS, 1996.
[4] This stratigraphic name does not conform to the usage of the USGS.
Notes: mya = million years ago

Additionally, no evidence of contamination of the Paluxy Aquifer has been found beneath NAS Fort Worth JRB.

2.3.3 Paluxy Aquifer

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The Paluxy Aquifer is an important source of potable groundwater for the Fort Worth area. Many of the surrounding communities, particularly White Settlement, develop their municipal water supplies from the Paluxy Aquifer. Groundwater from the Paluxy Aquifer is also used in some of the surrounding farms and ranches for agricultural purposes. Due to the extensive use of the Paluxy Aquifer, water levels have declined significantly over the years. Water levels in the NAS Fort Worth JRB vicinity have not decreased as much as in the Fort Worth area due to its proximity to the Lake Worth recharge area and the fact that the base does not develop water from the Paluxy Aquifer. Drinking water at the base is supplied by the city of Fort Worth, which uses Lake Worth as its water source. The groundwater of the Paluxy Aquifer is contained within the openings created by gaps between bedding planes, and cracks and fissures in the sandstones of the Paluxy Formation. Just as the Paluxy Formation is divided into upper and lower sand members, the aquifer is likewise divided into upper and lower aquifers. The upper sand is finer grained and contains a higher percentage of shale than the lower sand. Radian (1989) estimated the hydraulic conductivity and transmissivity to be 130 to 140 gpd/ft^2 and 1,263 to 13,808 gallons per day per foot (gpd/ft), respectively.

2.3.4 Glen Rose Aquitard

Below the Paluxy Aquifer are the fine-grained limestone, shale, marl, and sandstone beds of the Glen Rose Limestone. The thickness of the formation ranges from 250 to 450 feet. Although the sands in the Glen Rose Limestone yield small quantities of groundwater in the area, the relatively impermeable limestone acts as an aquitard restricting water movement between the Paluxy Aquifer above and the Twin Mountains Aquifer below.

2.3.5 Twin Mountains Aquifer

The Twin Mountains Formation is the oldest and deepest water supply source used in the NAS Fort Worth JRB area. The Twin Mountains Formation occurs approximately 600 feet below NAS Fort Worth JRB with a thickness of between 250 to 430 feet. Recharge to the Twin Mountains Aquifer occurs west of NAS Fort Worth JRB where the formation crops out. Groundwater movement follows the regional eastward slope of the bedrock. Like the groundwater in the Paluxy Aquifer, the Twin Mountains groundwater occurs under unconfined conditions in the recharge area and becomes confined as it moves downdip. Transmissivities in the Twin Mountain Aquifer range from 1,950 to 29,700 gpd/ft and average 8,450 gpd/ft in Tarrant County. Permeabilities range from 8 to 165 gpd/ft^2 and average 68 gpd/ft^2 in Tarrant County (CH_2M Hill, 1984).

2.4 SURFACE WATER

NAS Fort Worth JRB is located within the Trinity River Basin adjacent to Lake Worth. The main surface water features of interest are Lake Worth, the West Fork of the Trinity River, and Farmers Branch Creek. Lake Worth, which was constructed in 1941 as a source of municipal water for the city of Fort Worth, borders the base to the north of AFP 4. The surface area of the lake is

approximately 2,500 acres. The Paluxy Aquifer discharges to Lake Worth near its western extent. However, in the portion of the lake near Bomber Road, the top of the Paluxy Aquifer is recharged by Lake Worth. There does not appear to be a hydraulic connection between the Paluxy Aquifer and the lake in the eastern portion where the Walnut Formation separates the Paluxy Aquifer and Lake Worth. The elevation of the lake is fairly constant at approximately 594 feet above NGVD, the fixed elevation of the dam spillway (USGS, 1996).

The West Fork of the Trinity River, a major river in north central Texas, defines the eastern boundary of the base. The Trinity River flows southeast towards the Gulf of Mexico. Because the river has been dammed, the 100- and 500-year flood plains downstream of the dam do not extend more than 400 feet from the center of the river or any of its tributaries.

Storm water runoff from NAS Fort Worth that is not routed to the base or city sewer system is discharged into Lake Worth. The outfall is permitted under the National Pollutant Discharge Elimination System, and monitoring results document compliance with permit discharge limitations (IT Corporation, 1997b).

Surface drainage is mainly east towards the West Fork of the Trinity River. A portion of the base is drained by Farmers Branch Creek, a tributary to the West Fork of the Trinity River. Farmers Branch Creek begins within the community of White Settlement and flows eastward. Most of the flow in the creek is due to surface runoff, with some groundwater recharge from the Terrace Alluvium Aquifer. Just south of AFP 4, Farmers Branch flows under the runway within two large culverts identified as an aqueduct. Two unnamed tributaries flow across the Flightline Area and discharge into Farmers Branch Creek. Most of the base drainage is intercepted by a series of storm drains and culverts, directed to oil/water separators, and discharged to the West Fork of the Trinity River downstream of Lake Worth. A small portion of the north end of the base drains directly into Lake Worth.

2.5 CLIMATE

The climate in the Fort Worth area is classified as subhumid with long, hot summers and short, dry winters. Tropical maritime air masses control the weather during much of the year, but the passage of polar cold fronts and continental air masses can create large variations in winter temperatures. The average annual temperature in the area is 66 degrees Fahrenheit (°F), and monthly mean temperatures vary from 45°F in January to 86°F in July. The average daily minimum temperature in January is 35°F, and the lowest recorded temperature is 2°F. The average daily maximum temperature in July and August is 95°F, and the highest temperature ever recorded at the base was 111°F in the month of June. Freezing temperatures occur at NAS Fort Worth JRB an average of 33 days per year.

Mean annual precipitation recorded at the base is approximately 32 inches. The wettest months are April and May, with a secondary maximum in September. The period from November to March is generally dry, with a secondary minimum in August. Snowfall accounts for a small percentage of the total precipitation between November and March. Thunderstorm activity occurs at the base an average of 45 days per year, with the majority of the activity between April and June. Hail may fall 2 to 3 days per year. The maximum precipitation recorded in a 24-hour period is 5.9 inches. On the average, measurable snowfall occurs 2 days per year.

TAB

Section 3.0

3.0 MONITORING ACTIVITIES

432 38

This section describes the monitoring activities performed during the January 1998 quarterly basewide groundwater sampling events performed at NAS Fort Worth JRB. The work was performed in accordance with the pre-draft GSAP (HydroGeoLogic, 1997b) and draft Basewide QAPP (HydroGeoLogic, 1997a).

Monitoring activities included:

- Well inspection and water level measurements
- Well purging and analytical sampling
- Investigation-derived waste (IDW) management
- Laboratory and field analysis

3.1 WELL INSPECTION AND WATER LEVEL MEASUREMENTS

Based on the 1998 GSAP (HydroGeoLogic, 1997b), 246 monitoring wells screened in the Terrace Alluvium were selected for inspection and water level measurements during the January 1998 sampling event. The locations of these monitoring wells are provided on Figure 3.1. The water level measurements and total depths were taken several days prior to purging and sampling the wells in order to minimize water column disturbance.

A visual inspection of each monitoring well was conducted to determine the well's condition and integrity (e.g., pad condition, lock integrity, etc.). Following the visual inspection of each well, an organic vapor meter was used to measure the levels of organic vapors in the background area, in the breathing zone, and at the top of each well casing immediately after the well cap had been removed. An electronic oil/water interface device was used to determine the presence and depth of any non-aqueous phase liquids, depth to water, and total well depth. All well inspection and measurement data are summarized in Appendix A.1. Copies of the original field notes from the log books and groundwater field sampling data sheets are provided in Appendix A.2 and Appendix A.3.

3.2 SAMPLE WELL SELECTION

Of the 246 monitoring wells selected for inspection and water level measurements, 46 wells were selected for analytical sampling in the GSAP (HydroGeoLogic, 1997b). The selection process is described in detail in the GSAP (HydroGeoLogic, 1997b). The locations of the selected wells are shown on Figure 3.1.

The wells selected for analytical sampling were further divided, based on whether the wells were selected primarily to evaluate the potential for off-site migration or the extent of natural attenuation. The reason for selection of the well dictated the chemical parameters selected for analysis at each well. Table 3.1 includes a list of the wells selected for sampling, the rationale for their selection, and the chemical parameters selected for analysis at each well. The four well types are as follows:

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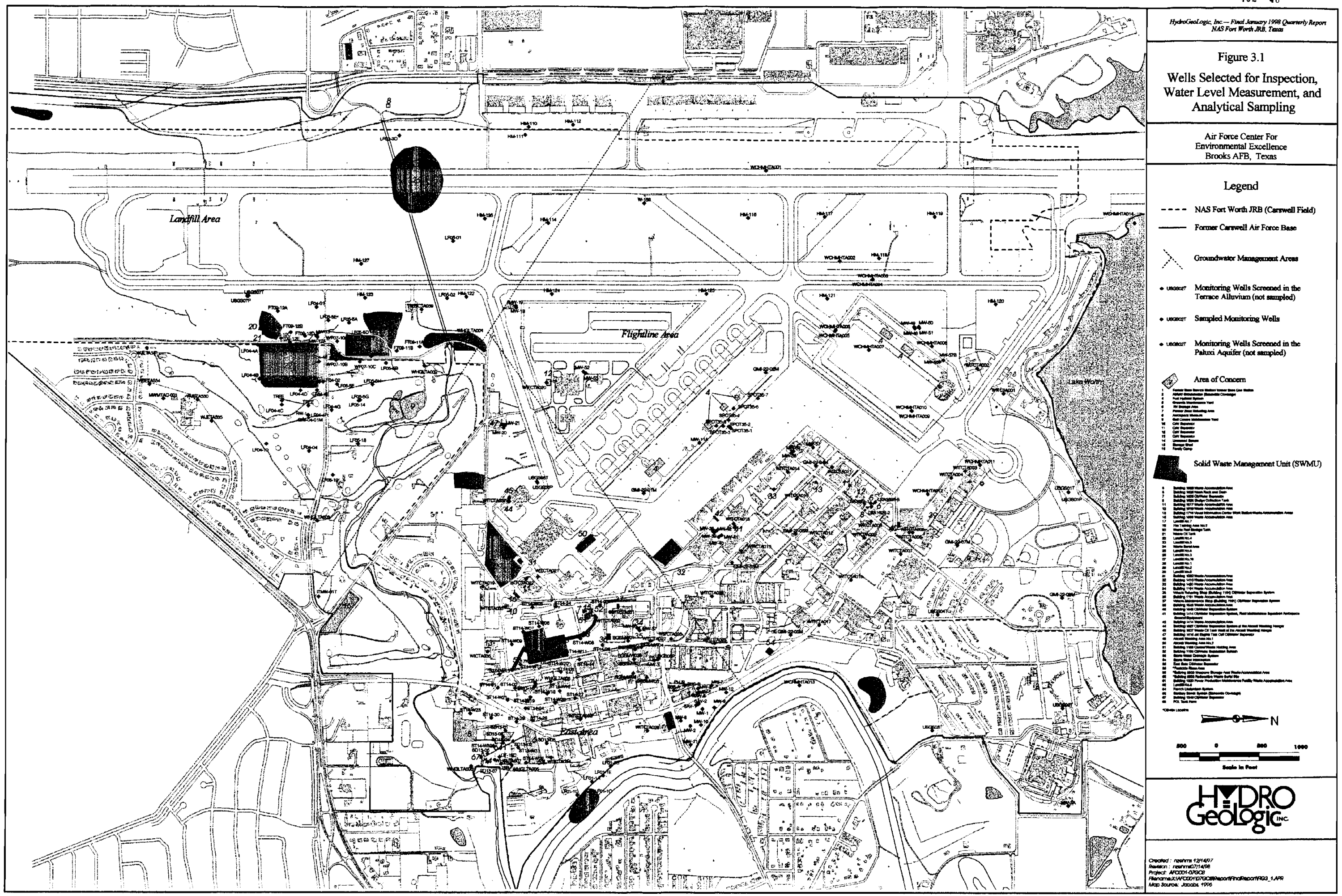
HydroGeoLogic, Inc. — Final January 1998 Quarterly Report
NAS Fort Worth JRB, Texas
Figure 3.1
Wells Selected for Inspection, Water Level Measurement, and Analytical Sampling
Air Force Center For Environmental Excellence
Brooks AFB, Texas
Legend
NAS Fort Worth JRB (Carswell Field)
Former Carswell Air Force Base
Groundwater Management Areas
Monitoring Wells Screened in the Terrace Alluvium (not sampled)
Sampled Monitoring Wells
Monitoring Wells Screened in the Paluxi Aquifer (not sampled)
Area of Concern
Solid Waste Management Unit (SWMU)
N
Scale in Feet
HYDRO GeoLogic INC.
Landfill Area
Flightline Area
East Area
Lake Worth

Table 3.1
Monitoring Wells Selected for 1998 Sampling Program

Area	Well	Objective	Well Type	Chemical Parameters[1]					
				App. IX[2]	VOCs	BTEX	MTBE[3]	Metals	Natural Attenuation[4]
Flightline	GMI-22-02M	L-2	Plume		X				X
	GMI-22-03M	L-2, L-3	Plume		X				X
	GMI-22-04M	L-2, L-3	Plume		X				X
	GMI-22-05M	S-1, S-2	Perimeter		X			X	
	GMI-22-06M	L-2, L-3	Plume		X				X
	GMI-22-07M	L-2	Sentry		X				
	LSA1628-3	L-2, L-3	Plume		X				X
	MW-53	L-2, L-3	Plume		X				X
	SPOT35-5	L-2	Plume		X				X
	USGS04T	S-1	Perimeter		X			X	
	WITCTA010	L-2, L-3	Plume		X				X
	WITCTA024	L-2	Sentry		X				
East	17M	L-1	Plume			X			X
	BGSMW03	L-1	POC			X	X		
	BGSMW05	L-1	POC			X	X		
	BGSMW06	L-1	POC			X	X		
	BSS-B	L-1	POC			X	X		
	LF01-1D	S-1, S-2, L-4	Perimeter	X (Jan.)	X			X	
	SAV-2[5]	L-1	POC			X	X		
	MW-10	L-1, S-1, S-2	POC/Perimeter			X	X	X	
	WHGLTA005	L-1, S-1, S-2	POC/Perimeter	X (Jan.)	X			X	X
	WHGLTA006	L-1, S-1, S-2	POC/Perimeter	X (Jan.)	X			X	X
	WHGLTA007	L-1	Plume	X (Jan.)	X			X	X
	WHGLTA008	L-1	Plume		X			X	X
	SD13-01	L-1	Plume	X (Jan.)		X			X
	SD13-02	L-1	Plume	X (Jan.)		X			X
	SD13-04	L-1	Plume	X (Jan.)		X			X
	SD13-06	L-1	Plume	X (Jan.)	X			X	X
	SD13-07	L-1, S-1, S-2	POC/Perimeter	X (Jan.)	X			X	X

Table 3.1 (continued)
Monitoring Wells Selected for 1998 Sampling Program

Area	Well	Objective	Well Type	Chemical Parameters[1]					
				App. IX[2]	VOCs	BTEX	MTBE[3]	Metals	Natural Attenuation[4]
East	ST14-02	L-1	Plume			X		X	X
	ST14-03	L-1	Plume			X			X
	ST14-04	L-1	Plume			X			X
	ST14-14	L-1	Upgradient		X			X	X
	ST14-24	L-1	Upgradient		X			X	X
	ST14-26	L-1	Upgradient		X			X	X
	ST14-28	L-1	Plume			X			X
	ST14-29	L-1	Plume			X			X
	ST14-W16	L-1	Plume			X			X
	ST14-W18	L-1	Plume			X		X	X
	ST14-W21	L-1	Plume			X		X	X
	ST14-W31	L-1	Plume	X (Jan.)		X			X
Landfill	LF05-19	L-2, L-3	Plume	X (Jan.)	X			X	X
	WHGLTA003	L-2, L-3	Plume		X				X
	WHGLTA004	L-2, L-3	Plume		X				X
	USGS07T	L-2, L-4	Sentry		X				X
	WP07-10C	L-2, L-3, L-4	Plume	X (Jan.)	X			X	X

[1] Samples from all wells will also be tested for the following standard field parameters: temperature, pH, electrical conductance, DO, oxidation-reduction potential, and turbidity.
[2] Analysis for Appendix IX constituents will be completed during the January 1998 sampling event only. The remaining sampling events will include the listed parameters and any others deemed necessary, based on the results of the Appendix IX sampling.
[3] MTBE can be sampled as part of the BTEX suite (SW8020).
[4] Natural attenuation parameters to be sampled are common anions (chloride, nitrate, sulfate), total organic carbon (TOC), Fe(II), alkalinity, and methane.
[5] This well replaces monitoring well MW-1, which was apparently destroyed during construction of a sewer line.

Notes:
VOCs = volatile organic compounds
BTEX = benzene, toluene, ethylbenzene, and xylenes
MTBE = methy tert-butyl ether
POC = point of compliance

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- Upgradient
- Plume
- Sentry
- Perimeter

Upgradient wells are located upgradient of the impacted groundwater: results were used to evaluate background conditions. Plume wells are located within or at the lateral edges of the dissolved contaminant plume; results were used to evaluate the rate of contaminant removal by natural attenuation. Sentry wells are located at the edge or downgradient of the contaminant plume: results were used to verify that natural attenuation is reducing contaminant concentrations. Perimeter wells are located at the boundaries of NAS Fort Worth JRB and/or surface water boundaries where groundwater may discharge to surface water; results were used to monitor potential off-site migration. Perimeter monitoring wells were selected from each groundwater management area in order to meet the short-term objective of identifying potential impacts to off-site groundwater receptors.

3.3 WELL PURGING AND ANALYTICAL SAMPLING

A total of 46 wells were selected in the GSAP (HydroGeoLogic, 1997b) for analytical sampling during the January 1998 sampling event. The locations of these monitoring wells are provided on Figure 3.1.

The selected monitoring wells were sampled using a low-flow purge technique, the procedure recommended for AFCEE projects (AFCEE, 1996). A detailed sampling protocol is included in Appendix B of the GSAP (HydroGeoLogic, 1997b). The wells were purged with 2/inch stainless steel Grundfos Redi-Flo submersible pumps. Pumping rates were kept between 0.1 to 2.0 liter/minute to minimize turbidity, oxygenation, mixing of chemically distinct zones, and potential loss of VOCs.

During purging, water quality stabilization criteria (pH, temperature, oxidation-reduction (redox) potential, turbidity, DO, and electrical conductance) were continuously monitored and recorded on the well sampling field data sheets (Appendix A.3) using a flow-through cell. If the sampled well was not experiencing significant drawdown while purging (i.e., the water column did not drop more than 2 feet, or 10 percent of the screened interval length), the criteria for sample collection was the stabilization of water quality parameters as follows:

- Temperature: +/-0.1°C
- pH: +/-0.1 units
- Electrical Conductance: +/-5 percent full scale range
- DO: +/- 0.10 milligram per liter (mg/L) or 10 percent of value (whichever is greater)
- Redox: +/-10 percent
- Turbidity: +/-1 percent and less than 10 nephelometric turbidity units

A well was sampled when the water quality stabilization criteria were met, and the well did not experience a significant drawdown while purged (i.e., >2 feet or 10 percent of the screen length interval).

If these parameters did not stabilize, the sample was collected after three to five equivalent well volumes had been removed. If the sampled well was exhibiting excessive drawdown while being purged at the lowest possible flow rate for that well, the well was purged dry and the sample collected when a sufficient volume of water had accumulated in the well.

Samples for VOC analysis were collected first at each well. The remaining samples were collected based on the approximate order of susceptibility to artificial aeration (i.e., methane, total metals, total organic carbon (TOC), ferrous iron, alkalinity, and anions). Required sample containers, preservation methods, volumes, and holding times are provided in Section 5.0 of the Basewide QAPP (HydroGeoLogic, 1997a).

3.4 INVESTIGATION-DERIVED WASTE MANAGEMENT

IDW management procedures were followed as outlined in Section B.4.3 of the GSAP (HydroGeoLogic, 1997b). All drums are stored at SWMU 22. The purge water was bulked, and samples were collected and analyzed for the parameters necessary for profiling and disposal. The waste will be manifested using the Uniform Hazardous Waste Manifest to ensure that disposal of the waste is properly documented.

3.5 LABORATORY AND FIELD ANALYSIS

The methods selected for the chemical analyses for the January 1998 sampling event are summarized in the following paragraphs. All samples, excluding those for ferrous iron analyses, were delivered by overnight courier to Quanterra Environmental Services in Denver, Colorado. Ferrous iron analyses were conducted on-site.

3.5.1 Laboratory Analysis

Forty-six monitoring wells were scheduled to be sampled as part of the quarterly sampling program. Twelve of the monitoring wells were to be sampled for RCRA Appendix IX compounds. Analytical methods used for RCRA Appendix IX compounds include Method SW8260A (VOCs), Method SW8270B (semivolatile organic compounds (SVOCs)), Method SW8080A (organochlorine pesticides and polychlorinated biphenyls), SW8140 (organophosphorus pesticides), Method SW8150 (chlorinated herbicides), Method SW8280 (dioxins and furans), Method SW6000- and SW7000-series (metals), Method E376.2 (sulfide), and Method SW9012 (cyanide).

Of the remaining 34 monitoring wells, 19 were to be sampled for VOCs using Method SW8260, 15 were to be analyzed for BTEX using Method SW8020, and 10 were to be analyzed for metals using the SW6000 and SW7000 series. Thirty-five wells were to be sampled for natural attenuation parameters. These analyses included common anions using Method SW9056, methane, ethane, and ethene using Method RSK-175, alkalinity using Method E310.1, and TOC using Method SW9060.

3.5.2 Field Analysis - Ferrous Iron

432 45

Samples collected from the 35 wells selected for natural attenuation monitoring (including the field quality control samples associated with these wells) were to be analyzed on-site for ferrous iron, one of the parameters necessary to evaluate the potential occurance of natural attenuation. A HACH Method 8146 spectrophotometer with a 1,10-phenanthroline reagent was used. This method is described in detail in the GSAP (HydroGeoLogic, 1997b). The reagent reacts with the ferrous iron in the sample to produce an orange color in proportion to the iron concentration. Ferric iron does not react in this test. All ferrous iron analyses were performed on the day of sample collection. All results of the on-site analyses were recorded in a field laboratory log book; a copy is provided in Appendix A.2.

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TAB

Section 4.0

4.0 QUALITY ASSURANCE/QUALITY CONTROL PROGRAM

This section describes the analytical methods and QC program utilized for the January 1998 basewide quarterly monitoring event at NAS Fort Worth JRB. The analytical methods used for the collection of data are fully described in the draft Basewide QAPP (HydroGeoLogic, 1997a).

4.1 FIELD QUALITY CONTROL

The field QC program for the collection of samples at NAS Fort Worth JRB included specific procedures for the collection of groundwater samples as described in the GSAP (HydroGeoLogic, 1997b). The groundwater samples were collected from developed monitoring wells after field parameters (pH, specific conductance, redox potential, DO, temperature, and turbidity) had stabilized. Groundwater purging and sampling was performed at a rate of 0.2 to 2.0 liters per minute to minimize turbidity and oxidation, mixing of chemically distinct zones, and potential loss of VOCs. Sample bottles met EPA requirements for environmentally clean containers. Sample labels were pre-printed to facilitate sample tracking from the field through the laboratory to the final report.

Field QC samples were collected to evaluate sampling technique and decontamination procedures. These samples included ambient blanks, equipment blanks, trip blanks, and fields duplicates. A summary of the QC samples and the number of each type collected as part of this sampling event are included in Table 4.1. Documentation of the sampling was performed in the field to ensure that sample labeling, chain-of-custody, and request for analysis were in agreement and traceable back to the correct field sample. Custody seals were placed on each cooler before shipment by common carrier.

4.1.1 Ambient Blank

An ambient blank consists of American Society for Testing and Materials (ASTM) Type II reagent grade water poured into a VOC sample vial at a sampling site (in the same vicinity as the associated samples). It is handled like an environmental sample and transported to the laboratory for analysis. Ambient blanks are analyzed only for VOCs, BTEX, and methane. Ambient blanks are used to assess the potential introduction of contaminants from ambient sources (e.g., active runways, engine test cells, gasoline motors in operation, etc.) to the samples during sample collection.

4.1.2 Equipment Blanks

An equipment blank is a sample of ASTM Type II reagent grade water poured into, over, or pumped through a sampling device, collected in a sample container, and transported to the laboratory for analysis. Equipment blanks are used to assess the effectiveness of equipment decontamination procedures. One equipment blank is collected for each type of sampling equipment used on each day that equipment decontamination activities occurred. Equipment blanks are collected immediately after the equipment has been decontaminated. Each blank is analyzed for all laboratory analyses requested for the environmental samples collected at the associated site on that day.

Table 4.1
Field Quality Control Samples
Collected for January 1998 Sampling Event

432 40

Type of Sample	Frequency	Total Number	Time	Analysis
Ambient Blank[1]	1 ambient blank/ sampling event	1	During normal sample collection conditions	VOC, BTEX, and/or methane analyses consistent with sampling event
Equipment Blank[2]	1 equipment blank/day	8	Immediately after equipment had been decontaminated	All laboratory analyses consistent with daily sampling
Trip Blank[3]	1 trip blank/ sample cooler	8	When VOC, BTEX, and/or methane samples were collected	VOC, BTEX, and/or methane analyses consistent with cooler contents
Field Duplicates (blind)[4]	1 duplicate/10 environmental samples	5	At the same time and location of original sample	Same as original sample

[1] Used to assess the impact of ambient conditions.
[2] Used to assess the effectiveness of equipment decontamination procedures.
[3] Used to assess the potential contaminants from sample containers or other foreign sources during sample transportation and storage.
[4] Each duplicate sample is assigned a unique identification number in the field in order to trace the sample analyses to each duplicate.

Notes:
VOC = volatile organic compound
BTEX = benzene, toluene, ethylbenzene, and xylenes

4.1.3 Trip Blanks

432 50

Trip blanks consist of a VOC sample vial filled in the laboratory with ASTM Type II reagent grade water, transported to the sampling site, handled as an environmental sample, and returned to the laboratory for analysis. Trip blanks are not opened in the field and are submitted only when VOC, BTEX, and/or methane samples are collected for analysis. Trip blanks are used to assess the potential introduction of contaminants from sample containers or the sample transportation and storage process.

4.1.4 Field Duplicates

A field duplicate is a second sample collected in the same location as a field sample ("parent" sample). Duplicate samples are collected simultaneously, or in immediate succession, using identical recovery techniques and treated in an identical manner during transportation, storage, preparation, and analysis.

4.2 SAMPLE TRACKING PROTOCOL

Each sample was assigned a unique identification number that described where the sample was collected. The number consists of a maximum 12-digit alphanumeric code as follows:

xxxxxxxxzzaa

where:

xxxx represents the well identification or well name (e.g., LF04-04, WHGLTA003)

zz represents the medium (WG for water-ground, SO for soil, WS for water-surface, SD for sediment)

aa indicates the sampling event number for groundwater, surface water, and soil (e.g., 01, 02, 03, etc.)

For example, the first groundwater sample collected from LF04F will be identified as "LF04-04FWG01." The locations from which field duplicate samples were to be collected were determined prior to mobilization. Unique sample identification numbers, which do not associate the duplicate with its parent sample, were assigned to field duplicates. Documentation was maintained in the field sampling log book to track these field duplicate samples.

QC samples were identified by use of a similar system of identifiers with a maximum of 10 characters. The QC sampling number system is summarized below:

xxyyyyyy

where: 432 51

xx represents the medium (EB for equipment blank, TB for trip blank, AB for ambient blank)

yyyyyy represents the date (month, day, year)

For example, an equipment blank obtained on September 22, 1997, would be identified as EB092297.

The Project Geologist/Field Coordinator maintained a list that described the connection between each QC sample and specific environmental samples. For instance, each trip blank was correlated with a particular set of samples shipped to the laboratory, and each equipment blank was correlated to those samples collected using a particular set of sampling tools.

After the laboratory data were received and validated, the data were loaded into the Environmental Resources Program Information Management System (ERPIMS). An electronic deliverable report in the ERPIMS format will be provided.

4.3 LABORATORY QUALITY CONTROL

The laboratory QC program, including sample handling, laboratory QC elements, and data reporting, is fully documented in the Basewide QAPP. Sample handling includes documentation of sample receipt, placement in storage, controlled sample access, and disposal. Laboratory QC elements consist of instrument calibration and maintenance, laboratory control samples (LCSs), method blanks, and matrix spike/matrix spike duplicate (MS/MSD) samples, and method-specific QC checks. Reporting of the laboratory control data was planned prior to the collection of the data, allowing the laboratory to place the appropriate information into the data package so that the data quality evaluation (DQE) could be performed in a timely manner.

4.4 QUALITY CONTROL ELEMENTS

The basis for assessing each element of data quality (precision, accuracy, representativeness, completeness, and comparability) is discussed in the following subsections.

4.4.1 Precision

Precision measures the reproducibility of measurements. It is strictly defined as the degree of mutual agreement among independent measurements as the result of repeated application of the same process under similar conditions. Analytical precision is the measurement of the variability associated with duplicate (two) or replicate (more than two) analyses. Total precision is the measurement of the variability associated with the entire sampling and analysis process. It is determined by analysis of duplicate or replicate field samples and measures variability introduced by both the laboratory and field operations. Field duplicate samples and MSD samples shall be analyzed to assess field and analytical precision, and the precision measurement is determined using the relative percent difference between the duplicate sample results. For replicate analyses, the relative standard deviation is determined.

Acceptable values for precision for each analyte are listed by analysis method in the Basewide QAPP (HydroGeoLogic, 1997a).

4.4.2 Accuracy

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Accuracy is a statistical measurement of correctness and includes components of random error (variability due to imprecision) and system error. It, therefore, reflects the total error associated with a measurement. A measurement is accurate when the value reported does not differ from the true value or known concentration of the spike or standard. Analytical accuracy is measured by comparing the percent recovery of analytes spiked into an LCS to a control limit. For most organic analytical methods, surrogate compound recoveries are also used to assess accuracy and method performance for each sample analyzed. Analysis of performance evaluation samples shall also be used to provide additional information for assessing the accuracy of the analytical data being produced.

Both accuracy and precision are calculated for each AFCEE analytical batch, and the associated sample results are interpreted by considering these specific measurements. The formula for calculation of accuracy is percent recovery from pure and sample matrices. Acceptable values for percent recovery for each analyte are listed by analysis method in the Basewide QAPP (HydroGeoLogic, 1997a).

4.4.3 Representativeness

Objectives for representativeness are defined for each sampling and analysis task and are a function of the investigative objectives. Representativeness shall be achieved through use of the standard field, sampling, and analytical procedures. Representativeness is also determined by appropriate program design with consideration of elements such as proper well locations, drilling and installation procedures, and sampling locations.

4.4.4 Completeness

Completeness is calculated for the aggregation of data for each analyte measured for any particular sampling event or other defined set of samples. Completeness is calculated and reported for each method, matrix, and analyte combination. The number of valid results divided by the number of possible individual analyte results, expressed as a percentage, determines the completeness of the data set. For completeness requirements, valid results are all results not qualified with an "R" flag (see Section 4.5 for an explanation of flagging criteria). The requirement for completeness is 95 percent for aqueous samples. For any instances of samples that could not be analyzed for any reason (e.g., holding time violations in which resampling and analysis were not possible, samples were spilled or broken, etc.), the numerator of this calculation becomes the number of valid results minus the number of possible results not reported.

The formula for calculation of completeness follows:

$$\%\ \text{completeness} = \frac{\text{number of valid (i.e., non-R qualified) results}}{\text{number of possible results}}$$

4.4.5 Comparability

432 53

Comparability is the confidence with which one data set can be compared to another data set. The objective for this QC program is to produce data with the greatest possible degree of comparability. The number of matrices sampled and the range of field conditions encountered are considered in determining comparability. Comparability is achieved by using standard methods for sampling and analysis, reporting data in standard units, normalizing results to standard conditions and using standard and comprehensive reporting formats. Complete field documentation using standardized data collection forms shall support the assessment of comparability. Analysis of performance evaluation samples and reports from audits shall also be used to provide additional information for assessing the comparability of analytical data produced among subcontracting laboratories. Historical comparability shall be achieved through consistent use of methods and documentation procedures throughout the project.

4.5 DATA QUALITY EVALUATION

This section describes the analytical methods and quality control program utilized for the January 1998 basewide groundwater sampling event at NAS Fort Worth JRB. The analytical methods used for the analysis of the field samples are described in the Basewide QAPP (HydroGeoLogic, 1997a).

The objective of the DQE was to provide a professional review of the analytical data packages submitted by the laboratory. The DQE consisted of reviewing laboratory QC data and field QC data to determine which data are usable, usable with qualification, or unusable. The analytical procedures used to generate field sample data were evaluated in accordance with the general and method-specific QC criteria listed in Sections 5.0, 6.0, 7.0, and 8.0 of the Basewide QAPP (HydroGeoLogic, 1997a).

The following items of laboratory QC data were reviewed:

- Sample integrity
- Sample completeness
- Preparation and analysis holding times
- Laboratory preparation and analysis methods
- Method accuracy and precision (e.g., MS/MSDs, dilution tests)
- Laboratory performance criteria (e.g., blanks, LCS recoveries, surrogates, internal standards)
- Instrument initial and continuing calibration checks

Field QC performance was evaluated through evaluating field duplicates, field blanks, field documentation, and shipping criteria.

The DQE was summarized by use of qualifiers that indicate to the user that the datum being considered has been qualified using the established criteria. The specific reason for the qualification is documented on the evaluation forms maintained in the project file. A brief explanation of the data qualification flags is provided in Table 4.2.

Table 4.2
Data Qualifiers

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Qualifiers[1]	Positive Results	Negative Results
Qualifiers for Data Within Acceptance Limits (Usable as Reported)		
(no flag)	The result is a detection with the indicated value and units. (Use datum without qualification.)	(Not applicable)
U	(Not applicable)	The analyte was analyzed for, but not detected. The associated numerical value is at the MDL. (Use datum without qualification.)
Qualifier for Data Within Action Limits (Usable with Qualification)		
F	The analyte was positively identified, but the associated numerical value is below the PQL.	(Not applicable)
J	The analyte was positively identified, but the quantitation is an estimation.	(Not applicable)
UJ	(Not applicable)	The analyte was not detected, but the MDL is an estimation.
Qualifiers for Data Outside of Action Limits (Unusable)		
R	The data were unusable due to deficiencies in the ability to analyze the sample and meet QC criteria.	The data were unusable due to deficiencies in the ability to analyze the sample and meet QC criteria.

[1]If a combination of QC results suggests contradictory qualifiers, the following hierarchy should be used to select the appropriate qualifier to assign:

R > F > J > U

UJ = J

Notes:
MDL = method detection limit
PQL = practical quantitation limit
QC = quality control

4.5.1 Landfill Area Groundwater

432 55

Five groundwater samples and one field duplicate were collected from the Landfill Area and analyzed for one or more of the following parameters: alkalinity; sulfide; ethane, ethene and methane (dissolved gases); metals by inductively coupled plasma (ICP) atomic emission spectrometry and mass spectrometry (ICP/MS); mercury; aromatic volatile organics (BTEX); organochlorine pesticides/polychlorinated biphenyls (PCBs); organophosphorus pesticides; herbicides; VOCs; SVOCs; dioxins and furans; cyanide; inorganic anions; and TOC. Two wells were sampled for those analytes listed in Appendix IX of 40 CFR 264.

The fluoride result is rejected (R-qualified) in sample USGS07TWG03. The bromoform and 1,2-dibromo-3-chloropropane results are rejected (R-qualified) in sample LF05-19CWG03. The results for the herbicides 2,4-D, 2,4,5-TP, and 2,4,5-T and the organophosphorus pesticide disulfoton are rejected (R-qualified) in samples LF05-19CWG03 and WP07-10CWG03. The orthophosphate result (reported as phosphorus) is rejected (R-qualified) in sample WHGLTA003WG03. The technical rationale for rejection of these results is described in the following sections.

The Method SW8260A VOC analyses for the Appendix IX samples were performed using a 5-milliliter (mL) rather than a 25-mL purge. This resulted in elevated practical quantitation limits (PQLs) for many VOC analytes in samples LF05-19CWG03, and WP07-19CWG03. As a result, these POLs failed to meet the PQL requirements stated in Section 7.0 the Basewide QAPP. The PQLs for the VOCs associated with only the Appendix IX list were not affected and are in accordance with the PQLs listed in Appendix A of the Basewide QAPP.

The remaining Landfill Area groundwater data were usable with qualification as described below.

Alkalinity (as $CaCO_3$) - The data are usable without qualification.

Sulfide - The data are usable without qualification.

Dissolved Gases - The methane results in samples LF05-19CWG03, USGS07TWG03, WHGLTA003WG03, DUP01-WG03, and WHGLTA004WG04 are raised to the PQL and qualified "U" due to contamination in the method blank, equipment blank, and trip blank.

ICP Metals - The data are usable without qualification.

ICP/MS Metals - Copper, lead, and manganese in sample LF05-19CWG03 and copper and lead in sample WP07-10CWG03 are affected by contamination in the equipment blank; however, these results are reported below the PQL. Each analyte result is raised to the applicable PQL and qualified "U."

Cadmium, chromium, copper, and nickel displayed high percent recoveries in an interference check sample (ICS). This ICS is associated with samples LF05-19CWG03 and WP07-10CWG03. The cadmium and chromium results for the associated samples are non-detects and are unaffected.

The positive copper results in the associated samples remain qualified due to blank contamination as described above. Nickel is reported below the PQL in both associated samples and remains qualified with an "F" flag.

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Mercury - The mercury data are usable without qualification.

BTEX - The toluene and xylene results in sample WHGLTA004WG03 are affected by contamination in either the associated equipment blank or trip blank. The results for both compounds are elevated to the associated PQL (5.0 micrograms per liter (μg/L)) and qualified "U" due to detections below the reporting limit. (The sample was diluted by a factor of 2.5.)

Organochlorine Pesticides/PCBs - Due to laboratory oversight, representative multicomponent compounds were not spiked into the LCS. Consequently, the following compounds are considered estimated and qualified "UJ" in samples LF05-19CWG03 and WP07-10CWG03: Aroclors 1016, 1221, 1232, 1242, 1248, 1254, and 1260; endrin ketone; heptachlor; kepone; chlordane; and toxaphene.

Organophosphorus Pesticides - Disulfoton results are rejected (R-qualified) in samples LF05-19CWG03 and WP07-10CWG03 due to a poor recovery in the LCS.

Herbicides - The results for the herbicides 2,4-D, 2,4,5-TP, and 2,4,5-T are rejected (R-qualified) in samples LF05-19CWG03 and WP07-10CWG03 due to poor recoveries in the LCS.

VOCs - The bromoform and 1,2-dibromo-3-chloropropane results are rejected (R-qualified) in sample LF05-19CWG03 due to high percent differences in an associated continuing calibration.

The acetone result in sample WP07-10CWG03 is affected by contamination in the associated equipment blank. Acetone is reported below the PQL in this sample; the result is raised to the PQL of 20 μg/L and qualified "U."

SVOCs - The data are usable without qualification.

Dioxins and Furans - The data are usable without qualification.

Cyanide - The data are usable without qualification.

Inorganic Anions - The fluoride result is rejected (R-qualified) in sample USGS07TWG03 due to a low recovery in the calibration standard. The orthophosphate result is rejected (R-qualified) in sample WHGLTA003WG03 due to a high recovery in an associated continuing calibration standard.

The holding times were exceeded by 1 day for the nitrate, nitrite, and orthophosphate analysis of sample WHGLTA003WG03. Because the results are considered estimated concentrations, the nitrite result is qualified "UJ," and nitrate result is qualified "J." The orthophosphate result remains rejected due to the high calibration recovery as discussed above.

TOC - The TOC result for sample WHGLTA003WG03 is qualified "U," and the TOC results for samples USGS07TWG03, DUP01-WG03, and WHGLTA004WG03 are raised to the PQL of 1.0 mg/L and qualified "U" due to contamination in the associated calibration and equipment blanks.

4.5.2 East Area Groundwater

432 57

Twenty-four groundwater samples and three field duplicates were collected from the East Area and analyzed for one or more of the following parameters: alkalinity; sulfide; ethane, ethene and methane (dissolved gases); metals by ICP and ICP/MS, mercury; BTEX; organochlorine pesticides/PCBs; organophosphorus pesticides; herbicides; VOCs; SVOCs; dioxins and furans; cyanide; inorganic anions; and TOC.

The potassium result is rejected (R-qualified) in sample ST14-02WG03. The results for the herbicides 2,4-D, 2,4,5-TP, and 2,4,5-T; and the organophosphorus pesticide disulfoton are rejected (R-qualified) in samples LF01-1DWG03, SD13-01WG03, SD13-02WG03, SD13-04WG03, SD13-06WG03, and ST14-W31WG03. The bromoform and 1,2-dibromo-3-chloropropane results are rejected (R-qualified) in sample SD13-06WG03. The technical rationale for rejection of these results is discussed in the following sections.

The Method SW8260 VOC analyses for the Appendix IX samples were performed using a 5-mL rather than a 25-mL purge. This resulted in elevated PQLs for many VOC analytes in samples LF01-1DWG03, SD13-01WG03, SD13-02WG03, SD13-04WG03, and SD13-06WG03, which failed to meet the PQL requirements in Section 7.0 the Basewide QAPP. The PQLs for the VOCs associated with the Appendix IX list were not affected and are in accordance with the PQLs listed in Appendix A of the Basewide QAPP.

The remaining East Area groundwater data are usable with qualification as described below.

Alkalinity - The data are usable without qualification.

Sulfide - The data are usable without qualification.

Dissolved Gases - The methane results in samples DUP03-WG03, ST14-04WG03, ST14-28WG03, DUP05-WG03, and ST14-26WG03 are affected by contamination in the method blank, equipment blank, and trip blank. Results reported below the PQL are raised to the reporting limit of 0.50 μg/L and qualified "U."

The positive ethane results in samples DUP04-WG03 and ST14-02WG03 received "J" qualifiers due to poor precision between the two analytical results. Methane and ethane exhibited poor precision between field duplicate samples DUP03-WG03 and ST14-04WG03 and are qualified "UJ" (methane results) and "J" (ethane results). Note that although the methane results for both of these samples are qualified as "U" for blank contamination, there was such a wide disparity between the original results that the data validator judged the "UJ" qualifier to be appropriate.

ICP Metals - The potassium result is rejected (R-qualified) in sample ST14-02WG03 due to a low recovery in the calibration standard.

The sodium results for samples DUP05-WG03 and ST14-26WG03 received "U" qualifiers due to possible inadequate decontamination of field sampling equipment (indicated by the presence of sodium in the associated equipment blank).

Serial dilutions were performed on samples ST14-24WG03 and ST14-W21WG03. Sodium exhibited a high percent difference between the initial sample result and the serial dilution. All East Area samples analyzed for metals by ICP (LF01-1DWG03, MW-10WG03, DUP04-WG03, ST14-02WG03, ST14-14WG03, ST14-24WG03, DUP05-WG03, ST14-26WG03, ST14-W18WG03, and ST14-W21WG03) have sodium detections qualified "J" or sodium non-detections qualified "UJ."

ICP/MS Metals - One or more of the following analytes (antimony, chromium, cobalt, copper, lead, manganese, nickel, and zinc) were detected in either the calibration or equipment blanks associated with samples LF01-1DWG03, MW-10WG03, SD13-01WG03, SD13-04WG03, SD13-06WG03, DUP04-WG03, ST14-02WG03, ST14-14WG03, ST14-24WG03, DUP05-WG03, ST14-26WG03 ST14-W18WG03, ST14-W21WG03, and ST14-W31WG03. Associated sample results detected below the PQL are raised to their respective reporting limits and qualified "U."

A continuing calibration blank associated with samples DUP04-WG03, ST14-02WG03, and ST14-24WG03 was contaminated with selenium. Since these results are reported below the PQL, selenium is raised to the PQL of 0.80 mg/L and qualified "U" in each affected sample.

An MS/MSD was performed on sample ST14-26WG03. Low percent recoveries were observed for chromium, cobalt, copper, manganese, nickel, selenium, silver, and vanadium. The MS/MSD is associated with all samples in the East Area analyzed for metals by ICP/MS (LF01-1DWG03, MW-10WG03, SD13-01WG03, SD13-02WG03, SD13-04WG03, SD13-06WG03, DUP04-WG03, ST14-02WG03, ST14-14WG03, ST14-24WG03, DUP05-WG03, ST14-26WG03, ST14-W18WG03, ST14-W21WG03, and ST14-W31WG03). All detections of affected metals are qualified "J" in the associated samples; all non-detections of affected metals are qualified "UJ" in the associated samples.

Cadmium, chromium, and nickel displayed high recoveries in the interference check sample; however, the analytical results in the associated samples (LF01-1DWG03, MW-10WG03, SD13-01WG03, SD13-02WG03, SD13-04WG03, SD13-06WG03, DUP04-WG03, ST14-02WG03, ST14-14WG03, DUP05-WG03, ST14-26WG03, ST14-W18WG03, ST14-W21WG03 and ST14-W31WG03) were previously qualified. As a result, no qualification is applied due to the ICS outliers.

Mercury - The mercury data are usable without qualification.

BTEX - The toluene results in samples BGSMW05WG03 and BGSMW06WG03 are affected by contamination in the associated equipment and trip blanks. Both sample results are reported below the PQL; therefore, toluene is elevated to its PQL of 2.0 μg/L and flagged "U" in both samples.

The poor precision observed between primary and secondary column result resulted in the following qualifications: sample MW-10WG03 received "J" qualifiers for tert-butyl methyl ether and 1,4-dichlorobenzene; sample MW-1WG03 received "J" qualifiers for toluene and tert-butyl

methyl ether; and sample ST14-W16WG03 received a "J" qualifier for benzene. The toluene result in sample BGSM03WG03 is affected by a high percent difference between the initial and confirmation column results; however, toluene is detected below the PQL and remains qualified with an "F" flag (dilution factor of 100; PQL = 2000 μg/L).

Pesticides/PCBs - Due to a laboratory oversight, representative multicomponent compounds were not spiked into the LCS. Consequently, the following compounds are considered estimated and qualified "UJ" in samples LF01-1DWG03, SD13-01WG03, SD13-02WG03, SD13-04WG03, SD13-06WG03, and ST14-W31WG03: Aroclors 1016, 1221, 1232, 1242, 1248, 1254, and 1260; endrin ketone; heptachlor; kepone; chlordane; and toxaphene.

Organophosphorus Pesticides - Disulfoton results are rejected (R-qualified) in samples LF01-1DWG03, SD13-01WG03, SD13-02WG03, SD13-04WG03, SD13-06WG03, and ST14-W31WG03 due to a poor recovery in the LCS.

Herbicides - The results for the herbicides 2,4-D, 2,4,5-TP, and 2,4,5-T are rejected (R-qualified) in samples LF01-1DWG03, SD13-01WG03, SD13-02WG03, SD13-04WG03, SD13-06WG03, and ST14-W31WG03 due to low recoveries in the LCS.

In addition, samples LF01-1DWG03, SD13-01WG03, SD13-04WG03, and SD13-06WG03 displayed poor surrogate recoveries; however, the herbicide data remain rejected from the LCS failure as stated above.

VOCs - The bromoform and 1,2-dibromo-3-chloropropane results are rejected (R-qualified) in sample SD13-06WG03 due to percent difference excedences in an associated continuing calibration check.

The 1,2,3-trichlorobenzene result in sample ST14-26WG03 is affected by contamination in the associated trip blank. Since 1,2,3-trichlorobenzene is reported below the PQL, the result is raised to the reporting limit of 2.0 μg/L and flagged "U." The acetone results in samples LF01-1DWG03 and SD13-06WG03 are affected by contamination in the associated equipment and trip blanks. Acetone is reported below the PQL, and the results are raised to the reporting limit (20 μg/L) and flagged "U."

Poor precision was observed for cis-1,2-dichloroethene and naphthalene between field duplicate samples DUP05-WG03 and ST14-26WG03. Sample DUP05-WG03 received "UJ" qualifiers for each compound. The cis-1,2-dichloroethene and naphthalene results in sample ST14-26WG03 retain their "F" flags due to values detected below the reporting limit.

SVOCs - Due to a laboratory error in the initial preparation, the technical holding time for semivolatile organic analysis was exceeded for sample SD13-04WG03; therefore, the positive results in this sample are qualified as estimated and qualified "J" (dibenzofuran and 2-methylnaphthalene), and non-detect results in this sample are qualified "UJ."

Dioxins and Furans - The data are usable without qualification.

Cyanide - The data are usable without qualification.

Inorganic Anions - The orthophosphate results in samples SD13-04WG03, ST14-24WG03, DUP04-WG03, and ST14-W16WG03 are affected by contamination in the laboratory method blank. These results are reported below the PQL; therefore, the orthophosphate result is raised to the PQL of 1.0 mg/L and qualified "U" in each sample.

TOC - Samples DUP03-WG03, ST14-04WG03, ST14-14WG03, ST14-24WG03, DUP05-WG03, ST14-26WG03, and ST14-28WG03 received "U" qualifiers for TOC due to contamination in the associated equipment blank.

4.5.3 Flightline Area Groundwater

Eleven groundwater samples and one field duplicate were collected from the Flightline Area and analyzed for one or more of the following parameters: alkalinity; ethane, ethene, and methane (dissolved gases); total petroleum hydrocarbons (TPH); metals by ICP and ICP/MS; mercury; VOCs; polynuclear aromatic hydrocarbons; inorganic anions; and TOC.

The fluoride is rejected (R-qualified) in sample GMI-22-02MWG03. The orthophosphate result is rejected (R-qualified) in sample GMI-22-06MWG03 as discussed in the following sections. The remaining Flightline Area groundwater data are usable with qualification as described below.

Alkalinity - The data are usable without qualification.

Dissolved Gases - The methane results in samples GMI-22-02MWG03, GMI-22-03MWG03, and MW-53WG03 are affected by contamination in the method, equipment, and trip blanks. These results are reported below the PQL; therefore, methane is raised to the PQL of 0.50 μg/L and qualified "U" in each sample.

TPH (extractable) - The data are usable without qualification.

ICP Metals - The data are usable without qualification.

ICP/MS Metals - Chromium, cobalt, copper, lead, nickel, and zinc were detected in the equipment blank associated with samples GMI-22-05MWG03, DUP02-WG03, and USGS04TWG03. Analytes detected below the PQL are raised to their respective reporting limits and qualified "U." (Zinc is reported below the PQL in sample USGS04TWG03; hence, zinc is raised to the PQL of 0.020 μg/L and flagged "U.")

Mercury - The data are usable without qualification.

VOCs - The data are usable without qualification.

TPH - The data are usable without qualification.

Inorganic Anions - The fluoride result is rejected (R-qualified) in sample GMI-22-02MWG03, and orthophosphate is rejected (R-qualified) in sample GMI-22-06MWG03 due to poor recoveries in associated continuing calibration standards.

The orthophosphate results in samples GMI-22-02MWG03 and GMI-22-03MWG03 are affected by contamination in the associated method blank. These results are reported below the PQL; therefore, orthophosphate is raised to the PQL of 1.0 mg/L and qualified "U" in both samples.

The holding times were exceeded by 1 day for the nitrate, nitrite, and orthophosphate analyses of sample GMI-22-06MWG03. Because the results are considered estimated, the nitrite non-detection is qualified "UJ." Orthophosphate remains rejected from the calibration outlier as discussed above, and the nitrate result retains an "F" qualifier due to a detection below the PQL.

TOC - The TOC results in samples GMI-22-02MWG03, GMI-22-04MWG03, GMI-22-06MWG03, LSA1628-3WG03, and MW-53WG03 are qualified "U" due to contamination in either an associated calibration, method, or equipment blank. Results reported below the PQL are raised to the reporting limit of 1.0 mg/L and qualified "U."

4.6 CORRECTIVE ACTION

Although the overall project completeness goal of 90 percent was achieved, there are several QC problems with the analytical data as reported by the laboratory for which the corrective actions specified in the Basewide QAPP were not performed. There are also cases where the analytical data quality is affected by failure of the laboratory to adhere to the requirements of the Basewide QAPP.

The results for herbicides and for the organophosphorus pesticide disulfoton were rejected in all Appendix IX samples due to low recoveries in associated LCSs. The affected samples were not reprepared and reanalyzed. All VOC samples submitted for Appendix IX analytes had elevated PQLs for many compounds (those Appendix IX compounds listed in Table 7.2.13-1 of the Basewide QAPP) due to the laboratory using an incorrect purge volume to conduct these analyses. The LCSs associated with multicomponent organochlorine pesticides and PCBs were not spiked with representative check compounds as specified in the Basewide QAPP.

As a consequence of these procedural deficiencies, those monitoring wells that were sampled for Appendix IX analytes in the January 1998 sampling event will be resampled for herbicides, organochlorine pesticides/PCBs, organophosphorus pesticides, and those VOCs listed in Table 7.2.13-1 of the Basewide QAPP (HydroGeoLogic, 1997a) during the April 1998 sampling event. The laboratory will perform the reanalyses for these parameters at its own expense (with the exception of those VOC analyses, which would have been required for April 1998 samples regardless of previous results).

TAB

Section 5.0

5.0 FIELD AND ANALYTICAL RESULTS

Well inspection observations, water level measurements, and field and analytical analyses results for the January 1998 basewide quarterly sampling event are presented in the following section.

5.1 WELL INSPECTION

The 246 monitoring wells screened in the Terrace Alluvium and selected for inspection in January 1998 were located between January 13 and January 17, 1998. During the inspection, the water level and the integrity and condition of each monitoring well were noted in a field log book. A copy of the field notes for this sampling event, copies of the groundwater field sampling data sheets, and a summary table of the field observations are provided in Appendix A of this document. A number of changes have occurred in the time between the selection of these wells during preparation of the pre-draft GSAP (HydroGeoLogic, 1997b) and the completion of the field sampling event, and are summarized below:

- CH_2M Hill installed the proposed C-series wells; however, only 14 were installed instead of the originally planned 16. The wells are now designated WCHMTA001 through WCHMTA014, and their surveyed locations are shown on Figure 3.1.

- The PPW-series wells were not installed as anticipated in time for sampling during the January 1998 event. These wells are being installed in early April 1998 and should be in place for the April 1998 basewide quarterly sampling event. The wells will be designated WHGLTA005, WHGLTA006, WHGLTA007, and WHGLTA008. The proposed locations are shown on Figure 3.1.

- Two existing monitoring wells, HM-110 and HM-112, were added to the list of wells selected for inspection and water level measurement. These wells were inadvertently excluded from the original list provided in the pre-draft GSAP (HydroGeoLogic, 1997b).

- A number of wells were either not found, found to be missing or destroyed, found to be abandoned, or found to be mislabeled as wells. A summary of these discoveries is included in Table 5.1. The table also presents wells that will be deleted from the list for future inventories and wells that will remain on the list in anticipation of being located in the future for inspection and possible sampling.

5.2 GROUNDWATER ELEVATIONS

The GSAP proposed 246 wells that are screened in the Terrace Alluvium for water elevation measurement. In addition, four monitoring wells screened in the Paluxy Aquifer (USGS01P, USGS05P, USGS06P, and USGS07P) were inspected, and groundwater levels were obtained. Of the 246 wells selected for measurement in the Terrace Alluvium, 4 wells (WHGLTA005, WHGLTA006, WHGLTA007, and WHGLTA008) had not yet been installed and 20 were not measured for the reasons summarized in Table 5.1. In addition, 28 groundwater elevations could

Table 5.1
Wells Not Gauged in January 1998

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Well	Reason for Not Gauging	Action
BSS-A	Covered by dumpster	Try to gauge in July
GMI-22-01M	Not found	Try to gauge in July
HM-111	Not found	Try to gauge in July
HM-112	Not found	Try to gauge in July
HM-122	Not found	Try to gauge in July
HM-125	Not found	Try to gauge in July
LF04-01	Not on map	Try to gauge in July
LF04-03	Not a monitoring well	Remove from list
LF05-14	Unable to remove cap	Try to gauge in July
MW-1	Unable to locate; new sewer pipe is now in that location	Remove from list; SAV-2 chosen as the replacement well for LTM requirements
MW-13	Not found	Try to gauge in July
MW-1A	Destroyed	Remove from list
PI-U9	Filled with silicon compound	Remove from list
RW-1	Not on map	Try to gauge in July
TREE	Not a well	Remove from list
TREE	Not a well	Remove from list
USGS02T	Destroyed	Remove from list
USGS05P	Not found	Try to gauge in July
WCHMHTA012	Not on map in new location	Try to gauge in July
WITCTA036	Free product sock in well	Try to gauge in July

not be calculated because top of casing elevations were unavailable. In summary, from the 246 selected wells, 195 groundwater elevations were obtained.

A total of 58 new wells have been installed at NAS Fort Worth JRB since the last GSAP (CH_2M Hill, 1997) was prepared:

- 7 new wells in the BGS-series at AOC 1 (Base Gas Station/Base Service Station)
- 14 new wells in the WCHMH-series at AOC 2 (TCE plume)
- 34 new wells in the WITC-series at SWMU 66 (Sanitary Sewer System)
- 3 new wells in the WHGL-series in the Landfill Area

Groundwater elevations were determined from water level measurements taken at 56 of these new monitoring wells. The addition of these new wells, distributed across the site, greatly enhances the ability to construct groundwater contours.

Groundwater elevations from the 195 wells screened in the Terrace Alluvium, provided in Table 5.2, were used to construct the potentiometric map for January 1998, presented as Figure 5.1. In general, the regional groundwater flow direction is from west to east. Groundwater elevation varied from 616 feet above NGVD along the western border to 535 feet NGVD in the eastern portion of the site. The head gradients toward the eastern end of the site are approximately double those on the western portion. The groundwater gradient ranges from approximately 0.05 ft/ft to 0.003 ft/ft.

Some local variations in groundwater direction are reflected on the potentiometric maps. The influence of the pump and treat system at Waste Pile 7 can be seen in the contours (i.e., spread of the contours in the area of the system) in the Landfill Area where flow may be influenced by the drawdown from the recovery wells. Monitoring well data on groundwater elevations in the central portion of Landfill Area indicate that the local groundwater flow is to the northeast towards the Farmers Branch Creek. Monitoring data from the East Area suggest that the local flow is from west to east. However, contours in the southern portion of the East Area indicate possible flow bifurcation toward Farmer Branch Creek and West Fork of the Trinity River, which is likely due to the influence of the river in the area.

Groundwater elevations from January 1998 (Figure 5.1) were compared to those obtained in July 1997 (Figure 5.2). Groundwater elevations in most of the wells varied by less than 2 feet from July 1997 to January 1998, although in some wells the January elevation was higher and in some wells the July elevation was higher. The average increase in groundwater elevation from July 1997 to January 1998 was approximately 0.2 feet.

5.3 ANALYTICAL RESULTS

Of the 46 wells proposed for analytical sampling in the GSAP, 40 were sampled during the January 1998 event. Four wells proposed for installation downgradient of SWMUs 64, 67, and

Table 5.2
Water Table Elevations for July 1997 and January 1998

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Well	Coordinates		Top of Casing Elevation	Groundwater Elevation	
	Easting	Northing		July 1997	January 1998
15B	2301032.08	6963338.735	567.59	559.62	559.73
17I	2299626.674	6963642.662	578.13	568.35	568.35
17J	2299584.431	6963780.053	579.94	569.83	569.62
17K	2299799.209	6963578.343	575.47	566.73	566.91
17L	2299741.167	6963812.735	577.32	567.97	568.06
17M	2300037.62	6963761.95	574.28	--	566.29
BGSMW01	2299511	6964916.44	578.64	--	572.39
BGSMW02	2299618.19	6965006.79	577.57	--	567.18
BGSMW03	2299690.06	6965067.5	576.72	--	567.08
BGSMW04	2299589.5	6965084.53	578.49	--	567.54
BGSMW05	2299961.23	6965150.67	571.66	--	561.68
BGSMW06	2299910.09	6964981.31	576.51	--	566.95
BGSMW07	2299737.83	6964990.68	574.88	--	567.80
BSS-A	2300115.431	6965491.098	566.49	561.88	--
BSS-B	2300091.9	6965797.6	569.40	560.20	560.69
FT08-11A	2295876.4	6962318.1	608.15	600.17	599.00
FT08-11B	2295928.5	6962030.9	608.05	600.39	600.50
FT09-12A	2295439.2	6960549.8	635.38	621.19	620.39
FT09-12B	2295697.4	6960709.3	627.36	598.42	597.92
FT09-12C	2295771.5	6960590.3	627.86	598.01	597.48
FT09-12D	2295743.4	6960887.6	627.26	598.72	598.33
FT09-12E	2295821.2	6960701.1	627.34	598.07	597.57
GMI-04-01M	2296724.6	6960930.7	613.79	595.22	594.93
GMI-22-01M	2297688.4	6965108.03	606.62	--	--
GMI-22-02M	2296187.4	6966632.9	619.13	610.12	610.23
GMI-22-03M	2298539.4	6966219.9	608.03	587.83	587.84
GMI-22-04M	2297340.5	6967250.5	610.70	591.61	591.47
GMI-22-05M	2299432.1	6966940.3	584.28	575.08	574.18
GMI-22-06M	2298186.6	6967004.5	606.84	589.06	588.99
GMI-22-07M	2298322.5	6969018.7	605.66	591.48	590.65
GMI-22-08M	2298971.5	6970323.6	606.94	592.18	592.05
HM-110	2293163.2	6963667.5	637.33	--	615.33
HM-111	2293265.658	6963623.549	636.49	614.07	--
HM-112	2293141.648	6964217.563	638.06	--	--
HM-114	2294352	6963912.1	627.77	--	612.13
HM-116	2294283.7	6966411.4	634.06	612.95	613.18
HM-117	2294274.3	6967355.4	633.32	613.27	613.42
HM-118	2294780.5	6968035.2	626.23	612.48	612.73
HM-119	2294271.8	6968726	625.04	613.28	613.40
HM-120	2295343.2	6969489	616.84	614.02	615.29
HM-121	2295279.2	6967390.2	627.66	610.54	610.70
HM-122	2295260.535	6962891.108	619.44	602.37	--
HM-123	2295272.6	6961638.5	624.85	601.12	601.23

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Table 5.2 (continued)
Water Table Elevations for July 1997 and January 1998

Well	Coordinates		Top of Casing Elevation	Groundwater Elevation	
	Easting	Northing		July 1997	January 1998
HM-124	2295223.3	6963957.8	623.26	611.40	610.70
HM-125	2295220.29	6965893.458	629.37	613.19	--
HM-126	2294300.2	6963121	622.99	--	611.56
HM-127	2294853.3	6961588.5	624.04	586.21	602.61
ITMW-01T	2298967.14	6961062.05	602.77	--	592.11
LF01-1A	2301249.8	6964466.4	570.27	--	541.11
LF01-1B	2301057.006	6964700.806	560.18	550.44	551.62
LF01-1C	2301376.05	6964438.037	562.15	548.74	549.79
LF01-1D	2301412.716	6964288.176	563.91	549.73	550.71
LF01-1E	2301174.3	6964606.025	562.11	548.95	549.92
LF03-3D	2293269.12	6962056.65	625.25	--	613.04
LF04-01	2295382.891	6961027.715	629.16	600.17	--
LF04-02	2296309.1	6961113.1	623.44	596.31	595.74
LF04-03	2296310.26	6961069.03	623.25	--	--
LF04-04	2297165.6	6960941.6	611.95	592.57	593.97
LF04-10	2297078.9	6960411.8	626.47	595.21	594.59
LF04-4A	2295852.984	6960300.484	625.84	617.65	617.57
LF04-4B	2296274.338	6960323.911	619.95	602.47	602.53
LF04-4C	2296593.501	6960604.002	612.96	595.93	595.30
LF04-4D	2296416.385	6960831.587	615.13	596.35	595.73
LF04-4E	2296410.998	6961036.036	618.49	596.20	595.65
LF04-4F	2296058.767	6961061.85	625.28	597.62	596.97
LF04-4G	2296658.929	6961224.127	619.75	594.70	594.61
LF04-4H	2296721.26	6960928.75	613.43	--	594.93
LF05-01	2294577.8	6962728.3	621.88	604.55	605.24
LF05-02	2295278.9	6962653.1	622.61	599.16	599.57
LF05-14	2296543.61	6961562.305	611.79	594.96	--
LF05-18	2297075.4	6961555.6	611.71	593.56	593.22
LF05-19	2297461.4	6961239.9	606.05	592.79	592.63
LF05-5A	2295580.898	6961438.557	623.00	600.32	600.29
LF05-5B	2296078.248	6961901.555	597.17	593.73	593.71
LF05-5C	2295993.73	6961720.051	608.56	598.94	598.80
LF05-5D	2295757.035	6961740.466	611.40	601.92	600.82
LF05-5E	2295550.36	6961177.867	626.70	600.18	601.04
LF05-5F	2296336.36	6961288.64	618.95	--	595.08
LF05-5G	2296536.324	6961581.317	615.28	594.92	594.54
LF05-5H	2296343.797	6961735.963	610.61	595.43	595.37
LSA1628-1	2297802.1	6967936.2	601.67	--	591.97
LSA1628-2	2297846.5	6967943.3	601.93	--	592.20
LSA1628-3	2297791.257	6967993.079	601.73	592.57	592.02
MW-1	2300345.606	6965853.592	560.64	--	--
MW-10	2300541.575	6965836.203	558.85	549.25	549.42

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Table 5.2 (continued)
Water Table Elevations for July 1997 and January 1998

Well	Coordinates		Top of Casing Elevation	Groundwater Elevation	
	Easting	Northing		July 1997	January 1998
MW-11	2300791.955	6965706.661	558.17	536.04	534.88
MW-11A	2297057.278	6965810.342	612.17	590.11	589.91
MW-12	2300142.021	6966149.318	559.62	554.65	555.01
MW-12A	2295756.2	6961041.92	--	--	--
MW-13	2295736.39	6961035.09	--	--	--
MW-18	2295389.85	6963519.14	--	--	--
MW-19	2295368.85	6963512.61	--	--	--
MW-1A	2301542.45	6970397.32	--	--	--
MW-2	2300555.919	6965704.96	557.55	549.63	550.49
MW-20	2296878.439	6963365.698	611.38	591.95	592.02
MW-21	2296841.863	6963382.211	--	--	--
MW-3	2299750.342	6965242.674	576.48	566.22	566.33
MW-36	2299356.658	6965034.802	--	--	--
MW-37	2299384.988	6965061.349	590.53	581.93	581.81
MW-38	2298153.077	6965981.092	604.11	588.61	588.53
MW-39	2298171.115	6965999.012	--	--	--
MW-4	2300090.055	6965802.687	--	--	--
MW-40	2298224.978	6966053.097	--	--	--
MW-41	2298204.568	6966088.853	--	--	--
MW-42	2298144.896	6966031.035	--	--	--
MW-48	2295643.543	6968478.952	619.33	610.23	610.53
MW-49	2295623.167	6968470.498	--	--	--
MW-5	2300138.608	6965803.452	563.69	560.63	560.35
MW-50	2295621.7	6968528.648	--	--	--
MW-51	2295639.958	6968536.471	--	--	--
MW-52	2296182.561	6964355.172	--	--	--
MW-53	2296200.241	6964378.184	616.75	602.04	606.89
MW-56	2296055.932	6968789.529	614.32	606.95	607.00
MW-57	2297112.98	6967217.16	613.37	601.66	599.61
MW-57B	2296034.177	6968836.004	613.78	606.76	606.76
MW-58	2297175.216	6966950.884	--	--	--
MW-59	2297160.82	6966970.471	--	--	--
MW-6	2300173.696	6965734.917	562.87	560.82	561.21
MW-7	2300055.237	6965967.108	567.37	559.87	559.88
MW-8	2300491.789	6965584.178	557.04	552.76	553.62
MW-9	2300329.174	6966001.958	559.54	553.93	554.26
MW-IT-02T	2292594	6965339	647.09	--	615.63
MW1-16	2300066.63	6963755.16	--	--	--
MWMTAC-001	2296520.35	6959115.8	645.04	--	617.73
OT-15C	2300947.512	6963316.339	564.25	556.33	556.56
P5	2299737.38	6965287.56	--	--	--
PI-U9	2300053.58	6965632.91	--	--	--

Table 5.2 (continued)
Water Table Elevations for July 1997 and January 1998 432 69

Well	Coordinates		Top of Casing Elevation	Groundwater Elevation	
	Easting	Northing		July 1997	January 1998
RW-1	2296721.472	6960929.874	--	--	--
SAV-1	2300298.887	6965776.357	--	--	--
SAV-2	2300280.415	6965807.583	--	--	--
SD13-01	2300621.423	6963391.743	573.09	561.41	562.72
SD13-02	2300753.03	6963487.702	573.28	560.65	561.60
SD13-03	2300699.63	6963362.921	571.41	560.75	562.94
SD13-04	2300770.955	6963361.521	569.08	559.98	561.05
SD13-05	2300775.292	6963904.275	571.54	562.72	563.16
SD13-06	2300907.827	6963164.35	557.68	547.77	548.31
SD13-07	2301009.342	6963167.041	560.44	543.86	543.66
SPOT35-1	2296878.532	6966202.395	613.59	591.45	591.33
SPOT35-2	2296854.203	6966175.289	613.64	592.68	592.60
SPOT35-3	2296850.617	6966108.748	--	--	--
SPOT35-4	2296777.882	6966174.924	612.74	592.80	592.69
SPOT35-5	2296846.726	6966020.036	614.09	592.74	592.68
SPOT35-6	2296634.627	6966234.614	--	--	--
SPOT35-7	2296508.592	6966534.791	616.41	609.89	610.05
ST14-01	2300090.8	6963295.3	575.95	562.83	563.93
ST14-02	2300091.7	6963511.6	575.51	564.24	564.99
ST14-03	2299891.6	6964080	576.68	568.70	568.93
ST14-04	2300345.3	6963642.7	575.61	563.91	564.92
ST14-14	2299735.22	6964309.76	--	--	--
ST14-24	2299084.2	6964017.889	594.14	583.39	583.86
ST14-25	2299065.36	6964563.76	--	--	--
ST14-26	2299557.04	6964593.25	--	--	--
ST14-27	2300212.35	6964257.94	--	--	--
ST14-28	2300495.99	6963728.32	--	--	--
ST14-29	2300512.775	6963527.787	571.45	562.57	563.74
ST14-30	2300466.182	6963211.534	566.87	561.67	562.52
ST14-W05	2299093.85	6963726.062	593.63	585.83	585.89
ST14-W06	2299330.792	6963806.563	581.42	573.13	573.00
ST14-W07	2299393.809	6963614.609	579.96	569.76	569.80
ST14-W08	2299479.591	6964323.981	580.54	571.29	571.36
ST14-W09	2299550.097	6963471.685	575.54	568.65	569.01
ST14-W10	2299730.125	6963949.34	573.98	568.93	569.08
ST14-W11	2299657.972	6964128.603	576.31	570.46	570.61
ST14-W12	2299581.062	6963953.266	575.52	571.19	571.34
ST14-W13	2299776.442	6963695.163	574.49	567.54	567.38
ST14-W15	2299923.113	6963315.787	573.47	563.63	564.26
ST14-W16	2300128.304	6964064.608	573.62	566.55	567.08
ST14-W18	2300162.474	6963906.725	573.79	565.71	567.61
ST14-W19	2300203.607	6963699.799	573.31	564.53	564.57

Table 5.2 (continued)
Water Table Elevations for July 1997 and January 1998 432 70

Well	Coordinates		Top of Casing Elevation	Groundwater Elevation	
	Easting	Northing		July 1997	January 1998
ST14-W20	2300275.355	6964009.08	573.48	565.13	565.72
ST14-W21	2300242.02	6963417.822	572.88	563.33	564.53
ST14-W22	2301016.385	6963649.635	571.30	561.74	562.16
ST14-W23	2300410.368	6962949.056	565.60	560.21	563.19
ST14-W31	2300830.861	6963549.672	571.23	561.22	561.62
ST14-W32	2300815.069	6963239.017	--	--	--
TREE	2296603	6960929.688	--	--	--
TREE	2296542	6960604	--	--	--
USGS01P[1]	2297665.1	6970401.4	604.83	574.39	574.10
USGS01T	2297661.3	6970397.8	604.78	594.43	594.28
USGS02T	2300335.041	6970326.57	604.21	--	--
USGS03T	2300610	6968704.7	575.02	571.42	571.92
USGS04T	2299178.7	6968773	604.92	588.06	587.38
USGS05P[1]	2299736.772	6965287.814	576.77	538.99	--
USGS06P[1]	2297558.4	6963786.2	606.71	548.79	548.76
USGS06T	2297542.1	6963777.9	606.67	589.46	589.59
USGS07P[1]	2295250.6	6960165	632.10	545.26	546.10
USGS07T	2295246.5	6960182.5	632.43	624.24	624.14
W-153	2294096.2	6965106.3	631.57	612.96	612.71
WCHMHTA001	2293702.384	6966632.501	639.08	--	613.35
WCHMHTA002	2294818.468	6967545.100	631.32	--	612.31
WCHMHTA003	2295039.039	6967958.333	631.00	--	611.68
WCHMHTA004	2295041.059	6967949.303	631.25	--	611.69
WCHMHTA005	2295662.842	6967495.679	626.95	--	610.51
WCHMHTA006	2295671.903	6967494.615	626.73	--	610.47
WCHMHTA007	2295910.42	6967910.326	623.93	--	610.04
WCHMHTA008	2295862.693	6968694.421	622.85	--	610.20
WCHMHTA009	2296663.993	6968444.685	615.55	--	609.50
WCHMHTA010	2296660.061	6968440.059	615.35	--	609.48
WCHMHTA011	2297328.375	6969295.196	605.80	--	593.75
WCHMHTA012	2297691.142	6968645.437	605.85	--	592.36
WCHMHTA013	2300051.586	6967055.521	578.26	--	--
WCHMHTA014	2294337.637	6971208.882	619.11	--	608.40
WHGLTA002	2296111.39	6962377.91	608.52	--	597.17
WHGLTA003	2298029.84	6961043.88	614.22	--	593.14
WHGLTA004	2295760.62	6962943.38	614.35	--	597.97
WITCTA001	2296446.73	6969591.007	610.85	--	595.87
WITCTA002	2296135.475	6969258.49	613.36	--	609.69
WITCTA003	2297405.052	6969111.3	607.58	--	594.29
WITCTA004	2297490.47	6968938.831	606.62	--	593.99
WITCTA005	2298166.787	6968458.461	602.81	--	591.44
WITCTA006	2298261.857	6968425.939	602.76	--	591.15

Table 5.2 (continued)
Water Table Elevations for July 1997 and January 1998 432 71

Well	Coordinates		Top of Casing Elevation	Groundwater Elevation	
	Easting	Northing		July 1997	January 1998
WITCTA007	2298432.068	6968309.561	603.03	--	589.58
WITCTA008	2298030.119	6967939.663	600.62	--	592.96
WITCTA009	2298232.895	6967860.597	597.15	--	592.11
WITCTA010	2298752.182	6967693.534	600.31	--	586.45
WITCTA011	2297357.309	6967455.258	610.27	--	593.93
WITCTA012	2298224.392	6967348.773	599.93	--	590.29
WITCTA013	2297750.979	6967015.62	605.39	--	590.89
WITCTA014	2297417.505	6966903.565	611.74	--	591.56
WITCTA015	2298395.024	6966332.667	606.84	--	589.34
WITCTA016	2298061.326	6966238.285	607.85	--	589.65
WITCTA017	2299305.778	6967298.148	592.94	--	584.65
WITCTA019	2298838.013	6963107.247	600.82	--	586.85
WITCTA020	2296316.788	6963895.317	616.78	--	597.68
WITCTA021	2298718.156	6963794.398	604.19	--	589.02
WITCTA022	2298742.854	6963649.916	604.17	--	587.61
WITCTA024	2298956.02	6965971.777	604.86	--	588.37
WITCTA025	2299534.282	6966004.916	595.20	--	585.47
WITCTA026	2299480.089	6965456.85	584.37	--	578.97
WITCTA027	2299510.856	6965193.741	581.44	--	572.07
WITCTA028	2300621.253	6965160.619	558.11	--	554.60
WITCTA031	2299152.204	6964689.931	592.10	--	588.44
WITCTA032	2299195.636	6964500.665	587.37	--	581.04
WITCTA033	2300475.241	6964323.666	574.06	--	565.29
WITCTA034	2300951.486	6963956.683	571.95	--	564.27
WITCTA035	2299093.681	6963387.121	599.37	--	586.60
WITCTA036	6963181.649	2299629.281	578.57	--	--
WITCTA037	2297784.441	6963424.036	604.19	--	590.70
WITCTA039	2295415.407	6962339.771	619.47	--	603.11
WJETA530	2296533.87	6959546.93	639.39	--	609.88
WJETA531	2295893.78	6958908.59	644.17	--	628.83
WJETA534	2296341.54	6958941.15	647.38	--	622.99
WJETA535	2296794.44	6959722.27	634.61	--	605.43
WP07-10A	2295807.3	6961290	626.50	599.79	599.61
WP07-10B	2296040.4	6961277.5	624.22	597.12	597.34
WP07-10C	2296062.4	6961575.6	617.18	597.98	597.55

[1] These wells are screened in the Paluxy Aquifer. The groundwater elevations obtained at these wells are not used to construct the groundwater contour maps.

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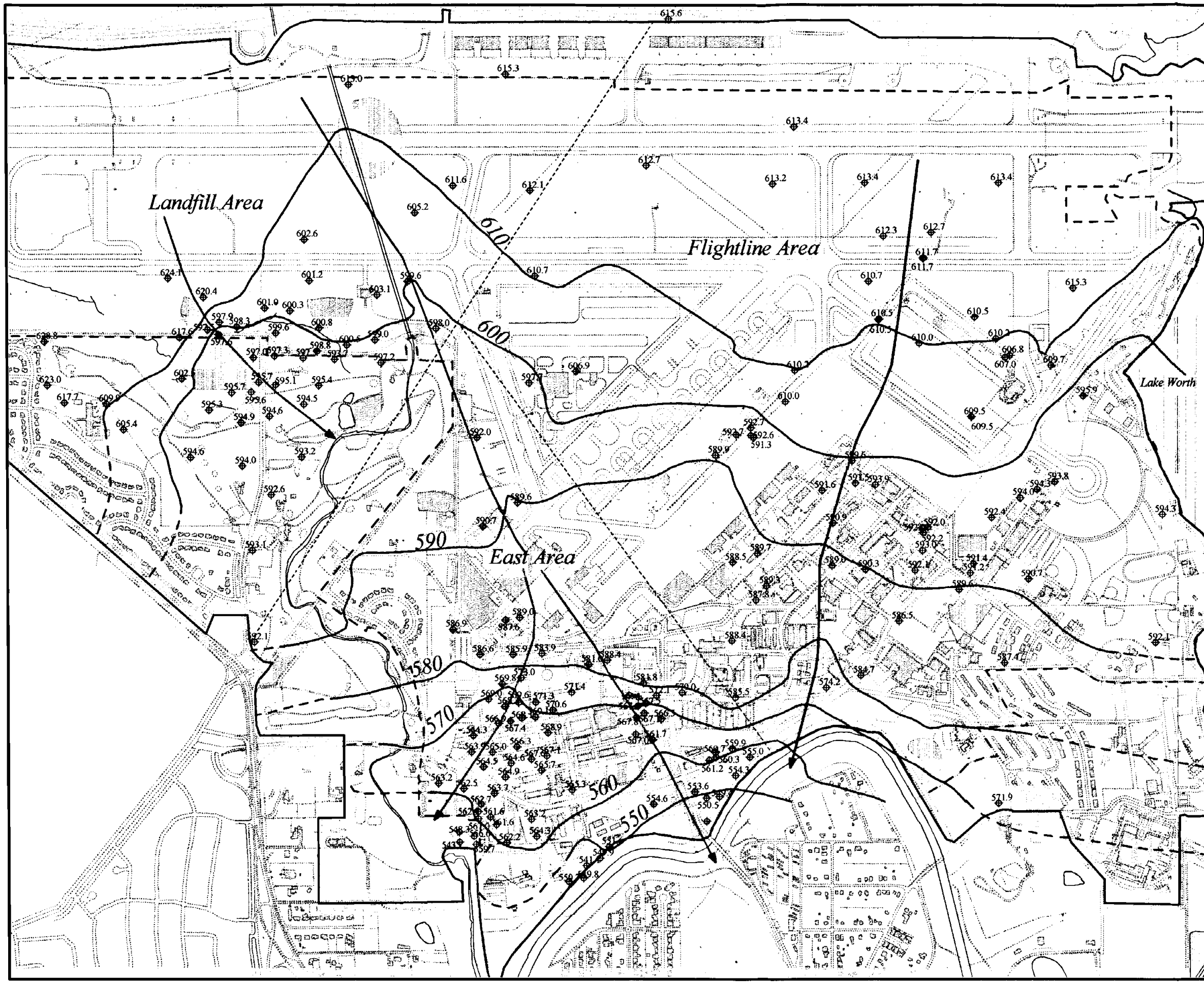


HydroGeoLogic, Inc.—Final January 1998 Quarterly Report
NAS Fort Worth JRB, Texas

Figure 5.1

Water Level Elevations January 1998

Air Force Center For Environmental Excellence
Brooks AFB, Texas

Legend

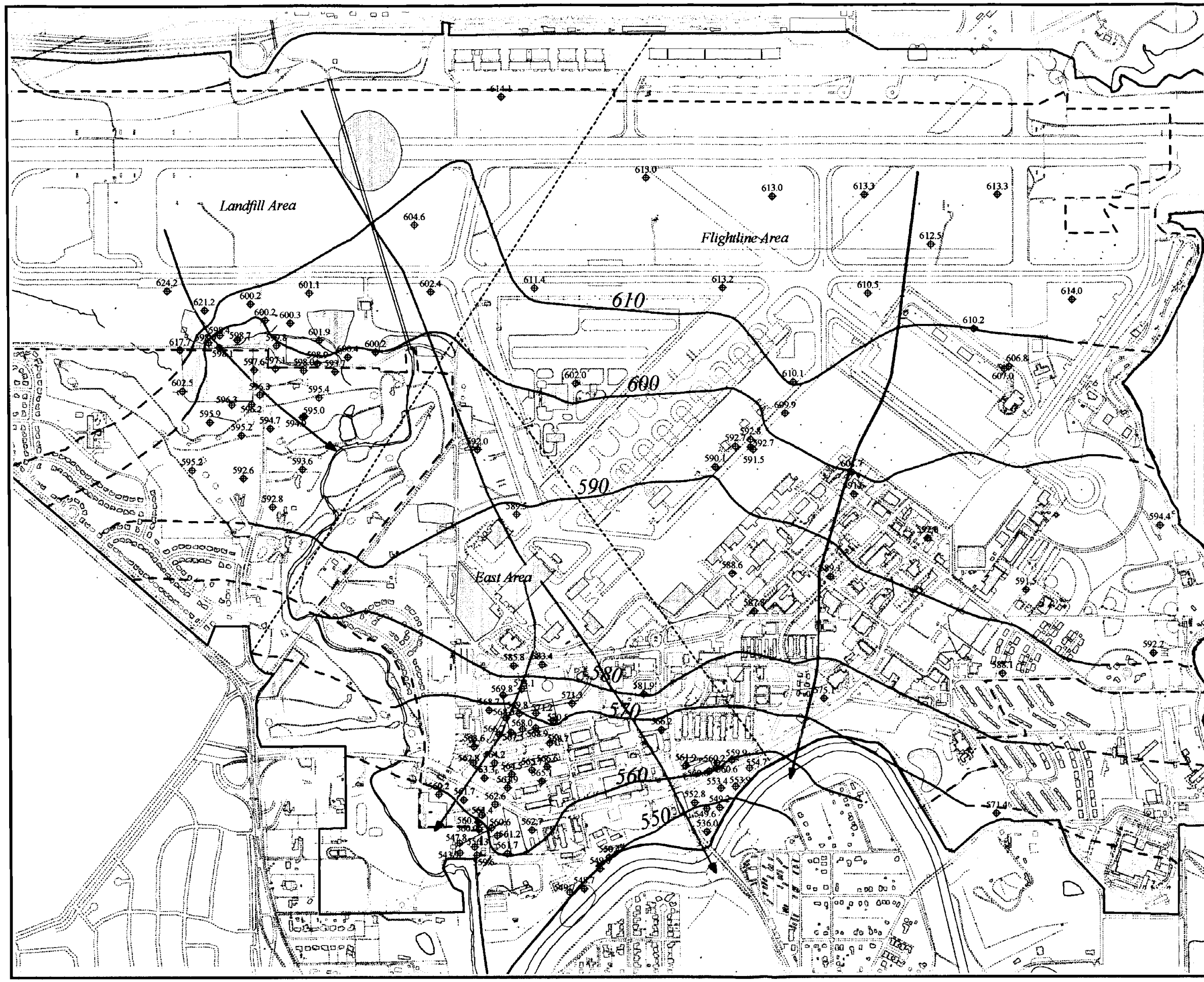
- NAS Fort Worth JRB (Carswell Field)
- Former Carswell Air Force Base
- 600 — Groundwater Elevation Contour (Feet Above Mean Sea Level)
- Generalized Groundwater Flow
- Groundwater Management Areas

N

0 500 1000 2000
SCALE IN FEET

HYDRO GeoLogic INC.

Filename: X:\AFC001\07GCB\Report\Final Report\FIG5_1.apr
Revised: 07/13/98 cf
Project: AFC001-07GCB
Map Source: Jacobs, 1996



HydroGeoLogic, Inc.—Final January 1998 Quarterly Report
NAS Fort Worth JRB, Texas

Figure 5.2

Water Level Elevations
July 1997

Air Force Center For
Environmental Excellence
Brooks AFB, Texas

Legend

- - - - NAS Fort Worth JRB (Carswell Field)

——— Former Carswell Air Force Base

600 Groundwater Elevation Contour (Feet Above Mean Sea Level)

——→ Generalized Groundwater Flow

Groundwater Management Areas

N

0 500 1000 2000
SCALE IN FEET

HYDRO GeoLogic INC.

Filename: X:\AFC001\07GCB\Report\Final Report\FIG5_2.apr
Revised: 07/14/98 cf
Project: AFC001-07GCB
Map Source: Jacobs, 1996

68 and AOC 7 (WHGLTA005, WHGLTA006, WHGLTA007, and WHGLTA008) were not in place for sampling; these wells should be in place for the April 1998 basewide quarterly sampling event. Monitoring well SD13-07 contained free product; therefore, it was not sampled. Monitoring well C-15, proposed by CH_2M Hill in the RFI for AOC 2 (CH_2M Hill, 1997), was not installed because another recently installed monitoring well, WITCTA010, drilled by IT Corporation for the RFI for SWMU 66 (IT Corporation, 1997c), was placed adjacent to its proposed location. CH_2M Hill instead used monitoring well WITCTA010 for the investigation and sampled it in January 1998 for its investigation. For the remaining basewide quarterly sampling events for 1998, WITCTA010 will be sampled in place of C-15. A complete listing of the analytical results from this January 1998 sampling event is provided in Appendix B.

5.3.1 Contaminant Evaluation

To facilitate discussion of contamination at NAS Fort Worth JRB, levels of contamination determined from analytical sampling were compared to several threshold values. The results of metals analyses were compared to established background concentrations (Jacobs, 1997), and the results of the organic analyses were compared to PQLs. These comparisons identified locations where contamination is likely and monitoring should be continued to provide further characterization. In addition, both metals and organics were compared to the TNRCC Risk Reduction Standard 2 (RRS 2) values. Comparison of contaminant concentrations to their respective RRS 2 values provides a basis for risk assessment. Concentrations that exceed their RRS 2 values indicate areas where continued monitoring and remedial action is necessary.

5.3.1.1 Background Concentrations

Background concentrations were determined for 24 inorganic constituents at NAS Fort Worth JRB (Jacobs, 1997). All metals sampled for at NAS Fort Worth JRB were included in this study, with the exception of tin, which is only sampled for as part of RCRA Appendix IX. A single groundwater sample was collected from each of 12 background wells in December 1996 using a low-stress technique to approximate filtered samples. The groundwater monitoring wells sampled, both newly installed and existing, were located up- and cross-gradient from wells that were known to contain VOCs and SVOCs.

The tolerance interval method suggested by the EPA (1989, 1992) was used to estimate background concentrations for the 24 inorganic constituents for comparison to compliance wells. Tolerance intervals are useful for groundwater data analysis because it is important to ensure that, at most, a small fraction of the compliance wells sampled exceed a specific concentration level (EPA, 1992). Two coefficients are associated with any tolerance interval. One is the proportion of the population that the interval is supposed to contain, called the coverage. The second is the degree of confidence with which the interval reaches the specified coverage, known as the tolerance coefficient. The $UTL_{95,95}$ is the upper tolerance limit (UTL) of a tolerance interval with a coverage of 95 percent and a tolerance coefficient of 95 percent. The $UTL_{95,95}$ was determined by Jacobs (1997) as the background concentration for comparison to contaminant concentrations. These values are provided in Table 5.3.

Table 5.3
Background and Risk Reduction Standard 2
Values for Inorganic Constituents

432 76

Metal	Background Value (mg/L)	RRS 2 Value (mg/L)	RRS 2 Value Source[1]
Aluminum	1.332	0.2	Derived
Antimony	0.002	0.006	TNRCC
Arsenic	0.0049	0.05	TNRCC
Barium	0.587	2	TNRCC
Beryllium	0.0003	0.004	TNRCC
Cadmium	0.0005	0.005	TNRCC
Calcium	226.3	--	Essential Nutrient[2]
Chromium	0.006	0.1	TNRCC
Cobalt	0.0089	6.1	Derived
Copper	0.0028	1.3	Derived
Iron	0.2240	0.3	Derived
Lead	0.0016	0.015	TNRCC
Magnesium	37.8	--	Essential Nutrient[2]
Manganese	0.175	2.4	Derived
Mercury	0.0001	0.002	TNRCC
Molybdenum	0.0144	0.51	Derived
Nickel	0.0204	0.1	TNRCC
Potassium	15.03	--	Essential Nutrient[2]
Selenium	0.0077	0.05	TNRCC
Silver	0.0002	0.183	TNRCC
Sodium	167.0	--	Essential Nutrient[2]
Tin	--	61	Derived
Thallium	0.0632	0.082	Derived
Vanadium	0.0120	0.71	Derived
Zinc	0.118	5	Derived

[1] Source of all values was TNRCC RRS 2 (30 TAC 335). Those noted as "Derived" were derived based on procedures presented in the regulations.
[2] Essential Nutrient - no risk values available.

5.3.1.2 Practical Quantitation Limits

432 77

A PQL is the lowest analytical result level that can reasonably be achieved within specified limits of precision and accuracy during routine laboratory conditions. Each PQL value is higher than the associated method detection limit, which is the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero. Sample concentrations falling between the method detection limit and PQL are assigned an "F" qualifier indicating the variability of the result (HydroGeoLogic, 1997a). Because a background concentration for organic compounds is not appropriate, the PQL is used as a comparison to determine those compounds that can be detected within established limits of precision and accuracy.

5.3.1.3 Risk Reduction Standard 2

RRS 2 values are the chemical-specific cleanup levels for remediation of groundwater that has been contaminated by a release(s) from a SWMU or AOC. These values are established from health-based standards and criteria (Texas and/or Federal) pursuant to TNRCC Regulations, 30 TAC 335.551-335.569. If the PQL and/or background concentration for a given chemical is greater than the RRS 2 level, either the PQL or the background value, whichever is greater, is to be used for determining compliance with requirements of the groundwater remediation. If RRS 2 values are not available or do not provide appropriate protection for human health or the environment, cleanup levels based on other numeric criteria, referred to as Medium Specific Concentrations (MSCs), must be established. Formulas to develop MSCs, based on exposure factors, exposure pathways, and chemical-specific toxicity, are provided in 30 TAC 335.558 (i.e., MSCs for RRS 2). RRS 2 values for metals and VOCs are provided in Table 5.3 and Table 5.4, respectively.

5.3.2 AOC 1 (Base Service Station/Base Gas Station)

In conjunction with the corrective action for AOC 1, the second quarter of groundwater sampling was conducted as part of this basewide sampling program (IT Corporation, 1997a, 1997b). Samples were collected from six wells (MW-10, BSS-B, SAV-2, BGSMW03, BGSMW05, and BGSMW06) and were analyzed by EPA Method SW8020 for BTEX compounds and MTBE. In addition, field parameters were measured in the field at the time of sampling and included pH, temperature, conductivity, DO, and turbidity. The results of sampling from the October 1997 and January 1998 events are presented in Appendix C of this document.

5.3.3 SWMUs 64, 67, and 68 and AOC 7 (POL Tank Farm Area)

In conjunction with the remedial action for SWMUs 64, 67, and 68 and AOC 7 (Sites ST14 and SD13), 17 wells were sampled as part of this basewide sampling program. The purpose of this sampling is to confirm that source soils are not causing increases in groundwater concentrations and that no unanticipated downgradient migration is occurring. The remedial action calls for quarterly sampling until the appropriate target concentrations are obtained and then an additional 2 years of verification sampling to ensure plume stability and ongoing compliance. The results of sampling in January 1998 are presented in Appendix D of this document.

Table 5.4
Risk Reduction Standard 2
Values for Volatile Organic Compounds

432 78

VOC	RRS 2 Value (µg/L)	RRS 2 Value Source[1]
2-Methylnaphthalene	4,100	Derived
Benzene	5	TNRCC
Chlorobenzene	100	TNRCC
cis-1,2-Dichloroethene	70	TNRCC
Ethylbenzene	700	TNRCC
Isopropylbenzene	10,000	TNRCC
m-Xylene & p-Xylene	10,000	Derived
Methyl tert-butyl ether	510	Derived
n-Propylbenzene	10,000	Derived
Naphthalene	1,460	TNRCC
o-Xylene	10,000	TNRCC
sec-Butylbenzene	1,020	Derived
tert-Butylbenzene	1,020	Derived
Tetrachloroethene	5	TNRCC
Toluene	1,000	TNRCC
trans-1,2-Dichloroethene	100	TNRCC
Trichloroethene	5	TNRCC
Vinyl chloride	2	TNRCC

[1] Source of all values was TNRCC RRS 2 (30 TAC 335). Those noted as "Derived" were derived based on procedures presented in the regulations.

5.3.4 Flightline Area

5.3.4.1 Volatile Organic Compounds

432 79

A total of 11 monitoring wells were sampled for VOCs in the Flightline Area during the January 1998 basewide sampling event using EPA Method SW8260. The VOCs detected above PQLs during this sampling event are presented in Table 5.5. Locations of the wells are provided in Figure 3.1. Six of the wells sampled were designated as plume wells to further delineate the extent of TCE and related compounds contamination. One of the wells was designated as a plume well to delineate fuel-related compounds contamination. Two of the wells, GMI-22-07M and WITCTA024, were designated as sentry wells. The remaining two wells, GMI-22-05M and USGS04T, were designated as perimeter wells

Chlorinated solvents and their daughter products were detected in five of the six TCE plume wells sampled in the Flightline Area. The one exception was monitoring well GMI-22-02M. TCE at concentrations ranging from 76 μg/L to 500 μg/L and cis-1,2-dichloroethene at concentrations ranging from 14 μg/L to 63 μg/L were detected in plume wells GMI-22-03M, GMI-22-04M, GMI-22-06M, LSA1628-3, and MW-53. Trans-1,2-dichloroethene was detected in three of the five wells at concentrations ranging from 31 μg/L to 41 μg/L. In addition, tetrachloroethene was found in monitoring well GMI-22-03M at a concentration of 19 μg/L. No VOCs were detected in monitoring well GMI-22-02M above PQLs; the designation of this well should be changed from plume well to sentry well since it is beyond the current limits of the TCE plume. No chlorinated solvents were detected in sentry well GMI-22-07M, located cross-gradient from the TCE plume, or WITCTA024, located downgradient from the plume.

In addition to sampling conducted as part of this program, neighboring AFP 4 also sampled some of the wells in the Flightline Area as part of its basewide sampling program in January 1998. The results of both sampling events conducted in January 1998 were used to produce the plume contour maps for TCE and cis-1,2-DCE presented as Figures 5.3 and Figure 5.4.

Fuel-related compounds, including cumene (58 μg/L), n-propylbenzene (67 μg/L), naphthalene (130 μg/L), and tert-butylbenzene (3.0J μg/L), were found in fuel plume monitoring well SPOT35-5 at levels above their PQLs; however, none of these compounds were above their RRS 2 values. Monitoring well WITCTA024, chosen as a sentry well for the TCE and fuel plumes, contained a very low level of tert-butylbenzene at 2.5 μg/L. The RRS 2 for tert-butylbenzene is 1,020 μg/L. No other compounds were detected above PQLs at this sentry well.

No contaminants at levels above PQLs were detected in either of the two perimeter wells, GMI-22-05M or USGS04T. Both of these wells were identified as perimeter wells and were sampled to monitor any off-site contaminant migration.

5.3.4.2 Metals

Monitoring wells GMI-22-05M and USGS04T, designated as perimeter wells for the Flightline Area, were sampled for metals during the January 1998 quarterly sampling event. Detections above background concentrations are provided in Table 5.6. The locations of these wells are

432 80

Table 5.5
Detections of Volatile Organic Compounds Above Practical Quantation Limits in Wells Sampled Using Analytical Method SW8260

Area	Well	Well Type	Analyte	Result (μg/L)[1]
Flightline	GMI-22-02M	Plume/TCE	(none)	--
	GMI-22-03M	Plume/TCE	cis-1,2-Dichloroethene	58
			Tetrachloroethene	19
			trans-1,2-Dichloroethene	41
			Trichloroethene	76
	GMI-22-04M	Plume/TCE	cis-1,2-Dichloroethene	63
			Trichloroethene	500
	GMI-22-05M	Perimeter	(none)	--
	GMI-22-06M	Plume/TCE	cis-1,2-Dichloroethene	34
			trans-1,2-Dichloroethene	36
			Trichloroethene	160
	GMI-22-07M	Sentry	(none)	--
	LSA1628-3	Plume/TCE	cis-1,2-Dichloroethene	51
			trans-1,2-Dichloroethene	31
			Trichloroethene	230
	MW-53	Plume/TCE	cis-1,2-Dichloroethene	14
			Trichloroethene	87
	SPOT35-5	Plume/Fuel	Isopropylbenzene (Cumene)	58
			n-Propylbenzene	67
			Naphthalene	130
			sec-Butylbenzene	13
	USGS04T	Perimeter	(none)	--
	WITCTA024	Sentry	tert-Butylbenzene	3
East	LF01-1D	Perimeter	(none)	--
	SD13-01	Plume	(none)	--
	SD13-02	Plume	(none)	--
	SD13-04	Plume	(none)	--
	SD13-06	Plume	(none)	--
	ST14-14	Upgradient	(none)	--
	ST14-24	Upgradient	Vinyl chloride	2
	ST14-26	Upgradient	(none)	--
	ST14-W31	Plume	(none)	--
Landfill	LF05-19C	Plume/TCE	Trichloroethene	56
	WHGLTA003	Plume/TCE	cis-1,2-Dichloroethene	61
			Trichloroethene	170
	WHGLTA004	Plume/TCE	cis-1,2-Dichloroethene	110
			Trichloroethene	910
	USGS07T	Sentry	(none)	--
	WP07-10C	Plume/TCE	Trichloroethene	1,200

[1]Concentrations are reported in micrograms per liter (μg/L). Results that exceed the TNRCC RRS 2 values are underlined.

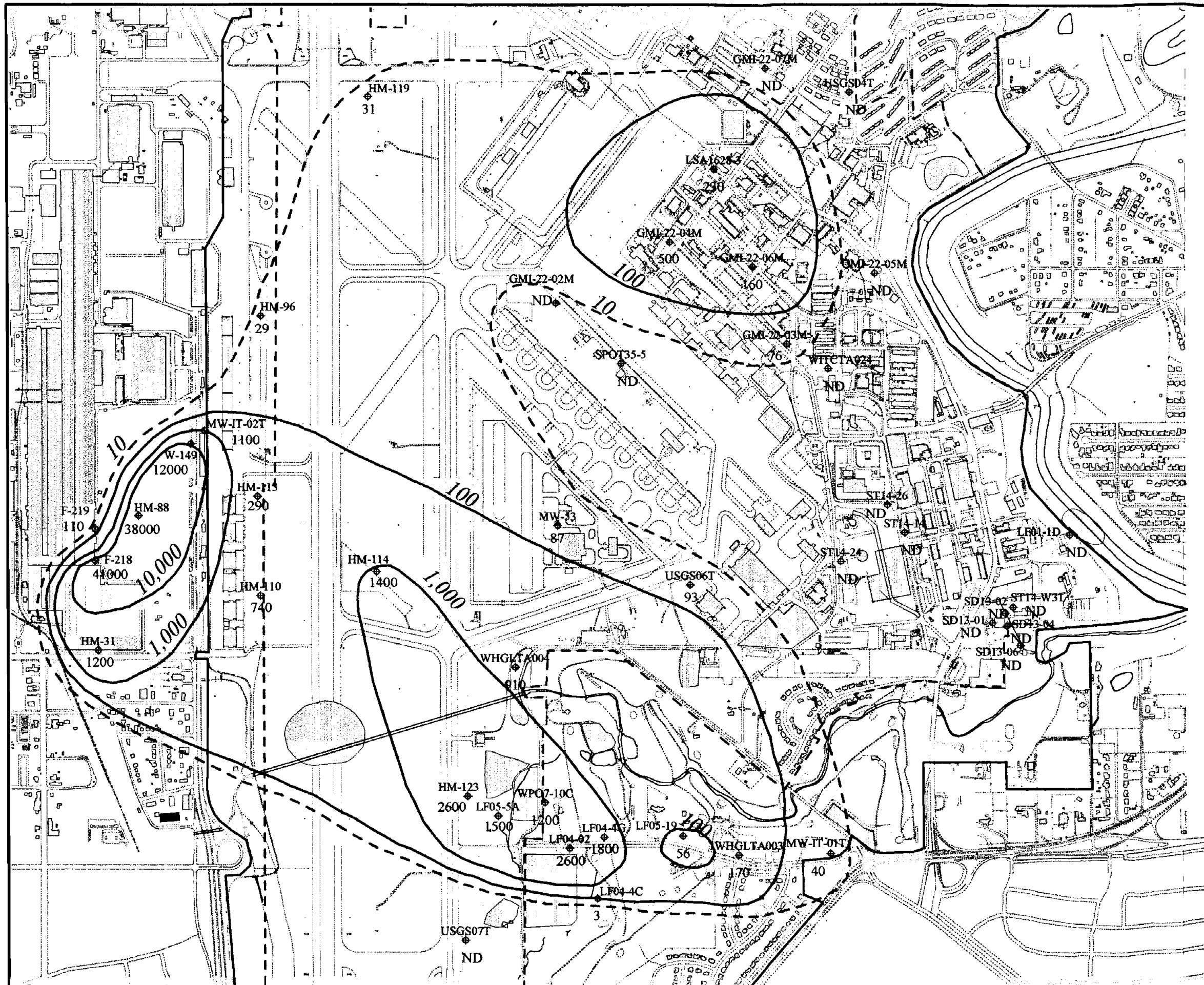


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Figure 5.3

TCE Concentrations January 1998

Air Force Center For Environmental Excellence
Brooks AFB, Texas

Legend

- NAS Fort Worth JRB (Carswell Field)
- Former Carswell Air Force Base
- Groundwater Management Areas
- 100 — TCE Concentration Contour (ug/L)
- GMI-22-07M — NAS Fort Worth JRB Baswide Sampling Well
- 235 — TCE Concentration (ug/L)
- GMI-22-07M — AFP 4 Baswide Sampling Well
- 568 — TCE Concentration (ug/L)

N

400 0 400 800 Feet

HYDRO GeoLogic INC.

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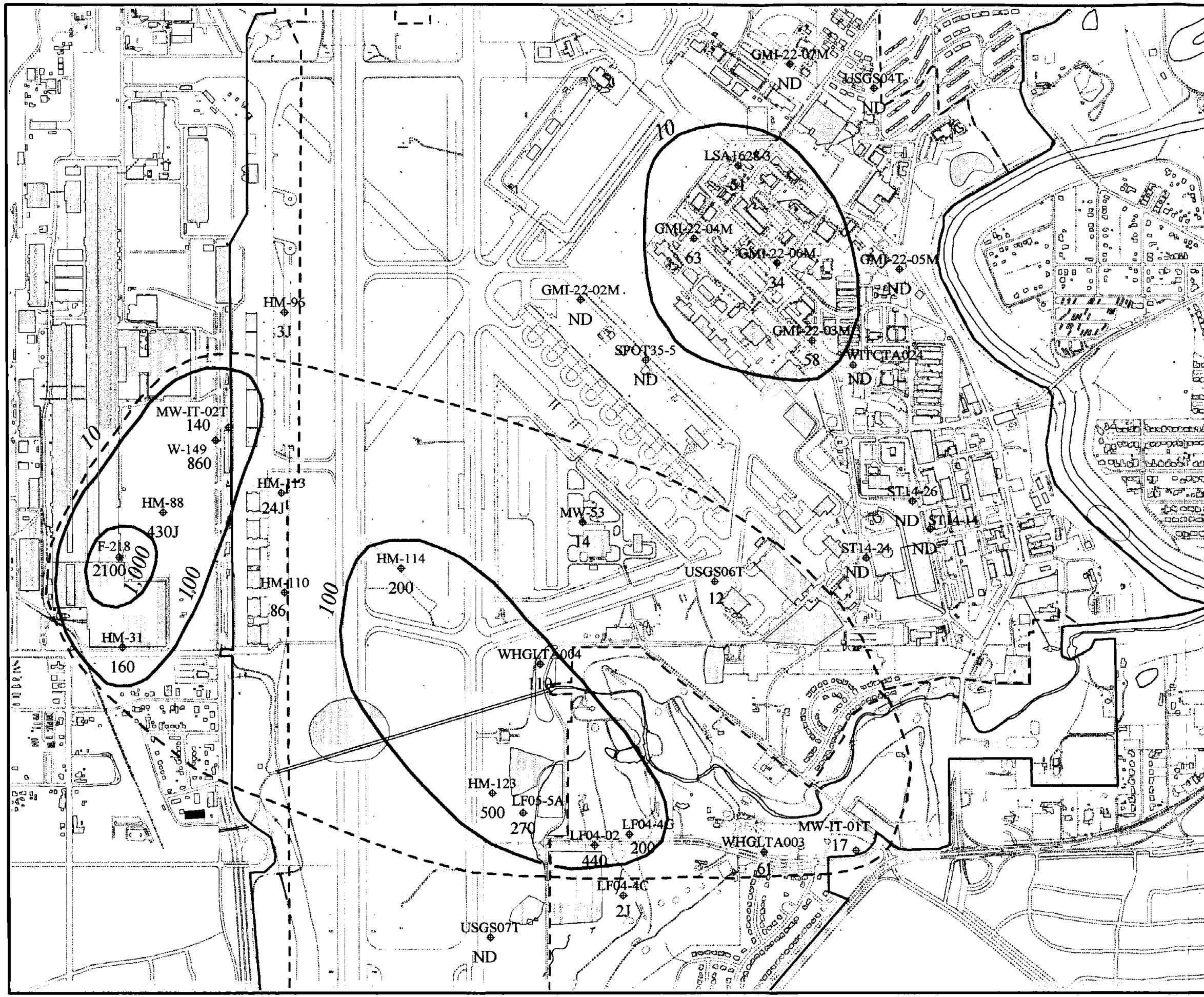

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Figure 5.4

cis-1,2-DCE Concentrations January 1998

Air Force Center For Environmental Excellence
Brooks AFB, Texas

Legend

- NAS Fort Worth JRB (Carswell Field)
- Former Carswell Air Force Base
- Groundwater Management Areas
- 100 — cis-1,2-DCE Concentration Contour (ug/L)
- NAS Fort Worth JRB
  - GMI-22-07M — Baswide Sampling Well
  - 235 — cis-1,2-DCE Concentration (ug/L)
- AFP 4
  - GMI-22-07M — Baswide Sampling Well
  - 568 — cis-1,2-DCE Concentration (ug/L)

N

400 0 400 800 Feet

HYDRO GeoLogic INC.

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Project: AFC001-07GBC
Map Source: Jacobs, 1996

Table 5.6
Detections of Metals Above Background in Wells Sampled

Area	Well	Well Type	Analyte	Result (mg/L)[1]
Flightline	GMI-22-05M	Perimeter	(none)	--
	USGS04T	Perimeter	Iron	0.32
East	LF01-1D	Perimeter	Manganese	0.34J
	MW-10	Perimeter	Arsenic	0.022F
			Iron	6.2
			Lead	0.0058F
			Manganese	4.9J
	SD13-01	Plume	Arsenic	0.056F
	SD13-02	Plume	Arsenic	0.026F
			Manganese	0.26
	SD13-04	Plume	Arsenic	0.069F
			Lead	0.0018F
	SD13-06	Plume	(none)	--
	ST14-02	Plume	Arsenic	0.012F
			Iron	13.8
			Manganese	0.23J
	ST14-14	Upgradient	Iron	1.6
			Manganese	0.19J
	ST14-24	Upgradient	(none)	--
	ST14-26	Upgradient	Iron	0.38
			Vanadium	0.023F
	ST14-W18	Plume	Arsenic	0.025F
			Iron	8.7
			Lead	0.02F
			Selenium	0.015F
	ST14-W21	Plume	Arsenic	0.054F
			Iron	14
			Manganese	0.42
			Nickel	0.069F
	ST14-W31	Plume	(none)	--
Landfill	LF05-19C	Plume	(none)	--
	WP07-10C	Plume	Arsenic	0.01F
			Manganese	0.39B

[1]Concentrations are reported in milligrams per liter (mg/L). The "J" qualifier indicates that the analyte was positively identified, but quantification is an estimation. The "F" qualifier indicates that the analyte was positively identified, but that the associated numerical value is below the PQL.

provided in Figure 3.1. No metals were detected above background values in the sample taken from monitoring well GMI-22-05M. The only metal detected in the sample from monitoring well USGS04T above background was iron. The iron concentration in this well was 0.32 mg/L, which is slightly above the RRS 2 value for iron of 0.3 mg/L. Although iron concentrations in this well have fluctuated historically, the concentration found in January 1998 is lower than any recorded in 1997. All other metals analyzed in monitoring well USGS04T were below their respective background concentrations.

5.3.4.3 Other Analyses

Monitoring wells GMI-22-02M and SPOT35-5 were sampled for volatile and extractable TPH using Method SW8015 and polynuclear aromatic hydrocarbons using Method SW8310. Monitoring well SPOT35-5 was installed to monitor a possible fuel plume in the vicinity of AOC 4. Monitoring well GMI-22-02M is upgradient of this site. The only detection from these analyses was extractable petroleum hydrocarbons at 2.9 mg/L in monitoring well SPOT35-5.

Monitoring wells GMI-22-02M and SPOT35-5 were also sampled for VOCs; a discussion of the results of those analyses is provided in Section 5.3.4.1.

5.3.5 East Area

5.3.5.1 Volatile Organic Compounds

Twenty-four wells were sampled for VOCs in the East Area during the January 1998 sampling event. Nine of the wells were sampled using EPA Method SW8260A, and the remaining, 15 wells were sampled with EPA Method SW8020A for aromatic VOCs (BTEX compounds). The VOCs detected above PQLs using these two methods are presented in Table 5.5 and Table 5.7. Locations of the wells are provided in Figure 3.1.

Of the nine monitoring wells sampled for VOCs using EPA Method SW8260A, the only compound found above PQL was vinyl chloride in monitoring well ST14-24, at a concentration of 1.7 μg/L. The RRS 2 value for vinyl chloride is 2 μg/L. Monitoring well ST14-24 was designated as an upgradient well for the East Area SWMUs, but is also located downgradient of the TCE plume in the Flightline and Landfill Areas. Vinyl chloride is a potential breakdown product of chlorinated solvent degradation. Therefore, the detection of this compound in a monitoring well does not affect its ability to function as an upgradient well in the East Area.

In the AOC 1 area, six monitoring wells were sampled using EPA Method SW8020A. Two of these wells, BGSMW05 and BGSMW06, contained no compounds above PQLs. Benzene was found at concentrations ranging from below PQL to 4,900 μg/L; benzene has an RRS 2 value of 5 μg/L. Ethylbenzene, toluene, and xylenes were found in monitoring wells BSS-B, SAV-2, and MW-10, and MTBE was found in monitoring well SAV-2.

In the SD13/ST14 area (SWMUs 64, 67, and 68 and AOC 7), nine monitoring wells were sampled using EPA Method SW8020A. Of these eight, two monitoring wells, ST14-02 and ST14-W16,

Table 5.7
Detections of Aromatic Volatile Organic Compounds Above Practical Quantitation Limits in Wells Sampled Using Analytical Method SW8020

Area	Well	Well Type	Analyte	Result (μg/L)[1]
East	17M	Plume	(none)	--
	BGSMW03	Compliance	Benzene	1,400
	BGSMW05	Compliance	(none)	--
	BGSMW06	Compliance	(none)	--
	BSS-B	Compliance	Ethylbenzene	1,700
			Toluene	7,600
			Xylenes (total)	12,000
	SAV-2	Compliance	Benzene	2,300
			Ethylbenzene	1,500
			tert-Butyl methyl ether (MTBE)	310
			Toluene	140J
			Xylenes (total)	2,900
	MW-10	Compliance	Benzene	4,900
			Ethylbenzene	5,200
			Toluene	7,300
			Xylenes (total)	14,000
	ST14-02	Plume	Benzene	57
	ST14-03	Plume	(none)	--
	ST14-04	Plume	(none)	--
	ST14-28	Plume	(none)	--
	ST14-29	Plume	Chlorobenzene	8.5
	ST14-W16	Plume	Benzene	9.4
	ST14-W18	Plume	(none)	--
	ST14-W21	Plume	(none)	--

[1]Concentrations are reported in micrograms per liter (μg/L). The "J" qualifier indicates that the analyte was positively identified, but quantification is an estimation. Results that exceed the TNRCC RRS 2 values are underlined.

contained benzene at concentrations above the PQL (57 and 9.4 μg/L, respectively); these concentrations were also above the RRS 2 for benzene (5 μg/L). The only other compound detected in this area was chlorobenzene; it was detected in monitoring well ST14-29 at a concentration of 8.5 μg/L, well below the RRS 2 value for this compound of 100 μg/L.

5.3.5.2 Metals

Thirteen monitoring wells were sampled for metals in the East Area during the January 1998 sampling event. The metals detected above background concentrations during this sampling event are presented in Table 5.6. Locations of the wells are provided in Figure 3.1. A map of the East Area showing all wells where metals were detected above background is provided in Figure 5.5.

Two of these wells, LF01-1D and MW-10, were designated as perimeter wells and were sampled to monitor any off-site migration. The only metal detected in monitoring well LF01-1D was manganese at a concentration of 0.34J mg/L, which exceeds the background value of 0.175 mg/L, but is below the RRS 2 value of 2.4 mg/L. The sample obtained at monitoring well MW-10 contained arsenic, iron, lead, and manganese above background values. The concentrations of both iron (6.2 mg/L) and manganese (4.9J mg/L) were also above the RRS 2 values of 0.3 mg/L and 2.4 mg/L for iron and manganese, respectively. The metals detected in both monitoring wells LF01-1D and MW-10 during January 1998 have been present during all sampling events in 1997.

Monitoring wells ST14-14, ST14-24, and ST14-26, which were also sampled for metals, are designated as upgradient wells, located upgradient from previously identified plume limits. The sample taken from monitoring well ST14-24 did not contain any metals above background values. Monitoring wells ST14-14 and ST14-26 both contained iron at concentrations above both the background and RRS 2 values. No other metals sampled in these upgradient wells were above RRS 2 values. Monitoring well ST14-14 contained manganese at a concentration of 0.19J mg/L, just slightly above the background values of 0.175 mg/L. Monitoring well ST14-26 contained vanadium at a concentration of 0.023F mg/L, which is above the background value of 0.0123 mg/L.

The remaining eight wells in the East Area sampled for metals are all designated as plume wells. Six of the eight plume wells contained arsenic above background values, with concentrations ranging from 0.012F mg/L to 0.069F mg/L. Arsenic concentrations exceeded the RRS 2 value of 0.05 mg/L in three wells: SD13-02, SD13-04, and ST14-W21. Three of the eight wells, ST14-02, ST14-W18, and ST14-W21, contained iron at concentrations above both the background and RRS 2 values, ranging from 8.7 mg/L to 14 mg/L. Three of the eight wells, SD13-02, ST14-02, and ST14-W21, contained manganese above background values, but none of these detections were above the RRS 2 value of 2.4 mg/L. Lead was detected in monitoring well ST14-W18 at a concentration 0.02F mg/L, which exceeds the RRS 2 value of 0.015 mg/L. Lead was also detected in monitoring well SD13-04 at a concentration of 0.0018F mg/L, slightly above background value of 0.0016 mg/L. Other metals found in the East Area plume wells include selenium in monitoring well ST14-W18 and nickel in monitoring well ST14-W21. Both of these detections were below background values. Samples from two of the plume wells, SD13-06 and ST14-W31, did not contain any metals above background values.

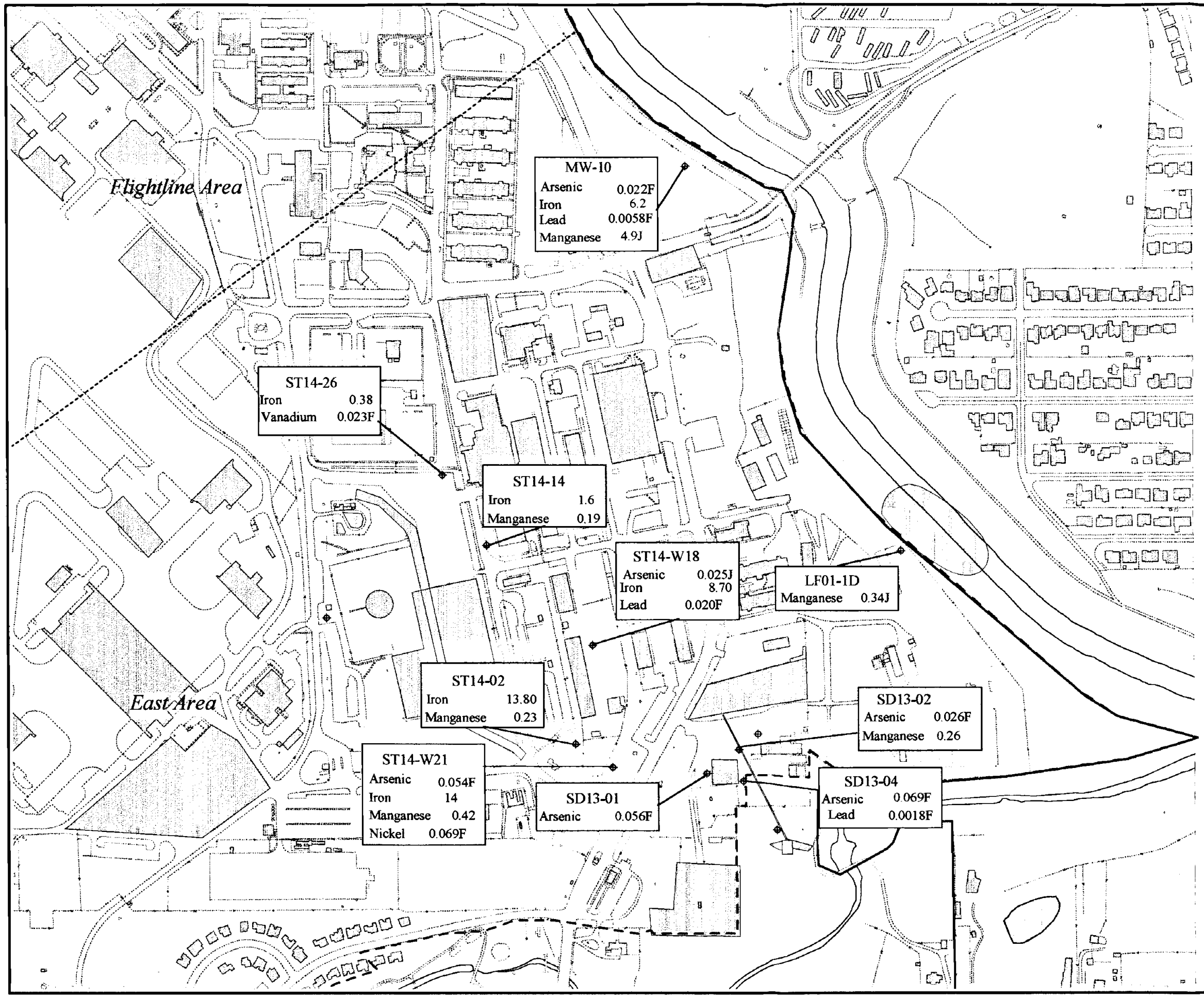

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Figure 5.5

Metals Detected Above Background Concentrations in the East Area January 1998

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Legend

- - - - NAS Fort Worth JRB (Carswell Field)

——— Former Carswell Air Force Base

Groundwater Management Areas

GMI-22-07M
Iron 0.32 — Metal Concentration Exceeding RRS2 values (mg/L)
Copper 0.0059J — Metal Concentration Exceeding Background Concentrations (mg/L)

N

200 0 200 400 Feet

HYDRO GeoLogic INC.

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Project: AFC001-07GCB
Map Source: Jacobs, 1996

5.3.5.3 Other Analyses

Six wells in the East Area were sampled for all RCRA Appendix IX compounds. In addition to the VOC and metals analyses described in the preceeding sections, monitoring wells LF01-1D, SD13-01, SD13-02, SD13-04, SD13-06, and ST14-W31 were sampled for SVOCS (SW8270B), organochlorine pesticides and PCBs (SW8080A), organophosphorus pesticides (SW8140), chlorinated herbicides (SW8150), dioxins and furans (SW8280), sulfide (E376.2), and cyanide (SW9012). The only contaminant found above its PQL was 2-methylnapthalene. This compound was found in monitoring well SD13-04 at a concentration of 54 μg/L. The RRS 2 value for 2-methylnapthalene is 4,100 μg/L.

5.3.6 Landfill Area

5.3.6.1 Volatile Organic Compounds

Five monitoring wells were sampled for VOCs in the Landfill Area during the January 1998 basewide sampling event using EPA Method SW8260. The VOCs detected above PQLs during this sampling event are presented in Table 5.5. Locations of the wells are provided in Figure 3.1.

Four of the five wells, LF05-19, WHGLTA003, WHGLTA004, and WP07-10C, were chosen as plume wells to further characterize the TCE contamination in this area. TCE was detected in all four of the plume wells, at concentrations ranging from 56 μg/L to 1,200 μg/L. Cis-1,2-dichloroethene was detected in monitoring well WHGLTA003 (61 μg/L) and monitoring well WHGLTA004 (110 μg/L). However, cis-1,2-dichloroethene was not sampled for in wells LF05-19 and WP07-10C because it is not included on the RCRA Appendix IX list. No other compounds were detected in these wells at concentrations above PQLs. The remaining well, USGS07T was chosen as a sentry well and is located cross-gradient from the plume. No compounds were detected in this well at concentrations above PQLs.

In addition to sampling conducted as part of this program, neighboring AFP 4 also sampled some of the wells in the Landfill Area as part of its basewide sampling program in January 1998. The results of both sampling events conducted in January 1998 were used to produce plume contour maps for TCE and cis-1,2-DCE. The maps for TCE and cis-1,2-DCE are presented in Figure 5.3 and Figure 5.4, respectively.

5.3.6.2 Metals

Monitoring wells LF05-19 and WP07-10C, both designated as plume wells, were sampled for metals in the Landfill Area during the January 1998 sampling event. The metals detected above background concentrations during this sampling event are presented in Table 5.6. Locations of the wells are provided in Figure 3.1.

None of the metals sampled for in monitoring wells LF05-19 and WP07-10C were above their respective RRS 2 values. No metals at concentrations above background values were present in monitoring well LF05-19. In monitoring well WP07-10C, arsenic (0.01F mg/L) and manganese (0.39B mg/L) were detected above their respective background values of 0.0049 mg/L and 0.175

mg/L. All other metals analyzed in monitoring well WP07-10C were below their respective background concentrations.

5.3.6.3 Other Analyses

In addition to sampling for VOCs and metals, monitoring wells LF05-19 and WP07-10C, both in the Landfill Area, were sampled for all RCRA Appendix IX contaminants. None of the Appendix IX constituents, with the exceptions of those discussed in the previous sections, were present in either well above their PQLs.

5.3.7 Natural Attenuation of TCE and Daughter Products

One of the objectives of the basewide monitoring program for 1998 is to collect data to demonstrate that natural attenuation is occurring. Parameters useful in determining whether natural attenuation is occurring include alkalinity, TOC, and concentrations of chloride, nitrate, sulfate, ferrous iron, methane, and ethene. These values were collected for 29 of the wells sampled during the January 1998 event. The values for these natural attenuation parameters are presented in Table 5.8. Monitoring well UGSG07T was sampled for natural attenuation parameters to serve as background conditions. Because monitoring well GMI-22-02M, originally selected as a plume well, contained no VOCs above PQLs, this well may also provide background conditions.

Natural attenuation data will be collected during each quarterly sampling event in 1998. After four quarters of data have been collected, an analysis of the data will be performed to determine if natural attenuation is occurring in areas on NAS Fort Worth. This analysis will be presented in the Annual Report for the Basewide Groundwater Sampling Program for 1998.

Table 5.8
Natural Attenuation Parameters for Selected Wells

Area	Well	TCE (µg/L)	Benzene (µg/L)	Chloride (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Fe(II) (mg/L)	Alkalinity[1]	Methane (µg/L)	Ethene (µg/L)
Flightline	GMI-22-02M	ND	ND	1.4	0.088F	4.8	ND	0.08	232	ND	ND
	GMI-22-03M	76	ND	86.6	0.67F	53.3	--	0.03	421	ND	ND
	GMI-22-04M	500	ND	108	9.7	50.6	ND	0	365	12	ND
	GMI-22-06M	160	ND	95.7	0.22F	219	ND	0.01	342	400	0.2F
	LSA1628-3	230	ND	104	3.6	70.3	ND	0.06	370	6.2	ND
	MW-53	87	ND	3.8	1.1	18.1	1	0.45	201	0.5	0.1
	SPOT35-5	ND	ND	97.2	ND	0.74F	7.4	7.53	429	8300	ND
East	17M	ND	ND	27.8	ND	0.98F	6.3	5.3	295	2900	ND
	SD13-01	ND	ND	28.2	ND	ND	6	8.6	327	6100	ND
	SD13-02	ND	ND	38.9	ND	ND	4.6	8.12	317	4600	ND
	SD13-04	ND	ND	26	0.18F	ND	8.5	13.75	372	6500	ND
	SD13-06	ND	ND	25.8	0.17F	42.1	7.5	0.52	458	180	ND
	ST14-02	ND	57	24.9	0.14F	ND	14.8	13.2	362	1300	ND
	ST14-03	ND	ND	24.7	4.3	34.2	1.8	0.18	249	75	ND
	ST14-04	ND	ND	37.4	0.13F	0.77F	ND	6.38	259	ND	ND
	ST14-14	ND	ND	19.6	ND	1.2	ND	1.58	267	2900	ND
	ST14-24	ND	ND	18.4	0.22F	17.9	ND	0.02	308	13	ND
	ST14-26	ND	ND	24.3	0.32F	19.2	ND	2.71	346	ND	ND
	ST14-28	ND	ND	28.3	0.36F	0.61F	ND	12.54	478	ND	ND
	ST14-29	ND	ND	16.2	ND	5.1	5.4	18.84	434	3800	ND
	ST14-W16	ND	9.4J	23.2	0.32F	1.5	11.6	5.2	346	2800	ND
	ST14-W18	ND	ND	41.5	ND	13.5	10.7	4.77	246	5700	ND
	ST14-W21	ND	ND	8.6	ND	17.5	5.2	12.72	443	290	ND
	ST14-W31	ND	ND	24.2	3.1	29.4	0.97F	0	339	ND	ND
Landfill	LF05-19	56	ND	39.4	2.3	92.5	0.98F	0.01	339	ND	ND
	WHGLTA003	170	ND	35	4.1J	68.5	ND	0.33	337	ND	ND
	WHGLTA004	910	ND	11.7	3.9	25.8	ND	0.08	324	ND	ND
	USGS07T	ND	ND	11.2	0.98F	72.6	ND		250	ND	ND
	WP07-10C	1200	ND	55.5	0.24F	41.1	7	5.8	431	1100	0.78

[1] Alkalinity is measured as C_aCO_3 at pH 4.5

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TAB

Section 6.0

6.0 CONCLUSIONS AND RECOMMENDATIONS 432 93

Based on the results of the basewide quarterly sampling at NAS Fort Worth JRB for January 1998, a number of changes and updates have been made to the sampling program. These changes will be implemented beginning with the April 1998 sampling event. A summary of the analyses to be performed during April 1998 is provided in Table 6.1. All changes are described in the following discussion.

6.1 CHANGES IN WELLS ON INSPECTION LIST

The following seven wells will be deleted from the well inspection list: LF04-03, MW-1, MW-1A, PI-U9, TREE, TREE, and USGS02T. LF04-03, TREE, and TREE were mislabeled as wells. Monitoring wells MW-1, MW-1A, and USGS02T have been destroyed. Monitoring well PI-U9 was filled with a silicon-like substance and is no longer a functioning well. Monitoring wells HM-110 and HM-112 were added to the inspection list for the July 1998 sampling event. These wells were inadvertently excluded for the original list provided in the pre-draft GSAP (HydroGeoLogic 1997b).

6.2 CHANGES IN WELLS SELECTED FOR ANALYTICAL SAMPLING

The list of wells to be sampled during the April 1998 basewide quarterly sampling program is presented in Table 6-1. The following changes have been made due to changes that have occurred between the submittal of the pre-draft GSAP (HydroGeoLogic, 1997b) and the January 1998 sampling event:

- Monitoring well MW-1 was destroyed during installation of a new sewer line on the base between April and July 1997. Monitoring well SAV-2 has been sampled in its place since the July 1997 basewide quarterly sampling event. This document and future documents will be modified to reflect this change. Changes will also be made to the IRPIMS database submittals to reflect the well that has been sampled. Well construction information is not currently available for this well, so it is not certain that this well is an appropriate substitute. Additional paper searches will be undertaken to locate any available information on this well.

- Proposed monitoring well C-15 has been replaced by monitoring well WITCTA010. Well C-15 was never installed since well WITCTA010 was located adjacent to its proposed location. At the time of sampling, HydroGeoLogic was unaware that this change had been made, so WITCTA010 was not sampled in January 1998. However, it will be sampled in April 1998 and future sampling events.

Table 6.1
Monitoring Wells Selected for April 1998 Basewide Sampling

Area	Well	Objective						Well Type	Chemical Parameters[1]						
		S1	S2	L1	L2	L3	L4		App. IX[2]	VOCs	Pesticides, Herbicides[3]	BTEX	MTBE[4]	Metals	Natural Attenuation[5]
Flightline	GMI-22-02M				X			Sentry		X					
	GMI-22-03M				X	X		Plume		X					X
	GMI-22-04M				X	X		Plume		X					X
	GMI-22-05M	X	X					Perimeter		X				X	
	GMI-22-06M				X	X		Plume		X					X
	GMI-22-07M				X			Sentry		X					
	LSA1628-3				X	X		Plume		X					X
	MW-53				X	X		Plume		X					X
	SPOT35-5				X			Plume		X					X
	USGS04T	X						Perimeter		X				X	
	WITCTA010				X	X		Plume		X					X
	WITCTA024				X			Sentry		X					
East	17M			X				Plume				X			X
	BGSMW03			X				POC				X	X		
	BGSMW05			X				POC				X	X		
	BGSMW06			X				POC				X	X		
	BSS-B			X				POC				X	X		
	LF01-1D	X	X				X	Perimeter		X	X			X	
	SAV-2			X				POC				X	X		
	MW-10	X	X	X				POC/Perimeter				X	X	X	
	WHGLTA005	X	X	X				POC/Perimeter	X						X
	WHGLTA006	X	X	X				POC/Perimeter	X						X
	WHGLTA007			X				Plume	X						X
	WHGLTA008			X				Plume		X				X	X
	SD13-01			X				Plume		X	X				X
	SD13-02			X				Plume		X	X				X
	SD13-04			X				Plume		X	X				X
	SD13-06			X				Plume		X	X			X	X
	SD13-07	X	X	X				POC/Perimeter	X						X
	ST14-02			X				Plume				X		X	X

Table 6.1 (continued)
Monitoring Wells

Area	Well	Objective						Well Type	Chemical Parameters[1]						
		S1	S2	L1	L2	L3	L4		App. IX[2]	VOCs	Pesticides, Herbicides[3]	BTEX	MTBE[4]	Metals	Natural Attenuation[5]
East	ST14-03			X				Plume				X			X
	ST14-04			X				Plume				X			X
	ST14-14			X				Upgradient		X				X	
	ST14-24			X				Upgradient		X				X	
	ST14-26			X				Upgradient		X				X	
	ST14-28			X				Plume				X			X
	ST14-29			X				Plume				X			X
	ST14-W16			X				Plume				X			X
	ST14-W18			X				Plume				X		X	X
	ST14-W21			X				Plume				X		X	X
	ST14-W31			X				Plume		X	X			X	X
Landfill	LF05-19				X	X		Plume		X	X				X
	WHGLTA003	X	X		X	X		Plume/Perimeter		X				X	X
	WHGLTA004				X	X		Plume		X					X
	USGS07T[6]				X		X	Sentry		X					X
	WP07-10C				X	X	X	Plume		X	X				X

1 Samples from all wells will also be tested for the following standard field parameters: temperature, pH, electrical conductance, DO, oxidation-reduction potential (Eh), and turbidity.
2 Analysis for Appendix IX constituents will be completed during this quarter only.
3 Herbicides, organophosporus pesticides, and organochlorine pesticides/PCBs are being resampled for in all wells sampled for Appendix IX constituents in January 1998, due to laboratory quality control problems.
4 MTBE can be sampled as part of the BTEX suite (SW8020).
5 Natural attentuation parameters to be sampled are common anions (chloride, nitrate, sulfate), TOC, Fe(II), alkalinity, and methane.
6 Natural attenuation parameters will be sampled at USGS07T to be used for background comparison.

6.3 CHANGES IN WELL DESIGNATIONS

Several changes have been made to the original well designations based on a thorough review of the sampling results. These changes are as follows:

- The designation of monitoring well GMI-22-02M has been changed from "plume" to "sentry." No contaminants above PQLs were found in this well during this sampling event or during the basewide quarterly sampling during 1997. The change in designation means that the well will still be sampled for VOCs but will no longer be sampled for natural attenuation parameters.

- The designation of monitoring well WHGLTA003 has been changed from "plume" to "plume/perimeter." This well, while not being adjacent to the site boundaries, is the farthest downgradient well in the Landfill Area selected for sampling. Monitoring well IT-MW-01T, located farther downgradient on the site boundary, is being monitored by AFP 4 as part of its basewide quarterly sampling program. The change in well designation means that the well will still be sampled for VOCs, but will also be sampled for metals.

6.4 CHANGES IN ANALYTICAL METHODS

The changes in analytical methods used at each well are described in the following section. The most significant changes occur in the eight wells (in the East Area and Landfill Area) sampled for RCRA Appendix IX constituents. The results of the Appendix IX sampling were reviewed to determine whether any of the sampled wells contained analytes above RRS 2 values that were not part of the analytes in standard VOC or metal analysis suites. The results indicated that no analytes were present in any of the Appendix IX analyses above RRS 2 values. In fact, there was only one detection of an analyte above the PQL; this occurred in monitoring well SD13-04, and the analyte was 2-methylnaphthalene at a concentration of 54 μg/L. The RRS 2 value for 2-methylnaphthalene is 4,100 μg/L. Based on these results, Appendix IX sampling could be discontinued at all wells sampled for these analytes during the January 1998 sampling event. However, due to a QC problem at the laboratory (described in Section 4.5 of this report), analyses for herbicides, organophosphorus pesticides, and organochlorine pesticides/PCBs, and some VOCs must be rerun to confirm the results. Therefore, additional samples will be collected during the April 1998 sampling event to rerun these analyses. When the results of the retesting are reviewed, a new determination of the sampling protocol for these wells will be made.

6.4.1 Flightline Area

Twelve monitoring wells were selected for sampling in the 1998 GSAP in the Flightline Area (HydroGeoLogic, 1997b). One of these monitoring wells, proposed well C-15, was not installed because monitoring well WITCTA010 was adjacent to the proposed location. WITCTA010 has been added to the list of wells to be sampled in the future as a replacement well for C-15. All 12 monitoring wells selected for sampling in the GSAP will continue to be sampled as part of the basewide monitoring program.

Of the 11 wells sampled, 7 wells were designated as plume wells: 6 for the TCE plume and 1 for the fuel plume at AOC 4. One of these wells, GMI-22-02M, contained no VOCs above PQLS, indicating that it is currently outside of the limits of the plume. As a result, the designation of this monitoring well will be changed from "plume" to "sentry."

6.4.2 East Area

Twenty-nine wells were selected for sampling in the East Area. Four of these wells, WHGLTA005, WHGLTA006, WHGLTA007, and WHGLTA008, were not installed in time for the January 1998 sampling event, but should be in place for the April 1998 sampling event. Monitoring well SD13-07 contained free product and was not sampled. This monitoring well also contained free product when it was inspected during each quarterly sampling event in 1997.

Twenty-eight of the 29 wells selected for sampling in the East Area are part of ongoing LTM programs (Parsons, 1997; IT Corporation 1997a, 1997b). Five of these monitoring wells were sampled for Appendix IX analytes. Monitoring well SD13-04 contained the only detection of an analyte above a PQL: 2-methylnaphthalene at a concentration of 54 μg/L. The RRS 2 value for 2-methylnaphthalene is 4,100 μg/L. Based on these results and pending the results of the rerun of the herbicide, pesticide, and VOC suites, sampling for all Appendix IX constituents will be discontinued at these wells. Based on LTM requirements, monitoring will continue for these 28 wells as presented in Table 6.1.

The only other monitoring well selected in the East Area, monitoring well LF01-1D, serves as a perimeter well along the West Fork of the Trinity River. This well was sampled for RCRA Appendix IX constituents. The only analyte detected was manganese, which was detected at a level below the RRS 2 value. Based on the results of this sampling and pending the results of the rerun of the herbicide, pesticide, and VOC suites, sampling of monitoring well LF01-1D for all Appendix IX constituents will be discountinued. This well will continue to serve as a perimeter well, and sampling will continue for VOCs and metals.

6.4.3 Landfill Area

The five monitoring wells sampled in the Landfill Area during January 1998 will be sampled again in the April 1998 basewide quarterly sampling event for VOCs. The four plume wells (LF05-19, WHGLTA003. WHGLTA004, and WP07-10C) continue to provide data to delineate and monitor any movement in the TCE plume. In conjunction with the monitoring wells that AFP 4 plans to sample on NAS Fort Worth JRB in the Landfill Area, the wells provide good coverage of the area. As more wells are installed for investigation of individual SWMUs and AOCs within the Landfill

Area, these wells will be evaluated to determine if they should be added to the basewide quarterly monitoring network.

Two of the plume wells, LF05-19C and WP07-10C, were sampled for all Appendix IX constituents. The only detections of metals above background values appeared in monitoring well WP07-10C, where both arsenic and manganese were detected above background values but below their RRS 2 values. No other constituents were detected above PQLs for any of the Appendix IX constituents, with the exception of VOCs sampled for by EPA Method SW8260. Based on these results and pending the results of the rerun of the herbicide, pesticide, and VOC suites, sampling for all Appendix IX constituents will be discontinued at these two wells. Samples taken in future events will be analyzed only for VOCs using method SW8260.

The designation of monitoring well WHGLTA003 will be changed from "plume" to "plume/perimeter," because it is the most downgradient of the wells being sampled in the Landfill Area. As a result of this change, the well will be sampled for metals to monitor any metals contamination moving toward the base boundaries.

The final well in the Landfill Area is monitoring well UGSG07T. During the January 1998 sampling event, no compounds were detected in this well at above PQLs. This well will continue to serve as a sentry well for TCE contamination and as a background well for natural attenuation parameters with no change in designation.

TAB

Section 70

7.0 REFERENCES

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TAB

Appendix A

TAB

Table A-1

Water Level Measurements and Well Inspection Data

Table A-1. Groundwater Measurement and Monitoring Well Status Field Form
NAS Fort Worth JRB, Texas

Well	DTW	TD	Date	Time	Casing Dia	OVM BG	OVM BZ	OVM TOC	ID Plate	Pad Condition	Lock	Cap	Manhole Gasket	Bolts	Logbook Entry	Sampler Name (s)	Comments	QC
15B	7.86	12.62	1/13/98	9:05	2	0	0	0	No	Good	Good	Good	NA	NA	1/13/98	NH, KH	A thin film of product and fuel odor were present	
17I	9.78	19.79	1/14/98	1:50 PM	2	0	0	0	Yes	Good	Good	Good	NA	NA	1/14/98	NH, KH		
17J	10.33	21.28	1/14/98	2:35 PM	2	0	0	0.0	No	Good	Good	Good	NA	NA	1/14/98	NH, KH		
17K	8.56	18.69	1/14/98	1:58 PM	2	0	0	0	Yes	Good	Good	Good	NA	NA	1/14/98	NH, KH		
17L	9.26	21.02	1/14/98	2:12 PM	2	0	0	0	No	Good	Good	Good	NA	NA	1/14/98	NH, KH		
17M	7.99	17.75	1/14/98	8:48 AM	2	0	0	40.7	No	Good	Good	Good	NA	NA	1/14/98	NH, KH		
BGSMW01	6.25	22.26	1/15/98	9:28 AM	4	0	0	0	Yes	Good	Good	Good	Good	Good	1/15/98	NH, KH		
BGSMW02	10.39	20.62	1/15/98	8:44 AM	4	0	0	172	Yes	Good	Good	Good	Good	Good	1/15/98	NH, KH		
BGSMW03	9.64	20.62	1/15/98	8:34 AM	4	0	0	24	Yes	Good	Good	Broken	Good	Good	1/15/98	NH, KH		
BGSMW04	10.95	22.55	1/15/98	8:52 AM	4	0	0	134	Yes	Good	Good	Good	Good	Good	1/15/98	NH, KH		
BGSMW05	9.98	12.63	1/15/98	8:08 AM	4	0	0	0	Yes	Good	None	Good	Good	Good	1/15/98	NH, KH		
BGSMW06	9.56	17.09	1/15/98	8:15 AM	4	0	0	0	Yes	Good	None	Good	Good	Good	1/15/98	NH, KH		
BGSMW07	7.08	17.55	1/15/98	8:25 AM	4	0	0	19.5	Yes	Good	None	Broken	Good	Good	1/15/98	NH, KH		
BSS-A			1/15/98												1/15/98	NH, KH	Covered by dumpster	
BSS-B	8.72	12.80	1/15/98	10:31 AM	2	0	0	75	No	Good	Good	Good	NA	NA	1/15/98	NH, KH		
FT08-11A	9.15	17.62	1/15/98	3:25 PM	2	0	0	0	No	Good	Good	Good	NA	NA	1/15/98	NH, KH		
FT08-11B	7.55	17.01	1/15/98	3:38 PM	2	0	0	0	No	Good	Missing	Good	NA	NA	1/15/98	NH, KH		
FT09-12A	14.99	27.78	1/16/98	9:04 AM	2	0	0	0.4	No	Good	Good	Good	NA	NA	1/16/98	NH, KH	Hinge on outer protective cap is broken	
FT09-12B	29.44	37.73	1/16/98	8:54 AM	2	0	0	0.9	No	Good	Missing	Good	NA	NA	1/16/98	NH, KH	Soft bottom	
FT09-12C	30.38	39.55	1/16/98	9:14 AM	2	0	0	2.8	No	Good	Good	Good	NA	NA	1/16/98	NH, KH	Soft bottom	
FT09-12D	28.93	37.01	1/16/98	8:46 AM	2	0	0	31	No	Good	Good	Good	NA	NA	1/16/98	NH, KH	Soft bottom	
FT09-12E	29.77	38.63	1/16/98	9:20 AM	2	0	0	0.8	No	Good	Good	Good	NA	NA	1/16/98	NH, KH		
GMI-04-01M	18.86	20.79	1/13/98	10:51 AM	2	0	0	0	No	Good	Good	Good	NA	NA	1/13/98	CW, JAM		
GMI-22-01M			1/13/98												1/13/98	CW, JAM	Unable to locate	
GMI-22-02M	8.90	27.80	1/14/98	3:10 PM	2	~	~	~	No	Good	Good	Good	Good	Good	1/13/98	CW, JAM		
GMI-22-03M	20.19	34.87	1/14/98	10:38 AM	2	0	0	0	No	Good	Good	Good	NA	NA	1/14/98	CW, JAM		
GMI-22-04M	19.23	25.58	1/14/98	11:45 AM	2	0	0	0	No	Good	Good	Good	NA	NA	1/14/98	CW, JAM		
GMI-22-05M	10.10	13.78	1/14/98	9:12 AM	2	0	0	0	No	Good	Good	Good	NA	NA	1/14/98	CW, JAM		
GMI-22-06M	17.85	26.55	1/14/98	11:18 AM	2	0	0	0	No	Good	Good	Good	NA	NA	1/14/98	CW, JAM		
GMI-22-07M	15.01	23.25	1/13/98	3:10 PM	2	0	0	0	No	Good	Good	Good	NA	NA	1/13/98	CW, JAM		
GMI-22-08M	14.89	25.17	1/13/98	3:30 PM	2	0	0	0	No	Good	Good	Good	NA	NA	1/14/98	CW, JAM		
HM-110	22.00	34.55	1/16/98	11:10 AM	4	0	0	0	Yes	Good	Good - Dolphin	Good	Good	Good	1/16/98	CW, JAM	Not included in original inspection list included in pre-draft 1998 GSAP	
HM-111																		
HM-112																	Not included in original inspection list included in pre-draft 1998 GSAP	
HM-114	15.64	35.64	1/15/98	11:45 AM	4	~	~	~	Yes	Good	Good - Dolphin	Good	Good	Missing	1/15/98	CW, JAM		
HM-116	20.88	31.50	1/15/98	11:10 AM	4	~	~	~	Yes	Ok	None	Good	None	None	1/15/98	CW, JAM		
HM-117	19.90	38.48	1/15/98	10:50 AM	4	~	~	~	Yes	NA	Good - Dolphin	Good	Good	Good	1/15/98	CW, JAM		
HM-118	13.50	26.35	1/15/98	10:40 AM		~	~	~	Yes	Ok	None	Good	Good	Good	1/15/98	CW, JAM		
HM-119	11.64	28.90	1/15/98	10:35 AM	4	~	~	~	Yes	Ok	Good - Dolphin	Good	Good	Good	1/15/98	CW, JAM		
HM-120	1.55	17.65	1/15/98	10:00 AM	4	~	~	~	Yes	Ok	Good	Good	Good	Good	1/15/98	CW, JAM		
HM-121	16.96	34.50	1/15/98	9:45 AM	4	~	~	~	Yes	Ok	Good	Good	Good	Good	1/15/98	CW, JAM		
HM-122																		
HM-123	23.62	38.35	1/16/98	8:15 AM	4	0	0	3.8	Yes	Good	Good - Dolphin	Good	Broken	Good	1/16/98	NH, KH	Protective outercasing damaged	
HM-124	12.56	24.38	1/16/98	9:30 AM	4	~	~	~	No	Bad	Good - Dolphin	Good	Good	Good	1/16/98	CW, JAM		
HM-125																		
HM-126	11.43	35.78	1/15/98	11:55 AM	4	~	~	~	Yes	Ok	None	Good	Good	1 Bolt	1/15/98	CW, JAM		
HM-127	21.43	37.80	1/15/98	12:10 PM	4	~	~	~	Yes	Fair	Good - Dolphin	Good	Good	Good	1/15/98	CW, JAM		
ITMW-01T	10.66	21.70	1/13/98	11:30 AM	4	0	0	0.4	No	Good	Good - Dolphin	Good	Good	Good	1/13/98	CW, JAM		
LF01-1A	29.16	41.25	1/15/98	4:15 PM	2	0	0	0	Yes	Good	Good	Good	NA	NA	1/15/98	NH, KH		
LF01-1B	8.56	19.74	1/13/98	12:55 PM	2	0	0	0	No	Good	None	Good	NA	NA	1/15/98	NH, KH	Water on outer casing - removed	
LF01-1C	12.36	32.55	1/13/98	1:32 PM	2	0	0	0	No	Good	Good	Good	NA	NA	1/13/98	NH, KH		
LF01-1D	13.20	28.08	1/13/98	1:10 PM	2	0	0	0	No	Good	None	Good	NA	NA	1/13/98	NH, KH		
LF01-1E	12.19	32.00	1/13/98	1:55 PM	2	0	0	0	No	Good	Good	Good	NA	NA	1/13/98	NH, KH		
LF03-3D	12.21	17.97	1/16/98	11:00 AM	2	0	0	0	No	Ok	None	Good	NA	NA	1/13/98	CW, JAM		

DTW = depth to well; TD = total depth; OVM BG = Organic Vapor Meter Reading - Background; OVM BZ = Organic Vapor Meter Reading - Breathing Zone; OVM TOC = Organic Vapor Meter Reading - Top of Casing.

Table A-1. Groundwater Measurement and Monitoring Well Status Field Form
NAS Fort Worth JRB, Texas

Well	DTW	TD	Date	Time	Casing Dia	OVM BG	OVM BZ	OVM TOC	ID Plate	Pad Condition	Lock	Cap	Manhole Gasket	Bolts	Logbook Entry	Sampler Name (s)		Comments	QC
LF04-01																			
LF04-02	27.70	38.22	1/13/98	8:48 AM	2	0	0	1.3	Yes	Ok	Good	Good	NA	NA	1/13/98	CW, JAM			
LF04-03																		Does not appear to be a well; location is an electrical box	
LF04-04	17.98	26.68	1/13/98	11:20 AM	2	0	0	0	Yes	Ok	Good	Good	Good	Good	1/13/98	CW, JAM			
LF04-10	31.88	49.95	1/13/98	11:01 AM	2	0	0	0	Yes	Ok	None	Good	Good	Good	1/13/98	CW, JAM			
LF04-4A	8.27	24.86	1/13/98	10:40 AM	2	0	0	0	No	NA	Good	Ok	NA	NA	1/13/98	CW, JAM			
LF04-4B	17.42	25.10	1/13/98	10:25 AM	2	0	0	0	No	NA	Good	Ok	NA	NA	1/13/98	CW, JAM			
LF04-4C	17.66	27.72	1/13/98	10:02 AM	2	0	0	0	No	NA	Good	Ok	NA	NA	1/13/98	CW, JAM			
LF04-4D	19.40	27.78	1/13/98	9:54 AM	2	0	0	0	No	Ok	Good	Ok	NA	NA	1/13/98	CW, JAM			
LF04-4E	22.84	30.60	1/13/98	9:45 AM	2	0	0	0	No	Ok	Good	Ok	NA	NA	1/13/98	CW, JAM		Top of standpipe is broken	
LF04-4F	28.31	37.00	1/13/98	8:37 AM	2	0	0	0.4	No	Ok	Good	Cracked	NA	NA	1/13/98	CW, JAM		Slip on cap is cracked	
LF04-4G	25.14	32.73	1/13/98	9:36 AM	2	0	0	0	No	Ok	Good	Ok	NA	NA	1/13/98	CW, JAM			
LF04-4H	18.50	18.73	1/13/98	10:55 AM	2	0	0	0	No	Ok	Good	Ok	NA	NA	1/13/98	CW, JAM			
LF05-01	16.64	27.51	1/15/98	12:00 PM	2	~	~	~	Yes	Ok	Good	Good	NA	NA	1/15/98	CW, JAM			
LF05-02	23.04	29.75	1/16/98	7:48 AM	2	0	0	0	No	Good	Good	Good	NA	NA	1/16/98	NH, KH			
LF05-14			1/13/98	9:08 AM	6				No	Ok	None	Ok	Good	Good	1/13/98	CW, JAM		Cap was not cracked or broken, but was too tight to remove	
LF05-18	18.49	23.58	1/13/98	11:50 AM	2	0	0	0	No	Ok	Good	Ok	Ok	Ok	1/13/98	CW, JAM			
LF05-19	13.42	20.50	1/13/98	11:37 AM	2	0	0	0.5	No	Ok	Good	Good	Ok	Ok	1/13/98	CW, JAM			
LF05-5A	22.71	30.39	1/15/98	4:02 PM	2	0	0	0	No	Good	Good	Good	NA	NA	1/16/98	NH, KH		Notch on the south side of casing; not the north side	
LF05-5B	3.46	12.48	1/13/98	8:05 AM	2	0	0	0.5	No	NA	Broken	Ok	NA	NA	1/13/98	CW, JAM			
LF05-5C	9.76	21.21	1/15/98	3:48 PM	2	0	0	0	No	Good	Good	Good	NA	NA	1/15/98	NH, KH		Well is slowly being buried by runoff deposits	
LF05-5D	10.58	21.14	1/16/98	8:33 AM	2	0	0	0	No	Good	Missing	Good	NA	NA	1/16/98	NH, KH			
LF05-5E	25.66	35.53	1/15/98	4:08 PM	2	0	0	0	No	Good	Good	Good	NA	NA	1/15/98	NH, KH		Casing is cracked	
LF05-5F	23.87	43.78	1/13/98	9:00 AM	6	0	0	2.6	No	Ok	None	Ok	Ok	Ok	1/13/98	CW, JAM		Mislabeled RW-7	
LF05-5G	20.74	30.14	1/13/98	9:16 AM	2	0	0	0	No	NA	Good	Ok	NA	NA	1/13/98	CW, JAM			
LF05-5H	15.24	16.14	1/13/98	9:08 AM	2	0	0	0.7	No	NA	Good	Ok	NA	NA	1/13/98	CW, JAM			
LSA1628-1	9.70	18.89	1/14/98	2:15 PM	4	~	~	~	No	Good	Good	Good	Good	Good	1/14/98	CW, JAM			
LSA1628-2	9.73	19.15	1/14/98	2:10 PM	4	~	~	~	No	Good	Good	Good	Good	Good	1/14/98	CW, JAM			
LSA1628-3	9.71	17.89	1/14/98	2:05 PM	4	~	~	~	No	Good	Good	Good	Good	Good	1/14/98	CW, JAM			
MW-1			1/15/98												1/15/98	NH, KH		Monitoring well could not be located, new sewer pipe is now in that location	
MW-10	9.43	32.95	1/15/98	1:24 PM	4	0	0	190	No	Good	None	Broken	Broken	1 missing	1/15/98	NH, KH		Protective outercasing damaged; notch on east side of casing	
MW-11	23.29	32.40	1/15/98	1:15 PM	4	0	0	0	No	Good	Broken	Broken	Good	Good	1/15/98	NH, KH		Notch on south side of casing	
MW-11A	22.26	26.07	1/14/98	4:05 PM	4	~	~	~	No	Ok	Good	Good	Good	1 missing	1/14/98	CW, JAM			
MW-12	4.61	27.37	1/15/98	2:08 PM	4	0	0	0	No	Good	Missing	Broken	Broken	2 missing	1/15/98	NH, KH		Protective outer casing damaged	
MW-12A	Dry	16.45	1/16/98	9:36 AM	4	0	0	0	No	Good	None	Good	Broken	Good	1/16/98	NH, KH		Well was dry	
MW-13																			
MW-18	16.08	19.73	1/16/98	9:37 AM	4	~	~	~	No	Ok	None	Good	Good	Good	1/16/98	CW, JAM			
MW-19	15.78	19.65	1/16/98	9:35 AM	4	~	~	~	No	Ok	None	Good	Good	Good	1/16/98	CW, JAM			
MW-1A																			
MW-2	7.06	47.74	1/16/98	2:04 PM	4	0	0	11.1	No	Broken	Good	Broken	Missing	Missing	1/16/98	NH, KH		Well has been badly damaged; protective outer casing is missing	
MW-20	19.36	19.71	1/16/98	10:25 AM	4	0	0	0	No	Poor	None	Good	Good	Good	1/16/98	CW, JAM			
MW-21	19.28	19.60	1/16/98	10:30 AM	4	0	0	0	No	Ok	None	Good	Good	Good	1/16/98	CW, JAM			
MW-3	10.15	19.83	1/15/98	8:58 AM	4	0	0	0	No	Good	None	Good	Good	Good	1/15/98	NH, KH			
MW-36	3.93	19.70	1/15/98	9:55 AM	4	0	0	1.8	No	Good	None	Good	Good	Good	1/15/98	NH, KH			
MW-37	8.72	19.75	1/15/98	10:02 AM	4	0	0	0	No	Good	None	Good	Good	Good	1/15/98	NH, KH			
MW-38	15.58	18.40	1/14/98	11:05 AM	4	0	0	0	No	Ok	None	Good	Good	Good	1/14/98	CW, JAM			
MW-39	15.60	19.05	1/14/98	11:08 AM	4	0	0	0	No	Ok	None	Good	Good	Good	1/14/98	CW, JAM		Fuel odor present	
MW-4	5.68	15.19	1/15/98	10:24 AM	2	0	0	171	No	Good	None	Broken	Good	1 missing	1/15/98	NH, KH			
MW-40	15.80	19.55	1/14/98	10:50 AM	4	0	0	0	No	Ok	None	Good	Good	Good	1/14/98	CW, JAM			
MW-41	16.31	16.35	1/14/98	10:55 AM	4	0	0	0	No	Ok	None	Good	Good	Good	1/14/98	CW, JAM			
MW-42	15.96	19.36	1/14/98	11:03 AM	4	0	0	0	No	Ok	None	Good	Good	Good	1/14/98	CW, JAM		Fuel odor present	
MW-48	8.80	13.78	1/15/98	9:36 AM	4	~	~	~	No	Destroyed	Good	Good	Good	NA	1/15/98	CW, JAM		Pad is destroyed and cover plate is missing	
MW-49	8.95	14.89	1/15/98	9:25 AM	4	~	~	~	No	Ok	Good	Good	Good	Good	1/15/98	CW, JAM			
MW-5	3.34	7.90	1/15/98	10:48 AM	4	0	0	0	No	Good	Good	Good	NA	NA	1/15/98	NH, KH		Well is located in the drainage ditch	

DTW = depth to well; TD = total depth; OVM BG = Organic Vapor Meter Reading - Background; OVM BZ = Organic Vapor Meter Reading - Breathing Zone; OVM TOC = Organic Vapor Meter Reading - Top of Casing.

Table A-1. Groundwater Measurement and Monitoring Well Status Field Form
NAS Fort Worth JRB, Texas

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Well	DTW	TD	Date	Time	Casing Dia	OVM BG[1]	OVM BZ[2]	OVM TOC[3]	ID Plate	Pad Condition	Lock	Cap	Manhole Gasket	Bolts	Logbook Entry	Sampler Name(s)	Comments	QC
MW-50	8.65	14.38	1/15/98	9:28 AM	4	~	~	~	No	Ok	Good	Good	Good	Good	1/15/98	CW, JAM		
MW-51	8.88	15.12	1/15/98	9:32 AM	4	~	~	~	No	Ok	Good	Good	Good	Good	1/15/98	CW, JAM		
MW-52	9.23	19.34	1/16/98	10:05 AM	4	~	~	~	No	Ok	None	Good	Good	Good	1/16/98	CW, JAM		
MW-53	9.86	19.60	1/16/98	10:00 AM	4	~	~	~	No	Ok	None	Good	Good	1 bolt	1/16/98	CW, JAM		
MW-56	7.32	19.20	1/15/98	9:07 AM	4	~	~	~	No	Ok	None	Good	Good	Good	1/15/98	CW, JAM		
MW-57	13.76	14.32	1/15/98	8:15 AM	4	~	~	~	No	Ok	None	Good	Good	Good	1/15/98	CW, JAM		
MW-57B	7.02	19.50	1/15/98	9:10 AM	4	~	~	~	No	Ok	None	Good	Good	Good	1/15/98	CW, JAM		
MW-58	19.26	19.67	1/15/98	8:00 AM	4	~	~	~	No	Ok	None	Good	Good	Good	1/15/98	CW, JAM		
MW-59	19.30	19.60	1/15/98	8:10 AM	4	~	~	~	No	Ok	None	Good	Good	Good	1/15/98	CW, JAM		
MW-6	1.66	9.95	1/15/98	11:00 AM	4	0	0	95	No	Good	Broken	Good	Good	2 missing	1/15/98	NH, KH		
MW-7	7.49	16.59	1/15/98	10:37 AM	4	0	0	0	No	Good	None	Broken	Broken	1 missing	1/15/98	NH, KH	Outer protective casing damaged; notch facing south	
MW-8	3.42	26.21	1/15/98	1:31 PM	4	0	0	0	No	Good	None	Broken	Broken	2 missing	1/15/98	NH, KH	Manhole missing; protective outer casing damaged	
MW-9	5.28	27.82	1/15/98	1:52 PM	4	0	0	0	No	Good	Missing	Broken	Broken	2 missing	1/15/98	NH, KH	Protective outer casing damaged	
MW-IT-02T	31.46	61.40*	1/17/98	9:48 AM	4	0	0	6.7	Yes	Good	Broken	Good	Good	Good	1/17/98	NH, KH	ID plate WITCUS001; Note * the well was deeper than the metertape	
MW1-16	7.82	15.33	1/14/98	9:03 AM	4	0	0	0	No	Good	None	Broken	Missing	Missing	1/14/98	NH, KH	Casing has no protective covering and is sticking ~ 1' out of the manhole	
MWMTAC-001	27.31	43.60	1/13/98	2:12 PM	2	0	0	0	No	Good	Good - Dolphin	Good	Good	Good	1/13/98	CW, JAM		
OT-15C	7.69	15.48	1/13/98	8:55 AM	2	0	0	0	Yes	Good	None	Good	NA	NA	1/13/98	NH, KH		
P5	38.50	*	1/15/98	9:07 AM	2	0	0	1.2	No	Good	Good	Good	Good	Good	1/15/98	NH, KH	Note: * Well depth too deep to get a total depth	
PI-U9			1/15/98	10:20 AM	2										1/15/98	NH, KH	Well has been filled with a silican-like compound	
RW-1																	Recovery well for pump and treat system at Waste Pile 7	
SAV-1	7.01	18.89	1/15/98	1:38 PM	4	0	0	18.9	No	Good	Broken	Broken	Good	Good	1/15/98	NH, KH	Not labeled	
SAV-2	6.64	18.85	1/15/98	1:48 PM	4	0	0	8.2	No	Good	Missing	Broken	Broken	1 missing	1/15/98	NH, KH	Soft bottom	
SD13-01	10.37	17.44	1/13/98	8:38 AM	2	0	0	2.3	Yes	Good	Good	Good	NA	NA	1/13/98	NH, KH		
SD13-02	11.68	16.45	1/13/98	8:08 AM	2	0	0	35.5	Yes	Good	Good	Good	NA	NA	1/13/98	NH, KH		
SD13-03	8.47	16.57	1/13/98	8:28 AM	2	0	0	5.3	Yes	Good	Good	Good	NA	NA	1/13/98	NH, KH		
SD13-04	8.03	13.30	1/13/98	8:18 AM	2	0	0	111	No	Good	Good	Good	NA	NA	1/13/98	NH, KH		
SD13-05	8.37	13.65	1/13/98	2:40 PM	4	0	0	0	No	Good	None	Good	Good	Good	1/13/98	NH, KH		
SD13-06	9.37	13.81	1/13/98	9:30 AM	4	0	0	74.6	Yes	Good	Good	Good	NA	NA	1/13/98	NH, KH		
SD13-07	16.78	21.50	1/13/98	9:42 AM	4	0	0.9	188.15	Yes	Good	Good	Good	NA	NA	1/13/98	NH, KH	DTW was 16.78 after purging ~ 1 cup of free-product, strong fuel odor	
SPOT35-1	22.26	26.67	1/14/98	4:30 PM	2	~	~	~	No	Ok	None	Good	Good	Good	1/14/98	CW, JAM	Strong fuel odor present	
SPOT35-2	21.03	24.32	1/14/98	4:25 PM	4	~	~	~	No	Poor	None	Good	Good	Good	1/14/98	CW, JAM	Fair condition	
SPOT35-3	19.49	23.80	1/14/98	4:20 PM	2	~	~	~	No	Ok	None	Good	Good	Good	1/14/98	CW, JAM	0.03' of product	
SPOT35-4	20.05	24.35	1/14/98	4:35 PM	2	~	~	~	No	Ok	None	Good	Good	None	1/14/98	CW, JAM		
SPOT35-5	21.41	27.50	1/14/98	4:00 PM	4	~	~	~	No	Ok	None	Broken	Good	Good	1/14/98	CW, JAM	Strong fuel odor present	
SPOT35-6	22.62	28.02	1/14/98	3:20 PM	4	~	~	~	No	Ok	None	Good	Good	Good	1/14/98	CW, JAM	0.39' of product present; product was bailed	
SPOT35-7	6.36	20.40	1/14/98	4:45 PM	4	~	~	~	No	Ok	None	Good	Good	Good	1/14/98	CW, JAM		
ST14-01	12.02	18.28	1/13/98	4:14 PM	2	0	0	0	Yes	Good	Good	Good	NA	N	1/13/98	NH, KH		
ST14-02	10.52	19.36	1/13/98	4:45 PM	2	0	1.1	0	Yes	Good	Good	Good	NA	N	1/13/98	NH, KH		
ST14-03	7.75	19.78	1/14/98	9:15 AM	2	0	0	0	Yes	Good	Good	Good	NA	N	1/14/98	NH, KH		
ST14-04	10.69	19.21	1/13/98	3:51 PM	2	0	0	0	Yes	Good	Good	Good	NA	N	1/13/98	NH, KH		
ST14-14	5.83	20.34	1/14/98	4:52 PM	2	0	0	0	Yes	Good	None	Good	Good	1 missing	1/14/98	NH, KH		
ST14-24	10.28	17.00	1/14/98	9:40 AM	2	0	0	0	Yes	Good	None	Good	Good	Good	1/14/98	NH, KH		
ST14-25	5.65	16.35	1/14/98	9:52 AM	2	0	0	0	Yes	Good	None	Good	Good	Good	1/14/98	NH, KH	Soft bottom	
ST14-26	10.14	27.25	1/15/98	7:57 AM	2	0	0	0	Yes	Good	Good - Dolphin	Good	Good	Good	1/15/98	NH, KH		
ST14-27	7.36	15.81	1/14/98	5:04 PM	2	0	0	0	Yes	Good	None	Good	Good	Good	1/14/98	NH, KH		
ST14-28	10.46	17.02	1/13/98	3:00 PM	2	0	0	0	No	Good	Good	Good	Good	Good	1/13/98	NH, KH		
ST14-29	7.71	15.7	1/13/98	11:17 AM	2	0	0	0	Yes	Good	None	Good	Broken	Good	1/13/98	NH, KH		
ST14-30	4.35	15.03	1/13/98	11:28 AM	2	0	0	0	Yes	Good	None	Good	Good	Good	1/13/98	NH, KH		
ST14-W05	7.74	16.32	1/14/98	9:31 AM	2	0	0	0	Yes	Good	None	Good	Good	Good	1/14/98	NH, KH		
ST14-W06	8.42	22.40	1/14/98	11:45 AM	2	0	0	0	Yes	Good	Good - Dolphin	Good	Broken	1 missing	1/14/98	NH, KH		
ST14-W07	10.16	24.65	1/14/98	11:15 AM	2	0	0	0	No	Good	Good - Dolphin	Good	Good	Good	1/14/98	NH, KH	Manhole was cemented over; not labeled	
ST14-W08	9.18	24.95	1/15/98	7:47 AM	2	0	0	0	No	Good	Good - Dolphin	Good	Broken	Good	1/15/98	NH, KH		
ST14-W09	6.53	20.19	1/14/98	1:36 PM	2	0	0	0	Yes	Good	Good - Dolphin	Good	Broken	Good	1/14/98	NH, KH		
ST14-W10	4.91	19.95	1/14/98	2:42 PM	2	0	0	0	Yes	Good	Good	Good	Good	Good	1/14/98	NH, KH	Mislabeled on map as ST14-W12	

DTW = depth to well; TD = total depth; OVM BG = Organic Vapor Meter Reading - Background; OVM BZ = Organic Vapor Meter Reading - Breathing Zone; OVM TOC = Organic Vapor Meter Reading - Top of Casing.

Table A-1. Groundwater Measurement and Monitoring Well Status Field Form
NAS Fort Worth JRB, Texas

Well	DTW	TD	Date	Time	Casing Dia	OVM BG[1]	OVM BZ[1]	OVM TOC[1]	ID Plate	Pad Condition	Lock	Cap	Manhole Gasket	Bolts	Logbook Entry	Sampler Name (s)	Comments	QC
ST14-W11	5.7	18.00	1/14/98	2:48 PM	2	0	0	0	No	Good	Broken	Broken	Good	Good	1/14/98	NH, KH	Manhole cover was cemented over; soft bottom	
ST14-W12	4.18	17.68	1/14/98	2:20 PM	2	0	0	0	Yes	Good	Good	Good	Broken	Good	1/14/98	NH, KH	Mislabeled on map as ST14-W10	
ST14-W13	7.11	17.09	1/14/98	2:05 PM	2	0	0	0	No	Good	Good - Dolphin	Broken	Broken	None	1/14/98	NH, KH		
ST14-W15	9.21	18.70	1/14/98	3:50 PM	2	0	0	0	Yes	Good	Good - Dolphin	Good	Broken	Good	1/14/98	NH, KH		
ST14-W16	6.54	19.03	1/13/98	3:18 PM	2	0	0	0	Yes	Good	None	Good	Good	1 missing	1/13/98	NH, KH		
ST14-W18	6.18	17.45	1/13/98	3:30 PM	2	0	0	0	No	Good	Good - Dolphin	Good	Good	Good	1/13/98	NH, KH	Not labeled	
ST14-W19	8.74	16.65	1/13/98	3:40 PM	2	0	0	0	No	Good	Good - Dolphin	Good	Broken	1 missing	1/13/98	NH, KH	Not labeled	
ST14-W20	7.76	15.93	1/13/98	3:10 PM	2	0	0	0	Yes	Good	None	Good	Good	Good	1/13/98	NH, KH		
ST14-W21	8.35	17.6	1/13/98	4:00 PM	2	0	0	0	Yes	Good	None	Good	Good	1 missing	1/13/98	NH, KH		
ST14-W22	9.14	10.92	1/13/98	10:58 AM	2	0	0	0	Yes	Good	None	Good	Good	Good	1/13/98	NH, KH		
ST14-W23	2.41	10.04	1/13/98	11:40 AM	2	0	0	0	Yes	Good	None	Good	Good	Good	1/13/98	NH, KH		
ST14-W31	9.61	14.77	1/13/98	11:05 AM	2	0	0	0	Yes	Good	None	Good	Good	Good	1/13/98	NH, KH		
ST14-W32	2.96`	12.24	1/13/98	9:20 AM	2	0	0	0.6	Yes	Good	Good	Good	NA	NA	1/13/98	NH, KH	Note: Depth to water may be incorrect due to water along inside of casing	
TREE																		
TREE																		
USGS01P	30.73	`	1/13/98	3:45 PM	2	0	0	0	No	None	None	None	None	None	1/13/98	CW, JAM	Cover and casing broken; Note: total depth could not be obtained	
USGS01T	10.5	19.9	1/13/98	3:45 PM	2	0	0	0	No	None	Good	Good	None	None	1/13/98	CW, JAM		
USGS02T																		
USGS03T	3.1	8.55	1/13/98	3:00 PM	2	0	0	0	No	None	Good	Good	Good	Good	1/13/98	CW, JAM	No pad; top of well cover broken	
USGS04T	17.54	22.46	1/13/98	3:20 PM	2	0	0	0	No	Poor	Good	Good	Good	Good	1/13/98	CW, JAM	Fair to poor condition; if not repaired may deteriorate further	
USGS05P																		
USGS06P	57.95	74.15	1/15/98	4:20 PM	2	~	~	~	No	Good	Good	Good	Good	Good	1/15/98	CW, JAM		
USGS06T	17.08	24.88	1/15/98	4:25 PM	2	~	~	~	No	Good	None	Good	Good	Good	1/15/98	CW, JAM		
USGS07P	86	*	1/16/98	9:52 AM	4	0	0	0	No	Good	Broken	Good	Broken	2 missing	1/16/98	NH, KH	Note: Well depth too deep to get a total depth; not labeled	
USGS07T	8.29	15.25	1/16/98	10:00 AM	2	0	0	0	No	Broken	Missing	Good	Missing	Good	1/16/98	NH, KH		
W-153	18.86	38.22	1/15/98	11:25 AM	2	~	~	~	Yes	Good	Good	Good	Good	Good	1/15/98	CW, JAM		
WCHMHTA001	25.73	45.9	1/16/98	9:30 AM	2	0	0	0	No	Good	None	Good	Good	Good	1/16/98	CW, JAM	New well	
WCHMHTA002	19.01	42.43	1/16/98	12:00 PM	2	0	0	0	No	Good	None	Good	Good	Good	1/16/98	CW, JAM	Was labeled C-3 on map, new well	
WCHMHTA003	19.32	28.65	1/16/98	12:10 PM	2	0	0	0	No	Good	None	Good	Good	Good	1/16/98	CW, JAM	Was labeled C-3b on map, new well	
WCHMHTA004	19.56	37.83	1/16/98	12:12 PM	2	0	0	0	No	Good	None	Good	Good	Good	1/16/98	CW, JAM	Was labeled C-4 on map, new well	
WCHMHTA005	16.44	26.79	1/16/98	9:10 AM	2	~	~	~	No	Good	None	Good	Good	Good	1/16/98	CW, JAM	Was labeled C-5 on map, new well	
WCHMHTA006	16.26	36.55	1/16/98	9:15 AM	2	~	~	~	No	Good	None	Good	Good	Good	1/16/98	CW, JAM	Was labeled C-6 on map, new well	
WCHMHTA007	13.89	32.42	1/16/98	8:10 AM	2	~	~	~	No	Good	None	Good	Good	Good	1/16/98	CW, JAM	Was labeled C-7 on map, new well	
WCHMHTA008	12.65	24.61	1/16/98	8:35 AM	2	~	~	~	No	Good	None	Good	Good	Good	1/16/98	CW, JAM	Was labeled C-8 on map, new well	
WCHMHTA009	6.05	11.8	1/16/98	8:00 AM	2	~	~	~	No	Good	None	Good	Good	Good	1/16/98	CW, JAM	Was labeled C-10 on map, new well	
WCHMHTA010	5.87	24.14	1/16/98	8:00 AM	2	~	~	~	No	Good	None	Good	Good	Good	1/16/98	CW, JAM	Was labeled C-9 on map, new well	
WCHMHTA011	12.05	22.23	1/16/98	8:18 AM	2	~	~	~	No	Good	None	Good	Good	Good	1/16/98	CW, JAM	Was labeled C-11 on map, new well	
WCHMHTA012	13.49	19.05	1/17/98	10:48 AM	2	0	0	0	No	Submerged	Missing	Good	Broken	Good	1/17/98	NH, KH	Submerged pad; not labeled	
WCHMHTA013																	Not included on map in right location	
WCHMHTA014	10.71	11.93	1/16/98	12:45 PM	2	0	0	0	No	Good	None	Good	Good	Good	1/16/98	CW, JAM	Was labeled C-16 on map, new well	
WHGLTA002	11.35	20.07	1/13/98	1:20 PM	2	0	0	0	No	Good	Good	Good	Good	Good	1/13/98	CW, JAM	New well	
WHGLTA003	21.08	29.65	1/13/98	1:42 PM	2	0	0	0	No	Good	Good	Good	Good	Good	1/13/98	CW, JAM	New well	
WHGLTA004	16.38	23.65	1/15/98	3:04 PM	2	0	0	0	No	Good	Good	Good	Good	Good	1/15/98	NH, KH	Not labeled	
WITCTA001	14.98	21.08	1/15/98	8:40 AM	2	~	~	~	Yes	Good	Good	Good	Good	Good	1/15/98	CW, JAM		
WITCTA002	3.67	7.49	1/16/98	8:25 AM	2	~	~	~	Yes	Good	Good	Good	Good	Good	1/16/98	CW, JAM		
WITCTA003	13.29	23.6	1/15/98	8:20 AM	2	~	~	~	Yes	Good	Good	Good	Good	Good	1/15/98	CW, JAM		
WITCTA004	12.63	14.58	1/15/98	8:30 AM	2	~	~	~	Yes	Good	Good	Good	Good	Good	1/15/98	CW, JAM		
WITCTA005	11.37	18.96	1/15/98	2:55 PM	2	~	~	~	Yes	Good	Good	Good	Good	Good	1/15/98	CW, JAM		
WITCTA006	11.61	18.55	1/15/98	3:00 PM	2	~	~	~	Yes	Good	Good	Good	Good	Good	1/15/98	CW, JAM		
WITCTA007	13.45	22.18	1/13/98	4:12 PM	2	0	0	0	Yes	Good	Good	Good	Good	Good	1/13/98	CW, JAM		
WITCTA008	7.66	14.29	1/14/98	1:48 PM	2	~	~	~	Yes	Good	Good	Good	Good	Good	1/14/98	CW, JAM		
WITCTA009	5.04	12.79	1/13/98	4:23 PM	2	0	0	0	Yes	Good	Good	Good	Good	Good	1/13/98	CW, JAM		
WITCTA010	13.86	16.56	1/13/98	4:30 PM	2	0	0	0	Yes	Good	Good	Good	Good	Good	1/13/98	CW, JAM		
WITCTA011	16.34	23.37	1/15/98	2:45 PM	2	~	~	~	Yes	Good	Good	Good	Good	Good	1/15/98	CW, JAM		

DTW = depth to well; TD = total depth; OVM BG = Organic Vapor Meter Reading - Background; OVM BZ = Organic Vapor Meter Reading - Breathing Zone; OVM TOC = Organic Vapor Meter Reading - Top of Casing.

Well	DTW	TD	Date	Time	Casing Dia.	OVM BG[1]	OVM BZ[1]	OVM TOC[1]	ID Plate	Pad Condition	Lock	Cap	Manhole Gasket	Bolts	Logbook Entry	Sampler Name (s)	Comments	QC
WITCTA012	9.64	17.1	1/14/98	11:30 AM	2	0	0	0	Yes	Good	Good	Good	Good	Good	1/14/98	CW, JAM		
WITCTA013	14.5	21.14	1/14/98	11:40 AM	2	0	0	0	Yes	Good	Good	Good	Good	Good	1/14/98	CW, JAM		
WITCTA014	20.18	24.45	1/15/98	2:25 PM	2	~	~	~	Yes	Good	Good	Good	Good	Good	1/15/98	CW, JAM		
WITCTA015	17.5	25.25	1/14/98	10:38 AM	2	0	0	0	Yes	Good	Good	Good	Good	Good	1/14/98	CW, JAM		
WITCTA016	18.2	27.67	1/15/98	3:20 PM	2	~	~	~	Yes	Good	Good	Good	Good	Good	1/15/98	CW, JAM		
WITCTA017	8.29	13.6	1/14/98	9:24 AM	2	0	0	0	Yes	Good	Good	Good	Good	Good	1/14/98	CW, JAM		
WITCTA019	13.97	19.45	1/14/98	10:48 AM	2	0	0	0	No	Good	Good	Broken	Good	Good	1/14/98	NH, KH	Well label has been ripped off; cap not on top of casing and water inside protective casing up to the top of the casing.	
WITCTA020	19.1	25.6	1/16/98	9:55 AM	2	~	~	~	Yes	Good	Good	Good	Good	Good	1/16/98	CW, JAM		
WITCTA021	15.17	24.11	1/14/98	10:25 AM	2	0	0	0	Yes	Good	Good	Good	Broken	Good	1/14/98	NH, KH		
WITCTA022	16.56	23.58	1/14/98	10:40 AM	2	0	0	1.6	Yes	Good	Good	Good	Good	Good	1/14/98	NH, KH		
WITCTA024	16.49	23.23	1/14/98	10:20 AM	2	0	0	0	Yes	Good	Good	Good	Good	Good	1/14/98	CW, JAM		
WITCTA025	9.73	12.22	1/14/98	9:54 AM	2	0	0	0	Yes	Good	Good	Good	Good	Good	1/14/98	CW, JAM		
WITCTA026	5.4	9.51	1/15/98	10:10 AM	2	0	0	0	Yes	Good	Good	Good	Good	Good	1/15/98	NH, KH		
WITCTA027	9.37	22.84	1/15/98	9:20 AM	2	0	0	0	Yes	Good	Broken	Good	Good	Good	1/15/98	NH, KH		
WITCTA028	3.51	14.89	1/15/98	11:22 AM	2	0	0	0	Yes	Broken	Good	Good	Good	Good	1/15/98	NH, KH	Pad cracked but not near the protectve outer casing	
WITCTA031	3.66	6.93	1/14/98	10:10 AM	2	0	0	0.5	Yes	Good	None	Good	Good	Good	1/14/98	NH, KH		
WITCTA032	6.33	12.7	1/14/98	10:00 AM	2	0	0	0	Yes	Good	None	Good	Good	Good	1/14/98	NH, KH		
WITCTA033	8.77	13.95	1/14/98	5:13 PM	2	0	0	0	Yes	Good	Good	Good	Good	Good	1/14/98	NH, KH		
WITCTA034	7.68	13.12	1/13/98	2:31 PM	2	0	0	0	Yes	Good	None	Good	Good	Good	1/13/98	NH, KH		
WITCTA035	12.77	18.19	1/14/98	11:05 AM	2	0	0	0	Yes	Good	Good	Good	Good	Good	1/14/98	NH, KH		
WITCTA036	*	*	1/14/98	3:58 PM	2	0	0	5.3	Yes	Good	Good	Good	Good	Good	1/14/98	NH, KH	Free Product sock in well; Note: could not get an accurate water depth due to product	
WITCTA037	13.49	20.97	1/15/98	4:15 PM	2	~	~	~	Yes	Good	Good	Good	Good	Good	1/15/98	CW, JAM		
WITCTA039	16.36	24.66	1/15/98	3:12 PM	2	0	0	0.1	Yes	Good	Good	Good	Good	Good	1/15/98	NH, KH		
WJETA530	29.51	44.14	1/13/98	2:05 PM	2	0	0	0	No	Good	Broken	Good	Good	Good	1/13/98	CW, JAM		
WJETA531	15.34	33.73	1/13/98	2:40 PM	2	0	0	0	No	Good	Good - Dolphin	Good	Good	Good	1/13/98	CW, JAM		
WJETA534	24.39	39.7	1/13/98	2:29 PM	2	0	0	0	No	Good	Good - Dolphin	Good	None	Good	1/13/98	CW, JAM		
WJETA535	29.18	42.64	1/13/98	1:55 PM	2	0	0	0	No	Good	None	None	Good	Good	1/13/98	CW, JAM		
WP07-10A	26.89	37.77	1/15/98	3:55 PM	2	0	0	0	No	Good	Good	Good	NA	NA	1/15/98	NH, KH		
WP07-10B	26.88	37.02	1/13/98	8:30 AM	2	0	0	0.2	No	None	Good	None	NA	NA	1/13/98	CW, JAM		
WP07-10C	19.63	32.85	1/13/98	8:20 AM	2	0	0	0	No	None	Good	Good	NA	NA	1/13/98	CW, JAM		

[1]The symbol " ~ " indicates that an OVM was not used; however, there was product odor present.

DTW = depth to well; TD = total depth; OVM BG = Organic Vapor Meter Reading - Background; OVM BZ = Organic Vapor Meter Reading - Breathing Zone; OVM TOC = Organic Vapor Meter Reading - Top of Casing.

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TAB

Appendix A-2
Field Notes - Book 1

1/12/98

4:00 Arrive at airport in Washington Dulles

8:30 (LLCA) Arrive at DFW Airport.

10:15 Arrive at Laguardia via the Super Shuttle. Check into hotel & wait for Enterprise to Arrive.

11:10 Arrive at Enterprise to fill out paperwork for 2 Cargo Vans. Drive vans to Field Office at CAFB

12-12:45 Lunch

13:00 Speak with Alan Flak of AFBCA. He says IT is doing work on the sanitary sewer this week. We got 1 house key & 2 well keys. Load up equipment that has arrived via Fed Ex. Hexane, Methanol, & 2-580B's & 2-Interface probes. Give Alan his copies of the report that Eileen sent.

14:30 Dropped by Les Bowers (NAS JRB Fort Worth Water Program Manager) office and obtained permission letter to discharge purge water into sanitary sewer.

15:30 Do not have extension cord for pumping out purge water into sanitary sewer.

16:00 Off-site to Home depot to look at extension cords.

6:30 Took Nicole on tour of base & get gas in VAN.

Kenneth Hurley 1/12/98

1/13/98

7:00 On-site, Get decon solutions ready, calibrate equipment, Get gloves, etc ready for sampling.

7:30 Health + Safety Meeting

7:45 Leave Field office.

7:50 Arrive at MW-32 (well vent)
OVM BG = 0 OVM = 22.5 OVM BZ = 0
DTP = NA
DTW = 8.59 TD = 111

0808 Arrive SD13-02
OVM BG = 0 OVM = 35.5 OVM BZ = 0
DTP = NA DTW = 11.65 DT = 16.45

0818 SD13-04
OVM BG = 0 OVM = 111.0 BZ = 0
DTP = NA DTW = 8.05 TD = 13.3

0828 SD13-03
BG = 0 OVM = 5.3 BZ = 0
DTP = NA DTW = 8.47 TD = 16.57

0838 SD13-01
BG = 0 OVM = 2.3 BZ = 0
DTP = NA DTW = 10.37 DT = 17.44

0855 DT-15
BG = 0 OVM = 0 BZ = 0
DTP = DTW = 7.69 TD = 15.8

0905 DT-15B
BG = 0 OVM = 0 BZ = 0
DTP = 7.85 DTW = 7.855 TD = 12.62
a film of product
not enough to release slight odor

0920 SD14-W32
BG = 0 OVM = 0.6 BZ = 0
DTP = DTW = 2.96* TD = 12.21
** 0 on outside of casing

0930 SD13-06/MW-06
BG = 0 OVM = 74.6 BZ = 0
DTP = NA DTW = 9.37 TD = 13.81

1.13.98

Time	Well ID	BG	CUM	BZ	OTP	OTW	TOI
0942	S013-07	0	188.15	0.9	16.69	16.78	21.5
1415	PPW01 PPW02 PPW03						
1020	Back to office to change Decon water						
1048	Drop five product sock off at Base Environmental office John Cummings received socks.						
		BG	CUM	BZ	OTP	OTW	TO
1058	STM-W22	0	0	0	NA	9.14	10.92
1105	STM-W31	0	0	0	NA	9.61	14.77
1117	STM-W29	0	0	0	NA	7.71	15.70
1128	STM-W30	0	0	0	NA	4.35	15.043
1140	STM-W23	0	0	0	NA	2.41	10.04
1200	LUNCH						
1220	Back from lunch load up ice coolers bring to office						
1255	LF01-110	0	0	0	NA	8.56	19.74
1310	LF01-10	0	0	0	NA	13.20	28.08
1332	LF01-1C	0	0	0	NA	12.36	32.55
1355	LF01-1E	0	0	0		12.19	32.0
	LF01-1F						
1410	Back to office to call Andre George.						
1431	WITCA034	0	0	0	NA	7.68	13.12
1440	S013-05	0	0	0	NA	8.37	13.65

strong odor, petroleum odor, bailing free product

16.78 = NATW after purging Purged ~ 1 cup of free product

* have not been installed as of 11/3/95

* No Lock
* Labeled on map as LFO-1F
* soft bottom
* Not located on outside of fence. New concrete on inside of fence

* 4" casing

1·13·98

Time	Well Id	Bt	OVM	BZ	DTP	DTW	TD
1500	ST14-W28	0	0	0	NA	10.46	17.02
1510	ST14-W20	0	0	0	NA	7.76	15.93
1518	ST14-W16	0	0	0	NA	6.54	19.03
1530	ST14-W18	0	0	0	NA	6.18	17.45
1540	ST14-W19	0	0	0	NA	8.74	16.65
1551	ST14-04	0	0	0	NA	10.69	19.21
1600	ST14-W21	0	0	0	NA	8.35	17.60
1616	ST14-01	0	0	0	NA	12.02	18.28
1645	ST14-02	0	1.1	0	NA	10.52	19.36

1700 Return to field office. Dispose of decon H_2O sediment equipment for the night. ~~Fax Data~~ on H_2O evaluations to Hydrotechnologies, Inc.

1730 OFF SITE

Kenneth L Healy

1/13/98

1-13-98

Comments

* Missing bolt, H_2O around outer casing, numbered

Not labeled, H_2O around outer casing, Dolphin lock

Not labeled, missing 1 bolt

Kenneth L Hurley

1/13/98

1.14.98

700 Arrive at Walmart to pickup supplies.

720 Arrive at Base
open coolers and organize contents for future sampling

830 Health and Safety meeting

Time	Well ID	BG	OVM	O2	DTP	DTW	TD
0848	17M	0	40.7	0	NA	7.99	17.75
0903	MW1-16	0	0	0	NA	7.82	15.33
NW ~~0911~~	~~STM-03~~						
0910	PRW-05						
0915	STM-03	0	0	0	NA	7.75	19.78
0931	STM-W05	0	0	0	NA	7.74	16.32
0940	STM-W24	0	0	0	NA	10.28	17.00
0952	STM-25	0	0	0	NA	6.65	16.35
1000	WITCMA032	0	0	0	NA	6.33	12.70
1010	WITCMA031	0	0.5	0	NA	3.66	6.93
1025	WITCMA021	0	0	0	NA	15.17	24.11
1040	WITCMA022	0	1.6	0	NA	16.56	23.58
1098	WITCMA017	0	0	0	NA	13.97	19.45
1105	WITCMA035	0	0	0	NA	12.77	18.19
1115	STM-07	0	0	0	NA	10.16	24.65
1145	STM-06	0	0	0	NA	8.42	22.40

12:00-12:30 Lunch

12:45 Pick up FedEx Deliveries at AFRCA

13:00 Pack up faulty equipment and FedEx back to HAZC. Make phone calls to Eileen, Mike & Kew R.

1/14/98

Comments

* ~~[illegible]~~ casing has no protective covering around ground manhole cover not a locking
* Not put in as of 1/14/95 needs new cap

* Identified on map as STP-24
* Soft bottom

* well sealed off. Cap was off, outer casing full of water up to top of well.
* manhole cemented over no lock, delphinus lock
* delphinus lock

1/14/98

1330 Leave field office.

Time	Well ID	BG	OVM	BZ	DTP	DTW	TD
1336	STM-W09	0	0	0	NA	6.53	20.19
1350	17I	0	0	0	NA	9.18	19.49
1358	17K	0	0	0	NA	8.56	18.69
1405	STM-W13	0	0	0	NA	7.11	17.09
1412	17L	0	0	0	NA	9.26	21.02
1420	STM-W12	0	0	0	NA	4.18	17.68
1435	17J	0	0	0	~~[illegible]~~	~~[illegible]~~ 11.48	21.28
1442	STM-W10	0	0	0	~~10.32~~ NA	10.325 4.91	19.95
1448	STM-W11	0	0	0	NA	5.70	18.00

Decimator water imperiled

1510 Back to office. Call Hydrogeologic and Les Bowers about intention to discharge waste water into sewer.

TIME	WELL ID	BG	OVM	BZ	DTP	DTW	TD
1550	STM-W15	0	0	0	NA	9.21	18.30
1558	W1TEMO36	0	5.3	0	ALLP	ALLP	
1600							
1652	STM-W14	0	0	0	NA	5.83	20.34
1704	STM-W27	0	0	0	NA	7.36	15.81
1713	W1TEMO33	0	0	0	NA	8.17	13.95

1730 Back at tank. Approx 100 gallons have drained. Set 2x4' & set cover so that tank could continue to drain.

1800 Off-site.

1/14/98 Kenneth Hurley

1/14/98

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* Mislabeled on map as S114-10, manhole cover has been cemented over needs new loc. map
* ~~Delete~~
* Mislabeled on map as S114-W12.
* manhole and label have been cemented over, needs new cap & lock soft bottom

* Could not gauge due to over full of free product. Full of product could not get an accurate water depth reading.
* Begin discharge of Ferrisburgh Lake Sanitary Sewer. Change design water

1/14/98 Kenneth J. Hurley

1/15/98

7:00 On-site. LAW (Jack & Chris) arrive. LAW calibrates OVM, & prepares decon solutions. I checked & saw that the farm tank had fully drained (<50 gal) into sanitary sewer. Total = 900 gallons, flow rate = 1.66 gpm. estimated duration = 9 hours.

7:15 Still preparing gauging supplies.

7:30 Health and Safety

7:40 Leave Field Office.

Time	Well ID	BZ	TOC OVM	BZ	DTP	DTW	TD
0747	STM-MW08	0	0	0	NA	9.13	29.95
0757	STM-76	0	0	0	NA	10.14	27.25
0805	BGSMW05	0	0	0	NA	9.98	12.63
0815	BGSMW06	0	0	0	NA	9.56	19.04
0825	BGSMW07	0	19.0	0	NA	7.05	17.55
0834	BGSMW03	0	24.0	0	NA	9.64	20.62
0844	BGSMW02	0	172.0	0	NA	10.38	20.62
0852	BGSMW04	0	134.0	0	NA	10.95	22.55
0858	MW03	0	0	0	NA	10.15	19.83
0902	B5	0	1.2	0	NA	38.5	To Deep for TD
0920	WTCMW23	0	0	0	NA	9.37	22.54
0928	BGSMW01	0	0	0	NA	6.25	22.26
0958	MW36	0	18	0	NA	3.93	19.70
1002	MW37	0	0	0	NA	8.72	19.75
1010	WTCMW26	0	0	0	NA	5.40	9.51
1020	PIU9						
1024	MW4	0	~~170~~ NA 1.15.98 171.0	0	NA	5.68	15.19
1031	B&B	0	75.0	0	NA	8.42	12.80
1037	MW7	0	0	0	NA	7.49	16.59
1098	MW5	0	0	0	NA	3.34	7.92
1100	MW6	0	95.0	0	NA	1.66	9.95
1110	BSKA						
1122	WTCMW29	0	0	0	NA	3.51	19.88
1138	IFOI-1A						

1/15/98

* no well label

* no hatch on black mark Brass cap padlock 4"
* 4"

* no lock not labelled
* not labelled American lock (usesso 54 same well)

* Broken padlock, not labelled has been filled in silicon compound 2"
* no lock, not labelled, missing 1 bolt brass cap 2"

* Outer casing damaged. Cracked broken 1 bolt missing, no lock, hatch at South
* located in drainage ditch
* Missing 2 bolts 4" not labelled, lock will not open
* covered by garbage bin

* not found

1/15/98

1145 Break for Lunch

1215 Pickup FedEx at ARCO Headquarters. Take back to field office and unload. Call Improbed gic - Talk to Mike

Time	Well ID	BG	TOC	BZ	DTP	DTW	TD
1315	MW 11	0	0	0	NA	23.29	32.40
1324	MW 10	0	1090	0	NA	9.43	32.95
1331	MW 8	0	0	0	NA	3.42	26.21
1338	MW 2 SAU-1	0	18.9	0	NA	7.01	18.89
1348	MW 4 SAU-2	0	82	0	NA	6.69	18.85
1352	MW 9	0	0	0	NA	5.28	27.82
1408	MW 12	0	0	0	NA	4.61	27.37
1420	MW 2						
1430	MW 1						

Note: Check TD's from previous Qts for MW-1

1504	WHELTRACK	0	0	0	NA	16.38	23.65
1512	WITSTRO89	0	0.1	0	NA	16.36	24.66
1525	FTC3-11A	0	0	0	NA	9.15	17.62
1538	FTC3-11B	0	0	0	NA	8.55	17.01
1548	LFO5-5C	0	0	0	NA	9.16	28.21
1555	WPO7-10A	0	0	0	NA	26.89	37.79
1602	LFO5-5A	0	0	0	NA	22.71	30.39
1608	LFO5-5E	0	0	0	NA	25.66	35.53
1615	LFO4-01	0	0	0	NA	29.16	41.25

1710 OVM received from Amoco was not working sent back again. Charge → Offsite

MW-1 MW2 could not be found.
* SAU-2 is what we thought was MW-1 and has previously been sampled as MW-1

1730 Packed up B40 OVM for FedEx Pickup. Finished phone calls to lab & office. Dumped Decon H_2O into Farm tank off-site

1/15/98 Kenneth Hurley

1/15/98

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COMMENTS

* Notch on Southern side, needs new cap & lock (dolphin lock) 4" not labeled
* Protective cluster casing has been damaged, missing 1 bolt, broken gasket, dolphin lock, Notch facing East, needs new cap, no ID plate 4"
* Manhole missing, no lock, needs new cap, notch facing South, cluster protective casing damaged 4"
* not labelled 4" needs new cap & lock
* not labelled missing 1 bolt, needs new cap and lock 4", soft bottom
* Outer casing (protective) has been damaged, 2 bolts missing, no lock, needs new cap
* protective cluster casing damaged, gasket broken, 2 bolts missing, cap broken, dolphin lock
* has been filled in w/ cement
* Not found

* Not labelled

* Not labelled no lock
* Not labelled
* Not labelled
* Notch on South Side
* Casing is cracked

1/15/98 Kenneth L Hurley

1.16.98

700 On-Site Lowe (Jack and Chris) arrive. Lowe calibrates OVM, & prepares decon solution.

725 Health and Safety meeting

TIME	WELL ID	BG	TOC	BZ	DTP	DTW	TD
0748	LF05-02	0	0	0	NA	23.04	29.75
0755	HM-123						
* 0805	LF05-5A	0	0	0	NA	22.71	30.40
0815	HM-123	0	3.8	0	NA	23.62	38.35
0833	LF05-5D	0	0	0	NA	10.58	21.14
0846	FT09-12D	0	31.0	0	NA	25.83	31.01
0858	FT09-12B	0	0.9	0	NA	29.44	37.13
0909	FT09-12A	0	0.4	0	NA	14.99	27.45
0914	FT09-12C	0	2.8	0	NA	30.38	38.55
0920	FT09-12E	0	0.8	0	NA	29.77	38.63
0936	MW12A	0	0	0	NA	DRY	16.45
0941	MW13						
0952	USGS07P	0	0	0	NA	86.00	TD
1000	USGS07T	0	0	0	NA	8.29	15.25

1015 Drop OVM off with Jack and Chris

1030 Pick up Fed EX + new OVM. Bladder pump & control Inspection meter

1045 Call Lea Reagan about Appendix IX Sampling

Call about generator and compressor.

* NOTE - LF05-5A was done twice.

Call Matt Wilson about MW1 and MW2

Matt Wilson said Cuzmhill found MW1 and MW2 Jan. 1997 but both were heavily damaged.

1115 Delivered free product socks to John Cummings

1125 Meet w/ Alan concerning location of MW1 and MW2

Located MW-2, outer protective casing has been destroyed

MW-1 still not found.

1-16-98

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COMMENTS

* 2"
* Ground excavated for underground pipes or wiring. Well appears to have been buried at same time. DNE
* 2"
* Pressure cover casing damaged. 4" dolphin lock, ~~not~~ labelled P.P.M. inside well. Broken gasket
* 2" no lock. Slowly being buried by runoff deposits
* 2" Soft bottom
* 2" No lock, soft bottom
* 2" Pressure cover cap hinge broken (not attached)
* 2" Soft bottom
* 2"
* 4" Broken gasket
* Cannot locate
* Broken gasket, 2 bolts missing, not labelled. Too Deep to get TD
  Broken lock
* Cracked pad, no gasket

1.16.98

1220 Break for lunch

1255 Pick up generator, compressor, and metal detector.

Time	Well ID	B6	TOC	B2	DTP	DTW	TD
1404	MW-2	0	111	0	0	3.06	47.74

1430 Searched for MW-1 with a metal detector for over 30 minutes NEAR the sewer line. Did not find well but did find a piece of broken PVC with mark on top (such as to measure GW elevation from top of casing. Finally gave up search.

1450 Searched for MW-12 with metal detector for 20 min. No trace of the well could be found.

1545 Law off-site

1550 Ken back out rental office for a nondefective generator

Make copies of gauging log for Mike.

1630 Call Inco about returned cash with small keyboard

1650 Fax gauging logs to Mike (Decide to wait for 5 more gauging well logs and fax at a later date)

1700 OFF-SITE

1.16.95

* Protective outer casing destroyed, No manhole, needs new drop 4" Soft bottom

Note: Allen stated that HM-122 has been gone for quite some time.

432 127

1.17.98

0900 Arrive on Site, Ken mixes decon solutions and calibrates PID.

0920 Health and Safety meeting

0930 Off to search for missing wells

Time	Well ID	BG	TOC	BZ	DIP	DTW	TD
0948	MW17-02R WOITAUSOOH	0	6.7	0	NA	31.46	61.40 ?

10:30 Could not locate C-14 (alot of construction going on in the proposed area.

1040 Could not locate C-15

1048 C-12 ? 0 0 0 NA 13.49 19.05

1052 Other well was submerged under 4" of H2O could not access it

1150 Begin discharging 1st Quarter (July 1997) purge water into Sanitary Sewer per approval of Les Bowers

11.45 Finish Drum #1

1220 Finish Drum #3

1230 Finish Drum #5

1300 Finish Drum #7

1335 Finish Drum 10

1400 Finish Drum #12

1435 Finish Drum #15

1515 Finish Drum #17 (Completely done)
Begin Decon.

1545 Finish Decon. Off site.

1/17/98 Ken Hurley

1/12/98

432_129

• not located - depth unk. 4" ? Too Deep to kill
labelled as WITCUS001

2", no lock pad submerged in H_2O, not labelled

1/12/98 [illegible]

1.19.95

0700 Arrive on site
Organize coolers for sampling, hand wipes.
Have calibrate OVM and Horiba.
Pick-up drums for purge water containment.

0825 Health and Safety meeting

0838 Leave field office for groundwater sampling

0845 Arrive GMI-22-05M, check wind direction →
No wind → set up VAN on Northern side of well.

900 Setting up at GMI-22-05M, Layout plastic, setup decon, get Hardhat.

905 Nicole goes back to hotel to find well key.

OVM = 0
DTW = 10.54 TD = 13.77 HVC = 3.23

Set pump at 12.5'

1 VS = 3.23 (0.163) = 0.527 gal
3 VS = 1.58
5 VS = 2.63 gal

Pump is too large to measure static water level.

1030 Ken goes back to office to figure out the bladder pump

1130 Still having trouble with Bladder pump.
Called QED, they said that since air is blowing out moisture port, then the controller needs repair. Called IE and said that I would be sending the equipment back.

1200 Called Mike Rodtang & informed him that I was going to get a Grundfos & Controller from Hazco.

1-19-98

1220 Ordered Grundfos, converter + Alconox from HAZCO. Should be here tommorow morning. Scheduled FedEx PicKup (#249). We are going back to GMI-22-05M to decon pump + get ready for shipment back to IE Monitoring Instruments.

1220-1250 Lunch.

1330 Finish decon of equipment at GMI-22-05M back to Field Office to unload equip + pack for FedEx.

1415 Leave A-1 with 6500 watt Generator.

1425 Break at Hotel.

1440 Back at Field Off. Pack up Bladder pump + controller + prepared FedEx. Nicole begins packing ice for samples Called Greg Chester at IE Environmental Monitoring to inform him we are shipping equipment back. He says that we will be given credit since the equipment was faulty.

1510 Begin Sample Custody + FedEx. Nicole reading manual for spectrophotometer.

1600 Prepared trip blanks. Chris and Nicole prepare equipment blank.

1630 Pack samples in cooler

Equipment Blank → 011998 → Fe^{2+} = 0 mg/L

Jack shows how to use Fe^{2+} Iron Tester

Need "C" - D size batteries.

Continue with paperwork.

Faxed Mike R. todays paperwork

432 131

1-19-98

1700 Filling out Sampling Plan Details.

1715 Finish paperwork. Off-site.

Talked to Matt Wilson, CH2M Hill, he said that C-15 was not installed, that WJTCTR010 was sampled in its place. He gave me COCs from the sampling for AOC4.

1/19/98

Kim Hulley

1-20-98

700 KH + NH on-site. Stopped by Walmart to pick up ice and batteries for Fe^{2+} kit. Nicole begins calibrating equipment.

720 Loading equipment + sample coolers

730 Health + Safety. Note: LAW will not arrive until 9 am so that they will pick up Grundfos pump from FedEx.

750 Arrive at GMI-22-05M.

OVM = 0

DTW = 10.60 Set pump at 12.2'

TD = 13.77

DTW after pump placement = 10.58

805 Begin pumping at ~0.5 LPM

815 DTW = 10.68.

850 Sampled GMI-22-05M for VOCs + Metals

Collected DUPQ2 at this location.

915 Finish Decon of equipment.

925 Finish Forms

930 Back to Field Office.

Picked up Grundfos + Controller, 2-Alconox from Hazco.

Spectrophotometer + Iron Ampules from On-Site.

Air hose from IE (Will send back)

Received message from Mike. Sent LAW out with new pump.

1000 Called Mike Rodtang

WITCTA010 → Natural Attenuation + VOCs

1015 Leave Field Office

432 133

1-20-98

1030 GMI-22-07M (Sample for VOCs)

OVM = 0

DTW = 14.04 TD = 23.24 Screen (10-20.5)

Set pump at 18.5'

10.50 Begin purging flow = 0.4 Lpm
DTW = 15.75 (Discontinue low flow)

80% of original = 15.88' TOC

1115 Increase flow to 0.75 Lpm.

1145 Stop pumping after 7.5 gallons, allow to recharge before sampling. Turbidity never did stabilize.

1200 Sample GMI-22-07M for VOCs

1220 Finish Decon

1230 Finish Paperwork

1235 Lunch

1305 Call FedEx (#310)

Get Iron Kit. Fedex tubing to IE Mon. Inst.

1320 Leave Office.

1330 Arrive at USGS OUT. (Sample for VOCs + Metals).

Clear water from annulus.

OVM = 0 ppm.

DTW = 17.46' (TOC) Set pump at 19.5'

TD = 22.44'

DTW AP = 17.45'

1355 Begin pump → Flow = 0.5 Lpm.

Purge water is reddish orange.

1405 Beginning to clear, Horiba turbidity probe is flashing "9999"

1-20-98

1440 Sample USGS04T
1500 Finish Decon
1510 Finish paperwork.
1515 Arrive at 17 M.

OVM = 30 ppm
DTW = 8.44'
TD = 14.36'
DTW_{AP} = 8.45.

Set Pump at

Equipment Blank = 0
Fe = 6.30 mg/L

1530 Begin purging
1535 DTW: 8.71'
1640 Sampled 17m
1715 Finish Decon & Field Forms.
1800 Trip Blanks
Nicole + Jack prepare EB using submersible pump.
1845 Finish packing cooler for FedEx. Send Noise Meter back via FedEx.
1900 Faxing paperwork to Mike.
1910 Finish Sampling Plan Details.
1915 Dump Purge Water, Cleanup. Off-site

1/20/98

Ken Hurley

1-23-98

432 136

GM 22-06 MW2 | 0.01 mg/L

1700 Pack samples - Empty Barrel (rinse water)

1800 - Jack + Chris out.

CN

1.26.98

432 137

0700 Arrive on site. HGC on scene
Prepare coolers
Mix solutions for decon

0730 Health and Safety Meeting

0755 Arrive at GMW-22-03M

OVM = 0ppm

DTW = 20.27'
TD = 34.84'

Fe^{2+} = 0.03 mg/L

0915 Collected Sample for Anions, Alkalinity, Ferrous, TOC, Methane, VOCs

1005 Arrive at MW-11 / SAW-2

OVM = 11
DTW = 7.17
TD = 18.84'

SAMPLE Collected 1105

1130 Lunch

1230 Meeting for App 9 sampling, Labelling, pack vans

1330 Arrive SD13-04

OVM = 26
DTW = 8.84'
TD = 13.28'

1-26-95

Fe^{2+} = 13.75 mg/L

1425 Collect Samples

1545 Back to office

Bag ice, pack coolers

1630 leave for day

432 138

1.27.98

0800 Arrive on Site, calibrate equip

0830 Health and Safety meeting

mix decon solutions

fill out, labels

empty 55 gal drum

fill generator

0940 Arrive SO13-01

OVM = 0.1 ppm

DTW = 11.9'

TD = 17.4'

Back flow preventor had to be removed in order to obtain flow

Orion will not be used

T_{eff} = 8.60 mg/L

1030 Collect Sample

1130 Decon equipment, head to office

1145 Lunch

1245 Head to SO13-06WG03

OVM = 0 ppm

DTW = 9.61'

TD = 13.77'

1335 purge well dry due to fast drawdown rate

1520 Back up van will collect sample

1.28.98 Recharge at 11.16 80% would be 10.4

432 139

1530 car wash to wash off 1600

1550 check SP01135 - for product

Product 22.25 - 22.30

1610 Pump 55 Gal drum into farm tank

1635 Back at field office
Pack ice, propane coolers
unload van

1730 Jack off-site

1745 Roger off-site

432 140

0.4i

1-28-98 17.18 - 17.25

WTTCTA-036 - oil/product

800 - Calibrate meters - HRS mtg

830 - Leave to remove product from
Spot 35-06 DTP 22.22 DTW 22.30
0.52'

900 Finish removing product - drive to SD13-06
for sampling

915 - Sample well w/ bailer (Fe^{2+} = 0.52 mg/L)

930 Do Levels + Tape

1010 - Remove product from SD13-07
DTP 17.18 DTW 17.25

1030 Drive to WTTCTA-036 to bail product
Automatic pump in well - placed by someone else

KH
1100 Dropped absorbent pads off with John Cummings
of NAS Fort Worth.

1200 Collect equipment blank from pump used at
LF05-19 (Type II water). Fe^{2+} = 0.00 mg/L

1230 Lunch

1330 Back on-site, Dump Drums into Farm Tank.

1400 Composite sample (WC36TWC03) collected from
Farm Tank (VOCs, SVOCs & Metals) - 550 gallons in Tank

1500 Returned Generators
8 A.M. → Feb 6 in Knoxville

1700 Finish packing coolers & equipment.

1800 Leave for Day

432 141

TAB

Appendix A-4

Groundwater Field Data Sampling Sheets

GROUNDWATER FIELD SAMPLING DATA SHEET

432 113

Well No.: 17M	Site: NAS Fort Worth JRB
Sampler(s): KH, NH	Project No.: APC001-07GAA
Well Depth: 17.76	Date: 1/20/98 Time: 1640
DTW (ft): 8.44 DTP: N/A	Courier Air Bill No.: _____ FedEx _____ UPS _____ Other _____ Hand
Screen Interval (ft): 4.9-14.9 (BGS)	
Well Diameter (in): 2"	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft): 13'	Weather (sun/clear, overcast/rain, wind direction, ambient temperature):
Type of Pump: Grundfos 2" submersible	to NE,

Field Parameters

Time	Depth to Water (ft)	Flow Rate (gpm)	Total Volume (gal)	pH	Temp. (C)	Cond. (umhos/cm)	ORP	D.O. (mg/L)	Turb. (N.T.U.)	Description
1538	8.70	0.4	1.5	7.22	21.5	.671	-88.3	1.17	251	
1543	8.50		2.0	6.91	22.0	.683	-93.7	1.18	170	
1545	8.50		2.5	6.80	22.8	.692	-102.6	1.13	90	
1553	8.49		3	6.80	23.2	.685	-106.8	1.04	87	
1558	8.48		3.5	6.77	23.4	.682	-108.8	0.96	63	
1603	8.47		4	6.76	23.6	.680	-108.6	0.87	50	
1608	8.45		4.5	6.76	23.7	.679	-109.7	0.91	35	* pump surged
[illegible]	8.46		5	6.82	24.2	.656	-112.0	1.03	85	
[illegible]	8.47		5.5	6.83	23.9	.659	-109.4	.74	70	
1623	8.47		6	6.79	23.8	.664	-109.8	.73	46	
1628	8.46		6.5	6.75	23.8	.662	-111.7	.66	37	
1633	8.52		7.0	6.77	24.3	.665	-113.9	.62	38	
1638	8.53	N	7.5	6.78	23.9	.666	-114.3	.60	25	

Observations

Color: Clear Other (describe):

Odor: None Low Medium High Very strong H2S Fuel-like

Sample Parameters:

Notes: 1V = 1.52, 3V = 4.55, 5V = 7.6 gal

Signed/Sampler(s): Ken Hurley [illegible]

GROUNDWATER FIELD SAMPLING DATA SHEET 432 144

Well No.: BSS-B	Site: NAS Fort Worth JRB
Sampler(s): KH, NH	Project No.: APC001-07GAA
Well Depth: 12.80	Date: 1/23/98 Time: 1450
DTW (ft): 8.99 DTP: N/A	Courier Air Bill No.: _____ FedEx _____ UPS _____ Other _____ Hand
Screen Interval (ft): 3.8-8.8 (BGS)	
Well Diameter (in): 2"	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft): 10.5'	Weather (sun/clear, overcast/rain, wind direction, ambient temperature):
Type of Pump: Grundfos 2" submersible	S 54°F

Field Parameters

Time	Depth to Water (ft)	Flow Rate (gpm)	Total Volume (gal)	pH	Temp. (C)	Cond. (umhos/cm)	ORP	D.O. (mg/L)	Turb. (N.T.U.)	Description
1405	~~12.50~~ 9.99	Begin Purging (Flow @ 0.4 gpm)								Low Flow Invalid
1410	9.45	0.3	0.8							Slight sheen
1415	9.53		1.2	6.45	19.8	1.14	-143.5	.22	41	Gray slight odor
1420	9.26		1.6	6.47	19.8	1.14	-111.3	.25	50	
1425	9.24		2.0	6.49	20.0	1.13	-100.4	.22	43	
1430	9.34		2.3	6.50	21.4	1.12	-101.4	.21	45	
1435	9.36		2.7	6.50	22.1	1.12	-98.7	.25	53	
1440	9.42		3.1	6.50	22.1	1.12	-112.0	1.00	62	
1445	9.42		3.5	6.50	22.2	1.12	-111.3	.69	66	
1450		Collected		Sample						

Observations

Color: Clear Other (describe):

Odor: None (Low) Medium High Very strong H2S (Fuel-like) Benzene

Sample Parameters: BTEX w MTBE

Notes: 1V = 0.62 gal, 3V = 1.86 gal, 5V = 3.1 gal
Sampled after 5 well volumes

Signed/Sampler(s): Ken Hurley

GROUNDWATER FIELD SAMPLING DATA SHEET

Well No.: B65MW03	Site: NAS Fort Worth JRB
Sampler(s): NH JAM	Project No.: APC001-07GAA
Well Depth: 20.58	Date: 1-22-98 Time: 1250
DTW (ft): 9.86 DTP:	Courier Air Bill No.: _____ FedEx _____ UPS _____ Other _____ Hand
Screen Interval (ft): Unknown	
Well Diameter (in): 4"	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft): 13'	Weather (sun/clear, overcast/rain, wind direction, ambient temperature):
Type of Pump: Grundfos 2" submersible	S 40°F

Field Parameters

Time	Depth to Water (ft)	Flow Rate (gpm)	Total Volume (gal)	pH	Temp. (C)	Cond. (umhos/cm) mS/cm	ORP	D.O. (mg/L)	Turb. (N.T.U.)	Description
1315	10.05	0.4	1.5	6.65	21.4	0.91	-88.0	-0.57	4	clear, slight
1320	10.04	↓	2.0	6.63	22.5	0.91	-90.3	-0.59	4	petro odor
1325	10.02	↓	2.5	6.61	23.3	0.91	-95.4	-0.59	5	↓
1330	10.02	↓	3.0	6.61	23.3	0.91	-96.3	-0.62	5	↓
1335	SAMPLED	✓								SAMPLED

Observations

Color: Clear Other (describe):

Odor: None Low Medium High Very strong H2S Fuel-like

Sample Parameters: BTEX - MTBE

Notes: No Problems

Signed/Sampler(s): [signature]

GROUNDWATER FIELD SAMPLING DATA SHEET

432 146

Well No.: BGSMW-05	Site: NAS Fort Worth JRB
Sampler(s): KH, CW	Project No.: APC001-07GAA
Well Depth: 12.62	Date: 1/22/98 Time: 1520
DTW (ft): 5.14 DTP: —	Courier Air Bill No.: _____ FedEx _____ UPS _____ Other _____ Hand
Screen Interval (ft): —	
Well Diameter (in): 4"	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft): 9'	Weather (sun/clear, overcast/rain, wind direction, ambient temperature): SE 50°F
Type of Pump: Grundfos 2" submersible	

Field Parameters

Time	Depth to Water (ft)	Flow Rate (gpm)	Total Volume (gal)	pH	Temp. (C)	Cond. ~~(umhos/cm)~~ mS/cm	ORP mV	D.O. (mg/L)	Turb. (N.T.U.)	Description
1445	Begin pumping		Flow	= (0.3	Lpm)					
1450	5.19			7.23	20.8	0.670	80.0	2.15	9	
1455	5.20			7.15	22.0	0.681	76.8	1.37	0	
1500	5.20			7.12	22.5	0.695	78.3	1.08	0	
1505	5.20			7.10	22.7	0.701	75.7	0.87	0	
1510	5.22			7.09	23.0	0.706	77.2	0.70	0	
1515	5.24			7.09	23.0	0.710	80.0	0.67	0	
1520	5.24			7.08	23.1	0.710	79.8	0.68	0	
1520	Sampled									

Observations

Color: (Clear) Other (describe):

Odor: (None) Low Medium High Very strong H2S Fuel-like

Sample Parameters: BTEX w MTBE

Notes: 1V = 4.88 gal, 3V = 14.64, 5V = 24.4

Signed/Sampler(s): Ken Hurley [signature] [signature]

GROUNDWATER FIELD SAMPLING DATA SHEET

432 147

Well No.: 86SMW06	Site: NAS Fort Worth JRB
Sampler(s): NH JAM	Project No.: APC001-07GAA
Well Depth: 17.03	Date: 1/22/98 Time: 1020
DTW (ft): 9.70 DTP:	Courier Air Bill No.: ✓ FedEx ____ UPS ____ Other ____ Hand
Screen Interval (ft):	
Well Diameter (in): 4"	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft): 12'	Weather (sun/clear, overcast/rain, wind direction, ambient temperature):
Type of Pump: Grundfos 2" submersible	5 40°F

Field Parameters

Time	Depth to Water (ft)	Flow Rate (gpm)	Total Volume (gal)	pH	Temp. (C)	Cond. (umhos/cm)	ORP	D.O. (mg/L)	Turb. (N.T.U.)	Description
1025	9.86	0.4	1.5	6.58	21.7	1.20	95.4	-.23	4	Clear - no Odor
30	9.86		2.0	6.56	22.3	1.19	83.1	-.34	3	
35	9.86		2.5	6.55	22.7	1.18	64.3	-.49	3	
1040	9.84		3.0	6.55	23.2	1.17	52.3	-.50	3	
45	9.84		3.5	6.55	23.2	1.16	12.4	-.52	2	
50	9.79		4.0	6.55	23.3	1.16	1.4	-.49	2	
1055	9.79		4.5	6.55	23.3	1.14	-11.8	-.58	1	
	9.79		5.0	6.54	23.4	1.14	-16.2	-.59	1	
	9.78		5.5	6.53	23.8	1.15	-16.9	-.62	1	
1110	9.79		6.0	6.53	23.9	1.16	-15.5	-.62	1	
5 →	SAMPLER									

Observations

Color: Clear Other (describe):

Odor: None Low Medium High Very strong H2S Fuel-like

Sample Parameters: ~~VOCs~~ BTEX + MTBE

Notes: Good well no problems

Signed/Sampler(s): [signature]

GROUNDWATER FIELD SAMPLING DATA SHEET

432 148

RJH 1/21/98

Well No.: GMI-22-~~05~~ 02 M	Site: NAS Fort Worth JRB
Sampler(s): KH, NJH	Project No.: APC001-07GAA
Well Depth: 28.0	Date: 1/21/98 Time: 1050
DTW (ft): 9.05 DTP: N/A	Courier Air Bill No.: X FedEx ___ UPS ___ Other ___ Hand
Screen Interval (ft): 15-30	
Well Diameter (in): RJH ~~2"~~ 2"	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft): 21.5'	Weather (sun/clear, overcast/rain, wind direction, ambient temperature):
Type of Pump: Grundfos 2" submersible	drizzle, 40°F, Wind to SW

Field Parameters

Time	Depth to Water (ft)	Flow Rate (gpm) 4pm	Total Volume (gal)	pH	Temp. (C)	Cond. (~~umhos/cm~~) mS/cm	ORP	D.O. (mg/L)	Turb. (N.T.U.)	Description
9:20	9.14	0.4	1.0	7.0	21.0	.46	131.1	5.6	490	
9:25	9.11		1.5	7.00	20.7	0.453	138.7	5.57	560	
9:30	9.11		2	7.02	20.9	0.450	142.7	5.57	484	
9:35	9.09		2.5	6.98	21.1	0.450	153.9	5.62	421	
9:40	9.10		3	6.99	21.3	0.450	155.6	5.22	381	
9:40	9.11		3.5	6.99	21.5	.449	154.6	5.16	357	
9:45	9.09		4	6.35	21.6	.450	145.5	5.26	293	
9:50	9.10		4.5	6.52	21.7	.450	149.4	5.36	285	
9:55	9.13		5	6.80	21.8	.451	139.1	5.24	240	
10:00	9.11		5.5	6.72	21.8	.452	143.8	5.41	199	
10:05	9.09		6	6.75	21.9	.453	145.2	5.39	172	
10:10	9.09		6.5	6.74	21.9	.453	141.5	4.99	146	
10:15	9.11		7	6.70	21.9	.454	139.3	5.05	131	
10:20	9.12		7.5	6.68	21.9	.455	139.3	5.23	125	
10:25	9.13		8	6.66	21.9	.455	137.1	5.23	110	
10:30	9.12		8.5	6.64	21.9	.456	140.8	5.09	94	
10:35	9.11		9	6.62	21.9	.456	144.0	4.93	98	
10:40	9.12		9.5	6.60	21.9	.458	141.1	4.91	90	
10:45	9.13	✓	10 gal	6.59	21.9	.453	141.3	4.88	95	

1050 Sampled

Observations

Color: (Clear) Other (describe):

Odor: (None) Low Medium High Very strong H2S Fuel-like

Sample Parameters: VOCs, TPH, PAH, Methane, TOC, Anions, + Alkalinity

Notes: 1V = 3.08, 3V = 9.26, 5V = 15.4

Sampled after 3 vs + pH, temp, EC + DO stabilized

Signed/Sampler(s): Ken Hurley [signature]

GROUNDWATER FIELD SAMPLING DATA SHEET

432 149

Well No.: GMI-22-03 MW603	Site: NAS Fort Worth JRB
Sampler(s): JHM NH	Project No.: APC001-07GAA
Well Depth: 34.84'	Date: 1-26-98 Time: 0915
TTW (ft): 20.27' DTP:	Courier Air Bill No.: _____ FedEx _____ UPS _____ Other _____ Hand
Screen Interval (ft): 12' to 32'	
Well Diameter (in): 2"	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft): 25'	Weather (sun/clear, overcast/rain, wind direction, ambient temperature):
Type of Pump: Grundfos 2" submersible	5 42°F

Field Parameters

Time	Depth to Water (ft)	Flow Rate (gpm)	Total Volume (gal)	pH	Temp. (C)	Cond. (umhos/cm)	ORP	D.O. (mg/L)	Turb. (N.T.U.)	Description
0830	20.29	0.4	1.5	6.74	21.2	1.11	NF	-0.41	103	Silty grey
0835	20.29		2.0	6.72	21.7	1.11		-0.38	93	ORP inoperational
0840	20.29		2.5	6.70	21.5	1.10		-0.32	54	clearing
0845	20.29		3.0	6.68	22.8	1.10		-0.34	34	
0850	20.29		3.5	6.67	22.9	1.10		-0.41	28	
0855	20.29		4.0	6.67	23.0	1.10		-0.44	18	
0900	20.29		4.5	6.67	23.2	1.10		-0.42	14	
[illegible]	20.29		5.0	6.66	23.5	1.10		-0.45	10	
[illegible]10	20.29		5.5	6.66	23.5	1.10		-0.46	7	
0915	SAMPLED									

Observations

Color: Clear Other (describe): Silty Green initially - clearing quickly

Odor: None Low Medium High Very strong H2S Fuel-like

Sample Parameters: Nitrate, Methane, Anions, Alkalinity, TOC, Ferrous

Notes: NF - ORP meter not functioning

Ferrous - 0.03 mg/L

Signed/Sampler(s): [illegible]

GROUNDWATER FIELD SAMPLING DATA SHEET

432 150

Well No.: MI-22-04M	Site: NAS Fort Worth JRB
Sampler(s): KH, NH	Project No.: APC001-07GAA
Well Depth: 25.6	Date: 1 23 98 / Time: 910
DTW (ft): 19.36 / DTP: N/A	Courier Air Bill No.: _____ FedEx _____ UPS _____ Other _____ Hand
Screen Interval (ft): 13-23 (BC-5)	
Well Diameter (in): 2"	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft): 22'	Weather (sun/clear, overcast/rain, wind direction, ambient temperature):
Type of Pump: Grundfos 2" submersible	S 35°F

Field Parameters

Time	Depth to Water (ft)	Flow Rate (gpm)	Total Volume (gal)	pH	Temp. (C)	Cond. (umhos/cm)	ORP	D.O. (mg/L)	Turb. (N.T.U.)	Description
8:25	19.36	Begin pumping (Flow = 0.4 gpm)								N: Odor
8:30	19.47	0.4	1.2							Gray
835	19.56		1.7	6.62	21.5	1.09	-127.5	.40	169	
840	19.46		2.2	6.64	22.3	1.09	-63.8	-.09	136	
845	19.44		2.7	6.66	22.4	1.08	-76.7	-.10	89	
850	19.56		3.2	6.67	23.4	1.09	-49.2	-.36	44	
855	~~19.85~~		3.7	6.67	24.1	1.09	-67.6	-.30	26	~~Low Flow Model~~
900	19.47		4.2	6.67	23.6	1.08	-61.3	-.33	22	Interface Probe
905	19.47		4.7	6.67	24.3	1.08	-62.4	-0.53	13	
910	Sampled After 5 well volumes (5.2 gal)									

Observations

Color: (Clear) Other (describe):

Odor: (None) Low Medium High Very strong H2S Fuel-like

Sample Parameters: VOCs, Methane, TOC, Anions, Alkalinity + Fe^{2+}

Notes: 1V = 1.017 gal, 3V = 3.05, 5V = 5.08

Sampled after 5 well volumes

Signed/Sampler(s): Ken Hurley

GROUNDWATER FIELD SAMPLING DATA SHEET

432 151

Well No.: GMI-22-05M	Site: NAS Fort Worth JRB
Sampler(s): KH, NH	Project No.: APC001-07GAA
Well Depth: 13.77 (TOC)	Date: 1/20/98 Time: 850
DTW (ft): 10.60 DTP: N/A	Courier Air Bill No.: _____ FedEx _____ UPS _____ Other _____ Hand
Screen Interval (ft): 5.5-10.5 / BGS	
Well Diameter (in): 2"	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft): 12.2' (TOC)	Weather (sun/clear, overcast/rain, wind direction, ambient temperature):
Type of Pump: Grundfos 2" submersible	EAST, 45°F

Field Parameters

Time	Depth to Water (ft)	Flow Rate ~~(gpm)~~ LPM	Total Volume (gal)	pH	Temp. (C)	Cond. (umhos/cm)	ORP mV	D.O. (mg/L)	Turb. (N.T.U.)	Description
8:05	10.58	0.3-0.4	Begin Pumping							
:10			0.4							
:15			0.8	Filling Chamber						
8:20			1.2							
:25	10.69		1.6	7.24	19.0	1.01	270.1	2.78	102	
:30			2.0	7.27	18.6	0.93	246.3	2.64	95	
8:35			2.4	7.25	18.5	1.02	236.4	2.90	87	
:2			2.8	7.32	17.6	1.03	235.7	2.53	66	
:5	10.76		3.0	7.33	17.4	1.06	236.2	2.73	48	
850	Sampled									

Observations

Color: (Clear) Other (describe):

Odor: (None) Low Medium High Very strong H2S Fuel-like

Sample Parameters: VOCs, METALS

Notes: WC = 3.17' 1V = 0.517 gal, 3V = 1.55 gal, 5V = 2.58 gal

After 5 well volumes were purged, samples were collected

Signed/Sampler(s): Kenneth Hurley

GROUNDWATER FIELD SAMPLING DATA SHEET

432 152

Well No.: GMT-22-C10 MW03	Site: NAS Fort Worth JRB
Sampler(s):	Project No.: APC001-07GAA
Well Depth: 26.51	Date: 11/23/98 Time:
DTW (ft): 17.99 DTP:	Courier Air Bill No.: _____ FedEx _____ UPS _____ Other _____ Hand
Screen Interval (ft): 13.5-23.5	
Well Diameter (in):	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft):	Weather (sun/clear, overcast/rain, wind direction, ambient temperature):
Type of Pump: Grundfos 2" submersible	

Field Parameters

Time	Depth to Water (ft)	Flow Rate (gpm)	Total Volume (gal)	pH	Temp. (C)	Cond. (umhos/cm)	ORP	D.O. (mg/L)	Turb. (N.T.U.)	Description
1505	18.21	0.4	2.0	6.89	24.1	1.29	79.7	-0.07	430	Silty
1510	18.05	0.4	2.5	6.92	24.1	1.29	78.4	-0.27	361	"
1515	18.08	0.4	3.0	6.91	24.2	1.30	67.5	-0.47	219	"
1520	18.08	0.4	3.75	6.92	25.0	1.3	64.5	-0.59	200	pump surge
1525	18.17	0.4	4.50	6.92	24.2	1.29	67.8	-0.20	56	"
1530	18.16	0.4	5.0	6.91	24.3	1.30	68.3	-0.60	16	Clearing
1535	18.16	0.4	5.75	6.91	24.2	1.30	62.4	-0.72	10	"
1540	18.16	0.4	6.25	6.90	24.2	1.31	60.0	-0.72	5	"
1545	18.16	0.4	7.0	6.89	24.3	1.32	64.4	-0.73	2	"
1550	Sampled									

Observations

Color: (Clear) Other (describe):

Odor: (None) Low Medium High Very strong H2S Fuel-like

Sample Parameters: VOCs, Anion, Alkalinity, Methane, TOC, Ferrous

Notes: 3v = 4.2 5v = 7

Signed/Sampler(s): Jack McCown

GROUNDWATER FIELD SAMPLING DATA SHEET

Well No.: GMI-22-07M	Site: NAS Fort Worth JRB
Sampler(s): KH, NH	Project No.: APC001-07GAA
Well Depth: 23.24 (TOC) NOTCH	Date: 1/20/98 Time: 1200
DTW (ft): 14.04 DTP: N/A	Courier Air Bill No.: _____ FedEx _____ UPS _____ Other _____ Hand
Screen Interval (ft): 10.0 - 20.5 (BGS)	
Well Diameter (in): 2"	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft): 18.5'	Weather (sun/clear, overcast/rain, wind direction, ambient temperature):
Type of Pump: Grundfos 2" submersible	KJH ~~Wind~~ Wind to NW 40°F

- Begin Pumping @ 1050

Field Parameters

Time	Depth to Water (ft)	Flow Rate (gpm)	Total Volume (gal)	pH	Temp. (C)	Cond. (mmhos/cm) mS/cm	ORP	D.O. (mg/L)	Turb. (N.T.U.)	Description
10:55	16.86	0.4	~1.5gal	7.30	20.6	.785	255.4	5.26	283	Over 0.33' drawdown
1:00	16.55	↓		7.20	21.9	.806	256.4	3.94	650	
11:05	16.19		~2.0gal	7.19	22.6	.834	262.5	3.4	652	
11:10	16.10			7.17	23.3	.85	266.3	3.05	565	
:15	15.97		3.0	7.16	23.5	.855	264.7	3.08	465	
11:20	16.46	0.75		7.14	24.7	.854	252.6	3.13	358	Increase Rate
11:25	16.63	↓	5.0	7.17	24.1	.844	255.3	3.28	237	
?	16.35	↓		7.18	23.9	.845	255.6	3.23	260	
11:35	16.30	↓		7.17	24.4	.854	256.3	2.92	287	
11:40	16.58		7.0	7.17	24.1	.854	254.7	2.78	287	
11:45	16.70		7.5	7.18	24.5	.857	252.8	2.77	780	
		Stop pumping allow to Recharge								
1150	>17.00									
155	>17.00	Interface probe - malfunctioned								
12.00	15.12	← Sampled								

Observations

Color: Clear (Other) (describe): Slightly turbid

Odor: (None) Low Medium High Very strong H2S Fuel-like

Sample Parameters: VOCs

Notes: 1V = 1.5gal, 3V = 4.5, 5V = 7.5gal

Signed/Sampler(s): Ken Hurley [signature]

GROUNDWATER FIELD SAMPLING DATA SHEET

432 154

Well No.: LF01-10	Site: NAS Fort Worth JRB
Sampler(s): KH, CW	Project No.: APC001-07GAA
Well Depth: 27.90	Date: 1/27/98 Time: 1350
DTW (ft): 14.23 DTP: —	Courier Air Bill No.: _____ FedEx _____ UPS _____ Other _____ Hand
Screen Interval (ft): 16.4 - 22.1 BGS	
Well Diameter (in): 2"	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft): 21.0' (TOC	Weather (sun/clear, overcast/rain, wind direction, ambient temperature):
Type of Pump: Grundfos 2" submersible	SE 55°F

Field Parameters

Time	Depth to Water (ft)	Flow Rate ~~(gpm)~~ Lpm	Total Volume (gal)	pH	Temp. (C)	Cond. ~~(µmhos/cm)~~ mS	ORP	D.O. (mg/L)	Turb. (N.T.U.)	Description
1305	Begin Pumping			(Flow = 0.5 Lpm)						
1310	14.80	0.5	1.0	6.77	21.4	1.160	-28.0	0.80	20	Low Flow Initial
1315	14.58	0.9	2	6.73	22.0	1.160	-56.0	-0.08	10	Pump Surged
1320	14.94		3	6.71	22.9	1.160	-61.8	-0.24	50	
1325	14.59		4	6.70	22.9	1.160	-61.6	-0.33	15	Pump Surged
1330	14.70		6	6.69	23.3	1.160	-65.6	-0.40	15	
1335	14.67		7	6.69	23.3	1.160	-64.5	-0.46	10	Pump Surged
1340	15.23		8	6.69	23.2	1.150	-64.0	-0.48	9	
1345	15.30		9	6.69	22.9	1.150	-63.8	-0.51	9	
1350	15.53		10	6.69	22.7	1.150	-64.0	-0.52	8	
1350	Sampled									

Observations

Color: (Clear) Other (describe):

Odor: (None) Low Medium High Very strong H2S Fuel-like

Sample Parameters: Appendix III (VOCs, SVOCs, Pest/PCBs, Cyanide, Sulfide, Metals, Dioxins, Herbicides, Organ Pest.

Notes: 1V = 2.23, 3V = 6.68, 5V = 11.14

D.O. Read Negative

Sampled after 3 V's and stabilization

Signed/Sampler(s): Ken Hurley

432 155

TAB

Appendix A-3
Field Notes - Book 2

1-12-78

7:00 - Chris + Jack arrive at site.

Begin loading van + calibrating the OVMs.

7:50 - Leave to begin gauging wells.

0805 - Well LF05-58 - DTW - 3.46 ft TD - 12.48 ft

0820 - Well WPC7.16C DTW - 19.63 ft TD - 32.85 ft

0830 - Well WPC7.16B DTW - 26.88 TD - 37.02

0837 - Well LF04-4F DTW - 28.31 TD - 37.00

0848 Well LF04-02 DTW 27.10 TD 35.22

0900 LF05-5E DTW 23.87 TD 43.78

0908 LF05-5H DTW 15.24 TD 16.14

0920 LF05-5G DTW - 20.74 TD 30.14

0918 LF05-14 - Not able to Remove cap

0936 LF04-4G DTW - 25.14 TD 32.73

0945 LF04-4E DTW 22.84 TD - 30.60

0954 LF04-4D DTW 14.40 DTW - 27.78

1002 LF04-4C DTW 17.66 TD - 27.72

1005 - Back to field house to Answer page.

1025 - LF04-4B DTW - 17.42 TD 25.10

1041 - LF04 4A DTW - 8.27 TD 24.86

1041 GMI-04-01 m DTW 15.80 TD 28.17

1055 LF04-4H DTW 18.5 TD 18.73

1101 LF04-10 DTW 31.88 DTD - 49.95

1120 LF04-07 DTW 17.98 TD 26.65

1130 ITAW-01T DTW - 10.68 TD 21.70

1145 1150 LF04-17 DTW 13.42 TD 20.5

1150 LF05-18 DTW - 18.49 TD 23.58

1/13/98

1200 - Lunch

1300 - Arrive back at Fieldhouse After Lunch

1320 - WHGLTA002 DTW - 11.39 ft TD 20.07

1342 - WHGLTA003 DTW - 21.08 TD 29.65

1350 - WJETA535 - DTW 27.18 42.64

1405 - WJETA530 - DTW 29.51 TD - 44.14

1412 MWMTA001 DTW - 27.31 TD 43.60

1424 WJETA534 DTW - 24.39 TD - 34.70

1440 WJETA531 DTW - 15.34 TD 33.73

1500 USGS037 DTW 3.10 TD 8.55

1510 GMC 22-07A DTW - 15.01 TD - 23.25

1520 USGS047 DTW - 17.54 TD - 22.46

1530 GMC-22-08M DTW - 14.89 TD - 25.17

1545 USGS018 DTW - 30.73 TD - ? Over 100'

USGS017 DTW - 10.50 TD - 19.90

1612 WTCTA007 DTW - 13.45 TD - 22.18

1623 WTCTA009 DTW - 5.04 TD - 12.79

1630 WTCTA010 DTW - 11.36 TD - 16.56

1640 - Head back to Field house.

1650 - Arrive back at Fieldhouse - wash up

1700 - End day

1-14-98

0845 - Chris arrived at work - Chris works on assembling machine

0940 - Jack arrived - works on assembling machine

0900 - leave to gauge wells

0910 - arrive at well GME 22-05M

GME 2205 M - DTW-10.10 TD - 13.12

0924 - WETETA01 - DTW-8.77 TD-19.60

0954 - WETETA05 DTW 6.73 TD-19.20

1020 - WETETA04 DTW 16.97 TD 23.83

1030 - GME 2203 DTW -10.19 TD 34.97

1038 - WETETA03 - DTW - 17.50 TD 25.25

1050 DTW - 40

1051 DTW 41 DTW 15.82 TD 19.55

1103 DTW - 42 DTW 16.31 TD 16.35

DTW 15.86 TD 18.36

1105 MW-38 DTW-15.58 TD-18.40

1108 MW-39 DTW-15.60 TD 19.05

1115 GME-22-06M DTW 17.85 TD 26.55

1130 WETETA02 DTW 9.64 TD-17.10

1140 WETETA-013 DTW 14.50 TD 24.44

1145 GME-2204 DTW - 18.23 TD-23.58

1155 - head to field office for lunch

1-14-98

1200 - 1300 Lunch

1300 - Back at field office packing up broken Equipment and unpacking new equipment

1330 - Formulating gauging Plan with Ken Hurley

1340 Leave for Field

1348 - WITT 1000? - DTW - 7.66 TD - 14.29

1405 - LSA 1628-3 - DTW 9.71 TD 17.89

1410 LSA 1628-2 DTW 19.13 TD 19.15

1415 LSA 1628-1 DTW 9.72 TD 18.89

1430 - Went off Base to wash Van of FOO in order to gauge wells along Flight line

1500 - GW 22-02 DTW 8.90 TD 27.80

1520 - Spot 35-6 DTP 22.23 DTW 22.62 TD 28.02
0.39 AA product
used pails to Remove product

1600 Spot 35-05 DTW 21.44 TD 27.50

1605 MW-11A DTW - 22.06 TD 26.07

1620 - Spot 35-3 DTW 19.49 TD 23.8
product 0.03

1625 - Spot 35-2 DTW 21.03 TD 24.32

1630 Spot 35-1 DTW 22.26 TD 26.67

1635 Spot 35-4 DTW - 20.05 TD 24.35

1-14-98

1645 Spot 357 DTG 00.36 TO 20.40

1695 - Drive back to house

1115 - Dump buckets into water storage container

1130 - Unload HAN

1800 - Leave for Day

1-15-98

0700 - ARRIVE begin calibration & set-up

0745 - begin drilling to first well

800 MW-58 DTW 19.26 TD - 19.67

810 MW-59 DTW 19.30 TD 19.60

815 - MW-57 DTW - 13.76 TD 14.32

820 WITCH-2003 DTW 13.49 TD 23.60

830 WITCH-2002 DTW 14.03 TD 18.58

840 - WITCH-2001 DTW 14.98 TD 21.05

0907 - MW56 DTW - 7.32 TD 19.20

0910 - MW57B DTW - 7.02 TD - 19.50

0915 - MW49 DTW - 8.95 TD - 14.87

0923 - MW50 DTW - 8.65 TD - 14.33

0932 - MW51 DTW - 8.39 TD 15.12

0936 - MW48 DTW - 8.80 TD 13.78

945 - HM-121 DTW 16.96 TD 34.52

1000 HM-120 DTW - 1.55 TD 17.65

1005 - Waiting for Aircraft to clear to proceed Across Runway

1020 - HM 119 DTW - 11.64 TD - 28.90

1040 HM 118 DTW - 13.50 TD - 24.35

1050 - HM 117 DTW - 19.90 TD - 33.48

1-15-98

1110 HM-116 DTW 20.38 TD-31.50

1125 W153 DTW-18.86 TD-38.22

1145 HM-114 DTW 15.64 TD 35.64

1155 HM 126 DTW 11.43 TD-35.78

1200 LFOS-01 DTW 16.44 TD 27.51

1210 HM 127 DTW-21.45 TD 37.80

1230 Head back to field office for Meeting with Ken Hurley

1300 Lunch

1400

1400-2100 Head out from field office for more gposing

1400-21425 WITCTA014 DTW-20.18 TD 24.45

1445 WITCTA011 DTW 16.34 TD 23.37

1455 WITCTA005 DTW-11.37 TD-18.96

1500 WITCTA006 DTW-11.61 TD 18.55

~~1500 DTW~~

1520 WITCTA016 DTW 18.20 TD 27.67

1530-1600 Remove product from 35-06

1615- WITCTA 037- DTW 13.49 TD- 20.97

1620 USGS06C DTW 57.95 TD 74.15

1625 USGS06T DTW 17.05 TD 24.88

1730 Off-site 1/15/98 Kenneth Hurley

1-16-98

0700 Arrive on-site (Jack & Chris)

0715 Health & Safety Meeting

~~0740~~

0740 Leave for field

0800 WCHMHTA09 - DTW - 6.05 TD - 11.20

WCHMHTA10 - DTW - 5.87 TD - 24.11

0810 WCHMHTA07 - DTW - 13.89 TD 32.42

0818 WCHMHTA011 - DTW - 12.05 TD - 22.23

0825 WETCTAC02 - DTW - 3.67 TD - 7.49

0835 WCHMHTA008 DTW 12.65 TD - 24.61

0890 WCHMHTA-A05 DTW 16.44 TD 26.29

0915 WCHMHTA-A06 DTW 16.26 TD 36.55

0930 HM-125 unable to find due to construction

0931 HM-124 DTW - 12.56 TD 29.38

0935 MW19 DTW 15.78 TD - 19.65

0937 MW18 DTW - 16.08 TD - 19.73

0945 WETCTAC20 DTW - 19.10 TD - 25.60

1000 MW53 - DTW - 9.86 TD - 19.60

1005 MW52 DTW - 9.23 TD - 19.34

1025 MW 20 DTW - ~~19.28~~ 19.30 ft TD - ~~19.60~~ 19.50 ft

1030 MW 21 DTW - ~~19.30~~ 19.28 ft TD - 19.60

1100 LFO 3-35 DTW - 12.31 TD 17.97

1110 HM-110 DTW 22.00 TD 34.55

1130 C-11 DTW - 25.73 TD 40.40

1-16-98

1200 WC-HMTA-03 DTW 19.01 TD 42.43

1210 WCHMTA-03b DTW 19.32 TD 28.65

1212 WCHMTA-04 DTW 19.56 TD 37.83

1225 WCHMTA-06 DTW 10.71 TD 21.93

1330 Check sampling equip.

1430 Set up to discharge 1st Quarter (July 97) purge water into sanitary sewer. Generator will not start.

1545 Jack + Chris off-site. Nicole counting wells gauged + wells which were missed. Ken H. takes generator + metal detector back.

1630 Back at Field Office. Called Hazco about OVM with sunken keyboard. They credited us with the rental.

1700 Finish clean-up. Off-site

1/16/98

1-19-98

0710 - Arrive begin calibration & set-up

0730 begin loading Equipment

0800 - Sampling & Health Safety Mtg

0830 - Leave Field house

0900 - Arrive at well ST14-04WG03 to begin Sampling

10:40am Sampled

0945 - Begin Decon

~~1055am~~ Finish Decon - Leave for Field house

1110 - Run Fe Samples

1148 Leave for lunch

1300 Restock VON

1335 - Arrive at ST14-28

1415 - No steady flow of water from pump purge 3 well volumes.

1445 - Begin Sampling

1455 - Decon

1505 - Fe Testing - Hach - 10.54

1530 Leave for House

1540 Equipment Blanks

1600 Empty Barrell - Pack packed samples

1630 Hach Lecture

1700 Leave for House - off

1-20-98

0900 - Jack & Chris arrive on site to begin loading van and calibrating Equipment

0925 - Putting together sampling kits for wells.

1000 - Arrive @ ST14-26

1130 Begin Sampling Procedures

1200 - Run Fe samples & Begin Decon

ST14-26 Fe Results - 2.62 Dup - 2.71

1215 Drive to House

1230 Lunch

1330 Leave for ST14-14 - purge 3 volumes - due to drawdown

1445 - Sample well

1455 Decon Equip

1500 Run Fe sample - 1.58 mg/L

1510 Drill office

1515 - head to well ST14-29

1615 - Sample - pump 5 volumes due to drawdown

1630 - Decon

Run Ferrous sample 3.14 - 18.84

1635 Return to house

1645 Pump out Purge water to farm land

1500 Arrive back at field house and unload equipment - Chris leaves.

1515 - Begin preparing samples for shipment.

1840 - Jack leaves

1-21-98

0700 - Arrive & begin calibration
0730 - Health & safety meeting
0745 - Leave for well ST 14-24WCO3
0800 Arrive at well
0925 well pump
0935 - Begin sample - locked & dam for depletion & parameters
945 - Begin drop
955 - Run back to ZT - 0.02
1000 - Leave for well ST 14 02
1005 Arrive at well
1055 Pump started working
1125 Sampling begins
1140 Racer
1145 Back from samples - 12.66
Dep. 13.20
1210 Leave to house
1220 Leave for lunch
1320 Ken & Nicole Return to field house
Chris fixes trailer generator
1330 - Leave for next well
1340 - Arrive at well ST 14 WCO3
Raining Hard

1-21-98

13:45 Begin set-up

1440 Begin Sampling - OVM - 5 ppm

1450 Break

1500 Run back from Samples - 5.20

1510 Need to have to restock each sampling containers

5:30 Arrive @ Mar-53

1535 Begin setup

1550 - Drum down Recorded 0.33' - Begin Purge 3 volumes

16:00 Stopped ~~sample~~ purging due to rain storm

1632 - Need to house

1645 - Begin to drain tanks

1700 Begin putting tools on equipment

1830 Back to Office - Out

1-22-98

0700 - Arrive at fieldhouse - begin calibration of equipment and loading vans

0735 - Health and Safety meeting

0745 - leave for field

0800 - Arrive at well MW 53 WG03

0810 - Begin Pumping - Drawdown > 0.33 Pump 3X Volume - Constantly changing flow rate to avoid pumping well dry and keep steady flow

0920 - SAMPLE After stabilization of parameters except Turbidity.

0945 - End Decon and field Analysis of Iron = 0.15 mg/L

1000 Arrive at BGSMW06

OVM = 0

DTW = 9.70

TD = 47.03

1015 Begin pumping constant flow

1115 Collect Sample

1130 Head to office and empty 55 gal Drum

LUNCH

1230 Arrive BGSMW03

OVM = 63 ppm

DTW = 9.86'

TD = 20.58'

1335 Collected Sample All parameters constant & stablized

1-22-98

1400 Arrive SITE-W21

OVM = 4.5 ppm

DTW = 9.07'

TD = 17.57'

1405 Begin Pumping - Drawdown > 0.33 Pump 3 well vol. Constantly changing flow rate to keep steady flow.

1455 Sampled for TOC, Alkalinity, Methane, Iron Total Metals, BTEX, Anions.

Fe^{2+} = 3.18 mg/L x 4 = 12.72 mg/L

1530 Arrive SITE-03

OVM = 0 ppm

DTW = 7.98'

TD = 19.73'

1520 Begin Pumping

1635 Collect Samples for BTEX, Anions, Alkalinity, Methane TOC, Fe^{2+}

Fe^{2+} = 0.18 mg/L

1650 Head to office and empty 55 gal drum

1725 Make ice and prepare samples for shipment to Quantera.

1840 Back off-site

1-23-98

0700 Begin calibrating meter and grease valves

0745 Health & Safety meeting

0800 Leave for well LSP-1628-3

0810 Begin set-up for purging - OVM 0.0

820 Begin sampling well

830 Decon equipment

845 Pre-clean sample - 0.06 mg/L

1000 Drive to well WMGLTA-003 WMGLTA-003

1010 Arrive at well

1015 Begin set up - OVM 0.7

1140 - Purged 5 well volumes - Begin sampling at 1150 Ferrous Results
WMGLTA-003 0.33 mg/L
WMGLTA/003 MS 0.32 mg/L

1235 - Drive to house for lunch WMGLTA003 MSD - 0.31 mg/L

1300 Leave for lunch

1400 Drive to well GMT 2203

1415 Arrive GMT 2203 - No turning

1425 Drive to GMT 22 06 ~~Ferrous Results~~

1550 Begin Sampling - 5 volumes Reached

1620 Decon

1630 Drive to House

Ferrous Results
GMT 22-06 - 0.01 mg/L
GMT 22-06 MS 0.01 mg/L

1-21-98

700 On-site. Picked up ice + batteries for spectrophotometer at WALMART.

730 Get back from getting gas for generator and the van.

815 Get back from changing clothes. Performed H+S at 745 + Nicole prepared today's bottles for sampling.

845 Finish speaking with Jim about App IX samples.

850 Arrive at GMI-22-05M.

OVM = 0.8 ppm

DTW = 9.05 Set pump at 21.5'

TD = 28

910 Begin Pumping.

1050 Sampled GMI-22-02M for VOCs, TPH, PAH, Methane, Anions, Alkalinity, TOC + Fe^{2+}

Fe^{2+} = 0.08 mg/L

1130 Finish Decon of equipment + paperwork. Back to Field Office.

1230 Call FedEx, schedule Pickup (#268)

1250 Arrive at USGS-07T. (VOCs + Natural AH).

OVM = 0 ppm

DTW = 8.87' Set pump at 11.5'

TD = 15.25'

13.0 DTW_{AP} = 8.87 Begin Pumping.

1321 Having trouble with either pump control or generator

1345 Begin Pumping

1-21-98

1350 DTW = 9.45 → 0.1 cont low flow
1420 Sampled for VOCs and Natural Attenuations
Fe^{2+} = 0.54 mg/L crystal formation (within sample container) began

1508 Arrive at SPOT 35-5

OVM = 6.7 ppm
DTW = 21.39
TD = 27.52

1525 Begin Pumping at Spot 35-5 (Flow = 0.4 lpm)
1530 DTW = 22.54 (Low Flow invalid, increased rate)
1600 Spot 35-5 purges dry with slow recharge. Removed pump, etc. Will wait 16 hrs for the well to recharge before sampling
1610 Finish Decon, back to Field Office.
1630 Preparing paperwork, blanks, etc. for FedEx.
1640 Heavy rain & hail begins to fall.
12170 Called HAZCO for new U-10. (RE 29609)
1730 Collected Equip Blank over Grundfos.

Fe^{2+} = 0.12 ← EB012198

1845 Finish paperwork, off-site.

1/21/98

Ken Henley

4

1-22-98 KH CW

700 On-site. Begin preparing equipment, decon water, sample containers, etc. for todays sampling.
740 Health & Safety Meeting. Call About DI water.
8:00 Arrive at Spot 35-5 to sample with Bailor.
DTW= 21.44'

810 Sample Spot 35-5 using Teflon Bailor.

Fe^{2+} = 2.51 * 3 = 7.53 mg/L — Spot 35-5 WG03

900 Finish Fe^{2+}, paperwork.
910 Arrive at ST14-W18.
OVM=0ppm DTW=7.39
TD=17.45

925 Begin Pumping Flow= 0.4lpm.
930 DTW= 7.96 (Low flow invalid)
1010 Reached 5 volumes wait for Re-charge = 50%
1020 Sampled ST14-W18 after recharged to 80%
DTW=8.34
1030 Fe^{2+} = 1.59 x 3 = 4.77 mg/L ← ST14-W18WG03
1100 Finish Decon & paperwork
1115 Back at Field Office, pick up Transit and new Horiba from FedEx. 6 cases of DI water Arrives.
Messages
1) Johanna →
2) MIK
3) Andy
1130 Lunch.

1-22-98 KH CW

1215 Pick up coolers at AFBCA, Contained trip blanks and temp blanks. FedEx #257

1230 Called Lab for more trip blanks (We received only HCl preserved bottles).

1245 Arrive at WITCTA024.

OVM = 15.0 ppm.

DTW = 16.59' Set pump at 19'

TD = 23.25

1330 Collect Ambient Blank (AB012298) downwind of generator at WITCTA024. Sampled for VOCs 8260A. Poured Type II Reggent Grade water directly into VOAs.

1405 Sampled WITCTA024 for VOCs AFTER 5 well volumes were purged.

1430 Finish Decon & filling out paperwork.

1435 Arrive at BGSMW05.

OVM = 0 ppm DTW = 5.14

TD = 12.62

1445 Begin pumping (Flow = 0.3 LPM)

1520 Sampled BGSMW05WG03 for BTEXWMTBE

1545 Finish Decon & paperwork. Back to Field Office.

1600 Back at Field Office. Call Ken R. about TPH & PAH equipment blanks.

1630 Prepared Equipment blank by pouring Type II water over Grundfos pump (VOCs, BTEXWMTBE, Methane, Metals, TOC, Anions, Alkalinity & Iron).

EB012298 ⇒ Fe^{2+} = 0.00 mg/L

1700 Chris W. off-site. KH Labels Trip Blanks (VOCs BTEX Method) Had to fill empty VOAs with Type II water because we ran out of Lab-filled VOAs (Methane T.B.'s).

1-22-98

~~1730~~ KJH

1800 Finish Sample Coolers, Begin sending paperwork to Mike.

1830 Offsite.

1/22/98

Ken Hurley

1-23-98 KH, NH

700 - Onsite. Picked up ice + gas for generator on the way to the Field office. LAN personell on-site.

730 Calibrating equipment, preparing sample bottles, decon supplies, etc.

750 Health & Safety

800 Leave for wells.

810 Arrive at GMI-22-04M.

OVM = 0 ppm

DTW = 19.36'

TD = 25.6'

910 Sampled GMI-22-04M

9:25 Fe^{2+} = 0.00 mg/L ⇐ GMI-22-04MWG03

950 Finish Decon of equipment + paperwork

1000 Pick up soil jars (Fe^{2+}) at Field office.

1005 Arrive at WAGLTA004.

OVM = 0 ppm

DTW = 16.82'

TD = 23.64'

1015 Begin Pumping

1115 Collect Sample and Dup. For WAGLTA004

Fe^{2+} = 0.06 mg/L

Fe^{2+} dup = 0.08 mg/L

1140 Decon and finish paperwork

1200 - 1300 Lunch

432 178

1/23/98

1316 Back at Field Office. Call FedEx & Mike Rodtang.

1345 Arrive at BSS-B

OVM = 179 ppm

DTW = 8.99 TD = 12.30

Set pump at 10.5'

1450 Sample BSS-WG03 for BTEX w MTBE

1505 Finish Decon & paperwork. Pack equipment, Back to Field Office.

1600 Prepared trip blank

630 Collected EB012398 using Grundfos pump

EB012398 ⇒ Fe^{2+} = 0.00 mg/L

1700 Pack and QC Samples

1800 Office Site

1/26/98 KH, CW

432 179

700 On-site. Picked up ice on the way in.
715 Hold health & safety meeting.
730 Loading & calibrating equipment.
750 Leave for MW-10.
800 Arrive at MW-10.
OVM = 114.0 ppm
DTW = 9.66 TD = 32.86

1000 Sample MW-10 W003 for BTEX w MTBE, Metals

1025 Finish Decon & Paperwork
1030 Back at Field office. Chris leaves to transfer purge water into Farm tank. I call the lab about bottles.
1045 Airborne Express called, they will have a delivery here in 5 minutes.
1055 Airborne expresses drops off 17 coolers with App. IX sample containers. Chris W. off-site to Dental Appt.
1110 Spoke to Jen Allender, she says she needs 2 of each for App. II
1130 Finish unloading coolers from Quanterra. Jack & Nicole come back from finishing their well.
1140 Lunch.
1230 Back from Lunch, pick up gas for generator.
Go over bottle requirements for Appendix IX analysis.
1315 Pack up sample bottles. Go to sample Appendix IX wells.
Call FedEx (#330).
1330 Arrive at STM-W31.
OVM = 0 ppm DTW = 9.82 TD = 13.75
1425 Sample STM-W31 for Append. IX & Nat. Attenuation
Fe^{2+} = 0.00 mg/L @ STM-W31 W003
1510 Finish paperwork & Decon.

432 180

1/26/98

1530 Collect equipment blank by pouring Type II water over the decanned Grundfos pump.

Fe^{2+} = 0.00 mg/L = EB012698

1730 Finish packing coolers, Finish up paperwork

1745 Off-site.

1

1/26/98

Kenneth Kelly

1/27/98

800 On-site. Picked up ice for coolers on the way to the Field office. Begin calibrating & Loading equipment into VOAs.

820 Called Hazco about Negative Dissolved Oxygen Readings being produced by the Horibas at some Locations.

830 Site Health + Safety Meeting.

900 Speak to Elliot about access to Landfill No. 1 wells

910 Arrive at SD13-02

OVM = 0ppm.

DTW = 12.33

TD = 16.46

1015 Sampled SD13-02WG03

Fe^{2+} 2.03 x 4 = 8.12 mg/L

1115 Finish Decont + paperwork. Back to Field office

1130 Finish icing samples, Lunch.

1230 Back from Lunch, Called the office + FedEx

1300 Arrive at LF01-10.

OVM = 0ppm DTW = 14.23 TD = 27.90

1350 Sampled LF01-DWG03 → App IX

1430 Finish Decont paperwork. Off to Walmart to buy tape.

1500 Back at Field office. Begin preparing trip blanks, equipment blanks, etc.

1600 Equipment Blank prepared using Grondfos pump

1700 Finish packing sample coolers.

1/27/98

1740 Finish faxing paperwork to Mike.

1745 Off-site

1/27/98

Ken Kelly

1/29/98

800 Onsite. Picked up ice on our way in to the Field office.

830 Finish loading equipment, Hold Health & Safety Meeting.

835 Arrive at LP05-19.

OVM = 0ppm

DTW = 13.37' (TOC)

TD = 20.00' (TOC

0920 Collect Samples Appendix IX, Natural Attenuations

Fe^{2+} = 0.01 mg/L

1000 Finish Decon of equipment & paperwork, Back to Field office

1030 Iced down samples, Bought oil for generator, Called about Airline tickets.

1035 Arrive at WP07-10C.

OVM = 0ppm

DTW = 19.58

TD = 32.85

1055 Having generator difficulty. Ken goes to switch generators with Jack.

1155 Collect Sample

Fe^{2+} = 5.8 mg/L

1230 Lunch

1330 Empty drums into farm tank, take sample from farm tank

1800 Packed coolers & Equipment, Took to FedEx. Off-site.

1/28/96 Ken Hurley

End of

3RD QUARTER (JAN 1998)

SAMPLING EVENT.

GROUNDWATER FIELD SAMPLING DATA SHEET

432 185

Well No.: LF05-19	Site: NAS Fort Worth JRB
Sampler(s): KH, NH	Project No.: APC001-07GAA
Well Depth: 20.00'	Date: 1/28/98 Time: 0920
DTW (ft): 13.37' DTP: N/A	Courier Air Bill No.: _____ FedEx _____ UPS _____ Other _____ Hand
Screen Interval (ft): 10.25 - 20.25	
Well Diameter (in): 2"	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft): 16.5'	Weather (sun/clear, overcast/rain, wind direction, ambient temperature):
Type of Pump: Grundfos 2" submersible	NW 40°

Field Parameters

Time	Depth to Water (ft)	Flow Rate (gpm)	Total Volume (gal)	pH	Temp. (C)	Cond. (umhos/cm)	ORP	D.O. (mg/L)	Turb. (N.T.U.)	Description
850	Begin	Purging (Flow = 0.4 gpm)								
855	13.35	0.4	1.0	6.53	19.0	.809	-	3.19	10	Clear, No odor
0900	13.36		1.8	6.56	19.6	.809		2.89	7	
0905	13.37		2.5	6.58	20.4	.806		2.94	5	
0910	13.37		3.3	6.59	20.7	807		3.00	2	
0915	13.37		4.0	6.59	20.9	807		2.90	1	
0920	Collect Sample									

Observations

Color: Clear Other (describe):

Odor: None Low Medium High Very strong H2S Fuel-like

Sample Parameters: App. IX + Natural AM.

Notes: 1V = 1.08, 3V = 3.24 gal, 5V = 5.4 gal

Fe^{2+} = 0.01 mg/L

Signed/Sampler(s): Nick Hale Ken Hardy

432 186

GROUNDWATER FIELD SAMPLING DATA SHEET

Well No.: LSA 1623 - 3 W003	Site: NAS Fort Worth JRB
Sampler(s): CM - JFM	Project No.: APC001-07GAA
Well Depth: 17.87	Date: 1/23/98 Time: 0810
DTW (ft): 9.54 DTP: —	Courier Air Bill No.: ✓FedEx UPS Other Hand
Screen Interval (ft): 8.5 - 18.5	
Well Diameter (in): 4"	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft): 13'	Weather (sun/clear, overcast/rain, wind direction, ambient temperature): 5' 35°
Type of Pump: Grundfos 2" submersible	

Field Parameters

Time	Depth to Water (ft)	Flow Rate (gpm)	Total Volume (gal)	pH	Temp. (C)	Cond. (umhos/cm)	ORP	D.O. (mg/L)	Turb. (N.T.U.)	Description
845	9.57	0.4	1.5	6.79	21.0	0.978	207.7	0.06	10	Clear - No Odor
850	9.58	0.4	2.0	6.85	21.8	0.982	208.9	-0.10	8	
855	9.58	0.4	2.5	6.86	22.5	1.03	206	-0.20	7	
900	9.58	0.4	3.25	6.84	22.7	1.06	199	-0.35	5	
905	9.58	0.4	4.5	6.82	22.8	1.09	+193.3	~~-0.45~~ -0.55	3	
910	9.58	0.4	5.25	6.81	23.1	1.11	189.3	-0.50	3	
915	9.58	0.4	6.0	6.81	23.2	1.12	175.2	-0.53	3	
920	SAMPLED									

Observations

Color: Clear Other (describe):

Odor: None, Low Medium High Very strong H2S Fuel-like

Sample Parameters: VOCs, Anions, Alkalinity, Methane, TOC, Ferrous = 0.06 mg/L

Notes: No problems

Signed/Sampler(s): Jack Millican

GROUNDWATER FIELD SAMPLING DATA SHEET

Well No.: MW-1 / SAU-2	Site: NAS Fort Worth JRB
Sampler(s): NH JAM	Project No.: APC001-07GAA
Well Depth: 18.54	Date: 1-26-98 Time: 1105
DTW (ft): 7.17 DTP:	Courier Air Bill No.: _____ FedEx _____ UPS _____ Other _____ Hand
Screen Interval (ft):	
Well Diameter (in): 4"	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft): 12'	Weather (sun/clear, overcast/rain, wind direction, ambient temperature):
Type of Pump: Grundfos 2" submersible	S 48°F

Field Parameters

Time	Depth to Water (ft)	Flow Rate (gpm)	Total Volume (gal)	pH	Temp. (C)	Cond. (umhos/cm)	ORP	D.O. (mg/L)	Turb. (N.T.U.)	Description
1025	7.23	.4	1.5	6.60	20.6	.955	—	.69	18	Strong Odor
1030	7.33		2.0	6.58	21.1	.962		.62	22	ORP Inaccurate
1035	7.25		2.5	6.57	21.5	.956		.66	15	
1040	7.29		3.0	6.57	21.8	.955		.71	13	
1045	7.31		3.5	6.56	21.9	.950		.71	13	
1050	7.33		4.0	6.56	21.8	.953		.67	10	
1055	7.32		4.5	6.56	21.7	.950		.72	9	
	7.34		5.0	6.55	21.7	.950		.73	3	
	Collect Samples									

Observations

Color: (Clear) Other (describe):

Odor: None Low Medium High (Very strong) H2S Fuel-like BTEX

Sample Parameters: BTEX + MTBE

Notes: Strong odor - Constantly adjusting flow rate to maintain steady flow

Signed/Sampler(s): Jack [illegible]

432 188

GROUNDWATER FIELD SAMPLING DATA SHEET

Well No.: MW-10	Site: NAS Fort Worth JRB
Sampler(s): KH, CW	Project No.: APC001-07GAA
Well Depth: 32.86	Date: 1-26-98 / Time: 1000
DTW (ft): 9.66 / DTP: N/A	Courier Air Bill No.: x _____ FedEx _____ UPS _____ Other _____ Hand
Screen Interval (ft): 12-32	
Well Diameter (in): 4"	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft): 19.5'	Weather (sun/clear, overcast/rain, wind direction, ambient temperature): East 50°
Type of Pump: Grundfos 2" submersible	

Field Parameters

Time	Depth to Water (ft)	Flow Rate ~~(gpm)~~ LPM	Total Volume (gal)	pH	Temp. (C)	Cond. ~~(umhos/cm)~~ mS/cm	ORP mV	D.O. (mg/L)	Turb. (N.T.U.)	Description
820	Begin Pumping (Flow = 0.5 Lpm)									
825	10.34	0.5 (Low Flow)	Nvalid							
830	10.94		0.75gal	6.79	19.6	1.160	61.0	0.26	10	Increase Flow
835	10.98	1.0	~~0.75~~ KH	6.76	20.4	1.160	69.4	0.25	9	
840	11.00	2.0	5.0gal	6.75	20.6	1.150	-74.2	0.32	-10	clear
845	11.06	↓	7.5	6.74	20.7	1.140	-75.6	0.34	-10	
850	11.06		10.0	6.73	20.7	1.14	-72.0	0.34	-10	
855	11.07		12.0	6.72	20.8	1.140	-72.1	0.35	-10	
900	11.11	↓	14.0	6.72	20.8	1.140	-74.0	0.35	-10	
905	11.46	2.5	16.0	6.71	20.7	1.140	-72.3	0.35	-10	Increase Flow
910	11.46		18.0	6.71	20.7	1.140	-72.6	0.35	-10	
915	11.50		21.0	6.71	20.7	1.140	-73.0	0.34	-10	
920	11.54	↓	24.0	6.70	20.7	1.140	-71.5	0.35	-10	
925	11.52		26.5	6.70	20.8	1.150	-67.2	0.35	-10	Clear
930	11.52		29.0	6.70	20.8	1.150	-70.8	0.35	-10	
935	11.54		31.0	6.70	20.8	1.150	-71.4	0.35	-10	
940	11.55		33.5	6.70	20.8	1.150	-72.6	0.35	-10	
945	11.56		36.0	6.69	20.8	1.15	-71.5	0.35	-10	
950	11.56		38.0	6.69	20.7	1.15	-72.4	0.35	-10	

Observations

Color: (Clear) Other (describe):

Odor: None Low (Medium) High Very strong H2S (Fuel-like)

Sample Parameters: BTEX w/MTBE, Metals

Notes: 1v = 14 3v = 42

Sampled after 3 well volumes - parameters stable

Signed/Sampler(s): Kevin Hurley

GROUNDWATER FIELD SAMPLING DATA SHEET

Well No.: MW-10 (Cont)	Site: NAS Fort Worth JRB
Sampler(s): K.H.CN	Project No.: APC001-07GAA
Well Depth: See Page 1 (32.86)	Date: 1/26/98 Time: 1000
DTW (ft): 9.66 DTP: N/A	Courier Air Bill No.: ___ FedEx ___ UPS ___ Other ___ Hand
Screen Interval (ft): 12-32	
Well Diameter (in): 4"	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft): 19.5'	Weather (sun/clear, overcast/rain, wind direction, ambient temperature):
Type of Pump: Grundfos 2" submersible	

Field Parameters

Time	Depth to Water (ft)	Flow Rate (gpm)	Total Volume (gal)	pH	Temp. (C)	Cond. ~~(umhos/cm)~~ mS/cm	ORP mV	D.O. (mg/L)	Turb. (N.T.U.)	Description
955	11.57	2.5	40	6.69	20.9	1.150	-71.7	0.35	-10	
100	11.58	↓	43	6.69	20.9	1.150	-72.0	0.35	-10	
200	Sampled									

Observations

Color: Clear Other (describe):

Odor: None Low Medium High Very strong H2S Fuel-like

Sample Parameters:

Notes:

Signed/Sampler(s): Ken Hurley, [illegible]

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GROUNDWATER FIELD SAMPLING DATA SHEET

Well No.: MW53L0603	Site: NAS Fort Worth JRB
Sampler(s): JAM [illegible]	Project No.: APC001-07GAA
Well Depth: ~~10.80~~ 19.60	Date: 1/22/97 Time: 0800
DTW (ft): 10.30 DTP: —	Courier Air Bill No.: _____ FedEx _____ UPS _____ Other _____ Hand
Screen Interval (ft): Unknown	
Well Diameter (in): 4"	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft): 15'	Weather (sun/clear, overcast/rain, wind direction, ambient temperature): S 40°F
Type of Pump: Grundfos 2" submersible	

Field Parameters

Time	Depth to Water (ft)	Flow Rate (gpm)	Total Volume (gal)	pH	Temp. (C)	Cond. (umhos/cm)	ORP	D.O. (mg/L)	Turb. (N.T.U.)	Description
0810	13.35	—	2.0	6.84	18.7	.403	145.6	2.71	20	Clear [illegible]
0815	13.57		3.0	6.89	18.1	.400	150.6	2.78	17	
0820	13.61		4.5	6.93	20.6	.395	127.7	3.46	26	
0825	13.92		5.0	6.95	20.5	.391	152.0	3.62	15	
0830	14.15		6.0	6.96	21.0	.390	138.1	3.18	16	
0835	13.85		7.0	6.96	20.5	.392	138.5	7.81	18	
0840	14.82		9.0	6.97	21.5	.389	136.6	3.23	16	Surge
0845	15.10		11.0	6.97	21.8	.389	131.1	3.30	27	
0850	14.86		12.0	6.97	21.7	.391	138.6	3.35	19	
0855	14.99		13.0	6.96	21.5	.393	129.3	2.73	23	
0900	16.15		14.0	6.97	21.8	.388	131.2	3.90	31	
0905	16.20		16.0	6.97	21.7	.387	128.2	3.75	21	
0910	15.55		17.0	6.96	22.0	.390	130.1	3.80	26	
0915	15.28		18.0	6.96	22.0	.390	132.3	3.78	24	
0920	→ SAM	Acc								

Observations

Color: Clear Other (describe):

Odor: None Low Medium High Very strong H2S Fuel-like

Sample Parameters: VOCs Anions Alkalinity Methane TOC Ferrous

Notes: Significant drawdown - increased rate of flow to purge 3x volume (16 gallons) - reduced + decreased flow constantly to keep flow going well to avoid pumping well dry. Sampled after 3 well volumes and stabilization of all parameters except turbidity. Freon = 0.45

Signed/Sampler(s): [illegible]

GROUNDWATER FIELD SAMPLING DATA SHEET

Well No.: SCB 01 WC03	Site: NAS Fort Worth JRB
Sampler(s): JAM NR	Project No.: APC001-07GAA
Well Depth: 17.41	Date: 1 27 98 / Time: 1030
DTW (ft): 11.4 / DTP:	Courier Air Bill No.: _____ FedEx _____ UPS _____ Other _____ Hand
Screen Interval (ft): 7.12' to 14.32'	
Well Diameter (in): 2"	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft): 12.5'	Weather (sun/clear, overcast/rain, wind direction, ambient temperature):
Type of Pump: Grundfos 2" submersible	NONE 45°F

Field Parameters

Time	Depth to Water (ft)	Flow Rate (gpm)	Total Volume (gal)	pH	Temp. (C)	Cond. (umhos/cm)	ORP	D.O. (mg/L)	Turb. (N.T.U.)	Description
005	11.44	0.4	1.5	6.99	19.9	.657	–	0.03	9	ORP invalid
10	11.42		2.0	6.85	20.9	.650		-0.48	7	clear
15	11.44		2.5	6.84	21.3	.655		-0.43	7	No Odor
020	11.44		3.0	6.83	21.3	.653		-0.45	7	
25	11.44	↓	3.5	6.83	21.3	.652		-0.47	6	↓
30	Collect Sample									

Observations

Color: Clear Other (describe):

Odor: None Low Medium High Very strong H2S Fuel-like

Sample Parameters:

Notes: Fe^{2+} = 2.15 x 4 = 8.60 mg/L

Signed/Sampler(s): [signature]

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GROUNDWATER FIELD SAMPLING DATA SHEET

Well No.: SD-13-02	Site: NAS Fort Worth JRB
Sampler(s): KH, CW	Project No.: APC001-07GAA
Well Depth: 16.46	Date: 1/27/98 Time: 1015
DTW (ft): 12.33 DTP:	Courier Air Bill No.: X FedEx ___ UPS ___ Other ___ Hand
Screen Interval (ft): 9.5-13.5 (BGS)	
Well Diameter (in): 2"	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft): 14.0' (TOC)	Weather (sun/clear, overcast/rain, wind direction, ambient temperature):
Type of Pump: Grundfos 2" submersible	SE 40°F

Field Parameters

Time	Depth to Water (ft)	Flow Rate (gpm)	Total Volume (gal)	pH	Temp. (C)	Cond. (umhos/cm)	ORP mV	D.O. (mg/L)	Turb. (N.T.U.)	Description
940	Begin Pumping (Flow = 0.4 gpm)									
945	12.37	0.4	1.0							Clear
950	12.38		1.5							
955	12.38		2.0	6.94	21.3	0.742	-96.0	1.07	12	
1000	12.45		2.5	6.95	22.4	0.734	102.8	0.59	16	
1005	12.42		3.0	6.96	22.4	0.735	107.3	0.20	9	
1010	12.43		3.5	6.96	22.5	0.731	109.4	0.19	9	
1015	12.39		4.0	6.96	22.8	0.733	110.2	0.15	10	
1015	Sampled									

Observations

Color: (Clear) Other (describe):

Odor: None (Low) Medium High Very strong H2S (Fuel-like)

Sample Parameters: App IX, Natural Attenuation

Notes: 1V = 0.673, 3V = 2gal, 5V = 3.4gal
Fe^{2+} = 8.12 mg/L

Signed/Sampler(s): Ken Hurley [signature]

432 193

GROUNDWATER FIELD SAMPLING DATA SHEET

Well No.: 5013-06-03	Site: NAS Fort Worth JRB
Sampler(s): John Nil	Project No.: APC001-07GAA
Well Depth: 13.77'	Date: 1-27-98 / 1/28/98 Time: 0915
DTW (ft): 9.61' DTP:	Courier Air Bill No.: _____ FedEx _____ UPS _____ Other _____ Hand
Screen Interval (ft): 6.17' to 10.36'	
Well Diameter (in): 4"	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft): 10.5'	Weather (sun/clear, overcast/rain, wind direction, ambient temperature):
Type of Pump: Grundfos 2" submersible	None 65°F

Field Parameters

Time	Depth to Water (ft)	Flow Rate (gpm)	Total Volume (gal)	pH	Temp. (C)	Cond. (umhos/cm)	ORP	D.O. (mg/L)	Turb. (N.T.U.)	Description
1325	10.36	0.4	1.5	6.97	20.7	0.862	—	3.66	4	ORP - Non operational
1330	10.39	0.4	2.0	6.94	21.2	0.873	—	3.51	1	
1335	10.45	0.3	2.25	6.90	22.0	0.873	—	3.23	1	
1345	12.20									
1350	12.03				1500					
1355	11.96			→ Jun	~~1455~~	11.23				
1400	11.85				1505	11.21				
	11.79				1510	11.20				
1410	11.74				1515	11.18				
1415	11.69				1520	11.16				
1420	11.65				Let	Recharge	Overnight			
1425	11.57									
1430	11.51									
1435	11.49									
1440	11.45									
1445	11.41									
1450	11.34									
1455	11.31									
1500	11.26									

Observations

Color: Clear Other (describe):

Odor: None Low Medium High Very strong H2S Fuel-like

Sample Parameters: Appendix 9 - Natural Attenuation

Notes: Drawdown > 3.77 ft Purge 3X Volume = 8.1 gallons

After 1335 purge well dry due to low demand rate

Let Recharge overnight - samples at 0915 on 1/28/98

Signed/Sampler(s):

432 191

GROUNDWATER FIELD SAMPLING DATA SHEET

Well No.: 5013-04~~44~~/3 603	Site: NAS Fort Worth JRB
Sampler(s): LH JAM	Project No.: APC001-07GAA
Well Depth: 13.28'	Date: 1-26-98 Time: 1355
DTW (ft): 8.81' DTP:	Courier Air Bill No.: _____ FedEx _____ UPS _____ Other _____ Hand
Screen Interval (ft): 5.8' to 9.5'	
Well Diameter (in): 2"	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft): 9.5'	Weather (sun/clear, overcast/rain, wind direction, ambient temperature):
Type of Pump: Grundfos 2" submersible	SE 55°F

Field Parameters

Time	Depth to Water (ft)	Flow Rate (gpm)	Total Volume (gal)	pH	Temp. (C)	Cond. (umhos/cm)	ORP	D.O. (mg/L)	Turb. (N.T.U.)	Description
1355	9.35	0.4	2.0	6.69	20.3	.762		.03	18	Low flow started
1400	9.50		2.5	6.70	21.0	.748		-.06	24	ORP started
1405	9.32		3.0	6.70	20.8	.731		-.52	14	Clear
1410	9.70		3.5	6.69	20.6	.739		-.68	17	
1415	9.13		4.0	6.70	20.1	.727		-.66	15	
1420	9.15		4.5	6.70	20.1	.724		-.71	10	
1425	Collect Samples									

Observations

Color: (Clear) Other (describe):

Odor: None Low (Medium) High Very strong H2S (Fuel-like)

Sample Parameters:

Notes: Low flow started drawdown > 1.33 feet 3x Volume = 2.14
Numerous flow steps during filling of samples 5x Volume = 3.5
No noticeable surges

Signed/Sampler(s): Jack Mahoney

432 195

GROUNDWATER FIELD SAMPLING DATA SHEET

Well No.: Spot 35-05	Site: NAS Fort Worth JRB
Sampler(s): KH, NH	Project No.: APC001-07GAA
Well Depth: 27.52	Date: 1/21/98, 1/22/98 Time: 8:10 (1/22/98)
DTW (ft): 21.39 DTP: N/A	Courier Air Bill No.: _____ FedEx _____ UPS _____ Other _____ Hand
Screen Interval (ft): 16.6-26.6	
Well Diameter (in): 4"	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft): 23.5'	Weather (sun/clear/overcast/rain, wind direction, ambient temperature):
Type of Pump: Grundfos 2" submersible	

Field Parameters

Time	Depth to Water (ft)	Flow Rate ~~gpm~~ LPM	Total Volume (gal)	pH	Temp. (C)	Cond. (us,hos/cm)	ORP	D.O. (mg/L)	Turb. (N.T.U.)	Description
1532	23.46	1.5	1.0	6.79	20.6	1.33	-77.5	1.75	120	
1537	25.22	↓	3.2	6.80	22.1	1.34	-81.0	1.00	70	
1542	dry	Purged dry AFTER 4.5 gALLONS								
1547	dry									
1552	dry									
	Will wait 16 hrs for well to recharge before sampling.									
22/98										
8:05	21.44									
8:10	Sample using Teflon Bailor									

Observations

Color: (Clear) Other (describe):

Odor: None Low (Medium) High Very strong H2S Fuel-like

Sample Parameters: VOCs, TPH, PAH, Methane, TOC, Anions, Alk. + Fe^{2+}

Notes: 1V = 4 gal, 3V = 12, 5V = 20 gal

Initial flow = 0.4 LPM, Drawdown > 0.33' (Low Flow invalid

Signed/Sampler(s): [signature] Ken Hurley

GROUNDWATER FIELD SAMPLING DATA SHEET

Well No.: ST H-29WC03	Site: NAS Fort Worth JRB
Sampler(s): JAM / CTW	Project No.: APC001-07GAA
Well Depth: 15.70	Date: 1-26-96 / Time: 1530
DTW (ft): 8.20 / DTP: —	Courier Air Bill No.: _____ FedEx _____ UPS _____ Other _____ Hand
Screen Interval (ft): 6-16	
Well Diameter (in): 2"	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft): 11'	Weather (sun/clear, overcast/rain, wind direction, ambient temperature): N 60°F
Type of Pump: Grundfos 2" submersible	

Field Parameters

Time	Depth to Water (ft)	Flow Rate (gpm)	Total Volume (gal)	pH	Temp. (C)	Cond. (umhos/cm)	ORP	D.O. (mg/L)	Turb. (N.T.U.)	Description
1540	9.75	—	2.5	6.54	21.0	.318	-92.9	-0.65	33	Clear - Slight odor
1545	9.22	0.4	3.5	6.53	22.3	.317	-100.4	-0.71	56	" "
1550	9.02	0.4	4.0	6.52	22.4	.307	-98.0	-0.16	40	" "
1555	8.91	0.4	4.5	6.51	23.2	.302	-95.2	-0.69	29	" "
1600	8.81	0.4	5.0	6.50	23.7	.300	-89.6	-0.66	24	" "
1605	8.59	0.4	5.5	6.50	24.2	.294	-91.7	-0.70	17	" "
1610										

Observations

Color: Clear Other (describe):

Odor: None Low Medium High Very strong H2S Fuel-like

Sample Parameters: BTEX, Anions, Alkalinity, Methane, TOC, Ferrous.

Notes: Drawdown > .33 ft. Purged 3x volume (36 gallons)
Sampled after stabilization of all parameters except turbidity.

Signed/Sampler(s):

432 197

GROUNDWATER FIELD SAMPLING DATA SHEET

Well No.: ST14-14 W603	Site: NAS Fort Worth JRB
Sampler(s): JAM / CTW	Project No.: APC001-07GAA
Well Depth:	Date: 1-20-98 Time: 1350
DTW (ft): 6.18 DTP: 20.37	Courier Air Bill No.: _____ FedEx _____ UPS _____ Other _____ Hand
Screen Interval (ft): 6.7-20.55	
Well Diameter (in): 2"	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft): 12.5'	Weather (sun/clear, overcast/rain, wind direction, ambient temperature): N - 15mph 58°F
Type of Pump: Grundfos 2" submersible	

Field Parameters

Time	Depth to Water (ft)	Flow Rate (gpm) LPM	Total Volume (gal)	pH	Temp. (C)	Cond. (umhos/cm)	ORP	D.O. (mg/L)	Turb. (N.T.U.)	Description
1415	6.44	0.4	2.0	6.93	21.7	.513	-85.4	1.53	6	Clear - No Odor
1420	6.51	0.6	4.0	6.91	21.4	.513	-94.2	-0.46	5	"
1425	6.50	0.4	7.0	6.92	21.9	.511	-101.7	-0.73	3	"
1430	6.34	0.4	8.0	6.92	21.3	.510	-104.6	-0.80	2	"
1435	6.32	0.4	8.5	6.91	21.6	.512	-106.3	-0.75	3	"
1440	6.32	0.4	8.75	6.90	21.9	.512	-105.4	-0.72	2	"
1445	- SAMPLED									

Observations

Color: Clear Other (describe):

Odor: None Low Medium High Very strong H2S Fuel-like

Sample Parameters: ↓

Notes: VOCs, Metals, Anions, Alkalinity, TOC Methane, Fe^{2+}

Upon purging there was a 6" drawdown which exceeds .33 ft. Therefore 3 well volumes were purged prior to sampling.

Signed/Sampler(s):

432 198

GROUNDWATER FIELD SAMPLING DATA SHEET

Well No.: 5TH-26W603	Site: NAS Fort Worth JRB
Sampler(s): CTW / JAM	Project No.: APC001-07GAA
Well Depth: 27.20	Date: 1-20-98 / Time: 1030
DTW (ft): 10.50 / DTP: -0-	Courier Air Bill No.: _____ FedEx _____ UPS _____ Other _____ Hand
Screen Interval (ft): 8'-13'	
Well Diameter (in): 2"	Sampling Method (G=grab, B=bailer, SP=submersible pump): SP
Placement of Pump (ft): 12'	Weather (sun/clear, overcast/rain, wind direction, ambient temperature): West 45°
Type of Pump: Grundfos 2" submersible	

Field Parameters

Time	Depth to Water (ft)	Flow Rate (gpm)	Total Volume (gal)	pH	Temp. (C)	Cond. (umhos/cm)	ORP	D.O. (mg/L)	Turb. (N.T.U.)	Description
1055	10.58	0.4	2.0	6.57	24.6	0.689	110.8	-0.12	219	
1100	10.56	0.4	2.25	6.61	25.1	0.679	91.2	-0.26	170	
1105	10.55	0.4	2.50	6.62	25.5	0.690	78.2	-0.29	158	
1110	10.54	0.4	2.75	6.61	26.2	0.678	75.8	-0.29	135	
1115	10.57	0.4	3.75	6.61	26.5	0.682	75.4	-0.28	132	
1120	10.55	0.4	4.50	6.59	26.4	0.679	76.3	-0.30	103	
1125	10.57	0.4	5.00	6.61	26.0	0.682	75.2	-0.29	130	

Observations

Color: Clear Other (describe): Mud. Brown

Odor: None Low Medium High Very strong H2S Fuel-like

Sample Parameters: VOCs, Metals, Anions, Alkalinity, Methane, TOC, Ferrous, Nitrate

Notes: Turbidity very high - lots of silt in bottom of well. Turbidity never stabilized.

Signed/Sampler(s): [illegible]

432 199

GROUNDWATER FIELD SAMPLING DATA SHEET

Well No.: ST14-02SG03	Site: NAS Fort Worth JRB
Sampler(s): JAM / CTW	Project No.: APC001-07GAA
Well Depth: 19.35	Date: 1/21/99 Time: 1015
DTW (ft): 11.12 DTP: -0-	Courier Air Bill No.: _____ FedEx _____ UPS _____ Other _____ Hand
Screen Interval (ft): 7 - 16.8	
Well Diameter (in): 2"	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft): 13'	Weather (sun/clear, overcast/rain, wind direction, ambient temperature): S 55°F
Type of Pump: Grundfos 2" submersible	

Field Parameters

Time	Depth to Water (ft)	Flow Rate (gpm)	Total Volume (gal)	pH	Temp. (C)	Cond. (umhos/cm)	ORP	D.O. (mg/L)	Turb. (N.T.U.)	Description
1045	11.13	0.4	1.5	6.80	22.2	0.687	89.1	0.58	13	
1050	11.13	0.4	2.0	6.76	22.8	0.685	-102.6	-0.26	8	
1055	11.12	0.4	2.5	6.75	24.4	0.684	107.1	1.38	10	
1100	11.12	0.4	3.0	6.75	24.4	0.685	-105.5	-0.08	12	
1105	11.12	0.4	3.5	6.74	25.2	0.680	-119.3	-0.04	10	
1110	11.12	0.4	4.25	6.75	24.0	0.684	-122.3	-0.51	7.4	
[illegible]	11.12	0.4	5.00	6.72	23.0	0.693	-120.4	-0.50	13	
[illegible]	11.12	0.4	6.00	6.70	22.8	0.694	-118.4	0.70	5	

Observations

Color: Clear Other (describe):

Odor: None Low Medium High Very strong H2S Fuel-like

Sample Parameters: BTEX, MTBE, Anions, RCRA 8 MK, Methane, TOC, Fe 2+

Notes:

PID - 2.0

Reached 5 well volumes before sampling parameters

Signed/Sampler(s):

432 290

GROUNDWATER FIELD SAMPLING DATA SHEET

Well No.: STM-MW-03	Site: NAS Fort Worth JRB
Sampler(s): CTW - JAM	Project No.: APC001-07GAA
Well Depth: 19.05	Date: 1-21-98 Time: 1440
DTW (ft): 7.07 DTP: -0-	Courier Air Bill No.: ✓ FedEx ~~[illegible]~~ UPS ____ Other ____ Hand
Screen Interval (ft): 7.19 - 18.89	
Well Diameter (in): 2"	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft): 11.5'	Weather (sun/clear, overcast/rain, wind direction, ambient temperature): 50°F
Type of Pump: Grundfos 2" submersible	

Field Parameters

Time	Depth to Water (ft)	Flow Rate (gpm)	Total Volume (gal)	pH	Temp. (C)	Cond. (umhos/cm)	ORP	D.O. (mg/L)	Turb. (N.T.U.)	Description
1420	~~7.7~~ 7.10	0.4	1.5	6.84	21.7	0.688	93.1	-0.60	10	
1425	7.12	0.4	2.25	6.82	22.6	0.683	-107.4	-0.66	9	
1430	7.11	0.4	2.75	6.81	23.0	0.683	-109.3	-0.69	8	
1435	7.11	0.4	3.25	6.81	23.2	0.681	-111.4	0.70	8	

Observations

Color: Clear Other (describe):

Odor: None Low Medium High Very strong H2S Fuel-like

Sample Parameters: BTEX, Anions, Alk, Methane, TOC, Fe 2+

Notes:

Signed/Sampler(s): [illegible]

432 201

GROUNDWATER FIELD SAMPLING DATA SHEET

Well No.: STM - 03	Site: NAS Fort Worth JRB
Sampler(s): NH JAM	Project No.: APC001-07GAA
Well Depth: 19.73'	Date: 1 22 98 / Time: 1540
DTW (ft): 7.98 / DTP:	Courier Air Bill No.: _____ FedEx _____ UPS _____ Other _____ Hand
Screen Interval (ft): 7.85' to 17.6'	
Well Diameter (in): 2'	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft): 12'	Weather (sun/clear, overcast/rain, wind direction, ambient temperature):
Type of Pump: Grundfos 2" submersible	S 50°F

Field Parameters

Time	Depth to Water (ft)	Flow Rate (gpm)	Total Volume (gal)	pH	Temp. (C)	Cond. ~~(umhos/cm)~~ mS/cm	ORP	D.O. (mg/L)	Turb. (N.T.U.)	Description
1550	8.13	.4	1.5	7.06	20.4	.547	135.3	-.52	75	clear, no odor
55	8.10	↓	2.0	6.99	21.8	.547	134.4	-.50	49	
00	8.09	↓	2.5	6.97	22.1	.551	134.8	-.55	32	
1605	8.13	—	2.75	6.95	22.7	.553	133.4	-.62	21	
10	8.26	—	3.25	6.93	23.1	.556	132.4	-.59	15	minor surge
15	8.25	-	4.0	6.89	22.0	.565	132.3	-.58	9	
16	8.23	-	5.0	6.84	22.1	.569	131.7	-.65	8	
	8.24	-	6.0	6.82	22.1	.571	130.4	-.64	4	
16.35										Collected Sample

Observations

Color: (Clear) Other (describe):

Odor: (None) Low Medium High Very strong H2S Fuel-like

Sample Parameters: BTEX, ANIONS, ALKALINITY, METHANE, TOC, Fe^{2+}

Notes:

Signed/Sampler(s): [signature]

432 202

GROUNDWATER FIELD SAMPLING DATA SHEET

Well No.: STM-24WG03	Site: NAS Fort Worth JRB
Sampler(s):	Project No.: APC001-07GAA
Well Depth: 16.5	Date: 1-21-98 Time: 935
DTW (ft): 10.60 DTP: -0-	Courier Air Bill No.: _____ FedEx _____ UPS _____ Other _____ Hand
Screen Interval (ft): 7-16.5	
Well Diameter (in): 2"	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft): 13.0'	Weather (sun/clear, overcast/rain, wind direction, ambient temperature): 50°
Type of Pump: Grundfos 2" submersible	

Field Parameters

Time	Depth to Water (ft)	Flow Rate (gpm)	Total Volume (gal)	pH	Temp. (C)	Cond. (umhos/cm)	ORP	D.O. (mg/L)	Turb. (N.T.U.)	Description
8:55	10.68	0.4	1.25	6.71	22.2	0.597	230.8	-0.28	14	
900	10.66	0.4	2.00	6.73	24.6	0.600	225.6	-0.34	11	
905	10.71	0.4	2.50	6.74	25.6	0.601	167.6	-0.28	11	
910	10.75	0.4	3.00	6.73	26.1	0.594	150.1	-0.35	49	
915	10.75	0.4	3.5	6.73	25.0	0.599	130.3	-0.29	33	
920	10.77	0.4	4.00	6.73	24.8	0.594	114.9	-0.52	18	
925	10.90	0.4	4.5	6.73	22.4	0.595	108.2	-0.20	15	
930	10.94	0.4	5.25	6.73	22.6	0.595	110.3	0.41	7	

Observations

Color: Clear Other (describe): MILKY white

Odor: None Low Medium High Very strong H2S Fuel-like

Sample Parameters: VOC's, Metals, Cations, Alkalinity, Methane, TOC, Fe

Notes: Pump Angle @ 920

PID = 0.0

Leached 5 volumes before parameters stabilized

Signed/Sampler(s):

432 203

GROUNDWATER FIELD SAMPLING DATA SHEET

W No.: ST14-W18	Site: NAS Fort Worth JRB
Sampler(s): KH, CW	Project No.: APC001-07GAA
Well Depth: 17.45	Date: 1/22/98 Time: 1020
DTW (ft): 7.39 DTP: N/A	Courier Air Bill No.: X FedEx ___ UPS ___ Other ___ Hand
Screen Interval (ft): 4.19 - 15.89	
Well Diameter (in): 2"	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft): 11.5'	Weather (sun/clear, overcast/rain, wind direction, ambient temperature):
Type of Pump: Grundfos 2" submersible	40°F, W to SE

Field Parameters

Time	Depth to Water (ft)	Flow Rate (gpm)	Total Volume (gal)	pH	Temp. (C)	Cond. (umhos/cm)	ORP mV	D.O. (mg/L)	Turb. (N.T.U.)	Description
925	7.39	0.4	Begin Purging							
930	7.95	→	Low flow - Invalid.							
935	8.11	0.8								
940	8.25		2.0	5.70	15.1	0.700	-51.0	1.65	109	
945	8.23		3.5	5.00	15.8	0.673	-63.8	1.33	96	
950	8.34		4.5	4.78	15.9	0.670	-67.8	1.47	100	KTH
955	9.62		5.5	4.71	16.7	0.662	-74.2	1.02	270	Pump Surged
[illegible]	10.35		6.5	4.70	16.4	0.685	-75.9	2.36	292	?
1005	10.72		7.5	4.69	16.3	0.696	-97.5	0.87	600	
1010	10.72	↓	8.5	4.66	16.5	0.691	-116.6	1.01	593	
	Acheive 5 well volumes.									
1015	9.22									

Observations

Color: (Clear) Other (describe):

Odor: None Low (Medium) High Very strong H2S (Fuel-like)

Sample Parameters: BTEX, Metals, Anions Alkalinity, Methane, TOC + Fe^{2+}

Notes: 1V = 1.64, 3V = 4.91, 5V = 8.19 gal

80% of WC = 9.40 Below TOC

Horiba not functioning accurately (Turbidity

Fe^{2+} = 4.77 mg/L

Signed/Sampler(s): Chris Wellesine

432 204

GROUNDWATER FIELD SAMPLING DATA SHEET

Well No.: STH - W21	Site: NAS Fort Worth JRB
Sampler(s): JAM NH	Project No.: APC001-07GAA
Well Depth: 17.57'	Date: 1 22 98 / Time: 1400
DTW (ft): 9.07' / DTP:	Courier Air Bill No.: _____ FedEx _____ UPS _____ Other _____ Hand
Screen Interval (ft): 16.89' to 7.99'	
Well Diameter (in): 2"	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft): 12'	Weather (sun/clear, overcast/rain, wind direction, ambient temperature):
Type of Pump: Grundfos 2" submersible	S' 50°F

Field Parameters

Time	Depth to Water (ft)	Flow Rate (gpm)	Total Volume (gal)	pH	Temp. (C)	Cond. (umhos/cm)	ORP	D.O. (mg/L)	Turb. (N.T.U.)	Description
1420	10.01	–	1.5	6.53	21.6	.814	-37.1	-.62	40	Clear, Slight odor
1425	10.16	–	2.5	6.51	22.0	.816	-80.8	-.66	15	
1430	10.17	–	3.5	6.50	22.4	.815	-86.2	-.62	16	
1435	10.18	–	4.5	6.50	22.6	.811	-90.4	-.68	12	
1440	10.19	.4	5.5	6.50	22.8	.809	-91.3	-.60	9	
1445	10.18	↓	6.0	6.50	22.9	.807	-93.4	-.60	8	
1450	10.18	↓	6.5	6.50	23.0	.804	-95.6	-.59	7	
1455	Sampled									Collect Samples

Observations

Color: Clear Other (describe):

Odor: None Low Medium High Very strong H2S Fuel-like

Sample Parameters:

Notes: Initial purging < .33 drawdown. Purging 3x well vol ≈ 4 gals.
Flow Rate increased to pump 3 well vol. – Drawdown stabilized
Sampled after stabilization of parameters

Signed/Sampler(s): [illegible]

432 205

GROUNDWATER FIELD SAMPLING DATA SHEET

W[illegible]lo.: ST14-W31	Site: NAS Fort Worth JRB
[illegible]mpler(s): KH, CW	Project No.: APC001-07GAA
Well Depth: 13.75	Date: 1/26/98 Time: 14:25
DTW (ft): 9.82 DTP: —	Courier Air Bill No.: _____ FedEx _____ UPS _____ Other _____ Hand
Screen Interval (ft): 9-14	
Well Diameter (in): 2	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft): 11.5'	Weather (sun/clear, overcast/rain, wind direction, ambient temperature):
Type of Pump: Grundfos 2" submersible	SE, 50°F

Field Parameters

Time	Depth to Water (ft)	Flow Rate ~~(gpm)~~ lpm	Total Volume (gal)	pH	Temp. (C)	Cond. (umhos/cm)	ORP	D.O. (mg/L)	Turb. (N.T.U.)	Description
1335	Begin pumping Flow = 0.4LPM									
1340	9.84	0.3	1.3	~~6.83~~	~~20.7~~	~~0.993~~	—	~~2.12~~	~~340~~	~~CW~~
1345	9.86		1.7	6.83	20.7	0.793	128.1	2.12	340	
1350	9.86		2.1	6.82	21.6	0.786	128.0	0.74	191	
1355	9.86		2.5	6.81	22.4	0.783	127.4	0.85	130	
1400	9.86		2.8	6.82	22.6	0.785	122.2	0.76	65	
1405	9.86		3.2	6.80	24.0	0.787	117.3	0.79	65	
[illegible]	9.86		3.5	6.80	23.9	0.787	120.7	0.81	25	
1415	9.85		3.8	6.80	23.0	0.787	119.0	0.82	4	
1420	9.86		4.2	6.80	23.0	0.784	119.0	0.76	3	
1425	9.86	↓	4.5	6.80	23.1	0.785	118.6	0.79	1	Sample

Observations

Color: (Clear) Other (describe):

[illegible]dor: (None) Low Medium High Very strong H2S Fuel-like

Sample Parameters: VOCs, SVOCs, Pest/PCB, Org. Pest/, Herb, Dioxins/Furans, Cyanide, Sulfide, Metals, Anions, Alk. + TOC, Methane

[illegible]otes: 1V = 0.64 gal, 3V = 1.92 gal, 5V = 3.2 gal

[illegible]gned/Sampler(s): Ken Hanley

432 206

GROUNDWATER FIELD SAMPLING DATA SHEET

Well No.: ST 14-04	Site: NAS Fort Worth JRB
Sampler(s): JM / CW	Project No.: APC001-07GAA
Well Depth: 19.20	Date: 1-19-98 Time: 0900
DTW (ft): 11.23 DTP: —	Courier Air Bill No.: 5739 0 20416 FedEx ____ UPS ____ Other ____ Hand
Screen Interval (ft): 6.45 - 16.2	
Well Diameter (in): 2"	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft): 13'	Weather (sun/clear, overcast/rain, wind direction, ambient temperature): South 50°F
Type of Pump: Grundfos 2" submersible	

Field Parameters

Time	Depth to Water (ft)	Flow Rate (gpm) LPM	Total Volume (gal)	pH	Temp. (C)	Cond. (umhos/cm)	ORP	D.O. (mg/L)	Turb. (N.T.U.)	Description
0945	11.30	0.3	1.5	6.77	22.3	.686	-61.4	-.23	4	Clear - No Odor
0950	11.24	0.3	2.0	6.78	23.4	.674	-63.8	-.44	0	
0955	11.25	0.3	2.5	6.79	23.8	.620	-68.5	-.46	20	
1000	11.23	0.3	3.0	6.82	23.7	.599	-74.6	-.58	9	
1005	11.23	0.3	3.5	6.80	24.1	.668	-79.0	-.29	25	
1010	11.23	0.3	4.0	6.82	23.8	.603	-77.8	-.57	18	
1015	11.23	0.3	4.5	6.82	23.9	.596	-86.5	-.61	19	
1020	11.23	0.3	5.0	6.82	24.6	.587	-85.0	-0.47	23	
1025	11.23	0.3	5.25	6.81	26.6	.587	-85.0	-0.57	20	
1030	11.25	0.3	5.75	6.82	25.2	.583	-23.1	-0.56	3	
1035	11.24	0.3	6.25	6.84	24.4	.579	-22.5	-0.57	1	
1040	— SAMPLED									

Observations

Color: Clear Other (describe):

Odor: ~~None~~ Low slight Medium High Very strong H2S Fuel-like

Sample Parameters: BTEX, Anions, Alkalinity, Methane, TOC, Fe^{2+}

Notes: Surge at 0950, 1005, 1025 6.376 gal = 5X Volume

Sampled at 5X Well Volume

Signed/Sampler(s): Jack McNamara / Chris Williams

432 207

GROUNDWATER FIELD SAMPLING DATA SHEET

Well No.: ST 14-28 W603	Site: NAS Fort Worth JRB
Sampler(s): CTW J.M.	Project No.: APC001-07GAA
Well Depth: 17.0'	Date: 1-19-98 Time: 1445
DTW (ft): 10.77 DTP: — N/A —	Courier Air Bill No.: 573902046 FedEx ____ UPS ____ Other ____ Hand
Screen Interval (ft): 7 - 17	
Well Diameter (in): 2"	Sampling Method (G=grab, B=bailer, SP=submersible pump): SP
Placement of Pump (ft): 13'	Weather (sun/clear, overcast/rain, wind direction, ambient temperature): south 55°F
Type of Pump: Grundfos 2" submersible	

Field Parameters

Time	Depth to Water (ft)	Flow Rate (gpm) LPM	Total Volume (gal)	pH	Temp. (C)	Cond. (umhos/cm)	ORP	D.O. (mg/L)	Turb. (N.T.U.)	Description
1415	11.02	0.4	1.5	6.56	23.1	0.99	-68.5	-.47	47	
1420	11.00	0.4	1.75	6.54	23.7	0.98	-70.4	-0.55	55	
1425	11.02	0.4	2.00	6.55	23.8	0.97	-70.5	-0.57	47	
1430	12.1									
1435	11.51									
1440	11.05									

Observations

Color: Clear Other (describe):

Odor: None Low Medium High Very strong H2S Fuel-like

Sample Parameters: BTEX, Anions, Alkalinity, TOC, Methane, Cations

Notes: OVM - 8 ppm

Not able to keep steady flow - purged 3 ~~#~~ volumes - 2.93 gal.

Signed/Sampler(s): [signature]

432 208

GROUNDWATER FIELD SAMPLING DATA SHEET

Well No.: VSGS-04T	Site: NAS Fort Worth JRB
Sampler(s): KH, NH	Project No.: APC001-07GAA
Well Depth: 22.44	Date: 1/20/98 Time: 1440
DTW (ft): 17.46 DTP: N/A	Courier Air Bill No.: _____ FedEx _____ UPS _____ Other _____ Hand
Screen Interval (ft): 15.5 - 25.5 (BGS)	
Well Diameter (in): 2'	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft): 19.5'	Weather (sun/clear, overcast/rain, wind direction, ambient temperature):
Type of Pump: Grundfos 2" submersible	Wind from West, 50°F

Field Parameters

Time	Depth to Water (ft)	Flow Rate ~~(gpm)~~ LPM	Total Volume (gal) KH	pH	Temp. (C)	Cond. ~~(umhos/cm)~~ mS/cm	ORP	D.O. (mg/L)	Turb. (N.T.U.)	Description
1400	17.47	0.3	0.5	7.40	21.3	0.739	277.4	1.09	999	
1405	17.46		1.6	7.42	21.6	0.734	264.7	1.01	999	
1410	17.47		1.8	7.43	23.1	0.739	263.2	0.88	915	
1415	17.51		2.2	7.44	23.7	0.740	237.6	0.85	725	
1420	17.51		2.6	7.42	23.9	0.741	219.6	0.65	516	
1425	17.52		3.0	7.43	24.0	0.741	183.7	0.60	365	
1430	17.51		3.4	7.43	24.1	0.742	156.4	0.61	290	
1435	17.52		3.8	7.43	24.1	0.743	127.8	0.59	276	
1440	17.52		4.2	7.43	24.2	0.743	125.7	0.60	260	

Observations

Color: Clear Other (describe):

Odor: None Low Medium High Very strong H2S Fuel-like

Sample Parameters: VOCs, Metals

Notes: 1V = 0.815, 3V = 2.445, 5V = 4.075

Sampled after 5 well volumes had been purged

Signed/Sampler(s): Ken Hurley

432 209

GROUNDWATER FIELD SAMPLING DATA SHEET

Well No.: USGS-07T	Site: NAS Fort Worth JRB
Sampler(s): KH, NH	Project No.: APC001-07GAA
Well Depth: 15.25	Date: 1/21/98 Time: 1420
DTW (ft): 8.87 DTP: N/A	Courier Air Bill No.: ✓ FedEx ____ UPS ____ Other ____ Hand
Screen Interval (ft): ?	
Well Diameter (in): 2"	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft): 11.5	Weather (sun/clear, overcast/rain, wind direction, ambient temperature):
Type of Pump: Grundfos 2" submersible	SW 48°F

Field Parameters

Time	Depth to Water (ft)	Flow Rate ~~(gpm)~~ Lpm	Total Volume (gal)	pH	Temp. (C)	Cond. ~~(umhos/cm)~~ mS/cm	ORP	D.O. (mg/L)	Turb. (N.T.U.)	Description
1350	9.45	Low Flow	NOALD	(Initial Flow = 0.4 lpm						
355	10.23	0.7	0.8	6.86	20.2	695	149.3	5.24	355	
400	10.23		1.7	6.86	20.9	.634	145.8	5.39	330	
1405	10.30		2.6	6.90	21.8	.685	137.4	4.97	225	
10	10.35		3.5	6.90	22.2	.682	132.3	5.04	208	
415	10.33		4.4	6.90	22.5	.678	130.4	5.00	183	
14[illegible]	10.33	↓	5.25	6.90	22.6	.680	129.3	5.01	174	
[illegible]	Sampled after 5V's									

Observations

Color: Clear (Other) (describe): slightly turbid

Odor: (None) Low Medium High Very strong H2S Fuel-like

Sample Parameters: VOCs, Methane, TOC, Anions, Alk

Notes: 1V = 1.03, 3V = 3.12, 5V = 5.19

Signed/Sampler(s): [illegible] Ken Hurley

432 210

GROUNDWATER FIELD SAMPLING DATA SHEET

Well No.: WP07-10C	Site: NAS Fort Worth JRB
Sampler(s): NH, KH	Project No.: APC001-07GAA
Well Depth: 32.85'	Date: 1-28-98 / Time: 1155
DTW (ft): 19.58' / DTP: N/A	Courier Air Bill No.: X FedEx ___ UPS ___ Other ___ Hand
Screen Interval (ft): 20-30	
Well Diameter (in): 2"	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft): 25'	Weather (sun/clear, overcast/rain, wind direction, ambient temperature): N 58°F
Type of Pump: Grundfos 2" submersible	

Field Parameters

Time	Depth to Water (ft)	Flow Rate (gpm)	Total Volume (gal)	pH	Temp. (C)	Cond. (umhos/cm)	ORP	D.O. (mg/L)	Turb. (N.T.U.)	Description
1120	19.69	.4	1.0	6.28	21.1	1.49	–	-.10	77	No Odor
1125	19.67		1.5	6.29	23.1	1.31	–	-.30	42	
1130	19.67		2.0	6.30	23.5	1.21	–	-.36	25	Clearing up
1135	19.67		2.5	6.32	23.6	1.19	–	-0.38	14	
1140	19.66		3.0	6.33	23.7	1.16	–	-.41	10	
1145	19.66		3.5	6.35	23.8	1.13	–	-.42	7	
1150	19.66		4.0	6.35	23.9	1.11	–	-.45	7	
55	Collect Sample									

Observations

Color: Clear Other (describe):

Odor: None Low Medium High Very strong H2S Fuel-like

Sample Parameters: Appendix IX and Natural Attenuations

Notes: 1vol = 3.1 gal 3 vol = 6.4 gal 5 vol = 11 gal

Signed/Sampler(s): [illegible]

GROUNDWATER FIELD SAMPLING DATA SHEET

Well No.: WHGLTA003 WG03	Site: NAS Fort Worth JRB
Sampler(s): JN/CW	Project No.: APC001-07GAA
Well Depth:	Date: 1/23/98 Time: 1150
DTW (ft): 20.85 DTP: 29.61	Courier Air Bill No.: _____ FedEx _____ UPS _____ Other _____ Hand
Screen Interval (ft): 20.0 - 31.0	
Well Diameter (in):	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft):	Weather (sun/clear, overcast/rain, wind direction, ambient temperature): S 40°F
Type of Pump: Grundfos 2" submersible	

Field Parameters

Time	Depth to Water (ft)	Flow Rate (gpm)	Total Volume (gal)	pH	Temp. (C)	Cond. (umhos/cm)	ORP	D.O. (mg/L)	Turb. (N.T.U.)	Description
1100	21.00	0.4	1.5	6.83	23.3	0.874	212.3	2.54	300	
1105	20.99	0.4	2.25	6.84	24.2	0.876	200.5	2.85	166	
1110	20.99	0.4	3.0	6.84	24.6	0.870	192.5	2.58	127	
1115	20.99	0.4	3.75	6.84	24.8	0.869	192.4	2.98	124	
1120	20.98	0.4	4.75	6.84	25.0	0.868	190.9	3.05	94	
1125	20.99	0.4	5.0	6.83	25.1	0.869	187.0	3.16	77	
1130	20.99	0.4	5.75	6.83	25.2	0.868	183.0	2.71	78	
1135	20.99	0.4	6.5	6.82	25.4	0.869	180.1	3.01	78	
1140	20.99	0.4	~~7.25~~ 7.25	6.82	25.5	0.867	174.6	2.80	97	
1145	20.99	0.4	7.5	6.82	25.6	0.869	174.9	3.23	84	
1150	SAMPLED									

Observations

Color: Clear Other (describe):

Odor: None Low Medium High Very strong H2S Fuel-like

Sample Parameters: VOCs, Anions, Alkalinity, TOC, Methane, Ferrous

Notes: 3_v - 4.33 5_v = 7.2 Purged 5x well volume and Sampled. Turbidity never cleared.

Signed/Sampler(s): [signature]

GROUNDWATER FIELD SAMPLING DATA SHEET

Well No.: IWH-TA004	Site: NAS Fort Worth JRB
Sampler(s): KH, NH	Project No.: APC001-07GAA
Well Depth: 23.64	Date: 1/23/98 Time: 1115
DTW (ft): 16.82 DTP: —	Courier Air Bill No.: X FedEx UPS Other Hand
Screen Interval (ft): 13.5 - 23.5	
Well Diameter (in): 2"	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft): 19'	Weather (sun/clear, overcast/rain, wind direction, ambient temperature): S 45°
Type of Pump: Grundfos 2" submersible	

Field Parameters

Time	Depth to Water (ft)	Flow Rate (gpm)	Total Volume (gal)	pH	Temp. (C)	Cond. (umhos/cm)	ORP	D.O. (mg/L)	Turb. (N.T.U.)	Description
1015	16.82	Begin Pumping (Flow = 0.3 Lpm)								
1020	16.85	0.35	0.25							
1025	16.92		0.75	6.72	21.0	.630	-27.4	-.03	789	
1030	16.88		1.25	6.71	21.1	.634	-21.3	-.06	501	
1035	16.87		1.75	6.71	21.3	.626	-17.3	-.10	426	
1040	16.85		2.25	6.71	20.7	.629	-7.6	-.07	430	
1045	16.88		2.75	6.70	218	.629	-7.4	-.09	295	
1050	16.88		3.25	6.70	22.1	.632	-11.5	-.05	200	
1055	16.83		3.75	6.69	22.5	.626	-14.5	-.07	194	
1100	16.90		4.25	6.69	23.0	.632	-10.9	-.05	144	
1105	16.90		4.75	6.68	22.9	.631	-13.5	-.09	130	
1110	16.90	↓	5.25	6.67	23.2	.632	-15.7	-.08	97	
1115	Collected Samples after 5 well vol (5.75 gal)									

Observations

Color: (Clear) Other (describe):

Odor: (None) Low Medium High Very strong H2S Fuel-like

Sample Parameters: VOCs, Methane, TOC, Fe^{2+}, Anions, Alkalinity

Notes: 1V = 1.11 gal, 3Vs = 3.33 gal, 5V = 5.55 gal

Collected Dup01WG03 at this location

Fe^{2+} = 0.06 mg/L

Dup Fe^{2+} = 0.08 mg/L

Signed/Sampler(s): Ken Hardy [illegible]

GROUNDWATER FIELD SAMPLING DATA SHEET

W No.: NITCTA024	Site: NAS Fort Worth JRB
Sampler(s): KH, GW	Project No.: APC001-07GAA
Well Depth: 23.25	Date: 1/22/98 Time: 1405
DTW (ft): 16.59 DTP: —	Courier Air Bill No.: X _____ FedEx _____ UPS _____ Other _____ Hand
Screen Interval (ft): 13.7-23.45	
Well Diameter (in): 2"	Sampling Method (G=grab, B=bailer, SP=submersible pump):
Placement of Pump (ft): 19'	Weather (sun/clear) overcast/rain, wind direction, ambient temperature): SE, 50°F
Type of Pump: Grundfos 2" submersible	

Field Parameters

Time	Depth to Water (ft)	Flow Rate (gpm)	Total Volume (gal)	pH	Temp. (C)	Cond. (umhos/cm)	ORP	D.O. (mg/L)	Turb. (N.T.U.)	Description
1310	Begin Pumping									
315	16.62									
320	16.62									
1325	16.62	0.4	1.0	7.14	22.5	1.14	-9.7	-0.10	950	
1330	meter	0.4	1.5	7.13	24.6	1.14	-30.1	-0.41	697	
1335	Not working	0.4	2.0	7.19	24.7	1.14	-32.6	-0.53	438	
1340	16.60	0.4	3.0	7.19	24.5	1.14	-45.9	-0.54	434	
	16.60	0.4	3.5	7.18	24.9	1.13	-48.3	-0.52	437	
1350	16.61	0.4	4.0	7.18	25.4	1.14	-48.6	-0.49	343	
1355	16.61	0.4	4.5	7.17	25.6	1.14	-48.2	-0.50	261	
1400	16.61	0.4	5.0	7.17	25.8	1.14	-48.5	-0.48	188	
1405	16.61	0.4	5.5	7.17	25.9	1.14	-48.0	-0.48	146	
1405	Sampled									

Observations

Color: Clear (Other) (describe): slightly turbid

Odor: (None) Low Medium High Very strong H2S Fuel-like

Sample Parameters:

Notes: 1V = 1.085 gal, 3V = 3.25, 5V = 5.42
Sampled after 5V's

Signed/Sampler(s): Ken Hurley

432 214

TAB

Appendix B

432 215

TAB

Appendix B-1
Flightline Area Laboratory Results

432 216

TAB

Flightline Area Laboratory Results
All Results

Data Summary Table
Carswell AFB
Flightline Area Groundwater

Locxref : / Sample ID : / Sample Date :	Method Detection Limit	GMI-22-02M GMI-22-02MWG03 21-Jan-98		GMI-22-03M GMI-22-03MWG03 26-Jan-98		GMI-22-04M GMI-22-04MWG03 23-Jan-98		GMI-22-05M DUP02-WG03 20-Jan-98	
Alkalinity (Titrimetric) - E310.1/NONE (mg/l)									
Alkalinity, Bicarb. as CaCO3 at pH 4.5	0.69	232		421		365		NA	
Alkalinity, Carb. as CaCO3 at pH 8.3	0.69	0.69	U	0.69	U	0.69	U	NA	
Alkalinity, Hydrox. as CaCO3	0.69	0.69	U	0.69	U	0.69	U	NA	
Alkalinity, Total as CaCO3 at pH 4.5	0.69	232		421		365		NA	
EPA-9/RSK-175 Modified A2720C - M2720C/NONE (ug/l)									
Ethane	0.092	0.092	U	0.18	F	2.3		NA	
Ethene	0.1	0.1	U	0.1	U	0.1	U	NA	
Methane	0.052	0.5	U	0.5	U	12		NA	
Total Petroleum Hydrocarbons - Extractables - M8015D/SW3510 (mg/l)									
Extractable Petroleum Hydrocarbons	0.054	0.052	U	NA		NA		NA	
Inductively Coupled Plasma Atomic Emission Spectro - SW6010/SW3005 (mg/l)									
Aluminum	0.052	NA		NA		NA		0.052	U
Calcium	0.034	NA		NA		NA		173	
Iron	0.026	NA		NA		NA		0.11	
Magnesium	0.07	NA		NA		NA		15.2	
Potassium	0.5	NA		NA		NA		0.5	U
Sodium	0.72	NA		NA		NA		63.4	
Inductively Coupled Plasma Mass Spectrometry - SW6020/SW3020 (mg/l)									
Antimony	0.00017	NA		NA		NA		0.00017	U
Arsenic	0.00019	NA		NA		NA		0.0017	F
Barium	0.0002	NA		NA		NA		0.14	
Beryllium	0.000069	NA		NA		NA		0.000069	U
Cadmium	0.00004	NA		NA		NA		0.000058	F
Chromium	0.0002	NA		NA		NA		0.07	U
Cobalt	0.00002	NA		NA		NA		0.07	U
Copper	0.00084	NA		NA		NA		0.06	U
Lead	0.0002	NA		NA		NA		0.5	U
Manganese	0.0002	NA		NA		NA		0.072	
Molybdenum	0.0002	NA		NA		NA		0.00094	F
Nickel	0.0002	NA		NA		NA		0.15	U
Selenium	0.00007	NA		NA		NA		0.0075	F
Silver	0.0002	NA		NA		NA		0.0002	U
Thallium	0.00002	NA		NA		NA		0.000086	F
Vanadium	0.00017	NA		NA		NA		0.00027	F
Zinc	0.0011	NA		NA		NA		0.023	U
Mercury in Liquid Waste (Manual Cold-Vapor Technig - SW7470/METHOD (mg/l)									
Mercury	0.00011	NA		NA		NA		0.00011	U
Volatile Organic Compounds by Gas Chromatograph/Mas - SW8260/SW5030 (ug/l)									
1,1,1,2-Tetrachloroethane	0.093	0.093	U	0.58	U	3.3	U	0.093	U
1,1,1-Trichloroethane	0.12	0.12	U	0.75	U	4.3	U	0.12	U

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Data Summary Table
Carswell AFB
Flightline Area Groundwater

Locxref :		Method	GMI-22-02M		GMI-22-03M		GMI-22-04M		GMI-22-05M	
Sample ID :		Detection	GMI-22-02MWG03		GMI-22-03MWG03		GMI-22-04MWG03		DUP02-WG03	
Sample Date :		Limit	21-Jan-98		26-Jan-98		23-Jan-98		20-Jan-98	
1,1,2,2-Tetrachloroethane		0.14	0.14	U	0.88	U	5	U	0.14	U
1,1,2-Trichloroethane		0.096	0.096	U	0.6	U	3.4	U	0.096	U
1,1-Dichloroethane		0.11	0.11	U	0.69	U	3.9	U	0.11	U
1,1-Dichloroethene		0.1	0.1	U	0.62	U	3.6	U	0.1	U
1,1-Dichloropropene		0.094	0.094	U	0.59	U	3.4	U	0.094	U
1,2,3-Trichlorobenzene		0.14	0.14	U	0.88	U	5	U	0.14	U
1,2,3-Trichloropropane		0.17	0.17	U	1.1	U	6.1	U	0.17	U
1,2,4-Trichlorobenzene		0.13	0.13	U	0.81	U	4.6	U	0.13	U
1,2,4-Trimethylbenzene		0.1	0.1	U	0.62	U	3.6	U	0.1	U
1,2-Dibromo-3-chloro-propane (DBCP)		0.15	0.15	U	0.94	U	5.4	U	0.15	U
1,2-Dichlorobenzene		0.13	0.13	U	0.81	U	4.6	U	0.13	U
1,2-Dichloroethane		0.13	0.13	U	0.81	U	4.6	U	0.13	U
1,2-Dichloropropane		0.14	0.14	U	0.88	U	5	U	0.14	U
1,3,5-Trimethylbenzene		0.13	0.13	U	0.81	U	4.6	U	0.13	U
1,3-Dichlorobenzene		0.15	0.15	U	0.94	U	5.4	U	0.15	U
1,3-Dichloropropane		0.11	0.11	U	0.69	U	3.9	U	0.11	U
1,4-Dichlorobenzene		0.11	0.11	U	0.69	U	3.9	U	0.11	U
1-Chlorohexane		0.5*	0.5	*U	0.5	*U	0.5	*U	0.5	*U
2,2-Dichloropropane		0.1	0.1	U	0.62	U	3.6	U	0.1	U
2-Chlorotoluene		0.15	0.15	U	0.94	U	5.4	U	0.15	U
4-Chlorotoluene		0.1	0.1	U	0.62	U	3.6	U	0.1	U
Benzene		0.11	0.11	U	0.69	U	3.9	U	0.11	U
Bromobenzene		0.13	0.13	U	0.81	U	4.6	U	0.13	U
Bromochloromethane		0.1	0.1	U	0.62	U	3.6	U	0.1	U
Bromodichloromethane		0.44	0.44	U	2.8	U	16	U	0.44	U
Bromoform		0.14	0.14	U	0.88	U	5	U	0.14	U
Bromomethane		0.25	0.25	U	1.6	U	8.9	U	0.25	U
Carbon tetrachloride		0.13	0.13	U	0.81	U	4.6	U	0.13	U
Chlorobenzene		0.12	0.12	U	0.75	U	4.3	U	0.12	U
Chloroethane		0.25	0.25	U	1.6	U	8.9	U	0.25	U
Chloroform		0.12	0.12	U	0.75	U	4.3	U	0.12	U
Chloromethane		0.26	0.26	U	1.6	U	9.3	U	0.26	U
Dibromochloromethane		0.12	0.12	U	0.75	U	4.3	U	0.12	U
Dibromomethane		0.097	0.097	U	0.61	U	3.5	U	0.097	U
Dichlorodifluoromethane		0.27	0.27	U	1.7	U	9.6	U	0.27	U
EDB (1,2-Dibromoethane)		0.11	0.11	U	0.69	U	3.9	U	0.11	U
Ethylbenzene		0.11	0.11	U	0.69	U	3.9	U	0.11	U
Hexachlorobutadiene		0.15	0.15	U	0.94	U	5.4	U	0.15	U
Isopropylbenzene (Cumene)		0.13	0.13	U	0.81	U	4.6	U	0.13	U
Methylene chloride		0.65	0.65	U	4.1	U	23	U	0.65	U
Naphthalene		0.44	0.44	U	2.8	U	16	U	0.44	U
Styrene		0.12	0.12	U	0.75	U	4.3	U	0.12	U
Tetrachloroethene		0.1	0.1	U	19		3.6	U	0.1	U
Toluene		0.098	0.098	U	0.61	U	3.5	U	0.098	U
Trichloroethene		0.13	0.13	U	76		500		0.13	U
Trichlorofluoromethane		0.3	0.3	U	1.9	U	11	U	0.3	U
Vinyl chloride		0.23	0.23	U	1.4	U	8.2	U	0.23	U

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Data Summary Table
Carswell AFB
Flightline Area Groundwater

Locxref: / Sample ID: / Sample Date:	Method Detection Limit	GMI-22-02M GMI-22-02MWG03 21-Jan-98		GMI-22-03M GMI-22-03MWG03 26-Jan-98		GMI-22-04M GMI-22-04MWG03 23-Jan-98		GMI-22-05M DUP02-WG03 20-Jan-98	
cis-1,2-Dichloroethene	0.1	0.1	U	58		63		0.1	U
cis-1,3-Dichloropropene	0.12	0.12	U	0.75	U	4.3	U	0.12	U
m- & p-Xylenes	0.28	0.28	U	1.8	U	10	U	0.28	U
n-Butylbenzene	0.13	0.13	U	0.81	U	4.6	U	0.13	U
n-Propylbenzene	0.13	0.13	U	0.81	U	4.6	U	0.13	U
o-Xylene	0.11	0.11	U	0.69	U	3.9	U	0.11	U
p-Isopropyltoluene (p-Cymene)	0.13	0.13	U	0.81	U	4.6	U	0.13	U
sec-Butylbenzene	0.17	0.17	U	1.1	U	6.1	U	0.17	U
tert-Butylbenzene	0.13	0.13	U	0.81	U	4.6	U	0.13	U
trans-1,2-Dichloroethene	0.11	0.11	U	41		7.6	F	0.11	U
trans-1,3-Dichloropropene	0.11	0.11	U	0.69	U	3.9	U	0.11	U
Polynuclear Aromatic Hydrocarbons - SW8310/SW3510 (ug/l)									
Acenaphthene	0.093	0.089	U	NA		NA		NA	
Acenaphthylene	0.04	0.038	U	NA		NA		NA	
Anthracene	0.03	0.029	U	NA		NA		NA	
Benzo(a)anthracene	0.06	0.058	U	NA		NA		NA	
Benzo(a)pyrene	0.065	0.063	U	NA		NA		NA	
Benzo(b)fluoranthene	0.059	0.057	U	NA		NA		NA	
Benzo(g,h,i)perylene	0.071	0.068	U	NA		NA		NA	
Benzo(k)fluoranthene	0.059	0.057	U	NA		NA		NA	
Chrysene	0.073	0.07	U	NA		NA		NA	
Dibenz(a,h)anthracene	0.076	0.073	U	NA		NA		NA	
Fluoranthene	0.036	0.035	U	NA		NA		NA	
Fluorene	0.035	0.034	U	NA		NA		NA	
Indeno(1,2,3-cd)pyrene	0.055	0.053	U	NA		NA		NA	
Naphthalene	0.059	0.057	U	NA		NA		NA	
Phenanthrene	0.03	0.029	U	NA		NA		NA	
Pyrene	0.043	0.041	U	NA		NA		NA	
SW846 9056 - SW9056/NONE (mg/l)									
Bromide	0.051	0.051	U	0.88		1		NA	
Chloride	0.1	1.4		86.6		108		NA	
Fluoride	0.05	0.32	R	0.16	F	0.3	F	NA	
Nitrate as N	0.05	0.088	F	0.67	F	9.7		NA	
Nitrite as N	0.05	0.05	U	0.05	U	0.05	U	NA	
Orthophosphate as P	0.05	1	U	1	U	0.05	U	NA	
Sulfate	0.1	4.8		53.3		50.6		NA	
Total Organic Carbon - SW9060/NONE (mg/l)									
Total Organic Carbon	0.22	1	U	NA		1	U	NA	

NOTE:
* PQLs used if MDL not reported.

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Data Summary Table
Carswell AFB
Flightline Area Groundwater

Locxref :	Method	GMI-22-05M		GMI-22-06M		GMI-22-07M		LSA1628-3		MW-53
Sample ID :	Detection	GMI-22-05MWG03		GMI-22-06MWG03		GMI-22-07MWG03		LSA1628-3WG03		MW-53WG03
Sample Date :	Limit	20-Jan-98		23-Jan-98		20-Jan-98		23-Jan-98		22-Jan-98
Alkalinity (Titrimetric) - E310.1/NONE (mg/l)										
Alkalinity, Bicarb. as CaCO3 at pH 4.5	0.69	NA		342		NA		370		201
Alkalinity, Carb. as CaCO3 at pH 8.3	0.69	NA		0.69	U	NA		0.69	U	0.69
Alkalinity, Hydrox. as CaCO3	0.69	NA		0.69	U	NA		0.69	U	0.69
Alkalinity, Total as CaCO3 at pH 4.5	0.69	NA		342		NA		370		201
EPA-9/RSK-175 Modified A2720C - M2720C/NONE (ug/l)										
Ethane	0.092	NA		18		NA		1.1		0.092
Ethene	0.1	NA		0.2	F	NA		0.1	U	0.1
Methane	0.052	NA		400		NA		6.2		0.5
Total Petroleum Hydrocarbons - Extractables - M8015D/SW3510 (mg/l)										
Extractable Petroleum Hydrocarbons	0.054	NA		NA		NA		NA		NA
Inductively Coupled Plasma Atomic Emission Spectro - SW6010/SW3005 (mg/l)										
Aluminum	0.052	0.052	U	NA		NA		NA		NA
Calcium	0.034	169		NA		NA		NA		NA
Iron	0.026	0.1		NA		NA		NA		NA
Magnesium	0.07	14.9		NA		NA		NA		NA
Potassium	0.5	0.5	U	NA		NA		NA		NA
Sodium	0.72	62.5		NA		NA		NA		NA
Inductively Coupled Plasma Mass Spectrometry - SW6020/SW3020 (mg/l)										
Antimony	0.00017	0.00017	U	NA		NA		NA		NA
Arsenic	0.00019	0.0016	F	NA		NA		NA		NA
Barium	0.0002	0.13		NA		NA		NA		NA
Beryllium	0.000069	0.000069	U	NA		NA		NA		NA
Cadmium	0.00004	0.000057	F	NA		NA		NA		NA
Chromium	0.0002	0.07	U	NA		NA		NA		NA
Cobalt	0.00002	0.07	U	NA		NA		NA		NA
Copper	0.00084	0.06	U	NA		NA		NA		NA
Lead	0.0002	0.5	U	NA		NA		NA		NA
Manganese	0.0002	0.064		NA		NA		NA		NA
Molybdenum	0.0002	0.00088	F	NA		NA		NA		NA
Nickel	0.0002	0.15	U	NA		NA		NA		NA
Selenium	0.00007	0.0072	F	NA		NA		NA		NA
Silver	0.0002	0.0002	U	NA		NA		NA		NA
Thallium	0.00002	0.000085	F	NA		NA		NA		NA
Vanadium	0.00017	0.00022	F	NA		NA		NA		NA
Zinc	0.0011	0.02	U	NA		NA		NA		NA
Mercury in Liquid Waste (Manual Cold-Vapor Techniq - SW7470/METHOD (mg/l)										
Mercury	0.00011	0.00011	U	NA		NA		NA		NA
Volatile Organic Compounds by Gas Chromatgraph/Mas - SW8260/SW5030 (ug/l)										
1,1,1,2-Tetrachloroethane	0.093	0.093	U	0.93	U	0.093	U	1.9	U	0.58
1,1,1-Trichloroethane	0.12	0.12	U	1.2	U	0.12	U	2.5	U	0.75

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Data Summary Table
Carswell AFB
Flightline Area Groundwater

Locxref:	Method	GMI-22-05M		GMI-22-06M		GMI-22-07M		LSA1628-3		MW-53
Sample ID:	Detection	GMI-22-05MWG03		GMI-22-06MWG03		GMI-22-07MWG03		LSA1628-3WG03		MW-53WG03
Sample Date:	Limit	20-Jan-98		23-Jan-98		20-Jan-98		23-Jan-98		22-Jan-98
1,1,2,2-Tetrachloroethane	0.14	0.14	U	1.4	U	0.14	U	2.9	U	0.88
1,1,2-Trichloroethane	0.096	0.096	U	0.96	U	0.096	U	2	U	0.6
1,1-Dichloroethane	0.11	0.11	U	1.1	U	0.11	U	2.3	U	0.69
1,1-Dichloroethene	0.1	0.1	U	1	U	0.1	U	2.1	U	0.62
1,1-Dichloropropene	0.094	0.094	U	0.94	U	0.094	U	2	U	0.59
1,2,3-Trichlorobenzene	0.14	0.14	U	1.4	U	0.14	U	2.9	U	0.88
1,2,3-Trichloropropane	0.17	0.17	U	1.7	U	0.17	U	3.5	U	1.1
1,2,4-Trichlorobenzene	0.13	0.13	U	1.3	U	0.13	U	2.7	U	0.81
1,2,4-Trimethylbenzene	0.1	0.1	U	1	U	0.1	U	2.1	U	0.62
1,2-Dibromo-3-chloro-propane (DBCP)	0.15	0.15	U	1.5	U	0.15	U	3.1	U	0.94
1,2-Dichlorobenzene	0.13	0.13	U	1.3	U	0.13	U	2.7	U	0.81
1,2-Dichloroethane	0.13	0.13	U	1.3	U	0.13	U	2.7	U	0.81
1,2-Dichloropropane	0.14	0.14	U	1.4	U	0.14	U	2.9	U	0.88
1,3,5-Trimethylbenzene	0.13	0.13	U	1.3	U	0.13	U	2.7	U	0.81
1,3-Dichlorobenzene	0.15	0.15	U	1.5	U	0.15	U	3.1	U	0.94
1,3-Dichloropropane	0.11	0.11	U	1.1	U	0.11	U	2.3	U	0.69
1,4-Dichlorobenzene	0.11	0.11	U	1.1	U	0.11	U	2.3	U	0.69
1-Chlorohexane	0.5*	0.5	*U	0.5	*U	0.5	*U	0.5	*U	0.5
2,2-Dichloropropane	0.1	0.1	U	1	U	0.1	U	2.1	U	0.62
2-Chlorotoluene	0.15	0.15	U	1.5	U	0.15	U	3.1	U	0.94
4-Chlorotoluene	0.1	0.1	U	1	U	0.1	U	2.1	U	0.62
Benzene	0.11	0.11	U	1.1	U	0.11	U	2.3	U	0.69
Bromobenzene	0.13	0.13	U	1.3	U	0.13	U	2.7	U	0.81
Bromochloromethane	0.1	0.1	U	1	U	0.1	U	2.1	U	0.62
Bromodichloromethane	0.44	0.44	U	4.4	U	0.44	U	9.2	U	2.8
Bromoform	0.14	0.14	U	1.4	U	0.14	U	2.9	U	0.88
Bromomethane	0.25	0.25	U	2.5	U	0.25	U	5.2	U	1.6
Carbon tetrachloride	0.13	0.13	U	1.3	U	0.13	U	2.7	U	0.81
Chlorobenzene	0.12	0.12	U	1.2	U	0.12	U	2.5	U	0.75
Chloroethane	0.25	0.25	U	2.5	U	0.25	U	5.2	U	1.6
Chloroform	0.12	0.12	U	1.2	U	0.12	U	2.5	U	0.75
Chloromethane	0.26	0.26	U	2.6	U	0.26	U	5.4	U	1.6
Dibromochloromethane	0.12	0.12	U	1.2	U	0.12	U	2.5	U	0.75
Dibromomethane	0.097	0.097	U	0.97	U	0.097	U	2	U	0.61
Dichlorodifluoromethane	0.27	0.27	U	2.7	U	0.27	U	5.6	U	1.7
EDB (1,2-Dibromoethane)	0.11	0.11	U	1.1	U	0.11	U	2.3	U	0.69
Ethylbenzene	0.11	0.11	U	1.1	U	0.11	U	2.3	U	0.69
Hexachlorobutadiene	0.15	0.15	U	1.5	U	0.15	U	3.1	U	0.94
Isopropylbenzene (Cumene)	0.13	0.13	U	1.3	U	0.13	U	2.7	U	0.81
Methylene chloride	0.65	0.65	U	6.5	U	0.65	U	14	U	4.1
Naphthalene	0.44	0.44	U	4.4	U	0.44	U	9.2	U	2.8
Styrene	0.12	0.12	U	1.2	U	0.12	U	2.5	U	0.75
Tetrachloroethene	0.1	0.1	U	1	U	0.1	U	2.1	U	0.62
Toluene	0.098	0.098	U	0.98	U	0.098	U	2	U	0.61
Trichloroethene	0.13	0.13	U	160		0.13	U	230		87
Trichlorofluoromethane	0.3	0.3	U	3	U	0.3	U	6.2	U	1.9
Vinyl chloride	0.23	0.23	U	4.6	F	0.23	U	4.8	U	1.4

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Data Summary Table
Carswell AFB
Flightline Area Groundwater

Locxref :		Method	GMI-22-05M		GMI-22-06M		GMI-22-07M		LSA1628-3		MW-53
Sample ID :		Detection	GMI-22-05MWG03		GMI-22-06MWG03		GMI-22-07MWG03		LSA1628-3WG03		MW-53WG03
Sample Date :		Limit	20-Jan-98		23-Jan-98		20-Jan-98		23-Jan-98		22-Jan-98
cis-1,2-Dichloroethene		0.1	0.1	U	34		0.1	U	51		14
cis-1,3-Dichloropropene		0.12	0.12	U	1.2	U	0.12	U	2.5	U	0.75
m- & p-Xylenes		0.28	0.28	U	2.8	U	0.28	U	5.8	U	1.8
n-Butylbenzene		0.13	0.13	U	1.3	U	0.13	U	2.7	U	0.81
n-Propylbenzene		0.13	0.13	U	1.3	U	0.13	U	2.7	U	0.81
o-Xylene		0.11	0.11	U	1.1	U	0.11	U	2.3	U	0.69
p-Isopropyltoluene (p-Cymene)		0.13	0.13	U	1.3	U	0.13	U	2.7	U	0.81
sec-Butylbenzene		0.17	0.17	U	1.7	U	0.17	U	3.5	U	1.1
tert-Butylbenzene		0.13	0.13	U	1.3	U	0.13	U	2.7	U	0.81
trans-1,2-Dichloroethene		0.11	0.11	U	36		0.11	U	31		0.69
trans-1,3-Dichloropropene		0.11	0.11	U	1.1	U	0.11	U	2.3	U	0.69
Polynuclear Aromatic Hydrocarbons - SW8310/SW3510 (ug/l)											
Acenaphthene		0.093	NA		NA		NA		NA		NA
Acenaphthylene		0.04	NA		NA		NA		NA		NA
Anthracene		0.03	NA		NA		NA		NA		NA
Benzo(a)anthracene		0.06	NA		NA		NA		NA		NA
Benzo(a)pyrene		0.065	NA		NA		NA		NA		NA
Benzo(b)fluoranthene		0.059	NA		NA		NA		NA		NA
Benzo(g,h,i)perylene		0.071	NA		NA		NA		NA		NA
Benzo(k)fluoranthene		0.059	NA		NA		NA		NA		NA
Chrysene		0.073	NA		NA		NA		NA		NA
Dibenz(a,h)anthracene		0.076	NA		NA		NA		NA		NA
Fluoranthene		0.036	NA		NA		NA		NA		NA
Fluorene		0.035	NA		NA		NA		NA		NA
Indeno(1,2,3-cd)pyrene		0.055	NA		NA		NA		NA		NA
Naphthalene		0.059	NA		NA		NA		NA		NA
Phenanthrene		0.03	NA		NA		NA		NA		NA
Pyrene		0.043	NA		NA		NA		NA		NA
SW846 9056 - SW9056/NONE (mg/l)											
Bromide		0.051	NA		0.97		NA		0.93		0.2
Chloride		0.1	NA		95.7		NA		104		3.8
Fluoride		0.05	NA		1		NA		0.39	F	0.39
Nitrate as N		0.05	NA		0.22	F	NA		3.6		1.1
Nitrite as N		0.05	NA		0.05	UJ	NA		0.05	U	0.05
Orthophosphate as P		0.05	NA		0.31	R	NA		0.05	U	0.05
Sulfate		0.1	NA		219		NA		70.3		18.1
Total Organic Carbon - SW9060/NONE (mg/l)											
Total Organic Carbon		0.22	NA		1.5	U	NA		1.2	U	1

NOTE:
* PQLs used if MDL not reported.

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Data Summary Table
Carswell AFB
Flightline Area Groundwater

Locxref :	Method	SPOT35-5		USGS04T		WITCTA024	
Sample ID :	Detection	SPOT35-5WG03		USGS04TWG03		WITCTA024WG03	
Sample Date :	Limit	22-Jan-98		20-Jan-98		22-Jan-98	
Alkalinity (Titrimetric) - E310.1/NONE (mg/l)							
Alkalinity, Bicarb. as CaCO3 at pH 4.5	0.69	429		NA		NA	
Alkalinity, Carb. as CaCO3 at pH 8.3	0.69 U	0.69	U	NA		NA	
Alkalinity, Hydrox. as CaCO3	0.69 U	0.69	U	NA		NA	
Alkalinity, Total as CaCO3 at pH 4.5	0.69	429		NA		NA	
EPA-9/RSK-175 Modified A2720C - M2720C/NONE (ug/l)							
Ethane	0.092 U	5.5		NA		NA	
Ethene	0.1 U	0.1	U	NA		NA	
Methane	0.052 U	8300		NA		NA	
Total Petroleum Hydrocarbons - Extractables - M8015D/SW3510 (mg/l)							
Extractable Petroleum Hydrocarbons	0.054	2.9		NA		NA	
Inductively Coupled Plasma Atomic Emission Spectro - SW6010/SW3005 (mg/l)							
Aluminum	0.052	NA		0.052	U	NA	
Calcium	0.034	NA		108		NA	
Iron	0.026	NA		0.32		NA	
Magnesium	0.07	NA		12.7		NA	
Potassium	0.5	NA		5.3		NA	
Sodium	0.72	NA		35.8		NA	
Inductively Coupled Plasma Mass Spectrometry - SW6020/SW3020 (mg/l)							
Antimony	0.00017	NA		0.00017	U	NA	
Arsenic	0.00019	NA		0.0024	F	NA	
Barium	0.0002	NA		0.022		NA	
Beryllium	0.000069	NA		0.00011	F	NA	
Cadmium	0.00004	NA		0.000062	F	NA	
Chromium	0.0002	NA		0.07	U	NA	
Cobalt	0.00002	NA		0.07	U	NA	
Copper	0.00084	NA		0.06	U	NA	
Lead	0.0002	NA		0.5	U	NA	
Manganese	0.0002	NA		0.17		NA	
Molybdenum	0.0002	NA		0.00068	F	NA	
Nickel	0.0002	NA		0.15	U	NA	
Selenium	0.00007	NA		0.0024	F	NA	
Silver	0.0002	NA		0.0002	U	NA	
Thallium	0.00002	NA		0.00012	F	NA	
Vanadium	0.00017	NA		0.0038	F	NA	
Zinc	0.0011	NA		0.02	U	NA	
Mercury in Liquid Waste (Manual Cold-Vapor Techniq - SW7470/METHOD (mg/l)							
Mercury	0.00011	NA		0.00011	U	NA	
Volatile Organic Compounds by Gas Chromatograph/Mas - SW8260/SW5030 (ug/l)							
1,1,1,2-Tetrachloroethane	0.093 U	0.77	U	0.093	U	0.093	U
1,1,1-Trichloroethane	0.12 U	1	U	0.12	F	0.12	U

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Data Summary Table
Carswell AFB
Flightline Area Groundwater

Locxref : Sample ID : Sample Date :	Method Detection Limit		SPOT35-5 SPOT35-5WG03 22-Jan-98		USGS04T USGS04TWG03 20-Jan-98		WITCTA024 WITCTA024WG03 22-Jan-98	
1,1,2,2-Tetrachloroethane	0.14	U	1.2	U	0.14	U	0.14	U
1,1,2-Trichloroethane	0.096	U	0.8	U	0.096	U	0.096	U
1,1-Dichloroethane	0.11	U	0.92	U	0.11	U	0.11	U
1,1-Dichloroethene	0.1	U	0.83	U	0.1	U	0.1	U
1,1-Dichloropropene	0.094	U	0.78	U	0.094	U	0.094	U
1,2,3-Trichlorobenzene	0.14	U	1.2	U	0.14	U	0.14	U
1,2,3-Trichloropropane	0.17	U	1.4	U	0.17	U	0.17	U
1,2,4-Trichlorobenzene	0.13	U	1.1	U	0.13	U	0.13	U
1,2,4-Trimethylbenzene	0.1	U	0.83	U	0.1	U	0.66	F
1,2-Dibromo-3-chloro-propane (DBCP)	0.15	U	1.2	U	0.15	U	0.15	U
1,2-Dichlorobenzene	0.13	U	1.1	U	0.13	U	0.13	U
1,2-Dichloroethane	0.13	U	1.1	U	0.13	U	0.13	U
1,2-Dichloropropane	0.14	U	1.2	U	0.14	U	0.14	U
1,3,5-Trimethylbenzene	0.13	U	1.1	U	0.13	U	0.21	F
1,3-Dichlorobenzene	0.15	U	1.2	U	0.15	U	0.15	U
1,3-Dichloropropane	0.11	U	0.92	U	0.11	U	0.11	U
1,4-Dichlorobenzene	0.11	U	0.92	U	0.11	U	0.11	U
1-Chlorohexane	0.5*	*U	0.5	*U	0.5	*U	0.5	*U
2,2-Dichloropropane	0.1	U	0.83	U	0.1	U	0.1	U
2-Chlorotoluene	0.15	U	1.2	U	0.15	U	0.15	U
4-Chlorotoluene	0.1	U	0.83	U	0.1	U	0.1	U
Benzene	0.11	U	0.92	U	0.11	U	0.11	U
Bromobenzene	0.13	U	1.1	U	0.13	U	0.13	U
Bromochloromethane	0.1	U	0.83	U	0.1	U	0.1	U
Bromodichloromethane	0.44	U	3.7	U	0.44	U	0.44	U
Bromoform	0.14	U	1.2	U	0.14	U	0.14	U
Bromomethane	0.25	U	2.1	U	0.25	U	0.25	U
Carbon tetrachloride	0.13	U	1.1	U	0.13	U	0.13	U
Chlorobenzene	0.12	U	1	U	0.12	U	0.12	U
Chloroethane	0.25	U	2.1	U	0.25	U	0.25	U
Chloroform	0.12	U	1	U	0.12	U	0.12	U
Chloromethane	0.26	U	2.2	U	0.26	U	0.26	U
Dibromochloromethane	0.12	U	1	U	0.12	U	0.12	U
Dibromomethane	0.097	U	0.81	U	0.097	U	0.097	U
Dichlorodifluoromethane	0.27	U	2.2	U	0.27	U	0.27	U
EDB (1,2-Dibromoethane)	0.11	U	0.92	U	0.11	U	0.11	U
Ethylbenzene	0.11	U	0.92	U	0.11	U	0.11	U
Hexachlorobutadiene	0.15	U	1.2	U	0.15	U	0.15	U
Isopropylbenzene (Cumene)	0.13	U	58		0.13	U	0.19	F
Methylene chloride	0.65	U	5.4	U	0.65	U	0.65	U
Naphthalene	0.44	U	130		0.44	U	0.67	F
Styrene	0.12	U	1	U	0.12	U	0.12	U
Tetrachloroethene	0.1	U	0.83	U	0.1	U	0.1	U
Toluene	0.098	U	0.82	U	0.098	U	0.098	U
Trichloroethene	0.13		1.1	U	0.13	U	0.13	U
Trichlorofluoromethane	0.3	U	2.5	U	0.3	U	0.3	U
Vinyl chloride	0.23	U	1.9	U	0.23	U	0.23	U

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Data Summary Table
Carswell AFB
Flightline Area Groundwater

Locxref : Sample ID : Sample Date :	Method Detection Limit		SPOT35-5 SPOT35-5WG03 22-Jan-98		USGS04T USGS04TWG03 20-Jan-98		WITCTA024 WITCTA024WG03 22-Jan-98	
cis-1,2-Dichloroethene	0.1		0.83	U	0.1	U	0.1	U
cis-1,3-Dichloropropene	0.12	U	1	U	0.12	U	0.12	U
m- & p-Xylenes	0.28	U	2.3	U	0.28	U	0.28	U
n-Butylbenzene	0.13	U	1.1	U	0.13	U	0.13	U
n-Propylbenzene	0.13	U	67		0.13	U	0.21	F
o-Xylene	0.11	U	0.92	U	0.11	U	0.11	U
p-Isopropyltoluene (p-Cymene)	0.13	U	1.1	U	0.13	U	0.18	F
sec-Butylbenzene	0.17	U	13		0.17	U	0.92	F
tert-Butylbenzene	0.13	U	3	F	0.13	U	2.5	
trans-1,2-Dichloroethene	0.11	U	0.92	U	0.11	U	0.11	U
trans-1,3-Dichloropropene	0.11	U	0.92	U	0.11	U	0.11	U
Polynuclear Aromatic Hydrocarbons - SW8310/SW3510 (ug/l)								
Acenaphthene	0.093		0.098	U	NA		NA	
Acenaphthylene	0.04		0.042	U	NA		NA	
Anthracene	0.03		0.032	U	NA		NA	
Benzo(a)anthracene	0.06		0.063	U	NA		NA	
Benzo(a)pyrene	0.065		0.068	U	NA		NA	
Benzo(b)fluoranthene	0.059		0.062	U	NA		NA	
Benzo(g,h,i)perylene	0.071		0.075	U	NA		NA	
Benzo(k)fluoranthene	0.059		0.062	U	NA		NA	
Chrysene	0.073		0.077	U	NA		NA	
Dibenz(a,h)anthracene	0.076		0.08	U	NA		NA	
Fluoranthene	0.036		0.038	U	NA		NA	
Fluorene	0.035		0.037	U	NA		NA	
Indeno(1,2,3-cd)pyrene	0.055		0.058	U	NA		NA	
Naphthalene	0.059		0.062	U	NA		NA	
Phenanthrene	0.03		0.032	U	NA		NA	
Pyrene	0.043		0.045	U	NA		NA	
SW846 9056 - SW9056/NONE (mg/l)								
Bromide	0.051	F	2.1		NA		NA	
Chloride	0.1		97.2		NA		NA	
Fluoride	0.05	F	0.68	F	NA		NA	
Nitrate as N	0.05		0.05	U	NA		NA	
Nitrite as N	0.05	U	0.05	U	NA		NA	
Orthophosphate as P	0.05	U	0.05	U	NA		NA	
Sulfate	0.1		0.74	F	NA		NA	
Total Organic Carbon - SW9060/NONE (mg/l)								
Total Organic Carbon	0.22	U	7.4		NA		NA	

NOTE:
* PQLs used if MDL not reported.

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TAB

Flightline Area Laboratory Results
Positive Results

Positive Results Summary Table
Carswell AFB
Flightline Area Groundwater

Locxref :	Method	GMI-22-02M		GMI-22-03M		GMI-22-04M		GMI-22-05M	
Sample ID :	Detection	GMI-22-02MWG03		GMI-22-03MWG03		GMI-22-04MWG03		DUP02-WG03	
Sample Date :	Limit	21-Jan-98		26-Jan-98		23-Jan-98		20-Jan-98	
Alkalinity (Titrimetric) - E310.1/NONE (mg/l)									
Alkalinity, Bicarb. as CaCO3 at pH 4.5	0.69	232		421		365		NA	
Alkalinity, Total as CaCO3 at pH 4.5	0.69	232		421		365		NA	
EPA-9/RSK-175 Modified A2720C - M2720C/NONE (ug/l)									
Ethane	0.092	0.092	U	0.18	F	2.3		NA	
Ethene	0.1	0.1	U	0.1	U	0.1	U	NA	
Methane	0.052	0.5	U	0.5	U	12		NA	
Total Petroleum Hydrocarbons - Extractables - M8015D/SW3510 (mg/l)									
Extractable Petroleum Hydrocarbons	0.054	0.052	U	NA		NA		NA	
Inductively Coupled Plasma Atomic Emission Spectro - SW6010/SW3005 (mg/l)									
Calcium	0.034	NA		NA		NA		173	
Iron	0.026	NA		NA		NA		0.11	
Magnesium	0.07	NA		NA		NA		15.2	
Potassium	0.5	NA		NA		NA		0.5	U
Sodium	0.72	NA		NA		NA		63.4	
Inductively Coupled Plasma Mass Spectrometry - SW6020/SW3020 (mg/l)									
Arsenic	0.00019	NA		NA		NA		0.0017	F
Barium	0.0002	NA		NA		NA		0.14	
Beryllium	0.000069	NA		NA		NA		0.000069	U
Cadmium	0.00004	NA		NA		NA		0.000058	F
Chromium	0.0002	NA		NA		NA		0.07	U
Cobalt	0.00002	NA		NA		NA		0.07	U
Copper	0.00084	NA		NA		NA		0.06	U
Lead	0.0002	NA		NA		NA		0.5	U
Manganese	0.0002	NA		NA		NA		0.072	
Molybdenum	0.0002	NA		NA		NA		0.00094	F
Nickel	0.0002	NA		NA		NA		0.15	U
Selenium	0.00007	NA		NA		NA		0.0075	F
Thallium	0.00002	NA		NA		NA		0.000086	F
Vanadium	0.00017	NA		NA		NA		0.00027	F
Zinc	0.0011	NA		NA		NA		0.023	U
Mercury in Liquid Waste (Manual Cold-Vapor Technig - SW7470/METHOD (mg/l)	No Analytes Detected								
Volatile Organic Compounds by Gas Chromatograph/Mas - SW8260/SW5030 (ug/l)									
1,1,1-Trichloroethane	0.12	0.12	U	0.75	U	4.3	U	0.12	U
1,2,4-Trimethylbenzene	0.1	0.1	U	0.62	U	3.6	U	0.1	U
1,3,5-Trimethylbenzene	0.13	0.13	U	0.81	U	4.6	U	0.13	U
Isopropylbenzene (Cumene)	0.13	0.13	U	0.81	U	4.6	U	0.13	U
Naphthalene	0.44	0.44	U	2.8	U	16	U	0.44	U
Tetrachloroethene	0.1	0.1	U	19		3.6	U	0.1	U
Trichloroethene	0.13	0.13	U	76		500		0.13	U

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Positive Results Summary Table
Carswell AFB
Flightline Area Groundwater

Locxref : Sample ID : Sample Date :	Method Detection Limit	GMI-22-02M GMI-22-02MWG03 21-Jan-98		GMI-22-03M GMI-22-03MWG03 26-Jan-98		GMI-22-04M GMI-22-04MWG03 23-Jan-98		GMI-22-05M DUP02-WG03 20-Jan-98	
Vinyl chloride	0.23	0.23	U	1.4	U	8.2	U	0.23	U
cis-1,2-Dichloroethene	0.1	0.1	U	58		63		0.1	U
n-Propylbenzene	0.13	0.13	U	0.81	U	4.6	U	0.13	U
p-Isopropyltoluene (p-Cymene)	0.13	0.13	U	0.81	U	4.6	U	0.13	U
sec-Butylbenzene	0.17	0.17	U	1.1	U	6.1	U	0.17	U
tert-Butylbenzene	0.13	0.13	U	0.81	U	4.6	U	0.13	U
trans-1,2-Dichloroethene	0.11	0.11	U	41		7.6	F	0.11	U
Polynuclear Aromatic Hydrocarbons - SW8310/SW3510 (ug/l)	No Analytes Detected								
SW846 9056 - SW9056/NONE (mg/l)									
Bromide	0.051	0.051	U	0.88		1		NA	
Chloride	0.1	1.4		86.6		108		NA	
Fluoride	0.05	0.32	R	0.16	F	0.3	F	NA	
Nitrate as N	0.05	0.088	F	0.67	F	9.7		NA	
Orthophosphate as P	0.05	1	U	1	U	0.05	U	NA	
Sulfate	0.1	4.8		53.3		50.6		NA	
Total Organic Carbon - SW9060/NONE (mg/l)									
Total Organic Carbon	0.22	1	U	NA		1	U	NA	

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Positive Results Summary Table
Carswell AFB
Flightline Area Groundwater

Locxref :	Method	GMI-22-05M		GMI-22-06M		GMI-22-07M		LSA1628-3		MW-53	
Sample ID :	Detection	GMI-22-05MWG03		GMI-22-06MWG03		GMI-22-07MWG03		LSA1628-3WG03		MW-53WG03	
Sample Date :	Limit	20-Jan-98		23-Jan-98		20-Jan-98		23-Jan-98		22-Jan-98	
Alkalinity (Titrimetric) - E310.1/NONE (mg/l)											
Alkalinity, Bicarb. as CaCO3 at pH 4.5	0.69	NA		342		NA		370		201	
Alkalinity, Total as CaCO3 at pH 4.5	0.69	NA		342		NA		370		201	
EPA-9/RSK-175 Modified A2720C - M2720C/NONE (ug/l)											
Ethane	0.092	NA		18		NA		1.1		0.092	U
Ethene	0.1	NA		0.2	F	NA		0.1	U	0.1	U
Methane	0.052	NA		400		NA		6.2		0.5	U
Total Petroleum Hydrocarbons - Extractables - M8015D/SW3510 (mg/l)											
Extractable Petroleum Hydrocarbons	0.054	NA		NA		NA		NA		NA	
Inductively Coupled Plasma Atomic Emission Spectro - SW6010/SW3005 (mg/l)											
Calcium	0.034	169		NA		NA		NA		NA	
Iron	0.026	0.1		NA		NA		NA		NA	
Magnesium	0.07	14.9		NA		NA		NA		NA	
Potassium	0.5	0.5	U	NA		NA		NA		NA	
Sodium	0.72	62.5		NA		NA		NA		NA	
Inductively Coupled Plasma Mass Spectrometry - SW6020/SW3020 (mg/l)											
Arsenic	0.00019	0.0016	F	NA		NA		NA		NA	
Barium	0.0002	0.13		NA		NA		NA		NA	
Beryllium	0.000069	0.000069	U	NA		NA		NA		NA	
Cadmium	0.00004	0.000057	F	NA		NA		NA		NA	
Chromium	0.0002	0.07	U	NA		NA		NA		NA	
Cobalt	0.00002	0.07	U	NA		NA		NA		NA	
Copper	0.00084	0.06	U	NA		NA		NA		NA	
Lead	0.0002	0.5	U	NA		NA		NA		NA	
Manganese	0.0002	0.064		NA		NA		NA		NA	
Molybdenum	0.0002	0.00088	F	NA		NA		NA		NA	
Nickel	0.0002	0.15	U	NA		NA		NA		NA	
Selenium	0.00007	0.0072	F	NA		NA		NA		NA	
Thallium	0.00002	0.000085	F	NA		NA		NA		NA	
Vanadium	0.00017	0.00022	F	NA		NA		NA		NA	
Zinc	0.0011	0.02	U	NA		NA		NA		NA	
Mercury in Liquid Waste (Manual Cold-Vapor Techniq - SW7470/METHOD (mg/l)	No Analytes Detected										
Volatile Organic Compounds by Gas Chromatgraph/Mas - SW8260/SW5030 (ug/l)											
1,1,1-Trichloroethane	0.12	0.12	U	1.2	U	0.12	U	2.5	U	0.75	U
1,2,4-Trimethylbenzene	0.1	0.1	U	1	U	0.1	U	2.1	U	0.62	U
1,3,5-Trimethylbenzene	0.13	0.13	U	1.3	U	0.13	U	2.7	U	0.81	U
Isopropylbenzene (Cumene)	0.13	0.13	U	1.3	U	0.13	U	2.7	U	0.81	U
Naphthalene	0.44	0.44	U	4.4	U	0.44	U	9.2	U	2.8	U
Tetrachloroethene	0.1	0.1	U	1	U	0.1	U	2.1	U	0.62	U
Trichloroethene	0.13	0.13	U	160		0.13	U	230		87	

Positive Results Summary Table
Carswell AFB
Flightline Area Groundwater

Locxref :	Method	GMI-22-05M		GMI-22-06M		GMI-22-07M		LSA1628-3		MW-53	
Sample ID :	Detection	GMI-22-05MWG03		GMI-22-06MWG03		GMI-22-07MWG03		LSA1628-3WG03		MW-53WG03	
Sample Date :	Limit	20-Jan-98		23-Jan-98		20-Jan-98		23-Jan-98		22-Jan-98	
Vinyl chloride	0.23	0.23	U	4.6	F	0.23	U	4.8	U	1.4	U
cis-1,2-Dichloroethene	0.1	0.1	U	34		0.1	U	51		14	
n-Propylbenzene	0.13	0.13	U	1.3	U	0.13	U	2.7	U	0.81	U
p-Isopropyltoluene (p-Cymene)	0.13	0.13	U	1.3	U	0.13	U	2.7	U	0.81	U
sec-Butylbenzene	0.17	0.17	U	1.7	U	0.17	U	3.5	U	1.1	U
tert-Butylbenzene	0.13	0.13	U	1.3	U	0.13	U	2.7	U	0.81	U
trans-1,2-Dichloroethene	0.11	0.11	U	36		0.11	U	31		0.69	U
Polynuclear Aromatic Hydrocarbons - SW8310/SW3510 (ug/l)	No Analytes Detected										
SW846 9056 - SW9056/NONE (mg/l)											
Bromide	0.051	NA		0.97		NA		0.93		0.2	F
Chloride	0.1	NA		95.7		NA		104		3.8	
Fluoride	0.05	NA		1		NA		0.39	F	0.39	F
Nitrate as N	0.05	NA		0.22	F	NA		3.6		1.1	
Orthophosphate as P	0.05	NA		0.31	R	NA		0.05	U	0.05	U
Sulfate	0.1	NA		219		NA		70.3		18.1	
Total Organic Carbon - SW9060/NONE (mg/l)											
Total Organic Carbon	0.22	NA		1.5	U	NA		1.2	U	1	U

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Positive Results Summary Table
Carswell AFB
Flightline Area Groundwater

Locxref :	Method	SPOT35-5		USGS04T		WITCTA024	
Sample ID :	Detection	SPOT35-5WG03		USGS04TWG03		WITCTA024WG03	
Sample Date :	Limit	22-Jan-98		20-Jan-98		22-Jan-98	
Alkalinity (Titrimetric) - E310.1/NONE (mg/l)							
Alkalinity, Bicarb. as CaCO3 at pH 4.5	0.69	429		NA		NA	
Alkalinity, Total as CaCO3 at pH 4.5	0.69	429		NA		NA	
EPA-9/RSK-175 Modified A2720C - M2720C/NONE (ug/l)							
Ethane	0.092	5.5		NA		NA	
Ethene	0.1	0.1	U	NA		NA	
Methane	0.052	8300		NA		NA	
Total Petroleum Hydrocarbons - Extractables - M8015D/SW3510 (mg/l)							
Extractable Petroleum Hydrocarbons	0.054	2.9					
Inductively Coupled Plasma Atomic Emission Spectro - SW6010/SW3005 (mg/l)							
Calcium	0.034	NA		108		NA	
Iron	0.026	NA		0.32		NA	
Magnesium	0.07	NA		12.7		NA	
Potassium	0.5	NA		5.3		NA	
Sodium	0.72	NA		35.8			
Inductively Coupled Plasma Mass Spectrometry - SW6020/SW3020 (mg/l)							
Arsenic	0.00019	NA		0.0024	F	NA	
Barium	0.0002	NA		0.022		NA	
Beryllium	0.000069	NA		0.00011	F	NA	
Cadmium	0.00004	NA		0.000062	F	NA	
Chromium	0.0002	NA		0.07	U	NA	
Cobalt	0.00002	NA		0.07	U	NA	
Copper	0.00084	NA		0.06	U	NA	
Lead	0.0002	NA		0.5	U	NA	
Manganese	0.0002	NA		0.17		NA	
Molybdenum	0.0002	NA		0.00068	F	NA	
Nickel	0.0002	NA		0.15	U	NA	
Selenium	0.00007	NA		0.0024	F	NA	
Thallium	0.00002	NA		0.00012	F	NA	
Vanadium	0.00017	NA		0.0038	F	NA	
Zinc	0.0011	NA		0.02	U		
Mercury in Liquid Waste (Manual Cold-Vapor Techniq - SW7470/METHOD (mg/l)	No Analytes Detected						
Volatile Organic Compounds by Gas Chromatgraph/Mas - SW8260/SW5030 (ug/l)							
1,1,1-Trichloroethane	0.12	1	U	0.12	F	0.12	U
1,2,4-Trimethylbenzene	0.1	0.83	U	0.1	U	0.66	F
1,3,5-Trimethylbenzene	0.13	1.1	U	0.13	U	0.21	F
Isopropylbenzene (Cumene)	0.13	58		0.13	U	0.19	F
Naphthalene	0.44	130		0.44	U	0.67	F
Tetrachloroethene	0.1	0.83	U	0.1	U	0.1	U
Trichloroethene	0.13	1.1	U	0.13	U	0.13	U

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Positive Results Summary Table
Carswell AFB
Flightline Area Groundwater

Locxref :	Method	SPOT35-5		USGS04T		WITCTA024	
Sample ID :	Detection	SPOT35-5WG03		USGS04TWG03		WITCTA024WG03	
Sample Date :	Limit	22-Jan-98		20-Jan-98		22-Jan-98	
Vinyl chloride	0.23	1.9	U	0.23	U	0.23	U
cis-1,2-Dichloroethene	0.1	0.83	U	0.1	U	0.1	U
n-Propylbenzene	0.13	67		0.13	U	0.21	F
p-Isopropyltoluene (p-Cymene)	0.13	1.1	U	0.13	U	0.18	F
sec-Butylbenzene	0.17	13		0.17	U	0.92	F
tert-Butylbenzene	0.13	3	F	0.13	U	2.5	
trans-1,2-Dichloroethene	0.11	0.92	U	0.11	U	0.11	U
Polynuclear Aromatic Hydrocarbons - SW8310/SW3510 (ug/l)	No Analytes Detected						
SW846 9056 - SW9056/NONE (mg/l)							
Bromide	0.051	2.1		NA		NA	
Chloride	0.1	97.2		NA		NA	
Fluoride	0.05	0.68	F	NA		NA	
Nitrate as N	0.05	0.05	U	NA		NA	
Orthophosphate as P	0.05	0.05	U	NA		NA	
Sulfate	0.1	0.74	F	NA		NA	
Total Organic Carbon - SW9060/NONE (mg/l)							
Total Organic Carbon	0.22	7.4		NA		NA	

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TAB

Appendix B-2
East Area Laboratory Results

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TAB

East Area Laboratory Results
All Results

Data Summary Table
Carswell AFB
East Area Groundwater

Locxref : Sample ID : Sample Date :	Method Detection Limit	17M 17MWG03 20-Jan-98		BGS-MW03 BGSMW03WG03 22-Jan-98		BGS-MW05 BGSMW05WG03 22-Jan-98		BGS-MW06 BGSMW06WG03 22-Jan-98		BSS-B BSS-BWG03 23-Jan-98	
Alkalinity (Titrimetric) - E310.1/NONE (mg/l)											
Alkalinity, Bicarb. as CaCO3 at pH 4.5	0.69	295		NA		NA		NA		NA	
Alkalinity, Carb. as CaCO3 at pH 8.3	0.69	0.69	U	NA		NA		NA		NA	
Alkalinity, Hydrox. as CaCO3	0.69	0.69	U	NA		NA		NA		NA	
Alkalinity, Total as CaCO3 at pH 4.5	0.69	295		NA		NA		NA		NA	
Sulfide (Colorimetric, Methylene Blue) - E376.2/NONE (mg/l)											
Sulfide, Total	0.009	NA		NA		NA		NA		NA	
EPA-9/RSK-175 Modified AZ720C - MZ720C/NONE (ug/l)											
Ethane	0.092	3.5		NA		NA		NA		NA	
Ethene	0.1	0.1	U	NA		NA		NA		NA	
Methane	0.052	2900		NA		NA		NA		NA	
Inductively Coupled Plasma Atomic Emission Spectro - SW6010/SW3005 (mg/l)											
Aluminum	0.052	NA		NA		NA		NA		NA	
Calcium	0.034	NA		NA		NA		NA		NA	
Iron	0.026	NA		NA		NA		NA		NA	
Magnesium	0.07	NA		NA		NA		NA		NA	
Potassium	0.5	NA		NA		NA		NA		NA	
Sodium	0.72	NA		NA		NA		NA		NA	
Tin	0.01	NA		NA		NA		NA		NA	
Inductively Coupled Plasma Mass Spectrometry - SW6020/SW3020 (mg/l)											
Antimony	0.00017	NA		NA		NA		NA		NA	
Arsenic	0.00019	NA		NA		NA		NA		NA	
Barium	0.0002	NA		NA		NA		NA		NA	
Beryllium	0.000069	NA		NA		NA		NA		NA	
Cadmium	0.00004	NA		NA		NA		NA		NA	
Chromium	0.0002	NA		NA		NA		NA		NA	
Cobalt	0.00002	NA		NA		NA		NA		NA	
Copper	0.00084	NA		NA		NA		NA		NA	
Lead	0.0002	NA		NA		NA		NA		NA	
Manganese	0.0002	NA		NA		NA		NA		NA	
Molybdenum	0.0002	NA		NA		NA		NA		NA	
Nickel	0.0002	NA		NA		NA		NA		NA	
Selenium	0.00007	NA		NA		NA		NA		NA	
Silver	0.0002	NA		NA		NA		NA		NA	
Thallium	0.00002	NA		NA		NA		NA		NA	
Vanadium	0.00017	NA		NA		NA		NA		NA	
Zinc	0.0011	NA		NA		NA		NA		NA	
Mercury in Liquid Waste (Manual Cold-Vapor Techniq - SW7470/METHOD (mg/l)											
Mercury	0.00011	NA		NA		NA		NA		NA	
Aromatic Volatile Organics - SW8020/SW5030 (ug/l)											
1,2-Dichlorobenzene	0.18	0.45	U	18	U	0.18	U	0.18	U	36	U
1,3-Dichlorobenzene	0.09	0.22	U	9	U	0.09	U	0.09	U	18	U

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref : Sample ID : Sample Date :	Method Detection Limit	17M 17MWG03 20-Jan-98		BGS-MW03 BGSMW03WG03 22-Jan-98		BGS-MW05 BGSMW05WG03 22-Jan-98		BGS-MW06 BGSMW06WG03 22-Jan-98		BSS-B BSS-BWG03 23-Jan-98	
1,4-Dichlorobenzene	0.33	0.82	U	33	U	0.33	U	0.33	U	66	U
Benzene	0.056	0.14	U	1400		0.056	U	0.056	U	11	U
Chlorobenzene	0.085	0.21	U	8.5	U	0.085	U	0.085	U	17	U
Ethylbenzene	0.054	0.14	U	38	F	0.054	U	0.054	U	1700	
Toluene	0.15	0.38	U	26	F	2	U	2	U	7600	
Xylenes (total)	0.15	0.38	U	75	F	0.15	U	0.15	U	12000	
tert-Butyl methyl ether	0.01	NA		1	U	0.01	U	0.01	U	2	U
Organochlorine Pesticides and PCBs - SW8080/SW3510 (ug/l)											
4,4'-DDD	0.012	NA		NA		NA		NA		NA	
4,4'-DDE	0.021	NA		NA		NA		NA		NA	
4,4'-DDT	0.033	NA		NA		NA		NA		NA	
Aldrin	0.023	NA		NA		NA		NA		NA	
Aroclor 1016	0.11	NA		NA		NA		NA		NA	
Aroclor 1221	0.45	NA		NA		NA		NA		NA	
Aroclor 1232	0.65	NA		NA		NA		NA		NA	
Aroclor 1242	0.18	NA		NA		NA		NA		NA	
Aroclor 1248	0.22	NA		NA		NA		NA		NA	
Aroclor 1254	0.13	NA		NA		NA		NA		NA	
Aroclor 1260	0.12	NA		NA		NA		NA		NA	
Chlordane	0.056	NA		NA		NA		NA		NA	
Dieldrin	0.022	NA		NA		NA		NA		NA	
Endosulfan I	0.025	NA		NA		NA		NA		NA	
Endosulfan II	0.022	NA		NA		NA		NA		NA	
Endosulfan sulfate	0.027	NA		NA		NA		NA		NA	
Endrin	0.027	NA		NA		NA		NA		NA	
Endrin aldehyde	0.022	NA		NA		NA		NA		NA	
Endrin ketone	0.026	NA		NA		NA		NA		NA	
Heptachlor	0.023	NA		NA		NA		NA		NA	
Heptachlor epoxide	0.024	NA		NA		NA		NA		NA	
Kepone	1.1	NA		NA		NA		NA		NA	
Methoxychlor	0.025	NA		NA		NA		NA		NA	
Toxaphene	0.18	NA		NA		NA		NA		NA	
alpha-BHC	0.022	NA		NA		NA		NA		NA	
alpha-Chlordane	0.025	NA		NA		NA		NA		NA	
beta-BHC	0.026	NA		NA		NA		NA		NA	
delta-BHC	0.022	NA		NA		NA		NA		NA	
gamma-BHC (Lindane)	0.022	NA		NA		NA		NA		NA	
gamma-Chlordane	0.025	NA		NA		NA		NA		NA	
Organophosphorus Pesticides - SW8140/SW3510 (ug/l)											
Dimethoate	0.03	NA		NA		NA		NA		NA	
Disulfoton	0.055	NA		NA		NA		NA		NA	
Ethyl parathion	0.064	NA		NA		NA		NA		NA	
Famphur	0.06	NA		NA		NA		NA		NA	
Methyl parathion	0.051	NA		NA		NA		NA		NA	
O,O,O-Triethylphosphoro-thioate	0.048	NA		NA		NA		NA		NA	
Phorate (Thimet)	0.047	NA		NA		NA		NA		NA	

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref :	Method	17M	BGS-MW03	BGS-MW05	BGS-MW06	BSS-B
Sample ID :	Detection	17MWG03	BGSMW03WG03	BGSMW05WG03	BGSMW06WG03	BSS-BWG03
Sample Date :	Limit	20-Jan-98	22-Jan-98	22-Jan-98	22-Jan-98	23-Jan-98
Sulfotepp	0.035	NA	NA	NA	NA	NA
Thionazin	0.048	NA	NA	NA	NA	NA
Chlorinated Herbicides - SW8150/SW3510 (ug/l)						
2,4,5-T	0.14	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)	0.14	NA	NA	NA	NA	NA
2,4-D	0.53	NA	NA	NA	NA	NA
Volatile Organic Compounds by Gas Chromatograph/Mas - SW8260/SW5030 (ug/l)						
1,1,1,2-Tetrachloroethane	5*	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	1.3	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	1.2	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	1.2	NA	NA	NA	NA	NA
1,1-Dichloroethane	1.4	NA	NA	NA	NA	NA
1,1-Dichloroethene	1.3	NA	NA	NA	NA	NA
1,1-Dichloropropene	0.094	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	0.14	NA	NA	NA	NA	NA
1,2,3-Trichloropropane	0.95	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	0.13	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	0.1	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloro-propane (DBCP)	10*	NA	NA	NA	NA	NA
1,2-Dibromoethane (EDB)	5*	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	0.13	NA	NA	NA	NA	NA
1,2-Dichloroethane	1.5	NA	NA	NA	NA	NA
1,2-Dichloropropane	0.74	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	0.13	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	0.15	NA	NA	NA	NA	NA
1,3-Dichloropropane	0.11	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	0.11	NA	NA	NA	NA	NA
1,4-Dioxane	57	NA	NA	NA	NA	NA
1-Chlorohexane	0.5*	NA	NA	NA	NA	NA
2,2-Dichloropropane	0.1	NA	NA	NA	NA	NA
2-Butanone (MEK)	1.5	NA	NA	NA	NA	NA
2-Chloroethyl vinyl ether	1.4	NA	NA	NA	NA	NA
2-Chlorotoluene	0.15	NA	NA	NA	NA	NA
2-Hexanone	0.85	NA	NA	NA	NA	NA
4-Chlorotoluene	0.1	NA	NA	NA	NA	NA
4-Methyl-2-pentanone (MIBK)	1.1	NA	NA	NA	NA	NA
Acetone	0.96	NA	NA	NA	NA	NA
Acetonitrile	12	NA	NA	NA	NA	NA
Acrolein	11	NA	NA	NA	NA	NA
Acrylonitrile	5.6	NA	NA	NA	NA	NA
Allyl chloride	0.6	NA	NA	NA	NA	NA
Benzene	1.2	NA	NA	NA	NA	NA
Bromobenzene	0.13	NA	NA	NA	NA	NA
Bromochloromethane	0.1	NA	NA	NA	NA	NA
Bromodichloromethane	1.3	NA	NA	NA	NA	NA
Bromoform	1.1	NA	NA	NA	NA	NA

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref :	Method	17M	BGS-MW03	BGS-MW05	BGS-MW06	BSS-B
Sample ID :	Detection	17MWG03	BGSMW03WG03	BGSMW05WG03	BGSMW06WG03	BSS-BWG03
Sample Date :	Limit	20-Jan-98	22-Jan-98	22-Jan-98	22-Jan-98	23-Jan-98
Bromomethane	1.3	NA	NA	NA	NA	NA
Carbon disulfide	1.3	NA	NA	NA	NA	NA
Carbon tetrachloride	1.5	NA	NA	NA	NA	NA
Chlorobenzene	1.2	NA	NA	NA	NA	NA
Chloroethane	1.4	NA	NA	NA	NA	NA
Chloroform	1.4	NA	NA	NA	NA	NA
Chloromethane	1.5	NA	NA	NA	NA	NA
Chloroprene	1	NA	NA	NA	NA	NA
Dibromochloromethane	1.3	NA	NA	NA	NA	NA
Dibromomethane	5*	NA	NA	NA	NA	NA
Dichlorodifluoromethane	10*	NA	NA	NA	NA	NA
EDB (1,2-Dibromoethane)	0.11	NA	NA	NA	NA	NA
Ethyl methacrylate	0.74	NA	NA	NA	NA	NA
Ethylbenzene	1.2	NA	NA	NA	NA	NA
Hexachlorobutadiene	0.15	NA	NA	NA	NA	NA
Iodomethane	1.3	NA	NA	NA	NA	NA
Isobutyl alcohol	19	NA	NA	NA	NA	NA
Isopropylbenzene (Cumene)	0.13	NA	NA	NA	NA	NA
Methacrylonitrile	0.95	NA	NA	NA	NA	NA
Methyl methacrylate	2.5	NA	NA	NA	NA	NA
Methylene chloride	1.2	NA	NA	NA	NA	NA
Naphthalene	0.44	NA	NA	NA	NA	NA
Propionitrile	1.5	NA	NA	NA	NA	NA
Styrene	1.3	NA	NA	NA	NA	NA
Tetrachloroethene	1.2	NA	NA	NA	NA	NA
Toluene	1.2	NA	NA	NA	NA	NA
Trichloroethene	1.2	NA	NA	NA	NA	NA
Trichlorofluoromethane	10*	NA	NA	NA	NA	NA
Vinyl acetate	1.8	NA	NA	NA	NA	NA
Vinyl chloride	1.2	NA	NA	NA	NA	NA
Xylenes (total)	0.75	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	0.1	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	1.3	NA	NA	NA	NA	NA
m- & p-Xylenes	0.28	NA	NA	NA	NA	NA
n-Butylbenzene	0.13	NA	NA	NA	NA	NA
n-Propylbenzene	0.13	NA	NA	NA	NA	NA
o-Xylene	0.11	NA	NA	NA	NA	NA
p-Isopropyltoluene (p-Cymene)	0.13	NA	NA	NA	NA	NA
sec-Butylbenzene	0.17	NA	NA	NA	NA	NA
tert-Butylbenzene	0.13	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	1.3	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	1.2	NA	NA	NA	NA	NA
trans-1,4-Dichloro-2-butene	1.2	NA	NA	NA	NA	NA
GC/MS for Semivolatile Organics (Capillary Column - SW8270/SW3520 (ug/l)						
1,2,4,5-Tetrachloro-benzene	1	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	4.3	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	4	NA	NA	NA	NA	NA

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref :	Method	17M	BGS-MW03	BGS-MW05	BGS-MW06	BSS-B
Sample ID :	Detection	17MWG03	BGSMW03WG03	BGSMW05WG03	BGSMW06WG03	BSS-BWG03
Sample Date :	Limit	20-Jan-98	22-Jan-98	22-Jan-98	22-Jan-98	23-Jan-98
1,3,5-Trinitrobenzene	1	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	4.1	NA	NA	NA	NA	NA
1,3-Dinitrobenzene	1	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	4	NA	NA	NA	NA	NA
1,4-Dinitrobenzene	1	NA	NA	NA	NA	NA
1,4-Naphthoquinone	1.3	NA	NA	NA	NA	NA
1-Chloronaphthalene	1	NA	NA	NA	NA	NA
1-Naphthylamine	2	NA	NA	NA	NA	NA
2,2'-oxybis(1-chloropropane)	1.7	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	1.3	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	1.8	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	2.2	NA	NA	NA	NA	NA
2,4-Dichlorophenol	2.7	NA	NA	NA	NA	NA
2,4-Dimethylphenol	1.4	NA	NA	NA	NA	NA
2,4-Dinitrophenol	19	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	1.8	NA	NA	NA	NA	NA
2,6-Dichlorophenol	1	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	1.9	NA	NA	NA	NA	NA
2-Acetylaminofluorene	1	NA	NA	NA	NA	NA
2-Chloronaphthalene	3.4	NA	NA	NA	NA	NA
2-Chlorophenol	2.7	NA	NA	NA	NA	NA
2-Methylnaphthalene	3.6	NA	NA	NA	NA	NA
2-Methylphenol	2	NA	NA	NA	NA	NA
2-Naphthylamine	1.2	NA	NA	NA	NA	NA
2-Nitroaniline	12	NA	NA	NA	NA	NA
2-Nitrophenol	2.7	NA	NA	NA	NA	NA
2-Picoline	1	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	1.9	NA	NA	NA	NA	NA
3,3'-Dimethylbenzidine	3.5	NA	NA	NA	NA	NA
3-Methylcholanthrene	2.7	NA	NA	NA	NA	NA
3-Nitroaniline	15	NA	NA	NA	NA	NA
3/4-Methylphenol	1.8	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	20	NA	NA	NA	NA	NA
4-Aminobiphenyl	1	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	1.3	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	2.2	NA	NA	NA	NA	NA
4-Chloroaniline	1.5	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	1.4	NA	NA	NA	NA	NA
4-Nitroaniline	25	NA	NA	NA	NA	NA
4-Nitrophenol	19	NA	NA	NA	NA	NA
4-Nitroquinoline-1-oxide	10	NA	NA	NA	NA	NA
5-Nitro-o-toluidine	1.2	NA	NA	NA	NA	NA
7,12-Dimethylbenz(a)-anthracene	1	NA	NA	NA	NA	NA
Acenaphthene	2.2	NA	NA	NA	NA	NA
Acenaphthylene	2.8	NA	NA	NA	NA	NA
Acetophenone	1	NA	NA	NA	NA	NA
Aniline	1.5	NA	NA	NA	NA	NA
Anthracene	1.5	NA	NA	NA	NA	NA

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref :	Method	17M	BGS-MW03	BGS-MW05	BGS-MW06	BSS-B
Sample ID :	Detection	17MWG03	BGSMW03WG03	BGSMW05WG03	BGSMW06WG03	BSS-BWG03
Sample Date :	Limit	20-Jan-98	22-Jan-98	22-Jan-98	22-Jan-98	23-Jan-98
Aramite	1	NA	NA	NA	NA	NA
Azobenzene	1.5	NA	NA	NA	NA	NA
Benzo(a)anthracene	1.5	NA	NA	NA	NA	NA
Benzo(a)pyrene	1.6	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	2.1	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	1.5	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	2	NA	NA	NA	NA	NA
Benzoic acid	22	NA	NA	NA	NA	NA
Benzyl alcohol	2.7	NA	NA	NA	NA	NA
Butyl benzyl phthalate	1.8	NA	NA	NA	NA	NA
Carbazole	1.8	NA	NA	NA	NA	NA
Chlorobenzilate	1	NA	NA	NA	NA	NA
Chrysene	1.5	NA	NA	NA	NA	NA
Di-n-butyl phthalate	1.9	NA	NA	NA	NA	NA
Di-n-octyl phthalate	1.2	NA	NA	NA	NA	NA
Diallate	2	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	1.3	NA	NA	NA	NA	NA
Dibenz(a,j)acridine	1	NA	NA	NA	NA	NA
Dibenzofuran	1.7	NA	NA	NA	NA	NA
Diethyl phthalate	1.9	NA	NA	NA	NA	NA
Dimethoate	1	NA	NA	NA	NA	NA
Dimethyl phthalate	1.8	NA	NA	NA	NA	NA
Diphenylamine	10*	NA	NA	NA	NA	NA
Ethyl methanesulfonate	1	NA	NA	NA	NA	NA
Fluoranthene	1.6	NA	NA	NA	NA	NA
Fluorene	2.1	NA	NA	NA	NA	NA
Hexachlorobenzene	1.5	NA	NA	NA	NA	NA
Hexachlorobutadiene	4.8	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	33	NA	NA	NA	NA	NA
Hexachloroethane	4.7	NA	NA	NA	NA	NA
Hexachloropropene	1	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	1.2	NA	NA	NA	NA	NA
Isodrin	1	NA	NA	NA	NA	NA
Isophorone	1.9	NA	NA	NA	NA	NA
Isosafrole	2	NA	NA	NA	NA	NA
Methapyrilene	11	NA	NA	NA	NA	NA
Methyl methanesulfonate	1	NA	NA	NA	NA	NA
N-Nitroso-di-n-butylamine	1	NA	NA	NA	NA	NA
N-Nitroso-di-n-propylamine	1.9	NA	NA	NA	NA	NA
N-Nitrosodiethylamine	10*	NA	NA	NA	NA	NA
N-Nitrosodimethylamine	2.4	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	1.8	NA	NA	NA	NA	NA
N-Nitrosomethylethylamine	1	NA	NA	NA	NA	NA
N-Nitrosomorpholine	1	NA	NA	NA	NA	NA
N-Nitrosopiperidine	1	NA	NA	NA	NA	NA
N-Nitrosopyrrolidine	1	NA	NA	NA	NA	NA
Naphthalene	3.4	NA	NA	NA	NA	NA
Nitrobenzene	2.5	NA	NA	NA	NA	NA

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref : Sample ID : Sample Date :	Method Detection Limit	17M 17MWG03 20-Jan-98		BGS-MW03 BGSMW03WG03 22-Jan-98	BGS-MW05 BGSMW05WG03 22-Jan-98	BGS-MW06 BGSMW06WG03 22-Jan-98	BSS-B BSS-BWG03 23-Jan-98
O,O,O-Triethylphosphoro-thioate	1	NA		NA	NA	NA	NA
Parathion	1	NA		NA	NA	NA	NA
Pentachlorobenzene	1	NA		NA	NA	NA	NA
Pentachloroethane	1	NA		NA	NA	NA	NA
Pentachloronitrobenzene	1	NA		NA	NA	NA	NA
Pentachlorophenol	18	NA		NA	NA	NA	NA
Phenacetin	1	NA		NA	NA	NA	NA
Phenanthrene	1.4	NA		NA	NA	NA	NA
Phenol	2.7	NA		NA	NA	NA	NA
Pronamide	1	NA		NA	NA	NA	NA
Pyrene	1.6	NA		NA	NA	NA	NA
Pyridine	1.2	NA		NA	NA	NA	NA
Safrole	1	NA		NA	NA	NA	NA
Sulfotepp	1	NA		NA	NA	NA	NA
a,a-Dimethylphenethyl-amine	19	NA		NA	NA	NA	NA
bis(2-Chloroethoxy)methane	2.7	NA		NA	NA	NA	NA
bis(2-Chloroethyl) ether	2.2	NA		NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	2.7	NA		NA	NA	NA	NA
o-Toluidine	1	NA		NA	NA	NA	NA
p-Dimethylaminoazobenzene	1.1	NA		NA	NA	NA	NA
p-Phenylenediamine	10	NA		NA	NA	NA	NA
Polychlorinated Dibenzo-p-Dioxins and Dibenzofuran - SW8280/METHOD (ng/l)							
2,3,7,8-TCDD	0.36	NA		NA	NA	NA	NA
HxCDDs (total)	0.78	NA		NA	NA	NA	NA
HxCDFs (total)	1.6	NA		NA	NA	NA	NA
PeCDDs (total)	46	NA		NA	NA	NA	NA
PeCDFs (total)	6.4	NA		NA	NA	NA	NA
TCDDs (total)	0.36	NA		NA	NA	NA	NA
TCDFs (total)	0.76	NA		NA	NA	NA	NA
Total and Amendable Cyanide (Colorimetric, Automat - SW9012/METHOD (mg/l)							
Cyanide	0.001	NA		NA	NA	NA	NA
SW846 9056 - SW9056/NONE (mg/l)							
Bromide	0.051	0.51		NA	NA	NA	NA
Chloride	0.1	27.8		NA	NA	NA	NA
Fluoride	0.05	0.41	F	NA	NA	NA	NA
Nitrate as N	0.05	0.05	U	NA	NA	NA	NA
Nitrite as N	0.05	0.05	U	NA	NA	NA	NA
Orthophosphate as P	0.05	0.05	U	NA	NA	NA	NA
Sulfate	0.1	0.98	F	NA	NA	NA	NA
Total Organic Carbon - SW9060/NONE (mg/l)							
Total Organic Carbon	0.22	6.3		NA	NA	NA	NA

NOTE:
* PQLs used if MDL not reported.

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref :	Method	LF01-1D		MW-1		MW-10		SD13-01		SD13-02	
Sample ID :	Detection	LF01-1DWG03		MW-1WG03		MW-10WG03		SD13-01WG03		SD13-02WG03	
Sample Date :	Limit	27-Jan-98		26-Jan-98		26-Jan-98		27-Jan-98		27-Jan-98	
		Appendix IX						Appendix IX		Appendix IX	
Alkalinity (Titrimetric) - E310.1/NONE (mg/l)											
Alkalinity, Bicarb. as CaCO3 at pH 4.5	0.69	NA		NA		NA		327		317	
Alkalinity, Carb. as CaCO3 at pH 8.3	0.69	NA		NA		NA		0.69	U	0.69	U
Alkalinity, Hydrox. as CaCO3	0.69	NA		NA		NA		0.69	U	0.69	U
Alkalinity, Total as CaCO3 at pH 4.5	0.69	NA		NA		NA		327		317	
Sulfide (Colorimetric, Methylene Blue) - E376.2/NONE (mg/l)											
Sulfide, Total	0.009	0.017	F	NA		NA		0.009	U	0.022	F
EPA-9/RSK-175 Modified A2720C - M2720C/NONE (ug/l)											
Ethane	0.092	NA		NA		NA		4.8		15	
Ethene	0.1	NA		NA		NA		0.1	U	0.1	U
Methane	0.052	NA		NA		NA		6100		4600	
Inductively Coupled Plasma Atomic Emission Spectro - SW6010/SW3005 (mg/l)											
Aluminum	0.052	NA		NA		0.052	U	NA		NA	
Calcium	0.034	NA		NA		177		NA		NA	
Iron	0.026	NA		NA		6.2		NA		NA	
Magnesium	0.07	NA		NA		13.2		NA		NA	
Potassium	0.5	NA		NA		0.5	U	NA		NA	
Sodium	0.72	NA		NA		55	J	NA		NA	
Tin	0.01	0.12		NA		NA		0.11		0.097	F
Inductively Coupled Plasma Mass Spectrometry - SW6020/SW3020 (mg/l)											
Antimony	0.00017	0.4	U	NA		0.4	U	0.00017	U	0.00017	U
Arsenic	0.00019	0.0036	F	NA		0.022	F	0.056	F	0.026	F
Barium	0.0002	0.082		NA		0.16		0.17		0.17	
Beryllium	0.000069	0.000069	U	NA		0.000069	U	0.000069	U	0.000069	U
Cadmium	0.00004	0.000043	F	NA		0.000044	F	0.00004	U	0.00004	U
Chromium	0.0002	0.0002	UJ	NA		0.0002	UJ	0.0002	UJ	0.0002	UJ
Cobalt	0.00002	0.0011	F	NA		0.0061	F	0.0017	F	0.00048	F
Copper	0.00084	0.06	UJ	NA		0.06	UJ	0.06	UJ	0.0027	F
Lead	0.0002	0.00033	F	NA		0.0058	F	0.00034	F	0.00044	F
Manganese	0.0002	0.34	J	NA		4.9	J	0.059		0.26	
Molybdenum	0.0002	0.0012	F	NA		0.0025	F	0.0059	F	0.005	F
Nickel	0.0002	0.011	F	NA		0.15	UJ	0.0097	F	0.0055	F
Selenium	0.00007	0.0021	F	NA		0.0072	F	0.0037	F	0.0045	F
Silver	0.0002	0.0002	UJ	NA		0.0002	UJ	0.0002	UJ	0.0002	UJ
Thallium	0.00002	0.00002	U	NA		0.000044	F	0.000024	F	0.000025	F
Vanadium	0.00017	0.00017	UJ	NA		0.00023	F	0.00017	UJ	0.00017	UJ
Zinc	0.0011	0.02	U	NA		0.02	U	0.02	U	0.013	F
Mercury in Liquid Waste (Manual Cold-Vapor Techniq - SW7470/METHOD (mg/l)											
Mercury	0.00011	0.00011	U	NA		0.00011	U	0.00011	U	0.00011	U
Aromatic Volatile Organics - SW8020/SW5030 (ug/l)											
1,2-Dichlorobenzene	0.18	NA		9	U	36	U	NA		NA	
1,3-Dichlorobenzene	0.09	NA		4.5	U	18	U	NA		NA	

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref :	Method	LF01-1D		MW-1		MW-10		SD13-01		SD13-02	
Sample ID :	Detection	LF01-1DWG03		MW-1WG03		MW-10WG03		SD13-01WG03		SD13-02WG03	
Sample Date :	Limit	27-Jan-98		26-Jan-98		26-Jan-98		27-Jan-98		27-Jan-98	
		Appendix IX						Appendix IX		Appendix IX	
1,4-Dichlorobenzene	0.33	NA		18	F	66	UJ	NA		NA	
Benzene	0.056	NA		2300		4900		NA		NA	
Chlorobenzene	0.085	NA		4.2	U	17	U	NA		NA	
Ethylbenzene	0.054	NA		1500		5200		NA		NA	
Toluene	0.15	NA		140	J	7300		NA		NA	
Xylenes (total)	0.15	NA		2900		14000		NA		NA	
tert-Butyl methyl ether	0.01	NA		310		400	F	NA		NA	
Organochlorine Pesticides and PCBs - SW8080/SW3510 (ug/l)											
4,4'-DDD	0.012	0.012	U	NA		NA		0.011	U	0.012	U
4,4'-DDE	0.021	0.021	U	NA		NA		0.02	U	0.02	U
4,4'-DDT	0.033	0.032	U	NA		NA		0.031	U	0.032	U
Aldrin	0.023	0.023	U	NA		NA		0.022	U	0.022	U
Aroclor 1016	0.11	0.11	UJ	NA		NA		0.1	UJ	0.11	UJ
Aroclor 1221	0.45	0.44	UJ	NA		NA		0.43	UJ	0.43	UJ
Aroclor 1232	0.65	0.64	UJ	NA		NA		0.62	UJ	0.63	UJ
Aroclor 1242	0.18	0.18	UJ	NA		NA		0.17	UJ	0.17	UJ
Aroclor 1248	0.22	0.22	UJ	NA		NA		0.21	UJ	0.21	UJ
Aroclor 1254	0.13	0.13	UJ	NA		NA		0.12	UJ	0.13	UJ
Aroclor 1260	0.12	0.12	UJ	NA		NA		0.11	UJ	0.12	UJ
Chlordane	0.056	0.055	UJ	NA		NA		0.053	UJ	0.054	UJ
Dieldrin	0.022	0.022	U	NA		NA		0.021	U	0.021	U
Endosulfan I	0.025	0.024	U	NA		NA		0.024	U	0.024	U
Endosulfan II	0.022	0.022	U	NA		NA		0.021	U	0.021	U
Endosulfan sulfate	0.027	0.026	U	NA		NA		0.026	U	0.026	U
Endrin	0.027	0.026	U	NA		NA		0.026	U	0.026	U
Endrin aldehyde	0.022	0.022	U	NA		NA		0.021	U	0.021	U
Endrin ketone	0.026	0.025	UJ	NA		NA		0.025	UJ	0.025	UJ
Heptachlor	0.023	0.023	UJ	NA		NA		0.022	UJ	0.022	UJ
Heptachlor epoxide	0.024	0.024	U	NA		NA		0.023	U	0.023	U
Kepone	1.1	1.1	UJ	NA		NA		1	UJ	1.1	UJ
Methoxychlor	0.025	0.024	U	NA		NA		0.024	U	0.024	U
Toxaphene	0.18	0.18	UJ	NA		NA		0.17	UJ	0.17	UJ
alpha-BHC	0.022	0.022	U	NA		NA		0.021	U	0.021	U
alpha-Chlordane	0.025	0.024	U	NA		NA		0.024	U	0.024	U
beta-BHC	0.026	0.025	U	NA		NA		0.025	U	0.025	U
delta-BHC	0.022	0.022	U	NA		NA		0.021	U	0.021	U
gamma-BHC (Lindane)	0.022	0.022	U	NA		NA		0.021	U	0.021	U
gamma-Chlordane	0.025	0.024	U	NA		NA		0.024	U	0.024	U
Organophosphorus Pesticides - SW8140/SW3510 (ug/l)											
Dimethoate	0.03	0.03	U	NA		NA		0.029	U	0.029	U
Disulfoton	0.055	0.056	R	NA		NA		0.053	R	0.054	R
Ethyl parathion	0.064	0.065	U	NA		NA		0.062	U	0.063	U
Famphur	0.06	0.061	U	NA		NA		0.058	U	0.059	U
Methyl parathion	0.051	0.052	U	NA		NA		0.05	U	0.05	U
O,O,O-Triethylphosphoro-thioate	0.048	0.048	U	NA		NA		0.047	U	0.047	U
Phorate (Thimet)	0.047	0.047	U	NA		NA		0.046	U	0.046	U

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref : Sample ID : Sample Date :	Method Detection Limit	LF01-1D LF01-1DWG03 27-Jan-98 Appendix IX		MW-1 MW-1WG03 26-Jan-98	MW-10 MW-10WG03 26-Jan-98	SD13-01 SD13-01WG03 27-Jan-98 Appendix IX		SD13-02 SD13-02WG03 27-Jan-98 Appendix IX	
Sulfotepp	0.035	0.035	U	NA	NA	0.034	U	0.034	U
Thionazin	0.048	0.048	U	NA	NA	0.047	U	0.047	U
Chlorinated Herbicides - SW8150/SW3510 (ug/l)									
2,4,5-T	0.14	0.14	R	NA	NA	0.14	R	0.14	R
2,4,5-TP (Silvex)	0.14	0.14	R	NA	NA	0.14	R	0.14	R
2,4-D	0.53	0.52	R	NA	NA	0.51	R	0.52	R
Volatile Organic Compounds by Gas Chromatograph/Mas - SW8260/SW5030 (ug/l)									
1,1,1,2-Tetrachloroethane	5*	5	*U	NA	NA	5	*U	5	*U
1,1,1-Trichloroethane	1.3	1.3	U	NA	NA	1.3	U	1.3	U
1,1,2,2-Tetrachloroethane	1.2	1.2	U	NA	NA	1.2	U	1.2	U
1,1,2-Trichloroethane	1.2	1.2	U	NA	NA	1.2	U	1.2	U
1,1-Dichloroethane	1.4	1.4	U	NA	NA	1.4	U	1.4	U
1,1-Dichloroethene	1.3	1.3	U	NA	NA	1.3	U	1.3	U
1,1-Dichloropropene	0.094	NA		NA	NA	NA		NA	
1,2,3-Trichlorobenzene	0.14	NA		NA	NA	NA		NA	
1,2,3-Trichloropropane	0.95	0.95	U	NA	NA	0.95	U	0.95	U
1,2,4-Trichlorobenzene	0.13	NA		NA	NA	NA		NA	
1,2,4-Trimethylbenzene	0.1	NA		NA	NA	NA		NA	
1,2-Dibromo-3-chloro-propane (DBCP)	10*	NA		NA	NA	10	*U	10	*U
1,2-Dibromoethane (EDB)	5*	5	*U	NA	NA	5	*U	5	*U
1,2-Dichlorobenzene	0.13	NA		NA	NA	NA		NA	
1,2-Dichloroethane	1.5	1.5	U	NA	NA	1.5	U	1.5	U
1,2-Dichloropropane	0.74	0.74	U	NA	NA	0.74	U	0.74	U
1,3,5-Trimethylbenzene	0.13	NA		NA	NA	NA		NA	
1,3-Dichlorobenzene	0.15	NA		NA	NA	NA		NA	
1,3-Dichloropropane	0.11	NA		NA	NA	NA		NA	
1,4-Dichlorobenzene	0.11	NA		NA	NA	NA		NA	
1,4-Dioxane	57	57	U	NA	NA	57	U	57	U
1-Chlorohexane	0.5*	NA		NA	NA	NA		NA	
2,2-Dichloropropane	0.1	NA		NA	NA	NA		NA	
2-Butanone (MEK)	1.5	1.5	U	NA	NA	1.5	U	1.5	U
2-Chloroethyl vinyl ether	1.4	1.4	U	NA	NA	1.4	U	1.4	U
2-Chlorotoluene	0.15	NA		NA	NA	NA		NA	
2-Hexanone	0.85	0.85	U	NA	NA	0.85	U	0.85	U
4-Chlorotoluene	0.1	NA		NA	NA	NA		NA	
4-Methyl-2-pentanone (MIBK)	1.1	1.1	U	NA	NA	1.1	U	1.1	U
Acetone	0.96	20	U	NA	NA	0.96	U	0.96	U
Acetonitrile	12	12	U	NA	NA	12	U	12	U
Acrolein	11	11	U	NA	NA	11	U	11	U
Acrylonitrile	5.6	5.6	U	NA	NA	5.6	U	5.6	U
Allyl chloride	0.6	0.6	U	NA	NA	0.6	U	0.6	U
Benzene	1.2	1.2	U	NA	NA	1.2	U	1.2	U
Bromobenzene	0.13	NA		NA	NA	NA		NA	
Bromochloromethane	0.1	NA		NA	NA	NA		NA	
Bromodichloromethane	1.3	1.3	U	NA	NA	1.3	U	1.3	U
Bromoform	1.1	1.1	U	NA	NA	1.1	U	1.1	U

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref :	Method	LF01-1D		MW-1	MW-10	SD13-01		SD13-02	
Sample ID :	Detection	LF01-1DWG03		MW-1WG03	MW-10WG03	SD13-01WG03		SD13-02WG03	
Sample Date :	Limit	27-Jan-98		26-Jan-98	26-Jan-98	27-Jan-98		27-Jan-98	
		Appendix IX				Appendix IX		Appendix IX	
Bromomethane	1.3	1.3	U	NA	NA	1.3	U	1.3	U
Carbon disulfide	1.3	1.3	U	NA	NA	1.3	U	1.3	U
Carbon tetrachloride	1.5	1.5	U	NA	NA	1.5	U	1.5	U
Chlorobenzene	1.2	1.2	U	NA	NA	1.2	U	1.2	U
Chloroethane	1.4	1.4	U	NA	NA	1.4	U	1.4	U
Chloroform	1.4	1.4	U	NA	NA	1.4	U	1.4	U
Chloromethane	1.5	1.5	U	NA	NA	1.5	U	1.5	U
Chloroprene	1	1	U	NA	NA	1	U	1	U
Dibromochloromethane	1.3	1.3	U	NA	NA	1.3	U	1.3	U
Dibromomethane	5*	5	*U	NA	NA	5	*U	5	*U
Dichlorodifluoromethane	10*	10	*U	NA	NA	10	*U	10	*U
EDB (1,2-Dibromoethane)	0.11	NA		NA	NA	NA		NA	
Ethyl methacrylate	0.74	0.74	U	NA	NA	0.74	U	0.74	U
Ethylbenzene	1.2	1.2	U	NA	NA	1.2	U	1.2	U
Hexachlorobutadiene	0.15	NA		NA	NA	NA		NA	
Iodomethane	1.3	1.3	U	NA	NA	1.3	U	1.3	U
Isobutyl alcohol	19	19	U	NA	NA	19	U	19	U
Isopropylbenzene (Cumene)	0.13	NA		NA	NA	NA		NA	
Methacrylonitrile	0.95	0.95	U	NA	NA	0.95	U	0.95	U
Methyl methacrylate	2.5	2.5	U	NA	NA	2.5	U	2.5	U
Methylene chloride	1.2	1.2	U	NA	NA	1.2	U	1.2	U
Naphthalene	0.44	NA		NA	NA	NA		NA	
Propionitrile	1.5	1.5	U	NA	NA	1.5	U	1.5	U
Styrene	1.3	1.3	U	NA	NA	1.3	U	1.3	U
Tetrachloroethene	1.2	1.2	U	NA	NA	1.2	U	1.2	U
Toluene	1.2	1.2	U	NA	NA	1.2	U	1.2	U
Trichloroethene	1.2	1.2	U	NA	NA	1.2	U	1.2	U
Trichlorofluoromethane	10*	10	*U	NA	NA	10	*U	10	*U
Vinyl acetate	1.8	1.8	U	NA	NA	1.8	U	1.8	U
Vinyl chloride	1.2	1.2	U	NA	NA	1.2	U	1.2	U
Xylenes (total)	0.75	0.75	U	NA	NA	0.75	U	0.75	U
cis-1,2-Dichloroethene	0.1	NA		NA	NA	NA		NA	
cis-1,3-Dichloropropene	1.3	1.3	U	NA	NA	1.3	U	1.3	U
m- & p-Xylenes	0.28	NA		NA	NA	NA		NA	
n-Butylbenzene	0.13	NA		NA	NA	NA		NA	
n-Propylbenzene	0.13	NA		NA	NA	NA		NA	
o-Xylene	0.11	NA		NA	NA	NA		NA	
p-Isopropyltoluene (p-Cymene)	0.13	NA		NA	NA	NA		NA	
sec-Butylbenzene	0.17	NA		NA	NA	NA		NA	
tert-Butylbenzene	0.13	NA		NA	NA	NA		NA	
trans-1,2-Dichloroethene	1.3	1.3	U	NA	NA	1.3	U	1.3	U
trans-1,3-Dichloropropene	1.2	1.2	U	NA	NA	1.2	U	1.2	U
trans-1,4-Dichloro-2-butene	1.2	1.2	U	NA	NA	1.2	U	1.2	U
GC/MS for Semivolatile Organics (Capillary Column - SW8270/SW3520 (ug/l)									
1,2,4,5-Tetrachloro-benzene	1	0.99	U	NA	NA	0.96	U	0.96	U
1,2,4-Trichlorobenzene	4.3	4.3	U	NA	NA	4.1	U	4.1	U
1,2-Dichlorobenzene	4	4	U	NA	NA	3.8	U	3.8	U

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref :	Method	LF01-1D		MW-1	MW-10	SD13-01		SD13-02	
Sample ID :	Detection	LF01-1DWG03		MW-1WG03	MW-10WG03	SD13-01WG03		SD13-02WG03	
Sample Date :	Limit	27-Jan-98		26-Jan-98	26-Jan-98	27-Jan-98		27-Jan-98	
		Appendix IX				Appendix IX		Appendix IX	
1,3,5-Trinitrobenzene	1	0.99	U	NA	NA	0.96	U	0.96	U
1,3-Dichlorobenzene	4.1	4.1	U	NA	NA	3.9	U	3.9	U
1,3-Dinitrobenzene	1	0.99	U	NA	NA	0.96	U	0.96	U
1,4-Dichlorobenzene	4	4	U	NA	NA	3.8	U	3.8	U
1,4-Dinitrobenzene	1	0.99	U	NA	NA	0.96	U	0.96	U
1,4-Naphthoquinone	1.3	1.3	U	NA	NA	1.3	U	1.3	U
1-Chloronaphthalene	1	0.99	U	NA	NA	0.96	U	0.96	U
1-Naphthylamine	2	2	U	NA	NA	1.9	U	1.9	U
2,2'-oxybis(1-chloropropane)	1.7	1.7	U	NA	NA	1.6	U	1.6	U
2,3,4,6-Tetrachlorophenol	1.3	1.3	U	NA	NA	1.3	U	1.3	U
2,4,5-Trichlorophenol	1.8	1.8	U	NA	NA	1.7	U	1.7	U
2,4,6-Trichlorophenol	2.2	2.2	U	NA	NA	2.1	U	2.1	U
2,4-Dichlorophenol	2.7	2.7	U	NA	NA	2.6	U	2.6	U
2,4-Dimethylphenol	1.4	1.4	U	NA	NA	1.3	U	1.3	U
2,4-Dinitrophenol	19	19	U	NA	NA	18	U	18	U
2,4-Dinitrotoluene	1.8	1.8	U	NA	NA	1.7	U	1.7	U
2,6-Dichlorophenol	1	0.99	U	NA	NA	0.96	U	0.96	U
2,6-Dinitrotoluene	1.9	1.9	U	NA	NA	1.8	U	1.8	U
2-Acetylaminofluorene	1	0.99	U	NA	NA	0.96	U	0.96	U
2-Chloronaphthalene	3.4	3.4	U	NA	NA	3.3	U	3.3	U
2-Chlorophenol	2.7	2.7	U	NA	NA	2.6	U	2.6	U
2-Methylnaphthalene	3.6	3.6	U	NA	NA	5.2	F	8.1	F
2-Methylphenol	2	2	U	NA	NA	1.9	U	1.9	U
2-Naphthylamine	1.2	1.2	U	NA	NA	1.2	U	1.2	U
2-Nitroaniline	12	12	U	NA	NA	12	U	12	U
2-Nitrophenol	2.7	2.7	U	NA	NA	2.6	U	2.6	U
2-Picoline	1	0.99	U	NA	NA	0.96	U	0.96	U
3,3'-Dichlorobenzidine	1.9	1.9	U	NA	NA	1.8	U	1.8	U
3,3'-Dimethylbenzidine	3.5	3.5	U	NA	NA	3.4	U	3.4	U
3-Methylcholanthrene	2.7	2.7	U	NA	NA	2.6	U	2.6	U
3-Nitroaniline	15	15	U	NA	NA	14	U	14	U
3/4-Methylphenol	1.8	1.8	U	NA	NA	1.7	U	1.7	U
4,6-Dinitro-2-methylphenol	20	20	U	NA	NA	19	U	19	U
4-Aminobiphenyl	1	0.99	U	NA	NA	0.96	U	0.96	U
4-Bromophenyl phenyl ether	1.3	1.3	U	NA	NA	1.3	U	1.3	U
4-Chloro-3-methylphenol	2.2	2.2	U	NA	NA	2.1	U	2.1	U
4-Chloroaniline	1.5	1.5	U	NA	NA	1.4	U	1.4	U
4-Chlorophenyl phenyl ether	1.4	1.4	U	NA	NA	1.3	U	1.3	U
4-Nitroaniline	25	25	U	NA	NA	24	U	24	U
4-Nitrophenol	19	19	U	NA	NA	18	U	18	U
4-Nitroquinoline-1-oxide	10	9.9	U	NA	NA	9.6	U	9.6	U
5-Nitro-o-toluidine	1.2	1.2	U	NA	NA	1.2	U	1.2	U
7,12-Dimethylbenz(a)-anthracene	1	0.99	U	NA	NA	0.96	U	0.96	U
Acenaphthene	2.2	2.2	U	NA	NA	2.1	U	2.1	U
Acenaphthylene	2.8	2.8	U	NA	NA	2.7	U	2.7	U
Acetophenone	1	0.99	U	NA	NA	0.96	U	0.96	U
Aniline	1.5	1.5	U	NA	NA	1.4	U	1.4	U
Anthracene	1.5	1.5	U	NA	NA	1.4	U	1.4	U

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref :	Method	LF01-1D		MW-1	MW-10	SD13-01		SD13-02	
Sample ID :	Detection	LF01-1DWG03		MW-1WG03	MW-10WG03	SD13-01WG03		SD13-02WG03	
Sample Date :	Limit	27-Jan-98		26-Jan-98	26-Jan-98	27-Jan-98		27-Jan-98	
		Appendix IX				Appendix IX		Appendix IX	
Aramite	1	0.99	U	NA	NA	0.96	U	0.96	U
Azobenzene	1.5	1.5	U	NA	NA	1.4	U	1.4	U
Benzo(a)anthracene	1.5	1.5	U	NA	NA	1.4	U	1.4	U
Benzo(a)pyrene	1.6	1.6	U	NA	NA	1.5	U	1.5	U
Benzo(b)fluoranthene	2.1	2.1	U	NA	NA	2	U	2	U
Benzo(g,h,i)perylene	1.5	1.5	U	NA	NA	1.4	U	1.4	U
Benzo(k)fluoranthene	2	2	U	NA	NA	1.9	U	1.9	U
Benzoic acid	22	22	U	NA	NA	21	U	21	U
Benzyl alcohol	2.7	2.7	U	NA	NA	2.6	U	2.6	U
Butyl benzyl phthalate	1.8	1.8	U	NA	NA	1.7	U	1.7	U
Carbazole	1.8	1.8	U	NA	NA	1.7	U	1.7	U
Chlorobenzilate	1	0.99	U	NA	NA	0.96	U	0.96	U
Chrysene	1.5	1.5	U	NA	NA	1.4	U	1.4	U
Di-n-butyl phthalate	1.9	1.9	U	NA	NA	1.8	U	1.8	U
Di-n-octyl phthalate	1.2	1.2	U	NA	NA	1.2	U	1.2	U
Diallate	2	2	U	NA	NA	1.9	U	1.9	U
Dibenz(a,h)anthracene	1.3	1.3	U	NA	NA	1.3	U	1.3	U
Dibenz(a,j)acridine	1	0.99	U	NA	NA	0.96	U	0.96	U
Dibenzofuran	1.7	1.7	U	NA	NA	1.7	F	1.6	U
Diethyl phthalate	1.9	1.9	U	NA	NA	1.8	U	1.8	U
Dimethoate	1	0.99	U	NA	NA	0.96	U	0.96	U
Dimethyl phthalate	1.8	1.8	U	NA	NA	1.7	U	1.7	U
Diphenylamine	10*	10	*U	NA	NA	10	*U	10	*U
Ethyl methanesulfonate	1	0.99	U	NA	NA	0.96	U	0.96	U
Fluoranthene	1.6	1.6	U	NA	NA	1.5	U	1.5	U
Fluorene	2.1	2.1	U	NA	NA	2	U	2	U
Hexachlorobenzene	1.5	1.5	U	NA	NA	1.4	U	1.4	U
Hexachlorobutadiene	4.8	4.8	U	NA	NA	4.6	U	4.6	U
Hexachlorocyclopentadiene	33	33	U	NA	NA	32	U	32	U
Hexachloroethane	4.7	4.7	U	NA	NA	4.5	U	4.5	U
Hexachloropropene	1	0.99	U	NA	NA	0.96	U	0.96	U
Indeno(1,2,3-cd)pyrene	1.2	1.2	U	NA	NA	1.2	U	1.2	U
Isodrin	1	0.99	U	NA	NA	0.96	U	0.96	U
Isophorone	1.9	1.9	U	NA	NA	1.8	U	1.8	U
Isosafrole	2	2	U	NA	NA	1.9	U	1.9	U
Methapyrilene	11	11	U	NA	NA	11	U	11	U
Methyl methanesulfonate	1	0.99	U	NA	NA	0.96	U	0.96	U
N-Nitroso-di-n-butylamine	1	0.99	U	NA	NA	0.96	U	0.96	U
N-Nitroso-di-n-propylamine	1.9	1.9	U	NA	NA	1.8	U	1.8	U
N-Nitrosodiethylamine	10*	0	U	NA	NA	0	U	0	U
N-Nitrosodimethylamine	2.4	2.4	U	NA	NA	2.3	U	2.3	U
N-Nitrosodiphenylamine	1.8	1.8	U	NA	NA	1.7	U	1.7	U
N-Nitrosomethylethylamine	1	0.99	U	NA	NA	0.96	U	0.96	U
N-Nitrosomorpholine	1	0.99	U	NA	NA	0.96	U	0.96	U
N-Nitrosopiperidine	1	0.99	U	NA	NA	0.96	U	0.96	U
N-Nitrosopyrrolidine	1	0.99	U	NA	NA	0.96	U	0.96	U
Naphthalene	3.4	3.4	U	NA	NA	3.3	U	3.3	U
Nitrobenzene	2.5	2.5	U	NA	NA	2.4	U	2.4	U

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref :	Method	LF01-1D		MW-1	MW-10	SD13-01		SD13-02	
Sample ID :	Detection	LF01-1DWG03		MW-1WG03	MW-10WG03	SD13-01WG03		SD13-02WG03	
Sample Date :	Limit	27-Jan-98		26-Jan-98	26-Jan-98	27-Jan-98		27-Jan-98	
		Appendix IX				Appendix IX		Appendix IX	
O,O,O-Triethylphosphoro-thioate	1	0.99	U	NA	NA	0.96	U	0.96	U
Parathion	1	0.99	U	NA	NA	0.96	U	0.96	U
Pentachlorobenzene	1	0.99	U	NA	NA	0.96	U	0.96	U
Pentachloroethane	1	0.99	U	NA	NA	0.96	U	0.96	U
Pentachloronitrobenzene	1	0.99	U	NA	NA	0.96	U	0.96	U
Pentachlorophenol	18	18	U	NA	NA	17	U	17	U
Phenacetin	1	0.99	U	NA	NA	0.96	U	0.96	U
Phenanthrene	1.4	1.4	U	NA	NA	1.3	U	1.3	U
Phenol	2.7	2.7	U	NA	NA	2.6	U	2.6	U
Pronamide	1	0.99	U	NA	NA	0.96	U	0.96	U
Pyrene	1.6	1.6	U	NA	NA	1.5	U	1.5	U
Pyridine	1.2	1.2	U	NA	NA	1.2	U	1.2	U
Safrole	1	0.99	U	NA	NA	0.96	U	0.96	U
Sulfotepp	1	0.99	U	NA	NA	0.96	U	0.96	U
a,a-Dimethylphenethyl-amine	19	19	U	NA	NA	18	U	18	U
bis(2-Chloroethoxy)methane	2.7	2.7	U	NA	NA	2.6	U	2.6	U
bis(2-Chloroethyl) ether	2.2	2.2	U	NA	NA	2.1	U	2.1	U
bis(2-Ethylhexyl)phthalate	2.7	2.7	U	NA	NA	2.6	U	2.6	U
o-Toluidine	1	0.99	U	NA	NA	0.96	U	0.96	U
p-Dimethylaminoazobenzene	1.1	1.1	U	NA	NA	1.1	U	1.1	U
p-Phenylenediamine	10	9.9	U	NA	NA	9.6	U	9.6	U
Polychlorinated Dibenzo-p-Dioxins and Dibenzofuran - SW8280/METHOD (mg/l)									
2,3,7,8-TCDD	0.36	0.44	U	NA	NA	0.4	U	0.38	U
HxCDDs (total)	0.78	0.6	U	NA	NA	0.73	U	0.44	U
HxCDFs (total)	1.6	0.7	U	NA	NA	0.48	U	0.27	U
PeCDDs (total)	46	59	U	NA	NA	24	U	16	U
PeCDFs (total)	6.4	8.8	U	NA	NA	3.3	U	2.4	U
TCDDs (total)	0.36	0.44	U	NA	NA	0.4	U	0.38	U
TCDFs (total)	0.76	0.69	U	NA	NA	0.55	U	0.6	U
Total and Amendable Cyanide (Colorimetric, Automat - SW9012/METHOD (mg/l)									
Cyanide	0.001	0.0014	F	NA	NA	0.001	U	0.001	F
SW846 9056 - SW9056/NONE (mg/l)									
Bromide	0.051	NA		NA	NA	0.66		0.75	
Chloride	0.1	NA		NA	NA	28.2		38.9	
Fluoride	0.05	NA		NA	NA	0.23	F	0.25	F
Nitrate as N	0.05	NA		NA	NA	0.05	U	0.05	U
Nitrite as N	0.05	NA		NA	NA	0.05	U	0.05	U
Orthophosphate as P	0.05	NA		NA	NA	0.05	U	0.05	U
Sulfate	0.1	NA		NA	NA	0.1	U	0.1	U
Total Organic Carbon - SW9060/NONE (mg/l)									
Total Organic Carbon	0.22	NA		NA	NA	6		4.6	

NOTE:
* PQLs used if MDL not reported.

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref :	Method	SD13-04		SD13-06		ST14-02		ST14-02		ST14-03	
Sample ID :	Detection	SD13-04WG03		SD13-06WG03		DUP04-WG03		ST14-02WG03		ST14-03WG03	
Sample Date :	Limit	26-Jan-98		28-Jan-98		21-Jan-98		21-Jan-98		22-Jan-98	
		Appendix IX		Appendix IX							
Alkalinity (Titrimetric) - E310.1/NONE (mg/l)											
Alkalinity, Bicarb. as CaCO3 at pH 4.5	0.69	372		458		362		361		249	
Alkalinity, Carb. as CaCO3 at pH 8.3	0.69	0.69	U	0.69	U	0.69	U	0.69	U	0.69	U
Alkalinity, Hydrox. as CaCO3	0.69	0.69	U	0.69	U	0.69	U	0.69	U	0.69	U
Alkalinity, Total as CaCO3 at pH 4.5	0.69	372		458		362		361		249	
Sulfide (Colorimetric, Methylene Blue) - E376.2/NONE (mg/l)											
Sulfide, Total	0.009	0.028	F	0.009	U	NA		NA		NA	
EPA-9/RSK-175 Modified A2720C - M2720C/NONE (ug/l)											
Ethane	0.092	6.5		0.31	F	1.4	J	2	J	0.19	F
Ethene	0.1	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Methane	0.052	6500		180		1300		1200		75	
Inductively Coupled Plasma Atomic Emission Spectro - SW6010/SW3005 (mg/l)											
Aluminum	0.052	NA		NA		0.052	U	0.052	U	NA	
Calcium	0.034	NA		NA		136		138		NA	
Iron	0.026	NA		NA		13.5		13.8		NA	
Magnesium	0.07	NA		NA		6.7		6.8		NA	
Potassium	0.5	NA		NA		0.5	U	0.5	R	NA	
Sodium	0.72	NA		NA		20.9	J	21.4	J	NA	
Tin	0.01	0.091	F	0.099	F	NA		NA		NA	
Inductively Coupled Plasma Mass Spectrometry - SW6020/SW3020 (mg/l)											
Antimony	0.00017	0.00017	U	0.00017	U	0.00017	U	0.00065	F	NA	
Arsenic	0.00019	0.069	F	0.0027	F	0.012	F	0.011	F	NA	
Barium	0.0002	0.19		0.15		0.11		0.11		NA	
Beryllium	0.000069	0.000069	U	0.000069	U	0.000069	U	0.000069	U	NA	
Cadmium	0.00004	0.00004	U	0.000094	F	0.00004	UJ	0.00004	UJ	NA	
Chromium	0.0002	0.0002	UJ	0.07	UJ	0.00038	F	0.00032	F	NA	
Cobalt	0.00002	0.0036	F	0.00088	F	0.00037	F	0.00038	F	NA	
Copper	0.00084	0.06	UJ	0.06	UJ	0.6	U	0.6	U	NA	
Lead	0.0002	0.0018	F	0.5	U	0.5	U	0.5	U	NA	
Manganese	0.0002	0.02	UJ	0.14	J	0.23	J	0.23	J	NA	
Molybdenum	0.0002	0.004	F	0.0048	F	0.0019	F	0.0019	F	NA	
Nickel	0.0002	0.15	UJ	0.0093	F	0.15	U	0.015	U	NA	
Selenium	0.00007	0.0045	F	0.0049	F	0.8	U	0.8	U	NA	
Silver	0.0002	0.0002	UJ	0.0002	UJ	0.0002	UJ	0.0002	UJ	NA	
Thallium	0.00002	0.000042	F	0.000051	F	0.000068	F	0.00006	F	NA	
Vanadium	0.00017	0.00029	F	0.00085	F	0.00038	F	0.00034	F	NA	
Zinc	0.0011	0.02	U	0.015	F	0.02	U	0.02	U	NA	
Mercury in Liquid Waste (Manual Cold-Vapor Technio - SW7470/METHOD (mg/l)											
Mercury	0.00011	0.00011	U	0.00011	U	0.00011	U	0.00011	U	NA	
Aromatic Volatile Organics - SW8020/SW5030 (ug/l)											
1,2-Dichlorobenzene	0.18	NA		NA		0.9	U	0.9	U	0.18	U
1,3-Dichlorobenzene	0.09	NA		NA		0.45	U	0.45	U	0.09	U

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref :		Method	SD13-04		SD13-06		ST14-02		ST14-02		ST14-03	
Sample ID :		Detection	SD13-04WG03		SD13-06WG03		DUP04-WG03		ST14-02WG03		ST14-03WG03	
Sample Date :		Limit	26-Jan-98		28-Jan-98		21-Jan-98		21-Jan-98		22-Jan-98	
			Appendix IX		Appendix IX							
1,4-Dichlorobenzene		0.33	NA		NA		1.6	U	1.6	U	0.33	U
Benzene		0.056	NA		NA		56		57		0.056	U
Chlorobenzene		0.085	NA		NA		0.42	U	0.42	U	0.085	U
Ethylbenzene		0.054	NA		NA		0.27	U	0.27	U	0.054	U
Toluene		0.15	NA		NA		0.75	U	0.75	U	0.15	U
Xylenes (total)		0.15	NA		NA		0.75	U	0.75	U	0.15	U
tert-Butyl methyl ether		0.01	NA		NA		NA		NA		NA	
Organochlorine Pesticides and PCBs - SW8080/SW3510 (ug/l)												
4,4'-DDD		0.012	0.012	U	0.013	U	NA		NA		NA	
4,4'-DDE		0.021	0.02	U	0.022	U	NA		NA		NA	
4,4'-DDT		0.033	0.032	U	0.035	U	NA		NA		NA	
Aldrin		0.023	0.022	U	0.024	U	NA		NA		NA	
Aroclor 1016		0.11	0.11	UJ	0.12	UJ	NA		NA		NA	
Aroclor 1221		0.45	0.43	UJ	0.48	UJ	NA		NA		NA	
Aroclor 1232		0.65	0.63	UJ	0.69	UJ	NA		NA		NA	
Aroclor 1242		0.18	0.17	UJ	0.19	UJ	NA		NA		NA	
Aroclor 1248		0.22	0.21	UJ	0.23	UJ	NA		NA		NA	
Aroclor 1254		0.13	0.13	UJ	0.14	UJ	NA		NA		NA	
Aroclor 1260		0.12	0.12	UJ	0.13	UJ	NA		NA		NA	
Chlordane		0.056	0.054	UJ	0.06	UJ	NA		NA		NA	
Dieldrin		0.022	0.021	U	0.023	U	NA		NA		NA	
Endosulfan I		0.025	0.024	U	0.027	U	NA		NA		NA	
Endosulfan II		0.022	0.021	U	0.023	U	NA		NA		NA	
Endosulfan sulfate		0.027	0.026	U	0.029	U	NA		NA		NA	
Endrin		0.027	0.026	U	0.029	U	NA		NA		NA	
Endrin aldehyde		0.022	0.021	U	0.023	U	NA		NA		NA	
Endrin ketone		0.026	0.025	UJ	0.028	UJ	NA		NA		NA	
Heptachlor		0.023	0.022	UJ	0.024	UJ	NA		NA		NA	
Heptachlor epoxide		0.024	0.023	U	0.026	U	NA		NA		NA	
Kepone		1.1	1.1	UJ	1.2	UJ	NA		NA		NA	
Methoxychlor		0.025	0.024	U	0.027	U	NA		NA		NA	
Toxaphene		0.18	0.17	UJ	0.19	UJ	NA		NA		NA	
alpha-BHC		0.022	0.021	U	0.023	U	NA		NA		NA	
alpha-Chlordane		0.025	0.024	U	0.027	U	NA		NA		NA	
beta-BHC		0.026	0.025	U	0.028	U	NA		NA		NA	
delta-BHC		0.022	0.021	U	0.023	U	NA		NA		NA	
gamma-BHC (Lindane)		0.022	0.021	U	0.023	U	NA		NA		NA	
gamma-Chlordane		0.025	0.024	U	0.027	U	NA		NA		NA	
Organophosphorus Pesticides - SW8140/SW3510 (ug/l)												
Dimethoate		0.03	0.029	U	0.029	U	NA		NA		NA	
Disulfoton		0.055	0.054	R	0.054	R	NA		NA		NA	
Ethyl parathion		0.064	0.063	U	0.063	U	NA		NA		NA	
Famphur		0.06	0.059	U	0.059	U	NA		NA		NA	
Methyl parathion		0.051	0.05	U	0.05	U	NA		NA		NA	
O,O,O-Triethylphosphoro-thioate		0.048	0.047	U	0.047	U	NA		NA		NA	
Phorate (Thimet)		0.047	0.046	U	0.046	U	NA		NA		NA	

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref :	Method	SD13-04		SD13-06		ST14-02	ST14-02	ST14-03
Sample ID :	Detection	SD13-04WG03		SD13-06WG03		DUP04-WG03	ST14-02WG03	ST14-03WG03
Sample Date :	Limit	26-Jan-98		28-Jan-98		21-Jan-98	21-Jan-98	22-Jan-98
		Appendix IX		Appendix IX				
Sulfotepp	0.035	0.034	U	0.034	U	NA	NA	NA
Thionazin	0.048	0.047	U	0.047	U	NA	NA	NA
Chlorinated Herbicides - SW8150/SW3510 (ug/l)								
2,4,5-T	0.14	0.14	R	0.14	R	NA	NA	NA
2,4,5-TP (Silvex)	0.14	0.14	R	0.14	R	NA	NA	NA
2,4-D	0.53	0.54	R	0.52	R	NA	NA	NA
Volatile Organic Compounds by Gas Chromatograph/Mas - SW8260/SW5030 (ug/l)								
1,1,1,2-Tetrachloroethane	5*	5	*U	5	*U	NA	NA	NA
1,1,1-Trichloroethane	1.3	1.3	U	1.3	U	NA	NA	NA
1,1,2,2-Tetrachloroethane	1.2	1.2	U	1.2	U	NA	NA	NA
1,1,2-Trichloroethane	1.2	1.2	U	1.2	U	NA	NA	NA
1,1-Dichloroethane	1.4	1.4	U	1.4	U	NA	NA	NA
1,1-Dichloroethene	1.3	1.3	U	1.3	U	NA	NA	NA
1,1-Dichloropropene	0.094	NA		NA		NA	NA	NA
1,2,3-Trichlorobenzene	0.14	NA		NA		NA	NA	NA
1,2,3-Trichloropropane	0.95	0.95	U	0.95	U	NA	NA	NA
1,2,4-Trichlorobenzene	0.13	NA		NA		NA	NA	NA
1,2,4-Trimethylbenzene	0.1	NA		NA		NA	NA	NA
1,2-Dibromo-3-chloro-propane (DBCP)	10*	10	*U	10	*R	NA	NA	NA
1,2-Dibromoethane (EDB)	5*	5	*U	5	*U	NA	NA	NA
1,2-Dichlorobenzene	0.13	NA		NA		NA	NA	NA
1,2-Dichloroethane	1.5	1.5	U	1.5	U	NA	NA	NA
1,2-Dichloropropane	0.74	0.74	U	0.74	U	NA	NA	NA
1,3,5-Trimethylbenzene	0.13	NA		NA		NA	NA	NA
1,3-Dichlorobenzene	0.15	NA		NA		NA	NA	NA
1,3-Dichloropropane	0.11	NA		NA		NA	NA	NA
1,4-Dichlorobenzene	0.11	NA		NA		NA	NA	NA
1,4-Dioxane	57	57	U	57	U	NA	NA	NA
1-Chlorohexane	0.5*	NA		NA		NA	NA	NA
2,2-Dichloropropane	0.1	NA		NA		NA	NA	NA
2-Butanone (MEK)	1.5	1.5	U	1.5	U	NA	NA	NA
2-Chloroethyl vinyl ether	1.4	1.4	U	1.4	U	NA	NA	NA
2-Chlorotoluene	0.15	NA		NA		NA	NA	NA
2-Hexanone	0.85	0.85	U	0.85	U	NA	NA	NA
4-Chlorotoluene	0.1	NA		NA		NA	NA	NA
4-Methyl-2-pentanone (MIBK)	1.1	1.1	U	1.1	U	NA	NA	NA
Acetone	0.96	0.96	U	20	U	NA	NA	NA
Acetonitrile	12	12	U	12	U	NA	NA	NA
Acrolein	11	11	U	11	U	NA	NA	NA
Acrylonitrile	5.6	5.6	U	5.6	U	NA	NA	NA
Allyl chloride	0.6	0.6	U	0.6	U	NA	NA	NA
Benzene	1.2	1.2	U	1.2	U	NA	NA	NA
Bromobenzene	0.13	NA		NA		NA	NA	NA
Bromochloromethane	0.1	NA		NA		NA	NA	NA
Bromodichloromethane	1.3	1.3	U	1.3	U	NA	NA	NA
Bromoform	1.1	1.1	U	1.1	R	NA	NA	NA

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref :	Method	SD13-04		SD13-06		ST14-02	ST14-02	ST14-03
Sample ID :	Detection	SD13-04WG03		SD13-06WG03		DUP04-WG03	ST14-02WG03	ST14-03WG03
Sample Date :	Limit	26-Jan-98		28-Jan-98		21-Jan-98	21-Jan-98	22-Jan-98
		Appendix IX		Appendix IX				
Bromomethane	1.3	1.3	U	1.3	U	NA	NA	NA
Carbon disulfide	1.3	1.3	U	1.3	U	NA	NA	NA
Carbon tetrachloride	1.5	1.5	U	1.5	U	NA	NA	NA
Chlorobenzene	1.2	1.2	U	1.2	U	NA	NA	NA
Chloroethane	1.4	1.4	U	1.4	U	NA	NA	NA
Chloroform	1.4	1.4	U	1.4	U	NA	NA	NA
Chloromethane	1.5	1.5	U	1.5	U	NA	NA	NA
Chloroprene	1	1	U	1	U	NA	NA	NA
Dibromochloromethane	1.3	1.3	U	1.3	U	NA	NA	NA
Dibromomethane	5*	5	*U	5	*U	NA	NA	NA
Dichlorodifluoromethane	10*	10	*U	10	*U	NA	NA	NA
EDB (1,2-Dibromoethane)	0.11	NA		NA		NA	NA	NA
Ethyl methacrylate	0.74	0.74	U	0.74	U	NA	NA	NA
Ethylbenzene	1.2	1.2	U	1.2	U	NA	NA	NA
Hexachlorobutadiene	0.15	NA		NA		NA	NA	NA
Iodomethane	1.3	1.3	U	1.3	U	NA	NA	NA
Isobutyl alcohol	19	19	U	19	U	NA	NA	NA
Isopropylbenzene (Cumene)	0.13	NA		NA		NA	NA	NA
Methacrylonitrile	0.95	0.95	U	0.95	U	NA	NA	NA
Methyl methacrylate	2.5	2.5	U	2.5	U	NA	NA	NA
Methylene chloride	1.2	1.2	U	1.2	U	NA	NA	NA
Naphthalene	0.44	NA		NA		NA	NA	NA
Propionitrile	1.5	1.5	U	1.5	U	NA	NA	NA
Styrene	1.3	1.3	U	1.3	U	NA	NA	NA
Tetrachloroethene	1.2	1.2	U	1.2	U	NA	NA	NA
Toluene	1.2	1.2	U	1.2	U	NA	NA	NA
Trichloroethene	1.2	1.2	U	1.2	U	NA	NA	NA
Trichlorofluoromethane	10*	10	*U	10	*U	NA	NA	NA
Vinyl acetate	1.8	1.8	U	1.8	U	NA	NA	NA
Vinyl chloride	1.2	1.2	U	1.2	U	NA	NA	NA
Xylenes (total)	0.75	0.75	U	0.75	U	NA	NA	NA
cis-1,2-Dichloroethene	0.1	NA		NA		NA	NA	NA
cis-1,3-Dichloropropene	1.3	1.3	U	1.3	U	NA	NA	NA
m- & p-Xylenes	0.28	NA		NA		NA	NA	NA
n-Butylbenzene	0.13	NA		NA		NA	NA	NA
n-Propylbenzene	0.13	NA		NA		NA	NA	NA
o-Xylene	0.11	NA		NA		NA	NA	NA
p-Isopropyltoluene (p-Cymene)	0.13	NA		NA		NA	NA	NA
sec-Butylbenzene	0.17	NA		NA		NA	NA	NA
tert-Butylbenzene	0.13	NA		NA		NA	NA	NA
trans-1,2-Dichloroethene	1.3	1.3	U	1.3	U	NA	NA	NA
trans-1,3-Dichloropropene	1.2	1.2	U	1.2	U	NA	NA	NA
trans-1,4-Dichloro-2-butene	1.2	1.2	U	1.2	U	NA	NA	NA
GC/MS for Semivolatile Organics (Capillary Column - SW8270/SW3520 (ug/l)								
1,2,4,5-Tetrachloro-benzene	1	0.97	UJ	0.98	U	NA	NA	NA
1,2,4-Trichlorobenzene	4.3	4.2	UJ	4.2	U	NA	NA	NA
1,2-Dichlorobenzene	4	3.9	UJ	3.9	U	NA	NA	NA

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref :	Method	SD13-04		SD13-06		ST14-02	ST14-02	ST14-03
Sample ID :	Detection	SD13-04WG03		SD13-06WG03		DUP04-WG03	ST14-02WG03	ST14-03WG03
Sample Date :	Limit	26-Jan-98		28-Jan-98		21-Jan-98	21-Jan-98	22-Jan-98
		Appendix IX		Appendix IX				
1,3,5-Trinitrobenzene	1	0.97	UJ	0.98	U	NA	NA	NA
1,3-Dichlorobenzene	4.1	4	UJ	4	U	NA	NA	NA
1,3-Dinitrobenzene	1	0.97	UJ	0.98	U	NA	NA	NA
1,4-Dichlorobenzene	4	3.9	UJ	3.9	U	NA	NA	NA
1,4-Dinitrobenzene	1	0.97	UJ	0.98	U	NA	NA	NA
1,4-Naphthoquinone	1.3	1.3	UJ	1.3	U	NA	NA	NA
1-Chloronaphthalene	1	0.97	UJ	0.98	U	NA	NA	NA
1-Naphthylamine	2	1.9	UJ	2	U	NA	NA	NA
2,2'-oxybis(1-chloropropane)	1.7	1.7	UJ	1.7	U	NA	NA	NA
2,3,4,6-Tetrachlorophenol	1.3	1.3	UJ	1.3	U	NA	NA	NA
2,4,5-Trichlorophenol	1.8	1.7	UJ	1.8	U	NA	NA	NA
2,4,6-Trichlorophenol	2.2	2.1	UJ	2.2	U	NA	NA	NA
2,4-Dichlorophenol	2.7	2.6	UJ	2.6	U	NA	NA	NA
2,4-Dimethylphenol	1.4	1.4	UJ	1.4	U	NA	NA	NA
2,4-Dinitrophenol	19	18	UJ	19	U	NA	NA	NA
2,4-Dinitrotoluene	1.8	1.7	UJ	1.8	U	NA	NA	NA
2,6-Dichlorophenol	1	0.97	UJ	0.98	U	NA	NA	NA
2,6-Dinitrotoluene	1.9	1.8	UJ	1.9	U	NA	NA	NA
2-Acetylaminofluorene	1	0.97	UJ	0.98	U	NA	NA	NA
2-Chloronaphthalene	3.4	3.3	UJ	3.3	U	NA	NA	NA
2-Chlorophenol	2.7	2.6	UJ	2.6	U	NA	NA	NA
2-Methylnaphthalene	3.6	54	J	3.5	U	NA	NA	NA
2-Methylphenol	2	1.9	UJ	2	U	NA	NA	NA
2-Naphthylamine	1.2	1.2	UJ	1.2	U	NA	NA	NA
2-Nitroaniline	12	12	UJ	12	U	NA	NA	NA
2-Nitrophenol	2.7	2.6	UJ	2.6	U	NA	NA	NA
2-Picoline	1	0.97	UJ	0.98	U	NA	NA	NA
3,3'-Dichlorobenzidine	1.9	1.8	UJ	1.9	U	NA	NA	NA
3,3'-Dimethylbenzidine	3.5	3.4	UJ	3.4	U	NA	NA	NA
3-Methylcholanthrene	2.7	2.6	UJ	2.6	U	NA	NA	NA
3-Nitroaniline	15	15	UJ	15	U	NA	NA	NA
3/4-Methylphenol	1.8	1.7	UJ	1.8	U	NA	NA	NA
4,6-Dinitro-2-methylphenol	20	19	UJ	20	U	NA	NA	NA
4-Aminobiphenyl	1	0.97	UJ	0.98	U	NA	NA	NA
4-Bromophenyl phenyl ether	1.3	1.3	UJ	1.3	U	NA	NA	NA
4-Chloro-3-methylphenol	2.2	2.1	UJ	2.2	U	NA	NA	NA
4-Chloroaniline	1.5	1.5	UJ	1.5	U	NA	NA	NA
4-Chlorophenyl phenyl ether	1.4	1.4	UJ	1.4	U	NA	NA	NA
4-Nitroaniline	25	24	UJ	24	U	NA	NA	NA
4-Nitrophenol	19	18	UJ	19	U	NA	NA	NA
4-Nitroquinoline-1-oxide	10	9.7	UJ	9.8	U	NA	NA	NA
5-Nitro-o-toluidine	1.2	1.2	UJ	1.2	U	NA	NA	NA
7,12-Dimethylbenz(a)-anthracene	1	0.97	UJ	0.98	U	NA	NA	NA
Acenaphthene	2.2	2.1	UJ	2.2	U	NA	NA	NA
Acenaphthylene	2.8	2.7	UJ	2.7	U	NA	NA	NA
Acetophenone	1	0.97	UJ	0.98	U	NA	NA	NA
Aniline	1.5	1.5	UJ	1.5	U	NA	NA	NA
Anthracene	1.5	1.5	UJ	1.5	U	NA	NA	NA

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref :	Method	SD13-04		SD13-06		ST14-02	ST14-02	ST14-03
Sample ID :	Detection	SD13-04WG03		SD13-06WG03		DUP04-WG03	ST14-02WG03	ST14-03WG03
Sample Date :	Limit	26-Jan-98		28-Jan-98		21-Jan-98	21-Jan-98	22-Jan-98
		Appendix IX		Appendix IX				
Aramite	1	0.97	UJ	0.98	U	NA	NA	NA
Azobenzene	1.5	1.5	UJ	1.5	U	NA	NA	NA
Benzo(a)anthracene	1.5	1.5	UJ	1.5	U	NA	NA	NA
Benzo(a)pyrene	1.6	1.6	UJ	1.6	U	NA	NA	NA
Benzo(b)fluoranthene	2.1	2	UJ	2.1	U	NA	NA	NA
Benzo(g,h,i)perylene	1.5	1.5	UJ	1.5	U	NA	NA	NA
Benzo(k)fluoranthene	2	1.9	UJ	2	U	NA	NA	NA
Benzoic acid	22	21	UJ	22	U	NA	NA	NA
Benzyl alcohol	2.7	2.6	UJ	2.6	U	NA	NA	NA
Butyl benzyl phthalate	1.8	1.7	UJ	1.8	U	NA	NA	NA
Carbazole	1.8	1.7	UJ	1.8	U	NA	NA	NA
Chlorobenzilate	1	0.97	UJ	0.98	U	NA	NA	NA
Chrysene	1.5	1.5	UJ	1.5	U	NA	NA	NA
Di-n-butyl phthalate	1.9	1.8	UJ	1.9	U	NA	NA	NA
Di-n-octyl phthalate	1.2	1.2	UJ	1.2	U	NA	NA	NA
Diallate	2	1.9	UJ	2	U	NA	NA	NA
Dibenz(a,h)anthracene	1.3	1.3	UJ	1.3	U	NA	NA	NA
Dibenz(a,j)acridine	1	0.97	UJ	0.98	U	NA	NA	NA
Dibenzofuran	1.7	3.6	J	1.7	U	NA	NA	NA
Diethyl phthalate	1.9	1.8	UJ	1.9	U	NA	NA	NA
Dimethoate	1	0.97	UJ	0.98	U	NA	NA	NA
Dimethyl phthalate	1.8	1.7	UJ	1.8	U	NA	NA	NA
Diphenylamine	10*	10	*UJ	10	*U	NA	NA	NA
Ethyl methanesulfonate	1	0.97	UJ	0.98	U	NA	NA	NA
Fluoranthene	1.6	1.6	UJ	1.6	U	NA	NA	NA
Fluorene	2.1	2	UJ	2.1	U	NA	NA	NA
Hexachlorobenzene	1.5	1.5	UJ	1.5	U	NA	NA	NA
Hexachlorobutadiene	4.8	4.7	UJ	4.7	U	NA	NA	NA
Hexachlorocyclopentadiene	33	32	UJ	32	U	NA	NA	NA
Hexachloroethane	4.7	4.6	UJ	4.6	U	NA	NA	NA
Hexachloropropene	1	0.97	UJ	0.98	U	NA	NA	NA
Indeno(1,2,3-cd)pyrene	1.2	1.2	UJ	1.2	U	NA	NA	NA
Isodrin	1	0.97	UJ	0.98	U	NA	NA	NA
Isophorone	1.9	1.8	UJ	1.9	U	NA	NA	NA
Isosafrole	2	1.9	UJ	2	U	NA	NA	NA
Methapyrilene	11	11	UJ	11	U	NA	NA	NA
Methyl methanesulfonate	1	0.97	UJ	0.98	U	NA	NA	NA
N-Nitroso-di-n-butylamine	1	0.97	UJ	0.98	U	NA	NA	NA
N-Nitroso-di-n-propylamine	1.9	1.8	UJ	1.9	U	NA	NA	NA
N-Nitrosodiethylamine	10*	0	UJ	0	U	NA	NA	NA
N-Nitrosodimethylamine	2.4	2.3	UJ	2.4	U	NA	NA	NA
N-Nitrosodiphenylamine	1.8	1.7	UJ	1.8	U	NA	NA	NA
N-Nitrosomethylethylamine	1	0.97	UJ	0.98	U	NA	NA	NA
N-Nitrosomorpholine	1	0.97	UJ	0.98	U	NA	NA	NA
N-Nitrosopiperidine	1	0.97	UJ	0.98	U	NA	NA	NA
N-Nitrosopyrrolidine	1	0.97	UJ	0.98	U	NA	NA	NA
Naphthalene	3.4	3.3	UJ	3.3	U	NA	NA	NA
Nitrobenzene	2.5	2.4	UJ	2.4	U	NA	NA	NA

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref : Sample ID : Sample Date :	Method Detection Limit	SD13-04 SD13-04WG03 26-Jan-98 Appendix IX		SD13-06 SD13-06WG03 28-Jan-98 Appendix IX		ST14-02 DUP04-WG03 21-Jan-98		ST14-02 ST14-02WG03 21-Jan-98		ST14-03 ST14-03WG03 22-Jan-98	
O,O,O-Triethylphosphoro-thioate	1	0.97	UJ	0.98	U	NA		NA		NA	
Parathion	1	0.97	UJ	0.98	U	NA		NA		NA	
Pentachlorobenzene	1	0.97	UJ	0.98	U	NA		NA		NA	
Pentachloroethane	1	0.97	UJ	0.98	U	NA		NA		NA	
Pentachloronitrobenzene	1	0.97	UJ	0.98	U	NA		NA		NA	
Pentachlorophenol	18	17	UJ	18	U	NA		NA		NA	
Phenacetin	1	0.97	UJ	0.98	U	NA		NA		NA	
Phenanthrene	1.4	1.4	UJ	1.4	U	NA		NA		NA	
Phenol	2.7	2.6	UJ	2.6	U	NA		NA		NA	
Pronamide	1	0.97	UJ	0.98	U	NA		NA		NA	
Pyrene	1.6	1.6	UJ	1.6	U	NA		NA		NA	
Pyridine	1.2	1.2	UJ	1.2	U	NA		NA		NA	
Safrole	1	0.97	UJ	0.98	U	NA		NA		NA	
Sulfotepp	1	0.97	UJ	0.98	U	NA		NA		NA	
a,a-Dimethylphenethyl-amine	19	18	UJ	19	U	NA		NA		NA	
bis(2-Chloroethoxy)methane	2.7	2.6	UJ	2.6	U	NA		NA		NA	
bis(2-Chloroethyl) ether	2.2	2.1	UJ	2.2	U	NA		NA		NA	
bis(2-Ethylhexyl)phthalate	2.7	2.6	UJ	2.6	U	NA		NA		NA	
o-Toluidine	1	0.97	UJ	0.98	U	NA		NA		NA	
p-Dimethylaminoazobenzene	1.1	1.1	UJ	1.1	U	NA		NA		NA	
p-Phenylenediamine	10	9.7	UJ	9.8	U	NA		NA		NA	
Polychlorinated Dibenzo-p-Dioxins and Dibenzofuran - SW8280/METHOD (ng/l)											
2,3,7,8-TCDD	0.36	0.39	U	0.33	U	NA		NA		NA	
HxCDDs (total)	0.78	0.58	U	0.53	U	NA		NA		NA	
HxCDFs (total)	1.6	0.48	U	0.79	U	NA		NA		NA	
PeCDDs (total)	46	51	U	36	U	NA		NA		NA	
PeCDFs (total)	6.4	7.3	U	5.3	U	NA		NA		NA	
TCDDs (total)	0.36	0.39	U	0.33	U	NA		NA		NA	
TCDFs (total)	0.76	0.65	U	0.56	U	NA		NA		NA	
Total and Amendable Cyanide (Colorimetric, Automat - SW9012/METHOD (mg/l)											
Cyanide	0.001	0.001	F	0.001	F	NA		NA		NA	
SW846 9056 - SW9056/NONE (mg/l)											
Bromide	0.051	0.8		0.79		0.61		0.6		0.6	
Chloride	0.1	26		25.8		24.9		24.9		24.7	
Fluoride	0.05	0.36	F	0.4	F	0.49	F	0.49	F	0.32	F
Nitrate as N	0.05	0.18	F	0.17	F	0.14	F	0.14	F	4.3	
Nitrite as N	0.05	0.05	U	0.05	U	0.05	U	0.05	U	0.27	F
Orthophosphate as P	0.05	1	U	0.05	U	1	U	0.05	U	0.05	U
Sulfate	0.1	0.1	U	42.1		0.1	U	0.1	U	34.2	
Total Organic Carbon - SW9060/NONE (mg/l)											
Total Organic Carbon	0.22	8.5		7.5		12.7		14.8		1.8	

NOTE:
* PQLs used if MDL not reported.

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref : Sample ID : Sample Date :	Method Detection Limit	ST14-04 DUP03-WG03 19-Jan-98		ST14-04 ST14-04WG03 19-Jan-98		ST14-14 ST14-14WG03 20-Jan-98		ST14-24 ST14-24WG03 21-Jan-98		ST14-26 DUP05-WG03 20-Jan-98	
Alkalinity (Titrimetric) - E310.1/NONE (mg/l)											
Alkalinity, Bicarb. as CaCO3 at pH 4.5	0.69	259		256		267		308		346	
Alkalinity, Carb. as CaCO3 at pH 8.3	0.69	0.69	U	0.69	U	0.69	U	0.69	U	0.69	U
Alkalinity, Hydrox. as CaCO3	0.69	0.69	U	0.69	U	0.69	U	0.69	U	0.69	U
Alkalinity, Total as CaCO3 at pH 4.5	0.69	259		256		267		308		346	
Sulfide (Colorimetric, Methylene Blue) - E376.2/NONE (mg/l)											
Sulfide, Total	0.009	NA		NA		NA		NA		NA	
EPA-9/RSK-175 Modified A2720C - M2720C/NONE (ug/l)											
Ethane	0.092	1.9	J	0.092	UJ	190		0.092	U	0.092	U
Ethene	0.1	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Methane	0.052	2600	UJ	0.5	UJ	2900		13		0.5	U
Inductively Coupled Plasma Atomic Emission Spectro - SW6010/SW3005 (mg/l)											
Aluminum	0.052	NA		NA		0.052	U	0.052	U	0.052	U
Calcium	0.034	NA		NA		93.5		109		165	
Iron	0.026	NA		NA		1.6		0.026	U	0.24	
Magnesium	0.07	NA		NA		5.3		9.1		8	
Potassium	0.5	NA		NA		0.5	U	0.5	U	0.5	U
Sodium	0.72	NA		NA		29.2	J	27.1	J	19.7	UJ
Tin	0.01	NA		NA		NA		NA		NA	
Inductively Coupled Plasma Mass Spectrometry - SW6020/SW3020 (mg/l)											
Antimony	0.00017	NA		NA		0.00017	U	0.00017	U	0.4	U
Arsenic	0.00019	NA		NA		0.0027	F	0.001	F	0.0041	F
Barium	0.0002	NA		NA		0.042		0.21		0.13	
Beryllium	0.000069	NA		NA		0.000069	U	0.000069	U	0.00016	F
Cadmium	0.00004	NA		NA		0.00004	U	0.00004	UJ	0.000059	F
Chromium	0.0002	NA		NA		0.07	UJ	0.00023	F	0.07	UJ
Cobalt	0.00002	NA		NA		0.07	UJ	0.00028	F	0.07	UJ
Copper	0.00084	NA		NA		0.06	UJ	0.6	U	0.06	UJ
Lead	0.0002	NA		NA		0.5	U	0.5	U	0.5	U
Manganese	0.0002	NA		NA		0.19	J	0.038	J	0.082	J
Molybdenum	0.0002	NA		NA		0.0025	F	0.0002	UJ	0.00094	F
Nickel	0.0002	NA		NA		0.15	UJ	0.15	UJ	0.15	UJ
Selenium	0.00007	NA		NA		0.0032	F	0.8	UJ	0.0049	F
Silver	0.0002	NA		NA		0.0002	UJ	0.0002	UJ	0.0002	UJ
Thallium	0.00002	NA		NA		0.000077	F	0.00011	F	0.000095	F
Vanadium	0.00017	NA		NA		0.00017	UJ	0.0012	F	0.02	F
Zinc	0.0011	NA		NA		0.026	U	0.02	U	0.021	U
Mercury in Liquid Waste (Manual Cold-Vapor Techniq - SW7470/METHOD (mg/l)											
Mercury	0.00011	NA		NA		0.00011	U	0.00011	U	0.00011	U
Aromatic Volatile Organics - SW8020/SW5030 (ug/l)											
1,2-Dichlorobenzene	0.18	0.9	U	0.9	U	NA		NA		NA	
1,3-Dichlorobenzene	0.09	0.45	U	0.45	U	NA		NA		NA	

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref : / Sample ID : / Sample Date :	Method Detection Limit	ST14-04 DUP03-WG03 19-Jan-98		ST14-04 ST14-04WG03 19-Jan-98		ST14-14 ST14-14WG03 20-Jan-98	ST14-24 ST14-24WG03 21-Jan-98	ST14-26 DUP05-WG03 20-Jan-98
1,4-Dichlorobenzene	0.33	1.6	U	1.6	U	NA	NA	NA
Benzene	0.056	0.28	U	0.28	U	NA	NA	NA
Chlorobenzene	0.085	0.42	U	9.3	F	NA	NA	NA
Ethylbenzene	0.054	0.27	U	0.27	U	NA	NA	NA
Toluene	0.15	0.75	U	0.75	U	NA	NA	NA
Xylenes (total)	0.15	0.75	U	0.75	U	NA	NA	NA
tert-Butyl methyl ether	0.01	NA		NA		NA	NA	NA
Organochlorine Pesticides and PCBs - SW8080/SW3510 (ug/l)								
4,4'-DDD	0.012	NA		NA		NA	NA	NA
4,4'-DDE	0.021	NA		NA		NA	NA	NA
4,4'-DDT	0.033	NA		NA		NA	NA	NA
Aldrin	0.023	NA		NA		NA	NA	NA
Aroclor 1016	0.11	NA		NA		NA	NA	NA
Aroclor 1221	0.45	NA		NA		NA	NA	NA
Aroclor 1232	0.65	NA		NA		NA	NA	NA
Aroclor 1242	0.18	NA		NA		NA	NA	NA
Aroclor 1248	0.22	NA		NA		NA	NA	NA
Aroclor 1254	0.13	NA		NA		NA	NA	NA
Aroclor 1260	0.12	NA		NA		NA	NA	NA
Chlordane	0.056	NA		NA		NA	NA	NA
Dieldrin	0.022	NA		NA		NA	NA	NA
Endosulfan I	0.025	NA		NA		NA	NA	NA
Endosulfan II	0.022	NA		NA		NA	NA	NA
Endosulfan sulfate	0.027	NA		NA		NA	NA	NA
Endrin	0.027	NA		NA		NA	NA	NA
Endrin aldehyde	0.022	NA		NA		NA	NA	NA
Endrin ketone	0.026	NA		NA		NA	NA	NA
Heptachlor	0.023	NA		NA		NA	NA	NA
Heptachlor epoxide	0.024	NA		NA		NA	NA	NA
Kepone	1.1	NA		NA		NA	NA	NA
Methoxychlor	0.025	NA		NA		NA	NA	NA
Toxaphene	0.18	NA		NA		NA	NA	NA
alpha-BHC	0.022	NA		NA		NA	NA	NA
alpha-Chlordane	0.025	NA		NA		NA	NA	NA
beta-BHC	0.026	NA		NA		NA	NA	NA
delta-BHC	0.022	NA		NA		NA	NA	NA
gamma-BHC (Lindane)	0.022	NA		NA		NA	NA	NA
gamma-Chlordane	0.025	NA		NA		NA	NA	NA
Organophosphorus Pesticides - SW8140/SW3510 (ug/l)								
Dimethoate	0.03	NA		NA		NA	NA	NA
Disulfoton	0.055	NA		NA		NA	NA	NA
Ethyl parathion	0.064	NA		NA		NA	NA	NA
Famphur	0.06	NA		NA		NA	NA	NA
Methyl parathion	0.051	NA		NA		NA	NA	NA
O,O,O-Triethylphosphoro-thioate	0.048	NA		NA		NA	NA	NA
Phorate (Thimet)	0.047	NA		NA		NA	NA	NA

Data Summary Table
Carswell AFB
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Locxref : / Sample ID : / Sample Date :	Method Detection Limit	ST14-04 DUP03-WG03 19-Jan-98		ST14-04 ST14-04WG03 19-Jan-98		ST14-14 ST14-14WG03 20-Jan-98		ST14-24 ST14-24WG03 21-Jan-98		ST14-26 DUP05-WG03 20-Jan-98	
Sulfotepp	0.035	NA		NA		NA		NA		NA	
Thionazin	0.048	NA		NA		NA		NA		NA	
Chlorinated Herbicides - SW8150/SW3510 (ug/l)											
2,4,5-T	0.14	NA		NA		NA		NA		NA	
2,4,5-TP (Silvex)	0.14	NA		NA		NA		NA		NA	
2,4-D	0.53	NA		NA		NA		NA		NA	
Volatile Organic Compounds by Gas Chromatograph/Mas - SW8260/SW5030 (ug/l)											
1,1,1,2-Tetrachloroethane	5*	NA		NA		0.093	U	0.093	U	0.093	U
1,1,1-Trichloroethane	1.3	NA		NA		0.12	U	0.12	U	0.12	U
1,1,2,2-Tetrachloroethane	1.2	NA		NA		0.14	U	0.14	U	0.14	U
1,1,2-Trichloroethane	1.2	NA		NA		0.096	U	0.096	U	0.096	U
1,1-Dichloroethane	1.4	NA		NA		0.11	U	0.11	U	0.11	U
1,1-Dichloroethene	1.3	NA		NA		0.1	U	0.1	U	0.1	U
1,1-Dichloropropene	0.094	NA		NA		0.094	U	0.094	U	0.094	U
1,2,3-Trichlorobenzene	0.14	NA		NA		0.14	U	0.14	U	0.14	UJ
1,2,3-Trichloropropane	0.95	NA		NA		0.17	U	0.17	U	0.17	U
1,2,4-Trichlorobenzene	0.13	NA		NA		0.13	U	0.13	U	0.13	U
1,2,4-Trimethylbenzene	0.1	NA		NA		0.1	U	0.1	U	0.1	U
1,2-Dibromo-3-chloro-propane (DBCP)	10*	NA		NA		0.15	U	0.15	U	0.15	U
1,2-Dibromoethane (EDB)	5*	NA		NA		NA		NA		NA	
1,2-Dichlorobenzene	0.13	NA		NA		0.13	U	0.13	U	0.13	U
1,2-Dichloroethane	1.5	NA		NA		0.13	U	0.13	U	0.13	U
1,2-Dichloropropane	0.74	NA		NA		0.14	U	0.14	U	0.14	U
1,3,5-Trimethylbenzene	0.13	NA		NA		0.13	U	0.13	U	0.13	U
1,3-Dichlorobenzene	0.15	NA		NA		0.15	U	0.15	U	0.15	U
1,3-Dichloropropane	0.11	NA		NA		0.11	U	0.11	U	0.11	U
1,4-Dichlorobenzene	0.11	NA		NA		0.11	U	0.11	U	0.11	U
1,4-Dioxane	57	NA		NA		NA		NA		NA	
1-Chlorohexane	0.5*	NA		NA		0.5	*U	0.5	*U	0.5	*U
2,2-Dichloropropane	0.1	NA		NA		0.1	U	0.1	U	0.1	U
2-Butanone (MEK)	1.5	NA		NA		NA		NA		NA	
2-Chloroethyl vinyl ether	1.4	NA		NA		NA		NA		NA	
2-Chlorotoluene	0.15	NA		NA		0.15	U	0.15	U	0.15	U
2-Hexanone	0.85	NA		NA		NA		NA		NA	
4-Chlorotoluene	0.1	NA		NA		0.1	U	0.1	U	0.1	U
4-Methyl-2-pentanone (MIBK)	1.1	NA		NA		NA		NA		NA	
Acetone	0.96	NA		NA		NA		NA		NA	
Acetonitrile	12	NA		NA		NA		NA		NA	
Acrolein	11	NA		NA		NA		NA		NA	
Acrylonitrile	5.6	NA		NA		NA		NA		NA	
Allyl chloride	0.6	NA		NA		NA		NA		NA	
Benzene	1.2	NA		NA		0.11	U	0.11	U	0.11	U
Bromobenzene	0.13	NA		NA		0.13	U	0.13	U	0.13	U
Bromochloromethane	0.1	NA		NA		0.1	U	0.1	U	0.1	U
Bromodichloromethane	1.3	NA		NA		0.44	U	0.44	U	0.44	U
Bromoform	1.1	NA		NA		0.14	U	0.14	U	0.14	U

Data Summary Table
Carswell AFB
East Area Groundwater

Locxref : / Sample ID : / Sample Date :	Method Detection Limit	ST14-04 DUP03-WG03 19-Jan-98	ST14-04 ST14-04WG03 19-Jan-98	ST14-14 ST14-14WG03 20-Jan-98		ST14-24 ST14-24WG03 21-Jan-98		ST14-26 DUP05-WG03 20-Jan-98	
Bromomethane	1.3	NA	NA	0.25	U	0.25	U	0.25	U
Carbon disulfide	1.3	NA	NA	NA		NA		NA	
Carbon tetrachloride	1.5	NA	NA	0.13	U	0.13	U	0.13	U
Chlorobenzene	1.2	NA	NA	0.12	U	0.12	U	0.12	U
Chloroethane	1.4	NA	NA	0.25	U	0.25	U	0.25	U
Chloroform	1.4	NA	NA	0.12	U	0.12	U	0.12	U
Chloromethane	1.5	NA	NA	0.26	U	0.26	U	0.26	U
Chloroprene	1	NA	NA	NA		NA		NA	
Dibromochloromethane	1.3	NA	NA	0.12	U	0.12	U	0.12	U
Dibromomethane	5*	NA	NA	0.097	U	0.097	U	0.097	U
Dichlorodifluoromethane	10*	NA	NA	0.27	U	0.27	U	0.27	U
EDB (1,2-Dibromoethane)	0.11	NA	NA	0.11	U	0.11	U	0.11	U
Ethyl methacrylate	0.74	NA	NA	NA		NA		NA	
Ethylbenzene	1.2	NA	NA	0.11	U	0.11	U	0.11	U
Hexachlorobutadiene	0.15	NA	NA	0.15	U	0.15	U	0.15	U
Iodomethane	1.3	NA	NA	NA		NA		NA	
Isobutyl alcohol	19	NA	NA	NA		NA		NA	
Isopropylbenzene (Cumene)	0.13	NA	NA	0.13	U	0.13	U	0.13	U
Methacrylonitrile	0.95	NA	NA	NA		NA		NA	
Methyl methacrylate	2.5	NA	NA	NA		NA		NA	
Methylene chloride	1.2	NA	NA	0.65	U	0.65	U	0.65	U
Naphthalene	0.44	NA	NA	0.44	U	0.44	U	0.44	UJ
Propionitrile	1.5	NA	NA	NA		NA		NA	
Styrene	1.3	NA	NA	0.12	U	0.12	U	0.12	U
Tetrachloroethene	1.2	NA	NA	0.1	U	0.1	U	0.1	U
Toluene	1.2	NA	NA	0.098	U	0.098	U	0.098	U
Trichloroethene	1.2	NA	NA	0.35	F	0.4	F	0.23	F
Trichlorofluoromethane	10*	NA	NA	0.3	U	0.3	U	0.3	U
Vinyl acetate	1.8	NA	NA	NA		NA		NA	
Vinyl chloride	1.2	NA	NA	0.23	U	1.7		0.23	U
Xylenes (total)	0.75	NA	NA	NA		NA		NA	
cis-1,2-Dichloroethene	0.1	NA	NA	0.12	F	0.32	F	0.1	UJ
cis-1,3-Dichloropropene	1.3	NA	NA	0.12	U	0.12	U	0.12	U
m- & p-Xylenes	0.28	NA	NA	0.28	U	0.28	U	0.28	U
n-Butylbenzene	0.13	NA	NA	0.13	U	0.13	U	0.13	U
n-Propylbenzene	0.13	NA	NA	0.13	U	0.13	U	0.13	U
o-Xylene	0.11	NA	NA	0.11	U	0.11	U	0.11	U
p-Isopropyltoluene (p-Cymene)	0.13	NA	NA	0.13	U	0.13	U	0.13	U
sec-Butylbenzene	0.17	NA	NA	0.17	U	0.17	U	0.17	U
tert-Butylbenzene	0.13	NA	NA	0.76	F	0.13	U	0.13	U
trans-1,2-Dichloroethene	1.3	NA	NA	0.11	U	0.11	U	0.11	U
trans-1,3-Dichloropropene	1.2	NA	NA	0.11	U	0.11	U	0.11	U
trans-1,4-Dichloro-2-butene	1.2	NA	NA	NA		NA		NA	
GC/MS for Semivolatile Organics (Capillary Column - SW8270/SW3520 (ug/l)									
1,2,4,5-Tetrachloro-benzene	1	NA	NA	NA		NA		NA	
1,2,4-Trichlorobenzene	4.3	NA	NA	NA		NA		NA	
1,2-Dichlorobenzene	4	NA	NA	NA		NA		NA	

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref : Sample ID : Sample Date :	Method Detection Limit	ST14-04 DUP03-WG03 19-Jan-98	ST14-04 ST14-04WG03 19-Jan-98	ST14-14 ST14-14WG03 20-Jan-98	ST14-24 ST14-24WG03 21-Jan-98	ST14-26 DUP05-WG03 20-Jan-98
1,3,5-Trinitrobenzene	1	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	4.1	NA	NA	NA	NA	NA
1,3-Dinitrobenzene	1	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	4	NA	NA	NA	NA	NA
1,4-Dinitrobenzene	1	NA	NA	NA	NA	NA
1,4-Naphthoquinone	1.3	NA	NA	NA	NA	NA
1-Chloronaphthalene	1	NA	NA	NA	NA	NA
1-Naphthylamine	2	NA	NA	NA	NA	NA
2,2'-oxybis(1-chloropropane)	1.7	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	1.3	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	1.8	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	2.2	NA	NA	NA	NA	NA
2,4-Dichlorophenol	2.7	NA	NA	NA	NA	NA
2,4-Dimethylphenol	1.4	NA	NA	NA	NA	NA
2,4-Dinitrophenol	19	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	1.8	NA	NA	NA	NA	NA
2,6-Dichlorophenol	1	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	1.9	NA	NA	NA	NA	NA
2-Acetylaminofluorene	1	NA	NA	NA	NA	NA
2-Chloronaphthalene	3.4	NA	NA	NA	NA	NA
2-Chlorophenol	2.7	NA	NA	NA	NA	NA
2-Methylnaphthalene	3.6	NA	NA	NA	NA	NA
2-Methylphenol	2	NA	NA	NA	NA	NA
2-Naphthylamine	1.2	NA	NA	NA	NA	NA
2-Nitroaniline	12	NA	NA	NA	NA	NA
2-Nitrophenol	2.7	NA	NA	NA	NA	NA
2-Picoline	1	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	1.9	NA	NA	NA	NA	NA
3,3'-Dimethylbenzidine	3.5	NA	NA	NA	NA	NA
3-Methylcholanthrene	2.7	NA	NA	NA	NA	NA
3-Nitroaniline	15	NA	NA	NA	NA	NA
3/4-Methylphenol	1.8	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	20	NA	NA	NA	NA	NA
4-Aminobiphenyl	1	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	1.3	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	2.2	NA	NA	NA	NA	NA
4-Chloroaniline	1.5	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	1.4	NA	NA	NA	NA	NA
4-Nitroaniline	25	NA	NA	NA	NA	NA
4-Nitrophenol	19	NA	NA	NA	NA	NA
4-Nitroquinoline-1-oxide	10	NA	NA	NA	NA	NA
5-Nitro-o-toluidine	1.2	NA	NA	NA	NA	NA
7,12-Dimethylbenz(a)-anthracene	1	NA	NA	NA	NA	NA
Acenaphthene	2.2	NA	NA	NA	NA	NA
Acenaphthylene	2.8	NA	NA	NA	NA	NA
Acetophenone	1	NA	NA	NA	NA	NA
Aniline	1.5	NA	NA	NA	NA	NA
Anthracene	1.5	NA	NA	NA	NA	NA

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref :	Method	ST14-04	ST14-04	ST14-14	ST14-24	ST14-26
Sample ID :	Detection	DUP03-WG03	ST14-04WG03	ST14-14WG03	ST14-24WG03	DUP05-WG03
Sample Date :	Limit	19-Jan-98	19-Jan-98	20-Jan-98	21-Jan-98	20-Jan-98
Aramite	1	NA	NA	NA	NA	NA
Azobenzene	1.5	NA	NA	NA	NA	NA
Benzo(a)anthracene	1.5	NA	NA	NA	NA	NA
Benzo(a)pyrene	1.6	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	2.1	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	1.5	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	2	NA	NA	NA	NA	NA
Benzoic acid	22	NA	NA	NA	NA	NA
Benzyl alcohol	2.7	NA	NA	NA	NA	NA
Butyl benzyl phthalate	1.8	NA	NA	NA	NA	NA
Carbazole	1.8	NA	NA	NA	NA	NA
Chlorobenzilate	1	NA	NA	NA	NA	NA
Chrysene	1.5	NA	NA	NA	NA	NA
Di-n-butyl phthalate	1.9	NA	NA	NA	NA	NA
Di-n-octyl phthalate	1.2	NA	NA	NA	NA	NA
Diallate	2	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	1.3	NA	NA	NA	NA	NA
Dibenz(a,j)acridine	1	NA	NA	NA	NA	NA
Dibenzofuran	1.7	NA	NA	NA	NA	NA
Diethyl phthalate	1.9	NA	NA	NA	NA	NA
Dimethoate	1	NA	NA	NA	NA	NA
Dimethyl phthalate	1.8	NA	NA	NA	NA	NA
Diphenylamine	10*	NA	NA	NA	NA	NA
Ethyl methanesulfonate	1	NA	NA	NA	NA	NA
Fluoranthene	1.6	NA	NA	NA	NA	NA
Fluorene	2.1	NA	NA	NA	NA	NA
Hexachlorobenzene	1.5	NA	NA	NA	NA	NA
Hexachlorobutadiene	4.8	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	33	NA	NA	NA	NA	NA
Hexachloroethane	4.7	NA	NA	NA	NA	NA
Hexachloropropene	1	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	1.2	NA	NA	NA	NA	NA
Isodrin	1	NA	NA	NA	NA	NA
Isophorone	1.9	NA	NA	NA	NA	NA
Isosafrole	2	NA	NA	NA	NA	NA
Methapyrilene	11	NA	NA	NA	NA	NA
Methyl methanesulfonate	1	NA	NA	NA	NA	NA
N-Nitroso-di-n-butylamine	1	NA	NA	NA	NA	NA
N-Nitroso-di-n-propylamine	1.9	NA	NA	NA	NA	NA
N-Nitrosodiethylamine	10*	NA	NA	NA	NA	NA
N-Nitrosodimethylamine	2.4	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	1.8	NA	NA	NA	NA	NA
N-Nitrosomethylethylamine	1	NA	NA	NA	NA	NA
N-Nitrosomorpholine	1	NA	NA	NA	NA	NA
N-Nitrosopiperidine	1	NA	NA	NA	NA	NA
N-Nitrosopyrrolidine	1	NA	NA	NA	NA	NA
Naphthalene	3.4	NA	NA	NA	NA	NA
Nitrobenzene	2.5	NA	NA	NA	NA	NA

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref : Sample ID : Sample Date :	Method Detection Limit	ST14-04 DUP03-WG03 19-Jan-98		ST14-04 ST14-04WG03 19-Jan-98		ST14-14 ST14-14WG03 20-Jan-98		ST14-24 ST14-24WG03 21-Jan-98		ST14-26 DUP05-WG03 20-Jan-98	
O,O,O-Triethylphosphoro-thioate	1	NA		NA		NA		NA		NA	
Parathion	1	NA		NA		NA		NA		NA	
Pentachlorobenzene	1	NA		NA		NA		NA		NA	
Pentachloroethane	1	NA		NA		NA		NA		NA	
Pentachloronitrobenzene	1	NA		NA		NA		NA		NA	
Pentachlorophenol	18	NA		NA		NA		NA		NA	
Phenacetin	1	NA		NA		NA		NA		NA	
Phenanthrene	1.4	NA		NA		NA		NA		NA	
Phenol	2.7	NA		NA		NA		NA		NA	
Pronamide	1	NA		NA		NA		NA		NA	
Pyrene	1.6	NA		NA		NA		NA		NA	
Pyridine	1.2	NA		NA		NA		NA		NA	
Safrole	1	NA		NA		NA		NA		NA	
Sulfotepp	1	NA		NA		NA		NA		NA	
a,a-Dimethylphenethyl-amine	19	NA		NA		NA		NA		NA	
bis(2-Chloroethoxy)methane	2.7	NA		NA		NA		NA		NA	
bis(2-Chloroethyl) ether	2.2	NA		NA		NA		NA		NA	
bis(2-Ethylhexyl)phthalate	2.7	NA		NA		NA		NA		NA	
o-Toluidine	1	NA		NA		NA		NA		NA	
p-Dimethylaminoazobenzene	1.1	NA		NA		NA		NA		NA	
p-Phenylenediamine	10	NA		NA		NA		NA		NA	
Polychlorinated Dibenzo-p-Dioxins and Dibenzofuran - SW8280/METHOD (ng/l)											
2,3,7,8-TCDD	0.36	NA		NA		NA		NA		NA	
HxCDDs (total)	0.78	NA		NA		NA		NA		NA	
HxCDFs (total)	1.6	NA		NA		NA		NA		NA	
PeCDDs (total)	46	NA		NA		NA		NA		NA	
PeCDFs (total)	6.4	NA		NA		NA		NA		NA	
TCDDs (total)	0.36	NA		NA		NA		NA		NA	
TCDFs (total)	0.76	NA		NA		NA		NA		NA	
Total and Amendable Cyanide (Colorimetric, Automat - SW9012/METHOD (mg/l)											
Cyanide	0.001	NA		NA		NA		NA		NA	
SW846 9056 - SW9056/NONE (mg/l)											
Bromide	0.051	0.54		0.53		0.53		0.41	F	0.75	
Chloride	0.1	36.7		37.4		19.6		18.4		24.3	
Fluoride	0.05	0.39	F	0.39	F	0.32	F	0.52	F	0.05	U
Nitrate as N	0.05	0.13	F	0.13	F	0.05	U	0.22	F	0.32	F
Nitrite as N	0.05	0.05	U	0.05	U	0.05	U	0.05	U	0.22	F
Orthophosphate as P	0.05	0.05	U	0.05	U	0.05	U	1	U	0.05	U
Sulfate	0.1	0.77	F	0.76	F	1.2		17.9		19.2	
Total Organic Carbon - SW9060/NONE (mg/l)											
Total Organic Carbon	0.22	6.2	U	6.3	U	2.2	U	1	U	1.7	U

NOTE:
* PQLs used if MDL not reported.

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref :	Method	ST14-26		ST14-28		ST14-29		ST14-W16		ST14-W18	
Sample ID :	Detection	ST14-26WG03		ST14-28WG03		ST14-29WG03		ST14-W16WG03		ST14-W18WG03	
Sample Date :	Limit	20-Jan-98		19-Jan-98		20-Jan-98		21-Jan-98		22-Jan-98	
Alkalinity (Titrimetric) - E310.1/NONE (mg/l)											
Alkalinity, Bicarb. as CaCO3 at pH 4.5	0.69	344		478		434		346		246	
Alkalinity, Carb. as CaCO3 at pH 8.3	0.69	0.69	U	0.69	U	0.69	U	0.69	U	0.69	U
Alkalinity, Hydrox. as CaCO3	0.69	0.69	U	0.69	U	0.69	U	0.69	U	0.69	U
Alkalinity, Total as CaCO3 at pH 4.5	0.69	344		478		434		346		246	
Sulfide (Colorimetric, Methylene Blue) - E376.2/NONE (mg/l)											
Sulfide, Total	0.009	NA		NA		NA		NA		NA	
EPA-9/RSK-175 Modified A2720C - M2720C/NONE (ug/l)											
Ethane	0.092	0.092	U	2.8		2.3		2.9		5.6	
Ethene	0.1	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Methane	0.052	0.5	U	4800	U	3800		2800		5700	
Inductively Coupled Plasma Atomic Emission Spectro - SW6010/SW3005 (mg/l)											
Aluminum	0.052	0.052	U	NA		NA		NA		0.052	U
Calcium	0.034	171		NA		NA		NA		122	
Iron	0.026	0.38		NA		NA		NA		8.7	
Magnesium	0.07	7.9		NA		NA		NA		5.1	
Potassium	0.5	0.5	U	NA		NA		NA		0.5	U
Sodium	0.72	20.1	UJ	NA		NA		NA		6.8	J
Tin	0.01	NA		NA		NA		NA		NA	
Inductively Coupled Plasma Mass Spectrometry - SW6020/SW3020 (mg/l)											
Antimony	0.00017	0.4	U	NA		NA		NA		0.4	U
Arsenic	0.00019	0.0048	F	NA		NA		NA		0.025	F
Barium	0.0002	0.13		NA		NA		NA		0.13	
Beryllium	0.000069	0.00023	F	NA		NA		NA		0.000068	F
Cadmium	0.00004	0.000085	F	NA		NA		NA		0.00004	U
Chromium	0.0002	0.07	UJ	NA		NA		NA		0.07	UJ
Cobalt	0.00002	0.07	UJ	NA		NA		NA		0.0025	F
Copper	0.00084	0.06	UJ	NA		NA		NA		0.06	U
Lead	0.0002	0.5	U	NA		NA		NA		0.02	F
Manganese	0.0002	0.097	J	NA		NA		NA		0.16	J
Molybdenum	0.0002	0.00097	F	NA		NA		NA		0.0021	F
Nickel	0.0002	0.15	UJ	NA		NA		NA		0.01	F
Selenium	0.00007	0.0048	F	NA		NA		NA		0.015	F
Silver	0.0002	0.0002	UJ	NA		NA		NA		0.0002	UJ
Thallium	0.00002	0.000075	F	NA		NA		NA		0.000071	F
Vanadium	0.00017	0.023	F	NA		NA		NA		0.00098	F
Zinc	0.0011	0.025	U	NA		NA		NA		0.044	U
Mercury in Liquid Waste (Manual Cold-Vapor Technig - SW7470/METHOD (mg/l)											
Mercury	0.00011	0.00011	U	NA		NA		NA		0.00011	U
Aromatic Volatile Organics - SW8020/SW5030 (ug/l)											
1,2-Dichlorobenzene	0.18	NA		0.9	U	0.45	U	0.36	U	1.8	U
1,3-Dichlorobenzene	0.09	NA		0.45	U	0.22	U	0.18	U	0.9	U

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref :	Method	ST14-26	ST14-28		ST14-29		ST14-W16		ST14-W18	
Sample ID :	Detection	ST14-26WG03	ST14-28WG03		ST14-29WG03		ST14-W16WG03		ST14-W18WG03	
Sample Date :	Limit	20-Jan-98	19-Jan-98		20-Jan-98		21-Jan-98		22-Jan-98	
1,4-Dichlorobenzene	0.33	NA	1.6	U	0.82	U	0.66	U	3.3	U
Benzene	0.056	NA	0.28	U	0.14	U	9.4	J	0.56	U
Chlorobenzene	0.085	NA	0.42	U	8.5		0.17	U	0.85	U
Ethylbenzene	0.054	NA	0.27	U	0.14	U	0.11	U	0.54	U
Toluene	0.15	NA	0.75	U	0.38	U	0.3	U	1.5	U
Xylenes (total)	0.15	NA	0.75	U	0.38	U	0.3	U	1.5	U
tert-Butyl methyl ether	0.01	NA	NA		NA		NA		NA	
Organochlorine Pesticides and PCBs - SW8080/SW3510 (ug/l)										
4,4'-DDD	0.012	NA	NA		NA		NA		NA	
4,4'-DDE	0.021	NA	NA		NA		NA		NA	
4,4'-DDT	0.033	NA	NA		NA		NA		NA	
Aldrin	0.023	NA	NA		NA		NA		NA	
Aroclor 1016	0.11	NA	NA		NA		NA		NA	
Aroclor 1221	0.45	NA	NA		NA		NA		NA	
Aroclor 1232	0.65	NA	NA		NA		NA		NA	
Aroclor 1242	0.18	NA	NA		NA		NA		NA	
Aroclor 1248	0.22	NA	NA		NA		NA		NA	
Aroclor 1254	0.13	NA	NA		NA		NA		NA	
Aroclor 1260	0.12	NA	NA		NA		NA		NA	
Chlordane	0.056	NA	NA		NA		NA		NA	
Dieldrin	0.022	NA	NA		NA		NA		NA	
Endosulfan I	0.025	NA	NA		NA		NA		NA	
Endosulfan II	0.022	NA	NA		NA		NA		NA	
Endosulfan sulfate	0.027	NA	NA		NA		NA		NA	
Endrin	0.027	NA	NA		NA		NA		NA	
Endrin aldehyde	0.022	NA	NA		NA		NA		NA	
Endrin ketone	0.026	NA	NA		NA		NA		NA	
Heptachlor	0.023	NA	NA		NA		NA		NA	
Heptachlor epoxide	0.024	NA	NA		NA		NA		NA	
Kepone	1.1	NA	NA		NA		NA		NA	
Methoxychlor	0.025	NA	NA		NA		NA		NA	
Toxaphene	0.18	NA	NA		NA		NA		NA	
alpha-BHC	0.022	NA	NA		NA		NA		NA	
alpha-Chlordane	0.025	NA	NA		NA		NA		NA	
beta-BHC	0.026	NA	NA		NA		NA		NA	
delta-BHC	0.022	NA	NA		NA		NA		NA	
gamma-BHC (Lindane)	0.022	NA	NA		NA		NA		NA	
gamma-Chlordane	0.025	NA	NA		NA		NA		NA	
Organophosphorus Pesticides - SW8140/SW3510 (ug/l)										
Dimethoate	0.03	NA	NA		NA		NA		NA	
Disulfoton	0.055	NA	NA		NA		NA		NA	
Ethyl parathion	0.064	NA	NA		NA		NA		NA	
Famphur	0.06	NA	NA		NA		NA		NA	
Methyl parathion	0.051	NA	NA		NA		NA		NA	
O,O,O-Triethylphosphoro-thioate	0.048	NA	NA		NA		NA		NA	
Phorate (Thimet)	0.047	NA	NA		NA		NA		NA	

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref : / Sample ID : / Sample Date :	Method Detection Limit	ST14-26 ST14-26WG03 20-Jan-98		ST14-28 ST14-28WG03 19-Jan-98	ST14-29 ST14-29WG03 20-Jan-98	ST14-W16 ST14-W16WG03 21-Jan-98	ST14-W18 ST14-W18WG03 22-Jan-98
Sulfotepp	0.035	NA		NA	NA	NA	NA
Thionazin	0.048	NA		NA	NA	NA	NA
Chlorinated Herbicides - SW8150/SW3510 (ug/l)							
2,4,5-T	0.14	NA		NA	NA	NA	NA
2,4,5-TP (Silvex)	0.14	NA		NA	NA	NA	NA
2,4-D	0.53	NA		NA	NA	NA	NA
Volatile Organic Compounds by Gas Chromatograph/Mas - SW8260/SW5030 (ug/l)							
1,1,1,2-Tetrachloroethane	5*	0.093	U	NA	NA	NA	NA
1,1,1-Trichloroethane	1.3	0.12	U	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	1.2	0.14	U	NA	NA	NA	NA
1,1,2-Trichloroethane	1.2	0.096	U	NA	NA	NA	NA
1,1-Dichloroethane	1.4	0.11	U	NA	NA	NA	NA
1,1-Dichloroethene	1.3	0.1	U	NA	NA	NA	NA
1,1-Dichloropropene	0.094	0.094	U	NA	NA	NA	NA
1,2,3-Trichlorobenzene	0.14	2	U	NA	NA	NA	NA
1,2,3-Trichloropropane	0.95	0.17	U	NA	NA	NA	NA
1,2,4-Trichlorobenzene	0.13	0.13	UJ	NA	NA	NA	NA
1,2,4-Trimethylbenzene	0.1	0.1	U	NA	NA	NA	NA
1,2-Dibromo-3-chloro-propane (DBCP)	10*	0.15	U	NA	NA	NA	NA
1,2-Dibromoethane (EDB)	5*	NA		NA	NA	NA	NA
1,2-Dichlorobenzene	0.13	0.13	U	NA	NA	NA	NA
1,2-Dichloroethane	1.5	0.13	U	NA	NA	NA	NA
1,2-Dichloropropane	0.74	0.14	U	NA	NA	NA	NA
1,3,5-Trimethylbenzene	0.13	0.13	U	NA	NA	NA	NA
1,3-Dichlorobenzene	0.15	0.15	U	NA	NA	NA	NA
1,3-Dichloropropane	0.11	0.11	U	NA	NA	NA	NA
1,4-Dichlorobenzene	0.11	0.11	U	NA	NA	NA	NA
1,4-Dioxane	57	NA		NA	NA	NA	NA
1-Chlorohexane	0.5*	0.5	*U	NA	NA	NA	NA
2,2-Dichloropropane	0.1	0.1	U	NA	NA	NA	NA
2-Butanone (MEK)	1.5	NA		NA	NA	NA	NA
2-Chloroethyl vinyl ether	1.4	NA		NA	NA	NA	NA
2-Chlorotoluene	0.15	0.15	U	NA	NA	NA	NA
2-Hexanone	0.85	NA		NA	NA	NA	NA
4-Chlorotoluene	0.1	0.1	U	NA	NA	NA	NA
4-Methyl-2-pentanone (MIBK)	1.1	NA		NA	NA	NA	NA
Acetone	0.96	NA		NA	NA	NA	NA
Acetonitrile	12	NA		NA	NA	NA	NA
Acrolein	11	NA		NA	NA	NA	NA
Acrylonitrile	5.6	NA		NA	NA	NA	NA
Allyl chloride	0.6	NA		NA	NA	NA	NA
Benzene	1.2	0.11	U	NA	NA	NA	NA
Bromobenzene	0.13	0.13	U	NA	NA	NA	NA
Bromochloromethane	0.1	0.1	U	NA	NA	NA	NA
Bromodichloromethane	1.3	0.44	U	NA	NA	NA	NA
Bromoform	1.1	0.14	U	NA	NA	NA	NA

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref :	Method	ST14-26		ST14-28	ST14-29	ST14-W16	ST14-W18
Sample ID :	Detection	ST14-26WG03		ST14-28WG03	ST14-29WG03	ST14-W16WG03	ST14-W18WG03
Sample Date :	Limit	20-Jan-98		19-Jan-98	20-Jan-98	21-Jan-98	22-Jan-98
Bromomethane	1.3	0.25	U	NA	NA	NA	NA
Carbon disulfide	1.3	NA		NA	NA	NA	NA
Carbon tetrachloride	1.5	0.13	U	NA	NA	NA	NA
Chlorobenzene	1.2	0.12	U	NA	NA	NA	NA
Chloroethane	1.4	0.25	U	NA	NA	NA	NA
Chloroform	1.4	0.12	U	NA	NA	NA	NA
Chloromethane	1.5	0.26	U	NA	NA	NA	NA
Chloroprene	1	NA		NA	NA	NA	NA
Dibromochloromethane	1.3	0.12	U	NA	NA	NA	NA
Dibromomethane	5*	0.097	U	NA	NA	NA	NA
Dichlorodifluoromethane	10*	0.27	U	NA	NA	NA	NA
EDB (1,2-Dibromoethane)	0.11	0.11	U	NA	NA	NA	NA
Ethyl methacrylate	0.74	NA		NA	NA	NA	NA
Ethylbenzene	1.2	0.11	U	NA	NA	NA	NA
Hexachlorobutadiene	0.15	0.15	U	NA	NA	NA	NA
Iodomethane	1.3	NA		NA	NA	NA	NA
Isobutyl alcohol	19	NA		NA	NA	NA	NA
Isopropylbenzene (Cumene)	0.13	0.13	U	NA	NA	NA	NA
Methacrylonitrile	0.95	NA		NA	NA	NA	NA
Methyl methacrylate	2.5	NA		NA	NA	NA	NA
Methylene chloride	1.2	0.65	U	NA	NA	NA	NA
Naphthalene	0.44	0.6	F	NA	NA	NA	NA
Propionitrile	1.5	NA		NA	NA	NA	NA
Styrene	1.3	0.12	U	NA	NA	NA	NA
Tetrachloroethene	1.2	0.1	U	NA	NA	NA	NA
Toluene	1.2	0.098	U	NA	NA	NA	NA
Trichloroethene	1.2	0.27	F	NA	NA	NA	NA
Trichlorofluoromethane	10*	0.3	U	NA	NA	NA	NA
Vinyl acetate	1.8	NA		NA	NA	NA	NA
Vinyl chloride	1.2	0.23	U	NA	NA	NA	NA
Xylenes (total)	0.75	NA		NA	NA	NA	NA
cis-1,2-Dichloroethene	0.1	0.17	F	NA	NA	NA	NA
cis-1,3-Dichloropropene	1.3	0.12	U	NA	NA	NA	NA
m- & p-Xylenes	0.28	0.28	U	NA	NA	NA	NA
n-Butylbenzene	0.13	0.13	U	NA	NA	NA	NA
n-Propylbenzene	0.13	0.13	U	NA	NA	NA	NA
o-Xylene	0.11	0.11	U	NA	NA	NA	NA
p-Isopropyltoluene (p-Cymene)	0.13	0.13	U	NA	NA	NA	NA
sec-Butylbenzene	0.17	0.17	U	NA	NA	NA	NA
tert-Butylbenzene	0.13	0.13	U	NA	NA	NA	NA
trans-1,2-Dichloroethene	1.3	0.11	U	NA	NA	NA	NA
trans-1,3-Dichloropropene	1.2	0.11	U	NA	NA	NA	NA
trans-1,4-Dichloro-2-butene	1.2	NA		NA	NA	NA	NA
GC/MS for Semivolatile Organics (Capillary Column - SW8270/SW3520 (ug/l)							
1,2,4,5-Tetrachloro-benzene	1	NA		NA	NA	NA	NA
1,2,4-Trichlorobenzene	4.3	NA		NA	NA	NA	NA
1,2-Dichlorobenzene	4	NA		NA	NA	NA	NA

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref :	Method	ST14-26	ST14-28	ST14-29	ST14-W16	ST14-W18
Sample ID :	Detection	ST14-26WG03	ST14-28WG03	ST14-29WG03	ST14-W16WG03	ST14-W18WG03
Sample Date :	Limit	20-Jan-98	19-Jan-98	20-Jan-98	21-Jan-98	22-Jan-98
1,3,5-Trinitrobenzene	1	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	4.1	NA	NA	NA	NA	NA
1,3-Dinitrobenzene	1	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	4	NA	NA	NA	NA	NA
1,4-Dinitrobenzene	1	NA	NA	NA	NA	NA
1,4-Naphthoquinone	1.3	NA	NA	NA	NA	NA
1-Chloronaphthalene	1	NA	NA	NA	NA	NA
1-Naphthylamine	2	NA	NA	NA	NA	NA
2,2'-oxybis(1-chloropropane)	1.7	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	1.3	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	1.8	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	2.2	NA	NA	NA	NA	NA
2,4-Dichlorophenol	2.7	NA	NA	NA	NA	NA
2,4-Dimethylphenol	1.4	NA	NA	NA	NA	NA
2,4-Dinitrophenol	19	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	1.8	NA	NA	NA	NA	NA
2,6-Dichlorophenol	1	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	1.9	NA	NA	NA	NA	NA
2-Acetylaminofluorene	1	NA	NA	NA	NA	NA
2-Chloronaphthalene	3.4	NA	NA	NA	NA	NA
2-Chlorophenol	2.7	NA	NA	NA	NA	NA
2-Methylnaphthalene	3.6	NA	NA	NA	NA	NA
2-Methylphenol	2	NA	NA	NA	NA	NA
2-Naphthylamine	1.2	NA	NA	NA	NA	NA
2-Nitroaniline	12	NA	NA	NA	NA	NA
2-Nitrophenol	2.7	NA	NA	NA	NA	NA
2-Picoline	1	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	1.9	NA	NA	NA	NA	NA
3,3'-Dimethylbenzidine	3.5	NA	NA	NA	NA	NA
3-Methylcholanthrene	2.7	NA	NA	NA	NA	NA
3-Nitroaniline	15	NA	NA	NA	NA	NA
3/4-Methylphenol	1.8	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	20	NA	NA	NA	NA	NA
4-Aminobiphenyl	1	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	1.3	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	2.2	NA	NA	NA	NA	NA
4-Chloroaniline	1.5	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	1.4	NA	NA	NA	NA	NA
4-Nitroaniline	25	NA	NA	NA	NA	NA
4-Nitrophenol	19	NA	NA	NA	NA	NA
4-Nitroquinoline-1-oxide	10	NA	NA	NA	NA	NA
5-Nitro-o-toluidine	1.2	NA	NA	NA	NA	NA
7,12-Dimethylbenz(a)-anthracene	1	NA	NA	NA	NA	NA
Acenaphthene	2.2	NA	NA	NA	NA	NA
Acenaphthylene	2.8	NA	NA	NA	NA	NA
Acetophenone	1	NA	NA	NA	NA	NA
Aniline	1.5	NA	NA	NA	NA	NA
Anthracene	1.5	NA	NA	NA	NA	NA

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref : Sample ID : Sample Date :	Method Detection Limit	ST14-26 ST14-26WG03 20-Jan-98	ST14-28 ST14-28WG03 19-Jan-98	ST14-29 ST14-29WG03 20-Jan-98	ST14-W16 ST14-W16WG03 21-Jan-98	ST14-W18 ST14-W18WG03 22-Jan-98
Aramite	1	NA	NA	NA	NA	NA
Azobenzene	1.5	NA	NA	NA	NA	NA
Benzo(a)anthracene	1.5	NA	NA	NA	NA	NA
Benzo(a)pyrene	1.6	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	2.1	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	1.5	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	2	NA	NA	NA	NA	NA
Benzoic acid	22	NA	NA	NA	NA	NA
Benzyl alcohol	2.7	NA	NA	NA	NA	NA
Butyl benzyl phthalate	1.8	NA	NA	NA	NA	NA
Carbazole	1.8	NA	NA	NA	NA	NA
Chlorobenzilate	1	NA	NA	NA	NA	NA
Chrysene	1.5	NA	NA	NA	NA	NA
Di-n-butyl phthalate	1.9	NA	NA	NA	NA	NA
Di-n-octyl phthalate	1.2	NA	NA	NA	NA	NA
Diallate	2	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	1.3	NA	NA	NA	NA	NA
Dibenz(a,j)acridine	1	NA	NA	NA	NA	NA
Dibenzofuran	1.7	NA	NA	NA	NA	NA
Diethyl phthalate	1.9	NA	NA	NA	NA	NA
Dimethoate	1	NA	NA	NA	NA	NA
Dimethyl phthalate	1.8	NA	NA	NA	NA	NA
Diphenylamine	10*	NA	NA	NA	NA	NA
Ethyl methanesulfonate	1	NA	NA	NA	NA	NA
Fluoranthene	1.6	NA	NA	NA	NA	NA
Fluorene	2.1	NA	NA	NA	NA	NA
Hexachlorobenzene	1.5	NA	NA	NA	NA	NA
Hexachlorobutadiene	4.8	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	33	NA	NA	NA	NA	NA
Hexachloroethane	4.7	NA	NA	NA	NA	NA
Hexachloropropene	1	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	1.2	NA	NA	NA	NA	NA
Isodrin	1	NA	NA	NA	NA	NA
Isophorone	1.9	NA	NA	NA	NA	NA
Isosafrole	2	NA	NA	NA	NA	NA
Methapyrilene	11	NA	NA	NA	NA	NA
Methyl methanesulfonate	1	NA	NA	NA	NA	NA
N-Nitroso-di-n-butylamine	1	NA	NA	NA	NA	NA
N-Nitroso-di-n-propylamine	1.9	NA	NA	NA	NA	NA
N-Nitrosodiethylamine	10*	NA	NA	NA	NA	NA
N-Nitrosodimethylamine	2.4	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	1.8	NA	NA	NA	NA	NA
N-Nitrosomethylethylamine	1	NA	NA	NA	NA	NA
N-Nitrosomorpholine	1	NA	NA	NA	NA	NA
N-Nitrosopiperidine	1	NA	NA	NA	NA	NA
N-Nitrosopyrrolidine	1	NA	NA	NA	NA	NA
Naphthalene	3.4	NA	NA	NA	NA	NA
Nitrobenzene	2.5	NA	NA	NA	NA	NA

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref :	Method	ST14-26		ST14-28		ST14-29		ST14-W16		ST14-W18	
Sample ID :	Detection	ST14-26WG03		ST14-28WG03		ST14-29WG03		ST14-W16WG03		ST14-W18WG03	
Sample Date :	Limit	20-Jan-98		19-Jan-98		20-Jan-98		21-Jan-98		22-Jan-98	
O,O,O-Triethylphosphoro-thioate	1	NA		NA		NA		NA		NA	
Parathion	1	NA		NA		NA		NA		NA	
Pentachlorobenzene	1	NA		NA		NA		NA		NA	
Pentachloroethane	1	NA		NA		NA		NA		NA	
Pentachloronitrobenzene	1	NA		NA		NA		NA		NA	
Pentachlorophenol	18	NA		NA		NA		NA		NA	
Phenacetin	1	NA		NA		NA		NA		NA	
Phenanthrene	1.4	NA		NA		NA		NA		NA	
Phenol	2.7	NA		NA		NA		NA		NA	
Pronamide	1	NA		NA		NA		NA		NA	
Pyrene	1.6	NA		NA		NA		NA		NA	
Pyridine	1.2	NA		NA		NA		NA		NA	
Safrole	1	NA		NA		NA		NA		NA	
Sulfotepp	1	NA		NA		NA		NA		NA	
a,a-Dimethylphenethyl-amine	19	NA		NA		NA		NA		NA	
bis(2-Chloroethoxy)methane	2.7	NA		NA		NA		NA		NA	
bis(2-Chloroethyl) ether	2.2	NA		NA		NA		NA		NA	
bis(2-Ethylhexyl)phthalate	2.7	NA		NA		NA		NA		NA	
o-Toluidine	1	NA		NA		NA		NA		NA	
p-Dimethylaminoazobenzene	1.1	NA		NA		NA		NA		NA	
p-Phenylenediamine	10	NA		NA		NA		NA		NA	
Polychlorinated Dibenzo-p-Dioxins and Dibenzofuran - SW8280/METHOD (ng/l)											
2,3,7,8-TCDD	0.36	NA		NA		NA		NA		NA	
HxCDDs (total)	0.78	NA		NA		NA		NA		NA	
HxCDFs (total)	1.6	NA		NA		NA		NA		NA	
PeCDDs (total)	46	NA		NA		NA		NA		NA	
PeCDFs (total)	6.4	NA		NA		NA		NA		NA	
TCDDs (total)	0.36	NA		NA		NA		NA		NA	
TCDFs (total)	0.76	NA		NA		NA		NA		NA	
Total and Amendable Cyanide (Colorimetric, Automat - SW9012/METHOD (mg/l)											
Cyanide	0.001	NA		NA		NA		NA		NA	
SW846 9056 - SW9056/NONE (mg/l)											
Bromide	0.051	0.73		1.9		0.26	F	0.85		2.2	
Chloride	0.1	24.3		28.3		16.2		23.2		41.5	
Fluoride	0.05	0.05	U	0.44	F	0.47	F	0.46	F	0.41	F
Nitrate as N	0.05	0.3	F	0.36	F	0.05	U	0.32	F	0.05	U
Nitrite as N	0.05	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U
Orthophosphate as P	0.05	0.05	U	0.05	U	0.05	U	1	U	0.05	U
Sulfate	0.1	19		0.61	F	5.1		1.5		13.5	
Total Organic Carbon - SW9060/NONE (mg/l)											
Total Organic Carbon	0.22	1.7	U	11.9	U	5.4		11.6		10.7	

NOTE:
* PQLs used if MDL not reported.

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref : Sample ID : Sample Date :	Method Detection Limit	ST14-W21 ST14-W21WG03 22-Jan-98		ST14-W31 ST14-W31WG03 26-Jan-98 Appendix IX	
Alkalinity (Titrimetric) - E310.1/NONE (mg/l)					
Alkalinity, Bicarb. as CaCO3 at pH 4.5	0.69	443		339	
Alkalinity, Carb. as CaCO3 at pH 8.3	0.69	0.69	U	0.69	U
Alkalinity, Hydrox. as CaCO3	0.69	0.69	U	0.69	U
Alkalinity, Total as CaCO3 at pH 4.5	0.69	443		339	
Sulfide (Colorimetric, Methylene Blue) - E376.2/NONE (mg/l)					
Sulfide, Total	0.009	NA		0.009	U
EPA-9/RSK-175 Modified A2720C - M2720C/NONE (ug/l)					
Ethane	0.092	7.9		0.092	U
Ethene	0.1	0.1	U	0.1	U
Methane	0.052	290		0.052	U
Inductively Coupled Plasma Atomic Emission Spectro - SW6010/SW3005 (mg/l)					
Aluminum	0.052	0.052	U	NA	
Calcium	0.034	191		NA	
Iron	0.026	14		NA	
Magnesium	0.07	6.2		NA	
Potassium	0.5	0.5	U	NA	
Sodium	0.72	14.5	J	NA	
Tin	0.01	NA		0.076	F
Inductively Coupled Plasma Mass Spectrometry - SW6020/SW3020 (mg/l)					
Antimony	0.00017	0.00017	U	0.00017	U
Arsenic	0.00019	0.054	F	0.0012	F
Barium	0.0002	0.15		0.15	
Beryllium	0.000069	0.000069	U	0.000069	U
Cadmium	0.00004	0.00004	U	0.00004	U
Chromium	0.0002	0.07	UJ	0.07	UJ
Cobalt	0.00002	0.0015	F	0.00056	F
Copper	0.00084	0.06	UJ	0.06	UJ
Lead	0.0002	0.5	U	0.00044	F
Manganese	0.0002	0.42	J	0.02	UJ
Molybdenum	0.0002	0.0016	F	0.00086	F
Nickel	0.0002	0.069	F	0.15	UJ
Selenium	0.00007	0.0031	F	0.0052	F
Silver	0.0002	0.0002	UJ	0.0002	UJ
Thallium	0.00002	0.000032	F	0.00005	F
Vanadium	0.00017	0.00043	F	0.00052	F
Zinc	0.0011	0.02	U	0.02	U
Mercury in Liquid Waste (Manual Cold-Vapor Technig - SW7470/METHOD (mg/l)					
Mercury	0.00011	0.00011	U	0.00011	U
Aromatic Volatile Organics - SW8020/SW5030 (ug/l)					
1,2-Dichlorobenzene	0.18	0.18	U	NA	
1,3-Dichlorobenzene	0.09	0.09	U	NA	

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref : Sample ID : Sample Date :	Method Detection Limit	ST14-W21 ST14-W21WG03 22-Jan-98		ST14-W31 ST14-W31WG03 26-Jan-98 Appendix IX	
1,4-Dichlorobenzene	0.33	0.33	U	NA	
Benzene	0.056	0.056	U	NA	
Chlorobenzene	0.085	0.085	U	NA	
Ethylbenzene	0.054	0.054	U	NA	
Toluene	0.15	0.15	U	NA	
Xylenes (total)	0.15	0.15	U	NA	
tert-Butyl methyl ether	0.01	NA		NA	
Organochlorine Pesticides and PCBs - SW8080/SW3510 (ug/l)					
4,4'-DDD	0.012	NA		0.012	U
4,4'-DDE	0.021	NA		0.021	U
4,4'-DDT	0.033	NA		0.033	U
Aldrin	0.023	NA		0.023	U
Aroclor 1016	0.11	NA		0.11	UJ
Aroclor 1221	0.45	NA		0.45	UJ
Aroclor 1232	0.65	NA		0.65	UJ
Aroclor 1242	0.18	NA		0.18	UJ
Aroclor 1248	0.22	NA		0.22	UJ
Aroclor 1254	0.13	NA		0.13	UJ
Aroclor 1260	0.12	NA		0.12	UJ
Chlordane	0.056	NA		0.056	UJ
Dieldrin	0.022	NA		0.022	U
Endosulfan I	0.025	NA		0.025	U
Endosulfan II	0.022	NA		0.022	U
Endosulfan sulfate	0.027	NA		0.027	U
Endrin	0.027	NA		0.027	U
Endrin aldehyde	0.022	NA		0.022	U
Endrin ketone	0.026	NA		0.026	UJ
Heptachlor	0.023	NA		0.023	UJ
Heptachlor epoxide	0.024	NA		0.024	U
Kepone	1.1	NA		1.1	UJ
Methoxychlor	0.025	NA		0.025	U
Toxaphene	0.18	NA		0.18	UJ
alpha-BHC	0.022	NA		0.022	U
alpha-Chlordane	0.025	NA		0.025	U
beta-BHC	0.026	NA		0.026	U
delta-BHC	0.022	NA		0.022	U
gamma-BHC (Lindane)	0.022	NA		0.022	U
gamma-Chlordane	0.025	NA		0.025	U
Organophosphorus Pesticides - SW8140/SW3510 (ug/l)					
Dimethoate	0.03	NA		0.03	U
Disulfoton	0.055	NA		0.055	R
Ethyl parathion	0.064	NA		0.064	U
Famphur	0.06	NA		0.06	U
Methyl parathion	0.051	NA		0.051	U
O,O,O-Triethylphosphoro-thioate	0.048	NA		0.048	U
Phorate (Thimet)	0.047	NA		0.047	U

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref : Sample ID : Sample Date :	Method Detection Limit	ST14-W21 ST14-W21WG03 22-Jan-98	ST14-W31 ST14-W31WG03 26-Jan-98 Appendix IX	
Sulfotepp	0.035	NA	0.035	U
Thionazin	0.048	NA	0.048	U
Chlorinated Herbicides - SW8150/SW3510 (ug/l)				
2,4,5-T	0.14	NA	0.14	R
2,4,5-TP (Silvex)	0.14	NA	0.14	R
2,4-D	0.53	NA	0.54	R
Volatile Organic Compounds by Gas Chromatograph/Mas - SW8260/SW5030 (ug/l)				
1,1,1,2-Tetrachloroethane	5*	NA	5	*U
1,1,1-Trichloroethane	1.3	NA	1.3	U
1,1,2,2-Tetrachloroethane	1.2	NA	1.2	U
1,1,2-Trichloroethane	1.2	NA	1.2	U
1,1-Dichloroethane	1.4	NA	1.4	U
1,1-Dichloroethene	1.3	NA	1.3	U
1,1-Dichloropropene	0.094	NA	NA	
1,2,3-Trichlorobenzene	0.14	NA	NA	
1,2,3-Trichloropropane	0.95	NA	0.95	U
1,2,4-Trichlorobenzene	0.13	NA	NA	
1,2,4-Trimethylbenzene	0.1	NA	NA	
1,2-Dibromo-3-chloro-propane (DBCP)	10*	NA	10	*U
1,2-Dibromoethane (EDB)	5*	NA	5	*U
1,2-Dichlorobenzene	0.13	NA	NA	
1,2-Dichloroethane	1.5	NA	1.5	U
1,2-Dichloropropane	0.74	NA	0.74	U
1,3,5-Trimethylbenzene	0.13	NA	NA	
1,3-Dichlorobenzene	0.15	NA	NA	
1,3-Dichloropropane	0.11	NA	NA	
1,4-Dichlorobenzene	0.11	NA	NA	
1,4-Dioxane	57	NA	57	U
1-Chlorohexane	0.5*	NA	NA	
2,2-Dichloropropane	0.1	NA	NA	
2-Butanone (MEK)	1.5	NA	1.5	U
2-Chloroethyl vinyl ether	1.4	NA	1.4	U
2-Chlorotoluene	0.15	NA	NA	
2-Hexanone	0.85	NA	0.85	U
4-Chlorotoluene	0.1	NA	NA	
4-Methyl-2-pentanone (MIBK)	1.1	NA	1.1	U
Acetone	0.96	NA	0.96	U
Acetonitrile	12	NA	12	U
Acrolein	11	NA	11	U
Acrylonitrile	5.6	NA	5.6	U
Allyl chloride	0.6	NA	0.6	U
Benzene	1.2	NA	1.2	U
Bromobenzene	0.13	NA	NA	
Bromochloromethane	0.1	NA	NA	
Bromodichloromethane	1.3	NA	1.3	U
Bromoform	1.1	NA	1.1	U

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref : Sample ID : Sample Date :	Method Detection Limit	ST14-W21 ST14-W21WG03 22-Jan-98	ST14-W31 ST14-W31WG03 26-Jan-98 Appendix IX	
Bromomethane	1.3	NA	1.3	U
Carbon disulfide	1.3	NA	1.3	U
Carbon tetrachloride	1.5	NA	1.5	U
Chlorobenzene	1.2	NA	1.2	U
Chloroethane	1.4	NA	1.4	U
Chloroform	1.4	NA	1.4	U
Chloromethane	1.5	NA	1.5	U
Chloroprene	1	NA	1	U
Dibromochloromethane	1.3	NA	1.3	U
Dibromomethane	5*	NA	5	*U
Dichlorodifluoromethane	10*	NA	10	*U
EDB (1,2-Dibromoethane)	0.11	NA	NA	
Ethyl methacrylate	0.74	NA	0.74	U
Ethylbenzene	1.2	NA	1.2	U
Hexachlorobutadiene	0.15	NA	NA	
Iodomethane	1.3	NA	1.3	U
Isobutyl alcohol	19	NA	19	U
Isopropylbenzene (Cumene)	0.13	NA	NA	
Methacrylonitrile	0.95	NA	0.95	U
Methyl methacrylate	2.5	NA	2.5	U
Methylene chloride	1.2	NA	1.2	U
Naphthalene	0.44	NA	NA	
Propionitrile	1.5	NA	1.5	U
Styrene	1.3	NA	1.3	U
Tetrachloroethene	1.2	NA	1.2	U
Toluene	1.2	NA	1.2	U
Trichloroethene	1.2	NA	1.2	U
Trichlorofluoromethane	10*	NA	10	*U
Vinyl acetate	1.8	NA	1.8	U
Vinyl chloride	1.2	NA	1.2	U
Xylenes (total)	0.75	NA	0.75	U
cis-1,2-Dichloroethene	0.1	NA	NA	
cis-1,3-Dichloropropene	1.3	NA	1.3	U
m- & p-Xylenes	0.28	NA	NA	
n-Butylbenzene	0.13	NA	NA	
n-Propylbenzene	0.13	NA	NA	
o-Xylene	0.11	NA	NA	
p-Isopropyltoluene (p-Cymene)	0.13	NA	NA	
sec-Butylbenzene	0.17	NA	NA	
tert-Butylbenzene	0.13	NA	NA	
trans-1,2-Dichloroethene	1.3	NA	1.3	U
trans-1,3-Dichloropropene	1.2	NA	1.2	U
trans-1,4-Dichloro-2-butene	1.2	NA	1.2	U
GC/MS for Semivolatile Organics (Capillary Column - SW8270/SW3520 (ug/l)				
1,2,4,5-Tetrachloro-benzene	1	NA	1	U
1,2,4-Trichlorobenzene	4.3	NA	4.5	U
1,2-Dichlorobenzene	4	NA	4.2	U

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref :	Method	ST14-W21	ST14-W31	
Sample ID :	Detection	ST14-W21WG03	ST14-W31WG03	
Sample Date :	Limit	22-Jan-98	26-Jan-98	
			Appendix IX	
1,3,5-Trinitrobenzene	1	NA	1	U
1,3-Dichlorobenzene	4.1	NA	4.3	U
1,3-Dinitrobenzene	1	NA	1	U
1,4-Dichlorobenzene	4	NA	4.2	U
1,4-Dinitrobenzene	1	NA	1	U
1,4-Naphthoquinone	1.3	NA	1.4	U
1-Chloronaphthalene	1	NA	1	U
1-Naphthylamine	2	NA	2.1	U
2,2'-oxybis(1-chloropropane)	1.7	NA	1.8	U
2,3,4,6-Tetrachlorophenol	1.3	NA	1.4	U
2,4,5-Trichlorophenol	1.8	NA	1.9	U
2,4,6-Trichlorophenol	2.2	NA	2.3	U
2,4-Dichlorophenol	2.7	NA	2.8	U
2,4-Dimethylphenol	1.4	NA	1.5	U
2,4-Dinitrophenol	19	NA	20	U
2,4-Dinitrotoluene	1.8	NA	1.9	U
2,6-Dichlorophenol	1	NA	1	U
2,6-Dinitrotoluene	1.9	NA	2	U
2-Acetylaminofluorene	1	NA	1	U
2-Chloronaphthalene	3.4	NA	3.5	U
2-Chlorophenol	2.7	NA	2.8	U
2-Methylnaphthalene	3.6	NA	3.8	U
2-Methylphenol	2	NA	2.1	U
2-Naphthylamine	1.2	NA	1.3	U
2-Nitroaniline	12	NA	13	U
2-Nitrophenol	2.7	NA	2.8	U
2-Picoline	1	NA	1	U
3,3'-Dichlorobenzidine	1.9	NA	2	U
3,3'-Dimethylbenzidine	3.5	NA	3.6	U
3-Methylcholanthrene	2.7	NA	2.8	U
3-Nitroaniline	15	NA	16	U
3/4-Methylphenol	1.8	NA	1.9	U
4,6-Dinitro-2-methylphenol	20	NA	21	U
4-Aminobiphenyl	1	NA	1	U
4-Bromophenyl phenyl ether	1.3	NA	1.4	U
4-Chloro-3-methylphenol	2.2	NA	2.3	U
4-Chloroaniline	1.5	NA	1.6	U
4-Chlorophenyl phenyl ether	1.4	NA	1.5	U
4-Nitroaniline	25	NA	26	U
4-Nitrophenol	19	NA	20	U
4-Nitroquinoline-1-oxide	10	NA	10	U
5-Nitro-o-toluidine	1.2	NA	1.3	U
7,12-Dimethylbenz(a)-anthracene	1	NA	1	U
Acenaphthene	2.2	NA	2.3	U
Acenaphthylene	2.8	NA	2.9	U
Acetophenone	1	NA	1	U
Aniline	1.5	NA	1.6	U
Anthracene	1.5	NA	1.6	U

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref : Sample ID : Sample Date :	Method Detection Limit	ST14-W21 ST14-W21WG03 22-Jan-98	ST14-W31 ST14-W31WG03 26-Jan-98 Appendix IX	
Aramite	1	NA	1	U
Azobenzene	1.5	NA	1.6	U
Benzo(a)anthracene	1.5	NA	1.6	U
Benzo(a)pyrene	1.6	NA	1.7	U
Benzo(b)fluoranthene	2.1	NA	2.2	U
Benzo(g,h,i)perylene	1.5	NA	1.6	U
Benzo(k)fluoranthene	2	NA	2.1	U
Benzoic acid	22	NA	23	U
Benzyl alcohol	2.7	NA	2.8	U
Butyl benzyl phthalate	1.8	NA	1.9	U
Carbazole	1.8	NA	1.9	U
Chlorobenzilate	1	NA	1	U
Chrysene	1.5	NA	1.6	U
Di-n-butyl phthalate	1.9	NA	2	U
Di-n-octyl phthalate	1.2	NA	1.3	U
Diallate	2	NA	2.1	U
Dibenz(a,h)anthracene	1.3	NA	1.4	U
Dibenz(a,j)acridine	1	NA	1	U
Dibenzofuran	1.7	NA	1.8	U
Diethyl phthalate	1.9	NA	2	U
Dimethoate	1	NA	1	U
Dimethyl phthalate	1.8	NA	1.9	U
Diphenylamine	10*	NA	10	*U
Ethyl methanesulfonate	1	NA	1	U
Fluoranthene	1.6	NA	1.7	U
Fluorene	2.1	NA	2.2	U
Hexachlorobenzene	1.5	NA	1.6	U
Hexachlorobutadiene	4.8	NA	5	U
Hexachlorocyclopentadiene	33	NA	34	U
Hexachloroethane	4.7	NA	4.9	U
Hexachloropropene	1	NA	1	U
Indeno(1,2,3-cd)pyrene	1.2	NA	1.3	U
Isodrin	1	NA	1	U
Isophorone	1.9	NA	2	U
Isosafrole	2	NA	2.1	U
Methapyrilene	11	NA	11	U
Methyl methanesulfonate	1	NA	1	U
N-Nitroso-di-n-butylamine	1	NA	1	U
N-Nitroso-di-n-propylamine	1.9	NA	2	U
N-Nitrosodiethylamine	10*	NA	10	*U
N-Nitrosodimethylamine	2.4	NA	2.5	U
N-Nitrosodiphenylamine	1.8	NA	1.9	U
N-Nitrosomethylethylamine	1	NA	1	U
N-Nitrosomorpholine	1	NA	1	U
N-Nitrosopiperidine	1	NA	1	U
N-Nitrosopyrrolidine	1	NA	1	U
Naphthalene	3.4	NA	3.5	U
Nitrobenzene	2.5	NA	2.6	U

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Data Summary Table
Carswell AFB
East Area Groundwater

Locxref : Sample ID : Sample Date :	Method Detection Limit	ST14-W21 ST14-W21WG03 22-Jan-98		ST14-W31 ST14-W31WG03 26-Jan-98 Appendix IX	
O,O,O-Triethylphosphoro-thioate	1	NA		1	U
Parathion	1	NA		1	U
Pentachlorobenzene	1	NA		1	U
Pentachloroethane	1	NA		1	U
Pentachloronitrobenzene	1	NA		1	U
Pentachlorophenol	18	NA		19	U
Phenacetin	1	NA		1	U
Phenanthrene	1.4	NA		1.5	U
Phenol	2.7	NA		2.8	U
Pronamide	1	NA		1	U
Pyrene	1.6	NA		1.7	U
Pyridine	1.2	NA		1.3	U
Safrole	1	NA		1	U
Sulfotepp	1	NA		1	U
a,a-Dimethylphenethyl-amine	19	NA		20	U
bis(2-Chloroethoxy)methane	2.7	NA		2.8	U
bis(2-Chloroethyl) ether	2.2	NA		2.3	U
bis(2-Ethylhexyl)phthalate	2.7	NA		2.8	U
o-Toluidine	1	NA		1	U
p-Dimethylaminoazobenzene	1.1	NA		1.1	U
p-Phenylenediamine	10	NA		10	U
Polychlorinated Dibenzo-p-Dioxins and Dibenzofuran - SW8280/METHOD (ng/l)					
2,3,7,8-TCDD	0.36	NA		0.25	U
HxCDDs (total)	0.78	NA		0.41	U
HxCDFs (total)	1.6	NA		0.27	U
PeCDDs (total)	46	NA		2.7	U
PeCDFs (total)	6.4	NA		1.3	U
TCDDs (total)	0.36	NA		0.35	U
TCDFs (total)	0.76	NA		0.58	U
Total and Amendable Cyanide (Colorimetric, Automat - SW9012/METHOD (mg/l)					
Cyanide	0.001	NA		0.0015	F
SW846 9056 - SW9056/NONE (mg/l)					
Bromide	0.051	0.58		0.65	
Chloride	0.1	8.6		24.2	
Fluoride	0.05	0.52	F	0.13	F
Nitrate as N	0.05	0.05	U	3.1	
Nitrite as N	0.05	0.05	U	0.05	U
Orthophosphate as P	0.05	0.05	U	0.05	U
Sulfate	0.1	17.5		29.4	
Total Organic Carbon - SW9060/NONE (mg/l)					
Total Organic Carbon	0.22	5.2		0.97	F

NOTE:
* PQLs used if MDL not reported.

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TAB

East Area Laboratory Results
Positive Results

Positive Results Summary Table
Carswell AFB
East Area Groundwater

Locxref : Sample ID : Sample Date :	Method Detection Limit	17M 17MWG03 20-Jan-98		BGS-MW03 BGSMW03WG03 22-Jan-98		BGS-MW05 BGSMW05WG03 22-Jan-98		BGS-MW06 BGSMW06WG03 22-Jan-98		BSS-B BSS-BWG03 23-Jan-98	
Alkalinity (Titrimetric) - E310.1/NONE (mg/l)											
Alkalinity, Bicarb. as CaCO3 at pH 4.5	0.69	295		NA		NA		NA		NA	
Alkalinity, Total as CaCO3 at pH 4.5	0.69	295		NA		NA		NA		NA	
Sulfide (Colorimetric, Methylene Blue) - E376.2/NONE (mg/l)											
Sulfide, Total	0.009	NA		NA		NA		NA		NA	
EPA-9/RSK-175 Modified A2720C - M2720C/NONE (ug/l)											
Ethane	0.092	3.5		NA		NA		NA		NA	
Methane	0.052	2900		NA		NA		NA		NA	
Inductively Coupled Plasma Atomic Emission Spectro - SW6010/SW3005 (mg/l)											
Calcium	0.034	NA		NA		NA		NA		NA	
Iron	0.026	NA		NA		NA		NA		NA	
Magnesium	0.07	NA		NA		NA		NA		NA	
Sodium	0.72	NA		NA		NA		NA		NA	
Tin	0.01	NA		NA		NA		NA		NA	
Inductively Coupled Plasma Mass Spectrometry - SW6020/SW3020 (mg/l)											
Antimony	0.00017	NA		NA		NA		NA		NA	
Arsenic	0.00019	NA		NA		NA		NA		NA	
Barium	0.0002	NA		NA		NA		NA		NA	
Beryllium	0.000069	NA		NA		NA		NA		NA	
Cadmium	0.00004	NA		NA		NA		NA		NA	
Chromium	0.0002	NA		NA		NA		NA		NA	
Cobalt	0.00002	NA		NA		NA		NA		NA	
Copper	0.00084	NA		NA		NA		NA		NA	
Lead	0.0002	NA		NA		NA		NA		NA	
Manganese	0.0002	NA		NA		NA		NA		NA	
Molybdenum	0.0002	NA		NA		NA		NA		NA	
Nickel	0.0002	NA		NA		NA		NA		NA	
Selenium	0.00007	NA		NA		NA		NA		NA	
Thallium	0.00002	NA		NA		NA		NA		NA	
Vanadium	0.00017	NA		NA		NA		NA		NA	
Zinc	0.0011	NA		NA		NA		NA		NA	
Mercury in Liquid Waste (Manual Cold-Vapor Technig - SW7470/METHOD (mg/l)	No Analytes Detected										
Aromatic Volatile Organics - SW8020/SW5030 (ug/l)											
1,4-Dichlorobenzene	0.33	0.82	U	33	U	0.33	U	0.33	U	66	U
Benzene	0.056	0.14	U	1400		0.056	U	0.056	U	11	U
Chlorobenzene	0.085	0.21	U	8.5	U	0.085	U	0.085	U	17	U
Ethylbenzene	0.054	0.14	U	38	F	0.054	U	0.054	U	1700	
Toluene	0.15	0.38	U	26	F	2	U	2	U	7600	
Xylenes (total)	0.15	0.38	U	75	F	0.15	U	0.15	U	12000	
tert-Butyl methyl ether	0.01	NA		1	U	0.01	U	0.01	U	2	U
Organochlorine Pesticides and PCBs - SW8080/SW3510 (ug/l)	No Analytes Detected										

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Positive Results Summary Table
Carswell AFB
East Area Groundwater

Locxref : Sample ID : Sample Date :	Method Detection Limit	17M 17MWG03 20-Jan-98		BGS-MW03 BGSMW03WG03 22-Jan-98	BGS-MW05 BGSMW05WG03 22-Jan-98	BGS-MW06 BGSMW06WG03 22-Jan-98	BSS-B BSS-BWG03 23-Jan-98
Organophosphorus Pesticides - SW8140/SW3510 (ug/l)	No Analytes Detected						
Chlorinated Herbicides - SW8150/SW3510 (ug/l)	No Analytes Detected						
Volatile Organic Compounds by Gas Chromatgraph/Mas - SW8260/SW5030 (ug/l)							
1,2,3-Trichlorobenzene	0.13	NA		NA	NA	NA	NA
Acetone	0.96	NA		NA	NA	NA	NA
Naphthalene	0.44	NA		NA	NA	NA	NA
Trichloroethene	1.2	NA		NA	NA	NA	NA
Vinyl chloride	1.2	NA		NA	NA	NA	NA
cis-1,2-Dichloroethene	0.1	NA		NA	NA	NA	NA
tert-Butylbenzene	0.13	NA		NA	NA	NA	NA
GC/MS for Semivolatile Organics (Capillary Column - SW8270/SW3520 (ug/l)							
2-Methylnaphthalene	3.6	NA		NA	NA	NA	NA
Dibenzofuran	1.7	NA		NA	NA	NA	NA
Polychlorinated Dibenzo-p-Dioxins and Dibenzofuran - SW8280/METHOD (ng/l)	No Analytes Detected						
Total and Amendable Cyanide (Colorimetric, Automat - SW9012/METHOD (mg/l)							
Cyanide	0.001	NA		NA	NA	NA	NA
SW846 9056 - SW9056/NONE (mg/l)							
Bromide	0.051	0.51		NA	NA	NA	NA
Chloride	0.1	27.8		NA	NA	NA	NA
Fluoride	0.05	0.41	F	NA	NA	NA	NA
Nitrate as N	0.05	0.05	U	NA	NA	NA	NA
Nitrite as N	0.05	0.05	U	NA	NA	NA	NA
Orthophosphate as P	0.05	0.05	U	NA	NA	NA	NA
Sulfate	0.1	0.98	F	NA	NA	NA	NA
Total Organic Carbon - SW9060/NONE (mg/l)							
Total Organic Carbon	0.22	6.3		NA	NA	NA	NA

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Positive Results Summary Table
Carswell AFB
East Area Groundwater

Locxref :	Method	LF01-1D		MW-1		MW-10		SD13-01		3-02	
Sample ID :	Detection	LF01-1DWG03		MW-1WG03		MW-10WG03		SD13-01WG03		2WG03	
Sample Date :	Limit	27-Jan-98		26-Jan-98		26-Jan-98		27-Jan-98		an-98	
		Appendix IX						Appendix IX		dix IX	
Alkalinity (Titrimetric) - E310.1/NONE (mg/l)											
Alkalinity, Bicarb. as CaCO3 at pH 4.5	0.69	NA		NA		NA		327		317	
Alkalinity, Total as CaCO3 at pH 4.5	0.69	NA		NA		NA		327		317	
Sulfide (Colorimetric, Methylene Blue) - E376.2/NONE (mg/l)											
Sulfide, Total	0.009	0.017	F	NA		NA		0.009	U	0.022	F
EPA-9/RSK-175 Modified A2720C - M2720C/NONE (ug/l)											
Ethane	0.092	NA		NA		NA		4.8		15	
Methane	0.052	NA		NA		NA		6100	B	4600	
Inductively Coupled Plasma Atomic Emission Spectro - SW6010/SW3005 (mg/l)											
Calcium	0.034	NA		NA		177		NA		NA	
Iron	0.026	NA		NA		6.2		NA		NA	
Magnesium	0.07	NA		NA		13.2		NA		NA	
Sodium	0.72	NA		NA		55	J	NA		NA	
Tin	0.01	0.12		NA		NA		0.11		0.097	F
Inductively Coupled Plasma Mass Spectrometry - SW6020/SW3020 (mg/l)											
Antimony	0.00017	0.4	U	NA		0.4	U	0.00017	U	0.00017	U
Arsenic	0.00019	0.0036	F	NA		0.022	F	0.056	F	0.026	F
Barium	0.0002	0.082		NA		0.16		0.17		0.17	
Beryllium	0.000069	0.000069	U	NA		0.000069	U	0.000069	U	0.000069	U
Cadmium	0.00004	0.000043	F	NA		0.000044	F	0.00004	U	0.00004	U
Chromium	0.0002	0.0002	UJ	NA		0.0002	UJ	0.0002	UJ	0.0002	UJ
Cobalt	0.00002	0.0011	F	NA		0.0061	F	0.0017	F	0.00048	F
Copper	0.00084	0.06	UJ	NA		0.06	UJ	0.06	UJ	0.0027	F
Lead	0.0002	0.00033	F	NA		0.0058	F	0.00034	F	0.00044	F
Manganese	0.0002	0.34	J	NA		4.9	J	0.059		0.26	
Molybdenum	0.0002	0.0012	F	NA		0.0025	F	0.0059	F	0.005	F
Nickel	0.0002	0.011	F	NA		0.15	UJ	0.0097	F	0.0055	F
Selenium	0.00007	0.0021	F	NA		0.0072	F	0.0037	F	0.0045	F
Thallium	0.00002	0.00002	U	NA		0.000044	F	0.000024	F	0.000025	F
Vanadium	0.00017	0.00017	UJ	NA		0.00023	F	0.00017	UJ	0.00017	UJ
Zinc	0.0011	0.02	U	NA		0.02	U	0.02	U	0.013	F
Mercury in Liquid Waste (Manual Cold-Vapor Techniq - SW7470/METHOD (mg/l)	No Analytes Detected										
Aromatic Volatile Organics - SW8020/SW5030 (ug/l)											
1,4-Dichlorobenzene	0.33	NA		18	F	66	UJ	NA		NA	
Benzene	0.056	NA		2300		4900		NA		NA	
Chlorobenzene	0.085	NA		4.2	U	17	U	NA		NA	
Ethylbenzene	0.054	NA		1500		5200		NA		NA	
Toluene	0.15	NA		140	J	7300		NA		NA	
Xylenes (total)	0.15	NA		2900		14000		NA		NA	
tert-Butyl methyl ether	0.01	NA		310		400	F				
Organochlorine Pesticides and PCBs - SW8080/SW3510 (ug/l)	No Analytes Detected										

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Positive Results Summary Table
Carswell AFB
East Area Groundwater

Locxref : / Sample ID : / Sample Date :	Method Detection Limit	LF01-1D LF01-1DWG03 27-Jan-98 Appendix IX		MW-1 MW-1WG03 26-Jan-98	MW-10 MW-10WG03 26-Jan-98	SD13-01 SD13-01WG03 27-Jan-98 Appendix IX		SD13-02 SD13-02WG03 27-Jan-98 Appendix IX	
Organophosphorus Pesticides - SW8140/SW3510 (ug/l)	No Analytes Detected								
Chlorinated Herbicides - SW8150/SW3510 (ug/l)	No Analytes Detected								
Volatile Organic Compounds by Gas Chromatograph/Mas - SW8260/SW5030 (ug/l)									
1,2,3-Trichlorobenzene	0.13	NA		NA	NA	NA		NA	
Acetone	0.96	20	U	NA	NA	0.96	U	0.96	U
Naphthalene	0.44	NA		NA	NA	NA		NA	
Trichloroethene	1.2	1.2	U	NA	NA	1.2	U	1.2	U
Vinyl chloride	1.2	1.2	U	NA	NA	1.2	U	1.2	U
cis-1,2-Dichloroethene	0.1	NA		NA	NA	NA		NA	
tert-Butylbenzene	0.13	NA		NA	NA	NA		NA	
GC/MS for Semivolatile Organics (Capillary Column - SW8270/SW3520 (ug/l)									
2-Methylnaphthalene	3.6	3.6	U	NA	NA	5.2	F	8.1	F
Dibenzofuran	1.7	1.7	U	NA	NA	1.7	F	1.6	U
Polychlorinated Dibenzo-p-Dioxins and Dibenzofuran - SW8280/METHOD (ng/l)	No Analytes Detected								
Total and Amendable Cyanide (Colorimetric, Automat - SW9012/METHOD (mg/l)									
Cyanide	0.001	0.0014	F	NA	NA	0.001	U	0.001	F
SW846 9056 - SW9056/NONE (mg/l)									
Bromide	0.051	NA		NA	NA	0.66		0.75	
Chloride	0.1	NA		NA	NA	28.2		38.9	
Fluoride	0.05	NA		NA	NA	0.23	F	0.25	F
Nitrate as N	0.05	NA		NA	NA	0.05	U	0.05	U
Nitrite as N	0.05	NA		NA	NA	0.05	U	0.05	U
Orthophosphate as P	0.05	NA		NA	NA	0.05	U	0.05	U
Sulfate	0.1	NA		NA	NA	0.1	U	0.1	U
Total Organic Carbon - SW9060/NONE (mg/l)									
Total Organic Carbon	0.22	NA		NA	NA	6		4.6	

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Positive Results Summary Table
Carswell AFB
East Area Groundwater

Locxref :	Method	SD13-04		SD13-06		ST14-02		ST14-02		ST14-03	
Sample ID :	Detection	SD13-04WG03		SD13-06WG03		DUP04-WG03		ST14-02WG03		ST14-03WG03	
Sample Date :	Limit	26-Jan-98		28-Jan-98		21-Jan-98		21-Jan-98		22-Jan-98	
		Appendix IX		Appendix IX							
Alkalinity (Titrimetric) - E310.1/NONE (mg/l)											
Alkalinity, Bicarb. as CaCO3 at pH 4.5	0.69	372		458		362		361		249	
Alkalinity, Total as CaCO3 at pH 4.5	0.69	372		458		362		361		249	
Sulfide (Colorimetric, Methylene Blue) - E376.2/NONE (mg/l)											
Sulfide, Total	0.009	0.028	F	0.009	U	NA		NA		NA	
EPA-9/RSK-175 Modified A2720C - M2720C/NONE (ug/l)											
Ethane	0.092	6.5		0.31	F	1.4	J	2	J	0.19	F
Methane	0.052	6500		180		1300		1200		75	
Inductively Coupled Plasma Atomic Emission Spectro - SW6010/SW3005 (mg/l)											
Calcium	0.034	NA		NA		136		138		NA	
Iron	0.026	NA		NA		13.5		13.8		NA	
Magnesium	0.07	NA		NA		6.7		6.8		NA	
Sodium	0.72	NA		NA		20.9	J	21.4	J	NA	
Tin	0.01	0.091	F	0.099	F	NA		NA		NA	
Inductively Coupled Plasma Mass Spectrometry - SW6020/SW3020 (mg/l)											
Antimony	0.00017	0.00017	U	0.00017	U	0.00017	U	0.00065	F	NA	
Arsenic	0.00019	0.069	F	0.0027	F	0.012	F	0.011	F	NA	
Barium	0.0002	0.19		0.15		0.11		0.11		NA	
Beryllium	0.000069	0.000069	U	0.000069	U	0.000069	U	0.000069	U	NA	
Cadmium	0.00004	0.00004	U	0.000094	F	0.00004	UJ	0.00004	UJ	NA	
Chromium	0.0002	0.0002	UJ	0.07	UJ	0.00038	F	0.00032	F	NA	
Cobalt	0.00002	0.0036	F	0.00088	F	0.00037	F	0.00038	F	NA	
Copper	0.00084	0.06	UJ	0.06	UJ	0.6	U	0.6	U	NA	
Lead	0.0002	0.0018	F	0.5	U	0.5	U	0.5	U	NA	
Manganese	0.0002	0.02	UJ	0.14	J	0.23	J	0.23	J	NA	
Molybdenum	0.0002	0.004	F	0.0048	F	0.0019	F	0.0019	F	NA	
Nickel	0.0002	0.15	UJ	0.0093	F	0.15	U	0.015	U	NA	
Selenium	0.00007	0.0045	F	0.0049	F	0.8	U	0.8	U	NA	
Thallium	0.00002	0.000042	F	0.000051	F	0.000068	F	0.00006	F	NA	
Vanadium	0.00017	0.00029	F	0.00085	F	0.00038	F	0.00034	F	NA	
Zinc	0.0011	0.02	U	0.015	F	0.02	U	0.02	U	NA	
Mercury in Liquid Waste (Manual Cold-Vapor Techniq - SW7470/METHOD (mg/l)	No Analytes Detected										
Aromatic Volatile Organics - SW8020/SW5030 (ug/l)											
1,4-Dichlorobenzene	0.33	NA		NA		1.6	U	1.6	U	0.33	U
Benzene	0.056	NA		NA		56		57		0.056	U
Chlorobenzene	0.085	NA		NA		0.42	U	0.42	U	0.085	U
Ethylbenzene	0.054	NA		NA		0.27	U	0.27	U	0.054	U
Toluene	0.15	NA		NA		0.75	U	0.75	U	0.15	U
Xylenes (total)	0.15	NA		NA		0.75	U	0.75	U	0.15	U
tert-Butyl methyl ether	0.01										
Organochlorine Pesticides and PCBs - SW8080/SW3510 (ug/l)	No Analytes Detected										

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Positive Results Summary Table
Carswell AFB
East Area Groundwater

Locxref :	Method	SD13-04		SD13-06		ST14-02		ST14-02		ST14-03	
Sample ID :	Detection	SD13-04WG03		SD13-06WG03		DUP04-WG03		ST14-02WG03		ST14-03WG03	
Sample Date :	Limit	26-Jan-98		28-Jan-98		21-Jan-98		21-Jan-98		22-Jan-98	
		Appendix IX		Appendix IX							
Organophosphorus Pesticides - SW8140/SW3510 (ug/l)	No Analytes Detected										
Chlorinated Herbicides - SW8150/SW3510 (ug/l)	No Analytes Detected										
Volatile Organic Compounds by Gas Chromatgraph/Mas - SW8260/SW5030 (ug/l)											
1,2,3-Trichlorobenzene	0.13	NA		NA		NA		NA		NA	
Acetone	0.96	0.96	U	20	U	NA		NA		NA	
Naphthalene	0.44	NA		NA		NA		NA		NA	
Trichloroethene	1.2	1.2	U	1.2	U	NA		NA		NA	
Vinyl chloride	1.2	1.2	U	1.2	U	NA		NA		NA	
cis-1,2-Dichloroethene	0.1	NA		NA		NA		NA		NA	
tert-Butylbenzene	0.13	NA		NA		NA		NA		NA	
GC/MS for Semivolatile Organics (Capillary Column - SW8270/SW3520 (ug/l)											
2-Methylnaphthalene	3.6	54	J	3.5	U	NA		NA		NA	
Dibenzofuran	1.7	3.6	J	1.7	U	NA		NA		NA	
Polychlorinated Dibenzo-p-Dioxins and Dibenzofuran - SW8280/METHOD (ng/l)	No Analytes Detected										
Total and Amendable Cyanide (Colorimetric, Automat - SW9012/METHOD (mg/l)											
Cyanide	0.001	0.001	F	0.001	F	NA		NA		NA	
SW846 9056 - SW9056/NONE (mg/l)											
Bromide	0.051	0.8		0.79		0.61		0.6		0.6	
Chloride	0.1	26		25.8		24.9		24.9		24.7	
Fluoride	0.05	0.36	F	0.4	F	0.49	F	0.49	F	0.32	F
Nitrate as N	0.05	0.18	F	0.17	F	0.14	F	0.14	F	4.3	
Nitrite as N	0.05	0.05	U	0.05	U	0.05	U	0.05	U	0.27	F
Orthophosphate as P	0.05	1	U	0.05	U	1	U	0.05	U	0.05	U
Sulfate	0.1	0.1	U	42.1		0.1	U	0.1	U	34.2	
Total Organic Carbon - SW9060/NONE (mg/l)											
Total Organic Carbon	0.22	8.5		7.5		12.7		14.8		1.8	

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Positive Results Summary Table
Carswell AFB
East Area Groundwater

Locxref : Sample ID : Sample Date :	Method Detection Limit	ST14-04 DUP03-WG03 19-Jan-98		ST14-04 ST14-04WG03 19-Jan-98		ST14-14 ST14-14WG03 20-Jan-98		ST14-24 ST14-24WG03 21-Jan-98		ST14-26 DUP05-WG03 20-Jan-98	
Alkalinity (Titrimetric) - E310.1/NONE (mg/l)											
Alkalinity, Bicarb. as CaCO3 at pH 4.5	0.69	259		256		267		308		346	
Alkalinity, Total as CaCO3 at pH 4.5	0.69	259		256		267		308		346	
Sulfide (Colorimetric, Methylene Blue) - E376.2/NONE (mg/l)											
Sulfide, Total	0.009	NA		NA		NA		NA		NA	
EPA-9/RSK-175 Modified A2720C - M2720C/NONE (ug/l)											
Ethane	0.092	1.9	J	0.092	UJ	190		0.092	U	0.092	U
Methane	0.052	2600	UJ	0.5	UJ	2900		13		0.5	U
Inductively Coupled Plasma Atomic Emission Spectro - SW6010/SW3005 (mg/l)											
Calcium	0.034	NA		NA		93.5		109		165	
Iron	0.026	NA		NA		1.6		0.026	U	0.24	
Magnesium	0.07	NA		NA		5.3		9.1		8	
Sodium	0.72	NA		NA		29.2	J	27.1	J	19.7	UJ
Tin	0.01	NA		NA		NA		NA		NA	
Inductively Coupled Plasma Mass Spectrometry - SW6020/SW3020 (mg/l)											
Antimony	0.00017	NA		NA		0.00017	U	0.00017	U	0.4	U
Arsenic	0.00019	NA		NA		0.0027	F	0.001	F	0.0041	F
Barium	0.0002	NA		NA		0.042		0.21		0.13	
Beryllium	0.000069	NA		NA		0.000069	U	0.000069	U	0.00016	F
Cadmium	0.00004	NA		NA		0.00004	U	0.00004	UJ	0.000059	F
Chromium	0.0002	NA		NA		0.07	UJ	0.00023	F	0.07	UJ
Cobalt	0.00002	NA		NA		0.07	UJ	0.00028	F	0.07	UJ
Copper	0.00084	NA		NA		0.06	UJ	0.6	U	0.06	UJ
Lead	0.0002	NA		NA		0.5	U	0.5	U	0.5	U
Manganese	0.0002	NA		NA		0.19	J	0.038	J	0.082	J
Molybdenum	0.0002	NA		NA		0.0025	F	0.0002	UJ	0.00094	F
Nickel	0.0002	NA		NA		0.15	U	0.15	UJ	0.15	UJ
Selenium	0.00007	NA		NA		0.0032	F	0.8	UJ	0.0049	F
Thallium	0.00002	NA		NA		0.000077	F	0.00011	F	0.000095	F
Vanadium	0.00017	NA		NA		0.00017	UJ	0.0012	F	0.02	F
Zinc	0.0011	NA		NA		0.026	U	0.02	U	0.021	U
Mercury in Liquid Waste (Manual Cold-Vapor Technig - SW7470/METHOD (mg/l)	No Analytes Detected										
Aromatic Volatile Organics - SW8020/SW5030 (ug/l)											
1,4-Dichlorobenzene	0.33	1.6	U	1.6	U	NA		NA		NA	
Benzene	0.056	0.28	U	0.28	U	NA		NA		NA	
Chlorobenzene	0.085	0.42	U	9.3	F	NA		NA		NA	
Ethylbenzene	0.054	0.27	U	0.27	U	NA		NA		NA	
Toluene	0.15	0.75	U	0.75	U	NA		NA		NA	
Xylenes (total)	0.15	0.75	U	0.75	U	NA		NA		NA	
tert-Butyl methyl ether	0.01										
Organochlorine Pesticides and PCBs - SW8080/SW3510 (ug/l)	No Analytes Detected										

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Positive Results Summary Table
Carswell AFB
East Area Groundwater

Locxref : Sample ID : Sample Date :	Method Detection Limit	ST14-04 DUP03-WG03 19-Jan-98		ST14-04 ST14-04WG03 19-Jan-98		ST14-14 ST14-14WG03 20-Jan-98		ST14-24 ST14-24WG03 21-Jan-98		ST14-26 DUP05-WG03 20-Jan-98	
Organophosphorus Pesticides - SW8140/SW3510 (ug/l)	No Analytes Detected										
Chlorinated Herbicides - SW8150/SW3510 (ug/l)	No Analytes Detected										
Volatile Organic Compounds by Gas Chromatgraph/Mas - SW8260/SW5030 (ug/l)											
1,2,3-Trichlorobenzene	0.13	NA		NA		0.14	U	0.14	U	0.14	UJ
Acetone	0.96	NA		NA		NA		NA		NA	
Naphthalene	0.44	NA		NA		0.44	U	0.44	U	0.44	UJ
Trichloroethene	1.2	NA		NA		0.35	F	0.4	F	0.23	F
Vinyl chloride	1.2	NA		NA		0.23	U	1.7		0.23	U
cis-1,2-Dichloroethene	0.1	NA		NA		0.12	F	0.32	F	0.1	UJ
tert-Butylbenzene	0.13	NA		NA		0.76	F	0.13	U	0.13	U
GC/MS for Semivolatile Organics (Capillary Column - SW8270/SW3520 (ug/l)											
2-Methylnaphthalene	3.6	NA		NA		NA		NA		NA	
Dibenzofuran	1.7	NA		NA		NA		NA		NA	
Polychlorinated Dibenzo-p-Dioxins and Dibenzofuran - SW8280/METHOD (ng/l)	No Analytes Detected										
Total and Amendable Cyanide (Colorimetric, Automat - SW9012/METHOD (mg/l)											
Cyanide	0.001	NA		NA		NA		NA		NA	
SW846 9056 - SW9056/NONE (mg/l)											
Bromide	0.051	0.54		0.53		0.53		0.41	F	0.75	
Chloride	0.1	36.7		37.4		19.6		18.4		24.3	
Fluoride	0.05	0.39	F	0.39	F	0.32	F	0.52	F	0.05	U
Nitrate as N	0.05	0.13	F	0.13	F	0.05	U	0.22	F	0.32	F
Nitrite as N	0.05	0.05	U	0.05	U	0.05	U	0.05	U	0.22	F
Orthophosphate as P	0.05	0.05	U	0.05	U	0.05	U	1	U	0.05	U
Sulfate	0.1	0.77	F	0.76	F	1.2		17.9		19.2	
Total Organic Carbon - SW9060/NONE (mg/l)											
Total Organic Carbon	0.22	6.2	U	6.3	U	2.2	U	1	U	1.7	U

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Positive Results Summary Table
Carswell AFB
East Area Groundwater

Locxref :	Method	ST14-26		ST14-28		ST14-29		ST14-W16		ST14-W18	
Sample ID :	Detection	ST14-26WG03		ST14-28WG03		ST14-29WG03		ST14-W16WG03		ST14-W18WG03	
Sample Date :	Limit	20-Jan-98		19-Jan-98		20-Jan-98		21-Jan-98		22-Jan-98	
Alkalinity (Titrimetric) - E310.1/NONE (mg/l)											
Alkalinity, Bicarb. as CaCO3 at pH 4.5	0.69	344		478		434		346		246	
Alkalinity, Total as CaCO3 at pH 4.5	0.69	344		478		434		346		246	
Sulfide (Colorimetric, Methylene Blue) - E376.2/NONE (mg/l)											
Sulfide, Total	0.009	NA		NA		NA		NA		NA	
EPA-9/RSK-175 Modified A2720C - M2720C/NONE (ug/l)											
Ethane	0.092	0.092	U	2.8	J	2.3		2.9		5.6	
Methane	0.052	0.5	U	4800	J	3800		2800		5700	
Inductively Coupled Plasma Atomic Emission Spectro - SW6010/SW3005 (mg/l)											
Calcium	0.034	171		NA		NA		NA		122	
Iron	0.026	0.38		NA		NA		NA		8.7	
Magnesium	0.07	7.9		NA		NA		NA		5.1	
Sodium	0.72	20.1	U	NA		NA		NA		6.8	J
Tin	0.01	NA		NA		NA		NA		NA	
Inductively Coupled Plasma Mass Spectrometry - SW6020/SW3020 (mg/l)											
Antimony	0.00017	0.4	U	NA		NA		NA		0.4	U
Arsenic	0.00019	0.0048	F	NA		NA		NA		0.025	F
Barium	0.0002	0.13		NA		NA		NA		0.13	
Beryllium	0.000069	0.00023	F	NA		NA		NA		0.000068	F
Cadmium	0.00004	0.000085	F	NA		NA		NA		0.00004	U
Chromium	0.0002	0.07	UJ	NA		NA		NA		0.07	UJ
Cobalt	0.00002	0.07	UJ	NA		NA		NA		0.0025	F
Copper	0.00084	0.06	UJ	NA		NA		NA		0.06	U
Lead	0.0002	0.5	U	NA		NA		NA		0.02	F
Manganese	0.0002	0.097	J	NA		NA		NA		0.16	J
Molybdenum	0.0002	0.00097	F	NA		NA		NA		0.0021	F
Nickel	0.0002	0.15	UJ	NA		NA		NA		0.01	F
Selenium	0.00007	0.0048	F	NA		NA		NA		0.015	F
Thallium	0.00002	0.000075	F	NA		NA		NA		0.000071	F
Vanadium	0.00017	0.023	F	NA		NA		NA		0.00098	F
Zinc	0.0011	0.025	U	NA		NA		NA		0.044	U
Mercury in Liquid Waste (Manual Cold-Vapor Technig - SW7470/METHOD (mg/l)	No Analytes Detected										
Aromatic Volatile Organics - SW8020/SW5030 (ug/l)											
1,4-Dichlorobenzene	0.33	NA		1.6	U	0.82	U	0.66	U	3.3	U
Benzene	0.056	NA		0.28	U	0.14	U	9.4	J	0.56	U
Chlorobenzene	0.085	NA		0.42	U	8.5		0.17	U	0.85	U
Ethylbenzene	0.054	NA		0.27	U	0.14	U	0.11	U	0.54	U
Toluene	0.15	NA		0.75	U	0.38	U	0.3	U	1.5	U
Xylenes (total)	0.15	NA		0.75	U	0.38	U	0.3	U	1.5	U
tert-Butyl methyl ether	0.01										
Organochlorine Pesticides and PCBs - SW8080/SW3510 (ug/l)	No Analytes Detected										

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Positive Results Summary Table
Carswell AFB
East Area Groundwater

Locxref :	Method	ST14-26		ST14-28		ST14-29		ST14-W16		ST14-W18	
Sample ID :	Detection	ST14-26WG03		ST14-28WG03		ST14-29WG03		ST14-W16WG03		ST14-W18WG03	
Sample Date :	Limit	20-Jan-98		19-Jan-98		20-Jan-98		21-Jan-98		22-Jan-98	
Organophosphorus Pesticides - SW8140/SW3510 (ug/l)	No Analytes Detected										
Chlorinated Herbicides - SW8150/SW3510 (ug/l)	No Analytes Detected										
Volatile Organic Compounds by Gas Chromatograph/Mas - SW8260/SW5030 (ug/l)											
1,2,3-Trichlorobenzene	0.13	2	U	NA		NA		NA		NA	
Acetone	0.96	NA		NA		NA		NA		NA	
Naphthalene	0.44	0.6	F	NA		NA		NA		NA	
Trichloroethene	1.2	0.27	F	NA		NA		NA		NA	
Vinyl chloride	1.2	0.23	U	NA		NA		NA		NA	
cis-1,2-Dichloroethene	0.1	0.17	F	NA		NA		NA		NA	
tert-Butylbenzene	0.13	0.13	U								
GC/MS for Semivolatile Organics (Capillary Column - SW8270/SW3520 (ug/l)											
2-Methylnaphthalene	3.6	NA		NA		NA		NA		NA	
Dibenzofuran	1.7	NA		NA		NA		NA		NA	
Polychlorinated Dibenzo-p-Dioxins and Dibenzofuran - SW8280/METHOD (ng/l)	No Analytes Detected										
Total and Amendable Cyanide (Colorimetric, Automat - SW9012/METHOD (mg/l)											
Cyanide	0.001	NA		NA		NA		NA		NA	
SW846 9056 - SW9056/NONE (mg/l)											
Bromide	0.051	0.73		1.9		0.26	F	0.85		2.2	
Chloride	0.1	24.3		28.3		16.2		23.2		41.5	
Fluoride	0.05	0.05	U	0.44	F	0.47	F	0.46	F	0.41	F
Nitrate as N	0.05	0.3	F	0.36	F	0.05	U	0.32	F	0.05	U
Nitrite as N	0.05	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U
Orthophosphate as P	0.05	0.05	U	0.05	U	0.05	U	1	U	0.05	U
Sulfate	0.1	19		0.61	F	5.1		1.5		13.5	
Total Organic Carbon - SW9060/NONE (mg/l)											
Total Organic Carbon	0.22	1.7	U	11.9	U	5.4		11.6		10.7	

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Positive Results Summary Table
Carswell AFB
East Area Groundwater

Locxref : Sample ID : Sample Date :	Method Detection Limit	ST14-W21 ST14-W21WG03 22-Jan-98		ST14-W31 ST14-W31WG03 26-Jan-98 Appendix IX	
Alkalinity (Titrimetric) - E310.1/NONE (mg/l)					
Alkalinity, Bicarb. as CaCO3 at pH 4.5	0.69	443		339	
Alkalinity, Total as CaCO3 at pH 4.5	0.69	443		339	
Sulfide (Colorimetric, Methylene Blue) - E376.2/NONE (mg/l)					
Sulfide, Total	0.009	NA		0.009	U
EPA-9/RSK-175 Modified A2720C - M2720C/NONE (ug/l)					
Ethane	0.092	7.9		0.092	U
Methane	0.052	290		0.052	U
Inductively Coupled Plasma Atomic Emission Spectro - SW6010/SW3005 (mg/l)					
Calcium	0.034	191		NA	
Iron	0.026	14		NA	
Magnesium	0.07	6.2		NA	
Sodium	0.72	14.5	J	NA	
Tin	0.01	NA		0.076	F
Inductively Coupled Plasma Mass Spectrometry - SW6020/SW3020 (mg/l)					
Antimony	0.00017	0.00017	U	0.00017	U
Arsenic	0.00019	0.054	F	0.0012	F
Barium	0.0002	0.15		0.15	
Beryllium	0.000069	0.000069	U	0.000069	U
Cadmium	0.00004	0.00004	U	0.00004	U
Chromium	0.0002	0.07	UJ	0.07	UJ
Cobalt	0.00002	0.0015	F	0.00056	F
Copper	0.00084	0.06	UJ	0.06	UJ
Lead	0.0002	0.5	U	0.00044	F
Manganese	0.0002	0.42	J	0.02	UJ
Molybdenum	0.0002	0.0016	F	0.00086	F
Nickel	0.0002	0.069	F	0.15	UJ
Selenium	0.00007	0.0031	F	0.0052	F
Thallium	0.00002	0.000032	F	0.00005	F
Vanadium	0.00017	0.00043	F	0.00052	F
Zinc	0.0011	0.02	U	0.02	U
Mercury in Liquid Waste (Manual Cold-Vapor Techniq - SW7470/METHOD (mg/l)	No Analytes Detected				
Aromatic Volatile Organics - SW8020/SW5030 (ug/l)					
1,4-Dichlorobenzene	0.33	0.33	U	NA	
Benzene	0.056	0.056	U	NA	
Chlorobenzene	0.085	0.085	U	NA	
Ethylbenzene	0.054	0.054	U	NA	
Toluene	0.15	0.15	U	NA	
Xylenes (total)	0.15	0.15	U	NA	
tert-Butyl methyl ether	0.01				
Organochlorine Pesticides and PCBs - SW8080/SW3510 (ug/l)	No Analytes Detected				

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Positive Results Summary Table
Carswell AFB
East Area Groundwater

Locxref :	Method	ST14-W21		ST14-W31	
Sample ID :	Detection	ST14-W21WG03		ST14-W31WG03	
Sample Date :	Limit	22-Jan-98		26-Jan-98	
				Appendix IX	
Organophosphorus Pesticides - SW8140/SW3510 (ug/l)	No Analytes Detected				
Chlorinated Herbicides - SW8150/SW3510 (ug/l)	No Analytes Detected				
Volatile Organic Compounds by Gas Chromatograph/Mas - SW8260/SW5030 (ug/l)					
1,2,3-Trichlorobenzene	0.13	NA		NA	
Acetone	0.96	NA		0.96	U
Naphthalene	0.44	NA		NA	
Trichloroethene	1.2	NA		1.2	U
Vinyl chloride	1.2	NA		1.2	U
cis-1,2-Dichloroethene	0.1	NA		NA	
tert-Butylbenzene	0.13				
GC/MS for Semivolatile Organics (Capillary Column - SW8270/SW3520 (ug/l)					
2-Methylnaphthalene	3.6	NA		3.8	U
Dibenzofuran	1.7	NA		1.8	U
Polychlorinated Dibenzo-p-Dioxins and Dibenzofuran - SW8280/METHOD (ng/l)	No Analytes Detected				
Total and Amendable Cyanide (Colorimetric, Automat - SW9012/METHOD (mg/l)					
Cyanide	0.001	NA		0.0015	F
SW846 9056 - SW9056/NONE (mg/l)					
Bromide	0.051	0.58		0.65	
Chloride	0.1	8.6		24.2	
Fluoride	0.05	0.52	F	0.13	F
Nitrate as N	0.05	0.05	U	3.1	
Nitrite as N	0.05	0.05	U	0.05	U
Orthophosphate as P	0.05	0.05	U	0.05	U
Sulfate	0.1	17.5		29.4	
Total Organic Carbon - SW9060/NONE (mg/l)					
Total Organic Carbon	0.22	5.2		0.97	F

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TAB

Appendix B-3 Landfill Area Laboratory Results

Data Summary Table
Carswell AFB
Landfill Area Groundwater

Locxref: / Sample ID: / Sample Date:	Method Detection Limit	LF05-19C LF05-19CWG03 28-Jan-98 Appendix IX		WHGLTA003 WHGLTA003WG03 23-Jan-98		WHGLTA004 DUP01-WG03 23-Jan-98		WHGLTA004 WHGLTA004WG03 23-Jan-98	
Alkalinity (Titrimetric) - E310.1/NONE (mg/l)									
Alkalinity, Bicarb. as CaCO3 at pH 4.5	0.69	339		337		324		322	
Alkalinity, Carb. as CaCO3 at pH 8.3	0.69	0.69	U	0.69	U	0.69	U	0.69	U
Alkalinity, Hydrox. as CaCO3	0.69	0.69	U	0.69	U	0.69	U	0.69	U
Alkalinity, Total as CaCO3 at pH 4.5	0.69	339		337		324		322	
Sulfide (Colorimetric, Methylene Blue) - E376.2/NONE (mg/l)									
Sulfide, Total	0.009	0.009	U	NA		NA		NA	
EPA-9/RSK-175 Modified A2720C - M2720C/NONE (ug/l)									
Ethane	0.092	0.092	U	0.16	F	0.092	U	0.092	U
Ethene	0.1	0.1	U	0.1	U	0.1	U	0.1	U
Methane	0.052	0.5	U	0.5	U	0.5	U	0.5	U
Inductively Coupled Plasma Atomic Emission Spectro - SW6010/SW3005 (mg/l)									
Aluminum	0.052	NA		NA		NA		NA	
Calcium	0.034	NA		NA		NA		NA	
Iron	0.026	NA		NA		NA		NA	
Magnesium	0.07	NA		NA		NA		NA	
Potassium	0.5	NA		NA		NA		NA	
Sodium	0.72	NA		NA		NA		NA	
Tin	0.01	0.097	F	NA		NA		NA	
Inductively Coupled Plasma Mass Spectrometry - SW6020/SW3020 (mg/l)									
Antimony	0.00017	0.00017	U	NA		NA		NA	
Arsenic	0.00019	0.00095	F	NA		NA		NA	
Barium	0.0002	0.1		NA		NA		NA	
Beryllium	0.000069	0.000069	U	NA		NA		NA	
Cadmium	0.00004	0.00004	U	NA		NA		NA	
Chromium	0.0002	0.0002	U	NA		NA		NA	
Cobalt	0.00002	0.00034	F	NA		NA		NA	
Copper	0.00084	0.06	U	NA		NA		NA	
Lead	0.0002	0.5	U	NA		NA		NA	
Manganese	0.0002	0.2	U	NA		NA		NA	
Molybdenum	0.0002	0.0005	F	NA		NA		NA	
Nickel	0.0002	0.0072	F	NA		NA		NA	
Selenium	0.00007	0.0031	F	NA		NA		NA	
Silver	0.0002	0.0002	U	NA		NA		NA	
Thallium	0.00002	0.000033	F	NA		NA		NA	
Vanadium	0.00017	0.0009	F	NA		NA		NA	
Zinc	0.0011	0.011	F	NA		NA		NA	
Mercury in Liquid Waste (Manual Cold-Vapor Technig - SW7470/METHOD (mg/l)									
Mercury	0.00011	0.00011	U	NA		NA		NA	
Aromatic Volatile Organics - SW8020/SW5030 (ug/l)									

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Data Summary Table
Carswell AFB
Landfill Area Groundwater

Locxref :	Method	LF05-19C		WHGLTA003	WHGLTA004	WHGLTA004	
Sample ID :	Detection	LF05-19CWG03		WHGLTA003WG03	DUP01-WG03	WHGLTA004WG03	
Sample Date :	Limit	28-Jan-98		23-Jan-98	23-Jan-98	23-Jan-98	
		Appendix IX					
1,2-Dichlorobenzene	0.18	NA		NA	NA	0.45	U
1,3-Dichlorobenzene	0.09	NA		NA	NA	0.22	U
1,4-Dichlorobenzene	0.33	NA		NA	NA	0.82	U
Benzene	0.056	NA		NA	NA	0.14	U
Chlorobenzene	0.085	NA		NA	NA	0.21	U
Ethylbenzene	0.054	NA		NA	NA	0.14	U
Toluene	0.15	NA		NA	NA	5	U
Xylenes (total)	0.15	NA		NA	NA	5	U
tert-Butyl methyl ether	0.01	NA		NA	NA	0.025	U
Organochlorine Pesticides and PCBs - SW8080/SW3510 (ug/l)							
4,4'-DDD	0.012	0.012	U	NA	NA	NA	
4,4'-DDE	0.021	0.021	U	NA	NA	NA	
4,4'-DDT	0.033	0.034	U	NA	NA	NA	
Aldrin	0.023	0.023	U	NA	NA	NA	
Aroclor 1016	0.11	0.11	UJ	NA	NA	NA	
Aroclor 1221	0.45	0.46	UJ	NA	NA	NA	
Aroclor 1232	0.65	0.66	UJ	NA	NA	NA	
Aroclor 1242	0.18	0.18	UJ	NA	NA	NA	
Aroclor 1248	0.22	0.22	UJ	NA	NA	NA	
Aroclor 1254	0.13	0.13	UJ	NA	NA	NA	
Aroclor 1260	0.12	0.12	UJ	NA	NA	NA	
Chlordane	0.056	0.057	UJ	NA	NA	NA	
Dieldrin	0.022	0.022	U	NA	NA	NA	
Endosulfan I	0.025	0.026	U	NA	NA	NA	
Endosulfan II	0.022	0.022	U	NA	NA	NA	
Endosulfan sulfate	0.027	0.028	U	NA	NA	NA	
Endrin	0.027	0.028	U	NA	NA	NA	
Endrin aldehyde	0.022	0.022	U	NA	NA	NA	
Endrin ketone	0.026	0.027	UJ	NA	NA	NA	
Heptachlor	0.023	0.023	UJ	NA	NA	NA	
Heptachlor epoxide	0.024	0.024	U	NA	NA	NA	
Kepone	1.1	1.1	UJ	NA	NA	NA	
Methoxychlor	0.025	0.026	U	NA	NA	NA	
Toxaphene	0.18	0.18	UJ	NA	NA	NA	
alpha-BHC	0.022	0.022	U	NA	NA	NA	
alpha-Chlordane	0.025	0.026	U	NA	NA	NA	
beta-BHC	0.026	0.027	U	NA	NA	NA	
delta-BHC	0.022	0.022	U	NA	NA	NA	
gamma-BHC (Lindane)	0.022	0.022	U	NA	NA	NA	
gamma-Chlordane	0.025	0.026	U	NA	NA	NA	
Organophosphorus Pesticides - SW8140/SW3510 (ug/l)							
Dimethoate	0.03	0.033	U	NA	NA	NA	
Disulfoton	0.055	0.06	R	NA	NA	NA	
Ethyl parathion	0.064	0.07	U	NA	NA	NA	

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Data Summary Table
Carswell AFB
Landfill Area Groundwater

Locxref : Sample ID : Sample Date :	Method Detection Limit	LF05-19C LF05-19CWG03 28-Jan-98 Appendix IX		WHGLTA003 WHGLTA003WG03 23-Jan-98		WHGLTA004 DUP01-WG03 23-Jan-98		WHGLTA004 WHGLTA004WG03 23-Jan-98	
Famphur	0.06	0.065	U	NA		NA		NA	
Methyl parathion	0.051	0.055	U	NA		NA		NA	
O,O,O-Triethylphosphoro-thioate	0.048	0.052	U	NA		NA		NA	
Phorate (Thimet)	0.047	0.051	U	NA		NA		NA	
Sulfotepp	0.035	0.038	U	NA		NA		NA	
Thionazin	0.048	0.052	U	NA		NA		NA	
Chlorinated Herbicides - SW8150/SW3510 (ug/l)									
2,4,5-T	0.14	0.14	R	NA		NA		NA	
2,4,5-TP (Silvex)	0.14	0.14	R	NA		NA		NA	
2,4-D	0.53	0.54	R	NA		NA		NA	
Volatile Organic Compounds by GC/MS - SW8260/SW5030 (ug/l)									
1,1,1,2-Tetrachloroethane	5*	5	*U	1.2	U	5.8	U	5.8	U
1,1,1-Trichloroethane	1.3	1.3	U	1.5	U	7.5	U	7.5	U
1,1,2,2-Tetrachloroethane	1.2	1.2	U	1.8	U	8.8	U	8.8	U
1,1,2-Trichloroethane	1.2	1.2	U	1.2	U	6	U	6	U
1,1-Dichloroethane	1.4	1.4	U	1.4	U	6.9	U	6.9	U
1,1-Dichloroethene	1.3	1.3	U	1.2	U	6.2	U	6.2	U
1,1-Dichloropropene	0.094	NA		1.2	U	5.9	U	5.9	U
1,2,3-Trichlorobenzene	0.14	NA		1.8	U	8.8	U	8.8	U
1,2,3-Trichloropropane	0.95	0.95	U	2.1	U	11	U	11	U
1,2,4-Trichlorobenzene	0.13	NA		1.6	U	8.1	U	8.1	U
1,2,4-Trimethylbenzene	0.1	NA		1.2	U	6.2	U	6.2	U
1,2-Dibromo-3-chloro-propane (DBCP)	10*	10	*R	1.9	U	9.4	U	9.4	U
1,2-Dibromoethane (EDB)	5*	5	*U	NA		NA		NA	
1,2-Dichlorobenzene	0.13	NA		1.6	U	8.1	U	8.1	U
1,2-Dichloroethane	1.5	1.5	U	1.6	U	8.1	U	8.1	U
1,2-Dichloropropane	0.74	0.74	U	1.8	U	8.8	U	8.8	U
1,3,5-Trimethylbenzene	0.13	NA		1.6	U	8.1	U	8.1	U
1,3-Dichlorobenzene	0.15	NA		1.9	U	9.4	U	9.4	U
1,3-Dichloropropane	0.11	NA		1.4	U	6.9	U	6.9	U
1,4-Dichlorobenzene	0.11	NA		1.4	U	6.9	U	6.9	U
1,4-Dioxane	57	57	U	NA		NA		NA	
1-Chlorohexane	0.5*	NA		0.5	*U	0.5	*U	0.5	*U
2,2-Dichloropropane	0.1	NA		1.2	U	6.2	U	6.2	U
2-Butanone (MEK)	1.5	1.5	U	NA		NA		NA	
2-Chloroethyl vinyl ether	1.4	1.4	U	NA		NA		NA	
2-Chlorotoluene	0.15	NA		1.9	U	9.4	U	9.4	U
2-Hexanone	0.85	0.85	U	NA		NA		NA	
4-Chlorotoluene	0.1	NA		1.2	U	6.2	U	6.2	U
4-Methyl-2-pentanone (MIBK)	1.1	1.1	U	NA		NA		NA	
Acetone	0.96	0.96	U	NA		NA		NA	
Acetonitrile	12	12	U	NA		NA		NA	
Acrolein	11	11	U	NA		NA		NA	
Acrylonitrile	5.6	5.6	U	NA		NA		NA	

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Data Summary Table
Carswell AFB
Landfill Area Groundwater

Locxref :	Method	LF05-19C		WHGLTA003		WHGLTA004		WHGLTA004	
Sample ID :	Detection	LF05-19CWG03		WHGLTA003WG03		DUP01-WG03		WHGLTA004WG03	
Sample Date :	Limit	28-Jan-98		23-Jan-98		23-Jan-98		23-Jan-98	
		Appendix IX							
Allyl chloride	0.6	0.6	U	NA		NA		NA	
Benzene	1.2	1.2	U	1.4	U	6.9	U	6.9	U
Bromobenzene	0.13	NA		1.6	U	8.1	U	8.1	U
Bromochloromethane	0.1	NA		1.2	U	6.2	U	6.2	U
Bromodichloromethane	1.3	1.3	U	5.5	U	28	U	28	U
Bromoform	1.1	1.1	R	1.8	U	8.8	U	8.8	U
Bromomethane	1.3	1.3	U	3.1	U	16	U	16	U
Carbon disulfide	1.3	1.3	U	NA		NA		NA	
Carbon tetrachloride	1.5	1.5	U	1.6	U	8.1	U	8.1	U
Chlorobenzene	1.2	1.2	U	1.5	U	7.5	U	7.5	U
Chloroethane	1.4	1.4	U	3.1	U	16	U	16	U
Chloroform	1.4	1.4	U	1.5	U	7.5	U	7.5	U
Chloromethane	1.5	1.5	U	3.2	U	16	U	16	U
Chloroprene	1	1	U	NA		NA		NA	
Dibromochloromethane	1.3	1.3	U	1.5	U	7.5	U	7.5	U
Dibromomethane	5*	5	*U	1.2	U	6.1	U	6.1	U
Dichlorodifluoromethane	10*	10	*U	3.4	U	17	U	17	U
EDB (1,2-Dibromoethane)	0.11	NA		1.4	U	6.9	U	6.9	U
Ethyl methacrylate	0.74	0.74	U	NA		NA		NA	
Ethylbenzene	1.2	1.2	U	1.4	U	6.9	U	6.9	U
Hexachlorobutadiene	0.15	NA		1.9	U	9.4	U	9.4	U
Iodomethane	1.3	1.3	U	NA		NA		NA	
Isobutyl alcohol	19	19	U	NA		NA		NA	
Isopropylbenzene (Cumene)	0.13	NA		1.6	U	8.1	U	8.1	U
Methacrylonitrile	0.95	0.95	U	NA		NA		NA	
Methyl methacrylate	2.5	2.5	U	NA		NA		NA	
Methylene chloride	1.2	1.2	U	8.1	U	41	U	41	U
Naphthalene	0.44	NA		5.5	U	28	U	28	U
Propionitrile	1.5	1.5	U	NA		NA		NA	
Styrene	1.3	1.3	U	1.5	U	7.5	U	7.5	U
Tetrachloroethene	1.2	1.2	U	1.2	U	6.2	U	6.2	U
Toluene	1.2	1.2	U	1.2	U	6.1	U	6.1	U
Trichloroethene	1.2	56		170		900		910	
Trichlorofluoromethane	10*	10	*U	3.8	U	19	U	19	U
Vinyl acetate	1.8	1.8	U	NA		NA		NA	
Vinyl chloride	1.2	1.2	U	2.9	U	14	U	14	U
Xylenes (total)	0.75	0.75	U	NA		NA		NA	
cis-1,2-Dichloroethene	0.1	NA		61		110		100	
cis-1,3-Dichloropropene	1.3	1.3	U	1.5	U	7.5	U	7.5	U
m- & p-Xylenes	0.28	NA		3.5	U	18	U	18	U
n-Butylbenzene	0.13	NA		1.6	U	8.1	U	8.1	U
n-Propylbenzene	0.13	NA		1.6	U	8.1	U	8.1	U
o-Xylene	0.11	NA		1.4	U	6.9	U	6.9	U
p-Isopropyltoluene (p-Cymene)	0.13	NA		1.6	U	8.1	U	8.1	U
sec-Butylbenzene	0.17	NA		2.1	U	11	U	11	U
tert-Butylbenzene	0.13	NA		1.6	U	8.1	U	8.1	U

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Data Summary Table
Carswell AFB
Landfill Area Groundwater

Locxref :	Method	LF05-19C		WHGLTA003		WHGLTA004		WHGLTA004	
Sample ID :	Detection	LF05-19CWG03		WHGLTA003WG03		DUP01-WG03		WHGLTA004WG03	
Sample Date :	Limit	28-Jan-98		23-Jan-98		23-Jan-98		23-Jan-98	
		Appendix IX							
trans-1,2-Dichloroethene	1.3	1.3	U	1.7	F	6.9	U	6.9	U
trans-1,3-Dichloropropene	1.2	1.2	U	1.4	U	6.9	U	6.9	U
trans-1,4-Dichloro-2-butene	1.2	1.2	U	NA		NA		NA	
GC/MS for Semivolatile Organics (Capillary Column - SW8270/SW3520 (ug/l)									
1,2,4,5-Tetrachloro-benzene	1	0.98	U	NA		NA		NA	
1,2,4-Trichlorobenzene	4.3	4.2	U	NA		NA		NA	
1,2-Dichlorobenzene	4	3.9	U	NA		NA		NA	
1,3,5-Trinitrobenzene	1	0.98	U	NA		NA		NA	
1,3-Dichlorobenzene	4.1	4	U	NA		NA		NA	
1,3-Dinitrobenzene	1	0.98	U	NA		NA		NA	
1,4-Dichlorobenzene	4	3.9	U	NA		NA		NA	
1,4-Dinitrobenzene	1	0.98	U	NA		NA		NA	
1,4-Naphthoquinone	1.3	1.3	U	NA		NA		NA	
1-Chloronaphthalene	1	0.98	U	NA		NA		NA	
1-Naphthylamine	2	2	U	NA		NA		NA	
2,2'-oxybis(1-chloropropane)	1.7	1.7	U	NA		NA		NA	
2,3,4,6-Tetrachlorophenol	1.3	1.3	U	NA		NA		NA	
2,4,5-Trichlorophenol	1.8	1.8	U	NA		NA		NA	
2,4,6-Trichlorophenol	2.2	2.2	U	NA		NA		NA	
2,4-Dichlorophenol	2.7	2.6	U	NA		NA		NA	
2,4-Dimethylphenol	1.4	1.4	U	NA		NA		NA	
2,4-Dinitrophenol	19	19	U	NA		NA		NA	
2,4-Dinitrotoluene	1.8	1.8	U	NA		NA		NA	
2,6-Dichlorophenol	1	0.98	U	NA		NA		NA	
2,6-Dinitrotoluene	1.9	1.9	U	NA		NA		NA	
2-Acetylaminofluorene	1	0.98	U	NA		NA		NA	
2-Chloronaphthalene	3.4	3.3	U	NA		NA		NA	
2-Chlorophenol	2.7	2.6	U	NA		NA		NA	
2-Methylnaphthalene	3.6	3.5	U	NA		NA		NA	
2-Methylphenol	2	2	U	NA		NA		NA	
2-Naphthylamine	1.2	1.2	U	NA		NA		NA	
2-Nitroaniline	12	12	U	NA		NA		NA	
2-Nitrophenol	2.7	2.6	U	NA		NA		NA	
2-Picoline	1	0.98	U	NA		NA		NA	
3,3'-Dichlorobenzidine	1.9	1.9	U	NA		NA		NA	
3,3'-Dimethylbenzidine	3.5	3.4	U	NA		NA		NA	
3-Methylcholanthrene	2.7	2.6	U	NA		NA		NA	
3-Nitroaniline	15	15	U	NA		NA		NA	
3/4-Methylphenol	1.8	1.8	U	NA		NA		NA	
4,6-Dinitro-2-methylphenol	20	20	U	NA		NA		NA	
4-Aminobiphenyl	1	0.98	U	NA		NA		NA	
4-Bromophenyl phenyl ether	1.3	1.3	U	NA		NA		NA	
4-Chloro-3-methylphenol	2.2	2.2	U	NA		NA		NA	
4-Chloroaniline	1.5	1.5	U	NA		NA		NA	
4-Chlorophenyl phenyl ether	1.4	1.4	U	NA		NA		NA	

Data Summary Table
Carswell AFB
Landfill Area Groundwater

Locxref:	Method	LF05-19C		WHGLTA003	WHGLTA004	WHGLTA004
Sample ID:	Detection	LF05-19CWG03		WHGLTA003WG03	DUP01-WG03	WHGLTA004WG03
Sample Date:	Limit	28-Jan-98		23-Jan-98	23-Jan-98	23-Jan-98
		Appendix IX				
4-Nitroaniline	25	24	U	NA	NA	NA
4-Nitrophenol	19	19	U	NA	NA	NA
4-Nitroquinoline-1-oxide	10	9.8	U	NA	NA	NA
5-Nitro-o-toluidine	1.2	1.2	U	NA	NA	NA
7,12-Dimethylbenz(a)-anthracene	1	0.98	U	NA	NA	NA
Acenaphthene	2.2	2.2	U	NA	NA	NA
Acenaphthylene	2.8	2.7	U	NA	NA	NA
Acetophenone	1	0.98	U	NA	NA	NA
Aniline	1.5	1.5	U	NA	NA	NA
Anthracene	1.5	1.5	U	NA	NA	NA
Aramite	1	0.98	U	NA	NA	NA
Azobenzene	1.5	1.5	U	NA	NA	NA
Benzo(a)anthracene	1.5	1.5	U	NA	NA	NA
Benzo(a)pyrene	1.6	1.6	U	NA	NA	NA
Benzo(b)fluoranthene	2.1	2.1	U	NA	NA	NA
Benzo(g,h,i)perylene	1.5	1.5	U	NA	NA	NA
Benzo(k)fluoranthene	2	2	U	NA	NA	NA
Benzoic acid	22	22	U	NA	NA	NA
Benzyl alcohol	2.7	2.6	U	NA	NA	NA
Butyl benzyl phthalate	1.8	1.8	U	NA	NA	NA
Carbazole	1.8	1.8	U	NA	NA	NA
Chlorobenzilate	1	0.98	U	NA	NA	NA
Chrysene	1.5	1.5	U	NA	NA	NA
Di-n-butyl phthalate	1.9	1.9	U	NA	NA	NA
Di-n-octyl phthalate	1.2	1.2	U	NA	NA	NA
Diallate	2	2	U	NA	NA	NA
Dibenz(a,h)anthracene	1.3	1.3	U	NA	NA	NA
Dibenz(a,j)acridine	1	0.98	U	NA	NA	NA
Dibenzofuran	1.7	1.7	U	NA	NA	NA
Diethyl phthalate	1.9	1.9	U	NA	NA	NA
Dimethoate	1	0.98	U	NA	NA	NA
Dimethyl phthalate	1.8	1.8	U	NA	NA	NA
Diphenylamine	10*	9.8	*U	NA	NA	NA
Ethyl methanesulfonate	1	0.98	U	NA	NA	NA
Fluoranthene	1.6	1.6	U	NA	NA	NA
Fluorene	2.1	2.1	U	NA	NA	NA
Hexachlorobenzene	1.5	1.5	U	NA	NA	NA
Hexachlorobutadiene	4.8	4.7	U	NA	NA	NA
Hexachlorocyclopentadiene	33	32	U	NA	NA	NA
Hexachloroethane	4.7	4.6	U	NA	NA	NA
Hexachloropropene	1	0.98	U	NA	NA	NA
Indeno(1,2,3-cd)pyrene	1.2	1.2	U	NA	NA	NA
Isodrin	1	0.98	U	NA	NA	NA
Isophorone	1.9	1.9	U	NA	NA	NA
Isosafrole	2	2	U	NA	NA	NA
Methapyrilene	11	11	U	NA	NA	NA

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Data Summary Table
Carswell AFB
Landfill Area Groundwater

Locxref : Sample ID : Sample Date :	Method Detection Limit	LF05-19C LF05-19CWG03 28-Jan-98 Appendix IX		WHGLTA003 WHGLTA003WG03 23-Jan-98	WHGLTA004 DUP01-WG03 23-Jan-98	WHGLTA004 WHGLTA004WG03 23-Jan-98
Methyl methanesulfonate	1	0.98	U	NA	NA	NA
N-Nitroso-di-n-butylamine	1	0.98	U	NA	NA	NA
N-Nitroso-di-n-propylamine	1.9	1.9	U	NA	NA	NA
N-Nitrosodiethylamine	10*	9.8	*U	NA	NA	NA
N-Nitrosodimethylamine	2.4	2.4	U	NA	NA	NA
N-Nitrosodiphenylamine	1.8	1.8	U	NA	NA	NA
N-Nitrosomethylethylamine	1	0.98	U	NA	NA	NA
N-Nitrosomorpholine	1	0.98	U	NA	NA	NA
N-Nitrosopiperidine	1	0.98	U	NA	NA	NA
N-Nitrosopyrrolidine	1	0.98	U	NA	NA	NA
Naphthalene	3.4	3.3	U	NA	NA	NA
Nitrobenzene	2.5	2.4	U	NA	NA	NA
O,O,O-Triethylphosphoro-thioate	1	0.98	U	NA	NA	NA
Parathion	1	0.98	U	NA	NA	NA
Pentachlorobenzene	1	0.98	U	NA	NA	NA
Pentachloroethane	1	0.98	U	NA	NA	NA
Pentachloronitrobenzene	1	0.98	U	NA	NA	NA
Pentachlorophenol	18	18	U	NA	NA	NA
Phenacetin	1	0.98	U	NA	NA	NA
Phenanthrene	1.4	1.4	U	NA	NA	NA
Phenol	2.7	2.6	U	NA	NA	NA
Pronamide	1	0.98	U	NA	NA	NA
Pyrene	1.6	1.6	U	NA	NA	NA
Pyridine	1.2	1.2	U	NA	NA	NA
Safrole	1	0.98	U	NA	NA	NA
Sulfotepp	1	0.98	U	NA	NA	NA
a,a-Dimethylphenethyl-amine	19	19	U	NA	NA	NA
bis(2-Chloroethoxy)methane	2.7	2.6	U	NA	NA	NA
bis(2-Chloroethyl) ether	2.2	2.2	U	NA	NA	NA
bis(2-Ethylhexyl)phthalate	2.7	2.6	U	NA	NA	NA
o-Toluidine	1	0.98	U	NA	NA	NA
p-Dimethylaminoazobenzene	1.1	1.1	U	NA	NA	NA
p-Phenylenediamine	10	9.8	U	NA	NA	NA
Polychlorinated Dibenzo-p-Dioxins and Dibenzofuran - SW8280/METHOD (ng/l)						
2,3,7,8-TCDD	0.36	0.59	*U	NA	NA	NA
HxCDDs (total)	0.78	1	*U	NA	NA	NA
HxCDFs (total)	1.6	0.7	*U	NA	NA	NA
PeCDDs (total)	46	15	*U	NA	NA	NA
PeCDFs (total)	6.4	1.8	*U	NA	NA	NA
TCDDs (total)	0.36	0.59	*U	NA	NA	NA
TCDFs (total)	0.76	0.71	*U	NA	NA	NA
Total and Amendable Cyanide (Colorimetric, Automat - SW9012/METHOD (mg/l)						
Cyanide	0.001	0.001	U	NA	NA	NA

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Data Summary Table
Carswell AFB
Landfill Area Groundwater

Locxref :	Method	LF05-19C		WHGLTA003		WHGLTA004		WHGLTA004	
Sample ID :	Detection	LF05-19CWG03		WHGLTA003WG03		DUP01-WG03		WHGLTA004WG03	
Sample Date :	Limit	28-Jan-98		23-Jan-98		23-Jan-98		23-Jan-98	
		Appendix IX							
SW846 9056 - SW9056/NONE (mg/l)									
Bromide	0.051	0.45	F	0.51		0.31	F	0.31	F
Chloride	0.1	39.4		35		11.7		11.5	
Fluoride	0.05	0.44	F	0.31	F	0.22	F	0.22	F
Nitrate as N	0.05	2.3		4.1	J	3.9		3.9	
Nitrite as N	0.05	0.05	U	0.05	UJ	0.05	U	0.05	U
Orthophosphate as P	0.05	0.05	U	0.05	R	0.05	U	0.05	U
Sulfate	0.1	92.5		68.5		25.8		25.5	
Total Organic Carbon - SW9060/NONE (mg/l)									
Total Organic Carbon	0.22	0.98	F	1.1	U	1	U	1	U

NOTE:
* PQLs used if MDL not reported.

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Data Summary Table
Carswell AFB
Landfill Area Groundwater

Locxref :	Method	USGS07T		WP07-10C	
Sample ID :	Detection	USGS07TWG03		WP07-10CWG03	
Sample Date :	Limit	21-Jan-98		28-Jan-98	
				Appendix IX	
Alkalinity (Titrimetric) - E310.1/NONE (mg/l)					
Alkalinity, Bicarb. as CaCO3 at pH 4.5	0.69	250		431	
Alkalinity, Carb. as CaCO3 at pH 8.3	0.69	0.69	U	0.69	U
Alkalinity, Hydrox. as CaCO3	0.69	0.69	U	0.69	U
Alkalinity, Total as CaCO3 at pH 4.5	0.69	250		431	
Sulfide (Colorimetric, Methylene Blue) - E376.2/NONE (mg/l)					
Sulfide, Total	0.009	NA		0.009	U
EPA-9/RSK-175 Modified A2720C - M2720C/NONE (ug/l)					
Ethane	0.092	0.092	U	1.5	
Ethene	0.1	0.1	U	0.78	
Methane	0.052	0.5	U	1100	
Inductively Coupled Plasma Atomic Emission Spectro - SW6010/SW3005 (mg/l)					
Aluminum	0.052	NA		NA	
Calcium	0.034	NA		NA	
Iron	0.026	NA		NA	
Magnesium	0.07	NA		NA	
Potassium	0.5	NA		NA	
Sodium	0.72	NA		NA	
Tin	0.01	NA		0.094	F
Inductively Coupled Plasma Mass Spectrometry - SW6020/SW3020 (mg/l)					
Antimony	0.00017	NA		0.00017	U
Arsenic	0.00019	NA		0.01	F
Barium	0.0002	NA		0.14	
Beryllium	0.000069	NA		0.000069	U
Cadmium	0.00004	NA		0.00004	U
Chromium	0.0002	NA		0.0002	U
Cobalt	0.00002	NA		0.0069	F
Copper	0.00084	NA		0.06	U
Lead	0.0002	NA		0.5	U
Manganese	0.0002	NA		0.39	B
Molybdenum	0.0002	NA		0.00043	F
Nickel	0.0002	NA		0.014	F
Selenium	0.00007	NA		0.0073	F
Silver	0.0002	NA		0.0002	U
Thallium	0.00002	NA		0.00005	F
Vanadium	0.00017	NA		0.00017	U
Zinc	0.0011	NA		0.012	F
Mercury in Liquid Waste (Manual Cold-Vapor Technig - SW7470/METHOD (mg/l)					
Mercury	0.00011	NA		0.00011	U
Aromatic Volatile Organics - SW8020/SW5030 (ug/l)					

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Data Summary Table
Carswell AFB
Landfill Area Groundwater

Locxref :	Method	USGS07T	WP07-10C	
Sample ID :	Detection	USGS07TWG03	WP07-10CWG03	
Sample Date :	Limit	21-Jan-98	28-Jan-98	
			Appendix IX	
1,2-Dichlorobenzene	0.18	NA	NA	
1,3-Dichlorobenzene	0.09	NA	NA	
1,4-Dichlorobenzene	0.33	NA	NA	
Benzene	0.056	NA	NA	
Chlorobenzene	0.085	NA	NA	
Ethylbenzene	0.054	NA	NA	
Toluene	0.15	NA	NA	
Xylenes (total)	0.15	NA	NA	
tert-Butyl methyl ether	0.01	NA	NA	
Organochlorine Pesticides and PCBs - SW8080/SW3510 (ug/l)				
4,4'-DDD	0.012	NA	0.012	U
4,4'-DDE	0.021	NA	0.02	U
4,4'-DDT	0.033	NA	0.032	U
Aldrin	0.023	NA	0.022	U
Aroclor 1016	0.11	NA	0.11	UJ
Aroclor 1221	0.45	NA	0.44	UJ
Aroclor 1232	0.65	NA	0.63	UJ
Aroclor 1242	0.18	NA	0.17	UJ
Aroclor 1248	0.22	NA	0.21	UJ
Aroclor 1254	0.13	NA	0.13	UJ
Aroclor 1260	0.12	NA	0.12	UJ
Chlordane	0.056	NA	0.054	UJ
Dieldrin	0.022	NA	0.021	U
Endosulfan I	0.025	NA	0.024	U
Endosulfan II	0.022	NA	0.021	U
Endosulfan sulfate	0.027	NA	0.026	U
Endrin	0.027	NA	0.026	U
Endrin aldehyde	0.022	NA	0.021	U
Endrin ketone	0.026	NA	0.025	UJ
Heptachlor	0.023	NA	0.022	UJ
Heptachlor epoxide	0.024	NA	0.023	U
Kepone	1.1	NA	1.1	UJ
Methoxychlor	0.025	NA	0.024	U
Toxaphene	0.18	NA	0.17	UJ
alpha-BHC	0.022	NA	0.021	U
alpha-Chlordane	0.025	NA	0.024	U
beta-BHC	0.026	NA	0.025	U
delta-BHC	0.022	NA	0.021	U
gamma-BHC (Lindane)	0.022	NA	0.021	U
gamma-Chlordane	0.025	NA	0.024	U
Organophosphorus Pesticides - SW8140/SW3510 (ug/l)				
Dimethoate	0.03	NA	0.029	U
Disulfoton	0.055	NA	0.053	R
Ethyl parathion	0.064	NA	0.062	U

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Data Summary Table
Carswell AFB
Landfill Area Groundwater

Locxref : Sample ID : Sample Date :	Method Detection Limit	USGS07T USGS07TWG03 21-Jan-98		WP07-10C WP07-10CWG03 28-Jan-98 Appendix IX	
Famphur	0.06	NA		0.058	U
Methyl parathion	0.051	NA		0.049	U
O,O,O-Triethylphosphoro-thioate	0.048	NA		0.046	U
Phorate (Thimet)	0.047	NA		0.045	U
Sulfotepp	0.035	NA		0.034	U
Thionazin	0.048	NA		0.046	U
Chlorinated Herbicides - SW8150/SW3510 (ug/l)					
2,4,5-T	0.14	NA		0.14	R
2,4,5-TP (Silvex)	0.14	NA		0.14	R
2,4-D	0.53	NA		0.51	R
Volatile Organic Compounds by GC/MS - SW8260/SW5030 (ug/l)					
1,1,1,2-Tetrachloroethane	5*	0.093	U	50	*U
1,1,1-Trichloroethane	1.3	0.12	U	13	U
1,1,2,2-Tetrachloroethane	1.2	0.14	U	12	U
1,1,2-Trichloroethane	1.2	0.096	U	12	U
1,1-Dichloroethane	1.4	0.25	F	14	U
1,1-Dichloroethene	1.3	0.43	F	13	U
1,1-Dichloropropene	0.094	0.094	U	NA	
1,2,3-Trichlorobenzene	0.14	0.14	U	NA	
1,2,3-Trichloropropane	0.95	0.17	U	9.5	U
1,2,4-Trichlorobenzene	0.13	0.13	U	NA	
1,2,4-Trimethylbenzene	0.1	0.1	U	NA	
1,2-Dibromo-3-chloro-propane (DBCP)	10*	0.15	U	100	*U
1,2-Dibromoethane (EDB)	5*	NA		50	*U
1,2-Dichlorobenzene	0.13	0.13	U	NA	
1,2-Dichloroethane	1.5	0.13	U	15	U
1,2-Dichloropropane	0.74	0.14	U	7.4	U
1,3,5-Trimethylbenzene	0.13	0.13	U	NA	
1,3-Dichlorobenzene	0.15	0.15	U	NA	
1,3-Dichloropropane	0.11	0.11	U	NA	
1,4-Dichlorobenzene	0.11	0.11	U	NA	
1,4-Dioxane	57	NA		570	U
1-Chlorohexane	0.5*	0.5	*U	NA	
2,2-Dichloropropane	0.1	0.1	U	NA	
2-Butanone (MEK)	1.5	NA		15	U
2-Chloroethyl vinyl ether	1.4	NA		14	U
2-Chlorotoluene	0.15	0.15	U	NA	
2-Hexanone	0.85	NA		8.5	U
4-Chlorotoluene	0.1	0.1	U	NA	
4-Methyl-2-pentanone (MIBK)	1.1	NA		11	U
Acetone	0.96	NA		20	U
Acetonitrile	12	NA		120	U
Acrolein	11	NA		110	U
Acrylonitrile	5.6	NA		56	U

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Data Summary Table
Carswell AFB
Landfill Area Groundwater

Locxref :	Method	USGS07T		WP07-10C	
Sample ID :	Detection	USGS07TWG03		WP07-10CWG03	
Sample Date :	Limit	21-Jan-98		28-Jan-98	
				Appendix IX	
Allyl chloride	0.6	NA		6	U
Benzene	1.2	0.11	U	12	U
Bromobenzene	0.13	0.13	U	NA	
Bromochloromethane	0.1	0.1	U	NA	
Bromodichloromethane	1.3	0.44	U	13	U
Bromoform	1.1	0.14	U	11	U
Bromomethane	1.3	0.25	U	13	U
Carbon disulfide	1.3	NA		13	U
Carbon tetrachloride	1.5	0.13	U	15	U
Chlorobenzene	1.2	0.12	U	12	U
Chloroethane	1.4	0.25	U	14	U
Chloroform	1.4	0.16	F	14	U
Chloromethane	1.5	0.26	U	15	U
Chloroprene	1	NA		10	U
Dibromochloromethane	1.3	0.12	U	13	U
Dibromomethane	5*	0.097	U	50	*U
Dichlorodifluoromethane	10*	0.27	U	100	*U
EDB (1,2-Dibromoethane)	0.11	0.11	U	NA	
Ethyl methacrylate	0.74	NA		7.4	U
Ethylbenzene	1.2	0.11	U	12	U
Hexachlorobutadiene	0.15	0.15	U	NA	
Iodomethane	1.3	NA		13	U
Isobutyl alcohol	19	NA		190	U
Isopropylbenzene (Cumene)	0.13	0.13	U	NA	
Methacrylonitrile	0.95	NA		9.5	U
Methyl methacrylate	2.5	NA		25	U
Methylene chloride	1.2	0.65	U	12	U
Naphthalene	0.44	0.44	U	NA	
Propionitrile	1.5	NA		15	U
Styrene	1.3	0.12	U	13	U
Tetrachloroethene	1.2	1.3	F	12	U
Toluene	1.2	0.098	U	12	U
Trichloroethene	1.2	0.46	F	1200	
Trichlorofluoromethane	10*	0.3	U	100	*U
Vinyl acetate	1.8	NA		18	U
Vinyl chloride	1.2	0.23	U	29	F
Xylenes (total)	0.75	NA		7.5	U
cis-1,2-Dichloroethene	0.1	0.5	F	NA	
cis-1,3-Dichloropropene	1.3	0.12	U	13	U
m- & p-Xylenes	0.28	0.28	U	NA	
n-Butylbenzene	0.13	0.13	U	NA	
n-Propylbenzene	0.13	0.13	U	NA	
o-Xylene	0.11	0.11	U	NA	
p-Isopropyltoluene (p-Cymene)	0.13	0.13	U	NA	
sec-Butylbenzene	0.17	0.17	U	NA	
tert-Butylbenzene	0.13	0.13	U	NA	

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Data Summary Table
Carswell AFB
Landfill Area Groundwater

Locxref :	Method	USGS07T		WP07-10C	
Sample ID :	Detection	USGS07TWG03		WP07-10CWG03	
Sample Date :	Limit	21-Jan-98		28-Jan-98	
				Appendix IX	
trans-1,2-Dichloroethene	1.3	0.11	U	21	F
trans-1,3-Dichloropropene	1.2	0.11	U	12	U
trans-1,4-Dichloro-2-butene	1.2	NA		12	U
GC/MS for Semivolatile Organics (Capillary Column - SW8270/SW3520 (ug/l)					
1,2,4,5-Tetrachloro-benzene	1	NA		0.96	U
1,2,4-Trichlorobenzene	4.3	NA		4.1	U
1,2-Dichlorobenzene	4	NA		3.8	U
1,3,5-Trinitrobenzene	1	NA		0.96	U
1,3-Dichlorobenzene	4.1	NA		3.9	U
1,3-Dinitrobenzene	1	NA		0.96	U
1,4-Dichlorobenzene	4	NA		6.4	F
1,4-Dinitrobenzene	1	NA		0.96	U
1,4-Naphthoquinone	1.3	NA		1.3	U
1-Chloronaphthalene	1	NA		0.96	U
1-Naphthylamine	2	NA		1.9	U
2,2'-oxybis(1-chloropropane)	1.7	NA		1.6	U
2,3,4,6-Tetrachlorophenol	1.3	NA		1.3	U
2,4,5-Trichlorophenol	1.8	NA		1.7	U
2,4,6-Trichlorophenol	2.2	NA		2.1	U
2,4-Dichlorophenol	2.7	NA		2.6	U
2,4-Dimethylphenol	1.4	NA		1.3	U
2,4-Dinitrophenol	19	NA		18	U
2,4-Dinitrotoluene	1.8	NA		1.7	U
2,6-Dichlorophenol	1	NA		0.96	U
2,6-Dinitrotoluene	1.9	NA		1.8	U
2-Acetylaminofluorene	1	NA		0.96	U
2-Chloronaphthalene	3.4	NA		3.3	U
2-Chlorophenol	2.7	NA		2.6	U
2-Methylnaphthalene	3.6	NA		3.5	U
2-Methylphenol	2	NA		1.9	U
2-Naphthylamine	1.2	NA		1.2	U
2-Nitroaniline	12	NA		12	U
2-Nitrophenol	2.7	NA		2.6	U
2-Picoline	1	NA		0.96	U
3,3'-Dichlorobenzidine	1.9	NA		1.8	U
3,3'-Dimethylbenzidine	3.5	NA		3.4	U
3-Methylcholanthrene	2.7	NA		2.6	U
3-Nitroaniline	15	NA		14	U
3/4-Methylphenol	1.8	NA		1.7	U
4,6-Dinitro-2-methylphenol	20	NA		19	U
4-Aminobiphenyl	1	NA		0.96	U
4-Bromophenyl phenyl ether	1.3	NA		1.3	U
4-Chloro-3-methylphenol	2.2	NA		2.1	U
4-Chloroaniline	1.5	NA		1.4	U
4-Chlorophenyl phenyl ether	1.4	NA		1.3	U

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Data Summary Table
Carswell AFB
Landfill Area Groundwater

Locxref : Sample ID : Sample Date :	Method Detection Limit	USGS07T USGS07TWG03 21-Jan-98	WP07-10C WP07-10CWG03 28-Jan-98 Appendix IX	
4-Nitroaniline	25	NA	24	U
4-Nitrophenol	19	NA	18	U
4-Nitroquinoline-1-oxide	10	NA	9.6	U
5-Nitro-o-toluidine	1.2	NA	1.2	U
7,12-Dimethylbenz(a)-anthracene	1	NA	0.96	U
Acenaphthene	2.2	NA	2.1	U
Acenaphthylene	2.8	NA	2.7	U
Acetophenone	1	NA	0.96	U
Aniline	1.5	NA	1.4	U
Anthracene	1.5	NA	1.4	U
Aramite	1	NA	0.96	U
Azobenzene	1.5	NA	1.4	U
Benzo(a)anthracene	1.5	NA	1.4	U
Benzo(a)pyrene	1.6	NA	1.5	U
Benzo(b)fluoranthene	2.1	NA	2	U
Benzo(g,h,i)perylene	1.5	NA	1.4	U
Benzo(k)fluoranthene	2	NA	1.9	U
Benzoic acid	22	NA	21	U
Benzyl alcohol	2.7	NA	2.6	U
Butyl benzyl phthalate	1.8	NA	1.7	U
Carbazole	1.8	NA	1.7	U
Chlorobenzilate	1	NA	0.96	U
Chrysene	1.5	NA	1.4	U
Di-n-butyl phthalate	1.9	NA	1.8	U
Di-n-octyl phthalate	1.2	NA	1.2	U
Diallate	2	NA	1.9	U
Dibenz(a,h)anthracene	1.3	NA	1.3	U
Dibenz(a,j)acridine	1	NA	0.96	U
Dibenzofuran	1.7	NA	1.6	U
Diethyl phthalate	1.9	NA	1.8	U
Dimethoate	1	NA	0.96	U
Dimethyl phthalate	1.8	NA	1.7	U
Diphenylamine	10*	NA	9.6	*U
Ethyl methanesulfonate	1	NA	0.96	U
Fluoranthene	1.6	NA	1.5	U
Fluorene	2.1	NA	2	U
Hexachlorobenzene	1.5	NA	1.4	U
Hexachlorobutadiene	4.8	NA	4.6	U
Hexachlorocyclopentadiene	33	NA	32	U
Hexachloroethane	4.7	NA	4.5	U
Hexachloropropene	1	NA	0.96	U
Indeno(1,2,3-cd)pyrene	1.2	NA	1.2	U
Isodrin	1	NA	0.96	U
Isophorone	1.9	NA	1.8	U
Isosafrole	2	NA	1.9	U
Methapyrilene	11	NA	11	U

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Data Summary Table
Carswell AFB
Landfill Area Groundwater

Locxref: / Sample ID: / Sample Date:	Method Detection Limit	USGS07T USGS07TWG03 21-Jan-98	WP07-10C WP07-10CWG03 28-Jan-98 Appendix IX	
Methyl methanesulfonate	1	NA	0.96	U
N-Nitroso-di-n-butylamine	1	NA	0.96	U
N-Nitroso-di-n-propylamine	1.9	NA	1.8	U
N-Nitrosodiethylamine	10*	NA	9.6	*U
N-Nitrosodimethylamine	2.4	NA	2.3	U
N-Nitrosodiphenylamine	1.8	NA	1.7	U
N-Nitrosomethylethylamine	1	NA	0.96	U
N-Nitrosomorpholine	1	NA	0.96	U
N-Nitrosopiperidine	1	NA	0.96	U
N-Nitrosopyrrolidine	1	NA	0.96	U
Naphthalene	3.4	NA	3.3	U
Nitrobenzene	2.5	NA	2.4	U
O,O,O-Triethylphosphoro-thioate	1	NA	0.96	U
Parathion	1	NA	0.96	U
Pentachlorobenzene	1	NA	0.96	U
Pentachloroethane	1	NA	0.96	U
Pentachloronitrobenzene	1	NA	0.96	U
Pentachlorophenol	18	NA	17	U
Phenacetin	1	NA	0.96	U
Phenanthrene	1.4	NA	1.3	U
Phenol	2.7	NA	2.6	U
Pronamide	1	NA	0.96	U
Pyrene	1.6	NA	1.5	U
Pyridine	1.2	NA	1.2	U
Safrole	1	NA	0.96	U
Sulfotepp	1	NA	0.96	U
a,a-Dimethylphenethyl-amine	19	NA	18	U
bis(2-Chloroethoxy)methane	2.7	NA	2.6	U
bis(2-Chloroethyl) ether	2.2	NA	2.1	U
bis(2-Ethylhexyl)phthalate	2.7	NA	2.6	U
o-Toluidine	1	NA	0.96	U
p-Dimethylaminoazobenzene	1.1	NA	1.1	U
p-Phenylenediamine	10	NA	9.6	U
Polychlorinated Dibenzo-p-Dioxins and Dibenzofuran - SW8280/METHOD (ng/l)				
2,3,7,8-TCDD	0.36	NA	0.37	*U
HxCDDs (total)	0.78	NA	0.65	*U
HxCDFs (total)	1.6	NA	0.42	*U
PeCDDs (total)	46	NA	10	*U
PeCDFs (total)	6.4	NA	1.6	*U
TCDDs (total)	0.36	NA	0.37	*U
TCDFs (total)	0.76	NA	0.52	*U
Total and Amendable Cyanide (Colorimetric, Automat - SW9012/METHOD (mg/l)				
Cyanide	0.001	NA	0.0016	F

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Data Summary Table
Carswell AFB
Landfill Area Groundwater

Locxref : Sample ID : Sample Date :	Method Detection Limit	USGS07T USGS07TWG03 21-Jan-98		WP07-10C WP07-10CWG03 28-Jan-98 Appendix IX	
SW846 9056 - SW9056/NONE (mg/l)					
Bromide	0.051	0.31	F	1.2	
Chloride	0.1	11.2		55.5	
Fluoride	0.05	0.48	R	0.55	F
Nitrate as N	0.05	0.98	F	0.24	F
Nitrite as N	0.05	0.05	U	0.05	U
Orthophosphate as P	0.05	1.2		0.05	U
Sulfate	0.1	72.6		41.1	
Total Organic Carbon - SW9060/NONE (mg/l)					
Total Organic Carbon	0.22	1	U	7	

NOTE:
* PQLs used if MDL not reported.

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TAB

Landfill Area Laboratory Results Positive Results

Positive Results Summary Table
Carswell AFB
Landfill Area Groundwater

Locxref : / Sample ID : / Sample Date :	Method Detection Limit	LF05-19C LF05-19CWG03 28-Jan-98 Appendix IX		WHGLTA003 WHGLTA003WG03 23-Jan-98		WHGLTA004 DUP01-WG03 23-Jan-98		WHGLTA004 WHGLTA004WG03 23-Jan-98	
Alkalinity (Titrimetric) - E310.1/NONE (mg/l)									
Alkalinity, Bicarb. as CaCO3 at pH 4.5	0.69	339		337		324		322	
Alkalinity, Total as CaCO3 at pH 4.5	0.69	339		337		324		322	
Sulfide (Colorimetric, Methylene Blue) - E376.2/NONE (mg/l)	No Analytes Detected								
EPA-9/RSK-175 Modified A2720C - M2720C/NONE (ug/l)									
Ethane	0.092	0.092	U	0.16	F	0.092	U	0.092	U
Ethene	0.1	0.1	U	0.1	U	0.1	U	0.1	U
Methane	0.052	0.15	FB	0.5	U	0.5	U	0.5	U
Inductively Coupled Plasma Atomic Emission Spectro - SW6010/SW3005 (mg/l)									
Tin	0.01	0.097	F	NA		NA		NA	
Inductively Coupled Plasma Mass Spectrometry - SW6020/SW3020 (mg/l)									
Arsenic	0.00019	0.00095	F	NA		NA		NA	
Barium	0.0002	0.1		NA		NA		NA	
Cobalt	0.00002	0.00034	F	NA		NA		NA	
Copper	0.00084	0.06	U	NA		NA		NA	
Lead	0.0002	0.5	U	NA		NA		NA	
Manganese	0.0002	0.2	U	NA		NA		NA	
Molybdenum	0.0002	0.0005	F	NA		NA		NA	
Nickel	0.0002	0.0072	F	NA		NA		NA	
Selenium	0.00007	0.0031	F	NA		NA		NA	
Thallium	0.00002	0.000033	F	NA		NA		NA	
Vanadium	0.00017	0.0009	F	NA		NA		NA	
Zinc	0.0011	0.011	F	NA		NA		NA	
Mercury in Liquid Waste (Manual Cold-Vapor Technig - SW7470/METHOD (mg/l)	No Analytes Detected								
Aromatic Volatile Organics - SW8020/SW5030 (ug/l)									
Toluene	0.15	NA		NA		NA		5	U
Xylenes (total)	0.15	NA		NA		NA		5	U
Organochlorine Pesticides and PCBs - SW8080/SW3510 (ug/l)	No Analytes Detected								
Organophosphorus Pesticides - SW8140/SW3510 (ug/l)	No Analytes Detected								
Chlorinated Herbicides - SW8150/SW3510 (ug/l)	No Analytes Detected								
Volatile Organic Compounds by Gas Chromatgraph/Mas - SW8260/SW5030 (ug/l)									
1,1-Dichloroethane	1.4	1.4	U	1.4	U	6.9	U	6.9	U
1,1-Dichloroethene	1.3	1.3	U	1.2	U	6.2	U	6.2	U
Acetone	0.96	0.96	U	NA		NA		NA	
Chloroform	1.4	1.4	U	1.5	U	7.5	U	7.5	U
Tetrachloroethene	1.2	1.2	U	1.2	U	6.2	U	6.2	U

Positive Results Summary Table
Carswell AFB
Landfill Area Groundwater

Locxref :	Method	LF05-19C		WHGLTA003		WHGLTA004		WHGLTA004	
Sample ID :	Detection	LF05-19CWG03		WHGLTA003WG03		DUP01-WG03		WHGLTA004WG03	
Sample Date :	Limit	28-Jan-98		23-Jan-98		23-Jan-98		23-Jan-98	
		Appendix IX							
Trichloroethene	1.2	56		170		900		910	
Vinyl chloride	1.2	1.2	U	2.9	U	14	U	14	U
cis-1,2-Dichloroethene	0.1	NA		61		110		100	
trans-1,2-Dichloroethene	1.3	1.3	U	1.7	F	6.9	U	6.9	U
GC/MS for Semivolatile Organics (Capillary Column - SW8270/SW3520 (ug/l)									
1,4-Dichlorobenzene	4	3.9	U	NA		NA		NA	
Polychlorinated Dibenzo-p-Dioxins and Dibenzofuran - SW8280/METHOD (ng/l)	No Analytes Detected								
Total and Amendable Cyanide (Colorimetric, Automat - SW9012/METHOD (mg/l)									
Cyanide	0.001	0.001	U	NA		NA		NA	
SW846 9056 - SW9056/NONE (mg/l)									
Bromide	0.051	0.45	F	0.51		0.31	F	0.31	F
Chloride	0.1	39.4		35		11.7		11.5	
Fluoride	0.05	0.44	F	0.31	F	0.22	F	0.22	F
Nitrate as N	0.05	2.3		4.1		3.9		3.9	
Orthophosphate as P	0.05	0.05	U	0.05	R	0.05	U	0.05	U
Sulfate	0.1	92.5		68.5		25.8		25.5	
Total Organic Carbon - SW9060/NONE (mg/l)									
Total Organic Carbon	0.22	0.98	F	1.1	U	1	U	1	U

432 309

Positive Results Summary Table
Carswell AFB
Landfill Area Groundwater

Locxref : / Sample ID : / Sample Date :	Method Detection Limit	USGS07T USGS07TWG03 21-Jan-98		WP07-10C WP07-10CWG03 28-Jan-98 Appendix IX	
Alkalinity (Titrimetric) - E310.1/NONE (mg/l)					
Alkalinity, Bicarb. as CaCO3 at pH 4.5	0.69	250		431	
Alkalinity, Total as CaCO3 at pH 4.5	0.69	250		431	
Sulfide (Colorimetric, Methylene Blue) - E376.2/NONE (mg/l)	No Analytes Detected				
EPA-9/RSK-175 Modified A2720C - M2720C/NONE (ug/l)					
Ethane	0.092	0.092	U	1.5	
Ethene	0.1	0.1	U	0.78	
Methane	0.052	0.5	U	1100	
Inductively Coupled Plasma Atomic Emission Spectro - SW6010/SW3005 (mg/l)					
Tin	0.01	NA		0.094	F
Inductively Coupled Plasma Mass Spectrometry - SW6020/SW3020 (mg/l)					
Arsenic	0.00019	NA		0.01	F
Barium	0.0002	NA		0.14	
Cobalt	0.00002	NA		0.0069	F
Copper	0.00084	NA		0.06	U
Lead	0.0002	NA		0.5	U
Manganese	0.0002	NA		0.39	B
Molybdenum	0.0002	NA		0.00043	F
Nickel	0.0002	NA		0.014	F
Selenium	0.00007	NA		0.0073	F
Thallium	0.00002	NA		0.00005	F
Vanadium	0.00017	NA		0.00017	U
Zinc	0.0011	NA		0.012	F
Mercury in Liquid Waste (Manual Cold-Vapor Techniq - SW7470/METHOD (mg/l)	No Analytes Detected				
Aromatic Volatile Organics - SW8020/SW5030 (ug/l)					
Toluene	0.15	NA		NA	
Xylenes (total)	0.15				
Organochlorine Pesticides and PCBs - SW8080/SW3510 (ug/l)	No Analytes Detected				
Organophosphorus Pesticides - SW8140/SW3510 (ug/l)	No Analytes Detected				
Chlorinated Herbicides - SW8150/SW3510 (ug/l)	No Analytes Detected				
Volatile Organic Compounds by Gas Chromatograph/Mas - SW8260/SW5030 (ug/l)					
1,1-Dichloroethane	1.4	0.25	F	14	U
1,1-Dichloroethene	1.3	0.43	F	13	U
Acetone	0.96	NA		20	U
Chloroform	1.4	0.16	F	14	U
Tetrachloroethene	1.2	1.3	F	12	U

432 310

Positive Results Summary Table
Carswell AFB
Landfill Area Groundwater

Locxref : Sample ID : Sample Date :	Method Detection Limit	USGS07T USGS07TWG03 21-Jan-98		WP07-10C WP07-10CWG03 28-Jan-98 Appendix IX	
Trichloroethene	1.2	0.46	F	1200	
Vinyl chloride	1.2	0.23	U	29	F
cis-1,2-Dichloroethene	0.1	0.5	F	NA	
trans-1,2-Dichloroethene	1.3	0.11	U	21	F
GC/MS for Semivolatile Organics (Capillary Column - SW8270/SW3520 (ug/l)					
1,4-Dichlorobenzene	4	NA		6.4	F
Polychlorinated Dibenzo-p-Dioxins and Dibenzofuran - SW8280/METHOD (ng/l)	No Analytes Detected				
Total and Amendable Cyanide (Colorimetric, Automat - SW9012/METHOD (mg/l)					
Cyanide	0.001	NA		0.0016	F
SW846 9056 - SW9056/NONE (mg/l)					
Bromide	0.051	0.31	F	1.2	
Chloride	0.1	11.2		55.5	
Fluoride	0.05	0.48	R	0.55	F
Nitrate as N	0.05	0.98	F	0.24	F
Orthophosphate as P	0.05	1.2		0.05	U
Sulfate	0.1	72.6		41.1	
Total Organic Carbon - SW9060/NONE (mg/l)					
Total Organic Carbon	0.22	1	U	7	

432 311

432 312

TAB

Appendix C

APPENDIX C
RESULTS OF LONG-TERM MONITORING AT AOC 1
(BASE GAS STATION/BASE SERVICE STATION)
JANUARY 1998

C.1 INTRODUCTION

As part of the corrective action for Area of Concern (AOC) 1 (Base Service Station/Base Gas Station), quarterly groundwater monitoring is being conducted for a period of one year, beginning in October 1997 (IT Corporation, 1997a, 1997b). The samples are being collected from six wells (SAV-2, BSS-B, MW-10, BGSMW03, BGSMW05, and BGSMW06) and will be analyzed by EPA Method SW8020A for benzene, toluene, ethylbenzene, and total xylenes (BTEX compounds) and methyl tert-butyl ether (MTBE). In addition, field parameters will be measured in the field at the time of sampling and will include pH, temperature, conductivity, dissolved oxygen (DO), and turbidity. The original long-term monitoring (LTM) requirements specified sampling monitoring well MW-1 (IT Corporation, 1997b). However, construction of a sewer line in Spring 1997 destroyed this monitoring well; monitoring well SAV-2, located 80 feet to the southwest of MW-1, has been monitored as a substitute. The locations of the six wells monitored as part of the LTM for AOC 1 are provided on Figure C.1.

C.2 SAMPLING METHODS

A visual inspection of each of the six monitoring wells was conducted to determine the well's condition and integrity (e.g., pad condition, lock integrity, etc.). Following the visual inspection of each well, an organic vapor meter (OVM) was used to measure the levels of organic vapors in the background area, breathing zone, and at the top of each well casing immediately after the well cap had been removed. An electronic oil-water interface device was used to determine the presence and depth of any non-aqueous phase liquids (NAPL), depth to water, and total well depth. The water level measurements and total depths were taken several days prior to purging and sampling the wells in order to minimize water column disturbance.

The monitoring wells were sampled using a low-flow purge technique. A detailed sampling protocol is included in Appendix B of the pre-draft GSAP (HydroGeoLogic, 1997). The wells were purged with 2 inch stainless steel Grundfos Redi-Flo submersible pumps. Pumping rates were kept between 0.1 to 2.0 liter/minute to minimize turbidity, oxygenation, mixing of chemically distinct zones, and potential loss of volatile organic compounds (VOCs).

During purging, water quality stabilization criteria (pH, temperature, oxidation-reduction potential [Eh], turbidity, dissolved oxygen [DO], and electrical conductance [EC]) were continuously monitored. If the sampled well was not experiencing significant drawdown while purging (i.e., the water column did not drop more than 2 feet, or 10 percent of the screened interval length), the criteria for sample collection was the stabilization of water quality parameters as follows:

- Temperature +/-0.1°C
- pH +/-0.1 units
- EC +/-5% full scale range

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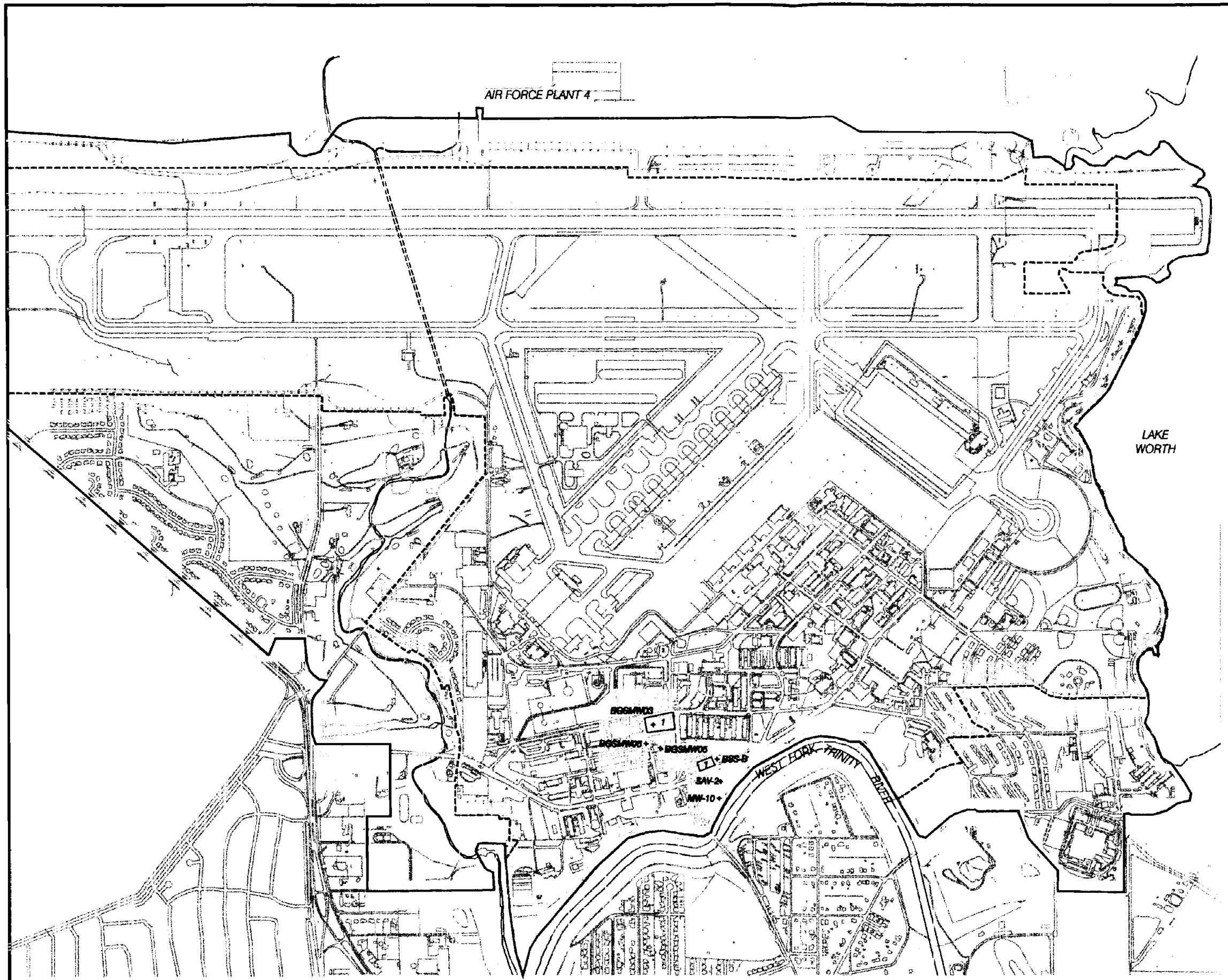

Figure C.1

Wells Designated for Long-Term Monitoring Activity at AOC 1 NAS Fort Worth JRB

Air Force Center
For Environmental Excellence
Brooks AFB, Texas

Legend

- - - - - NAS Fort Worth JRB (Carswell Field)
——— Former Carswell Air Force Base
[1] Area of Concern (AOC)
+ SAV-2 Long-Term Monitoring Well for AOC 1 (Base Gas Station / Base Service Station)

N

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Revised: 07/13/98 jb
Project: AFC001-07GCB
Map Source: Jacobs, 1996

- DO +/- 0.10 mg/L or 10% of value (whichever is greater)
- Eh +/-10%
- Turbidity +/-1% and less than 10 NTUs

A well was sampled when the water quality stabilization criteria were met, and the well did not experience a significant drawdown while purged (i.e., >2 ft or 10% of the screen length interval).

If these parameters did not stabilize, the sample was collected after three to five equivalent well volumes had been removed. If the sampled well was exhibiting excessive drawdown while being purged at the lowest possible flow rate for that well, the well was purged dry and the sample collected when a sufficient volume of water had accumulated in the well.

The wells were sampled for 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, benzene, chlorobenzene, ethylbenzene, toluene, total xylenes, and methyl tert-butyl ether using EPA Method SW8020. All samples were delivered by overnight courier to Quanterra Environmental Services in Denver, Colorado for analysis.

C.3 RESULTS OF SAMPLING

The Corrective Action specifies that all six monitoring wells be analyzed for the BTEX compounds and MTBE using Method SW8020A. Table C.1 lists all detections of these compounds above the method detection limits in both the October 1997 and January 1998 sampling events. The table shows similar results for both sampling rounds.

Monitoring wells BGSMW03, BGSMW05, and BGSMW06 are being monitored to evaluate contamination at the Base Gas Station portion of AOC 1. Monitoring well BGSMW03 is located within the AOC 1 boundaries. The benzene concentration detected in this well was 1,000 ug/L in October 1997 and 1,400 ug/L in January 1998. All other sampled contaminants were detected at low levels in this well (all below practical quantitation limits (PQLs) in January 1998). Monitoring wells BGSMW05 and BSGMW06 are located downgradient of the Base Gas Station. These wells contained very low concentrations of the BTEX compounds in October 1997 and no sampled compounds were detected above the method detection limits (MDLS) in January 1998 in either well.

Monitoring wells BSS-B, MW-10, and SAV-2 are being monitored to evaluate contamination at the Base Service Station portion of AOC 1. Monitoring well BSS-B is located cross-gradient of the site, while monitoring wells MW-10 and SAV-2 are located downgradient of the site. Benzene was not detected in monitoring well BSS-B during either sampling event, although it was detected in monitoring wells MW-10 and SAV-2 at concentrations ranging from 2,300 ug/L to 4,900 ug/L. Ethylbenzene was found in all three wells at concentrations ranging from 1,500 ug/L to 5,200 ug/L.

The Corrective Action Plan also requires the presentation of results from the measurement of pH, temperature, conductivity, dissolved oxygen, and turbidity during sampling. The results are presented in Table C.2.

Table C.1
Analytical Results for Sampling by Method SW8020A
at AOC 1 (Base Gas Station/Base Service Station)

Well	Analyte	October 1997		January 1998	
		Result (ug/L)[1]	Qualifier[2]	Result (ug/L)[1]	Qualifier
BGSMW03	Benzene	1,000		1,400	
	Ethylbenzene	25		38	F
	Methyl tert-butyl ether	8.6	F	ND	
	Toluene	10	F	26	F
	Xylenes (total)	51		75	F
BGSMW05	Toluene	0.52	F	ND	
	Xylenes (total)	1	F	ND	
BGSMW06	Benzene	0.65	F	ND	
	Ethylbenzene	1.1	F	ND	
	Toluene	2.1		ND	
	Xylenes (total)	3.3		ND	
BSS-B	Ethylbenzene	1,800		1,700	
	Toluene	9,100		7,600	
	Xylenes (total)	9,400		12,000	
MW-10	Benzene	2,600		4,900	
	Ethylbenzene	4,900		5,200	
	Methyl tert-butyl ether	380		400	F
	Toluene	7,300		7,300	
	Xylenes (total)	13,000		14,000	
SAV-2[3]	Benzene	3,000		2,300	
	1,4-Dichlorobenzene	ND		18	F
	Ethylbenzene	1,700		1,500	
	Methyl tert-butyl ether	300		310	
	Toluene	160		140	J
	Xylenes (total)	2,900		2,900	

[1]Concentrations are reported in micrograms per liter (ug/L).
[2]The "F" qualifier indicates that the analyte was postively identified, but that the associated numerical value is below the practical quantitation limit (PQL). The "J" qualifier indicates that the analyte was positively identified, but the quantification is an estimation.
[3]This well was mislabelled as monitoring well MW-1 during the October 1997 and Janaury 1998 sampling events.

Table C.2
Field Parameters Measured in Sampled Wells
at AOC 1 (Base Gas Station/Base Service Station)

Well	pH	Temperature[1] (°C)	Conductivity[2] (mS/cm)	Dissolved Oxygen[3] (mg/L)	Turbidity[4] (NTU)
Parameters Measured October 1997					
BGSMW03	6.50	25.4	0.92	0.75	0
BGSMW05	6.91	26.4	0.99	0.08	0
BGSMW06	6.46	27.5	0.92	0.62	0
BSS-B	6.75	26.8	1.07	6.83	38
MW-10	6.44	23.9	1.11	0.62	0
SAV-2[6]	6.78	25.2	1.03	0.42	8
Parameters Measured January 1998					
BGSMW03	6.61	23.3	0.91	0[5]	5
BGSMW05	7.08	23.1	0.71	0.68	0
BGSMW06	6.53	23.9	1.16	0[5]	1
BSS-B	6.50	22.2	1.12	0.69	66
MW-10	6.69	20.9	1.15	0.35	0
SAV-2	6.55	21.7	0.95	0[5]	8

[1]Temperature was measured in degrees Celsius (°C).

[2]Conductivity was measured in milliSiemens per centimeter (mS/cm).

[3]Dissolved oxygen was measured in milligrams per liter (mg/L).

[4]Turbidity was measured in nephelometric turbidity units (NTUs).

[5]Values are assumed to be zero due to negative values recorded in the field.

[6]This well was mislabelled as monitoring well MW-1 during the October 1997 and Janaury 1998 sampling events.

C.4 REFERENCES

HydroGeoLogic, Inc. (HydroGeoLogic), 1997. Pre-Draft 1998 Basewide Groundwater Sampling and Analysis Plan, NAS Fort Worth JRB.

IT Corporation, 1997a. Final Attachment 20, Corrective Action Plan Submittal, TNRCC Assessment Report Form, Base Gas Station, NAS Fort Worth JRB, Carswell Field, Fort Worth, Texas.

IT Corporation, 1997b. Final Attachment 20, Corrective Action Plan Submittal, TNRCC Assessment Report Form, Base Service Station, NAS Fort Worth JRB, Carswell Field, Fort Worth, Texas.

TAB

Appendix D

APPENDIX D
RESULTS OF LONG-TERM MONITORING AT SWMUS 64, 67, AND 68 AND AOC 7 (SD13/ST14 AREA) JANUARY 1998

D.1 INTRODUCTION

As part of the remedial action for solid waste management units (SWMUs) 64, 67, and 68 and area of concern (AOC) 7 (Sites ST14 and SD13), a total of 22 wells will be used to monitor the nature and extent of dissolved contaminants at these sites (Parsons, 1997). The purpose of these monitoring events is to confirm that source soils are not causing increases in groundwater concentrations and that no unanticipated downgradient migration is occurring. The remedial action calls for quarterly sampling until the appropriate target concentrations are obtained, and then, an additional two years of verification sampling to ensure plume stability and ongoing compliance (Parsons, 1997). Table D.1 lists all wells designated for sampling as part of this remedial action. The locations of all wells are shown on Figure D.1.

Table D.1
Wells Designated for Sampling in Remedial Action Plan (RAP) for SWMUs 64, 67, 68 and AOC 7 (Sites ST14 and SD13)

Type of Well	Site	Well Name
Upgradient Wells (3 wells)		ST14-14, ST14-24, ST14-26
Plume Wells (16 wells)	SWMU 68 (10 wells) [Site ST14]	ST14-03, ST14-W16, ST14-W18, 17M, ST14-02, ST14-29, ST14-W21, ST14-04, ST14-28, WHGLTA008
	SWMU 64, 67 and AOC 7 (6 wells) [Site SD13]	SD13-01, SD13-02, ST14-W31, SD13-04, SD13-06, WHGLTA006
Downgradient Wells - POC Wells (3 wells)		SD13-07, WHGLTA005, WHGLTA007

D.2 SAMPLING METHODS

A visual inspection of each monitoring well was conducted to determine the well's condition and integrity (e.g., pad condition, lock integrity, etc.). Following the visual inspection of each well, an organic vapor meter (OVM) was used to measure the levels of organic vapors in the background area, breathing zone, and at the top of each well casing immediately after the well cap had been removed. An electronic oil-water interface device was used to determine the presence and depth of any non-aqueous phase liquids (NAPL), depth to water, and total well depth. The water level measurements and total depths were taken several days prior to purging and sampling the wells in order to minimize water column disturbance.

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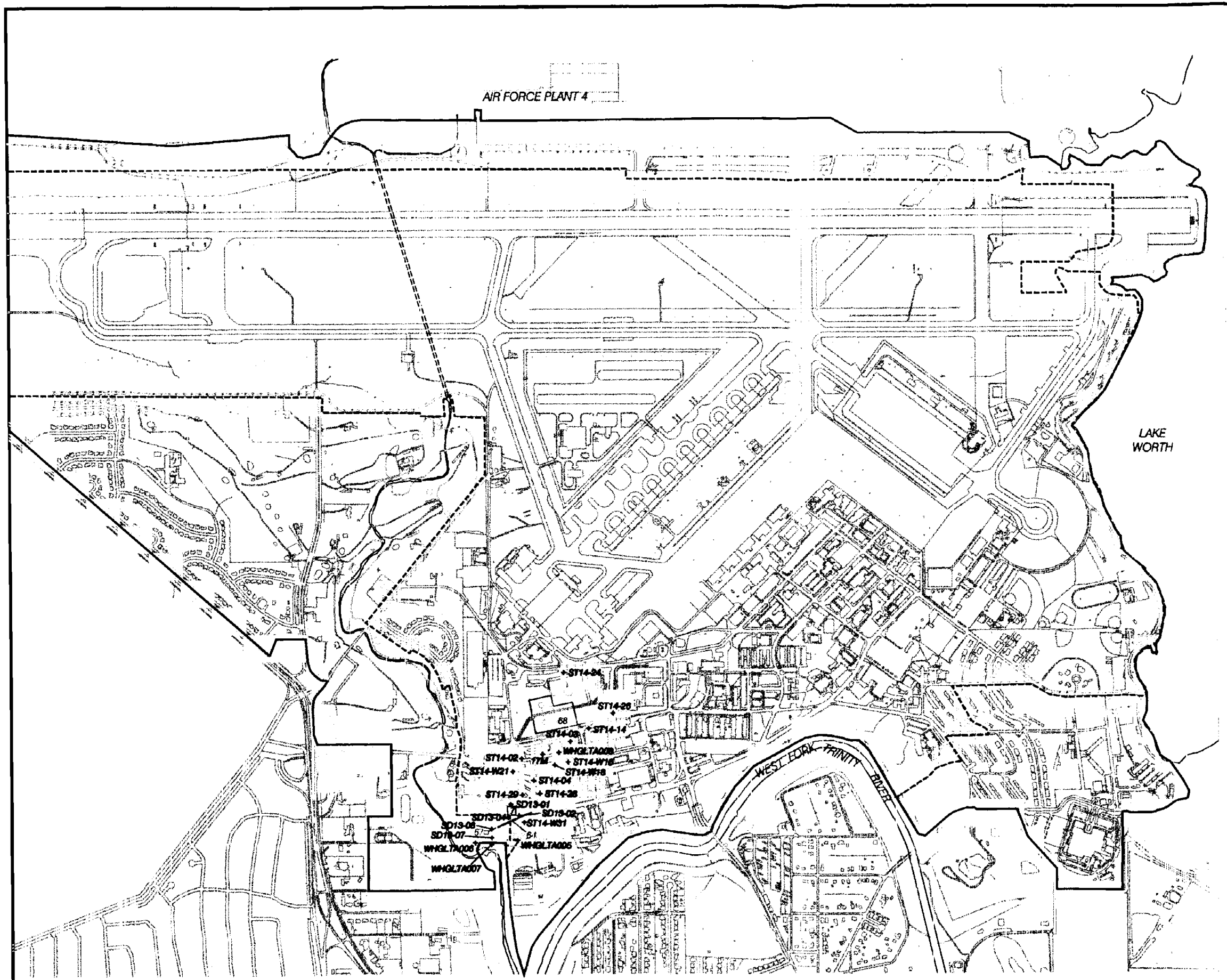

HydroGeoLogic, Inc. — Final January 1998 Quarterly Report
NAS Fort Worth JRB, Texas

Figure D.1
Wells Designated for Long-Term Monitoring Activity at SWMU's 64, 67, and 68 and AOC 7 NAS Fort Worth JRB

Air Force Center
For Environmental Excellence
Brooks AFB, Texas

Legend

- - - - - NAS Fort Worth JRB (Carswell Field)

——— Former Carswell Air Force Base

[7] Area of Concern (AOC)

[68] Solid Waste Management Unit (SWMU)

+ MW-1 Long Term Monitoring Well For SWMUs 64, 67, and 68 and AOC 7 (ST14 and SD13)

N

0 600 1200 2400
SCALE IN FEET

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Revised: 07/13/98 jb
Project: AFC001-07GCB
Map Source: Jacobs, 1996

The monitoring wells were sampled using a low-flow purge technique. A detailed sampling protocol is included in Appendix B of the GSAP (HydroGeoLogic, 1997b). The wells were purged with 2-inch stainless steel Grundfos Redi-Flo submersible pumps. Pumping rates were kept between 0.1 to 2.0 liter/minute to minimize turbidity, oxygenation, mixing of chemically distinct zones, and potential loss of volatile organic compounds (VOCs).

During purging, water quality stabilization criteria (pH, temperature, oxidation-reduction potential [Eh], turbidity, dissolved oxygen [DO], and electrical conductance [EC]) were continuously monitored. If the sampled well was not experiencing significant drawdown while purging (i.e., the water column did not drop more than 2 feet, or 10 percent of the screened interval length), the criteria for sample collection was the stabilization of water quality parameters as follows:

- Temperature +/-0.1°C
- pH +/-0.1 units
- EC +/-5% full scale range
- DO +/- 0.10 mg/L or 10% of value (whichever is greater)
- Eh +/-10%
- Turbidity +/-1% and less than 10 NTUs

A well was sampled when the water quality stabilization criteria were met, and the well did not experience a significant drawdown while purged (i.e., >2 ft or 10% of the screen length interval).

If these parameters did not stabilize, the sample was collected after three to five equivalent well volumes had been removed. If the sampled well was exhibiting excessive drawdown while being purged at the lowest possible flow rate for that well, the well was purged dry and the sample collected when a sufficient volume of water had accumulated in the well.

D.3 CONTAMINANT EVALUATION

To facilitate discussion of contamination at NAS Fort Worth JRB, levels of contamination determined from analytical sampling were compared to several threshold values. The results of metals analyses were compared to established background concentrations (Jacobs, 1997), and the results of the organic analyses were compared to practical quantitation limits (PQLs). In addition, both metals and organics were compared to the Texas Natural Resources Conservation Commission (TNRCC) Risk Reduction Standard 2 (RRS 2) values. Comparison of contaminant concentrations to their respective RRS 2 value provides a basis for risk assessment. Concentrations that exceed their RRS 2 values indicate areas where continued monitoring and remedial action is necessary.

D.3.1 Background Concentrations

Background concentrations were determined for 24 inorganic constituents at NAS Fort Worth JRB (Jacobs, 1997). All metals sampled for at NAS Fort Worth JRB were included in this study, with the exception of tin, which is only sampled for as part of RCRA Appendix IX. A single groundwater sample was collected from each of twelve background wells in December 1996 using a low-stress technique to approximate filtered samples. The groundwater monitoring wells

sampled, both newly installed and existing, were located up- and cross-gradient from wells that were known to contain volatile and semivolatile compounds.

The Tolerance Interval (TI) method suggested by the U.S. Environmental Protection Agency (EPA, 1989, 1992) was used to estimate background concentrations for the 24 inorganic constituents for comparison to compliance wells. TIs are useful for groundwater data analysis because it is important to ensure that, at most, a small fraction of the compliance wells sampled exceed a specific concentration level (EPA, 1992). Two coefficients are associated with any tolerance interval; one is the proportion of the population that the interval is supposed to contain, called the coverage. The second is the degree of confidence with which the interval reaches the specified coverage, known as the tolerance coefficient. The $UTL_{95,95}$ is the upper tolerance limit (UTL) of a TI with a coverage of 95 percent and a tolerance coefficient of 95 percent. The $UTL_{95,95}$ was determined by Jacobs (1997) as the background concentration for comparison to contaminant concentrations. Background values for those metals found are provided in Table D.2.

D.3.2 Practical Quantitation Limits (PQLs)

A PQL is the lowest analytical result level that can reasonably be achieved within specified limits of precision and accuracy during routine laboratory conditions. Each PQL value is higher than the associated method detection limit (MDL), which is the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero. Sample concentrations falling in between the MDL and PQL are assigned an "F" qualifier indicating the variability of the result (HydroGeoLogic, 1997). Since a background concentration for organic compounds is not appropriate, the PQL is used as a comparison to determine those compounds which can be detected within established limits of precision and accuracy.

D.3.3 Risk Reduction Standard 2 (RRS 2)

RRS 2 values are the chemical-specific clean-up levels for remediation of groundwater that has been contaminated by a release(s) from a SWMU/AOC. These values are established from health-based standards and criteria (Texas and/or Federal) pursuant to the TNRCC Regulations, 30 TAC 335.551-335.569. If the PQL and/or background concentration for a given chemical is greater than the RRS 2 level, the greater of the PQL or background value is to be used for determining compliance with requirements of the groundwater remediation. If RRS 2 values are not available, or do not provide appropriate protection for human health or the environment, cleanup levels based on other numeric criteria, referred to as Medium Specific Concentrations (MSCs), must be established. Formulae to develop MSCs, based on exposure factors and pathways and chemical-specific toxicity, are provided in 30 TAC 335.558 (i.e., Medium Specific Concentrations for Risk Reduction Standard Number 2). RRS 2 values for metals and VOCs are provided in Table D.2 and Table D.3, respectively.

D.4 RESULTS OF SAMPLING

Of the 22 monitoring wells selected for sampling in the RAP (Parsons, 1997), 17 were sampled. Four wells proposed for installation downgradient of SWMUs 64, 67, and 68 and AOC 7 (WHGLTA005, WHGLTA006, WHGLTA007, and WHGLTA008) were not in place for

Table D.2
Background and Risk Reduction Standard 2 (RRS 2) Values for Inorganic Constituents

Metal	Background Value (mg/L)	RRS 2 Value (mg/L)	RRS 2 Value Source[1]
Arsenic	0.0049	0.05	TNRCC
Barium	0.587	2	TNRCC
Beryllium	0.0003	0.004	TNRCC
Cadmium	0.0005	0.005	TNRCC
Calcium	226.3	--	Essential Nutrient[2]
Chromium	0.006	0.1	TNRCC
Cobalt	0.0089	6.1	Derived
Iron	0.2239	0.3	Derived
Lead	0.0016	0.015	TNRCC
Magnesium	37.8	--	Essential Nutrient[2]
Manganese	0.175	2.4	Derived
Molybdenum	0.0144	0.51	Derived
Nickel	0.0204	0.1	TNRCC
Selenium	0.0077	0.05	TNRCC
Sodium	167.2	--	Essential Nutrient[2]
Tin	--	61	Derived
Thallium	0.0632	0.082	Derived
Vanadium	0.0123	0.71	Derived

Notes:

[1]Source of all values was Texas Natural Resource Conservation Commission (TNRCC) Risk Reduction Standards 2 (30 TAC 335). Those noted as "Derived" were derived based on procedures presented in the regulations.

[2]Essential Nutrient - no risk values available.

Table D.3
Risk Reduction Standard 2 (RRS 2) Values
for Volatile Organic Compounds (VOCs)

VOC	RRS 2 Value (ug/L)	RRS 2 Value Source[1]
1,2,3-Trichlorobenzene	70	TNRCC
2-Methylnaphthalene	4,100	Derived
Benzene	5	TNRCC
Chlorobenzene	100	TNRCC
cis-1,2-Dichloroethene	70	TNRCC
Dibenzofuran	410	Derived
Naphthalene	1,460	TNRCC
tert-Butylbenzene	1,020	Derived
Trichloroethene	5	TNRCC
Vinyl chloride	2	TNRCC

Notes:
[1]Source of all values was Texas Natural Resource Conservation Commission (TNRCC) Risk Reduction Standards 2 (30 TAC 335). Those noted as "Derived" were derived based on procedures presented in the regulations.

sampling; these wells should be in place for the April 1998 basewide quarterly sampling event. Monitoring well SD13-07 contained free product; therefore, it was not sampled. The samples collected from each well during the January 1998 sampling event are summarized in Table D.4.

D.4.1 Volatile Organic Compounds (VOCs)

All 17 monitoring wells sampled were analyzed for the presence of VOCs. Nine of the wells were sampled using EPA Method SW8020A for aromatic VOCs (BTEX compounds) and the remaining eight wells were sampled using EPA Method SW8260A. The VOCs detected above MDLs using these two methods are presented in Table D.5 and Table D.6. Locations of the wells are provided in Figure D.1.

Of nine monitoring wells sampled using EPA Method SW8020A, two monitoring wells, ST14-02 and ST14-W16, contained benzene at concentrations above the MDL (57 and 9.4 ug/L, respectively); these concentrations were also above the RRS 2 for benzene (5 ug/L). The only other compound detected in this area was chlorobenzene; it was detected in monitoring wells ST14-04 and ST14-29 at concentrations of 9.3F ug/L and 8.5 ug/L, respectively. These concentrations are both well below the 100 ug/L RRS 2 value for this compound.

Of the eight monitoring wells sampled for VOCs using EPA Method SW8260A, the only compound found above PQL was vinyl chloride in monitoring well ST14-24, at a concentration of 1.7 ug/L. The RRS 2 value for vinyl chloride is 2 ug/L. Monitoring well ST14-24 was designated as an upgradient well for the East Area SWMUs, but is also located downgradient of the TCE plume in the Flightline and Landfill Areas. Vinyl chloride is a potential breakdown product of chlorinated solvent degradation. Other contaminants, including trichloroethene, cis-1,2-dichloroethene, tert-butylbenzene, naphthalene, and 1,2,3-trichlorobenzene, were all found in at least one of the upgradient wells (ST14-14, ST14-24, and ST14-26); however, all detections were below PQLs.

D.4.2 Metals

Eleven monitoring wells were sampled for metals during the January 1998 sampling event. The metals detected above MDLs during this sampling event are presented in Table D.7. Locations of the wells are provided in Figure D.1.

Monitoring wells ST14-14, ST14-24, and ST14-26, which were all sampled for metals, are designated as upgradient wells. The sample taken from monitoring well ST14-24 did not contain any metals above background values. Monitoring wells ST14-14 and ST14-26 both contained iron at concentrations above both the background and RRS 2 values. No other metals sampled in these upgradient wells were above RRS 2 values. Monitoring well ST14-14 contained manganese at a concentration of 0.19J mg/L, just slightly above the background values of 0.175 mg/L. Monitoring well ST14-26 contained vanadium at a concentration of 0.023F mg/L, which is above background value of 0.0123 mg/L.

The remaining eight wells sampled for metals are all designated as plume wells. Six of the eight plume wells contained arsenic above background values, with concentrations ranging from 0.012F

Table D.4
Analytical Sampling - January 1998

Well	Chemical Parameters				
	Appendix IX	VOCs	BTEX	Metals	Natural Attenuation
Upgradient Wells					
ST14-14		X		X	
ST14-24		X		X	
ST14-26		X		X	
Plume Wells (ST14)					
17M			X		X
ST14-02			X	X	X
ST14-03			X		X
ST14-04			X		X
ST14-28			X		X
ST14-29			X		X
ST14-W16			X		X
ST14-W18			X	X	X
ST14-W21			X	X	X
WHGLTA008[1]					
Plume Wells (SD13)					
SD13-01	X				X
SD13-02	X				X
SD13-04	X				X
SD13-06	X				X
ST14-W31	X				X
WHGLTA007[3]					
Point of Compliance Wells					
SD13-07[4]					
WHGLTA005[3]					
WHGLTA006[3]					

[1]Samples from all wells will also be tested for the following standard field parameters: temperature, pH, electrical conductance (EC), dissolved oxygen (DO), oxidation-reduction potential (Eh), and turbidity.

[2]Natural attenuation parameters to be sampled are common anions (chloride, nitrate, sulfate), total organic carbon (TOC), Fe(II), alkalinity, and methane.

[3]These wells were not installed in time for January 1998 sampling. They should be in place for the April 1998 sampling event.

[4]This well contained free product and was not sampled during the Janaury 1998 event.

Notes:
VOCs = volatile organic compounds
BTEX = benzene, toluene, ethylbenzene, and total xylenes

Table D.5
Detections of Aromatic Volatile Organic Compounds (VOCs)
In Wells Sampled Using Method SW8020

Well	Analyte	Result	Qualifier[1]	PQL	Units[2]
ST14-02	Benzene	57		10	ug/L
ST14-03	(none)	--		--	--
ST14-04	Chlorobenzene	9.3	F	10	ug/L
ST14-28	(none)	--		--	--
ST14-29	Chlorobenzene	8.5		5.0	ug/L
ST14-W16	Benzene	9.4		4	ug/L
ST14-W18	(none)	--		--	--
ST14-W21	(none)	--		--	--

[1]The "F" qualifier indicates that the analyte was postively identified, but that the associated numerical value is below the practical quantitation limit (PQL).
[2]Concentrations are reported in micrograms per liter (ug/L).

Notes:
PQL = practical quantitation limit

Table D.6
Detections of Volatile Organic Compounds (VOCs)
In Wells Sampled Using Method SW8260

Well	Analyte	Result	Qualifier[1]	PQL	Units[2]
17M	(none)	--		--	--
SD13-01	(none)	--		--	--
SD13-02	(none)	--		--	--
SD13-04	(none)	--		--	--
SD13-06	(none)	--		--	--
ST14-14	cis-1,2-Dichloroethene	0.12	F	1.2	ug/L
	tert-Butylbenzene	0.76	F	1.4	ug/L
	Trichloroethene	0.35	F	1.0	ug/L
ST14-24	cis-1,2-Dichloroethene	0.32	F	1.2	ug/L
	Trichloroethene	0.4	F	1	ug/L
	Vinyl chloride	1.7		1.1	ug/L
ST14-26	1,2,3-Trichlorobenzene	0.2	F	2.0	ug/L
	cis-1,2-Dichloroethene	0.17	F	1.2	ug/L
	Naphthalene	0.6	F	2.0	ug/L
	Trichloroethene	0.27	F	1	ug/L
ST14-W31	(none)	--		--	--

[1]The "F" qualifier indicates that the analyte was postively identified, but that the associated numerical value is below the practical quantitation limit (PQL).
[2]Concentrations are reported in micrograms per liter (ug/L).

Notes:
PQL = practical quantitation limit

Table D.7
Detections of Metals in Wells Sampled

Well	Analyte	Method	Result	Qualifier[1]	PQL	Units[2]
SD13-01	Arsenic	SW6020	0.056	F	0.6	mg/L
	Barium	SW6020	0.17		0.02	mg/L
	Cobalt	SW6020	0.0017	F	0.07	mg/L
	Lead	SW6020	0.00034	F	0.5	mg/L
	Manganese	SW6020	0.059		0.02	mg/L
	Molybdenum	SW6020	0.0059	F	0.08	mg/L
	Nickel	SW6020	0.0097	F	0.15	mg/L
	Selenium	SW6020	0.0037	F	0.8	mg/L
	Thallium	SW6020	0.000024	F	0.4	mg/L
	Tin	SW6010A	0.11		0.1	mg/L
SD13-02	Arsenic	SW6020	0.026	F	0.6	mg/L
	Barium	SW6020	0.17		0.02	mg/L
	Cobalt	SW6020	0.00048	F	0.07	mg/L
	Lead	SW6020	0.00044	F	0.5	mg/L
	Manganese	SW6020	0.26		0.02	mg/L
	Molybdenum	SW6020	0.005	F	0.08	mg/L
	Nickel	SW6020	0.0055	F	0.15	mg/L
	Selenium	SW6020	0.0045	F	0.8	mg/L
	Thallium	SW6020	0.000025	F	0.4	mg/L
	Tin	SW6010A	0.097	F	0.1	mg/L
	Zinc	SW6020	0.013	F	0.02	mg/L
SD13-04	Arsenic	SW6020	0.069	F	0.6	mg/L
	Barium	SW6020	0.19		0.02	mg/L
	Cobalt	SW6020	0.0036	F	0.07	mg/L
	Lead	SW6020	0.0018	F	0.5	mg/L
	Molybdenum	SW6020	0.004	F	0.08	mg/L
	Selenium	SW6020	0.0045	F	0.8	mg/L
	Thallium	SW6020	0.000042	F	0.4	mg/L
	Tin	SW6010A	0.091	F	0.1	mg/L
	Vanadium	SW6020	0.00029	F	0.08	mg/L
ST14-02	Antimony	SW6020	0.00065	F	0.4	mg/L
	Arsenic	SW6020	0.012	F	0.6	mg/L
	Barium	SW6020	0.11		0.02	mg/L
	Calcium	SW6010	138		1	mg/L
	Chromium	SW6020	0.00038	F	0.07	mg/L
	Cobalt	SW6020	0.00038	F	0.07	mg/L
	Iron	SW6010	13.8		0.07	mg/L
	Magnesium	SW6010	6.8		1	mg/L
	Manganese	SW6020	0.23	J	0.02	mg/L
	Molybdenum	SW6020	0.0019	F	0.08	mg/L
	Sodium	SW6010	21.4		1	mg/L
	Thallium	SW6020	0.000068	F	0.4	mg/L
	Vanadium	SW6020	0.00038	F	0.08	mg/L

Table D.7
Detections of Metals in Wells Sampled (continued)

Well	Analyte	Method	Result	Qualifier[1]	PQL	Units[2]
ST14-14	Arsenic	SW6020	0.0027	F	0.60	mg/L
	Barium	SW6020	0.042		0.020	mg/L
	Calcium	SW6010	93.5		1.0	mg/L
	Iron	SW6010	1.6		0.070	mg/L
	Magnesium	SW6010	5.3		1.0	mg/L
	Manganese	SW6020	0.19	J	0.020	mg/L
	Molybdenum	SW6020	0.0025	F	0.080	mg/L
	Selenium	SW6020	0.0032	F	0.80	mg/L
	Sodium	SW6010	29.2		1.0	mg/L
	Thallium	SW6020	0.000077	F	0.40	mg/L
ST14-24	Arsenic	SW6020	0.001	F	0.6	mg/L
	Barium	SW6020	0.21		0.02	mg/L
	Calcium	SW6010	109		1	mg/L
	Chromium	SW6020	0.00023	F	0.07	mg/L
	Cobalt	SW6020	0.00028	F	0.07	mg/L
	Magnesium	SW6010	9.1		1	mg/L
	Manganese	SW6020	0.038	J	0.02	mg/L
	Sodium	SW6010	27.1	J	1	mg/L
	Thallium	SW6020	0.00011	F	0.4	mg/L
	Vanadium	SW6020	0.0012	F	0.08	mg/L
ST14-26	Arsenic	SW6020	0.0048	F	0.60	mg/L
	Barium	SW6020	0.13		0.020	mg/L
	Beryllium	SW6020	0.00023	F	0.0030	mg/L
	Cadmium	SW6020	0.000085	F	0.040	mg/L
	Calcium	SW6010	171		1.0	mg/L
	Lead	SW6020	0.0063	F	0.50	mg/L
	Magnesium	SW6010	8		1.0	mg/L
	Manganese	SW6020	0.097	J	0.020	mg/L
	Molybdenum	SW6020	0.00097	F	0.080	mg/L
	Selenium	SW6020	0.0049	F	0.80	mg/L
	Thallium	SW6020	0.000095	F	0.40	mg/L
	Vanadium	SW6020	0.023	F	0.080	mg/L
ST14-W18	Arsenic	SW6020	0.025	F	0.60	mg/L
	Barium	SW6020	0.13		0.020	mg/L
	Beryllium	SW6020	0.000068	F	0.0030	mg/L
	Calcium	SW6010	122		1.0	mg/L
	Cobalt	SW6020	0.0025	F	0.070	mg/L
	Iron	SW6010	8.7		0.070	mg/L
	Lead	SW6020	0.02	F	0.50	mg/L
	Magnesium	SW6010	5.1		1.0	mg/L
	Manganese	SW6020	0.16	J	0.020	mg/L
	Molybdenum	SW6020	0.0021	F	0.080	mg/L
	Nickel	SW6020	0.01	F	0.15	mg/L
	Selenium	SW6020	0.015	F	0.80	mg/L
	Sodium	SW6010	6.8	J	1.0	mg/L
	Thallium	SW6020	0.000071	F	0.40	mg/L
	Vanadium	SW6020	0.00098	F	0.080	mg/L

Table D.7
Detections of Metals in Wells Sampled (continued)

Well	Analyte	Method	Result	Qualifier[1]	PQL	Units[2]
ST14-W21	Arsenic	SW6020	0.054	F	0.60	mg/L
	Barium	SW6020	0.15		0.020	mg/L
	Calcium	SW6010	191		1.0	mg/L
	Cobalt	SW6020	0.0015	F	0.070	mg/L
	Iron	SW6010	14		0.070	mg/L
	Magnesium	SW6010	6.2		1.0	mg/L
	Manganese	SW6020	0.42	J	0.020	mg/L
	Molybdenum	SW6020	0.0016	F	0.080	mg/L
	Nickel	SW6020	0.069	F	0.15	mg/L
	Selenium	SW6020	0.0031	F	0.80	mg/L
	Sodium	SW6010	14.5	J	1.0	mg/L
	Thallium	SW6020	0.000032	F	0.40	mg/L
	Vanadium	SW6020	0.00043	F	0.080	mg/L
ST14-W31	Arsenic	SW6020	0.0012	F	0.6	mg/L
	Barium	SW6020	0.15		0.02	mg/L
	Cobalt	SW6020	0.00056	F	0.07	mg/L
	Lead	SW6020	0.00044	F	0.5	mg/L
	Molybdenum	SW6020	0.00086	F	0.08	mg/L
	Selenium	SW6020	0.0052	F	0.8	mg/L
	Thallium	SW6020	0.00005	F	0.4	mg/L
	Tin	SW6010A	0.076	F	0.1	mg/L
	Vanadium	SW6020	0.00052	F	0.08	mg/L

[1]The "F" qualifier indicates that the analyte was postively identified, but that the associated numerical value is below the practical quantitation limit (PQL). The "J" qualifier indicates that the analyte was positively identified, but quantification is an estimation

[2]Concentrations are reported in milligrams per liter (mg/L).

Notes:
PQL = practical quantitation limit

mg/L to 0.069F mg/L. Arsenic concentrations exceeded the RRS 2 value of 0.05 mg/L in three wells: SD13-02, SD13-04, and ST14-W21. Three of the eight wells, ST14-02, ST14-W18, and ST14-W21, contained iron at concentrations above both the background and RRS 2 values, ranging from 8.7 mg/L to 14 mg/L. Three of the eight wells, SD13-02, ST14-02, and ST14-W21, contained manganese above background values, but none of these detections were above the RRS 2 value of 2.4 mg/L. Lead was detected in monitoring well ST14-W18 at a concentration 0.02F mg/L, above the RRS 2 value of 0.015 mg/L. Lead was also detected in monitoring well SD13-04 at a concentration of 0.0018F mg/L, slightly above background value of 0.0016 mg/L. Other metals found in the East area plume wells include selenium in monitoring well ST14-W18 and nickel in monitoring well ST14-W21. Both of these detections were below background values. Samples from two of the plume wells, SD13-06 and ST14-W31, did not contain any metals above background values.

D.4.3 Other Analyses

Five wells were sampled for all RCRA Appendix IX compounds. In addition to the VOC and metals analyses described in the preceeding sections, monitoring wells SD13-01, SD13-02, SD13-04, SD13-06, and ST14-W31 were sampled for semivolatile organic compounds (SW8270B), organochlorine pesticides and polychlorinated biphenyls (SW8080A), organophosphorus pesticides (SW8140), chlorinated herbicides (SW8150), dioxins and furans (SW8280), sulfide (E376.2), and cyanide (SW9012). Table D.8 summarizes all detections above MDLs for these analyses. The only contaminant found above its PQL was 2-methylnapthalene. This compound was found in monitoring well SD13-04 at a concentration of 54 ug/L. The RRS 2 value for 2-methylnapthalene is 4,100 ug/L.

D.4.4 Field and Natural Attenuation Parameters

As part of the requirements for the RAP, field and natural attenuation parameters were collected at all sampled wells. The parameters and results are provided in Table D.9.

D.4.5 Corrective Action

There are several QC problems with the analytical data as reported by the laboratory for which the corrective actions specified in the Basewide QAPP (HydroGeoLogic, 1997a) were not performed. There are also cases where the analytical data quality is affected by failure of the laboratory to adhere to the requirements of the Basewide QAPP (HydroGeoLogic, 1997a). As a consequence of these procedural deficiencies in the laboratory quality control procedures, those monitoring wells which were sampled for Appendix IX analytes in the January 1998 sampling event will be resampled for herbicides, organochlorine pesticides/PCBs, organophosphorus pesticides, and those VOCs listed in Table 7.2.13-1 of the Basewide QAPP (HydroGeoLogic, 1997a) during the April 1998 sampling event. The laboratory will perform the reanalyses for these parameters at its own expense (with the exception of those VOC analyses which would have been required for April 1998 samples regardless of previous results). The proposed sampling protocol for the April 1998 sampling event is provided in Table 6.10.

Table D.8
Detections of Appendix IX Constituents, Excluding Metals and Volatile Organic Compounds (VOCs), in Wells Sampled

Well	Analyte	Method	Result	Qualifier[1]	PQL	Units[2]
SD13-01	2-Methylnaphthalene	SW8270B	5.2	F	9.6	ug/L
	Dibenzofuran	SW8270B	1.7	F	9.6	ug/L
SD13-02	Sulfide, Total	E376.2	0.022	F	0.05	mg/L
	2-Methylnaphthalene	SW8270B	8.1	F	9.6	ug/L
	Cyanide	SW9012	0.001	F	0.01	mg/L
SD13-04	Sulfide, Total	E376.2	0.028	F	0.05	mg/L
	2-Methylnaphthalene	SW8270B	54		9.7	ug/L
	Dibenzofuran	SW8270B	3.6	F	9.7	ug/L
	Cyanide	SW9012	0.001	F	0.01	mg/L
SD13-06	Cyanide	SW9012	0.001	F	0.01	mg/L
ST14-W31	Cyanide	SW9012	0.0015	F	0.01	mg/L

[1]The "F" qualifier indicates that the analyte was postively identified, but that the associated numerical value is below the practical quantitation limit (PQL).
[2]Concentrations are reported in micrograms per liter (ug/L) or milligrams per liter (mg/L).

Notes:
PQL = practical quantitation limit

Table D.9
Field and Natural Attenuation Parameters in Wells Sampled

Well	Alkalinity Total as CaCO3 at pH 4.5 (mg/L)	Sulfate (mg/L)	Nitrate as N[1] (mg/L)	Methane (ug/L)	Redox Potential (mV)	Dissolved Oxygen (mg/L)	Ferrous Iron (mg/L)	pH	Temperature (°C)	Conductivity (umhos/cm)
17M	295	0.98F	ND	2,900	-114.3	0.6	5.3	6.78	23.9	0.666
SD13-01	327	ND	ND	6,100	-	-0.47	8.6	6.83	21.3	0.652
SD13-02	317	ND	ND	4,600	110.2	0.15	8.12	6.96	22.8	0.733
SD13-04	372	ND	0.18F	6,500	-	-0.71	13.75	6.70	20.1	0.724
SD13-06	458	42.1	0.17F	180	-	3.23	0.52	6.90	22.0	0.873
ST14-02	362	ND	0.14F	1,300	-120.4	-0.5	13.2	6.7	22.8	0.694
ST14-03	249	34.2	4.3	75	130.4	-0.64	0.18	6.82	22.1	0.571
ST14-04	259	0.77F	0.13F	ND	-82.5	-0.57	6.38	6.84	24.4	0.579
ST14-14	267	1.2	ND	2,900	-105.4	-0.72	1.58	6.9	21.9	0.512
ST14-24	308	17.9	0.22F	13	110.3	0.41	0.02	6.73	22.6	0.595
ST14-26	346	19.2	0.32F	ND	75.2	-0.29	2.71	6.61	26	0.682
ST14-28	478	0.61F	0.36F	ND	-70.5	-0.57	12.54	6.55	23.8	0.97
ST14-29	434	5.1	ND	3,800	-91.7	-0.7	18.84	6.5	24.2	0.794
ST14-W16	346	1.5	0.32F	2,800	-111.4	-0.7	5.2	6.81	23.2	0.681
ST14-W18	246	13.5	ND	5,700	-116	1.01	4.77	4.66	16.5	0.691
ST14-W21	443	17.5	ND	290	-95.6	-0.59	12.72	6.5	23	0.804
ST14-W31	339	29.4	3.1	ND	118.6	0.79	0	6.8	23.1	0.785

[1]The "F" qualifier indicates that the analyte was postively identified, but that the associated numerical value is below the practical quantitation limit (PQL).

Notes:
mg/L = milligrams/liter; ug/L = micrograms/liter; mV = millivolts; °C = degrees Celsius; umhos/cm = micromhos/centimeter; ND = not detected

Table D.10
Proposed Analytical Sampling - April 1998

Well	Chemical Parameters[1]					
	Full Appendix IX[4]	Pesticides, Herbicides[2]	VOCs	BTEX	Metals	Natural Attenuation[3]
Upgradient Wells						
ST14-14			X		X	
ST14-24			X		X	
ST14-26			X		X	
Plume Wells (ST14)						
17M				X		X
ST14-02				X	X	X
ST14-03				X		X
ST14-04				X		X
ST14-28				X		X
ST14-29				X		X
ST14-W16				X		X
ST14-W18				X	X	X
ST14-W21				X	X	X
WHGLTA008			X		X	X
Plume Wells (SD13)						
SD13-01		X	X			X
SD13-02		X	X			X
SD13-04		X	X			X
SD13-06		X	X		X	X
ST14-W31		X	X		X	X
WHGLTA007	X					
Point of Compliance Wells						
SD13-07	X					
WHGLTA005	X					
WHGLTA006	X					

[1]Samples from all wells will also be tested for the following standard field parameters: temperature, pH, electrical conductance (EC), dissolved oxygen (DO), oxidation-reduction potential (Eh), and turbidity.

[2]Herbicides, organophosporus pesticides, and organochlorine pesticides/PCBs are being resampled in all wells sampled for Appendix IX constituents in January 1998, due to laboratory quality control problems.

[3]Natural attentuation parameters to be sampled are common anions (chloride, nitrate, sulfate), total organic carbon (TOC), Fe(II), alkalinity, and methane.

Notes:
VOCs = volatile organic compounds
BTEX = benzene, toluene, ethylbenzene, and total xylenes

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