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FINAL RCRA FACILITY INVESTIGATION FOR AREA OF CONCERN 13 NAS FORT WORTH TX
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FORT WORTH JRB
CARSWELL FIELD
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FINAL
RCRA FACILITY INVESTIGATION REPORT
AREA OF CONCERN 13
NAS FORT WORTH JRB, TEXAS

Prepared for
U.S. Air Force Center for Environmental Excellence
Brooks AFB, Texas

Contract Number F41624-95-D-8005

June 2001

HydroGeoLogic, Inc
1155 Herndon Parkway
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Herndon, Virginia 20170
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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR FORCE CENTER FOR ENVIRONMENTAL EXCELLENCE
BROOKS AIR FORCE BASE TEXAS

4 June 2001

MEMORANDUM FOR RAY RISNER (TNRCC)

FROM: Michael Dodyk, P.E.
HQ AFCEE/ERD
P.O. BOX 27008
Ft Worth, TX 76127-0008

SUBJECT: NAS Fort Worth JRB, Texas (Formerly Carswell AFB)
TNRCC Solid Waste Registration No. 65004
TNRCC Hazardous Waste Permit No. HW-50289
Final RCRA Facility Investigation (RFI) Report
Area of Concern No. 13 (AOC 13)

Dear Mr. Risner,

Enclosed for your review are two (2) copies of the Final RFI Report for AOC 13 (The Auto Hobby Shop OWS). This RFI Report summarizes historical and recent environmental investigations and interim remedial actions performed as part of the completed RFI. The report provides evidence for, and recommends, closure of soil and ground water media under Risk Reduction Standard No.2 of the TNRCC Risk Reduction Rules Program.

Should you have any questions regarding this submission, please contact me at (817) 782-7167

Sincerely,

Michael R. Dodyk

Michael R. Dodyk, P.E.
Restoration Team Chief
ERA Restoration Division

Enclosures
cc:

Mr. Gary Miller, EPA Region VI (1 copy)
Mr. Don Ficklen, HQ AFCEE
Ms. Audrie Medina, UNITEC

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RESPONSE TO REVIEW COMMENTS
DRAFT RCRA FACILITY INVESTIGATION REPORT
AREA OF CONCERN 13
NAS FORT WORTH JRB, TEXAS
MAY 2001

Introduction

A technical review was conducted for the subject document submitted by HydroGeoLogic, Inc. Overall, the document is adequate to meet the proposed objectives outlined in the report. However, there are some issues detailed in the following specific comments, which need to be addressed before the document is finalized.

General Comments

It is recommended that the Figures at the end of each section be moved to the body of the respective section with the pages numbered.

Response **Based on discussions with AFCEE, this comment has been withdrawn (see also the response to Specific Comment 10).**

Specific Comments

Comment 1 *Page 1-2, Section 1.2. 2nd paragraph. Please include a figure/map showing PST locations and sampling points.*

Response **The map presented as Figure 1.2 has had the location of former OWS/UST 1145-1 added to it, as well as the former locations of 1140-1 and 1140-2. The location of sampling points around AOC 13 are one of the primary topics of Section 3.0 and would appear to be prematurely presented in Section 1.**

Comment 2 *Page 1-2, Section 1.2. 2nd paragraph, 4th sentence. Please provide a discussion of the loss of tank contents and possible contamination extent due to the punctures. Also, please give the date of removal.*

Response **The text in the draft document incorrectly states that USTs 1140-1 and 1140-2 were damaged during construction activities associated with the construction of Building 1145. The text has been revised to indicate that these USTs were actually damaged in the decommissioning of Building 1140. The text has also been revised to clarify that the Hobby Shop UST was designated as 1145-1 in 1989, when it was moved to the newly-constructed Building 1145. The puncturing of USTs 1140-1 and 1140-2**

occurred outside the confines of AOC 13 and there was no impact on the subject site.

Comment 3 *Page 1-2, Section 1.2. 2nd paragraph, last sentence. Please insert a sentence indicating the type of PST report that the USAF submitted. Then rewrite the beginning of the last sentence to read "This report will be submitted to the...".*

Response **Text describing the UST 1140-1 and 1140-2 Site Closure Request has been added.**

Comment 4 *Page 1-2, Section 1.2. 2nd paragraph, 5th sentence. Please specify the PST regulations or guidance documents that are applicable to clean closure at this site.*

Response **The PST regulations governing the UST 1140-1 and 1140-2 closure are now referenced. As stated in Section 1.1, closure of the OWS/UST at AOC 13 is governed by the provisions of hazardous waste permit HW-50289.**

Comment 5 *Page 1-3, Section 1.2. 2nd paragraph on the page, 3rd sentence. Please describe the method(s) used to determine that amount of soil to be removed (e.g. field screening, soil sampling, visual inspection).*

Response **Text has been added describing the process for determining if a sufficient amount of soil had been excavated during the removal process.**

Comment 6 *Page 1-3, Section 1.2. 2nd paragraph on page, 7th sentence. Please state the contractor that removed the free-product/water. Also, please include copies of the manifests for this and other disposed materials in an Appendix.*

Response **Identification of the contractor (Sunbelt Industrial Services) for the OWS/UST removal action and for contaminated water removal has been added to the text. Copies of the manifests for the disposal of contaminated soil and water, as well as other relevant documentation received from Sunbelt, have been added as Appendix A.**

Comment 7 *Page 1-4, Section 1.3.2. Please consider showing the applicable RRS values in tabular form in the body of the text.*

Response **Text was inserted in Section 1.3.2 that indicates that the applicable RRS values accompany the detection tables presented in Section 4.0 of the report.**

Comment 8 *Page 1-5, Section 1.4. First sentence. Please change "The" to "This".*

Response **The text has been edited as requested.**

Comment 9 *Page 1-5, Section 1.4. First bullet. If previous efforts have determined that a release had occurred, please delete this bullet.*

Response **This bullet has been removed as requested.**

Comment 10 *Please consider moving the figures at the end of the sections to the body of each section and number the pages.*

Response **Based on discussions with AFCEE, this comment has been withdrawn.**

Comment 11 *Figure 2.4. Please label all borings on the cross sections (many of the borings along cross section B'-B" are not labeled).*

Response **All borings used to develop this cross section are now identified.**

Comment 12 *Figure 2.5. If appropriate, please complete cross section drawings. Some of the cross sections do not appear to be complete as they get deeper. This comment applies to all similar figures.*

Response **The cross-sections represent the actual boring logs available and there are some uncertainties in the extent of the deeper formations. A revised basewide conceptual model is currently being developed under a separate project. Once complete, the updated model will be incorporated into future RFI Reports.**

Comment 13 *Figure 2.7. Please ensure that well GMI18-01B and all others are shown on the cross section maps.*

Response **All borings used to develop this cross section are now identified on the map presented as Figure 2.4.**

Comment 14 *Figure 2.10. Please insert an arrow showing generalized groundwater flow direction on this figure.*

Response **An arrow showing the generalized groundwater flow direction has bee added to this figure.**

Comment 15 *Page 3-5, Section 3.2.5. 1st paragraph, 7th sentence. Please quantify the term "repeatedly".*

Response **This section no longer discusses the water removal at the excavation, and references Section 1.2 for a description of removal activities. In Section 1.2, the term "repeatedly" has been removed, and the description of the water removal activities at the excavation after OWS/UST removal has been revised.**

Comment 16 *Figure 4-1. Please show the location of the former UST/OWS on the figure.*

Response **The location of the former UST/OWS has been added to this Figure.**

FINAL
RCRA FACILITY INVESTIGATION REPORT
AREA OF CONCERN 13
NAS FORT WORTH JRB, TEXAS

Prepared for

U.S. Air Force Center for Environmental Excellence
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Contract Number F41624-95-D-8005

Prepared by

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June 2001

REPORT DOCUMENTATION PAGE

Form Approved

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13 ABSTRACT (Maximum 200 words)

This document presents the Final RCRA Facility Investigation Report for AOC 13, located at the Naval Air Station Fort Worth Joint Reserve Base, Texas. Field observations and analytical results included in this RFI Report indicate that here is some evidence that a release to the environment of hazardous constituents listed in 40 Code of Federal Regulations Part 264, Appendix IX may have occurred at AOC 13; however, analytical results indicate that these releases pose no threat to human health or the environment. Based on this information, no further action is warranted, and this site is recommended for closure.

14 SUBJECT TERMS	15 NUMBER OF PAGES
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17 SECURITY CLASSIFICATION OF REPORT	18 SECURITY CLASSIFICATION OF THIS PAGE.	17 SECURITY CLASSIFICATION OF ABSTRACT	20 LIMITATION OF ABSTRACT
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PREFACE

This document contains the Final Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Report for area of concern (AOC) 13 at the Naval Air Station (NAS) Fort Worth Joint Reserve Base (JRB), Texas.

HydroGeoLogic, Inc. (HydroGeoLogic) prepared this report under contract to the U.S. Air Force (USAF) Center for Environmental Excellence (AFCEE), Contract No. F41624-95-D-8005, Delivery Order No. 0016, in support of the Air Force Installation Restoration Program (IRP).

Responsible key HydroGeoLogic personnel are as follows:

James P. Costello, P.G.	Program Manager
Miquette E. Rochford, P.G.	Deputy Program Manager
Todd C. Harrah	Project Manager

This contract is administered by the Defense Contract Management Command (DCMC), 10500 Battleview Parkway, Suite 200, Manassas, Virginia, 22110. The Contracting Officer is Mr. Cliff Trimble. The Contracting Officer's Representative is Mr. Don Ficklen (210/536-5290), representing the AFCEE Environmental Restoration Division (ERD), located at Headquarters AFCEE, 3207 North Road, Brooks Air Force Base (AFB), Texas, 78235-5363.

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LIST OF ACRONYMS AND ABBREVIATIONS

AFB	Air Force Base
AFCEE	U.S. Air Force Center for Environmental Excellence
AFP 4	Air Force Plant 4
AGE	aerospace ground equipment
AOC	area of concern
ASTM	American Society for Testing and Materials
bgs	below ground surface
BLRA	baseline risk assessment
BTEX	benzene, toluene, ethylbenzene, and xylenes
CFR	Code of Federal Regulations
cm/sec	centimeters per second
COPC	contaminant of potential concern
CSM	conceptual site model
DCMC	Defense Contract Management Command
DPT	direct push technology
DQE	data quality evaluation
DQO	date quality objective
DRO	diesel range organics
EDD	electronic data deliverable
EDS	Environmental Data Services, Inc.
EPA	Environmental Protection Agency
ERA	Environmental Restoration Account
ERD	Environmental Restoration Division
ERPIMS	Environmental Resources Program Information Management System
ft/d	feet per day
°F	degrees Fahrenheit
gpd/ft^2	gallons per day per square foot
GRO	gasoline range organics
HW	hazardous waste
HydroGeoLogic	HydroGeoLogic, Inc.
IRP	Installation Restoration Program

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

IT	International Technologies Corporation
JRB	Joint Reserve Base
Law	Law Environmental and Engineering Services
LCS	laboratory control samples
LNAPL	light non-aqueous phase liquid
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MQL	method quantitation limit
MSC	medium-specific concentration
MS/MSD	matrix spike/matrix spike duplicate
NAS	Naval Air Station
NFA	no further action
NGVD	National Geodetic Vertical Datum
NPDES	National Pollution Discharge Elimination System
OC	organochlorine
OVM	organic vapor monitor
OWS	oil/water separator
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
PID	photoionization detector
POL	petroleum oil and lubricant
PST	petroleum storage tank
QAPP	quality assurance project plan
QA	quality assurance
QC	quality control
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RPM	Remedial Project Managers'
RRS	risk reduction standard
SCR	Site Closure Request
SDG	sample delivery group
SPLP	Synthetic Precipitation Leaching Procedure

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

SVOC	semivolatile organic compound
SWMU	solid waste management unit
TCE	trichloroethene
TIC	tentatively identified compound
TNRCC	Texas Natural Resource Conservation Commission
TOC	total organic carbon
TPH	total petroleum hydrocarbons
TWC	Texas Water Commission
TX1005	Texas Method 1005
USAF	U.S. Air Force
UST	underground storage tank
VOC	volatile organic compound
WAA	waste accumulation area
WP	work plan

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TAB

SECTION L.0

FINAL
RCRA FACILITY INVESTIGATION REPORT
AREA OF CONCERN 13
NAS FORT WORTH JRB, TEXAS

1.0 INTRODUCTION

The Texas Natural Resource Conservation Commission (TNRCC) requested that the USAF investigate solid waste management units (SWMUs) and AOCs located at what is currently NAS Fort Worth JRB, Fort Worth, Texas. NAS Fort Worth JRB was formerly known as Carswell Air Force Base. The TNRCC requested that an RFI be conducted at AOC 13 to determine whether any hazardous constituents listed in 40 Code of Federal Regulations (CFR) Part 264, Appendix IX have been released into the environment. The soil and groundwater in and around AOC 13 have been the subject of several investigations. These investigations began in 1994 and concluded in 2000.

This document provides a summary of the results from all environmental investigation activities conducted at AOC 13. There is some evidence of release to soils at AOC 13; however, analytical results indicate that this release poses no threat to human health or the environment. Based on this information, no further action (NFA) is warranted, and AOC 13 is recommended for closure under TNRCC's risk reduction standard (RRS) 2.

1.1 PROJECT BACKGROUND

Carswell AFB was officially closed on September 30, 1993. A parcel of the former base, now known as NAS Fort Worth JRB, has been transferred from USAF to U.S. Navy management. Before complete property transfer can be accomplished, required environmental investigations of potential contamination related to USAF activities occurring prior to September 30, 1993 on NAS Fort Worth JRB property are to be completed, and contaminated sites remediated.

On February 7, 1991, the former Carswell AFB was issued a Resource Conservation and Recovery Act (RCRA) hazardous waste (HW) permit, HW-50289, by the TNRCC. This permit requires a RCRA Facility Investigation (RFI) of all SWMUs and AOCs listed in Permit Provision VIII; as well as those SWMUs and AOCs subsequently added to the list. On March 2, 1995, AOC 13, the Auto Hobby Shop oil/water separator (OWS) and associated underground storage tank (UST) were added to Permit Provision VIII. The permit requires that the owner determine whether hazardous constituents listed in the 40 CFR Part 264, Appendix IX have been released into the environment prior to site closure and removal of AOC 13 from the permit.

Law Environmental and Engineering Services (Law) conducted a RCRA Facilities Assessment (RFA) on 11 OWSs in April 1994. This RFA included the OWS at the Auto Hobby Shop

(Law, 1995). In accordance with permit HW-50289, AOC 13 was included in a sanitary sewer system RFI initially conducted by International Technologies Corporation (IT) from February through May 1997 (IT, 1997). IT performed a second round of sampling at AOC 13 in January 1998 as part of an OWS RFI (IT, 1998). The 1997 sanitary sewer RFI and the 1998 OWS RFI conducted by IT together are considered to comprise Phase I of the RFI process at AOC 13. HydroGeoLogic sampled nearby groundwater monitoring wells during the four quarterly sampling events in 1999 (HydroGeoLogic, 1999a, b, c, and 2000a) and again in the October 2000 quarterly sampling event (HydroGeoLogic, 2001), and collected confirmation samples from the sidewalls of the excavation that resulted when the OWS was replaced in June 2000. HydroGeoLogic conducted a final round (Phase II) of soil sampling in December 2000. Section 3 of this report provides a full description of each site investigation event, and Section 4 presents a summary of results.

This RFI Report demonstrates that AOC 13 poses no significant risk to human health or the environment and provides justification for NFA and closure in accordance with TNRCC RRS guidelines. Although there is some evidence of release to the soils at AOC 13, this release has been removed and/or delineated and poses no significant risk to human health or the environment. As a result, AOC 13 is recommended for closure under RRS 2. This investigation was managed by the USAF under the Environmental Restoration Account (ERA). The primary regulatory programs that govern the RFI and closure of this site are RCRA and the TNRCC RRS program. The TNRCC is the lead regulatory agency for activities conducted at AOC 13. The U.S. Environmental Protection Agency (EPA) Region VI provides additional oversight of investigation activities.

1.2 SITE IDENTIFICATION AND DESCRIPTION

AOC 13, the Auto Hobby Shop (Building 1145), was constructed in September 1989. Building 1145 is located south of the petroleum oil and lubricant (POL) tank farm on Hercules Road (formerly Hobby Shop Road). The location of AOC 13 in relation to the base is presented on Figure 1.1, and a site overview and photographs are presented on Figure 1.2. The OWS and associated UST was located under the concrete pavement adjacent to the back of the building and received waste engine oil, lubricating oil, brake fluid, grease, and other petroleum by-products. The majority of historical contaminant releases at AOC 13 have occurred as a result of leaking connection pipes leading from the Auto Hobby Shop to the OWS.

The original OWS was installed in 1982 to treat wastewater collected from the Auto Hobby Shop floor drains located within Building 1140. The OWS was connected to a double-walled UST (1145-1) and the effluent water was then piped to the sanitary sewer (IT, 1998). When the new Auto Hobby Shop was built in 1989, the OWS and UST were relocated and placed south of Building 1145 and renamed 1145-1. Two additional USTs (1140-1 and 1140-2) were located to the east (downgradient) of Building 1145, and one of these tanks were punctured during construction activities associated with the decommissioning of Building 1140 in July 1989. The contaminated soils were excavated, no release to groundwater was observed, and these USTs were subsequently removed. The locations of former USTs 1140-1 and 1140-2 relative to AOC 13 are shown on Figure 1.2. Any release from the punctured tanks occurred outside, and

downgradient from, AOC 13, and there was no impact on this site. Under a separate project, HydroGeoLogic submitted a Site Closure Request (SCR) under TNRCC's "Plan A Early Exit Criteria" process for USTs 1140-1 and 1140-2 in April 2000. In response to the SCR, TNRCC requested two additional borings, which were performed in December 2000. HydroGeoLogic will resubmit the SCR, including the new soil data, to the TNRCC Petroleum Storage Tank Division.

A broken inflow pipe was discovered in 1993 during the replacement of the original OWS at Building 1145. Soil beneath the OWS was saturated with light non-aqueous phase liquid (LNAPL). The contaminated soil was overexcavated, replaced with clean fill, and a new OWS was installed. The original UST (1145-1) was not removed during this excavation. The excavated area was capped with 8 inches of reinforced concrete, thereby limiting surface water from leaching through site soils and further transporting contaminants to groundwater.

In May and June 2000, Sunbelt Industrial Services, Inc. (Sunbelt), a subcontractor to HydroGeoLogic, completed the removal and disposal of the Building 1145 OWS, UST, and associated contaminated media. The excavation consisted of removing the surface concrete, subsurface soils, and OWS/UST system. Approximately 300 cubic yards of soil were removed and the excavation area measured approximately 16.5 feet wide by 32 feet long and 16 feet deep. Monitoring well WITCTA036 was within the excavation area and was plugged and abandoned. The extent of excavation of contaminated soils was determined in the field by visual observation, olfactory evidence, and testing of soil samples with a photoionization detector (PID) during excavation activities. Once field evidence indicated that all contaminated soils had been removed, confirmation samples were collected from the sidewalls of the excavation and analyzed by an off-site laboratory (see Section 3.2.5). The analysis of these samples confirmed that the excavation had reached uncontaminated soil. Groundwater was encountered during the excavation at 16 feet below ground surface (bgs) and a small amount of LNAPL was observed on the groundwater. From the time of the OWS/UST removal until the closure of the pit, Sunbelt pumped contaminated groundwater out of the excavation as it accumulated, in an effort to remove as much free product as possible. The pit was allowed to recharge between pumping events. Approximately 2,600 gallons of free product-impacted water was removed from the excavation area and appropriately disposed. The new 1,500-gallon OWS system was installed and the excavation was back filled with crushed stone. The new OWS is a self-contained unit; therefore, a new UST was not installed. Manifests for the disposal of contaminated soil and water are presented in Appendix A.

1.3 REGULATORY REQUIREMENTS

The overall objective of this project is to obtain closure of AOC 13 under the TNRCC RRS program. An overview of the RRS program is presented in Section 4.1 of the RFI Work Plans (WPs) (HydroGeoLogic, 1999d); RRSs applicable to the AOC 13 RFI are summarized below. In addition, the SWMUs and AOCs at NAS Fort Worth JRB are subject to the specific requirements of RCRA Permit HW-50289. These sites are typically very small and each SWMU and AOC only received wastes produced from the industrial practices conducted at the associated site. As a result, a large soil boring network and the full suite of Appendix IX

analyses were not justified at the majority of these sites. The Law RFA and IT RFI sampling efforts at AOC 13 used limited lists of analyses based on previous site use and contaminants expected to be encountered. This approach was discussed with the TNRCC during the June 2000 interim Remedial Project Managers' (RPM) meeting, and was utilized when planning and performing Phase II RFI sampling and analyses.

The RFI was designed to meet the requirements of Permit Provision VIII of RCRA permit HW-50289. The RFI WPs and this RFI Report have been prepared using guidance documents from the IRP, RCRA, the U.S. Environmental Protection Agency (EPA), and the TNRCC RRS program.

1.3.1 Project Documents

HydroGeoLogic's RFI activities were conducted in accordance with the RFI WPs prepared by HydroGeoLogic dated May 1999 (HydroGeoLogic, 1999d) and the Phase II RFI AOC 13 WP dated December 2000 (HydroGeoLogic, 2000b). The RFI WPs contain the Field Sampling Plan, which was followed during all sampling activities. The Final Basewide Quality Assurance Project Plan (QAPP), prepared by HydroGeoLogic dated February 1998 (HydroGeoLogic, 1998), was used as guidance for managing specific quality assurance (QA) and quality control (QC) procedures as well as analytical data generated from the four 1999 quarterly groundwater sampling events. The 1998 QAPP was revised and reissued in March 2000 as the Final 2000 Basewide QAPP (HydroGeoLogic, 2000c), and the revised QAPP was used as the QA/QC guidance document for all subsequent 2000 RFI activities conducted by HydroGeoLogic. Project analytical data generation and assessment were designed to achieve data quality goals in accordance with the applicable edition of the Basewide QAPP. HydroGeoLogic's 1998 QAPP was based on the AFCEE Model QAPP, versions 1.1 and 2.0, and modified by project-specific requirements. The 2000 QAPP incorporated corrections to the 1998 QAPP, as well as analytical method updates and elements of the AFCEE Model QAPP, version 3.0.

Previous investigations at AOC 13 were conducted by Law and IT, and these activities were performed in accordance with project-specific planning documents prepared for those investigations.

1.3.2 Risk Reduction Standards

To determine if a release has occurred at a site, the results from samples collected from that site are compared to predetermined RRS 1 values. For metals, the RRS 1 values were obtained from the base-specific background values for groundwater, surface soils, and subsurface soils as presented in the Final Basewide Background Study (Jacobs, 1998). For organic analytes, RRS 1 values were determined using compound-specific method quantitation limits (MQLs), as defined in the TNRCC Interoffice Consistency Memorandum (TNRCC, 1998a) and its Erratum Sheet (TNRCC, 1998b). The MQLs for the 1994 Law RFA and the 1997 and 1998 IT RFIs are not available, as these data were generated prior to the Consistency Memorandum. For

evaluation purposes, the current HydroGeoLogic MQLs are used as the organic compound RRS 1 values for all data discussed in this report, regardless of origin.

The Texas Risk Reduction Rules (30 TAC §335 Subchapter S) require that any analytes detected at concentrations above the applicable RRS 1 value be compared to available medium-specific concentrations (MSCs). The MSCs presented in tabular form in 30 TAC §335.368 are used to determine if detected contaminants pose a potential threat to human health, the environment, or to shallow groundwater. Based on the anticipated future site uses and practices at the SWMUs and AOCs at NAS Fort Worth JRB, the RRS 2 values used were the groundwater MSCs for industrial use and the soil MSCs for industrial use based on groundwater protection. Note that no MSC has been established for total petroleum hydrocarbons (TPH). The RRS 2 value used for TPH was derived from the TNRCC action level for coarse-grained soils from the Petroleum Storage Tank (PST) Division (TNRCC, 1996a).

In some instances during RFI activities, analytes were detected in soil above both the RRS 1 value and the soil MSC for groundwater protection. In selected cases, the Synthetic Precipitation Leaching Procedure (SPLP) was performed on aliquots of the affected samples, and the resulting extracts were analyzed. If all results for SPLP extracts at the site were below the analyte industrial groundwater MSC, a site-specific soil MSC for groundwater protection was developed for that analyte. This analyte- and site-specific soil MSC was set to the value of the highest soil detection of that analyte at the site for which the SPLP was below RRS 2.

All analytes detected in samples collected from AOC 13 during the 1994, 1997, 1998, and 2000 investigations are presented in tabular form in Section 4.0. The RRS 1 and RRS 2 values applicable to each reported detection are presented in each of these results tables in order to support the evaluation of the data.

1.4 INVESTIGATION STRATEGY

This RFI was designed and conducted to achieve the following objectives:

- To characterize the nature and extent of any contamination encountered. Data from previous investigations were evaluated; if necessary, additional rounds of sampling were performed to accomplish this objective.

- If necessary, utilize SPLP to provide site-specific MSCs.

Field tasks used to characterize the site included advancing continuous-core direct push technology (DPT) soil borings in order to collect soil samples. This soil sampling method was used to determine the lithology of native soils and the nature and extent of any surface and subsurface contamination.

During the RFA conducted by Law, soil samples were collected from two intervals in each boring: the interval with the highest reading on a photoionization detector (PID) and the interval directly above groundwater or refusal. During the Phase I RFI conducted by IT, soil samples were collected from each soil boring location at the near surface (0-2 feet bgs) interval and at the interval two feet above the top of the water table in order to determine the nature and extent of any surface and subsurface contamination. During the Phase II RFI conducted by HydroGeoLogic, additional soil samples were collected in order to confirm Phase I detections or to delineate specific contaminants of potential concern (COPCs) to RRS 1 concentrations. Phase II soil samples were collected at the surface and at the 5-foot depth intervals associated with the intervals of the corresponding IT Phase I detections or detections from the Law RFA.

During the 1997 portion of the Phase I investigation, IT installed and sampled a monitoring well at AOC 13. In January 1998, IT installed and sampled five additional monitoring wells. HydroGeoLogic sampled selected IT-installed monitoring wells associated with AOC 13 during the four 1999 and the October 2000 quarterly groundwater monitoring events.

In order to determine if AOC 13 presents a threat to human health or the environment, essential information regarding the site was obtained. This information includes:

- The lithology of soils to the top of the water table or refusal beneath AOC 13.
- The nature of wastes stored at AOC 13.
- An assessment of potential contaminant impacts on the quality of soil and groundwater within and around AOC 13.

1.5 DATA QUALITY OBJECTIVES

The data generated by this project are of sufficient quality and quantity to meet the overall project objective, which is to determine if a release has occurred at AOC 13, to determine if any identified releases have an impact on human health and the environment, and to request closure of AOC 13 under the TNRCC RRS program. Data from the following categories were required for this study:

Site Characterization - Data were used to evaluate physical and chemical properties of soil and groundwater. The definitive data were also used to characterize the nature and extent of any contaminants detected. Screening level data were used for determining optimal monitoring well placement.

Health and Safety - Data were used to establish the level of protection needed for the sampling team and other site-related personnel. These data were gathered by the use of organic vapor monitors (OVMs) during intrusive activities.

A combination of screening level data and definitive level data was used during this RFI. Health and safety and well placement data were collected as screening data. All field samples were analyzed following EPA SW846 protocols or methods able to generate a comparable level of data quality, such as Texas Method 1005 (TX1005) for TPH. The definitions of screening data and definitive data, as established by the Data Quality Objectives Process for Superfund Interim Final Guidance (EPA/540/G-93/071, 1993), are described below:

- Screening Data with Definitive Confirmation - Screening data can be generated by rapid, less precise methods of analysis with less rigorous sample preparation. Sample preparation steps may be restricted to simple procedures such as dilution with a solvent, instead of elaborate extraction/digestion and cleanup. Screening data provides analyte identification and quantification. Although the quantification may be determined using analytical methods with QA/QC procedures and criteria associated with definitive data, screening data without associated confirmation data are not considered to be data of known quality.

- Definitive Data - Definitive data can be generated using rigorous analytical methods, such as approved EPA reference methods. Data are analyte-specific, with confirmation of analyte identity and concentration. These methods produce tangible raw data (e.g., chromatograms, spectra, digital values) in the form of paper printouts or computer-generated electronic files. Data may be generated at the site or at an off-site location, as long as the QA/QC requirements are satisfied. For the data to be definitive, either analytical or total measurement error must be determined.

The methods of analysis selected for samples collected from NAS Fort Worth JRB produced screening as well as definitive data. The data generated by the laboratory analysis of samples were sufficiently sensitive to allow comparison of the results to the TNRCC RRS. The 1998 and 2000 Basewide QAPPs describe each analytical method that was performed as part of the investigation and outlines the QA measures followed by the contract laboratory.

The data quality evaluation (DQE) performed for each data collection event at AOC 13 was governed by different approved protocols. Although analytical methods and sensitivity remained comparable, each data quality assessment is specific to the individual investigation for which it was performed. Overall, the definitive data generated at AOC 13 by Law, IT, and HydroGeoLogic are of sufficient quality and comparability to determine the presence and concentration of COPCs at the site; however, a direct comparison of the relative quality of each data set is not always possible. A data quality assessment of the analytical data collected during the multiple stages of this RFI is presented as Appendix B.

1.6 REPORT ORGANIZATION

The remainder of this document is divided into the following sections:

Section 2.0 summarizes the regional and installation-specific environmental settings for this RFI.

Section 3.0 summarizes activities that were conducted during this RFI. These activities included field observations made at AOC 13, site lithology, and the collection of soil and groundwater samples for analysis.

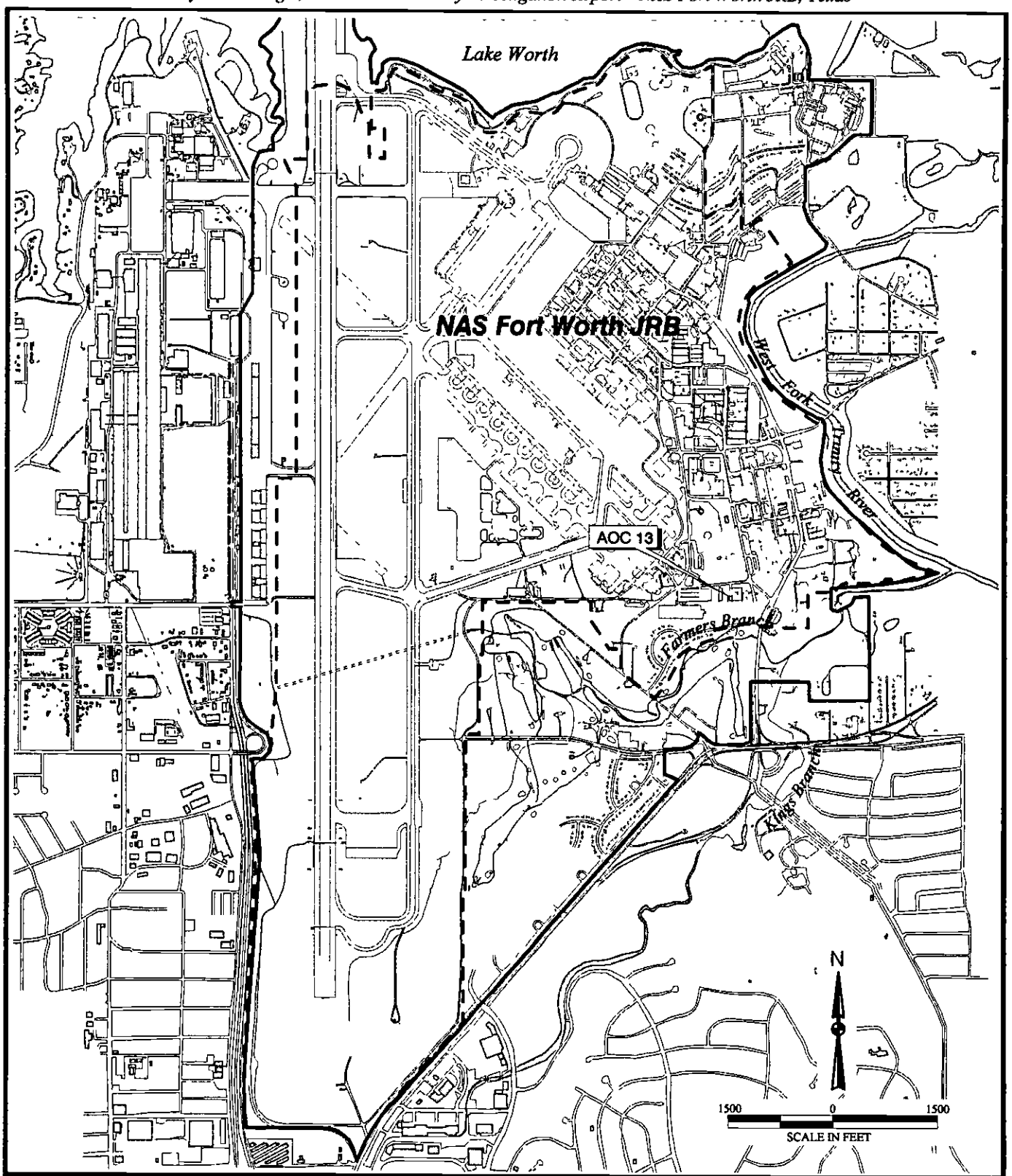
Section 4.0 presents the sample results of the RFI and assesses the potential releases to the environment.

Section 5.0 presents a discussion and evaluation of the results presented in Section 4.0.

Section 6.0 presents the conclusions of the RFI and recommendations for closure based on the results presented in Section 4.0.

Section 7.0 presents the references associated with the preparation of this report.

FIGURES



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Project. AFC001-16BDB
Created 03/11/99 jbelcher
Revised 06/01/01 cf
Source HydroGeoLogic, Inc.—GIS Database

HYDRO GeoLogic

Legend

- NAS Fort Worth JRB Boundary
- Former Carswell AFB Boundary
- Area of Concern (AOC)

Figure 1.1

AOC 13 Location Map

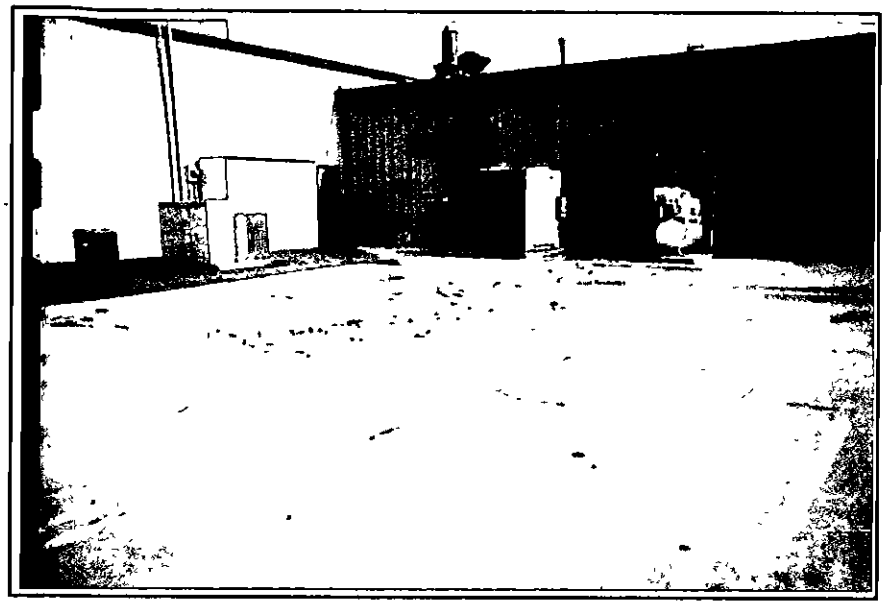
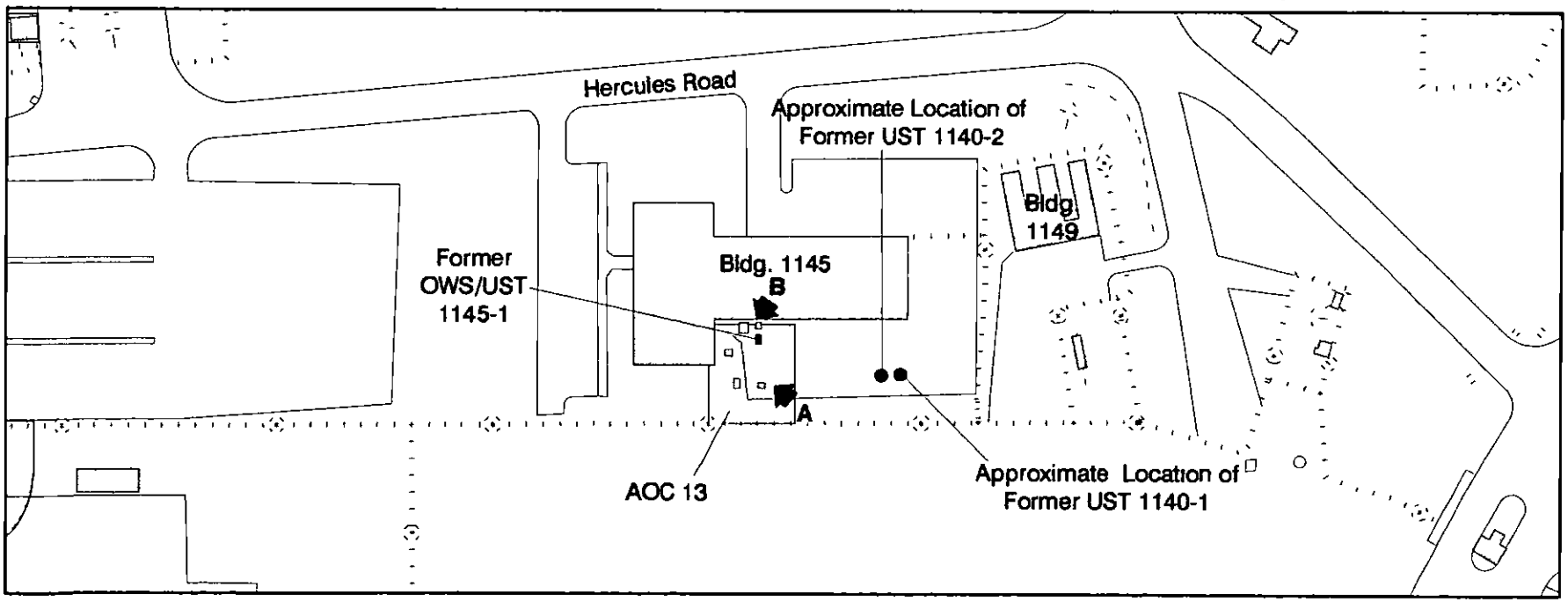


Photo Taken at Point A: May 2000

Photo Taken at Point B: May 2000



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U S Air Force Center for Environmental Excellence
Brooks AFB, Texas

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Figure 1.2
Photos and Location Map — AOC 13

TAB

SECTION 2.0

2.0 SUMMARY OF EXISTING INFORMATION

The climate, physiography, geology, hydrology, biology, and demographics of the NAS Fort Worth JRB area are described in the following sections.

2.1 INSTALLATION ENVIRONMENTAL SETTING

2.1.1 Physiographic Province

NAS Fort Worth JRB 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. Most of NAS Fort Worth JRB is located within this province. This region 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. This area is characterized by rolling topography and a heavy growth of post and blackjack oaks (Radian, 1989a,b). 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 2.1 is a section of the Lake Worth, Texas, U.S. Geological Survey topographic map showing the relief of the NAS Fort Worth JRB/Air Force Plant 4 (AFP 4) region.

2.1.2 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 Formation, and (6) the Cretaceous Twin Mountains Formation. A generalized cross section of the geology beneath NAS Fort Worth JRB is presented in Figure 2.2 (Radian, 1989a,b). The areal limits of surface exposure of these units at NAS Fort Worth JRB are shown in Figure 2.3. Cross section locations and individual cross sections at NAS Fort Worth JRB are presented in Figures 2.4 through 2.7 (CH2M HILL, 1996). The regional dip of the stratigraphic units beneath NAS Fort Worth JRB is between 35 and 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.

2.1.3 Groundwater

The water-bearing geologic formations located in the NAS Fort Worth JRB area may be divided into the following five hydrogeologic units, listed from the shallowest to the deepest: (1) an upper perched-water zone occurring in the alluvial terrace deposits associated with the Trinity River, (2) an aquitard of predominantly dry limestone of the Goodland and Walnut

Formations, (3) an aquifer in the Paluxy Sand, (4) an aquitard of relatively impermeable limestone in the Glen Rose Formation, and (5) a major aquifer in the sandstone of the Twin Mountains Formation. Each of these units is examined more explicitly in the following paragraphs. The relationship between these hydrogeologic units and geologic units is illustrated in Figure 2.8 (Radian, 1989a,b).

2.1.3.1 Alluvial Terrace Deposits

The uppermost groundwater in the area occurs within the pore space of the grains of coarse 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 and susceptibility to surface/storm water pollution (CH2M HILL, 1984).

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 supply lines, sewer systems, storm drains, and cooling water systems. In 1991, this leakage was calculated to be in excess of approximately 115.5 million gallons for NAS Fort Worth JRB and AFP 4 (General Dynamics Facility Management, 1992). This inflow of water to the shallow aquifer effects local groundwater flow patterns and contamination transport, along with increasing hydraulic head, which acts as the force to potentially drive water into lower aquifer systems. The estimated hydraulic conductivity of the alluvial aquifer is 4.57 gallons per day per square foot (gpd/ft^2) (Radian, 1989a,b).

This flow between aquifers is restricted by the Goodland/Walnut Formations; therefore, the alluvial terrace groundwater is not hydraulically connected to the underlying aquifers at NAS Fort Worth JRB. The primary water flow in the terrace deposits is generally eastward toward the West Fork Trinity River, although localized variations exist across the entire site. 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 on-site, specifically Farmers Branch Creek.

Potentiometric maps of NAS Fort Worth JRB and AFP 4 alluvial terrace groundwater are presented as Figure 2.9 and Figure 2.10. Both the January 1999 and July 2000 groundwater elevation data show an easterly trend in groundwater flow over the area of NAS Fort Worth JRB toward the West Fork Trinity River (HydroGeoLogic, 1999a, c; 2000d).

2.1.3.2 Goodland/Walnut Aquitard

The groundwater within the terrace deposits is isolated from groundwater within the lower aquifers by the low permeability 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^{-9} 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 flow rate that ranges between 1.16×10^{-3} feet per day (ft/d) to 5.22×10^{-3} ft/d (ESE, 1994).

At the AFP 4 "window area," the Goodland/Walnut aquitard is breached, and the alluvial terrace groundwater is in direct contact with the groundwater in the Paluxy aquifer. Several wells and borings have been advanced at NAS Fort Worth JRB to the Goodland/Walnut aquitard. There is no evidence that a similar window exists on the base property. All five monitoring wells that fully penetrate the Paluxy aquifer on NAS Fort Worth JRB property are represented in cross sections (Figures 2.5 through 2.7). These wells are USGS01P, USGS05P, USGS06P, USGS07P, and Paluxy 1 (P1).

2.1.3.3 Paluxy Aquifer

The Paluxy aquifer is an important source of potable groundwater for the Fort Worth area. Many of the surrounding communities, particularly White Settlement, obtain their municipal water supplies from the Paluxy aquifer. Groundwater from the Paluxy 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 obtain 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, 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. In 1989, Radian estimated the hydraulic conductivity and transmissivity to be 130 to 140 gpd/ft^2 and 1,263 to 13,808 gpd/ft^2, respectively.

2.1.3.4 Glen Rose Aquitard

Below the Paluxy aquifer are the fine-grained limestone, shale, marl, and sandstone beds of the Glen Rose Formation. The thickness of the formation ranges from 250 to 450 feet. Although the sands in the Glen Rose Formation 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.

2.1.3.5 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 out crops. Groundwater movement is eastward in the downdip direction. The Twin Mountains groundwater occurs under unconfined conditions in the recharge area and becomes confined as it moves downdip. Transmissivities in the Twin Mountains aquifer range from 1,950 to 29,700 gpd/ft^2 and average 8,450 gpd/ft^2 in Tarrant County. Permeabilities range from 8 to 165 gpd/ft^2 and average 68 gpd/ft^2 in Tarrant County (CH2M HILL, 1984).

2.1.3.6 Water Well Survey Results

An inventory of water supply wells within a one-half-mile radius of the NAS Fort Worth JRB boundary was conducted by HydroGeoLogic in 2000. Figure 2.11 illustrates the locations of 97 wells that were identified from Texas Water Commission (TWC) records. No active water wells are located on NAS Fort Worth JRB property. Water is supplied to the base by the city of Fort Worth, which obtains water from Lake Worth.

2.1.4 Surface Water

The topography of NAS Fort Worth JRB is fairly flat except for the lower lying areas along the tributaries of the Trinity River. The land surface slopes gently northeastward toward Lake Worth and eastward toward the West Fork Trinity River. Surface elevations range from about 690 feet above NGVD at the southwest corner of the base to approximately 550 feet above NGVD, along the eastern side of the base.

NAS Fort Worth JRB is located within the Trinity River Basin, adjacent to Lake Worth. The lake is a man-made reservoir created by damming the Trinity River at a point just northeast of the base. The surface area of the lake is approximately 2,500 acres. Lake Worth receives a limited amount of storm water runoff from NAS Fort Worth JRB during and immediately after rainfall events. Elevation of the water surface is fairly consistent at approximately 594 feet above NGVD, the fixed elevation of the dam spillway. Part of the eastern boundary of NAS Fort Worth JRB is defined by the West Fork Trinity River. River flow is towards the southeast into the Gulf of Mexico. Because the Trinity River has been dammed, the 100- and 500-year flood plains do not extend more than 400 feet from the center of the river or any of its tributaries.

Surface drainage is mainly east towards the West Fork Trinity River. The base is partly drained by Farmers Branch Creek, a tributary of the West Fork Trinity River. Farmers Branch Creek begins within the community of White Settlement and flows eastward. Just south of AFP 4, Farmers Branch flows under the runway within two large culverts identified as an aqueduct. Most of the base drainage is intercepted by a series of storm drains and culverts, directed to OWSs, and discharged to the West Fork Trinity River downstream of Lake Worth. A small portion of the north end of the base drains directly into Lake Worth.

NAS Fort Worth JRB currently has three storm water discharge points that are subject to National Pollution Discharge Elimination System (NPDES) requirements. Each discharge point is monitored weekly for chemical oxygen demand, oil and grease, and pH. The permit has

been violated on numerous occasions. In 1979, these violations prompted the EPA to formally demand a corrective action (CH2M HILL, 1984). Several additional sampling points were established to determine the flow of pollutants onto and off of the base. Samples were collected for a variety of parameters (spills, fish kills, odors, and oil sheen) as circumstances dictated (Radian, 1989a,b).

2.1.5 Air

The climate in the Fort Worth area is classified as humid subtropical with hot summers and 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. Freezing temperatures occur at NAS Fort Worth JRB an average of 33 days per year (TNRCC, 1996b).

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 ever recorded in a 24-hour period is 5.9 inches. On the average, measurable snowfall occurs 2 days per year (TNRCC, 1996b).

Lake evaporation near NAS Fort Worth JRB is estimated to be approximately 57 inches per year. Evapotranspiration over land areas may be greater or less than lake evaporation depending on vegetative cover type and moisture availability. Average net precipitation is expected to be equal to the difference between average total precipitation and average lake evaporation, or approximately minus 25 inches per year. Mean cloud cover averages 50 percent at NAS Fort Worth JRB, with clear weather occurring frequently during the year. Some fog is present an average of 83 days per year. Wind speed averages 7 knots; however, a maximum of 80 knots has been recorded. Predominant wind direction is from the south-southwest throughout the year (TNRCC, 1996b).

Air quality in the Dallas-Fort Worth area meets EPA National Ambient Air Quality Standards for carbon monoxide, nitrogen dioxide, sulfur dioxide, and respirable particulate matter. However, ozone levels exceed national standards, and the ozone pollution level in the area has a Federal classification of moderate. During 1996, ozone measurements showed an arithmetic mean concentration of 0.033 parts per million in North Tarrant County. Actual exceedances of the national standards for ozone concentrations were calculated to be 2 days for the measurement station in North Tarrant County. Additional control measures are being

implemented as a result of 1990 Federal Clean Air Act mandates to bring the area into compliance with the national standard (TNRCC, 1996b).

2.1.6 Biology

Approximately 374 acres, or 14 percent, of NAS Fort Worth JRB is considered unimproved, indicating the presence of seminatural to natural biological/ecological conditions. The base lies in the Cross Timbers and Prairies Regions of Texas, where native vegetation is characterized by alternating bands of prairies and woodlands. Native and cultivated grasses such as little bluestem, Indian grass, big bluestem, side oats, grama, and buffalo grass cover the higher elevations on the base. Forested areas occur primarily on the lower land and along the banks of streams. Common wood species include oak, elm, pecan, hackberry, and sumac. Several non-native species such as catalpa and chinaberry are common (Radian, 1989a,b).

Typical wildlife on the base includes black-tailed jackrabbits in grassy areas along the runway. In addition, there are cottontail rabbits, gray squirrels, and opossums in the wooded areas. Common birds include morning doves, meadowlarks, grackles, and starlings. Hunting and trapping are not allowed on the base, but in the nearby rural areas they are a very popular form of recreation (Radian, 1989a,b).

Reported game fish include black bass, sunfish, and catfish, all of which can be found in Lake Worth, Farmers Branch Creek, and one small pond located on base near the golf course equipment shed. According to the Texas Department of Parks and Wildlife and the U.S. Fish and Wildlife Service, there are no threatened or endangered species known to occur on NAS Fort Worth JRB. None of the federally listed endangered plant species for Texas are known to occur within 100 miles of Tarrant County. Of the federally listed endangered animals species, only the peregrine falcon and the whooping crane are known to occasionally inhabit the area; however, none of these is suspected to reside in the vicinity of NAS Fort Worth JRB (Radian, 1989a,b).

2.1.7 Demographics

The following sections describe the regional and site-specific demographics as they relate to the Fort Worth, Texas area and NAS Fort Worth JRB.

2.1.7.1 Regional Demographics

Approximately 1,278,606 people reside within Tarrant County, Texas (U.S. Department of Commerce, 1996). Of this population, 485,650 reside within the city limits of Fort Worth. Several smaller cities and villages make up the remainder of the population. The communities of White Settlement, Lake Worth, Westworth Village, River Oaks, and Sansom Park lie within a 3-mile radius of NAS Fort Worth JRB. The following populations that reside in the cities and villages are based on 1990 census data: White Settlement (city) 16,502; Lake Worth (city) 4,694; Westworth Village (town) 2,502; River Oaks (city) 6,747; and Sansom Park (city)

4,136 (U.S. Department of Commerce, 1994). Six schools are within a 2-mile radius of NAS Fort Worth JRB; the closest is 0.5 miles south (Rust Geotech, 1995).

The area surrounding NAS Fort Worth JRB is highly urbanized due to its proximity to the city of Fort Worth. The area is comprised of a combination of residential, commercial, and light industrial properties that employ the majority of local residents (Rust Geotech, 1995).

2.1.7.2 Site-Specific Demographics

The current full-time population at NAS Fort Worth JRB is approximately 3,600 people, comprising 400 officers, 1,400 civilians, and 1,800 active reservists. Part-time military reservists will increase this population to over 6,000 military personnel (CH2M HILL, 1996).

Approximately 86 percent of NAS Fort Worth JRB has been developed by way of buildings, roads, parking lots, runways, and housing and recreational areas. On-site activities include various maintenance, inspection, and support activities for fuel systems, weapons, jet engines, aerospace ground equipment (AGE), and specialized ground equipment (HydroGeoLogic, 1999a).

2.2 SITE-SPECIFIC ENVIRONMENTAL SETTING

The following sections describe the site-specific environmental setting of NAS Fort Worth JRB.

2.2.1 Site-Specific Soils

The U.S. Soil Conservation Service has identified four major soil associations in the area of NAS Fort Worth JRB. The first association is the surficial soils of the nearly level to gently sloping clayey soils of the Sanger-Purves-Slidell Association. Second is the Aledo-Bolar-Sanger Association, which is located within the southwestern portion of the Sanger-Purves-Slidell Association and is characterized as an increasingly loamy clayey soil of gentle to moderate slope. The third association, the Bastsil-Silawa Association separates the Sanger-Purves-Slidell Association from the Frio-Trinity Association. The Bastsil-Silawa Association is characterized as a sandy clay loam of nearly level slope (ESE, 1994). The clayey soils of the Frio-Trinity Association make up the fourth soil association and are located along the flood plain of the West Fork Trinity River. The areal limits of each of these soil associations and their occurrence on-site are shown in Figure 2.12.

2.2.2 Site-Specific Geology

The majority of NAS Fort Worth JRB is covered by alluvium deposited by the Trinity River during flood stages. The Quaternary Period alluvium (Holocene Epoch) occurs downstream from the Lake Worth Dam in the current flood plain of the West Fork Trinity River, on the east side of the facility. Older alluvial deposits and terrace deposits (Pleistocene Epoch) also occur on-site. The alluvium is composed of gravel, sand, silt, and clay of varying thickness

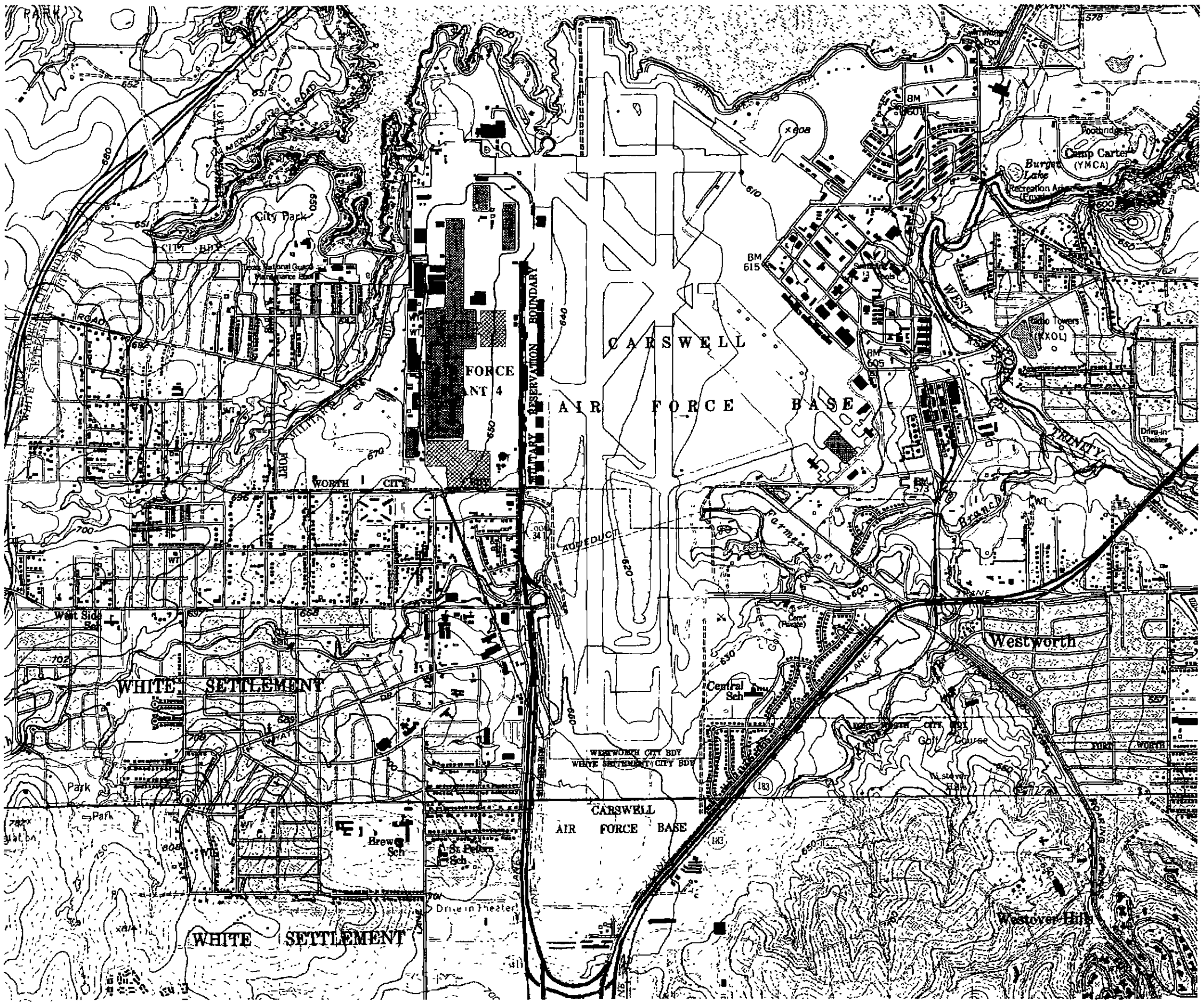
and lateral extent. The thickness of these materials ranges from 0 to 60 feet. Fill material is also included within these deposits where landfills, waste pits, excavation sites, and other construction activities have altered the original land surface. This fill material is made up of clay, silt, sand, and gravel mixtures, but may also contain debris and other waste (Radian, 1989a,b).

Below the alluvial terrace deposits are the Cretaceous-age Goodland and Walnut Formations, which form the bedrock surface beneath NAS Fort Worth JRB. Both formations consist of interbedded, fossiliferous, hard limestone and calcareous shale. The upper formation, the Goodland Limestone, is exposed on the southern portion of the base, south of White Settlement Road. The Goodland is a chalky-white, fossiliferous limestone and marl. The thickness of the Goodland Limestone ranges from 20 to 25 feet. Below the Goodland Formation is the Walnut Formation (or Walnut Clay). The Walnut Formation is exposed in a small area along the shores of Lake Worth and Meandering Road Creek. This formation is a shell agglomerate limestone with varying amounts of clay and shale. It ranges in thickness from 25 to 35 feet throughout the site except where erosion has produced a few thinner areas. Subsurface investigations have located troughs and paleochannels that are eroded into the top of the bedrock at NAS Fort Worth JRB. These paleochannels are typical of an erosional surface modified by fluvial processes and are filled with sand and gravel deposits ranging in thickness from 15 to 35 feet (CH2M HILL, 1996).

Below the Walnut Formation is the Paluxy Formation (or Paluxy Sand). The Paluxy Formation underlies all of NAS Fort Worth JRB. The formation consists of several thick sandstone layers that are separated by thin, discontinuous shale and claystone layers. Sandstones in the formation are primarily fine- to coarse-grained sand with minor amounts of clay, sandy clay, pyrite, lignite, and shale. The lower section of the Paluxy is generally coarser-grained than the upper section (CH2M HILL, 1996). Total formation thickness ranges from 130 to 175 feet, with variable thickness and occurrence of individual layers across the site. Only one unit in this formation, a shale/silty shale, can be extensively mapped across the base.

The older Glen Rose and Twin Mountains Formations are not exposed at NAS Fort Worth JRB. The Glen Rose Formation consists primarily of calcareous sedimentary rock and some sands, clays, and anhydrite. The Glen Rose caps the Twin Mountain Formation, which is the oldest Cretaceous Formation in the NAS Fort Worth JRB area. The Twin Mountain Formation consists of a basal conglomerate of chert and quartz, grading upward into coarse- to fine-grained sand interspersed with varicolored shale.

FIGURES



HydroGeoLogic, Inc.—RCRA Facility Investigation Report
NAS Fort Worth JRB, Texas

Figure 2.1

NAS Fort Worth JRB
Regional Topographic Map

Air Force Center for Environmental Excellence

Legend

Site Location

N

1000 0 1000 2000

SCALE IN FEET

Filename: X \AFC001\15bdb\RCRA Facility Investigation Report\ topo map.apr
Project AFC001-15BDB
Created by cfarmer 01/17/01
Revised: 03/13/01 jb
Maps Lake Worth and Benbrook TX
Dates. Photorevised 1981, 1982

HYDRO GeoLogic

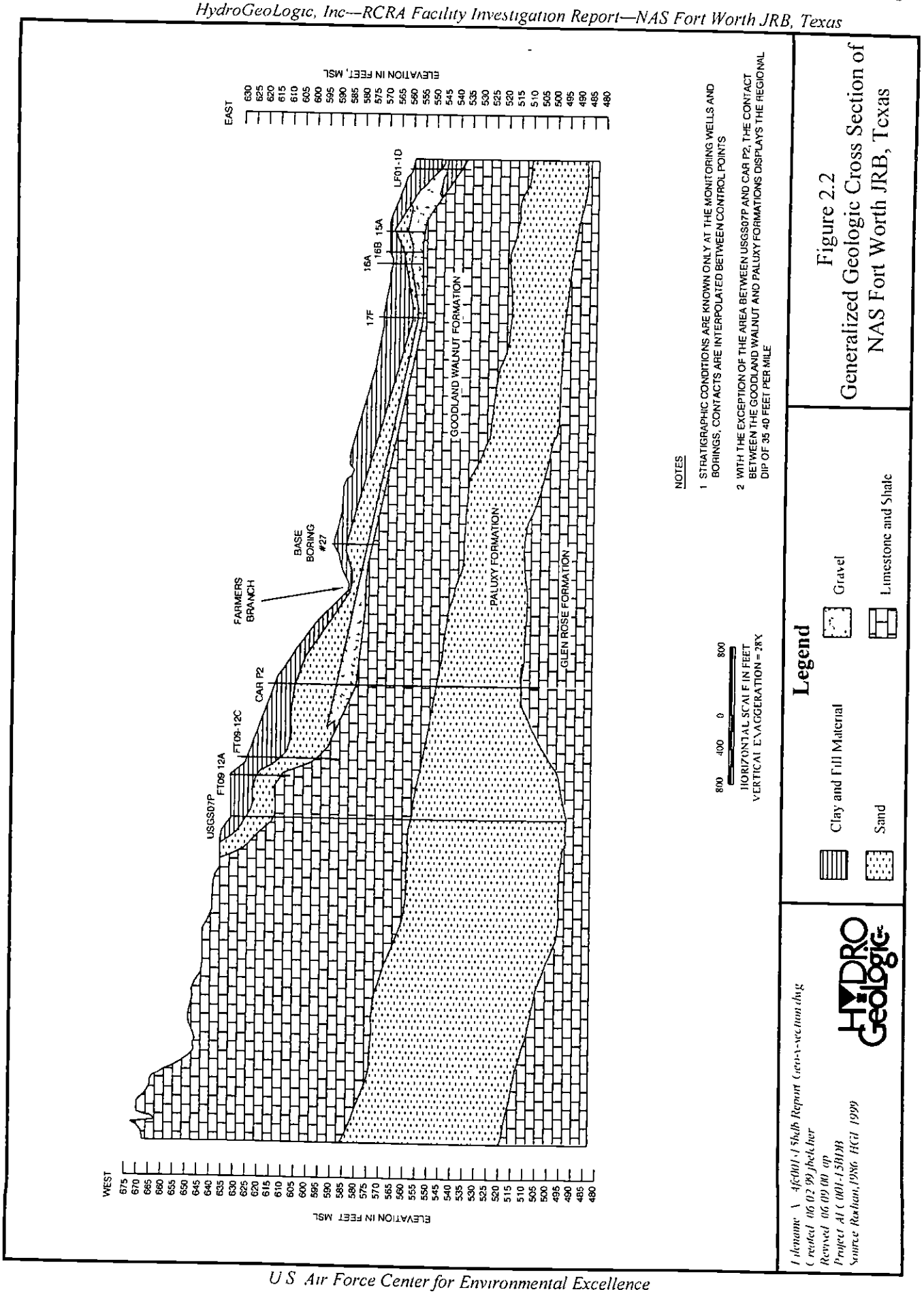
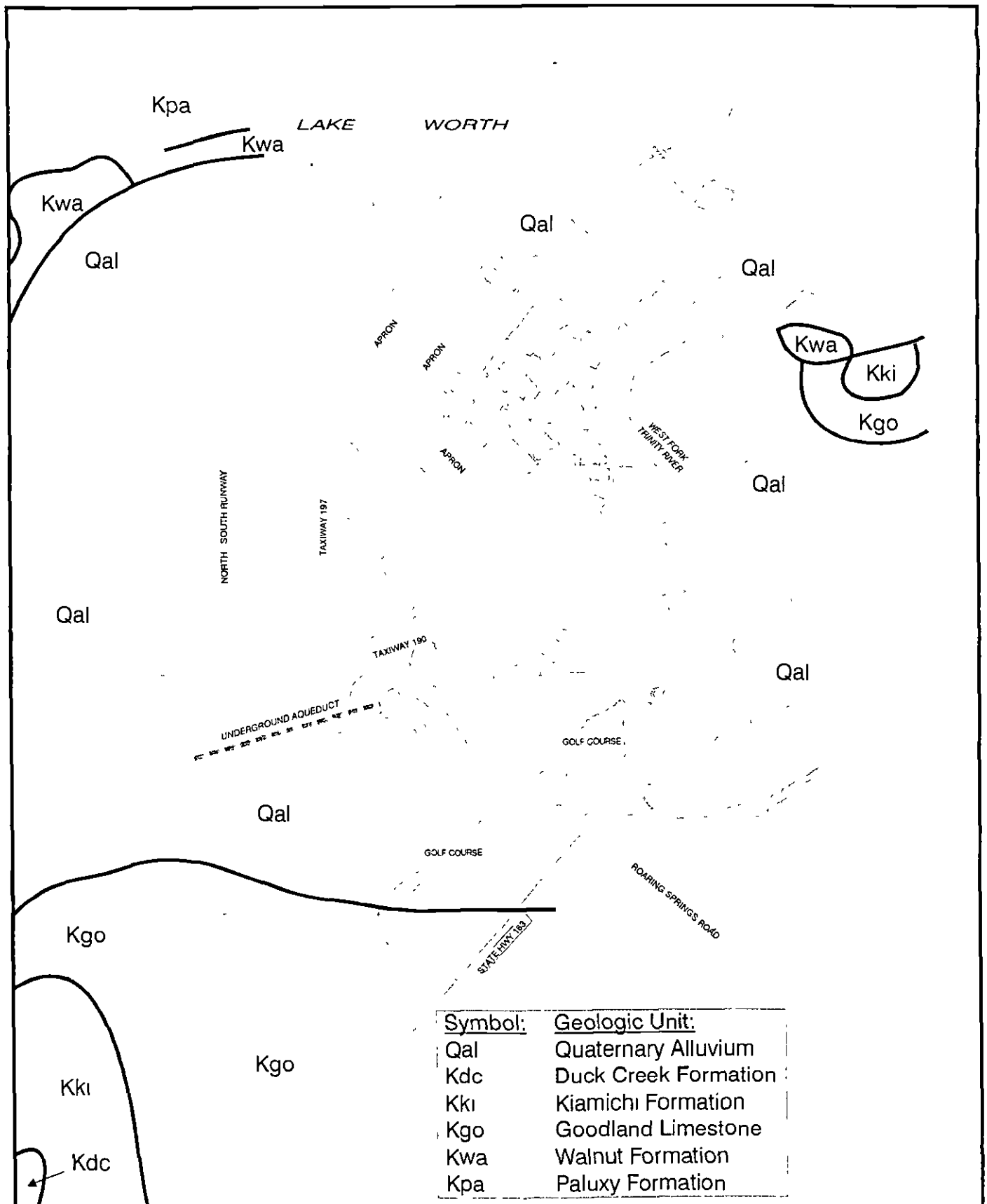


Figure 2.2
Generalized Geologic Cross Section of NAS Fort Worth JRB, Texas



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Project AFC001-15BDB
Revised 06/09/00 ap
Map Source Radian 1989

HYDRO GeoLogic INC

Legend

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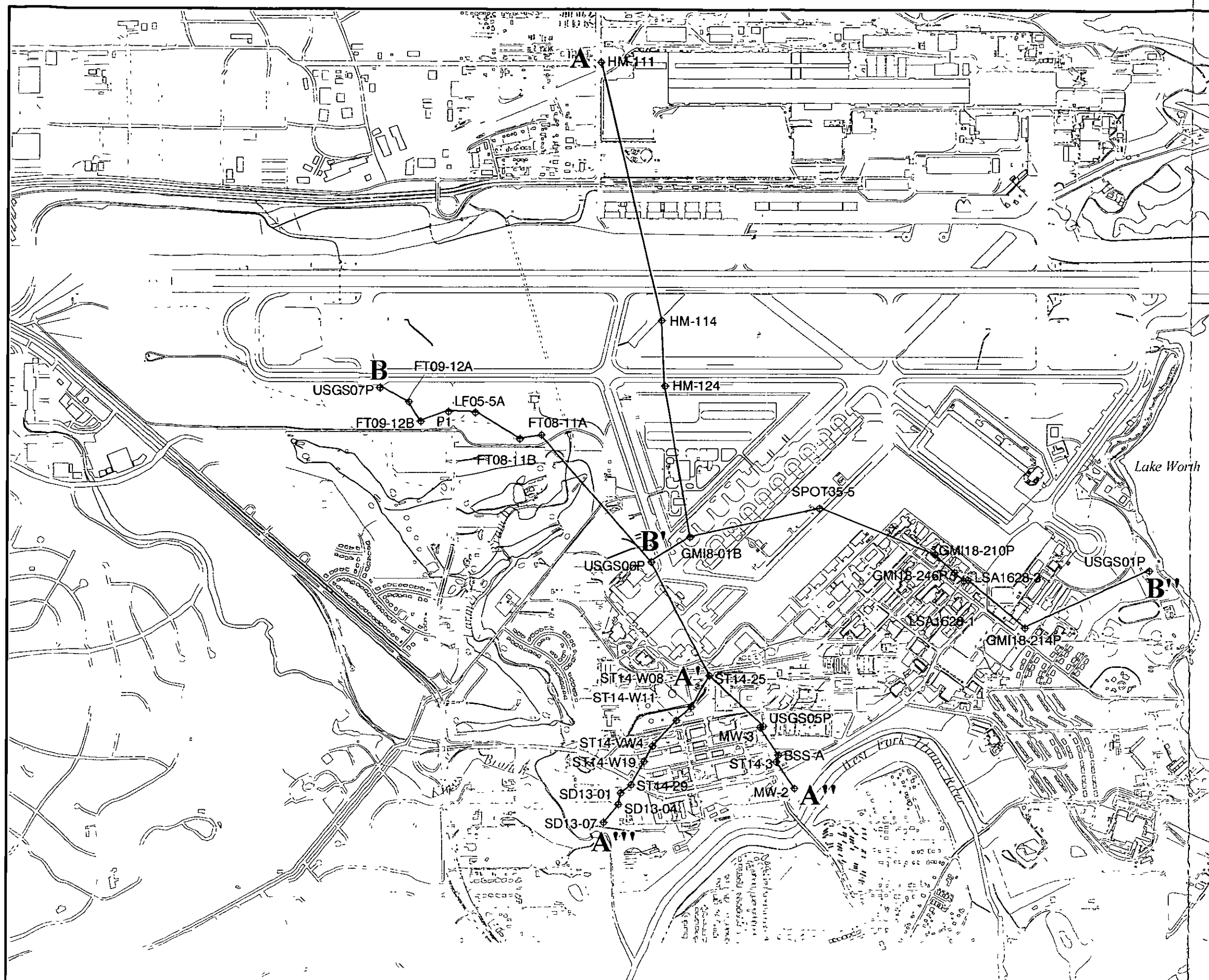
SCALE IN FEET

N

Figure 2.3
Areal Distribution of Geologic Units of NAS Fort Worth JRB, Texas



HydroGeoLogic, Inc —RCRA Facility Investigation Report
NAS Fort Worth JRB, Texas

Figure 2.4

Cross Section Location Map

U.S. Air Force Center For Environmental Excellence

Legend

⌖ Boring Location

A——A' Cross Section Line

N

0 650 1300 2600

SCALE IN FEET

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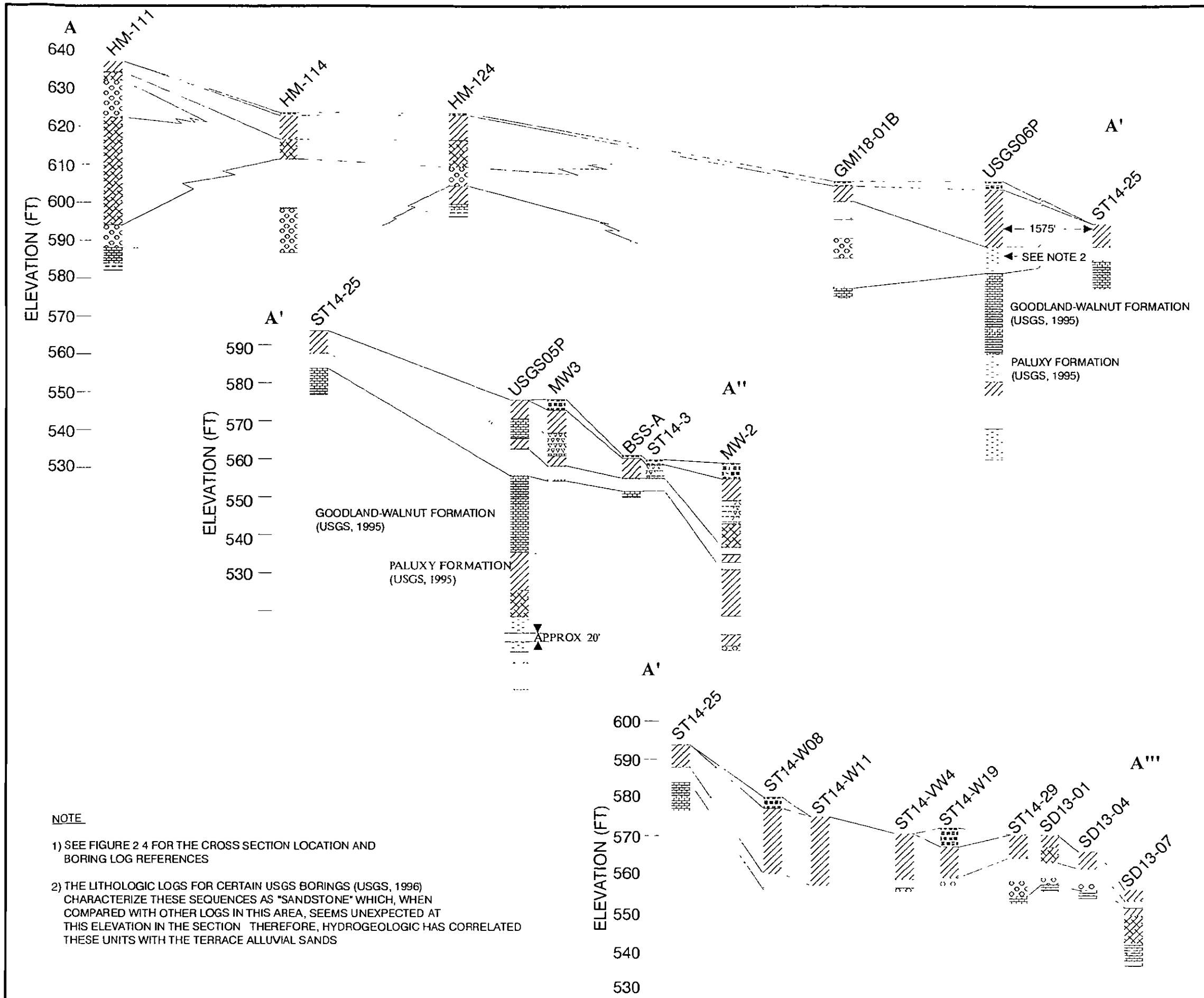
Project AFC001-15BDB
Created 02/22/01 jbelcher
Revised 03/13/01 jb
Map Source HydroGeoLogic, Inc., ArcView GIS Database, 2001 Jacobs, 1996

HYDRO GeoLogic



NOTE

1) SEE FIGURE 2 4 FOR THE CROSS SECTION LOCATION AND BORING LOG REFERENCES

2) THE LITHOLOGIC LOGS FOR CERTAIN USGS BORINGS (USGS, 1996) CHARACTERIZE THESE SEQUENCES AS "SANDSTONE" WHICH, WHEN COMPARED WITH OTHER LOGS IN THIS AREA, SEEMS UNEXPECTED AT THIS ELEVATION IN THE SECTION THEREFORE, HYDROGEOLOGIC HAS CORRELATED THESE UNITS WITH THE TERRACE ALLUVIAL SANDS

HydroGeoLogic, Inc —RCRA Facility Investigation Report
NAS Fort Worth JRB, Texas

Figure 2.5

Cross Sections A-A', A'-A'', and A'-A'''

U.S. Air Force Center for Environmental Excellence

Legend

- Stratigraphic Contact
- Inferred Stratigraphic Contact
- Fine- to Coarse-Grained Sand, Clayey Sand, Silty Sand, Gravelly Sand
- Clay, Silty Clay, Sandy Clay
- Silt, Clayey Silt, Sandy Silt
- Gravelly Clay or Clay w/Limestone
- Fill, Soil, Gravel, Rock
- Coarse Gravel, Silty Gravel, Sandy Gravel
- Limestone
- Claystone/Mudstone/Shale
- Sandstone

0 600 1200
HORIZONTAL SCALE IN FEET

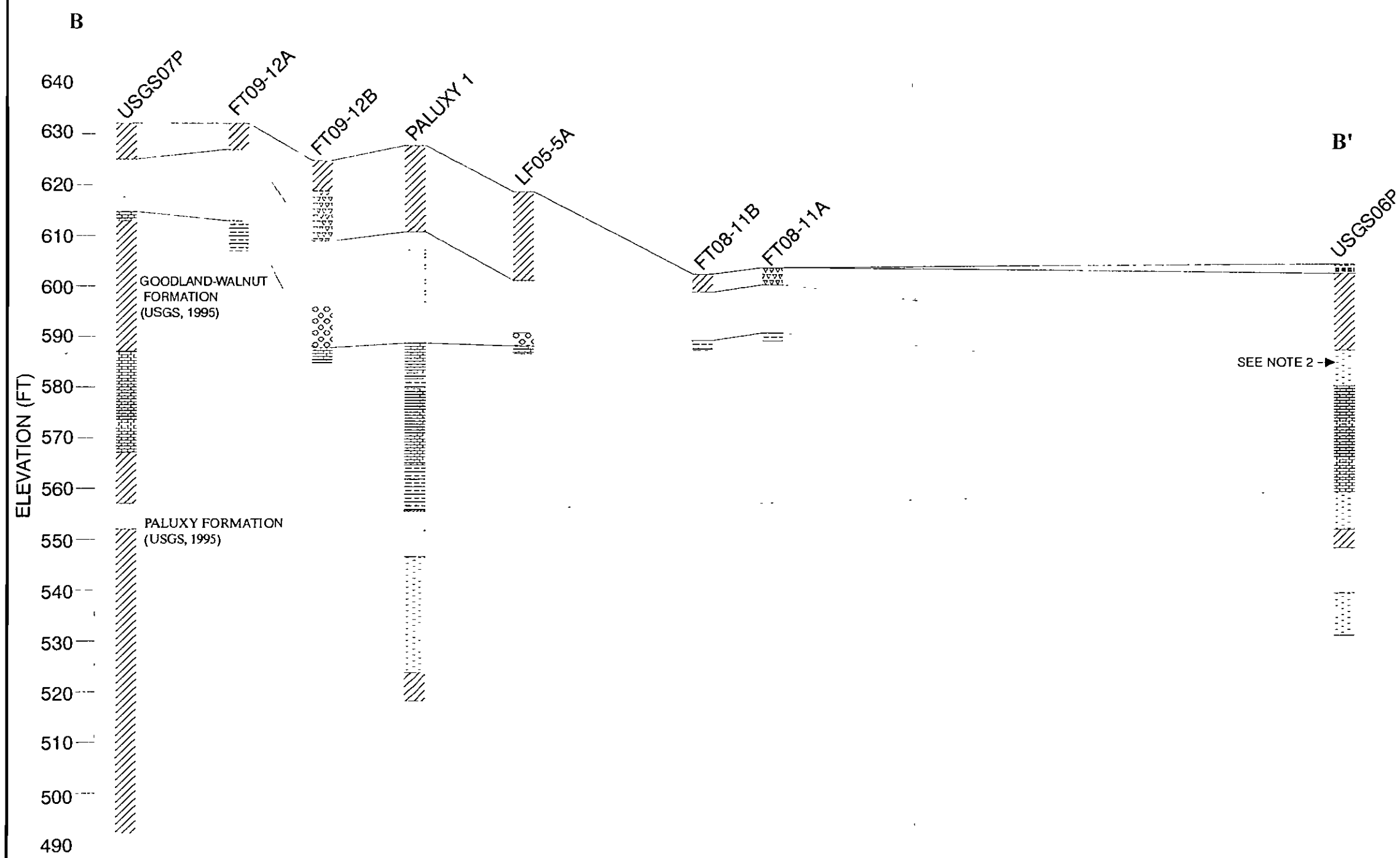
Filename X AFC001\15BDB
\Report\A-A' x-sections cdr
Project AFC001-15BDB
Revised 07/12/00 cf
Source CH2M HILL 1996 b

HYDRO GeoLogic INC

Figure 2.6

Cross Section B-B'

U.S. Air Force Center for Environmental Excellence



NOTE

1) SEE FIGURE 2 4 FOR THE CROSS SECTION LOCATION AND BORING LOG REFERENCES

2) THE LITHOLOGIC LOGS FOR CERTAIN USGS BORINGS (USGS, 1996) CHARACTERIZE THESE SEQUENCES AS "SANDSTONE" WHICH, WHEN COMPARED WITH OTHER LOGS IN THIS AREA, SEEMS UNEXPECTED AT THIS ELEVATION IN THE SECTION THEREFORE, HYDROGEOLOGIC HAS CORRELATED THESE UNITS WITH THE TERRACE ALLUVIAL SANDS

Legend

- Stratigraphic Contact
- Inferred Stratigraphic Contact
- Fine- to Coarse-Grained Sand, Clayey Sand, Silty Sand, Gravelly Sand
- Clay, Silty Clay, Sandy Clay
- Silt, Clayey Silt, Sandy Silt
- Gravelly Clay or Clay w/Limestone
- Fill, Soil, Gravel, Rock
- Coarse Gravel, Silty Gravel, Sandy Gravel
- Limestone
- Claystone/Mudstone/Shale
- Sandstone

0 600 1200
HORIZONTAL SCALE IN FEET

Filename X AFC001\15BDB
\Report\B-B'_x-section cdr
Project AFC001-15BDB
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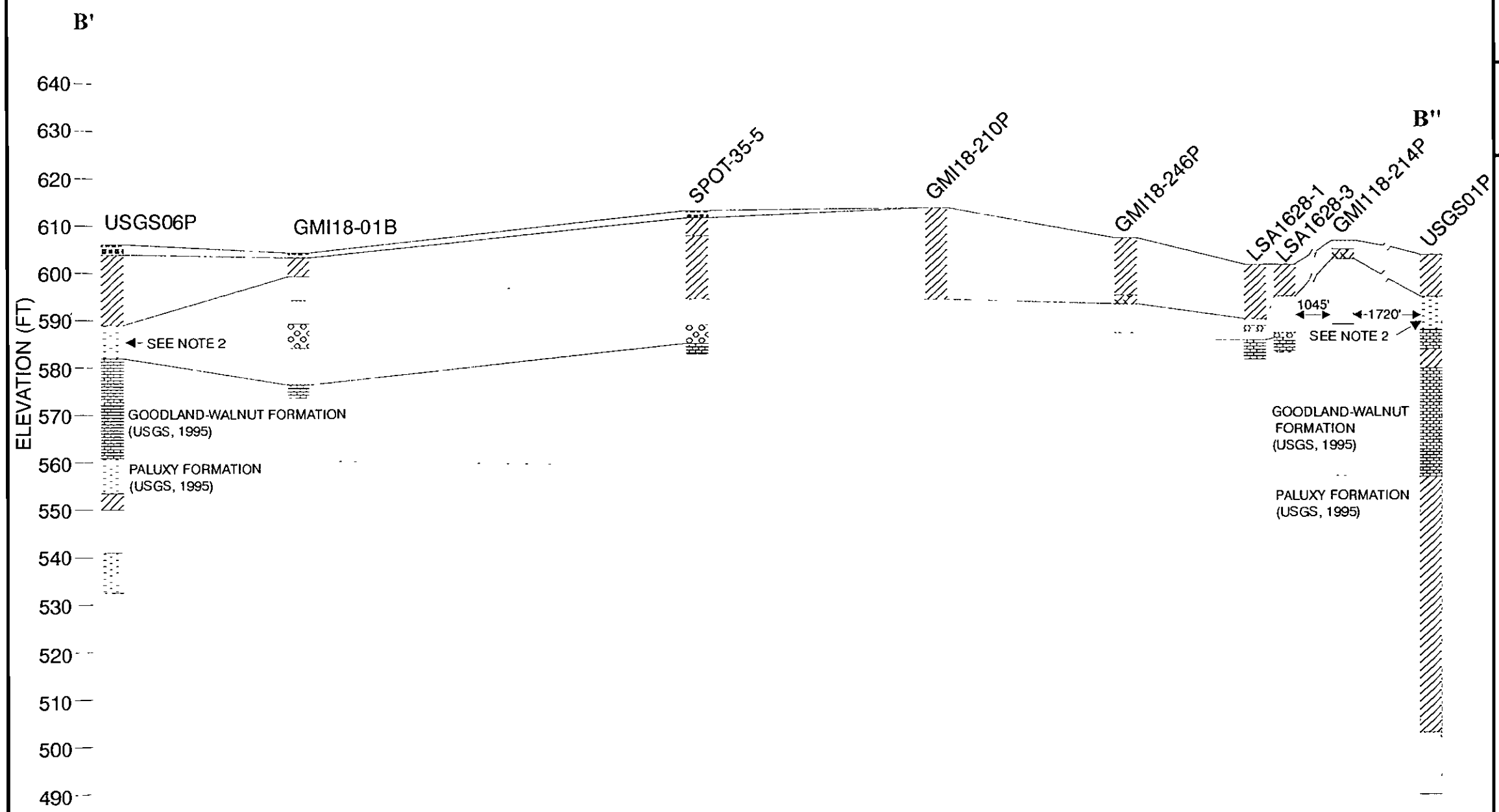
Source CH2M HILL 1996 b

HYDRO GeoLogic INC

Figure 2.7

Cross Section B'-B"

U.S. Air Force Center for Environmental Excellence



NOTE

1) SEE FIGURE 2 4 FOR THE CROSS SECTION LOCATION AND BORING LOG REFERENCES

2) THE LITHOLOGIC LOGS FOR CERTAIN USGS BORINGS (USGS, 1996) CHARACTERIZE THESE SEQUENCES AS "SANDSTONE" WHICH, WHEN COMPARED WITH OTHER LOGS IN THIS AREA, SEEMS UNEXPECTED AT THIS ELEVATION IN THE SECTION THEREFORE, HYDROGEOLOGIC HAS CORRELATED THESE UNITS WITH THE TERRACE ALLUVIAL SANDS

Legend

- Stratigraphic Contact
- Inferred Stratigraphic Contact
- Fine- to Coarse-Grained Sand, Clayey Sand, Silty Sand, Gravelly Sand
- Clay, Silty Clay, Sandy Clay
- Silt, Clayey Silt, Sandy Silt
- Gravelly Clay or Clay w/Limestone
- Fill, Soil, Gravel, Rock
- Coarse Gravel, Silty Gravel, Sandy Gravel
- Limestone
- Claystone/Mudstone/Shale
- Sandstone

0 600 1200
HORIZONTAL SCALE IN FEET

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Revised 06/09/00 ap
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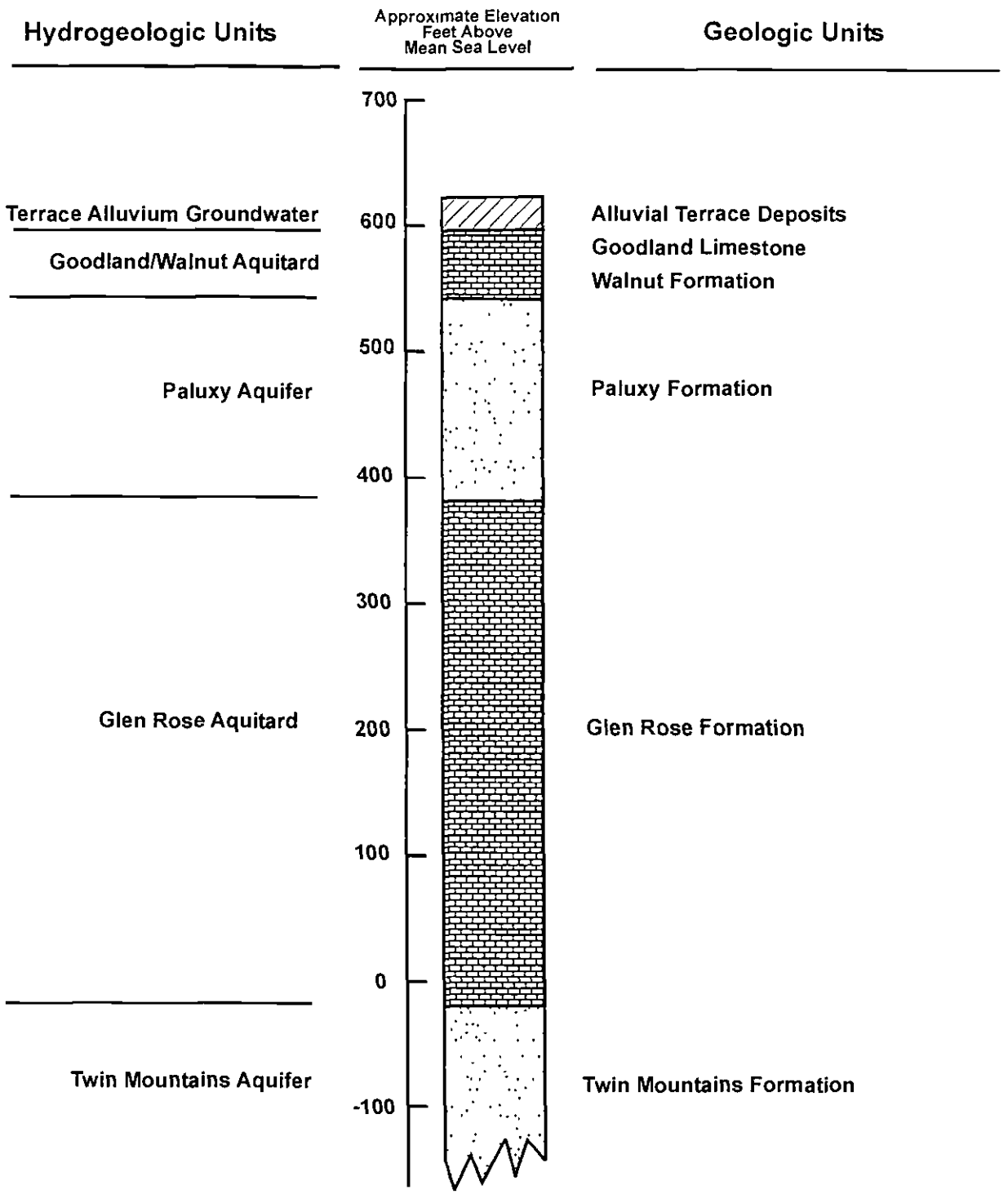
HYDRO GeoLogic INC



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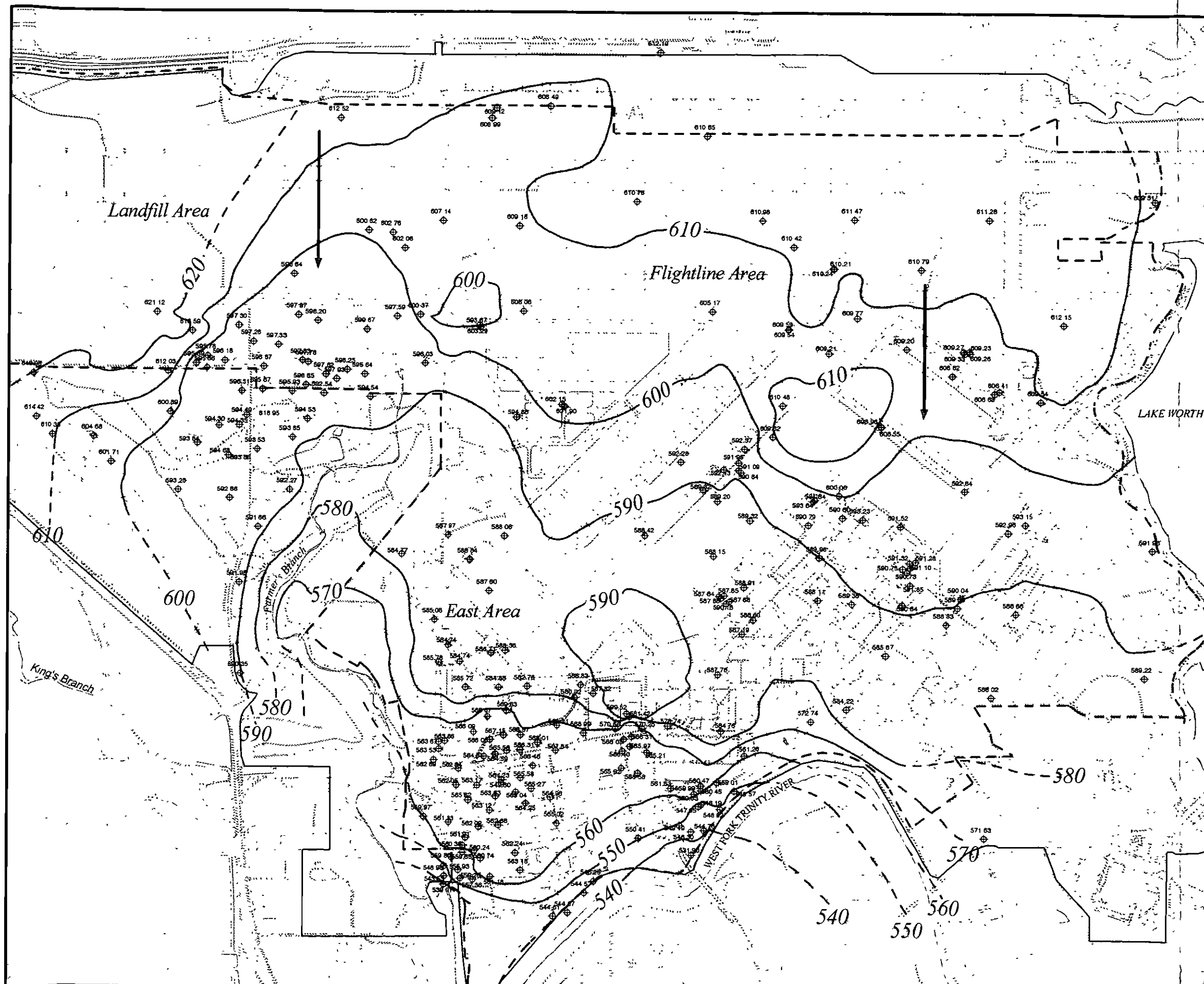
Project AFC001-15BDB
Revised 06/09/00 ap
Map Source Radian, 1989

HYDRO GeoLogic INC

Legend

- Alluvium
- Limestone
- Sandstone

Figure 2.8
Stratigraphic Column Correlating Hydrogeologic and Geologic Units



HydroGeoLogic, Inc —RCRA Facility Investigation Report
NAS Fort Worth JRB, Texas

Figure 2.9

Water Level Elevations
Terrace Alluvium
January 1999

U.S. 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

N

0 500 1000 2000
SCALE IN FEET

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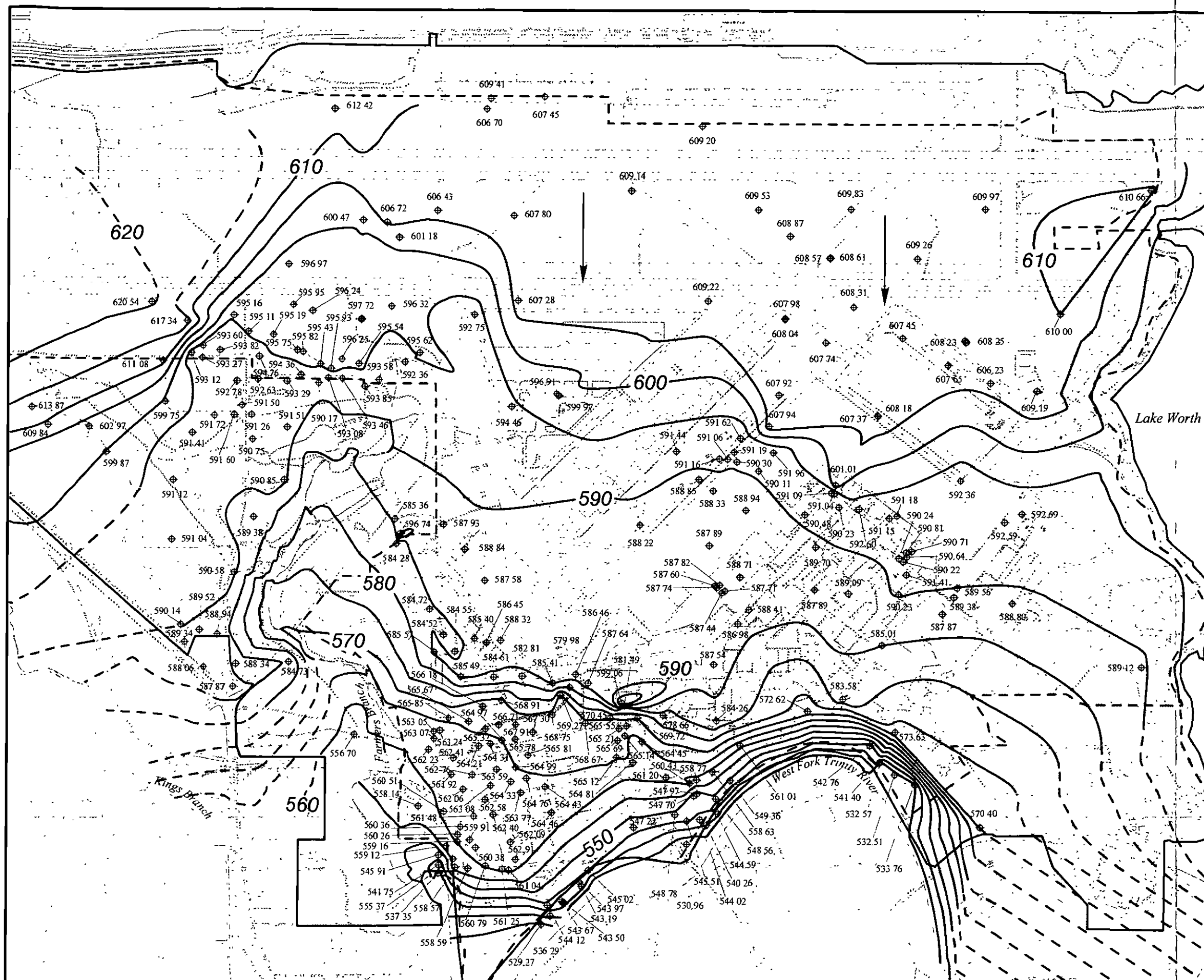
Project AFC001-15BDB
Created nzehms 03/15/99
Revised 06/12/00 ap
Map Source HGL GIS Database



HydroGeoLogic, Inc —RCRA Facility Investigation Report
NAS Fort Worth JRB, Texas

Figure 2.10

Water Level Elevations
Terrace Alluvium
July 2000

U.S. Air Force Center For Environmental Excellence

Legend

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

——— Former Carswell Air Force Base

–600– Groundwater Elevation Contour (ft msl)

⊕ Monitoring Well

→ Generalized Groundwater Flow

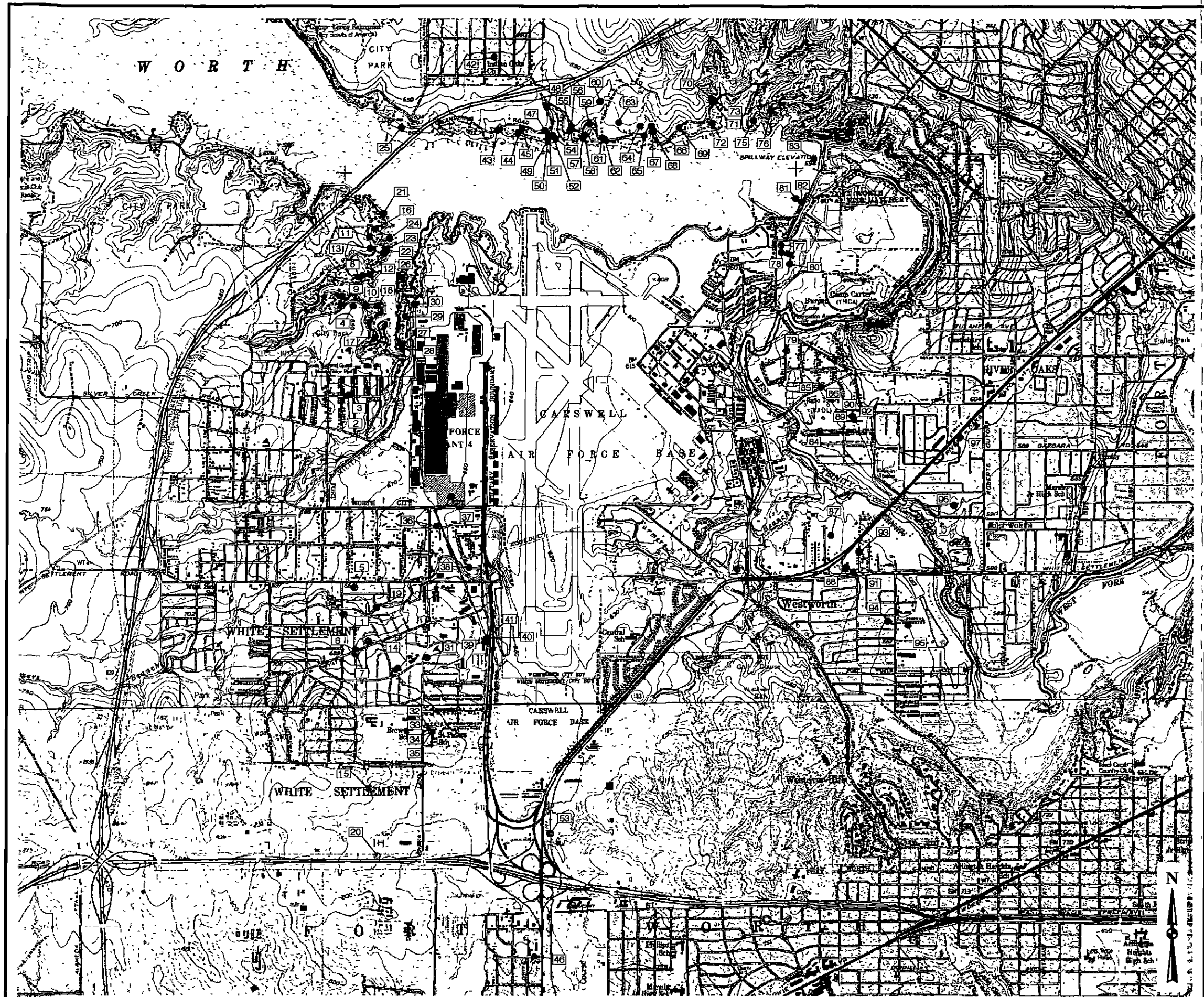
N

0 500 1000 2000

SCALE IN FEET

Filename X AFC001 15bdb Report gw elev july2000 apr
Project AFC 001-15BDB
Created 01 22 00 jbelcher
Revised 01 18 01 jb
Map Source HydroGeologic, Inc GIS Database

HYDRO GeoLogic INC



HydroGeoLogic, Inc —RCRA Facility Investigation Report
NAS Fort Worth JRB, Texas

Figure 2.11

Water Well Receptor Survey Within 1 Mile of NAS Fort Worth JRB

Air Force Center for Environmental Excellence

Legend

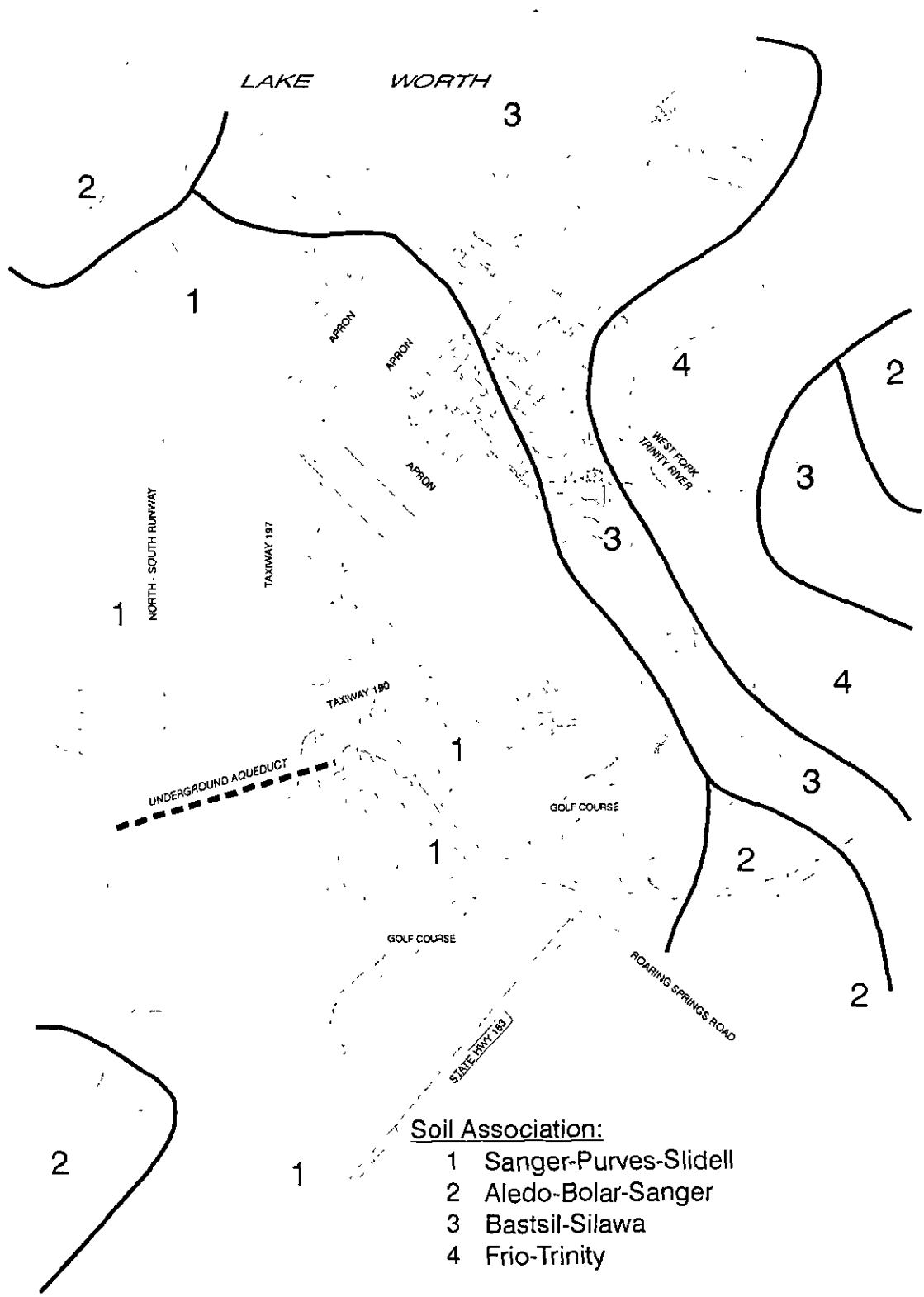
○ Water Well Location

MAP ID	STATE WELL ID	WELL TYPE
1	Unnumbered	Domestic
2	32-13-811	Public Supply
3	32-13-808	Public Supply
4	32-13-08	Domestic
5	32-13-7k	Domestic
6	32-13-806	Unused
7	32-13-805	Unused
8	32-13-8	Domestic
9	32-13-4	Domestic
10	32-13-816	Domestic
11	32-13-7X	Domestic
12	32-13-8	Domestic
13	32-13-8	Domestic
14	Unnumbered	Domestic
15	32-21-2	Public Supply
16	32-13-8	Domestic
17	32-13-814	Domestic
18	32-13-819	Domestic
19	32-13-804	Public Supply
20	32-20-6	Domestic
21	32-13-822	Domestic
22	32-13-815	Domestic
23	32-13-820	Domestic
24	32-13-821	Domestic
25	32-13-5	Domestic
26	32-13-818	Domestic
27	32-13-813	Domestic
28	G2200324A	Public Supply
29	32-13-817	Domestic
30	32-13-8	Domestic
31	32-13-7g	Domestic
32	32-21-205	Unused
33	32-21-206	Unused
34	32-21-207	Unused
35	32-21-208	Unused
36	32-13-8c	Domestic
37	32-13-807	Unused
38	32-13-803	Public Supply
39	32-13-812	Public Supply
40	32-13-801	Public Supply
41	32-13-802	Public Supply
42	32-13-5C	Domestic
43	Unnumbered	NA
44	32-13-5	Domestic
45	32-13-7	Domestic
46	32-21-2B	Domestic
47	32-13-5	Domestic
48	32-13-5	Domestic
49	32-13-5	Domestic

MAP ID	STATE WELL ID	WELL TYPE
50	32-13-5	Domestic
51	32-13-5U	Domestic
52	32-24-4	Domestic
53	Unnumbered	Industrial
54	32-13-3	Domestic
55	Unnumbered	Domestic
56	32-13-5	Domestic
57	32-13-5K	Domestic
58	32-13-5K	Domestic
59	32-13-5	Domestic
60	32-13-5B	NA
61	32-13-5	Domestic
62	32-13-5	Domestic
63	32-13-9h	Domestic
64	32-13-5	Domestic
65	32-13-5	Domestic
66	32-13-5F	Domestic
67	32-13-5F	Domestic
68	32-13-5F	Domestic
69	32-13-5	Domestic
70	32-13-5S	Domestic
71	32-13-5S	Domestic
72	32-13-5	Domestic
73	32-13-5S	Domestic
74	32-12-9	Domestic
75	32-13-5	Domestic
76	32-13-5M	Domestic
77	32-13-810	Unused
78	32-13-809	Unused
79	32-13-8	Domestic
80	32-13-9	Domestic
81	S2200012A	Surface Water Intake
82	S2200012B	Surface Water Intake
83	S2200069A	Surface Water Intake
84	32-14-7	Domestic
85	32-13-911	Unused
86	32-13-912	Public Supply
87	32-13-9a	Domestic
88	32-13-917	Public Supply
89	32-13-9	Irrigation
90	32-14-7	Domestic
91	32-13-9	Domestic
92	32-14-7	Domestic
93	32-13-9	Domestic
94	32-13-9	Domestic
95	32-13-9a	Domestic
96	32-13-9	Irrigation
97	32-31-1N	Irrigation

Filename. X:\Afc001\15bdb\RCRA Facility Investigation Report
well receptor survey apr
Project AFC001-15BDB
Created by cfarmer 01/17/01
Revised 03/13/01 jb
Maps Lake Worth and Benbrook TX
Dates Photorevised 1981, 1982

HYDRO GeoLogic INC.



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Project AFC001-15BDB
Revised 07/06/00 cf
Source Radian, 1989

HYDRO GeoLogic

Legend

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SCALE IN FEET

N

Figure 2.12
Soil Association Map
NAS Fort Worth JRB, Texas

TAB

SECTION 3.0

3.0 SUMMARY OF INVESTIGATION ACTIVITIES

This section describes activities conducted as part of this investigation. Preliminary activities conducted for the site characterization included site reconnaissance, utility clearance, and inspections of AOC 13 and the immediate surroundings. Chemical characterization activities included surface and subsurface soil sample collection, and installation, development, and sampling of groundwater monitoring wells. Chemical characterization sampling was intended to identify the nature and extent of contamination that may have resulted from past activities at the site.

3.1 SITE RECONNAISSANCE AND UTILITY CLEARANCE

The project planning and background documents for Law's RFA and IT's RFI activities at AOC 13 are not available to HydroGeoLogic, and the summaries presented below are from the referenced reports produced by each company.

3.1.1 1994 OWS RFA (Law)

The Law OWS RFA Report (Law, 1995) indicates that the AOC 13 OWS was visually inspected, site personnel were interviewed, and site records were reviewed during a September 1993 site visit. Visual observations were made by Law to obtain information on the general conditions and any visually obvious structural deficiencies of the OWS. The information gathered by this process was used to assist in the positioning of the soil borings advanced at the site.

3.1.2 1997 Sanitary Sewer RFI (IT)

The IT Sanitary Sewer RFI Report (IT, 1997) indicates that prior to installing soil borings, IT reviewed utility drawings and groundwater elevation maps, and performed field utility location.

3.1.3 1998 OWS RFI (IT)

The IT OWS RFI Report (IT, 1998) does not include a discussion of pre-investigation site reconnaissance.

3.1.4 1999 and 2000 Quarterly Sampling Events (HydroGeoLogic)

Prior to each Quarterly Sampling Event, the wells to be sampled were inspected. The integrity of each well's surface features such as the concrete pad, security posts, and the manhole cover, were examined and maintenance needs recorded. Monitoring well caps, security features (such as locks or custody seals), and bolts were also inspected and replaced if necessary.

3.1.5 2000 OWS Removal and Phase II RFI (HydroGeoLogic)

Prior to initiating intrusive site activities, HydroGeoLogic conducted a site reconnaissance to select sample locations and to assess requirements for site preparation and clearance of underground utilities. The Navy Public Works Office was notified regarding the intended removal action, field investigation, and sampling. Local utility companies were requested to mark and clear all subsurface utilities within the area of AOC 13 by the Navy Public Works office. Navy Construction Permit 536 was issued for the removal action after the area was cleared for utilities.

3.2 SITE INVESTIGATION ACTIVITIES

The following sections provide a more detailed description of the previous investigations performed at AOC 13 (summarized in Section 1), and describe activities conducted as part of this RFI. HydroGeoLogic's sampling activities were conducted in accordance with the RFI WPs (HydroGeoLogic, 1999d), the Phase II RFI AOC 13 WP (HydroGeoLogic, 2000b), and the applicable Basewide QAPP (HydroGeoLogic, 1998 and 2000c).

As stated earlier in Section 1.3, the Air Force provided justification for a reduced list of soil and groundwater analytical requirements for RFI activities at AOC 13 in the June 2000 interim RPM meeting with TNRCC.

3.2.1 1994 OWS RFA (Law)

In April 1994, Law conducted an RFA on 11 OWSs located at the former Carswell AFB. The Auto Hobby Shop, Building 1145 was part of this RFA. The RFA was designed to evaluate the operational status of the OWS, assess the potential for release of contaminants, recommend repairs or replacement, and provide recommendations concerning the future use of each OWS (Law, 1995). Law advanced four soil borings (1145-SB01 through 1145-SB04) surrounding the OWS at AOC 13. These soil borings were located on the northeast, southeast, southwest, and northwest side of the OWS. The locations of these are depicted in Figure 3.1. Surface and subsurface soil samples were collected at each boring and analyzed for the following lists of analytes:

- SW8240 - volatile organic compounds (VOCs)
- SW6010 - trace elements (metals)

Analytical and lithological results from this RFA are presented in Section 4.0.

3.2.2 1997 Sanitary Sewer RFI (IT)

In 1997, IT performed an RFI of the sanitary sewer system to investigate the potential for a release of hazardous materials into the environment and assess the potential impact on human health and the environment. IT advanced two soil borings (SB114501 and SB114502) on the east and west sides of the OWS (IT, 1997). The locations of these two borings are shown on

Figure 3.1. The near surface and subsurface soil samples collected from these borings were analyzed for the following lists of analytes:

- SW8270 - semivolatile organic compounds (SVOCs)
- SW8080 - organochlorine (OC) pesticides and polychlorinated biphenyls (PCBs)

Analytical and lithological results of this RFI are presented in Section 4.0. In addition to advancing the soil borings, monitoring well WITCTA036 was installed after over drilling boring SB114501. Approximately 2 feet of LNAPL was extracted from WITCTA036 immediately after the well was installed. A sample of the LNAPL layer was analyzed for the following lists of analytes:

- SW8260 - VOCs
- SW8270 - SVOCs
- SW8080 - OC pesticides and PCBs
- SW8015M - TPH as diesel range organics (DRO) and gasoline range organics (GRO)

IT continued to perform product removal at WITCTA036 and recommended additional delineation of contaminants detected in soil (IT, 1997).

3.2.3 1998 OWS RFI (IT)

In January 1998, IT conducted a second round of sampling at AOC 13, installing five additional soil borings: SB114503, SB114504, SB114506, SB114507, and SB114508. A sixth boring, SB114505 met refusal close to the surface and was abandoned. The purpose of these borings was to determine the extent of petroleum contamination in soils and whether free product detected at well WITCTA036 was migrating laterally in groundwater (IT, 1998). Surface and subsurface soil samples were collected from each boring and analyzed for the following lists of analytes:

- SW8260 - VOCs
- SW8270 - SVOCs
- SW8080 - OC pesticides and PCBs
- SW6010/7000 - trace elements (metals)
- SW7471 - mercury

In addition to the soil borings, IT installed 13 stratopunch groundwater screening wells to determine the lateral migration of constituents in groundwater. A field laboratory analyzed samples from these screening locations for VOCs by Method SW8021. Based upon the screening results, five permanent monitoring wells (WITCTA040 through WITCTA044) were installed and developed. These five monitoring wells were sampled for the following lists of analytes:

- SW8260 - VOCs
- SW8270 - SVOCs
- SW6010/7000 - trace elements (metals)
- SW7471 - mercury

IT performed product removal from well WITCTA036 again in July 1998. In August 1998, HydroGeoLogic began performing free product removal on a weekly basis; this weekly removal continued until May 2000 (see Section 3.2.5 below). Figure 3.1 shows the locations of the soil borings and monitoring wells installed at AOC 13 during the OWS RFI.

3.2.4 1999 and 2000 Quarterly Sampling Events (HydroGeoLogic)

In 1999, HydroGeoLogic performed quarterly groundwater monitoring on two of the five AOC 13 monitoring wells (HydroGeoLogic, 2000a). Monitoring well WITCTA044 was sampled during each of the 1999 quarterly sampling events, and the samples were analyzed for the following lists of analytes:

- SW8260B - VOCs
- SW9056 - anions (chloride, sulfate, and nitrate)
- E415.1 - total organic carbon (TOC)
- RSK-175 - dissolved gases (methane, ethane, and ethene)
- E310.1 - alkalinity
- Field test kit - ferrous iron

Note that anions, TOC, dissolved gases, alkalinity, and ferrous iron were sampled to determine if the conditions for natural attenuation of the regional trichloroethene plume exist and are not indicators of contamination. As a consequence, the results of these tests are not presented in this report.

Monitoring well WITCTA041 was sampled during the April 1999 quarterly sampling event, and the sample was analyzed for the following lists of analytes:

- SW8260B - VOCs
- SW6010B/7000A - trace elements (metals)
- SW7471A - mercury

During the October 2000 quarterly sampling event, all five monitoring wells installed by IT in 1998 (WITCTA040 through WITCTA044) were sampled specifically for the AOC 13 RFI. The samples collected from these wells were analyzed for the following lists of analytes:

- SW8260B - VOCs
- SW8270C - SVOCs
- SW6010B/7000A - trace elements (metals)
- SW7471A - mercury

The sample from well WITCTA044 was analyzed for metals and mercury only. Note that although these wells were sampled concurrently with the sampling performed for the October 2000 quarterly sampling event, the results are not discussed in the report prepared for that event (HydroGeoLogic, 2001). Analytical results from each groundwater sampling event are discussed in Section 4.0.

3.2.5 2000 OWS Removal (HydroGeoLogic)

In May and June 2000, HydroGeoLogic completed the removal and disposal of the Building 1145 OWS, UST, and associated contaminated media. The field activities associated with this removal action are described in Section 1.2. The extent of excavation of contaminated soils was determined in the field by visual observation, olfactory evidence, and testing of soil samples with a PID during excavation activities. Once field evidence indicated that all contaminated soils had been removed, 10 confirmation samples were collected from the sidewalls/perimeter of the excavation area (Figure 3.5) in order to determine the amount, if any, of residual contamination left in place. The confirmation samples were analyzed for the following lists of analytes:

- SW8260B - VOCs
- SW8270C - SVOCs
- SW6010B/7000A - trace elements (metals)
- SW7471A - mercury
- TX1005 - TPH

The results of the perimeter samples are presented in Section 4.0.

3.2.6 Phase II RFI (HydroGeoLogic)

The May 2000 excavation confirmation sampling results were evaluated and compared with historical site characterization data. It was concluded that data gaps in soil and groundwater remained, and that additional investigation would be necessary to acquire sufficient site characterization data to determine the appropriate closure standard for the site under the TNRCC RRS program. In order to eliminate the identified data gaps, five DPT soil borings, BHGLAOC13001 through BHGLAOC13005, were advanced at AOC 13 during Phase II (Figure 3.1). The 5-foot interval sample at boring BHGLAOC13005 was collected in duplicate. Relative to the OWS/UST removal area, Boring BHGLAOC13001 was advanced to the northeast, BHGLAOC13002 and BHGLAOC13003 were advanced to the southeast, BHGLAOC13004 was advanced to the south, and BHGLAOC13005 was advanced to the west. All five borings were advanced within 20 feet of the removal excavation area. A total of four surface soil and eight subsurface soil samples were submitted for chemical analysis during Phase II. Phase II soil samples were collected to confirm and/or delineate specific COPCs at the depth intervals associated with the corresponding detections from the Law RFA, Phase I (the IT sanitary sewer and OWS RFIs), and HydroGeoLogic's removal action excavation samples. Based on the results of previous sampling, the following methods were used to analyze the Phase II soil samples:

Definitive (Appendix IX):

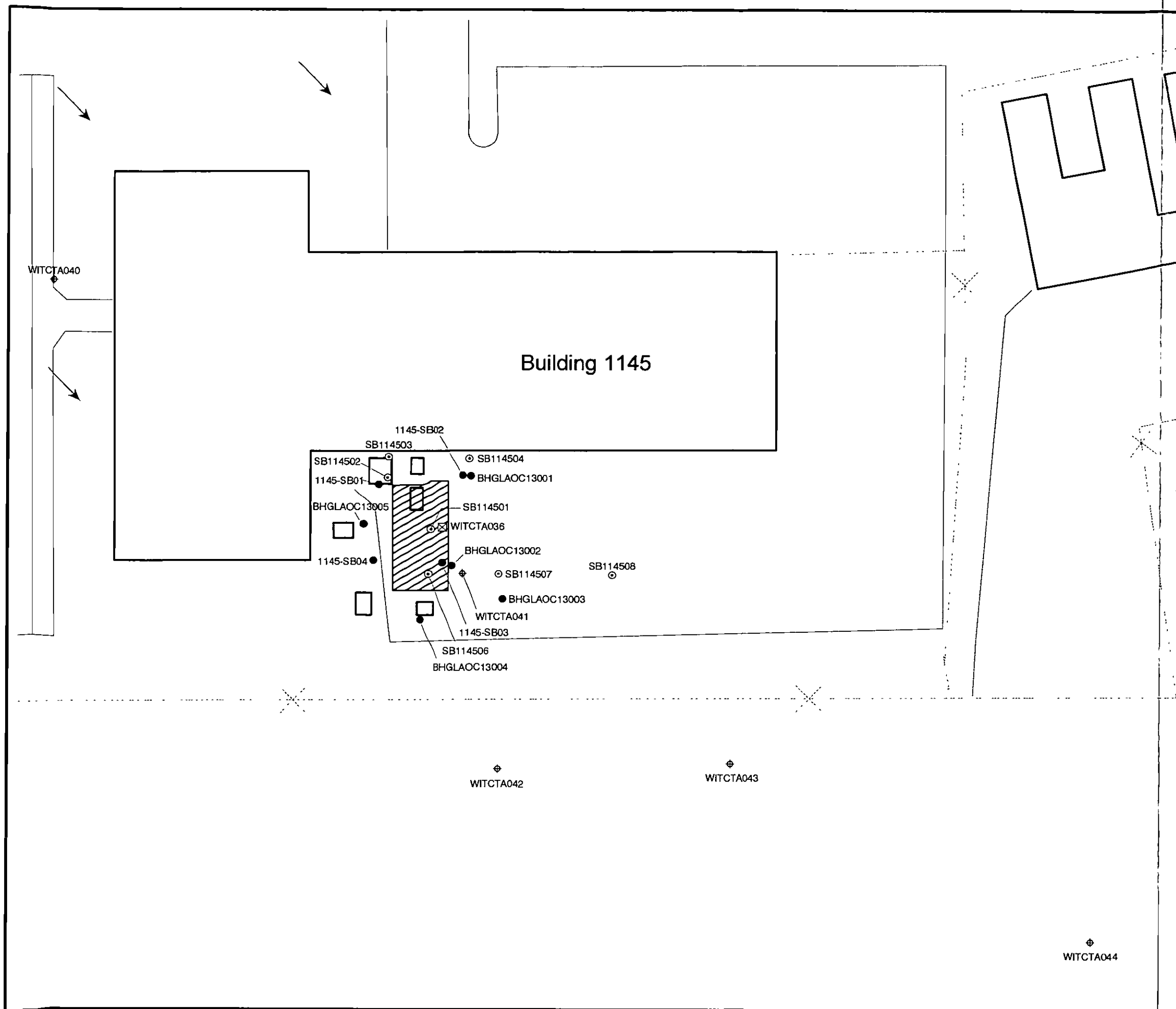
- SW8260B - VOCs
- SW8270C - SVOCs
- SW6010B - arsenic, cadmium, chromium, zinc
- SW7421 - lead

The surface interval samples of BHGLAOC13001 through BHGLAOC13004, and the subsurface intervals of BHGLAOC13001, BHGLAOC13002, and BHGLAOC13004, were analyzed for cadmium. In addition to cadmium, the surface interval samples from BGHLAOC13001 and BHGLAOC13002 were analyzed for arsenic; the surface interval sample from BHGLAOC13003 was analyzed for lead; and the surface interval sample from BHGLAOC13004 was analyzed for arsenic, lead, and zinc. The 10- and 15-foot intervals of BHGLAOC13005 were sampled for VOCs and SVOCs; and the surface, 5-foot, and 10-foot intervals of BHGLAOC13005 were sampled for cadmium and chromium. The analytical results obtained from samples collected from the Phase II soil borings are intended to confirm and/or delineate analytes detected above RRS 1 at SWMU 13 during previous investigations. Results of the AOC 13 Phase II soil investigation are presented in Section 4.0.

3.3 ELEVATION AND LOCATION SURVEY

Baird, Hampton & Brown, Inc., of Fort Worth, Texas, surveyed each HydroGeoLogic DPT soil boring and monitoring well location. Vertical and horizontal measurements were collected in accordance with the RFI WPs (HydroGeoLogic, 1999d). Surveying data are provided in Appendix C. Survey data for the soil boring locations sampled by Law and IT were not available, and placement of these points on site figures is approximated based on the interpretation of previous report figures (Law, 1995, and IT, 1997 and 1998).

FIGURES



HydroGeoLogic, Inc —RCRA Facility Investigation Report
NAS Fort Worth JRB, Texas

Figure 3.1

Sample Locations
AOC 13

U.S. Air Force Center for Environmental Excellence

Legend

- Fence
- Building / Structure
- Groundwater Flow Direction
- WITCTA042 — Existing Monitoring Well Location
- WITCTA036 — Abandoned Monitoring Well Location
- Excavation Area - 2000

Soil Borings

- 1145-SB02 — Law Engineering - 1994 *
- SB114501 — IT Corporation - 1997/1998*
- BHGLAOC13002 — HydroGeoLogic Excavation Confirmation Soil Samples - 2000

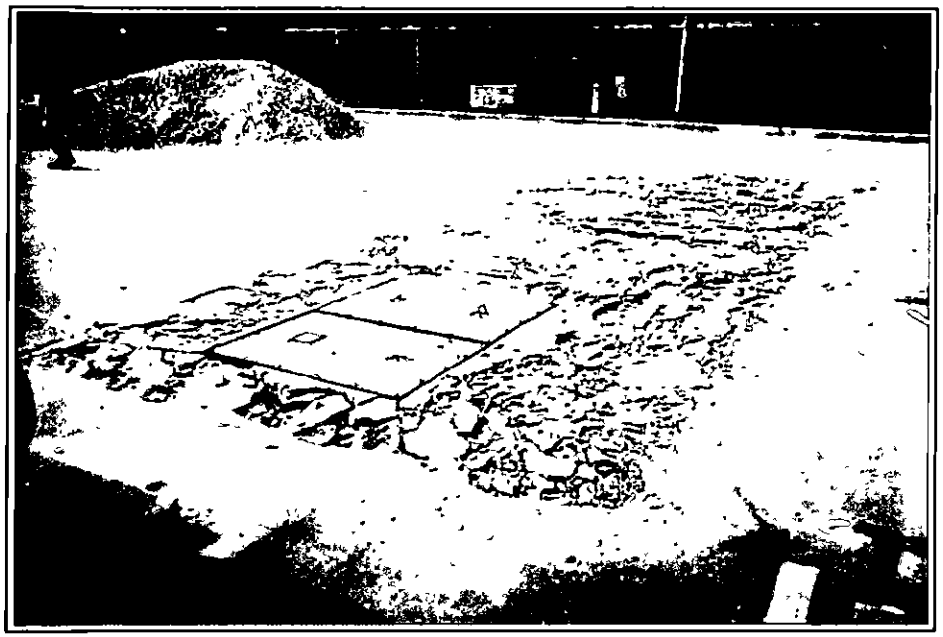
* Survey data are unavailable and soil boring locations are approximations.

N

20 0 20 40
SCALE IN FEET

Filename X \Afc001\16bdb\AOC13_RFI\Report\aoc13_sample locs apr
Project AFC001-16BDB
Created 04/15/99 jbelcher
Revised 05/11/01 jb
Map Source HydroGeoLogic, Inc GIS Database

HYDRO GeoLogic INC.



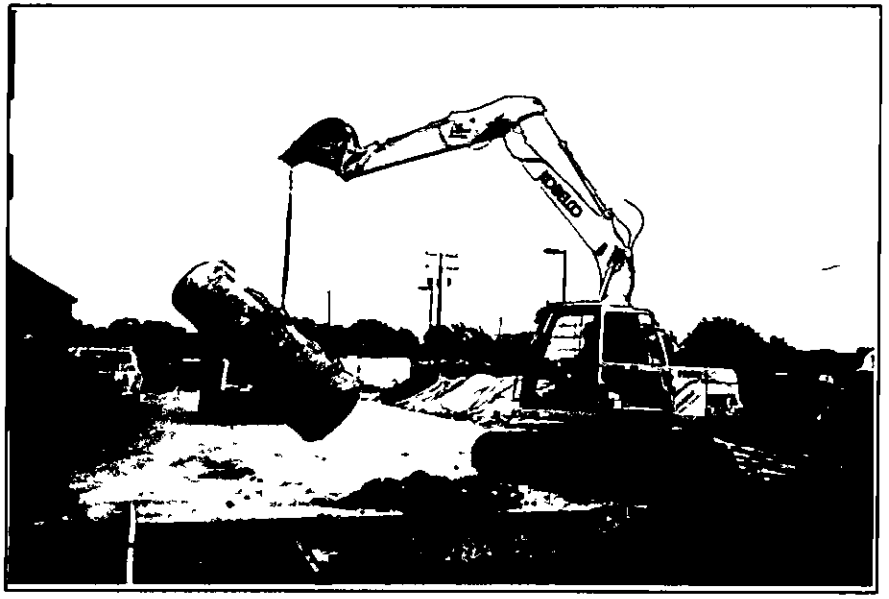
The concrete covering the removal area is broken up.

A perimeter trench is dug around the excavation area.

Filename X:\Afc001\16bdb\Report photos.apr
Project AFC001-16BDB
Created 06/12/99 cfarmer
Revised 04/20/01 jb
Source HydroGeoLogic Inc 2001

U.S. Air Force Center for Environmental Excellence
Brooks AFB, Texas

Figure 3.2
Photographs — AOC 13, OWS Removal



The UST is removed.

Filename X:\Afc001\16bdb\Report\photos.apr
Project AFC001-16BDB
Created 06/12/99 cfarmer
Revised 04/17/01 jb
Source HydroGeologic Inc 2001

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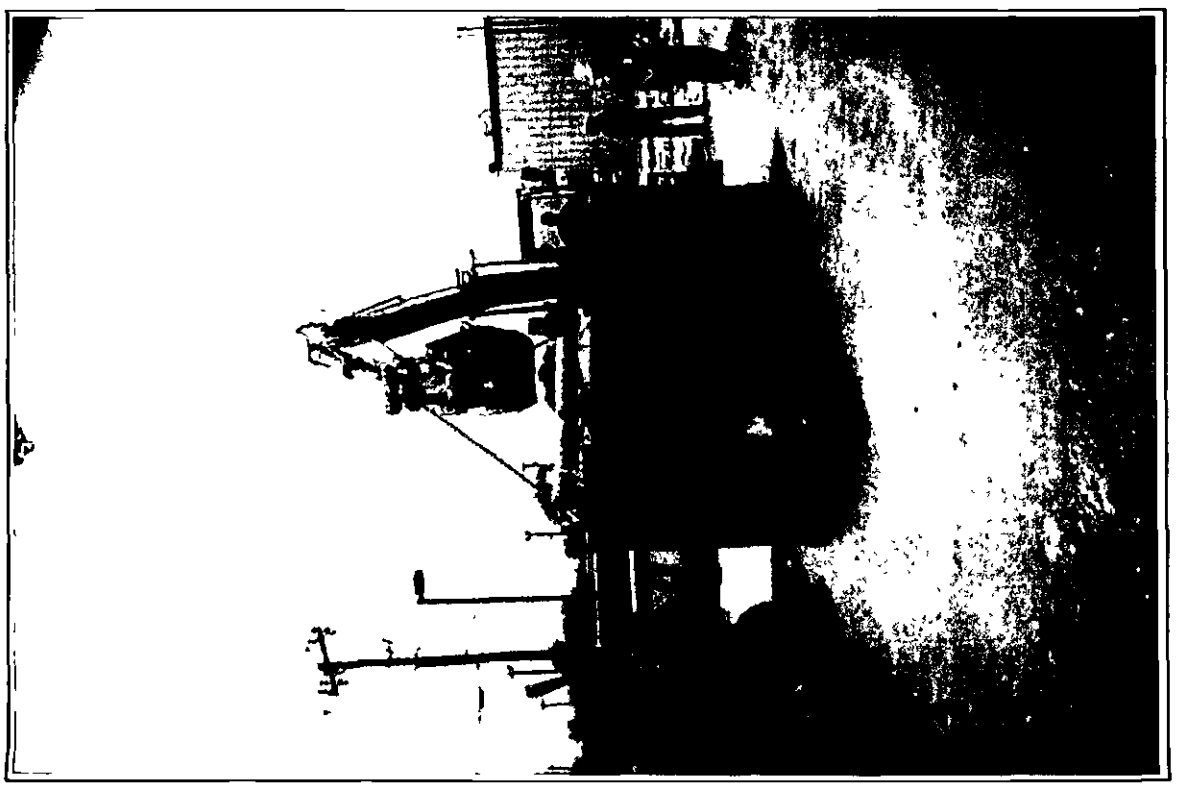
Figure 3.3
Photographs — AOC 13
OWS Removal (continued)

The new OWS is installed and the excavation is filled with gravel.



The OWS is removed.

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Figure 3.4
Photographs — AOC 13
OWS Removal (concluded)

Filename X:\Afc001\16bdb\AOC13_RFI Report\photos.apr
Project AFI 001-16BDB
Created 06/12/99 cfarmer
Revised 04/17/01 jb
Source HydroGeoLogic Inc 2001

HYDRO GeoLogic

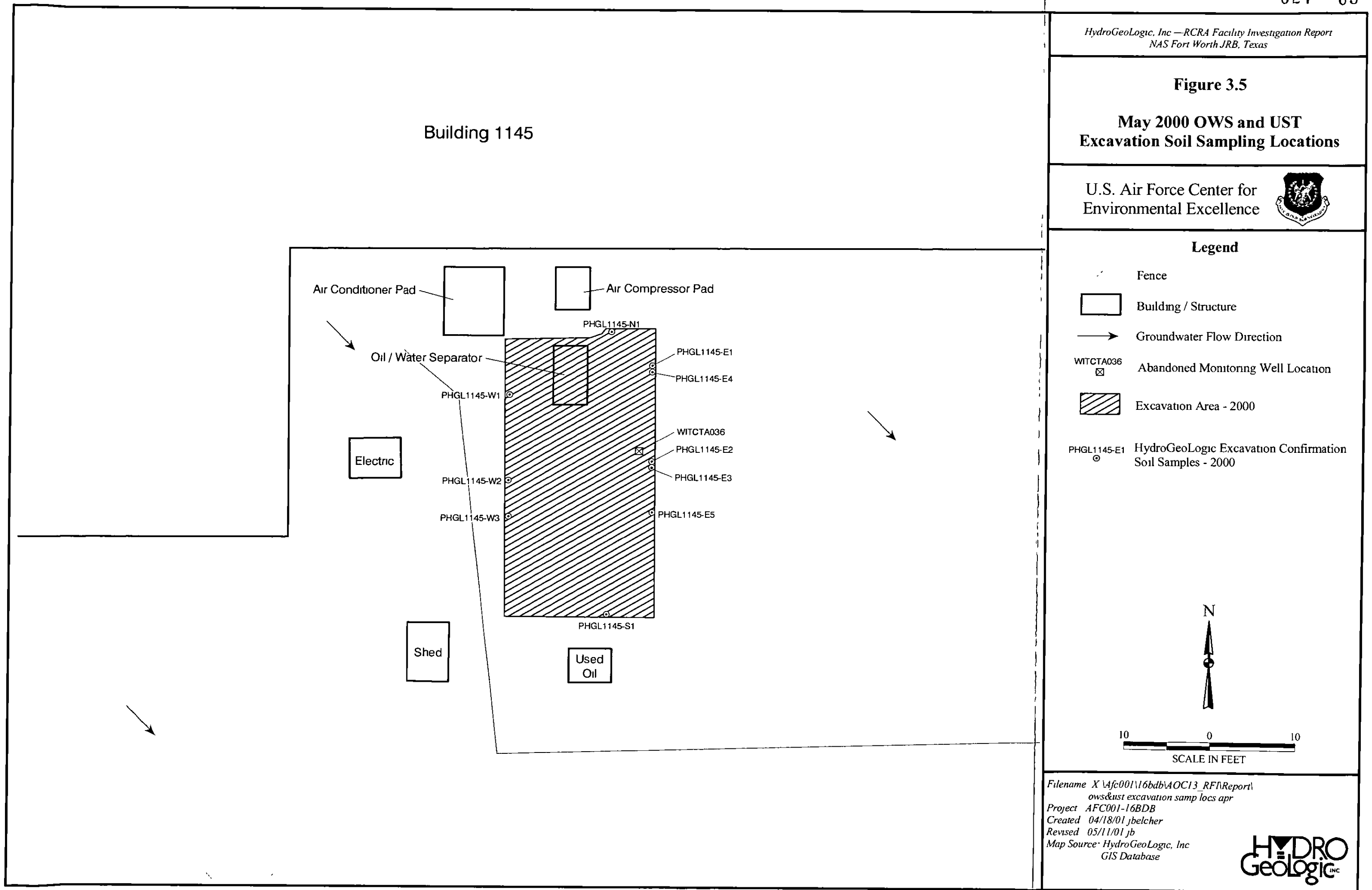

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Figure 3.5

May 2000 OWS and UST Excavation Soil Sampling Locations

U.S. Air Force Center for Environmental Excellence

Legend

- Fence
- Building / Structure
- Groundwater Flow Direction
- WITCTA036 — Abandoned Monitoring Well Location
- Excavation Area - 2000
- PHGL1145-E1 — HydroGeoLogic Excavation Confirmation Soil Samples - 2000

Filename X \Afc001\16bdb\AOC13_RFI\Report\ ows&ust excavation samp locs apr
Project AFC001-16BDB
Created 04/18/01 jbelcher
Revised 05/11/01 jb
Map Source· HydroGeoLogic, Inc GIS Database

HYDRO GeoLogic INC

TAB

SECTION 4.0

4.0 INVESTIGATION RESULTS

This section provides a discussion of analytical results of the soil and groundwater samples collected at AOC 13. All soil and groundwater samples collected by HydroGeoLogic were analyzed in accordance with the rationale presented in the RFI WPs (HydroGeoLogic, 1999d) and the Phase II RFI WP for AOC 13 (HydroGeoLogic, 2000a). The soil and groundwater samples collected as part of the Law RFA and the component studies of the IT Phase I RFI were analyzed in accordance with the applicable project planning documents.

To determine if a release had occurred at AOC 13, the results from samples collected and analyzed for inorganic compounds were compared to the base-specific background values as presented in the Final Basewide Background Study (Jacobs, 1998). The results from samples collected and analyzed for organic compounds were compared to respective MQLs. In addition, all analytical results were compared to available MSCs to determine if detected contaminants posed a potential threat to shallow groundwater. Detections from all sampling events from surface soil samples, subsurface soil samples, and groundwater samples are presented in tabular form in this section. Complete analytical data summaries for soil and groundwater samples collected by HydroGeoLogic are presented in Appendix D. As the complete analytical data for the samples collected by Law and IT have already been presented in the reports submitted in 1994, 1997, and 1998, these data sets are not included in tabular format in Appendix D.

Note that the MQLs used to evaluate organic constituents were either the compound-specific reporting limit used by the laboratory or the reporting limit required by the 2000 Basewide QAPP (HydroGeoLogic, 2000c). Generally, the lower of the two values is used, unless the laboratory has an approved variance to change the reporting limit. Note also that the data for the Law RFA and both IT RFIs presented in the tables and in the discussions below were not validated in accordance with the current Basewide QAPP. Minimal requalification has been performed on the affected data; primarily, those detections reported from the earlier studies that are below the reporting limit have had the qualifier changed from "J" to "F", in accordance with current AFCEE and Basewide QAPP data validation guidelines.

A portion of each soil sample volume submitted for metals analysis during the Phase II RFI field effort was held at the laboratory for SPLP extraction and analysis at a later date, if necessary. This SPLP extraction method was used in order to possibly provide a site specific adjusted MSC if inorganic analytes were detected above the MSC in the original sample. When an SPLP extraction and analysis was performed, each analyte SPLP result was compared to the applicable industrial groundwater MSC; if the result was below this MSC, then the soil MSC is adjusted to the highest soil value that is associated with a "passing" SPLP result, provided that there is no soil result at the site with a lower detection for the same analyte that "failed" subsequent SPLP analysis.

4.1 AOC 13 LITHOLOGIC FINDINGS

The lithological findings from the 1994 Law RFA (Law, 1995), 1997 IT Sanitary Sewer RFI (IT, 1997), and 1998 IT OWS RFI (IT, 1998) are detailed in the referenced documents; of these three documents, the most complete site lithological discussion is presented in the 1998 IT OWS RFI, and this discussion is summarized in the following paragraph.

The site slopes gently from the northwest to the southeast, dropping 3.2 feet in elevation over the 370-foot distance between wells WITCTA040 (northwest) and WITCTA044 (southeast). Groundwater elevation drops 4.73 feet over the same distance, and is encountered approximately 10 to 12 feet bgs. Groundwater flow is also from the northwest to the southeast, in the direction of nearby Farmer's Branch Creek. A cross-section of the site along a line from WITCTA040 to WITCTA044 was prepared by IT; this cross-section is reproduced in this report as Figure 4.1. In general terms, the subsurface lithology consists of the following: a layer of fill material with concrete gravels, 0 to 2 feet thick, overlies the majority of the site. The fill material overlies a thick layer, 15 to 18 feet thick, of dark to light gray, slightly moist, silty clay. There are several thin, 0.5 to 1.5 feet thick lenses of sandy silt present in the silty clay layer. The silty clay overlies a light tan, moist to wet, sandy clay which is 6 feet thick at boring WITCTA040 and thins to 3 feet thick at boring WITCTA036 before pinching out toward the southeast. Underlying the silty clay and the sandy clay is approximately 2 feet of tan to brown, loose sand with silt and gravel. Underlying the entire site at a depth of approximately 25 feet bgs is a weathered limestone layer, the Walnut Formation.

During the December 2000 Phase II soil investigation, HydroGeoLogic advanced five soil borings around the perimeter of AOC 13. These borings, BHGLAOC13001 through BHGLAOC13005, were advanced to characterize the subsurface soils around the perimeter of the site, and to collect samples to delineate contaminants found at the site during previous investigations. The lithology encountered during the advancement of these borings is summarized below.

Soil boring BHGLAOC13001 was advanced to a depth of 12 feet bgs. It exhibited concrete from the surface to six inches bgs. A blind probe was advanced from 6 inches to three feet bgs. A dark gray clay is exhibited from 3 feet bgs to 6 feet bgs. A blind probe was advanced from 6 feet bgs to 9 feet bgs. A brown silty clay is exhibited from 9 feet bgs to the end of the boring at a depth of 12 feet bgs. Soil boring BHGLAOC13002 was advanced to a depth of 12 feet bgs. It exhibited concrete from the surface to six inches bgs, overlying a layer of clay fill material to a depth of 2.5 feet bgs, overlying a layer of grayish brown silty clay to the end of the boring at a depth of 12 feet bgs. Soil boring BHGLAOC13003 was advanced to a depth of 3 feet bgs. It exhibited concrete from the surface to six inches bgs, overlying a layer of dark gray silty clay to a depth of one foot bgs, overlying a layer of pale brown silty clay to the end of the boring at a depth of 3 feet bgs. Soil boring BHGLAOC13004 was advanced to a depth of 12 feet bgs. It exhibited concrete from the surface to six inches bgs, overlying a layer of very dark gray clay with gravel to a depth of 3 feet bgs, overlying a layer of gray to brown silty clay to the end of the boring at a depth of 12 feet bgs. Yellow brown mottling was present approximately 9 feet bgs. Soil boring BHGLAOC13005 was advanced to a depth of 18 feet

bgs. It exhibited a root zone from the surface to three inches bgs, overlying a layer of brownish yellow silty sand fill material to a depth of 2 feet bgs, overlying a layer of dark grayish brown silty clay with calcium carbonate nodules to a depth of 3 feet bgs, overlying a layer of gray and brown silty clay to the end of the boring at a depth of 18 feet bgs.

The lithology encountered during the Phase II RFI activities was generally consistent with that depicted in the site cross-section developed by IT (IT, 1998) and presented in Figure 4.1.

The boring logs from all three previous investigations, as well as from the Phase II soil sampling effort, are presented in Appendix E.

4.2 SURFACE SOIL RESULTS

A total of two surface soil samples were collected from borings 1145-SB03 and 1145-SB04 during the 1994 Law OWS RFA and analyzed for the list of analyses presented in Section 3.2.1. A total of five surface soil samples were collected from borings SB114503, SB114504, SB114506, SB114507, and SB114508 during the 1998 IT Sanitary Sewer RFI and analyzed for the list of analyses presented in Section 3.2.3. Based on the results of the RFA and Phase I soil investigation, additional surface soil samples were collected from borings BHGLAOC1302 through BHGLAOC1305 to delineate COPCs identified at the site. The results from the surface soil samples collected at BHGLAOC13002 and BHGLAOC13003 were also intended to serve as confirmation for detections of COPCs in the surface soil samples collected at borings 1145-SB03 and SB114507, respectively. The Phase II surface soil samples were analyzed for the lists of analyses presented in Section 3.2.6. Surface soil sampling locations and results above background/MQLs are depicted in Figure 4.2. Surface soil detections from the 1994 Law OWS RFA and the 1998 IT OWS RFI are presented in Table 4.1; surface soil detections from HydroGeoLogic's Phase II RFI are presented in Table 4.2.

Note that for the purposes of the discussion in this section, a sample is considered a surface soil sample if it is collected from 2 feet bgs or shallower. The samples collected from the 1 foot to 3 foot interval during the 1997 IT Sanitary Sewer RFI are considered subsurface soil samples and the results are discussed in Section 4.3.

4.2.1 Inorganic Constituents

The following metals were detected above background values (Jacobs, 1998) in the surface soil samples collected at AOC 13:

- **Antimony** was detected at 0.69 F milligrams per kilogram (mg/kg) in the surface soil sample collected from boring SB114504 and at 0.64 F mg/kg in the surface soil sample collected from SB114507; these detections of antimony are slightly above background and the MSC (both 0.56 mg/kg).

- **Arsenic** was detected at 17 mg/kg in the surface soil sample collected from boring 1145- SB03; this detection of arsenic is above both background and the

MSC (both 5.85 mg/kg). Two additional surface soil samples were collected for arsenic from borings BHGLAOC13002 and BHGLAOC13004 during Phase II for confirmation and/or delineation purposes. Arsenic was detected below background, at 2.1 F mg/kg and 2.5 F mg/kg, respectively, in the two Phase II surface soil samples.

- **Cadmium** was detected at 2.3 mg/kg in surface soil samples collected from 1145-SB03 and 1145-SB04 (duplicate result), and at 0.95 mg/kg in the surface soil sample collected from SB114507; these detections of cadmium are above background and the MSC (both 0.556 mg/kg). Four additional surface soil samples were collected for cadmium from borings BHGLAOC13002 through BHGLAOC13005 during Phase II for confirmation and/or delineation purposes. Cadmium was detected below background in each of the Phase II delineation samples, at 0.1 F mg/kg, 0.42 mg/kg, 0.37 F mg/kg, and 0.007 F mg/kg, respectively.

- **Calcium** was detected at 310,000 J mg/kg in the surface soil sample collected from boring 1145-SB03; this detection of calcium is above the background value (167,788 mg/kg). No MSC has been established for this element.

- **Lead** was detected at 159 mg/kg in the surface soil sample collected from SB114507; this detection of lead is above background and the MSC (both 30.97 mg/kg). Two additional surface soil samples were collected for lead in borings BHGLAOC13003 and BHGLAOC13004 during Phase II for confirmation and/or delineation purposes. Lead was detected below background in each of the Phase II delineation samples, at 20.9 mg/kg and 27.0 mg/kg, respectively.

- **Zinc** was detected at 76.6 mg/kg in the surface soil sample collected from SB114507; this detection of zinc is above background (38.8 mg/kg), but well below the MSC of 3,100 mg/kg. One additional surface soil sample was collected for zinc from boring BHGLAOC13004 during Phase II for delineation purposes. Zinc was detected below background at 34.9 mg/kg in the Phase II delineation sample.

4.2.2 Organic Constituents

The following organic constituents were detected above the applicable MQL in the surface soil samples collected at AOC 13:

- **Acetone** was detected at 0.073 mg/kg in the surface soil sample collected from boring 1145-SB03. This detection of acetone was above the MQL, but well below the MSC (1,000 mg/kg).

- **bis(2-Ethylhexyl)phthalate** was detected at 15 F mg/kg in the surface soil sample collected from boring SB114507. This detection was above the MQL and above the MSC (0.6 mg/kg).

- **Methylene chloride** was detected in each surface soil sample collected during the 1994 Law RFA and the 1998 IT OWS RFI. These detections ranged from 0.0042 mg/kg to 0.017 mg/kg, which are above the MQL, but well below the MSC (0.5 mg/kg).

- **2-Methylnaphthalene** was detected at 18 F mg/kg in the surface soil sample collected from boring SB114507. This detection was above the MQL but well below the MSC (410 mg/kg).

- **Naphthalene** was detected at 6.7 F mg/kg in the surface soil sample collected from boring SB114507. This detection was above the MQL but well below the MSC (200 mg/kg).

- **N-Nitrosodiphenylamine** was detected at 5.1 F mg/kg in the surface soil sample collected from boring SB114507. This detection was above the MQL but below the MSC (5.8 mg/kg).

- **Phenanthrene** was detected at 5.4 F mg/kg in the surface soil sample collected from boring SB114507. This detection was above the MQL but well below the MSC (310 mg/kg).

All organic compounds detected during the Law RFA and the IT RFIs were determined to be laboratory artifacts or localized to the surface interval of SB114507. No additional surface soil sampling was performed for organics during the 2000 Phase II investigation.

4.3 SUBSURFACE SOIL RESULTS

A total of six subsurface soil samples were collected from borings 1145-SB01 through 1145-SB04 during the 1994 Law RFA. These samples were analyzed for the lists of analytes presented in Section 3.2.1. IT collected two subsurface soil samples each from borings SB114501 and SB114502 advanced during the 1997 Sanitary Sewer RFI. In the 1998 OWS RFI, IT collected two subsurface soil samples from SB114503, and one sample each was collected from SB114504, SB114506, SB114507, and SB114508. The 1997 samples were analyzed for the lists of analytes presented in Section 3.2.2, and the 1998 samples were analyzed for the lists of analytes presented in Section 3.2.3. HydroGeoLogic collected 10 subsurface soil samples from the perimeter of the excavation after the May 2000 OWS/UST removal action. These samples were collected to determine what, if any, contamination was left in place. During Phase II RFI sampling activities, HydroGeoLogic collected a total of seven subsurface soil samples from borings BHGLAOC13001 through BHGLAOC13005. These samples were intended to delineate COPCs identified by Law's RFA and IT's RFI efforts. In addition, the results from the subsurface soil samples collected at BHGLAOC13001,

BHGLAOC13002, and BHGLAOC13003 were intended to serve as confirmation for the detections of COPCs in the subsurface soil samples collected at borings 1145-SB02, 1145-SB03, and SB114507, respectively. The Phase II RFI samples were analyzed for the lists of analytes presented in Section 3.2.6. Subsurface soil sampling locations and results above background/MQLs are depicted in Figure 4.2. Subsurface soil detections from the 1994 Law OWS RFA and the 1998 IT OWS RFI are presented in Table 4.3; detections from HydroGeoLogic's excavation confirmation samples and Phase II RFI subsurface soil samples are presented in Table 4.4.

4.3.1 Inorganic Constituents

The following metals were detected above background values (Jacobs, 1998) in the subsurface soil samples collected at AOC 13:

- **Arsenic** was detected at 9.4 mg/kg in the subsurface soil sample collected from 1145-SB02; this detection was above the background value and MSC (both 6.58 mg/kg). A subsurface soil sample was collected for arsenic from the 5-foot interval of boring BHGLAOC13001 for confirmation and delineation purposes. Arsenic was detected at 2.0 F mg/kg, which is below background.

- **Cadmium** was detected above the background value and MSC (both 0.59 mg/kg) in all six subsurface soil samples collected during the 1994 Law RFA; these detections ranged from 2.0 mg/kg to 3.2 mg/kg. All subsurface samples collected during Phase II for confirmation/delineation purposes were analyzed for cadmium. Cadmium was detected below background in each of the Phase II confirmation and delineation subsurface soil samples, at concentrations ranging from 0.13 F mg/kg to 0.33 F mg/kg.

- **Calcium** was detected at 283,000 mg/kg in the subsurface soil sample collected from boring SB114504; this detection of calcium is above the background value (272,000 mg/kg). This element is considered an essential nutrient, and no MSC has been established.

- **Chromium** was detected above background and MSC (both 16.31 mg/kg) in 5 of the 10 confirmation subsurface soil samples collected from the OWS/UST removal excavation. These detections were along the east, south, and west walls, and ranged from 16.7 mg/kg to 18.9 mg/kg. The three subsurface soil samples collected from boring BHGLAOC13005 during Phase II for delineation purposes were analyzed for chromium. Chromium was detected, but below background, in each of the Phase II delineation subsurface soil samples, at concentrations ranging from 12.8 mg/kg and 15.9 mg/kg.

- **Selenium** was detected at 0.38 F mg/kg in the subsurface soil sample collected from boring SB114508; this detection of selenium is above the background value of 0.313 mg/kg, but well below the MSC (5 mg/kg).

- **Zinc** was detected above background 4 of the 10 confirmation subsurface soil samples collected from the OWS/UST removal excavation. These detections were along the east, north, and west walls, and ranged from 31.5 F mg/kg to 37.8 mg/kg. These detections are slightly above the background value of 31.3 mg/kg, but well below the MSC of 3,100 mg/kg.

4.3.2 Organic Constituents

The following organic constituents were detected above the applicable MQL in the subsurface soil samples collected at AOC 13:

- **Acetone** was detected above the MQL in the subsurface soil samples from the 6-8 foot and 8-10 foot intervals collected at boring 1145-SB02, at 0.03 and 0.048 mg/kg, respectively. It was also detected above the MQL in 6 of the 10 confirmation subsurface soil samples collected from the OWS/UST removal excavation. These detections were along the east and north walls, and ranged from 0.01 mg/kg to 0.22 mg/kg. All detections of acetone were well below the MSC (1,000 mg/kg).

- **Benzene** was detected above the MQL in 1 of the 10 confirmation subsurface soil samples collected from the OWS/UST removal excavation. This detection was along the east wall, was at 0.004 mg/kg. This detection was well below the MSC (0.5 mg/kg).

- **bis(2-Ethylhexyl)phthalate** was detected in the subsurface soil samples from the 13-15 foot intervals collected at borings SB114501 and SB114502, at 2.6 mg/kg and 2.7 J mg/kg, respectively. These detections were above the MQL and above the MSC (0.6 mg/kg). This compound was also detected above the MQL, but below the MSC, in 2 of the 10 confirmation subsurface soil samples collected from the OWS/UST removal excavation. These detections were along the east and north walls, and were 0.58 mg/kg and 0.54 mg/kg, respectively.

- **DRO** was detected above the MQL in 1 of the 10 confirmation subsurface soil samples collected from the OWS/UST removal excavation. This detection was along the north wall, was at 60 mg/kg. This detection was well below the MSC (500 mg/kg) (see Section 1.3)

- **Ethylbenzene** was detected at 0.01 mg/kg in the subsurface soil sample collected from the 8-10 foot interval of boring 1145-SB02, and at 0.32 mg/kg in the subsurface soil sample collected from the 17-18 foot interval of boring SB114503. This compound was also detected above the MQL in 2 of the 10 confirmation subsurface soil samples collected from the OWS/UST removal excavation. These detections were along the east and north walls, and were 0.067 mg/kg and 0.036 mg/kg, respectively. All detections of this compound in subsurface soils were well below the MSC (70 mg/kg).

- **Methylene chloride** was detected in each subsurface soil sample collected during the 1994 Law RFA and the 1998 IT OWS RFI, with the exception of the two subsurface samples collected from SB114503. These detections ranged from 0.0042 mg/kg to 0.017 mg/kg, which are above the MQL, but well below the MSC (0.5 mg/kg).

- **Methyl ethyl ketone** was detected above the MQL in 3 of the 10 confirmation subsurface soil samples collected from the OWS/UST removal excavation. These detections were along the east and north walls, and ranged from 0.007 mg/kg to 0.023 mg/kg. These detections were well below the MSC (6,100 mg/kg).

- **2-Methylnaphthalene** was detected in the subsurface soil samples collected from borings SB114501 and SB114502, at 6 J mg/kg and 6.4 J mg/kg, respectively. This compound was also detected above the MQL in 2 of the 10 confirmation subsurface soil samples collected from the OWS/UST removal excavation. These detections were along the east and north walls, and were 2 mg/kg and 1.1 mg/kg, respectively. All detections of this compound in subsurface soils were well below the MSC (410 mg/kg).

- **Naphthalene** was detected above the MQL in the subsurface soil samples collected from borings SB114501 and SB114502, at 3 J mg/kg and 3.2 J mg/kg, respectively. This compound was also detected above the MQL in 2 of the 10 confirmation subsurface soil samples collected from the OWS/UST removal excavation. These detections were along the east and north walls, and were 0.89 mg/kg and 0.36 F mg/kg, respectively. All detections of this compound in subsurface soils were well below the MSC (200 mg/kg).

- **Phenanthrene** was detected above the MQL in the subsurface soil samples collected from borings SB114501 and SB114502, at 0.71 F mg/kg and 0.59 F mg/kg, respectively. Both detections of this compound were well below the MSC (310 mg/kg).

- **Pyrene** was detected above the MQL in the subsurface soil sample collected from boring SB114501, at 0.68 F mg/kg. The detection of this compound was well below the MSC (310 mg/kg).

- **Toluene** was detected above the MQL in 2 of the 10 confirmation subsurface soil samples collected from the OWS/UST removal excavation. These detections were along the east and north walls, and were 0.009 mg/kg and 0.013 mg/kg, respectively. Both detections of this compound in subsurface soils were well below the MSC (100 mg/kg).

- **TPH** was detected above the MQL in 2 of the 10 confirmation subsurface soil samples collected from the OWS/UST removal excavation. These detections

were along the east and north walls, and were 54 mg/kg and 64 mg/kg, respectively. Both detections of this compound in subsurface soils were well below the MSC (500 mg/kg) (see Section 1.3).

- **Xylenes** were detected in the subsurface soil samples collected from borings 1145-SB01 (9-11 foot interval), 1145-SB02 (8-10 foot interval), and SB114503 (17-18 foot interval). These detections range from 0.04 mg/kg to 0.049 mg/kg, and are all above the MQL but well below the MSC (1,000 mg/kg). This compound was also detected above the MQL in 3 of the 10 confirmation subsurface soil samples collected from the OWS/UST removal excavation. These detections were along the east and north walls, and range from 0.010 mg/kg to 0.231 mg/kg (values reported as a sum of m,p-xylenes and o-xylene concentrations).

Note that several compounds not listed in 40 CFR 264 Appendix IX were detected in AOC 13 subsurface soils during the 1997 and 1998 IT investigations, and HydroGeoLogic's 2000 investigation. These compounds included 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, isopropylbenzene (cumene), n-butylbenzene, n-propylbenzene, and sec-butylbenzene, which were on the analyte lists selected at the time of the investigations. Although they are not associated with the compounds on permit HW-50289, these compounds are presented on the figures and in the tables associated with this investigation. IT reported tentatively identified compounds (TICs) in its 1997 and 1998 data. TICs include some compounds identified from a library match of the compound mass spectrum (1,3-dimethylnaphthalene, 1,4,6-trimethylnaphthalene, 1,4-dimethylnaphthalene, 1-methylnaphthalene, 1-propenylbenzene, and 2,6-dimethylnaphthalene), and compounds for which no identification could be made ("saturated hydrocarbon", "substituted benzene", and "unknown"). As TICs do not have associated MQLs, and the quantitation of these compounds is arbitrary, results for these compounds are not presented either on figures or in tables.

4.4 GROUNDWATER RESULTS

IT sampled the LNAPL layer in monitoring well WITCTA036 during the 1997 Sanitary Sewer RFI; this sample was analyzed for the lists of analytes presented in Section 3.2.2. In 1998, IT installed and sampled five additional monitoring wells, WITCTA040 through WITCTA044, in the AOC 13 area as part of the OWS RFI. The samples from these wells were analyzed for the lists of analytes presented in Section 3.2.3. During 1999 and 2000 quarterly sampling events, HydroGeoLogic collected four samples from well WITCTA044 and one from WITCTA041 in 1999, and one sample from each of wells WITCTA040 through WITCTA044 in 2000. These samples were analyzed for the lists of analytes presented in Section 3.2.4. Groundwater monitoring well locations and results are depicted in Figure 4.3. Groundwater detections from the 1998 IT OWS RFI are presented in Table 4.5; groundwater detections from each HydroGeoLogic sampling event are presented in Table 4.6.

4.4.1 LNAPL Sample from Well WITCTA036

The LNAPL layer from well WITCTA036 was found to be heavily contaminated with diesel range organics, at 11,000 milligrams per liter (mg/L), and gasoline range organics, at 8,600 mg/L. The specific compounds detected in this sample included the Appendix IX compounds ethylbenzene (120 mg/L), m,p-xylene (410 mg/L), naphthalene (320 mg/L), o-xylene (230 mg/L), toluene (180 mg/L), 1,1,1-trichloroethane (28.0 J mg/L), and 2-methylnaphthalene (200 mg/L). The non-Appendix IX compound 1,3,5-trimethylbenzene (190 mg/L), and the TICs 1,2,4-trimethylbenzene and 1-methyl-2-propylbenzene were also detected in this sample. The sample was also found to contain large amounts of TICs only identified as "saturated hydrocarbon."

4.4.2 Inorganic Constituents

The following metals were detected in groundwater in the vicinity of AOC 13:

- **Chromium** was detected in samples collected from WITCTA041 and WITCTA044 during IT's 1998 OWS RFI. The detected values were 0.0064 F mg/L and 0.0138 mg/L, respectively. These detections were above the background value of 0.006 mg/L, but well below the RRS 2 value of 0.1 mg/L. Chromium was not detected in the sample HydroGeoLogic collected from WITCTA041 in April 1999, nor was it detected in any groundwater sample collected by HydroGeoLogic in during the October 2000 quarterly sampling event.

- **Cobalt** was detected at 0.014 mg/L in the sample collected from WITCTA041 during IT's 1998 OWS RFI. This detection was above the background value of 0.0089 mg/L, but well below the RRS 2 value of 6.1 mg/L. Cobalt was not detected in the sample HydroGeoLogic collected from WITCTA041 in April 1999, nor was it detected in any groundwater sample collected by HydroGeoLogic in during the October 2000 quarterly sampling event.

- **Copper** was detected in samples collected from WITCTA041, WITCTA043, and WITCTA044 during IT's 1998 OWS RFI. The detected values were 0.0066 F mg/L, 0.0036 F mg/L, and 0.0034 F mg/L, respectively. These detections were above the background value of 0.0028 mg/L, but well below the RRS 2 value of 1.3 mg/L. Copper was not detected in the sample HydroGeoLogic collected from WITCTA041 in April 1999, nor was it detected in any groundwater sample collected by HydroGeoLogic in during the October 2000 quarterly sampling event.

- **Iron** was detected in samples collected from WITCTA041, WITCTA042, WITCTA043, and WITCTA044 during IT's 1998 OWS RFI. The detected values ranged from 0.420 mg/L to 1.98 mg/L. These detections were above the background value of 0.224 mg/L. Iron was also detected above background (at

0.297 mg/L) in the sample from WITCTA041 collected in 1999, and above background (ranging from 0.294 to 0.706 mg/L) in all samples collected during the October 2000 quarterly sampling event, with the exception of well WITCTA043. This element is considered an essential nutrient, and no MSC has been established. Iron is not listed in Appendix IX, and is not included on permit HW-50289. This element is not considered a COPC at AOC 13.

4.4.3 Organic Constituents

The following organic constituents were detected above the applicable MQL in groundwater in the vicinity of AOC 13:

- **1,1-Dichloroethane** was detected at 0.0095 mg/L in the groundwater sample collected from WITCTA041 by IT in 1998. This detection was above the MQL, but well below the MSC (10 mg/L). This compound was not detected in the sample HydroGeoLogic collected from this well in April 1999, but it was detected at 0.002 J mg/L in the sample HydroGeoLogic collected from this well in November 2000.

- **1,2-Dichlorobenzene** was detected at 0.00039 mg/L in the groundwater sample collected from WITCTA041 by IT in 1998. This detection was above the MQL, but well below the MSC (0.6 mg/L). This compound was not detected in the samples HydroGeoLogic collected from this well in April 1999 and in November 2000.

- **Benzene** was detected at 0.0033 mg/L in the groundwater sample collected from WITCTA041 by IT in 1998. This detection was above the MQL, but below the MSC (0.005 mg/L). This compound was not detected in the samples HydroGeoLogic collected from this well in April 1999 and in November 2000.

- **cis-1,2-Dichloroethene** was detected at 0.0051 mg/L in the groundwater sample collected from WITCTA040 by IT in 1998. This detection was above the MQL, but well below the MSC (0.07 mg/L). This compound was detected at 0.013 J mg/L in the sample HydroGeoLogic collected from this well in November 2000. The detections of this compound are associated with the trichloroethene (TCE) plume, and this compound is considered a COPC originating from this site.
- **Ethylbenzene** was detected at 0.0034 mg/L in the groundwater sample collected from WITCTA041 by IT in 1998. This detection was above the MQL, but well below the MSC (0.7 mg/L). This compound was not detected in the samples HydroGeoLogic collected from this well in April 1999 and in November 2000; however, it was detected at 0.001 mg/L in the sample HydroGeoLogic collected from WITCTA043 in November 2000.

- **Naphthalene** was detected at 0.0033 mg/L in the groundwater sample collected from WITCTA041 by IT in 1998. This detection was above the MQL, but

below the MSC (2 mg/L). This compound was not detected in the samples HydroGeoLogic collected from this well in April 1999 and in November 2000.

- **m,p-Xylenes** were not detected in any groundwater samples collected by IT in 1998; however, they were detected in the samples HydroGeoLogic collected from WITCTA040, WITCTA041, and WITCTA043 in November 2000, at 0.0008 J mg/L, 0.0008 J mg/L, and 0.003 mg/L, respectively. These detections are above the MQL, but are well below the MSC (10 mg/L).

- **o-Xylene** was detected at 0.0039 mg/L in the groundwater sample collected from WITCTA041 by IT in 1998. This detection was above the MQL, but well below the MSC (10 mg/L). This compound was not detected in the samples HydroGeoLogic collected from this well in April 1999 and in November 2000; however, it was detected at 0.0007 mg/L in the sample HydroGeoLogic collected from WITCTA043 in November 2000.

- **Toluene** was detected at 0.0037 mg/L in the groundwater sample collected from WITCTA041 by IT in 1998. This detection was above the MQL, but well below the MSC (1 mg/L). This compound was not detected above the MQL in the groundwater samples HydroGeoLogic collected at AOC 13 in 1999 or in 2000.

- **Trichloroethene** was detected above the MQL at 0.025 mg/L in the groundwater sample collected from WITCTA040 by IT in 1998. This detection was above the MSC (0.005 mg/L). This compound was not detected above the MQL in the sample HydroGeoLogic collected from WITCTA041 in April 1999; however, it was detected in the samples HydroGeoLogic collected from WITCTA040, WITCTA041, and WITCTA042 in November 2000, at 0.054 mg/L, 0.001 J mg/L, and 0.0007 mg/L, respectively. The detections of this compound are associated with the TCE plume, and TCE is not considered a COPC originating from this site.

- **Vinyl chloride** was detected at 0.0021 mg/L in the groundwater sample collected from WITCTA041 by IT in 1998. This detection was above the MQL and above the MSC (0.002 mg/L). This compound was not detected in the samples HydroGeoLogic collected from this well in April 1999 and in November 2000. The detection of this compound is associated with the TCE plume and is not considered a COPC originating from this site.

Note that several compounds not listed in 40 CFR 264 Appendix IX were detected in AOC 13 groundwater during the 1998 IT investigation. These compounds included 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and n-propylbenzene, which were on the analyte lists selected by IT at the time of the investigation. One of these compounds, 1,2,4-trimethylbenzene, was detected above the MQL in the sample HydroGeoLogic collected from WITCTA043 in November 2000.

TABLES

KEY FOR TABLES

-- = Result not detected at or above sample-specific method detection limit (MDL).

F= The analyte was positively identified but the associated numerical value is below the sample-specific method quantitation limit (MQL)

J = The analyte was positively identified; the quantitation is an estimation.

Results in **bold** and enclosed in (parentheses) exceed Risk Reduction Standard 1 (RRS 1).

Results in **bold** and enclosed in [brackets] exceed Risk Reduction Standard 2 (RRS 2).

NV = No associated MSC or RRS 2 value.

NA = Sample not analyzed for this analyte.

Table 4.1
AOC 13 Surface Soil Detections, Law and IT Samples
NAS Fort Worth JRB, Texas

Method	Analyte	RRS 1	RRS 2	Units	114503SB 1-2 ft	114504SB 0-2 ft	114504SB 0-2 ft Duplicate	SB114503 0.5-2 ft
SW6010	Aluminum	22035	22035	mg/kg	4500	2600 J	5800 J	4960
SW6010	Antimony	0.56	0.6	mg/kg	--	--	--	--
SW6010	Arsenic	5.85	5.85	mg/kg	17	--	5.4	3
SW6010	Barium	233	233	mg/kg	75	23 J	51 J	48
SW6010	Beryllium	1.02	1.02	mg/kg	--	0.27	--	0.5 F
SW6010	Cadmium	0.556	0.556	mg/kg	2.3	0.99 J	2.3 J	0.14 F
SW6010	Calcium	167788	NV	mg/kg	310000 J	11000 J	110000 J	120000
SW6010	Chromium, total	25.86	25.86	mg/kg	6.8	0.72 J	7.1 J	5.1
SW6010	Cobalt	11.05	610	mg/kg	4.6	3.2	3.3	2 7
SW6010	Copper	17.37	130	mg/kg	14 J	4.0 J	8.4 J	6
SW6010	Iron	17717	NV	mg/kg	8100	3600 J	9700 J	6140
SW6010	Lead	30.97	30 97	mg/kg	6.3	7.3 J	21 J	17.5
SW6010	Magnesium	3003	NV	mg/kg	2600	560 J	1600 J	1320
SW6010	Manganese	849	1400	mg/kg	290	25 J	140 J	154
SW6010	Molybdenum	1.46	51	mg/kg	--	--	--	0.89 F
SW6010	Nickel	14.6	200	mg/kg	8.8	2.7	7.0	6 4
SW6010	Potassium	2895	NV	mg/kg	700	300 J	920 J	986
SW6010	Selenium	0.907	5	mg/kg	--	--	--	--
SW6010	Sodium	37300	NV	mg/kg	180	19	72	56.5 F
SW6010	Vanadium	46.3	72	mg/kg	18	2.7 J	13 J	13.4
SW6010	Zinc	38.8	3100	mg/kg	15 J	3.1 J	22 J	19.3
SW7471	Mercury	0.14	0.2	mg/kg	--	--	--	--
SW8240	Acetone	0.02	1000	mg/kg	**(0.073)**	--	--	NA
SW8240	Methylene chloride	0.002	0.5	mg/kg	**(0.017)**	**(0.014)**	**(0.014)**	NA

Table 4.1 (continued)
AOC 13 Surface Soil Detections, Law and IT Samples
NAS Fort Worth JRB, Texas

Method	Analyte	RRS 1	RRS 2	Units	114503SB 1-2 ft	114504SB 0-2 ft	114504SB 0-2 ft Duplicate	SB114503 0.5-2 ft
SW8260	Methylene chloride	0.002	0 5	mg/kg	NA	NA	NA	(0.0064)
SW8270	2-Methylnaphthalene	0.33	410	mg/kg	NA	NA	NA	--
SW8270	bis(2-Ethylhexyl)phthalate	0.33	0.6	mg/kg	NA	NA	NA	0.21 F
SW8270	Di-n-octylphthalate	0.33	200	mg/kg	NA	NA	NA	0.16 F
SW8270	Naphthalene	0.33	200	mg/kg	NA	NA	NA	--
SW8270	N-Nitrosodiphenylamine	0.33	5 8	mg/kg	NA	NA	NA	--
SW8270	Phenanthrene	0.33	310	mg/kg	NA	NA	NA	--

Table 4.1 (continued)
AOC 13 Surface Soil Detections, Law and IT Samples
NAS Fort Worth JRB, Texas

Method	Analyte	RRS 1	RRS 2	Units	SB114504 1-2 ft	SB114506 0.5-2 ft	SB114507 0-2 ft	SB114508 1-2 ft
SW6010	Aluminum	22035	22035	mg/kg	3740	1990	9100	9510
SW6010	Antimony	0.56	0.6	mg/kg	0.69 F	--	0.64 F	--
SW6010	Arsenic	5.85	5.85	mg/kg	2.1	1.1	3 9	2 6
SW6010	Barium	233	233	mg/kg	37.9	36.7	132	96.4
SW6010	Beryllium	1.02	1.02	mg/kg	0 5 F	0.43 F	0.9	0 89
SW6010	Cadmium	0.556	0 556	mg/kg	--	--	0.95	0.12 F
SW6010	Calcium	167788	NV	mg/kg	78700	15900	119000	107000
SW6010	Chromium, total	25.86	25.86	mg/kg	4	1.3	12.2	7.9
SW6010	Cobalt	11.05	610	mg/kg	2.3	1.6	5.3	3 2
SW6010	Copper	17.37	130	mg/kg	3.8	3.2	12.1	8.9
SW6010	Iron	17717	NV	mg/kg	5350	2960	11000	8900
SW6010	Lead	30.97	30.97	mg/kg	9.1	5 1	159	18
SW6010	Magnesium	3003	NV	mg/kg	984	433	1830	1770
SW6010	Manganese	849	1400	mg/kg	97.7	33.2	198	180
SW6010	Molybdenum	1.46	51	mg/kg	1.1 F	--	0.66 F	0.46 F
SW6010	Nickel	14.6	200	mg/kg	5.1	2.5	9.8	7.9
SW6010	Potassium	2895	NV	mg/kg	823	330	1640 J	1740
SW6010	Selenium	0.907	5	mg/kg	--	--	--	0.52 F
SW6010	Sodium	37300	NV	mg/kg	57.2 F	23.3 F	75.7 F	63 3 F
SW6010	Vanadium	46.3	72	mg/kg	10.2	3	23.8	20.2
SW6010	Zinc	38.8	3100	mg/kg	11.6	3 1	**(76.6)**	28.1
SW7471	Mercury	0.14	0.2	mg/kg	--	--	0.02 F	--
SW8240	Acetone	0.02	1000	mg/kg	NA	NA	NA	NA
SW8240	Methylene chloride	0.002	0.5	mg/kg	NA	NA	NA	NA
SW8260	Methylene chloride	0.002	0.5	mg/kg	**(0.0045)**	**(0.0042)**	**(0.007)**	**(0.0044)**
SW8270	2-Methylnaphthalene	0.33	410	mg/kg	--	--	**(18 F)**	--

Table 4.1 (continued)
AOC 13 Surface Soil Detections, Law and IT Samples
NAS Fort Worth JRB, Texas

Method	Analyte	RRS 1	RRS 2	Units	SB114504 1-2 ft	SB114506 0.5-2 ft	SB114507 0-2 ft	SB114508 1-2 ft
SW8270	bis(2-Ethylhexyl)phthalate	0.33	0.6	mg/kg	--	--	[(15 F)]	--
SW8270	Di-n-octylphthalate	0 33	200	mg/kg	--	--	--	--
SW8270	Naphthalene	0.33	200	mg/kg	--	--	(6.7 F)	--
SW8270	N-Nitrosodiphenylamine	0.33	5.8	mg/kg	--	--	(5.1 F)	--
SW8270	Phenanthrene	0.33	310	mg/kg	--	--	(5.4 F)	--

Table 4.2
AOC 13 Surface Soil Detections, HydroGeoLogic Samples
NAS Fort Worth JRB, Texas

Method	Analyte	RRS-1	RRS-2	Units	BHGLAOC13002 00 ft	BHGLAOC13003 00 ft	BHGLAOC13004 00 ft	BHGLAOC13005 00 ft
SW6010	Arsenic	5.85	5.85	mg/kg	2.1 F	NA	2.5 F	NA
SW6010	Cadmium	0.556	0.556	mg/kg	0.1 F	0.42	0.37 F	0.07 F
SW6010	Zinc	38.8	3100	mg/kg	NA	NA	34.9	NA
SW7421	Lead	30.97	30.97	mg/kg	NA	20.9	27	NA

Table 4.3
AOC 13 Subsurface Soil Detections, Law and IT Samples
NAS Fort Worth JRB, Texas

Method	Analyte	RRS 1	RRS 2	Units	114501SB 7-9 ft	114501SB 9-11 ft	114502SB 6-8 ft	114502SB 8-10 ft	114503SB 8-10 ft	114504SB 8-10 ft	SB114501 13-15 ft
SW6010	Aluminum	20260	20260	mg/kg	12000	12000	13000	16000	13000	16000	NA
SW6010	Antimony	0 712	0 712	mg/kg	--	--	--	--	--	--	NA
SW6010	Arsenic	6.58	6.58	mg/kg	--	--	[(9.4)]	--	--	--	NA
SW6010	Barium	128.1	200	mg/kg	120	99	120	110	89	100	NA
SW6010	Beryllium	1.13	1.13	mg/kg	--	--	--	--	--	--	NA
SW6010	Cadmium	0.59	0.59	mg/kg	[(2.1)]	[(2.0)]	[(2.7)]	[(3.2)]	[(2.4)]	[(2.7)]	NA
SW6010	Calcium	272000	NV	mg/kg	150000 J	140000 J	180000 J	160000 J	180000 J	160000 J	NA
SW6010	Chromium, total	16.31	16.31	mg/kg	10	9 7	11	14	12	12	NA
SW6010	Cobalt	6.19	610	mg/kg	3.0	3.3	5.1	4.6	3.8	4.7	NA
SW6010	Copper	13.72	130	mg/kg	10 J	7.9 J	13 J	11 J	11 J	9 3 J	NA
SW6010	Iron	17469	NV	mg/kg	7900	7700	10000	13000	9000	12000	NA
SW6010	Lead	12.66	12.66	mg/kg	10	11	11	11	11	11	NA
SW6010	Magnesium	2420	NV	mg/kg	1900	1900	2200	2300	2200	2200	NA
SW6010	Manganese	351.7	1400	mg/kg	77	16	200	94	190	120	NA
SW6010	Molybdenum	1.93	51	mg/kg	--	--	--	--	--	--	NA
SW6010	Nickel	19.76	200	mg/kg	7.7	7.4	8 5	9.1	9.9	8.3	NA
SW6010	Potassium	1717	NV	mg/kg	1300	1300	1300	1700	1600	170	NA
SW6010	Selenium	0.313	5	mg/kg	--	--	--	--	--	--	NA
SW6010	Sodium	53200	NV	mg/kg	55	63	61	78	98	74	NA
SW6010	Vanadium	37.4	72	mg/kg	18	16	27	23	27	24	NA
SW6010	Zinc	31.3	3100	mg/kg	21 J	18 J	21 J	25 J	21 J	23 J	NA
SW8240	Acetone	0.005	1000	mg/kg	--	--	(0.03)	(0.048)	--	--	NA
SW8240	Ethylbenzene	0.003	1000	mg/kg	--	--	--	(0.01)	--	--	NA
SW8240	Methylene chloride	0.002	0.5	mg/kg	(0.016)	(0.014)	(0.017)	(0.017)	(0.015)	(0.015)	NA
SW8240	Xylenes, Total	0.005	1000	mg/kg	--	(0.049)	--	(0.045)	--	--	NA
SW8260	1,2,4-Trimethylbenzene	0.005	NV	mg/kg	NA	NA	NA	NA	NA	NA	NA

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Table 4.3 (continued)
AOC 13 Subsurface Soil Detections, Law and IT Samples
NAS Fort Worth JRB, Texas

Method	Analyte	RRS 1	RRS 2	Units	114501SB 7-9 ft	114501SB 9-11 ft	114502SB 6-8 ft	114502SB 8-10 ft	114503SB 8-10 ft	114504SB 8-10 ft	SB114501 13-15 ft
SW8260	1,3,5-Trimethylbenzene	0.003	NV	mg/kg	NA	NA	NA	NA	NA	NA	NA
SW8260	Ethylbenzene	0.003	70	mg/kg	NA	NA	NA	NA	NA	NA	NA
SW8260	Isopropylbenzene	0 005	1000	mg/kg	NA	NA	NA	NA	NA	NA	NA
SW8260	m,p-Xylenes (sum of isomers)	0.005	1000	mg/kg	NA	NA	NA	NA	NA	NA	NA
SW8260	Methylene chloride	0 002	0.5	mg/kg	NA	NA	NA	NA	NA	NA	NA
SW8260	n-Butylbenzene	0.005	NV	mg/kg	NA	NA	NA	NA	NA	NA	NA
SW8260	n-Propylbenzene	0.002	NV	mg/kg	NA	NA	NA	NA	NA	NA	NA
SW8260	p-Isopropyltoluene	0 005	NV	mg/kg	NA	NA	NA	NA	NA	NA	NA
SW8260	sec-Butylbenzene	0.005	NV	mg/kg	NA	NA	NA	NA	NA	NA	NA
SW8260	tert-Butylbenzene	0.005	NV	mg/kg	NA	NA	NA	NA	NA	NA	NA
SW8260	Tetrachloroethene (PCE)	0 005	0.5	mg/kg	NA	NA	NA	NA	NA	NA	NA
SW8270	2-Methylnaphthalene	0.33	410	mg/kg	NA	NA	NA	NA	NA	NA	**(6 J)**
SW8270	bis(2-Ethylhexyl)phthalate	0.33	0.6	mg/kg	NA	NA	NA	NA	NA	NA	**[(2.6)]**
SW8270	Fluorene	0.33	410	mg/kg	NA	NA	NA	NA	NA	NA	0 27 F
SW8270	Naphthalene	0.33	200	mg/kg	NA	NA	NA	NA	NA	NA	**(3 J)**
SW8270	Phenanthrene	0 33	310	mg/kg	NA	NA	NA	NA	NA	NA	**(0.71 F)**
SW8270	Pyrene	0.33	310	mg/kg	NA	NA	NA	NA	NA	NA	--

Table 4.3 (continued)
AOC 13 Subsurface Soil Detections, Law and IT Samples
NAS Fort Worth JRB, Texas

Method	Analyte	RRS 1	RRS 2	Unit	SB114502 13-15 ft	SB114503 13-14 ft	SB114503 17-18 ft	SB114504 14-15 ft	SB114506 13-14 ft	SB114507 15-16 ft	SB114508 13-14 ft
SW6010	Aluminum	20260	20260	mg/kg	NA	9630	NA	5220	8240	4110	2220
SW6010	Antimony	0.712	0.712	mg/kg	NA	--	NA	--	--	0.54 F	0.64 F
SW6010	Arsenic	6.58	6.58	mg/kg	NA	1 F	NA	0.52 F	2.9	0.65 F	--
SW6010	Barium	128.1	200	mg/kg	NA	87.8	NA	98.1	77.1	66.2	22.4
SW6010	Beryllium	1.13	1.13	mg/kg	NA	0.85	NA	0.58 F	0.87	0.52 F	0.32 F
SW6010	Cadmium	0.59	0.59	mg/kg	NA	0.05 F	NA	0.1 F	--	0.09 F	--
SW6010	Calcium	272000	NV	mg/kg	NA	152000	NA	**(283000)**	186000	127000	1320
SW6010	Chromium, total	16.31	16.31	mg/kg	NA	8.1	NA	4 8	7.1	4.5	2.9
SW6010	Cobalt	6.19	610	mg/kg	NA	3.5	NA	1.4	2.6	2	1.3
SW6010	Copper	13.72	130	mg/kg	NA	9.2	NA	4.2	9	5.3	3
SW6010	Iron	17469	NV	mg/kg	NA	6310	NA	3180	7290	3020	2010
SW6010	Lead	12.66	12.66	mg/kg	NA	5.9	NA	2.3	6.3	4.4	3.6
SW6010	Magnesium	2420	NV	mg/kg	NA	1640	NA	1300	1660	905	377
SW6010	Manganese	351.7	1400	mg/kg	NA	94	NA	83.6	78 5	43.7	9.4
SW6010	Molybdenum	1.93	51	mg/kg	NA	0.49 F	NA	0.43 F	0.5 F	0.46 F	--
SW6010	Nickel	19.76	200	mg/kg	NA	7.7	NA	3.9	7.3	5.2	3.9
SW6010	Potassium	1717	NV	mg/kg	NA	1440	NA	1040	1310	790 F	466
SW6010	Selenium	0.313	5	mg/kg	NA	--	NA	--	--	--	**(0.38 F)**
SW6010	Sodium	53200	NV	mg/kg	NA	61.1 F	NA	56 F	50 7 F	30 5 F	11.5 F
SW6010	Vanadium	37.4	72	mg/kg	NA	11.2	NA	6.5	24.7	5.9	3 7
SW6010	Zinc	31.3	3100	mg/kg	NA	20	NA	10.9	15.2	15.3	10.9
SW8240	Acetone	0.005	1000	mg/kg	NA	NA	NA	NA	NA	NA	NA
SW8240	Ethylbenzene	0.003	1000	mg/kg	NA	NA	NA	NA	NA	NA	NA
SW8240	Methylene chloride	0.002	0.5	mg/kg	NA	NA	NA	NA	NA	NA	NA
SW8240	Xylenes, Total	0.005	1000	mg/kg	NA	NA	NA	NA	NA	NA	NA

Table 4.3 (continued)
AOC 13 Subsurface Soil Detections, Law and IT Samples
NAS Fort Worth JRB, Texas

Method	Analyte	RRS 1	RRS 2	Unit	SB114502 13-15 ft	SB114503 13-14 ft	SB114503 17-18 ft	SB114504 14-15 ft	SB114506 13-14 ft	SB114507 15-16 ft	SB114508 13-14 ft
SW8260	1,2,4-Trimethylbenzene	0.005	NV	mg/kg	NA	(0.0067 F)	--	--	--	--	--
SW8260	1,3,5-Trimethylbenzene	0.003	NV	mg/kg	NA	(0.0045)	(0.006)	--	--	--	--
SW8260	Ethylbenzene	0.003	70	mg/kg	NA	--	(0.032)	--	--	--	--
SW8260	Isopropylbenzene	0.005	1000	mg/kg	NA	0.0045 F	(0.014)	--	--	--	--
SW8260	m,p-Xylenes (sum of isomers)	0.005	1000	mg/kg	NA	--	(0.04)	--	--	--	--
SW8260	Methylene chloride	0.002	0.5	mg/kg	NA	--	--	(0.0053)	(0.0043)	(0.0055)	(0.0042)
SW8260	n-Butylbenzene	0.005	NV	mg/kg	NA	(0.022)	(0.026)	--	--	--	--
SW8260	n-Propylbenzene	0.002	NV	mg/kg	NA	(0.0059)	(0.037)	--	--	--	--
SW8260	p-Isopropyltoluene	0.005	NV	mg/kg	NA	--	0.0043 F	--	--	--	--
SW8260	sec-Butylbenzene	0.005	NV	mg/kg	NA	(0.0052 F)	(0.0061 F)	--	--	--	--
SW8260	tert-Butylbenzene	0.005	NV	mg/kg	NA	--	0.0042 F	--	--	--	--
SW8260	Tetrachloroethene (PCE)	0.005	0 5	mg/kg	NA	--	0 0029 F	--	--	--	--
SW8270	2-Methylnaphthalene	0.33	410	mg/kg	(6.4 J)	--	--	--	--	--	--
SW8270	bis(2-Ethylhexyl)phthalate	0.33	0.6	mg/kg	[(2.7 J)]	--	--	--	--	--	--
SW8270	Fluorene	0.33	410	mg/kg	0.31 F	--	--	--	--	--	--
SW8270	Naphthalene	0.33	200	mg/kg	(3.2 J)	0.18	0.16	--	--	--	--
SW8270	Phenanthrene	0.33	310	mg/kg	(0.59 F)	--	--	--	--	--	--
SW8270	Pyrene	0.33	310	mg/kg	(0.68 F)	--	--	--	--	--	--

Table 4.4
AOC 13 Subsurface Soil Detections, HydroGeoLogic Samples
NAS Fort Worth JRB, Texas

Method	Analyte	RRS-1	RRS-2	Units	BHGLAOC13001 05 ft	BHGLAOC13001 10 ft	BHGLAOC13002 10 ft	BHGLAOC13004 05 ft
SW6010	Arsenic	6.58	6.58	mg/kg	2 F	NA	NA	NA
SW6010	Barium	128.1	200	mg/kg	NA	NA	NA	NA
SW6010	Beryllium	1.13	1.13	mg/kg	NA	NA	NA	NA
SW6010	Cadmium	0.59	0.59	mg/kg	0.13 F	0.3 F	0.19 F	0.33 F
SW6010	Chromium, total	16.31	16.31	mg/kg	NA	NA	NA	NA
SW6010	Cobalt	6 19	610	mg/kg	NA	NA	NA	NA
SW6010	Copper	13.72	130	mg/kg	NA	NA	NA	NA
SW6010	Nickel	19.76	200	mg/kg	NA	NA	NA	NA
SW6010	Vanadium	37.4	72	mg/kg	NA	NA	NA	NA
SW6010	Zinc	31.3	3100	mg/kg	NA	NA	NA	NA
SW7421	Lead	12.66	12.66	mg/kg	NA	NA	NA	NA
SW8260B	1,1-Dichloroethane	0.002	1000	mg/kg	NA	NA	NA	NA
SW8260B	Acetone	0.005	1000	mg/kg	NA	NA	NA	NA
SW8260B	Benzene	0.002	0.5	mg/kg	NA	NA	NA	NA
SW8260B	Ethylbenzene	0.003	70	mg/kg	NA	NA	NA	NA
SW8260B	m,p-Xylene (sum of isomers)	0.005	1000	mg/kg	NA	NA	NA	NA
SW8260B	Methyl ethyl ketone	0.005	6100	mg/kg	NA	NA	NA	NA
SW8260B	o-Xylene	0 005	1000	mg/kg	NA	NA	NA	NA
SW8260B	Toluene	0.005	100	mg/kg	NA	NA	NA	NA
SW8270C	2-Methylnaphthalene	0.33	410	mg/kg	NA	NA	NA	NA
SW8270C	Benzo(a)anthracene	0.33	0.33	mg/kg	NA	NA	NA	NA
SW8270C	bis(2-Ethylhexyl)phthalate	0.33	0.6	mg/kg	NA	NA	NA	NA
SW8270C	Chrysene	0.33	3.9	mg/kg	NA	NA	NA	NA
SW8270C	Naphthalene	0.33	200	mg/kg	NA	NA	NA	NA
SW8270C	Phenanthrene	0.33	310	mg/kg	NA	NA	NA	NA
SW8270C	Pyrene	0.33	310	mg/kg	NA	NA	NA	NA
TX1005	TPH	50	500	mg/kg	NA	NA	NA	NA
TX1005	DRO	50	500	mg/kg	NA	NA	NA	NA

Table 4.4 (continued)
AOC 13 Subsurface Soil Detections, HydroGeoLogic Samples
NAS Fort Worth JRB, Texas

Method	Analyte	RRS-1	RRS-2	Units	BHGLAOC13004 10 ft	BHGLAOC13005 05 ft	BHGLAOC13005 05 ft Duplicate	BHGLAOC13005 10 ft
SW6010	Arsenic	6.58	6.58	mg/kg	NA	NA	NA	NA
SW6010	Barium	128 1	200	mg/kg	NA	NA	NA	NA
SW6010	Beryllium	1.13	1.13	mg/kg	NA	NA	NA	NA
SW6010	Cadmium	0.59	0.59	mg/kg	0.2 F	0.28 F	0.21 F	0.21 F
SW6010	Chromium, total	16.31	16.31	mg/kg	NA	15.7	12.8	15.9
SW6010	Cobalt	6.19	610	mg/kg	NA	NA	NA	NA
SW6010	Copper	13.72	130	mg/kg	NA	NA	NA	NA
SW6010	Nickel	19.76	200	mg/kg	NA	NA	NA	NA
SW6010	Vanadium	37.4	72	mg/kg	NA	NA	NA	NA
SW6010	Zinc	31.3	3100	mg/kg	NA	NA	NA	NA
SW7421	Lead	12.66	12.66	mg/kg	NA	NA	NA	NA
SW8260B	1,1-Dichloroethane	0.002	1000	mg/kg	NA	NA	NA	--
SW8260B	Acetone	0.005	1000	mg/kg	NA	NA	NA	--
SW8260B	Benzene	0.002	0.5	mg/kg	NA	NA	NA	--
SW8260B	Ethylbenzene	0.003	70	mg/kg	NA	NA	NA	--
SW8260B	m,p-Xylene (sum of isomers)	0.005	1000	mg/kg	NA	NA	NA	--
SW8260B	Methyl ethyl ketone	0.005	6100	mg/kg	NA	NA	NA	--
SW8260B	o-Xylene	0.005	1000	mg/kg	NA	NA	NA	--
SW8260B	Toluene	0.005	100	mg/kg	NA	NA	NA	--
SW8270C	2-Methylnaphthalene	0.33	410	mg/kg	NA	NA	NA	--
SW8270C	Benzo(a)anthracene	0.33	0.33	mg/kg	NA	NA	NA	--
SW8270C	bis(2-Ethylhexyl)phthalate	0 33	0.6	mg/kg	NA	NA	NA	--
SW8270C	Chrysene	0.33	3.9	mg/kg	NA	NA	NA	--
SW8270C	Naphthalene	0.33	200	mg/kg	NA	NA	NA	--
SW8270C	Phenanthrene	0.33	310	mg/kg	NA	NA	NA	--
SW8270C	Pyrene	0.33	310	mg/kg	NA	NA	NA	--
TX1005	TPH	50	500	mg/kg	NA	NA	NA	NA
TX1005	DRO	50	500	mg/kg	NA	NA	NA	NA

Table 4.4 (continued)
AOC 13 Subsurface Soil Detections, HydroGeoLogic Samples
NAS Fort Worth JRB, Texas

Method	Analyte	RRS-1	RRS-2	Units	BHGLAOC13005 15 ft	PHGL1145-E1 10 ft	PHGL1145-E2 10 ft	PHGL1145-E3 15 ft
SW6010	Arsenic	6.58	6.58	mg/kg	NA	2.8 F	1.5 F	1.4 F
SW6010	Barium	128.1	200	mg/kg	NA	115	116	86.3
SW6010	Beryllium	1.13	1.13	mg/kg	NA	0.79	0.79	0 63
SW6010	Cadmium	0.59	0.59	mg/kg	NA	0.27 F	0.33 F	0.2 F
SW6010	Chromium, total	16.31	16.31	mg/kg	NA	14	**[(16.7)]**	13.9
SW6010	Cobalt	6.19	610	mg/kg	NA	3.9 F	4 F	3.6 F
SW6010	Copper	13.72	130	mg/kg	NA	9 F	10.1 F	7.6 F
SW6010	Nickel	19.76	200	mg/kg	NA	9.2 F	9.9 F	8.1 F
SW6010	Vanadium	37.4	72	mg/kg	NA	28.2 F	29.8 F	22.9 F
SW6010	Zinc	31.3	3100	mg/kg	NA	27 F	**(31.5 F)**	24.1 F
SW7421	Lead	12.66	12.66	mg/kg	NA	5 F	6.2 F	4 7 F
SW8260B	1,1-Dichloroethane	0.002	1000	mg/kg	--	--	--	--
SW8260B	Acetone	0.005	1000	mg/kg	--	**(0.046)**	**(0.01)**	**(0.018)**
SW8260B	Benzene	0.002	0.5	mg/kg	--	--	--	--
SW8260B	Ethylbenzene	0.003	70	mg/kg	--	0.002 F	--	--
SW8260B	m,p-Xylene (sum of isomers)	0.005	1000	mg/kg	--	**(0.006)**	--	--
SW8260B	Methyl ethyl ketone	0.005	6100	mg/kg	--	--	--	--
SW8260B	o-Xylene	0.005	1000	mg/kg	--	0.004 F	--	--
SW8260B	Toluene	0.005	100	mg/kg	--	0.003 F	--	--
SW8270C	2-Methylnaphthalene	0.33	410	mg/kg	--	--	--	--
SW8270C	Benzo(a)anthracene	0.33	0.33	mg/kg	--	--	--	--
SW8270C	bis(2-Ethylhexyl)phthalate	0.33	0.6	mg/kg	0.18 F	--	--	--
SW8270C	Chrysene	0.33	3.9	mg/kg	--	--	--	--
SW8270C	Naphthalene	0.33	200	mg/kg	0.086 F	--	--	--
SW8270C	Phenanthrene	0.33	310	mg/kg	--	--	--	--
SW8270C	Pyrene	0.33	310	mg/kg	--	--	--	--
TX1005	TPH	50	500	mg/kg	NA	--	--	--
TX1005	DRO	50	500	mg/kg	NA	--	--	8.2 F

Table 4.4 (continued)
AOC 13 Subsurface Soil Detections, HydroGeoLogic Samples
NAS Fort Worth JRB, Texas

Method	Analyte	RRS-1	RRS-2	Units	PHGL1145-E4 15 ft	PHGL1145-E5 10 ft	PHGL1145-N1 10 ft	PHGL1145-S1 10 ft
SW6010	Arsenic	6.58	6.58	mg/kg	1.3 F	2.1 F	1.8 F	1.9 F
SW6010	Barium	128.1	200	mg/kg	93.1	125	93.9	101
SW6010	Beryllium	1.13	1.13	mg/kg	0.68	0.82	0.61	0.71
SW6010	Cadmium	0.59	0.59	mg/kg	0.26 F	0.37 F	0.27 F	0.25 F
SW6010	Chromium, total	16.31	16.31	mg/kg	[(17.9)]	[(18.6)]	13.2	15.6
SW6010	Cobalt	6.19	610	mg/kg	3.6 F	4.2 F	3.4 F	4 F
SW6010	Copper	13.72	130	mg/kg	10.6 F	8.8 F	8 F	7.7 F
SW6010	Nickel	19.76	200	mg/kg	10 F	9.9	7.5 F	9.2 F
SW6010	Vanadium	37.4	72	mg/kg	31.5 F	34.6	27.4 F	31.6 F
SW6010	Zinc	31.3	3100	mg/kg	(33.9)	31.3	(37.8)	26.3 F
SW7421	Lead	12.66	12.66	mg/kg	4.6 F	4.6 F	5.3 F	4.9 F
SW8260B	1,1-Dichloroethane	0.002	1000	mg/kg	0.002 F	--	--	--
SW8260B	Acetone	0 005	1000	mg/kg	(0.22)	(0.042)	(0.14)	--
SW8260B	Benzene	0.002	0.5	mg/kg	(0.004)	--	--	--
SW8260B	Ethylbenzene	0.003	70	mg/kg	(0.067)	--	(0.036)	--
SW8260B	m,p-Xylene (sum of isomers)	0.005	1000	mg/kg	(0.14)	--	(0.12)	--
SW8260B	Methyl ethyl ketone	0 005	6100	mg/kg	(0.023)	(0.007)	(0.013)	--
SW8260B	o-Xylene	0 005	1000	mg/kg	(0.091)	--	(0.082)	--
SW8260B	Toluene	0.005	100	mg/kg	(0.009)	--	(0.013)	--
SW8270C	2-Methylnaphthalene	0.33	410	mg/kg	(2)	--	(1.1)	--
SW8270C	Benzo(a)anthracene	0.33	0.33	mg/kg	0.12 F	--	0.1 F	--
SW8270C	bis(2-Ethylhexyl)phthalate	0.33	0.6	mg/kg	(0.58)	--	(0.54)	--
SW8270C	Chrysene	0.33	3.9	mg/kg	0.092 F	--	0.069 F	--
SW8270C	Naphthalene	0.33	200	mg/kg	(0.89)	--	(0.36 F)	--
SW8270C	Phenanthrene	0.33	310	mg/kg	0.28 F	--	0.18 F	--
SW8270C	Pyrene	0.33	310	mg/kg	0.28 F	--	0.24 F	--
TX1005	TPH	50	500	mg/kg	(54)	--	(64)	--
TX1005	DRO	50	500	mg/kg	49 F	--	(60)	--

Table 4.4 (continued)
AOC 13 Subsurface Soil Detections, HydroGeoLogic Samples
NAS Fort Worth JRB, Texas

Method	Analyte	RRS-1	RRS-2	Units	PHGL1145-W1 10 ft	PHGL1145-W2 10 ft	PHGL1145-W3 10 ft
SW6010	Arsenic	6.58	6.58	mg/kg	1.3 F	0.59 F	1.7 F
SW6010	Barium	128.1	200	mg/kg	110	108	110
SW6010	Beryllium	1.13	1.13	mg/kg	0.88	0.79	0.77
SW6010	Cadmium	0.59	0.59	mg/kg	0.31 F	0.22 F	0.26 F
SW6010	Chromium, total	16.31	16.31	mg/kg	[(18.6)]	[(18.9)]	12.5
SW6010	Cobalt	6.19	610	mg/kg	3.7 F	4.8 F	3 5 F
SW6010	Copper	13.72	130	mg/kg	10.8	7.4 F	9.1 F
SW6010	Nickel	19.76	200	mg/kg	10.7	10.6 F	8.6 F
SW6010	Vanadium	37.4	72	mg/kg	32.1	26.7 F	27.6 F
SW6010	Zinc	31.3	3100	mg/kg	(35.1)	30.2 F	24.9 F
SW7421	Lead	12.66	12.66	mg/kg	5.5 F	5 F	3.9 F
SW8260B	1,1-Dichloroethane	0.002	1000	mg/kg	--	--	--
SW8260B	Acetone	0.005	1000	mg/kg	--	--	--
SW8260B	Benzene	0.002	0.5	mg/kg	--	--	--
SW8260B	Ethylbenzene	0.003	70	mg/kg	--	--	--
SW8260B	m,p-Xylene (sum of isomers)	0.005	1000	mg/kg	--	--	--
SW8260B	Methyl ethyl ketone	0.005	6100	mg/kg	--	--	--
SW8260B	o-Xylene	0.005	1000	mg/kg	--	--	--
SW8260B	Toluene	0.005	100	mg/kg	--	--	--
SW8270C	2-Methylnaphthalene	0.33	410	mg/kg	--	--	--
SW8270C	Benzo(a)anthracene	0.33	0.33	mg/kg	--	--	--
SW8270C	bis(2-Ethylhexyl)phthalate	0.33	0.6	mg/kg	--	--	--
SW8270C	Chrysene	0.33	3.9	mg/kg	--	--	--
SW8270C	Naphthalene	0.33	200	mg/kg	--	--	--
SW8270C	Phenanthrene	0.33	310	mg/kg	--	--	--
SW8270C	Pyrene	0.33	310	mg/kg	--	--	--
TX1005	TPH	50	500	mg/kg	--	--	--
TX1005	DRO	50	500	mg/kg	--	--	--

Table 4.5
AOC 13 Groundwater Detections, IT Samples
NAS Forth Worth JRB, Texas

Method	Analyte	RRS 1	RRS 2	Units	WITCTA036* 05/02/1997	WITCTA040 01/23/1998	WITCTA041 01/24/1998
M8015D	DRO	0.5	NV	mg/L	11000	NA	NA
M8015V	GRO	0.5	NV	mg/L	8600	NA	NA
SW6010	Aluminum	1.332	100	mg/L	NA	0.0409 F	0.506
SW6010	Arsenic	0.0049	0.05	mg/L	NA	0.0027 F	0.0033 F
SW6010	Barium	0 587	2	mg/L	NA	0.117	0.128
SW6010	Calcium	266 3	NV	mg/L	NA	153	175
SW6010	Chromium, total	0.006	0 1	mg/L	NA	0.0028 F	**(0.0064 F)**
SW6010	Cobalt	0.0089	6.1	mg/L	NA	0.0058 F	**(0.014)**
SW6010	Copper	0.0028	1.3	mg/L	NA	0.0019 F	**(0.0066 F)**
SW6010	Iron	0.224	NV	mg/L	NA	0.156	**(1.13)**
SW6010	Magnesium	37.8	NV	mg/L	NA	6.17	6.58
SW6010	Manganese	0.175	14	mg/L	NA	0.148	0.0881
SW6010	Nickel	0.0204	2	mg/L	NA	0.0034 F	0.0098 F
SW6010	Potassium	15.03	NV	mg/L	NA	0.986 F	0.844 F
SW6010	Selenium	0.0077	0.05	mg/L	NA	0.004 F	--
SW6010	Sodium	167	NV	mg/L	NA	15.7	15.7
SW6010	Thallium	0.0632	0.0632	mg/L	NA	0.0074 F	--
SW6010	Vanadium	0.012	0.72	mg/L	NA	0.0023 F	0.0102
SW6010	Zinc	0.118	31	mg/L	NA	0.0079 F	0.0149 F
SW8260	1,1,1-Trichloroethane	0.0005	0.2	mg/L	28 J	--	--
SW8260	1,1-Dichloroethane	0.0004	10	mg/L	--	--	**(0.0095)**
SW8260	1,2,4-Trimethylbenzene	0.0005	NV	mg/L	750	--	**(0.0037)**
SW8260	1,2-Dichlorobenzene	0.0003	0.6	mg/L	--	--	**(0.00039)**
SW8260	1,3,5-Trimethylbenzene	0.0005	NV	mg/L	190	--	**(0.0016)**
SW8260	Benzene	0.0004	0.005	mg/L	--	--	**(0.0033)**
SW8260	cis-1,2-Dichloroethene	0.0005	0.07	mg/L	--	**(0.0051)**	--

Table 4.5 (continued)
AOC 13 Groundwater Detections, IT Samples
NAS Forth Worth JRB, Texas

Method	Analyte	RRS 1	RRS 2	Units	WITCTA036* 05/02/1997	WITCTA040 01/23/1998	WITCTA041 01/24/1998
SW8260	Ethylbenzene	0.0005	0.7	mg/L	120	--	**(0.0034)**
SW8260	Isopropylbenzene	0.0005	10	mg/L	--	--	0.00038 F
SW8260	m,p-Xylenes (sum of isomers)	0.0005	10	mg/L	410	--	--
SW8260	Methylene Chloride	0.0005	0.005	mg/L	--	--	0.00036
SW8260	Naphthalene	0.0005	2	mg/L	320	--	**(0.0033)**
SW8260	n-Propylbenzene	0.0004	NV	mg/L	94	--	**(0.00094)**
SW8260	o-Xylene	0.0005	10	mg/L	230	--	**(0.0039)**
SW8260	Toluene	0.0005	1	mg/L	180	--	0.0037
SW8260	Trichloroethene (TCE)	0.0005	0.005	mg/L	--	**[(0.025)]**	0.00033 F
SW8260	Vinyl Chloride	0.0005	0.002	mg/L	--	--	**[(0.0021)]**
SW8270	2-Methylnaphthalene	0.01	4.1	mg/L	200	--	--
SW8270	Naphthalene	0.01	2	mg/L	320	--	--

Table 4.5 (continued)
AOC 13 Groundwater Detections, IT Samples
NAS Forth Worth JRB, Texas

Method	Analyte	RRS 1	RRS 2	Units	WITCTA042 01/23/1998	WITCTA043 01/23/1998	WITCTA044 01/23/1998
M8015D	DRO	0.5	NV	mg/L	NA	NA	NA
M8015V	GRO	0.5	NV	mg/L	NA	NA	NA
SW6010	Aluminum	1.332	100	mg/L	0.541	0.117	0.196
SW6010	Arsenic	0.0049	0.05	mg/L	--	--	--
SW6010	Barium	0.587	2	mg/L	0 119	0.119	0.125
SW6010	Calcium	266.3	NV	mg/L	157	151	154
SW6010	Chromium, total	0.006	0.1	mg/L	--	0.0027 F	**(0.0138)**
SW6010	Cobalt	0.0089	6.1	mg/L	--	0.0029 F	0 003 F
SW6010	Copper	0.0028	1.3	mg/L	--	**(0.0036 F)**	**(0.0034 F)**
SW6010	Iron	0.224	NV	mg/L	**(1.98)**	**(0.42)**	**(0.828)**
SW6010	Magnesium	37.8	NV	mg/L	6.13	5.98	5.56
SW6010	Manganese	0.175	14	mg/L	0.0517	0.01	0.0392
SW6010	Nickel	0.0204	2	mg/L	--	0.003 F	0 0105 F
SW6010	Potassium	15.03	NV	mg/L	1 05	0 842 F	0.893 F
SW6010	Selenium	0.0077	0.05	mg/L	--	--	--
SW6010	Sodium	167	NV	mg/L	13.8	14.2	13.9
SW6010	Thallium	0 0632	0.0632	mg/L	--	--	--
SW6010	Vanadium	0.012	0.72	mg/L	0.0101	0.0048 F	0.0017 F
SW6010	Zinc	0.118	31	mg/L	0.027	0.0048 F	0.0141 F
SW8260	1,1,1-Trichloroethane	0.0005	0.2	mg/L	--	--	--
SW8260	1,1-Dichloroethane	0.0004	10	mg/L	--	--	--
SW8260	1,2,4-Trimethylbenzene	0.0005	NV	mg/L	--	--	--
SW8260	1,2-Dichlorobenzene	0.0003	0.6	mg/L	--	--	--
SW8260	1,3,5-Trimethylbenzene	0.0005	NV	mg/L	--	--	--
SW8260	Benzene	0 0004	0.005	mg/L	--	--	--
SW8260	cis-1,2-Dichloroethene	0.0005	0.07	mg/L	--	--	--

Table 4.5 (continued)
AOC 13 Groundwater Detections, IT Samples
NAS Forth Worth JRB, Texas

Method	Analyte	RRS 1	RRS 2	Units	WITCTA042 01/23/1998	WITCTA043 01/23/1998	WITCTA044 01/23/1998
SW8260	Ethylbenzene	0.0005	0.7	mg/L	--	--	--
SW8260	Isopropylbenzene	0.0005	10	mg/L	--	--	--
SW8260	m,p-Xylenes (sum of isomers)	0.0005	10	mg/L	--	--	--
SW8260	Methylene Chloride	0.0005	0.005	mg/L	--	--	0.00039
SW8260	Naphthalene	0.0005	2	mg/L	--	--	--
SW8260	n-Propylbenzene	0.0004	NV	mg/L	--	--	--
SW8260	o-Xylene	0.0005	10	mg/L	--	--	--
SW8260	Toluene	0.0005	1	mg/L	--	--	--
SW8260	Trichloroethene (TCE)	0.0005	0.005	mg/L	--	--	--
SW8260	Vinyl Chloride	0.0005	0.002	mg/L	--	--	--
SW8270	2-Methylnaphthalene	0.01	4.1	mg/L	--	--	--
SW8270	Naphthalene	0.01	2	mg/L	--	--	--

* Data from well WITCTA036 are from a sample of LNAPL and are not compared to aqueous RRS values.

Table 4.6
AOC 13 Groundwater Detections, HydroGeoLogic Samples
NAS Fort Worth JRB, Texas

Method	Analyte	RRS-1	RRS-2	Units	WITCTA040 11/03/2000	WITCTA041 04/19/1999	WITCTA041 11/03/2000	WITCTA042 11/02/2000	WITCTA043 11/02/2000
SW6010	Aluminum	1.332	100	mg/L	--	--	--	0.501	0.291 F
SW6010	Barium	0.587	2	mg/L	0.11 F	0.12 F	0.115 F	0.121 F	0.134 F
SW6010	Calcium	266.3	NV	mg/L	141	135	141	126	143
SW6010	Iron	0.224	NV	mg/L	**(0.554)**	--	**(0.355)**	**(0.294)**	0.165
SW6010	Magnesium	37.8	NV	mg/L	5.86	6.1	6 57	5.73	6 39
SW6010	Manganese	0 175	14	mg/L	0 0488	--	0.0184 F	0.0071 F	--
SW6010	Potassium	15.03	NV	mg/L	1.77 F	0.903 F	0.842 F	0.948 F	0.976 F
SW6010	Sodium	167	NV	mg/L	18.9	15	17.4	15.4	17.6
SW6010	Vanadium	0.012	0.72	mg/L	--	--	--	0.0043 F	0 0047 F
SW6010	Zinc	0.118	31	mg/L	0.0737 F	--	0.0165 F	--	--
SW8260B	1,1-Dichloroethane	0 0004	10	mg/L	--	--	**(0.002 J)**	--	--
SW8260B	1,2,4-Trimethylbenzene	0.0005	NV	mg/L	--	--	--	--	**(0.0006)**
SW8260B	cis-1,2-Dichloroethene	0 0005	0.07	mg/L	**(0.013 J)**	--	--	--	--
SW8260B	Ethylbenzene	0.0005	0.7	mg/L	--	--	--	--	**(0.001)**
SW8260B	m,p-Xylene (sum of isomers)	0.0005	10	mg/L	**(0.0008 J)**	--	**(0.0008 J)**	--	**(0.003)**
SW8260B	o-Xylene	0.0005	10	mg/L	--	--	--	--	**(0.0007)**
SW8260B	Toluene	0.0005	1	mg/L	--	--	--	--	0.0005
SW8260B	trans-1,2-Dichloroethene	0.0005	0.1	mg/L	**(0.0009 J)**	--	--	--	--
SW8260B	Trichloroethene (TCE)	0.0005	0.005	mg/L	**[(0.054)]**	--	**(0.001 J)**	**(0.0007)**	--

Table 4.6 (continued)
AOC 13 Groundwater Detections, HydroGeoLogic Samples
NAS Fort Worth JRB, Texas

Method	Analyte	RRS-1	RRS-2	Units	WITCTA044 01/26/1999	WITCTA044 04/23/1999	WITCTA044 07/20/1999	WITCTA044 10/06/1999	WITCTA044 11/03/2000
SW6010	Aluminum	1.332	100	mg/L	NA	NA	NA	NA	0.329 F
SW6010	Barium	0.587	2	mg/L	NA	NA	NA	NA	0.129 F
SW6010	Calcium	266.3	NV	mg/L	NA	NA	NA	NA	134
SW6010	Iron	0.224	NV	mg/L	NA	NA	NA	NA	**(0.706)**
SW6010	Magnesium	37.8	NV	mg/L	NA	NA	NA	NA	5.92
SW6010	Manganese	0.175	14	mg/L	NA	NA	NA	NA	0.0119 F
SW6010	Potassium	15.03	NV	mg/L	NA	NA	NA	NA	1.11 F
SW6010	Sodium	167	NV	mg/L	NA	NA	NA	NA	16.8
SW6010	Vanadium	0.012	0.72	mg/L	NA	NA	NA	NA	--
SW6010	Zinc	0.118	31	mg/L	NA	NA	NA	NA	0.0129 F
SW8260B	1,1-Dichloroethane	0.0004	10	mg/L	NA	NA	NA	NA	NA
SW8260B	1,2,4-Trimethylbenzene	0 0005	NV	mg/L	NA	NA	NA	NA	NA
SW8260B	cis-1,2-Dichloroethene	0.0005	0.07	mg/L	NA	NA	NA	NA	NA
SW8260B	Ethylbenzene	0.0005	0.7	mg/L	NA	NA	NA	NA	NA
SW8260B	m,p-Xylene (sum of isomers)	0.0005	10	mg/L	NA	NA	NA	NA	NA
SW8260B	o-Xylene	0.0005	10	mg/L	NA	NA	NA	NA	NA
SW8260B	Toluene	0.0005	1	mg/L	NA	NA	NA	NA	NA
SW8260B	trans-1,2-Dichloroethene	0.0005	0.1	mg/L	NA	NA	NA	NA	NA
SW8260B	Trichloroethene (TCE)	0.0005	0.005	mg/L	NA	NA	NA	NA	NA

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FIGURES

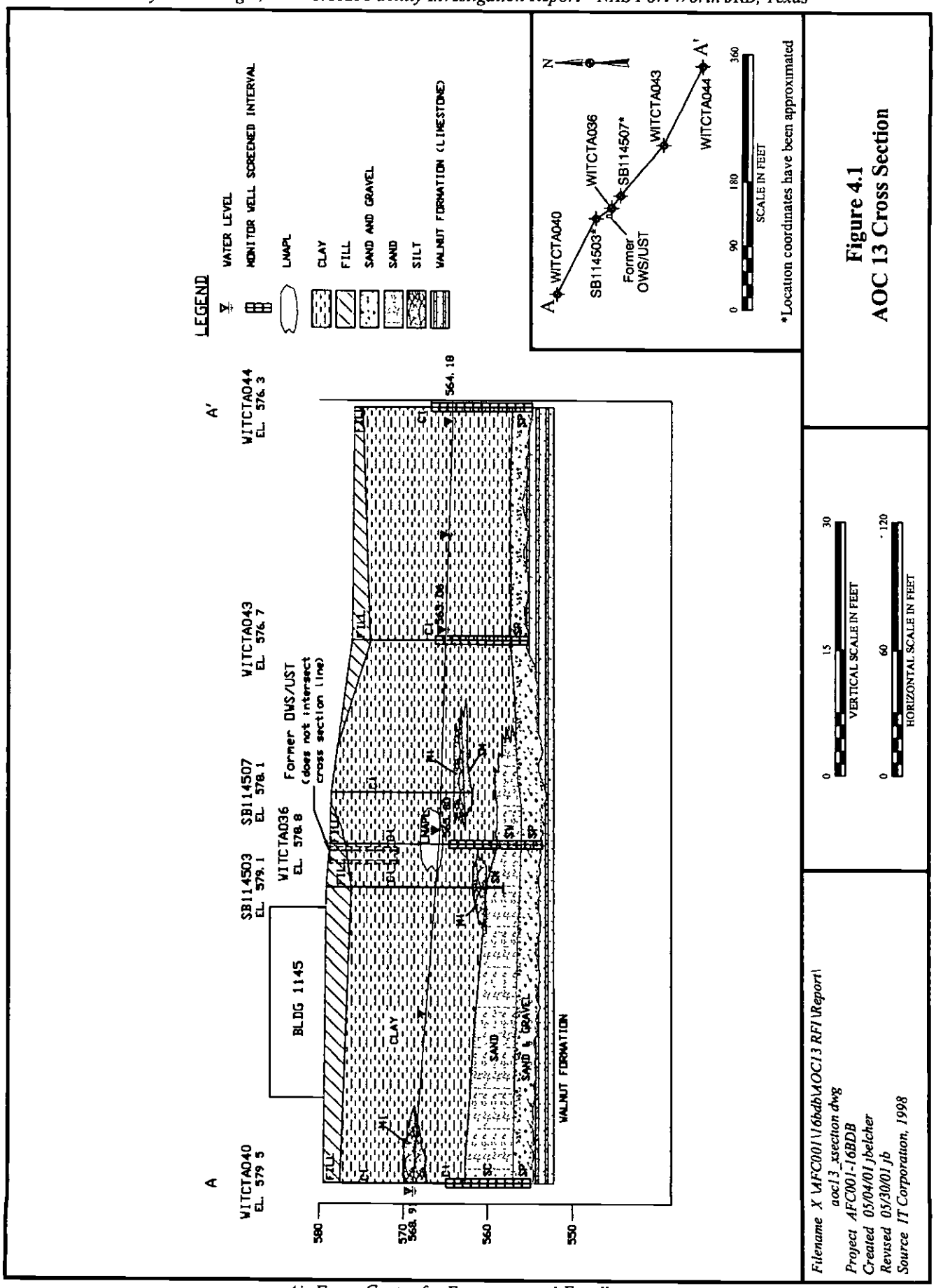
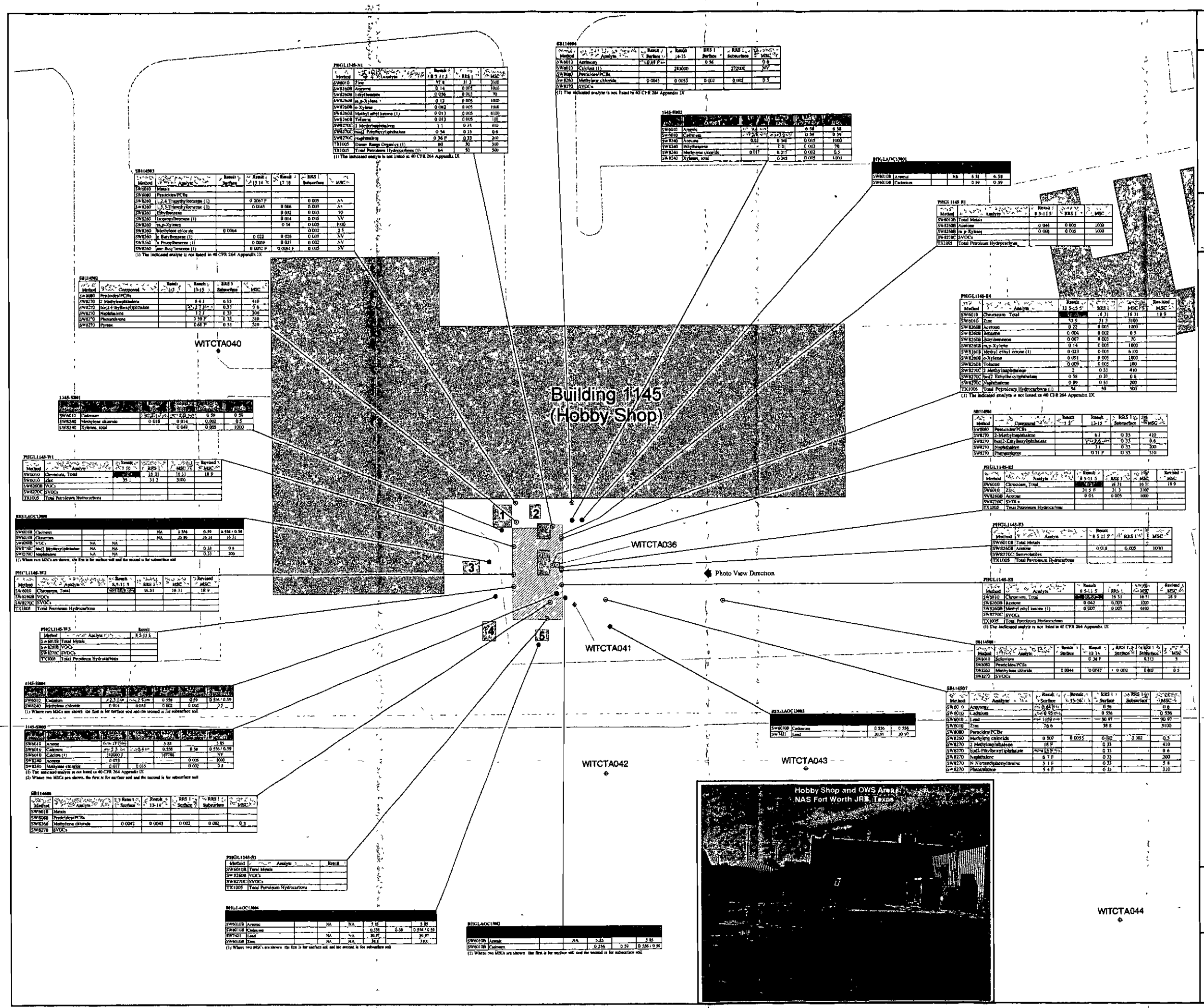


Figure 4.1
AOC 13 Cross Section



HydroGeoLogic Inc
RCRA Facility Investigation
NAS Fort Worth JRB, Texas

Figure 4.2

Analytes Detected above RRS 1 in Soil Samples AOC 13

U.S Air Force Center For Environmental Excellence

Legend

- Fence
- Building / Structure
- Excavation Area
- Former Oil/Water Separator (OWS)
- Former Underground Storage Tank (UST)
- WITCTA042 — Existing Monitoring Well Location
- WITCTA036 — Abandoned Monitoring Well Location

Soil Borings

- Law Engineering - 1994
- IT Corporation - 1997/1998
- HGL OWS Samples- 2000
- HGL Soil Samples - 2000

Header Key

- Law Engineering - 1994 Results
- IT Corporation - 1997/1998 Results
- HydroGeoLogic - 2000 Excavation Confirmation Results
- HydroGenLogic - 2000 Phase II Results

Data Key

- Analyte detected above the MSC
- Analyte detected above the MSC, but not confirmed by subsequent sampling
- Analyte detected above the MSC but below the site-specific MSC

Structure No.	Structure
1	Air Conditioner Pad
2	Air Compressor Pad
3	Electric
4	Shed
5	Used Oil

Sources
Law Engineering soil boring locations (1145-SB01 1145-SB04) and analytical data obtained from OWS Assessment Report (Law Engineering, 1994)

IT Corporation soil boring locations(SB114501-SB114504 and SB114506-SB114508) and analytical data obtained from Draft OWS RCRA Facility Investigation (IT Corporation 1998)

Notes
Concentrations are reported in mg/kg
The Texas State median background level for antimony is 1 0 mg/kg (TAC 350 51)
"Blank Space" Analyte/Analyte State not detected above RRS-1 values
NA Not Analyzed
NV No value
MQL - Method Quantitation Limit
RRS 1 Risk Reduction Standard 1
RRS 2 Risk Reduction Standard 2
F - The analyte was positively identified but the associated numerical value is below the Reporting Limit
J Estimated quantitation based upon the QC data

N

20 0 20 40
SCALE IN FEET

HYDRO GeoLogic INC

Filename X \Afc001\16bdb\AOC 13 RFI\Report\soil apr
Created 02.04/01 jb
Revised 05/11/00 jb
Project AFC001-16BDB
Map Source HydroGeoLogic, Inc GIS Database 2001

HydroGeoLogic, Inc.—RCRA Facility Investigation Report
NAS Fort Worth JRB, Texas

Figure 4.3
Analytes Detected Above RRS 1 in Groundwater Samples AOC 13

U.S. Air Force Center for Environmental Excellence

WITCTA036

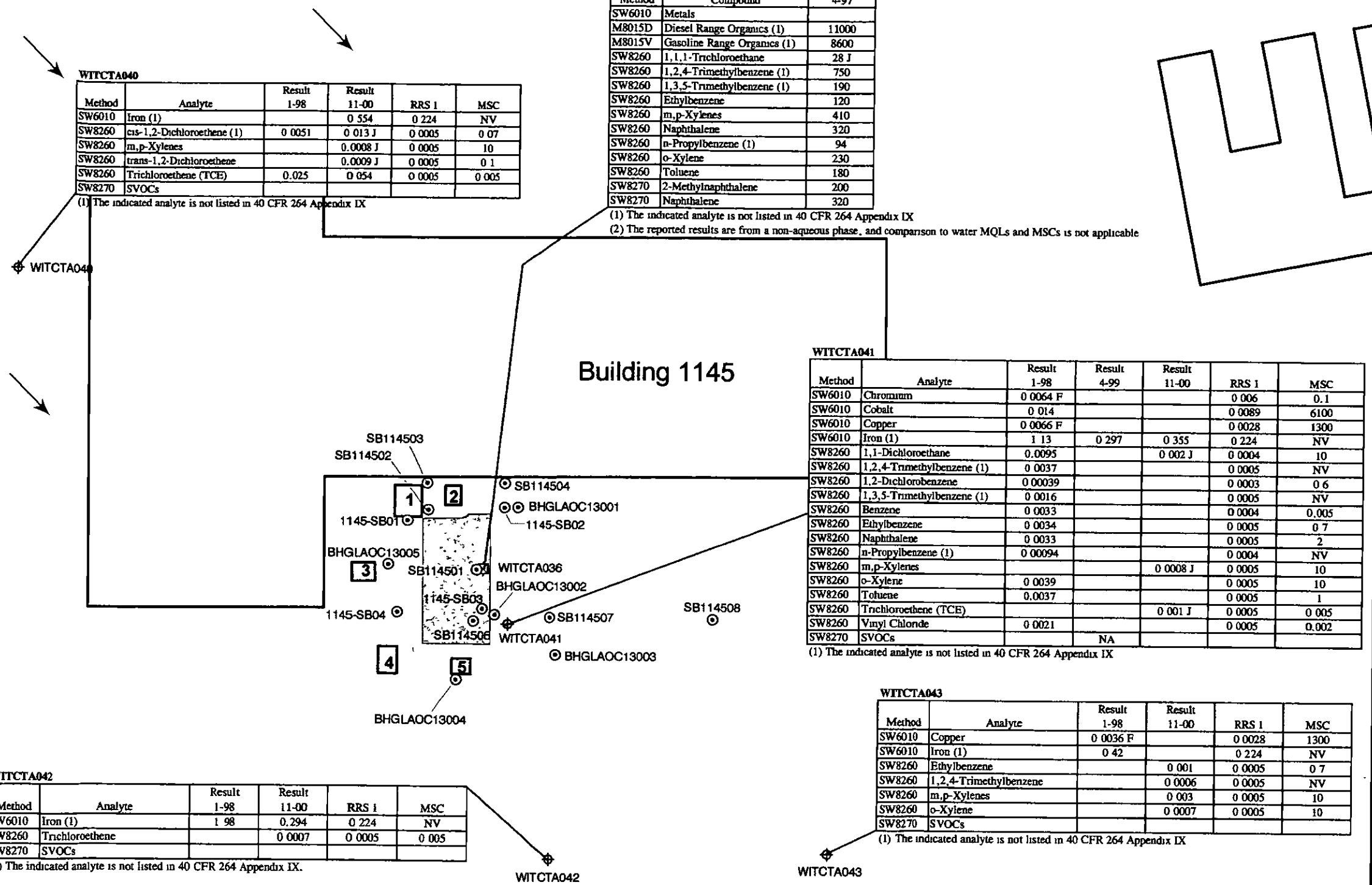
Method	Compound	Result (2) 4-97
SW6010	Metals	
M8015D	Diesel Range Organics (1)	11000
M8015V	Gasoline Range Organics (1)	8600
SW8260	1,1,1-Trichloroethane	28 J
SW8260	1,2,4-Trimethylbenzene (1)	750
SW8260	1,3,5-Trimethylbenzene (1)	190
SW8260	Ethylbenzene	120
SW8260	m,p-Xylenes	410
SW8260	Naphthalene	320
SW8260	n-Propylbenzene (1)	94
SW8260	o-Xylene	230
SW8260	Toluene	180
SW8270	2-Methylnaphthalene	200
SW8270	Naphthalene	320

(1) The indicated analyte is not listed in 40 CFR 264 Appendix IX
(2) The reported results are from a non-aqueous phase, and comparison to water MQLs and MSCs is not applicable

WITCTA040

Method	Analyte	Result 1-98	Result 11-00	RRS 1	MSC
SW6010	Iron (1)		0 554	0 224	NV
SW8260	cis-1,2-Dichloroethene (1)	0 0051	0 013 J	0 0005	0 07
SW8260	m,p-Xylenes		0.0008 J	0 0005	10
SW8260	trans-1,2-Dichloroethene		0.0009 J	0 0005	0 1
SW8260	Trichloroethene (TCE)	0.025	0 054	0 0005	0 005
SW8270	SVOCs				

(1) The indicated analyte is not listed in 40 CFR 264 Appendix IX



WITCTA041

Method	Analyte	Result 1-98	Result 4-99	Result 11-00	RRS 1	MSC
SW6010	Chromium	0 0064 F			0 006	0.1
SW6010	Cobalt	0 014			0 0089	6100
SW6010	Copper	0 0066 F			0 0028	1300
SW6010	Iron (1)	1 13	0 297	0 355	0 224	NV
SW8260	1,1-Dichloroethane	0.0095		0 002 J	0 0004	10
SW8260	1,2,4-Trimethylbenzene (1)	0 0037			0 0005	NV
SW8260	1,2-Dichlorobenzene	0 00039			0 0003	0 6
SW8260	1,3,5-Trimethylbenzene (1)	0 0016			0 0005	NV
SW8260	Benzene	0 0033			0 0004	0.005
SW8260	Ethylbenzene	0 0034			0 0005	0 7
SW8260	Naphthalene	0 0033			0 0005	2
SW8260	n-Propylbenzene (1)	0 00094			0 0004	NV
SW8260	m,p-Xylenes			0 0008 J	0 0005	10
SW8260	o-Xylene	0 0039			0 0005	10
SW8260	Toluene	0.0037			0 0005	1
SW8260	Trichloroethene (TCE)			0 001 J	0 0005	0 005
SW8260	Vinyl Chloride	0 0021			0 0005	0.002
SW8270	SVOCs		NA			

(1) The indicated analyte is not listed in 40 CFR 264 Appendix IX

WITCTA043

Method	Analyte	Result 1-98	Result 11-00	RRS 1	MSC
SW6010	Copper	0 0036 F		0 0028	1300
SW6010	Iron (1)	0 42		0 224	NV
SW8260	Ethylbenzene		0 001	0 0005	0 7
SW8260	1,2,4-Trimethylbenzene		0 0006	0 0005	NV
SW8260	m,p-Xylenes		0 003	0 0005	10
SW8260	o-Xylene		0 0007	0 0005	10
SW8270	SVOCs				

(1) The indicated analyte is not listed in 40 CFR 264 Appendix IX

WITCTA042

Method	Analyte	Result 1-98	Result 11-00	RRS 1	MSC
SW6010	Iron (1)	1 98	0.294	0 224	NV
SW8260	Trichloroethene		0 0007	0 0005	0 005
SW8270	SVOCs				

(1) The indicated analyte is not listed in 40 CFR 264 Appendix IX.

WITCTA044

Method	Analyte	Result 1-98	Results 1, 4, 7, and 10-99	Result 11-00	RRS 1	MSC
SW6010	Chromium	0.0138	NA		0 006	0 1
SW6010	Copper	0.0034 F	NA		0 0028	1300
SW6010	Iron (1)	0 828	NA	0 706	0 224	NV
SW8260	Volatiles					
SW8270	SVOCs		NA			

(1) The indicated analyte is not listed in 40 CFR 264 Appendix IX

Notes:
Concentrations are reported in mg/L.
"Blank Space" - Analyte/Analyte Suite Not detected above RRS-1 value/s.
NA - Not Analyzed
NV - No Value
MQL - Method Quantitation Limit
RRS 1 - Risk Reduction Standard 1
RRS 2 - Risk Reduction Standard 2
F - The analyte was positively identified but the associated numerical value is below the Reporting Limit.
J - Estimated quantitation based upon the QC data.

Legend

- Fence
- Building / Structure
- Groundwater Flow Direction
- WITCTA042 — Existing Monitoring Well Location
- SB114503 — Soil Boring Location
- WITCTA036 — Abandoned Monitoring Well

Field Investigations

- IT Corporation 1997 Results
- IT Corporation 1998 Results
- HydroGeoLogic 1999 Results
- HydroGeoLogic 2000 Results
- Analyte detected above MSC

Structure No.	Structure
1	Air Conditioner Pad
2	Air Compressor Pad
3	Electric
4	Shed
5	Used Oil

Sources: Law soil boring locations (1145-SB01-1145-SB04) obtained from OWS Assessment Report (Law, 1994)

IT Corp. soil boring locations (SB114501-SB114504 and SB114506-SB114508) and groundwater data obtained from Draft OWS RCRA Facility Investigation (IT Corp , 1998)

N

20 0 20 40
SCALE IN FEET

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Project AFC001-16BDB
Created· 04/15/99 jbelcher
Revised· 05/11/01 asp
Map Source HydroGeoLogic, Inc GIS Database

HYDRO GeoLogic INC

TAB

SECTION 5.0

5.0 DISCUSSION OF ANALYTICAL RESULTS

5.1 SURFACE SOIL RESULTS

Six inorganic constituents, antimony, arsenic, cadmium, calcium, iron, and zinc, were detected at concentrations above the corresponding background values in Phase I surface soils samples collected at AOC 13. Of these, calcium and iron do not have a corresponding MSC and are not considered contaminants under the provisions of permit HW-50289. Concentrations of the VOCs acetone and methylene chloride, and the SVOCs bis(2-ethylhexyl)phthalate, 2-methylnaphthalene, naphthalene, N-nitrosodiphenylamine, and phenanthrene, were detected above the corresponding MQLs in AOC 13 surface soils (Figure 4.2).

- **Antimony** was detected above the background value in two Phase I (1998 IT OWS RFI) surface soil samples from AOC 13, at 0.69 F mg/kg and 0.64 F mg/kg. These detections of antimony are only slightly above background and the MSC (both 0.556 mg/kg). Antimony was not detected above background in any of the other surface or subsurface soil samples collected at the site. Because there is no pattern of occurrence, these isolated detections of antimony are considered to be extreme, but true, background concentrations, and are not indicative of a release of hazardous constituents from AOC 13. It should be noted that these detections of antimony are below the Texas median soil background level of 1.0 mg/kg (TAC 350.51).

- **Arsenic** was detected at 17 mg/kg in one surface soil sample (1145-SB03) collected from AOC 13 during the 1994 Law RFA. This detection of arsenic is above the background value and MSC (both 5.85 mg/kg). Arsenic was not detected above background in any of the other surface soil samples collected at the site, although it was detected above background in a subsurface soil sample from a different boring. During the Phase II investigation, HydroGeoLogic collected two surface soil samples for arsenic in order to confirm and delineate the detection from the Law RFA. The results of both these samples were detections below the background value, and arsenic is considered to be delineated in surface soils at this site. Additionally, the original Standard 3 detection was not confirmed by Phase II sampling.

- **Cadmium** was detected above background and the MSC (both 0.556 mg/kg) at 2.3 mg/kg in each of the two surface soil samples collected during the 1994 Law RFA, and at 0.95 mg/kg in one surface soil sample collected during the 1998 IT OWS RFI. Cadmium was also detected above background and the MSC (both 0.59 mg/kg) in each of the subsurface soil samples collected during the 1994 Law RFA. During the Phase II investigation, HydroGeoLogic collected four confirmation/delineation surface soil samples for cadmium. The results of all four of these samples were detections below the background value, and cadmium is considered to be delineated in surface soils at this site. Additionally,

two the three original Standard 3 detections were not confirmed by Phase II sampling.

- **Zinc** was detected at 76.6 mg/kg in one surface soil sample collected from AOC 13 during the 1998 IT OWS RFI. This detection of zinc is above the background value of 38.6 mg/kg, but well below the MSC (3,100 mg/kg). Zinc was not detected above background in any of the other surface soil samples collected at the site, although it was detected above background in three subsurface soil samples from the confirmation samples collected by HydroGeoLogic from the perimeter of the removal excavation. During the Phase II investigation, HydroGeoLogic collected one delineation surface soil sample for zinc. The result of this sample was a detection below the background value, and zinc is considered to be delineated in surface soils at this site.

- **Acetone** was detected above the MQL in one surface soil sample (1145-SB03) from AOC 13, at 0.073 mg/kg. This detection is substantially lower than the MSC of 1,000 mg/kg. Acetone is a common laboratory artifact, and although this compound was not detected in any blanks associated with this sample analysis, it is likely that the detection of acetone is an artifact of the analytical process. Based on this information, this constituent does not warrant additional consideration. Due to the high likelihood that the detection of this compound is an analytical artifact, acetone was not identified as a COPC in subsurface soils at the site, and no further sampling for this analyte was conducted.

- **bis(2-Ethylhexyl)phthalate** was detected above the MQL in one surface soil sample (SB114507) from AOC 13, at 15 F mg/kg. This detection is substantially above the MSC of 0.6 mg/kg. This compound is a common laboratory artifact, and although this compound was not detected in any blanks associated with this sample analysis, it is likely that the detection of bis(2-ethylhexyl)phthalate is an artifact of the analytical process. The sample in which this compound was detected was analyzed under a substantial dilution, and the sample-specific reporting limit for this compound, 43 mg/kg, is more than two orders of magnitude greater than the MQL of 0.33 mg/kg. Due to the extreme dilution of the sample analysis, even a small amount of introduced contamination by this compound will be inflated when the raw analytical results are adjusted for the dilution factor. Based on this information, this constituent does not warrant additional consideration.

- **Methylene chloride** was detected above the MQL in every surface soil sample collected at AOC 13 by Law in 1994 and IT in 1998. The methylene chloride detections ranged from 0.0042 mg/kg to 0.017 mg/kg, and are substantially below the MSC of 0.5 mg/kg. This compound is a common laboratory artifact, and as it was detected in blanks associated with most of these sample analyses, it is likely that the detections of methylene chloride are artifacts of the analytical

process. Based on this information, this constituent does not warrant additional consideration.

- **2-Methylnaphthalene, naphthalene, N-nitrosodiphenylamine, and phenanthrene** were each detected, at 18 F mg/kg, 6.7 F mg/kg, 5.1 F mg/kg, and 5.4 F mg/kg, respectively, in the same Phase I surface soil sample, SB114507, collected by IT. These four detections were above the respective MQLs, but below the applicable MSCs (410 mg/kg, 200 mg/kg, 5.8 mg/kg, and 310 mg/kg). These detections appear to be isolated to a single location, and no pattern of occurrence can be identified. None of these compounds were detected in sample SB114508, which was sampled surficially downgradient from SB114507. Based on this information, these constituents are considered to be delineated and no further Phase II surface soil samples were collected for these compounds.

5.2 SUBSURFACE SOIL RESULTS

Six inorganic constituents, arsenic, cadmium, calcium, chromium, selenium, and zinc, were detected at concentrations above the corresponding background value in Phase I subsurface soils samples collected at AOC 13. Of these, calcium does not have a corresponding MSC and is not considered a contaminant under the provisions of permit HW-50289. Concentrations of the VOCs acetone, ethylbenzene, methylene chloride, and xylenes, and the SVOCs bis(2-ethylhexyl)phthalate, 2-methylnaphthalene, and naphthalene, were detected above the corresponding MQLs in AOC 13 subsurface soils (Figure 4.2).

- **Arsenic** was detected at 9.4 mg/kg in one subsurface soil sample (1145-SB02) collected from AOC 13 during the 1994 Law RFA. This detection of arsenic is above the background value and MSC (both 6.58 mg/kg). Arsenic was not detected above background in any of the other subsurface soil samples collected at the site, although it was detected above background in a surface soil sample from a different boring. During the Phase II investigation, HydroGeoLogic collected one confirmation/delineation subsurface soil sample for arsenic. The result for this sample was a detection below the background value, and arsenic is considered to be delineated in subsurface soils at this site. Additionally, the original Standard 3 detection was not confirmed by Phase II sampling. Arsenic was not detected above background in any groundwater samples collected in the vicinity of AOC 13 in 1998, 1999, or 2000.

- **Cadmium** was detected in each of the six subsurface soil samples collected from AOC 13 during the 1994 Law RFA. These detections ranged from 2.0 mg/kg to 3.2 mg/kg, which are above the background value and the MSC (both 0.59 mg/kg). Cadmium was detected in 3 of the 5 subsurface samples collected by IT in 1998, in 7 of the 10 confirmation samples collected from the removal pit excavation by HydroGeoLogic in 2000, and in all 8 confirmation/delineation

samples collected during HydroGeoLogic's Phase II RFI, but all detections were below the background value. Based on these results, cadmium is considered to be delineated in subsurface soils at this site. Additionally, three of the six original Standard 3 detections were not confirmed by Phase II sampling. Cadmium was not detected above background in any groundwater samples collected in the vicinity of AOC 13 in 1998, 1999, or 2000.

- **Chromium** was detected above background and the MSC (16.31 mg/kg) in 5 of the 10 confirmation samples collected from the removal pit excavation by HydroGeoLogic in 2000. These detections ranged from 16.7 mg/kg to 18.9 mg/kg. SPLP was performed on the sample with the highest detection (sample PHGL1145-W2), and the extract was found not to contain chromium above the groundwater RRS 2 value (0.1 mg/L). A site-specific subsurface soil MSC of 18.9 mg/kg was established for this element. The three delineation subsurface soil samples HydroGeoLogic collected from boring BHGLAOC13005 during Phase II were analyzed for chromium. Chromium was detected, but below background, in all three samples, at concentrations ranging from 12.8 mg/kg to 15.9 mg/kg. Chromium was not detected above background in any other surface or subsurface Phase I soil samples collected at AOC 13, and is considered to be delineated at this site. Chromium was detected above background, but below the MSC, in two groundwater samples collected at the site in 1998 (see Section 4.3), but was not detected in samples collected at AOC 13 in 1999 or 2000.

- **Selenium** was detected at 0.38 F mg/kg in the subsurface soil sample collected from boring SB114508; this detection of selenium is above the background value of 0.313 mg/kg, but well below the MSC (5 mg/kg). Selenium was not detected above background in any of the other surface or subsurface soil samples collected at the site. Because there is no pattern of occurrence, this isolated detection of selenium is considered to be an extreme, but true, background concentration, and is not indicative of a release of hazardous constituents from AOC 13. Selenium was not detected above background in any groundwater samples collected in the vicinity of AOC 13 in 1998, 1999, or 2000.

- **Zinc** was detected above background 4 of the 10 confirmation subsurface soil samples collected from the OWS/UST removal excavation. These detections were along the east, north, and west walls, and ranged from 31.5 F mg/kg to 37.8 mg/kg. These detections are slightly above the background value of 31.3 mg/kg, and well below the zinc MSC of 3,100 mg/kg. Zinc was detected above background in one of the other surface soil samples collected at the site, but not in any other subsurface soil sample. Zinc in subsurface soils is considered to be delineated by the samples Law and IT collected outside the perimeter of the excavation area. Zinc was not detected above background in any groundwater samples collected in the vicinity of AOC 13 in 1998, 1999, or 2000.

- **Acetone** was detected above the MQL in two subsurface soil samples, and in 6 of the 10 confirmation samples collected from the OWS/UST removal excavation. These detections ranged from 0.01 mg/kg to 0.22 mg/kg, and were substantially lower than the MSC of 1,000 mg/kg. Acetone is a common laboratory artifact, and although this compound was not detected in any blanks associated with these sample analyses, it is likely that these detections of acetone are artifacts of the analytical process. Acetone is miscible with water, but was not detected in any of the groundwater samples collected at AOC 13 in 1998, 1999, or 2000. Based on this information, this constituent does not warrant additional consideration.

- **Benzene** was detected above the MQL in 1 of the 10 confirmation samples collected from the OWS/UST removal excavation, at a value of 0.004 mg/kg. This detection, in a sample from the east wall, is substantially lower than the MSC of 0.5 mg/kg. Benzene was not detected above the MQL in any other surface or subsurface soil samples collected at AOC 13, and is considered delineated based on the results from the samples Law and IT collected outside the perimeter of the excavation area, and by the confirmation samples collected from the north, south, and west walls of the excavation. Benzene was detected above the MQL, but below the MSC, in one groundwater sample collected at the site in 1998 (see Section 4.4), but was not detected in samples collected at AOC 13 in 1999 or 2000.

- **bis(2-Ethylhexyl)phthalate** was detected above the MQL in two subsurface soil samples at values of 2.6 mg/kg and 2.7 J mg/kg. These detections are substantially above the MSC of 0.6 mg/kg. This compound was also detected above the MQL, but below the MSC, in 2 of the 10 confirmation subsurface soil samples collected from the OWS/UST removal excavation. These detections were along the east and north walls, and were 0.58 mg/kg and 0.54 mg/kg, respectively. This compound is a common laboratory artifact, and although this compound was not detected in any blanks associated with these sample analyses, it is likely that the detections of bis(2-ethylhexyl)phthalate are artifacts of the analytical process. This compound was not detected above background in any groundwater samples collected in the vicinity of AOC 13 in 1998, 1999, or 2000. Based on this information, this constituent does not warrant additional consideration.

- **DRO** was detected above the MQL in 1 of the 10 confirmation samples collected from the OWS/UST removal excavation, at a value of 60 mg/kg. This detection is substantially lower than the derived MSC of 500 mg/kg. DRO was not detected above the MQL in any other surface or subsurface soil samples collected at AOC 13. DRO was not detected above the MQL in any groundwater samples collected in the vicinity of AOC 13. The detection of DRO was from the sample from the north wall of the excavation, and is considered delineated

based on the results from the remaining confirmation samples collected from the east, south, and west walls of the excavation.

- **Ethylbenzene** was detected above the MQL in two subsurface soil samples at values of 0.01 mg/kg and 0.32 mg/kg. This compound was also detected above the MQL in 2 of the 10 confirmation subsurface soil samples collected from the OWS/UST removal excavation. These detections were along the east and north walls, and were 0.067 mg/kg and 0.036 mg/kg, respectively. All detections of this compound in subsurface soils were well below the MSC (70 mg/kg). Ethylbenzene was not detected above the MQL in any other surface or subsurface soil samples collected at AOC 13, and is considered delineated based on the results from the samples Law and IT collected outside the perimeter of the excavation area, and by the other confirmation samples collected from the east, south, and west walls of the excavation. Ethylbenzene was detected above the MQL, but below the MSC, in one groundwater sample collected at the site in 1998, and although it was not detected in samples collected at AOC 13 in 1999, it was detected above the MQL in a sample from a different well during 2000 sampling (see Section 4.4).

- **Methylene chloride** was detected above the MQL in all but two subsurface soil samples collected at AOC 13 by Law in 1994 and IT in 1998. The methylene chloride detections ranged from 0.0042 mg/kg to 0.017 mg/kg, and are substantially below the MSC of 0.5 mg/kg. This compound is a common laboratory artifact, and as it was detected in blanks associated with most of these sample analyses, it is likely that the detections of methylene chloride are artifacts of the analytical process. Methylene chloride was detected above the MQL, but below the MSC, in one groundwater sample collected at the site in 1998 (see Section 4.3), but was not detected in samples collected at AOC 13 in 1999 or 2000. Based on this information, this constituent does not warrant additional consideration and is not considered a COPC at the site.

- **Methyl ethyl ketone** was detected above the MQL in 3 of the 10 confirmation samples collected from the OWS/UST removal excavation. The detected concentrations, ranging from 0.007 mg/kg to 0.023 mg/kg, were substantially lower than the MSC of 6,100 mg/kg. Methyl ethyl ketone is a common laboratory artifact, and although this compound was not detected in any blanks associated with these sample analyses, it is likely that these detections are artifacts of the analytical process. Methyl ethyl ketone is highly soluble in water, but was not detected in any of the groundwater samples collected at AOC 13 in 1998, 1999, or 2000. Based on this information, this constituent does not warrant additional consideration and is not considered a COPC at the site.

- **2-Methylnaphthalene** was detected above the MQL in two subsurface soil samples, at 6 J mg/kg and 6.4 J mg/kg. This compound was also detected above

the MQL in 2 of the 10 confirmation subsurface soil samples collected from the OWS/UST removal excavation. These detections were along the east and north walls, and were 2 mg/kg and 1.1 mg/kg, respectively. The detections in subsurface soils were well below the MSC (410 mg/kg). This compound was not detected in any of the groundwater samples collected at AOC 13 in 1998, 1999, or 2000. This compound is considered delineated in subsurface soils based on the results from the samples Law and IT collected outside the perimeter of the excavation area, and by the other confirmation samples collected from the east, south, and west walls of the excavation.

- **Naphthalene** was detected above the MQL in two subsurface soil samples, at concentrations of 3 J mg/kg and 3.2 J mg/kg. This compound was also detected above the MQL in 2 of the 10 confirmation subsurface soil samples collected from the OWS/UST removal excavation. These detections were along the east and north walls, and were 0.89 mg/kg and 0.36 F mg/kg, respectively. The detections in subsurface soils were well below the MSC (200 mg/kg). Naphthalene was detected above the MQL, but below the MSC, in one groundwater sample collected at the site in 1998 (see Section 4.4), but was not detected in samples collected at AOC 13 in 1999 or 2000.This compound is considered delineated in subsurface soils based on the results from the samples Law and IT collected outside the perimeter of the excavation area, and by the other confirmation samples collected from the east, south, and west walls of the excavation.

- **Phenanthrene** was detected above the MQL in two subsurface soil samples, at 0.71 F mg/kg and 0.59 F mg/kg. The detections in subsurface soils were well below the MSC (310 mg/kg). This compound was not detected in any of the groundwater samples collected at AOC 13 in 1998, 1999, or 2000. Phenanthrene is considered delineated in subsurface soils based on the results from the samples collected from the perimeter walls of the of the OWS/UST removal excavation (immediately to the south of the two borings where this compound was detected), and by the samples Law and IT collected outside the perimeter of the excavation area.

- **Pyrene** was detected above the MQL in one subsurface soil sample, at 0.68 F mg/kg. This detection in subsurface soils was well below the MSC (310 mg/kg). This compound was not detected in any of the groundwater samples collected at AOC 13 in 1998, 1999, or 2000. Pyrene is considered delineated in subsurface soils based on the results from the samples collected from the perimeter walls of the of the OWS/UST removal excavation (immediately to the south of the boring where this compound was detected), and by the samples Law and IT collected outside the perimeter of the excavation area.

- **Toluene** was detected above the MQL in 2 of the 10 confirmation subsurface soil samples collected from the OWS/UST removal excavation. These detections were along the east and north walls, and were 0.009 mg/kg and 0.013 mg/kg, respectively. Both detections of this compound in subsurface soils were well below the MSC (100 mg/kg). Toluene was not detected above the MQL in any other surface or subsurface soil samples collected at AOC 13, and is considered delineated based on the results from the samples Law and IT collected outside the perimeter of the excavation area, and by the other confirmation samples collected from the east, south, and west walls of the excavation. Toluene was detected above the MQL, but below the MSC, in one groundwater sample collected at the site in 1998, and although it was not detected in samples collected at AOC 13 in 1999, it was detected at the MQL in a sample from a different well during 2000 sampling (see Section 4.4).

- **TPH** was detected above the MQL in 2 of the 10 confirmation subsurface soil samples collected from the OWS/UST removal excavation. These detections were along the east and north walls, and were 54 mg/kg and 64 mg/kg, respectively. Both detections of this compound in subsurface soils were well below the MSC (500 mg/kg). TPH was not detected above the MQL in any other surface or subsurface soil samples collected at AOC 13, and is considered delineated based the other confirmation samples collected from the east, south, and west walls of the excavation.

- **Xylenes** were detected above the MQL in three subsurface soil samples at values ranging from 0.04 mg/kg to 0.049 mg/kg. This constituent was also detected above the MQL in 3 of the 10 confirmation subsurface soil samples collected from the OWS/UST removal excavation. These detections were along the east and north walls, and ranged from 0.01 mg/kg to 0.231 mg/kg (as total xylenes). All detections of this compound in subsurface soils were well below the MSC (1,000 mg/kg). Xylenes were not detected above the MQL in any other surface or subsurface soil samples collected at AOC 13, and are considered delineated based on the results from the samples Law and IT collected outside the perimeter of the excavation area, and by the other confirmation samples collected from the east, south, and west walls of the excavation. Xylenes were detected above the MQL, but below the MSC, in one groundwater sample collected at the site in 1998, and although it was not detected in samples collected at AOC 13 in 1999, it was detected above the MQL in samples from three different wells during 2000 sampling (see Section 4.4).

As noted in Section 4.3.2, several compounds not listed in 40 CFR 264 Appendix IX were detected in subsurface soil samples collected at AOC 13. These compounds are not part of permit HW-50289, and are not considered COPCs at this site.

5.3 GROUNDWATER RESULTS

Four inorganic constituents, chromium, cobalt, copper, and iron, were detected at concentrations above their corresponding background values in groundwater samples collected in the vicinity AOC 13. Of these, iron does not have a corresponding MSC and is not considered a contaminant under the provisions of permit HW-50289. Concentrations of 15 VOCs were detected above the corresponding MQLs in groundwater samples collected in the vicinity of AOC 13 (Figure 4.3).

- **Chromium** was detected in two groundwater samples during IT's 1998 OWS RFI. The detected values were 0.0064 F mg/L and 0.0138 mg/L, which were above the background value of 0.006 mg/L, but well below the RRS 2 value of 0.1 mg/L. Chromium was not confirmed in any of the groundwater samples HydroGeoLogic collected from AOC 13 in 1999 or 2000. Because the original detections of chromium were not confirmed, it is concluded that chromium has not had an impact on groundwater at AOC 13.

- **Cobalt** was detected in one groundwater sample during IT's 1998 OWS RFI. The detected value was 0.014 mg/L, which was above the background value of 0.0089 mg/L, but well below the RRS 2 value of 6.1 mg/L. Cobalt was not detected in any of the groundwater samples HydroGeoLogic collected from AOC 13 in 1999 or 2000. Because the original detection of cobalt was not confirmed, it is concluded that cobalt has not had an impact on groundwater at AOC 13.

- **Copper** was detected in three groundwater samples during IT's 1998 OWS RFI. The detected values ranged from 0.0034 F mg/L to 0.0066 F mg/L, which were above the background value of 0.0028 mg/L, but well below the RRS 2 value of 1.3 mg/L. Copper was not detected in any of the groundwater samples HydroGeoLogic collected from AOC 13 in 1999 or 2000. Because the original detections of copper were not confirmed, it is concluded that copper has not had an impact on groundwater at AOC 13.

- **1,1-Dichloroethane** was detected at 0.0095 mg/L in the groundwater sample collected from WITCTA041 by IT in 1998. This detection was above the MQL, but well below the MSC (10 mg/L). This compound was not detected in the sample HydroGeoLogic collected from this well in April 1999, but it was detected at 0.002 J mg/L in the sample HydroGeoLogic collected from this well in November 2000. The detections of this compound are possibly associated with the TCE plume, and 1,1-dichloroethane is not considered a COPC originating from this site.

- **1,2-Dichlorobenzene** was detected at 0.00039 mg/L in the groundwater sample collected from WITCTA041 by IT in 1998. This detection was above the MQL, but well below the MSC (0.6 mg/L). This compound was not detected in any of

the groundwater samples HydroGeoLogic collected from AOC 13 in 1999 or 2000. Because the original detection of this compound was not confirmed, it is concluded that 1,2-dichlorobenzene has not had an impact on groundwater at AOC 13.

- **Benzene** was detected at 0.0033 mg/L in the groundwater sample collected from WITCTA041 by IT in 1998. This detection was above the MQL, but below the MSC (0.005 mg/L). This compound was not detected in any of the groundwater samples HydroGeoLogic collected from AOC 13 in 1999 or 2000. Because the original detection of this compound was not confirmed, it is concluded that benzene has not had an impact on groundwater at AOC 13.

- **cis-1,2-Dichloroethene** was detected at 0.0051 mg/L in the groundwater sample collected from WITCTA040 by IT in 1998. This detection was above the MQL, but well below the MSC (0.07 mg/L). This compound was not detected in any of the groundwater samples HydroGeoLogic collected from AOC 13 in 1999, but it was detected at 0.013 J mg/L in the sample HydroGeoLogic collected from this well in November 2000. The detections of this compound are associated with the TCE plume, and cis-1,2-dichloroethene is not considered a COPC originating from this site.

- **Ethylbenzene** was detected at 0.0034 mg/L in the groundwater sample collected from WITCTA041 by IT in 1998. This detection was above the MQL, but well below the MSC (0.7 mg/L). This compound was not detected in any of the groundwater samples HydroGeoLogic collected from this well in 1999 or in 2000, but it was detected at 0.001 mg/L in the sample HydroGeoLogic collected from well WITCTA043 in November 2000. Ethylbenzene has had a slight impact on groundwater in the vicinity of AOC 13, but this compound is delineated, the source of contamination has been identified and removed, and the detection in WITCTA043 is likely to be from low levels of residual contamination.

- **Naphthalene** was detected at 0.0033 mg/L in the groundwater sample collected from WITCTA041 by IT in 1998. This detection was above the MQL, but below the MSC (2 mg/L). This compound was not detected in any of the groundwater samples HydroGeoLogic collected from AOC 13 in 1999 or 2000. Because the original detection of this compound was not confirmed, it is concluded that naphthalene has not had an impact on groundwater at AOC 13.

- **m,p-Xylenes** were not detected in any of the groundwater samples collected by IT in 1998 or by HydroGeoLogic in 1999; however, these compounds were detected in the samples HydroGeoLogic collected from wells WITCTA040, WITCTA041, and WITCTA043 in November 2000, at concentrations ranging from 0.0008 J mg/L through 0.003 mg/L. These detections were above the MQL, but well below the MSC (10 mg/L). m,p-Xylenes have had a slight

impact on groundwater in the vicinity of AOC 13, but these compounds are delineated, the source of contamination has been identified and removed, and the detections in WITCTA040, WITCTA041, and WITCTA043 are likely to be from low levels of residual contamination.

- **o-Xylene** was detected at 0.0039 mg/L in the groundwater sample collected from WITCTA041 by IT in 1998. This detection was above the MQL, but well below the MSC (10 mg/L). This compound was not detected in any of the groundwater samples HydroGeoLogic collected from this well in 1999 or in 2000, but it was detected at 0.0007 mg/L in the sample HydroGeoLogic collected from well WITCTA043 in November 2000. o-Xylene has had a slight impact on groundwater in the vicinity of AOC 13, but this compound is delineated, the source of contamination has been identified and removed, and the detection in WITCTA043 is likely to be from low levels of residual contamination.

- **Toluene** was detected at 0.0037 mg/L in the groundwater sample collected from WITCTA041 by IT in 1998. This detection was above the MQL, but well below the MSC (1 mg/L). This compound was not detected above the MQL in any of the groundwater samples HydroGeoLogic collected at AOC 13 in 1999 or in 2000, but it was detected at 0.0005 mg/L in the sample HydroGeoLogic collected from well WITCTA043 in November 2000. This detection is equal to the MQL. Toluene has had a slight impact on groundwater in the vicinity of AOC 13, but this compound is delineated, the source of contamination has been identified and removed, and the detection in WITCTA043 is likely to be from low levels of residual contamination.

- **Trichloroethene** was detected at 0.025 mg/L in the groundwater sample collected from WITCTA040 by IT in 1998. The detection was above the MQL, and above the MSC (0.005 mg/L). This compound was detected in the samples HydroGeoLogic collected from wells WITCTA040, WITCTA041, and WITCTA042 in November 2000, at concentrations ranging from 0.0007 mg/L to 0.054 mg/L. The detections of this compound are associated with the TCE plume, and trichloroethene is not considered a COPC originating from this site.

- **Vinyl chloride** was detected at 0.0021 mg/L in the groundwater sample collected from WITCTA041 by IT in 1998. This detection was above the MQL, and was slightly above the MSC (0.002 mg/L). This compound was not detected in any of the groundwater samples HydroGeoLogic collected from AOC 13 in 1999 or 2000. The detection of this compound is associated with the TCE plume, and vinyl chloride is not considered a COPC originating from this site.

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TAB

SECTION 6.0

6.0 CONCLUSIONS AND RECOMMENDATIONS

Field observations and analytical results indicate that the former OWS/UST at AOC 13 may have had an impact on the immediately surrounding environment. Chromium was detected above the MSC in confirmation samples collected from the OWS/UST removal excavation, however these detections were below the site-specific MSC established by performing an SPLP extraction and analysis on the sample with the highest chromium detection. Chromium has been delineated to RRS 1 and does not appear to pose a potential threat to groundwater. RRS 2 concentrations of arsenic, cadmium, and lead have also been delineated to RRS 1 or not confirmed by subsequent sampling.

The low concentrations of antimony detected above RRS 2 in the surface interval of two borings at the site are assessed to be extreme, but true, background concentrations and do not appear to be indicative of a release at the site. The same assessment is made concerning the single surface interval detection of selenium. A release to the soils at the OWS unit would most likely be indicated by elevated concentrations in subsurface soils near the unit, followed by horizontally decreasing concentrations. However, sample results show no evidence of an antimony or selenium impact on the samples collected from the subsurface intervals at the site. Based on this information, this constituent does not warrant further consideration at this site.

The OWS/UST that was the source for potential contamination at the site was removed in 2000 and the potentially contaminated soils were overexcavated. All of the petroleum wastes currently generated at the AOC 13 Hobby Shop are disposed of in the new OWS, which is managed under the Navy compliance program. It is believed, based on the results of this RFI, that AOC 13 does not present a threat to human health or the environment as all analytes detected at the site are currently below site-specific MSCs, or are delineated to decreasing concentrations and/or RRS 1.

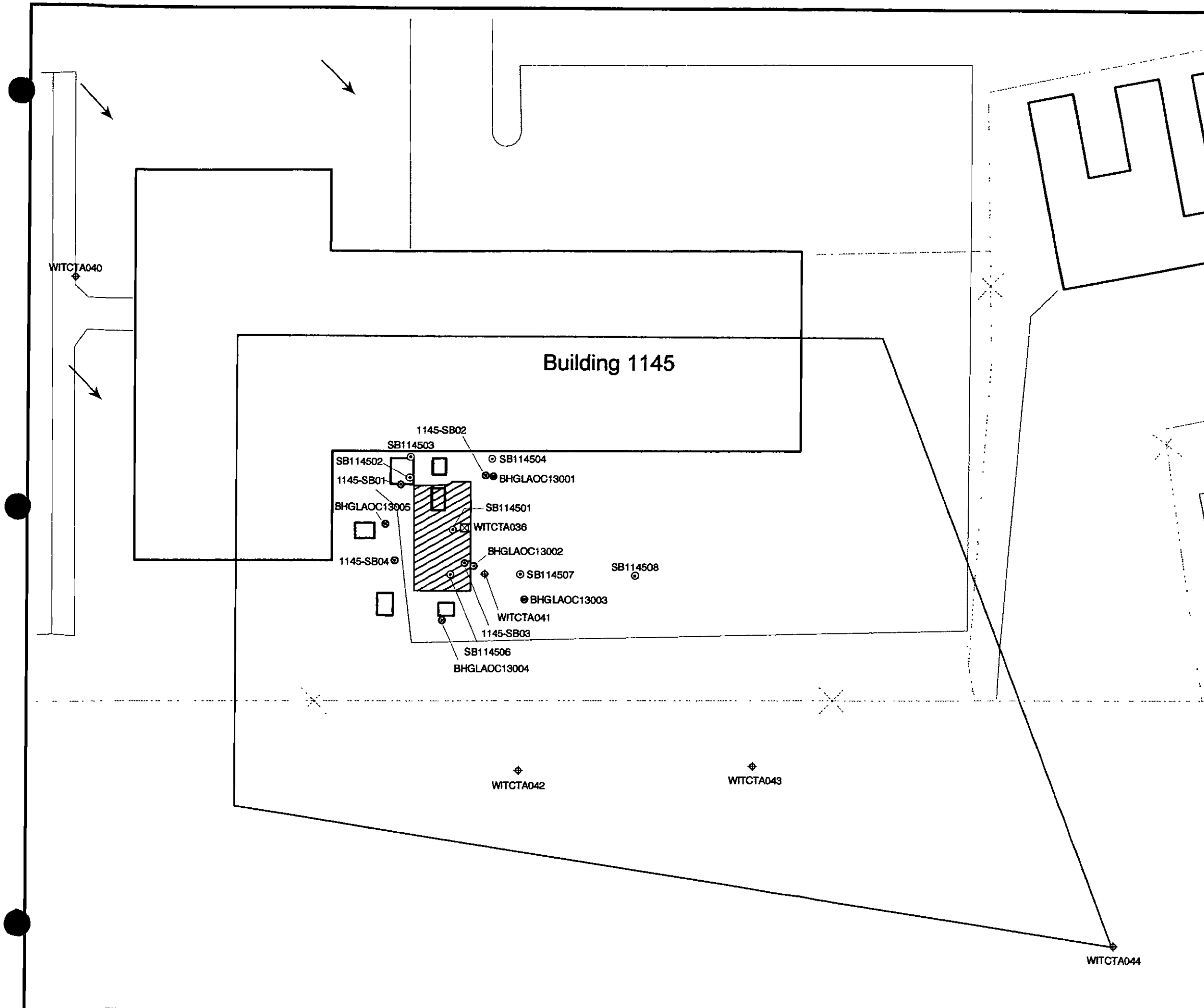
The only organic compounds detected above RRS 2 at the site were bis(2-ethylhexyl)phthalate in soils, and trichloroethene and vinyl chloride in groundwater. All detections of bis(2-ethylhexyl)phthalate are considered to be artifacts of the analytical process and are not indicative of an environmental impact. The detections of trichloroethene and vinyl chloride are associated with the TCE plume that exists under NAS Fort Worth JRB and are unrelated to site activities at AOC 13. The leading edge of this TCE plume has been found to be advancing under the site, and moving in a southeasterly direction.

RRS 1 detections of acetone, methylene chloride, and methyl ethyl ketone are considered to be artifacts of the analytical process and are not indicative of an environmental impact. All other organic compounds detected above RRS 1 values at the site were hydrocarbon VOCs and SVOCs associated with petroleum products, including fuels, oils, and lubricants. These compounds are delineated to RRS 1 or to decreasing concentrations. There is some evidence of an impact of low levels of VOCs on groundwater in the vicinity of AOC 13; however, the detections of VOCs in groundwater have generally decreased after the removal action, and are most likely the result of low levels of residual contamination at the site.

One surface soil sampling location, SB114507, shows some signs of contamination that do not meet the anticipated pattern of release from the obsolete OWS/UST unit. The detections at this location are isolated and occur in the surface interval only, and appear to be evidence either of a localized release that predates the construction of the concrete parking lot, or a small, localized amount of contamination present in the fill material used as base under the parking lot.

Pursuant with Chapter 335, Subchapter S, and Sections 335.555 through 335.560 of the TNRCC RRS, the conditions for applying RRS 2 (Closure/Remediation to Health-based Standards and Criteria) have been achieved, and closure of AOC 13 soils and groundwater is recommended. Analytes to be included in the soil RRS 2 deed certification survey are cadmium, chromium, zinc, TPH (DRO), benzene ethylbenzene, 2-methylnaphthalene, naphthalene, N-nitrosodiphenylamine, phenanthrene, pyrene, toluene, and xylenes. Other analytes detected above RRS 1 values were not considered to be COPCs; these analytes include those that were not confirmed by Phase II sampling (arsenic and lead), those that are likely to be laboratory artifacts (methylene chloride, acetone, methyl ethyl ketone, and bis(2-ethylhexyl)phthalate), those for which no MSC has been developed or are not listed in 40 CFR 264 Appendix IX (calcium, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, isopropylbenzene, n-butylbenzene, n-propylbenzene, and sec-butylbenzene), and those for which detections at the site appear to be extreme background values (antimony and selenium). Analytes to be included in the groundwater RRS 2 deed certification are ethylbenzene, toluene, and xylenes. Other analytes detected above RRS 1 values were not considered to be COPCs; these analytes include those that were not confirmed in subsequent sampling (chromium, cobalt, copper, 1,2-dichlorobenzene, benzene, and naphthalene), those analytes for which no MSC has been developed or are not listed in 40 CFR 264 Appendix IX (iron), and those chlorinated compounds associated with the TCE plume currently advancing beneath the site (1,1-dichloroethane, cis-1,2-dichloroethene, trichloroethene, and vinyl chloride). Should this RFI Report be accepted, a letter stating that closure of AOC 13 was carried out in accordance with Section 335.555, signed by the AFCEE representative, will be transmitted to TNRCC, along with a metes and bounds description of AOC 13. The metes and bounds description will correspond to the surveyed coordinates of the affected area shown in Figure 6.1, and will be filed with Tarrant County. A stamped and approved deed certification will be forwarded to TNRCC upon receipt by AFCEE.

FIGURE



HydroGeoLogic, Inc.—RCRA Facility Investigation Report
NAS Fort Worth JRB, Texas

Figure 6.1

Pr posed Area for RRS 2 Closure
AOC 13

U.S. Air Force Center for Environmental Excellence

Legend

- Fence
- Building / Structure
- Groundwater Flow Direction
- WITCTA042 — Existing Monitoring Well Location
- WITCTA036 — Abandoned Monitoring Well Location
- Excavation Area - 2000
- Proposed RRS 2 Survey Boundary

Soil Borings

- 1145-SB02 — Law Engineering - 1994 *
- SB114501 — IT Corporation - 1997/1998*
- BHGLAOC13002 — HydroGeoLogic Excavation Confirmation Soil Samples - 2000

* Survey data are unavailable and soil boring locations are approximations.

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SCALE IN FEET

Filename. X:\Afc001\16bdb\AOC13_RFI\Report
proposed area_RRS2 closure apr
Project: AFC001-16BDB
Created: 05/03/01 jbelcher
Revised. 06/01/01 cf
Map Source HydroGeoLogic, Inc
GIS Database

HYDRO GeoLogic INC.

TAB

SECTION 7.0

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627 127

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TAB

APPENDIX A

APPENDIX A

OWS/UST REMOVAL AND WASTE DISPOSAL DOCUMENTATION

A.1 TNRCC NOTIFICATION FORM

627 131

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION
UNDERGROUND & ABOVEGROUND STORAGE TANK
CONSTRUCTION NOTIFICATION FORM

1. [✓] Underground Storage Tank (UST) [ ] Aboveground Storage Tank (AST)

2. [ ] Stage I [ ] Stage II (Vapor Recovery) CARB order # _____

3. **TYPE OF CONSTRUCTION:** (Indicate all that apply)
   [ ] Installation [ ] Replacement [ ] Improvement
   [✓] Removal [ ] Abandonment [ ] Other (Specify) _____

4. **FACILITY LOCATION INFORMATION:**
   Facility Name: Hobby Shop
   Address/Location: (No P.O. Box) Building 1145 Hercules Ave.
   County: Tarrant City: NAS Ft. Worth JRB
   Facility No.: 0009696
   Telephone: 817-782-7167

5. **OWNER INFORMATION:**
   Owner: Air Force Center for Environmental Excellence
   Representative: Mike Dodyk
   Address: P.O. Box 27008
   City/State/Zip: NAS Ft. Worth JRB Texas 76127-0008
   Telephone: 817-782-7167

6. **CONSULTANT INFORMATION:**
   Company: Hydro Geologic, Inc.
   Representative: Brad Nielsen
   Address: 13740 Research Blvd. N-5
   City/State/Zip: Austin, Tx. 78751
   Telephone: 512-336-1170

7. **CONTRACTOR INFORMATION:**
   Company: Sunbelt Industrial Serv., Inc.
   Representative: Brent McClure
   Address: 2415 Collen St.
   City/State/Zip: Ft. Worth, Tx. 76107
   Telephone: 817-877-0866
   CRP#: 000337 ILP#: 000953

8. GENERAL DESCRIPTION OF PROPOSED UST/AST ACTIVITY:
   Removal of one (1) 1,050 gallon waste oil UST
   Removal and replacement of one 1500 gallon Oil/Water Separator

9. SCHEDULE/DATES FOR PROPOSED CONSTRUCTION:
   May 15-16, 2000

10. SUBMITTED BY (Signature) Brent McClure
    Title & Company: Vice President Sunbelt

11. MAIL COMPLETED FORM TO:
    Texas Natural Resource
    Conservation Commission
    Petroleum Storage Tank Division
    P.O. Box 13087
    Austin, Texas 78711-3087

TNRCC STAFF USE ONLY
Date Rec'd: _____
Region: _____
Remarks: _____
Tracking No.: _____
Logged By: _____

A.2 CERTIFICATES OF DESTRUCTION

CERTIFICATE OF DESTRUCTION

FOR

USED PETROLEUM STORAGE TANKS

KNOW ALL MEN BY THESE PRESENTS·

That the undersigned ***Sunbelt Industrial Services, 2415 Cullen Street, Fort Worth, Texas 76107***, did on ***May 16, 2000***, properly dispose of ***one (1) 1500 gallon*** oil water separator previously located at ***Building 1145 Hercules Ave., NAS FT. Worth JRB, Texas*** in accordance with API recommended guidelines 1604, 2015, 2217 and other regulations as appropriate, by properly cleaning the interior of the tank(s), by properly disposing of residual tank contents in accordance with all applicable local, state and federal regulations and destroying the tank(s), rendering it useless by ***cutting the tank(s) and scraping.***

Executed on this ***16th*** Day of ***May, 2000.***

Brent McClure

(Signature)

By: Brent McClure

Title Vice President

Company· Sunbelt Industrial Services

627 134

CERTIFICATE OF DESTRUCTION

FOR

USED PETROLEUM STORAGE TANKS

KNOW ALL MEN BY THESE PRESENTS

That the undersigned ***Sunbelt Industrial Services, 2415 Cullen Street, Fort Worth, Texas 76107,*** did on ***May 16, 2000***, properly dispose of ***one (1) 1050 gallon*** underground storage tank(s) previously located at ***Building 1145 Hercules Ave., NAS FT. Worth JRB, Texas*** in accordance with API recommended guidelines 1604, 2015, 2217 and other regulations as appropriate, by properly cleaning the interior of the tank(s), by properly disposing of residual tank contents in accordance with all applicable local, state and federal regulations and destroying the tank(s), rendering it useless by ***cutting the tank(s) and scraping.***

Executed on this ***16th*** Day of ***May, 2000.***

Brent McClure

(Signature)

By Brent McClure

Title Vice President

Company Sunbelt Industrial Services

A.3 LIQUID DISPOSAL MANIFESTS

627 136

Fluid Type: UST ☑ PST ☐

OFF-SPECIFICATION PRODUCT MANIFEST

US FILTER RECOVERY SERVICES (SOUTHWEST), INC.

GENERATOR INFORMATION	Generators U.S. EPA I.D. # (if applicable)	No. 122772
GENERATOR NAME Naval Air Station		TRUCK # 307265
ADDRESS Carswell Airforce Base	CITY	STATE Carts Hobby Shop ZIP
PHONE # X (817) 782-7167	CONTACT PERSON	

TRANSPORTER INFORMATION

US Filter Recovery Services (Southwest), Inc. 4415 East Greenwood Baytown, Texas 77520	STATE REGISTRATIONS # 81059 & A85348 U S EPA I D # TXD988089421
PHONE (800) 355-2383	U S D O T REGISTRATION # 381565

DESIGNATED FACILITY INFORMATION

NAME AND ADDRESS **US Filter Recovery Services (Southwest), Inc.** 2107 Quincy Street Dallas, TX 75212 (214) 637-6264	State Registration #39337 & A85347 U S EPA I D #TXD 987988359

HM	U.S. D.O.T. DESCRIPTION	CONTAINERS (GALLONS) DRUM	CONTAINERS (GALLONS) TANK	TOTAL QUANTITY (GALLONS)
X	Flammable Liquid, n o s., (Petroleum Product),3,UN1993, PG II		X	2294

ADDITIONAL INFORMATION: Emergency Contact Arthur L Radcliffe (800) 355-2383 or Chemtrec (800) 424-9300
North American Emergency Response Guide No 128 Placard as Flammable Liquid (UN1993), Materials is Off-Specification Fuel Product. See MSDS for additional information

GENERATORS CERTIFICATION I hereby declare the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highways according to applicable international and national governmental regulations
I certify that the material removed from the above premises is not hazardous waste as identified in 40 CFR Part 261, and does not contain PCB's as identified in 40 CFR Part 761 I verify the service times and explanations are correct
Is this a petroleum-contaminated media or debris defined under 40 CFR 261.4(b)(10) subject to corrective action under 40 CFR280? ☒ Yes ☐ No

PRINT/TYPE NAME	SIGNATURE	DATE
MICHAEL DODYK	Michael Dodyk	5-16-00

TRANSPORTER ACKNOWLEDGEMENT OF RECEIPT OF MATERIALS

PRINT/TYPE NAME	SIGNATURE	DATE	
M.McCallister	[signature]	5-16-00	Unit No 307265 Arrival Time 8:00 Departure Time 11:30

DISCREPANCY AND EXPLANATION SPACE
P/O W/O Tanks

DESIGNATED FACILITY ACKNOWLEDGEMENT OF RECEIPT OF MATERIALS

PRINT/TYPE NAME DTD
SIGNATURE Donnie Hamilton
DATE 5/17/00

TREATMENT FACILITY

☐ Baytown Treatment Facility
4415 East Greenwood
Baytown TX 77520
EPA ID # TXD988089421
State Reg # 81059 & A85348

☑ Corsicana Treatment Facility
2124 East Highway 31
Corsicana TX 75110
EPA ID # TXD988059291
State Reg # 20095

White Copy - Generator Original Pink Copy - Designated Facility Canary Copy - Transporter Green Copy - Generator's 1st Copy
EHS017 D1 (Rev 8-99)

627 137

Fluid Type: UST ☒ PST ☐

OFF-SPECIFICATION PRODUCT MANIFEST

US FILTER RECOVERY SERVICES (SOUTHWEST), INC.

GENERATOR INFORMATION	Generators U.S. EPA I.D. # (if applicable)	No. 123151
GENERATOR NAME Mike Dodyk Burbelt		TRUCK # 307265
ADDRESS P.O. Box 27708	CITY Carswell Airforce Base	STATE Ft. Worth TX ZIP
PHONE # X	CONTACT PERSON 817-782-7167	

TRANSPORTER INFORMATION

US Filter Recovery Services (Southwest), Inc. 4415 East Greenwood Baytown, Texas 77520	STATE REGISTRATIONS # 81059 & A85348 U S EPA I D. # TXD988089421
PHONE (800) 355-2383	U S D O T. REGISTRATION # 381565

DESIGNATED FACILITY INFORMATION

NAME AND ADDRESS **US Filter Recovery Services (Southwest), Inc.** 2107 Quincy Street Dallas, TX 75212 (214) 637-6264	State Registration #39337 & A85347 U S. EPA I D #TXD 987988359

HM	U.S. D.O.T. DESCRIPTION	CONTAINERS (GALLONS) DRUM	CONTAINERS (GALLONS) TANK	TOTAL QUANTITY (GALLONS)
X	Flammable Liquid, n o.s , (Petroleum Product),3,UN1993, PG II		X	317

ADDITIONAL INFORMATION: Emergency Contact Arthur L Radcliffe (800) 355-2383 or Chemtrec (800) 424-9300
North American Emergency Response Guide No 128, Placard as Flammable Liquid (UN1993), Materials is Off-Specification Fuel Product, See MSDS for additional information

GENERATORS CERTIFICATION I hereby declare the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highways according to applicable international and national governmental regulations
I certify that the material removed from the above premises is not hazardous waste as identified in 40 CFR Part 261, and does not contain PCB's as identified in 40 CFR Part 761 I verify the service times and explanations are correct
Is this a petroleum-contaminated media or debris defined under 40 CFR 261 4(b)(10) subject to corrective action under 40 CFR280? ☐ Yes ☒ No

PRINT/TYPE NAME	SIGNATURE	DATE
MICHAEL DODYK	Michael R Dodyk	5-19-00

TRANSPORTER ACKNOWLEDGEMENT OF RECEIPT OF MATERIALS

PRINT/TYPE NAME	SIGNATURE	DATE	
	Archie Sessions	5-19-00	Unit No 307265 Arrival Time 11:00 Departure Time 11:30

DISCREPANCY AND EXPLANATION SPACE
P/L Hole + Drums

DESIGNATED FACILITY ACKNOWLEDGEMENT OF RECEIPT OF MATERIALS

PRINT/TYPE NAME DSP
SIGNATURE [signature]
DATE 5/22/00

TREATMENT FACILITY

☐ Baytown Treatment Facility
4415 East Greenwood
Baytown TX 77520
EPA ID # TXD988089421
State Reg # 81059 & A85348

☑ Corsicana Treatment Facility
2124 East Highway 31
Corsicana TX 75110
EPA ID # TXD988059291
State Reg # 20095

White Copy - Generator Original Pink Copy - Designated Facility Canary Copy - Transporter Green Copy - Generator's 1st Copy

LHS017 D1 (Rev 8 99)

A.4 SOIL DISPOSAL MANIFESTS

42837 627 139

Waste Management Special Waste Services
P.O. Box 719
Lewisville, TX 75067
(972) 316-2296 / FAX (972) 316-2298

NON-HAZARDOUS MANIFEST

GENERATOR: _____ I.D. #: _____
ADDRESS: _____ SITE LOCATION: _____
CTY/ST: _____ PHONE: _____
Attn: _____

Description of Waste Materials		Profile Number	Quantity	Units
		20		Cubic Yards
				Gallons
				Drums

hereby certify that the above described materials are not hazardous wastes as defined by 40 CFR Part 261 and does not contain free liquids as defined by 40 CFR Part 260.10 or any applicable state law. Have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable regulations.

Generator Authorized Agent Name (Print) _____ Signature _____ Delivery Date 6-6-00

TRANSPORTER

TRANSPORTER NAME: _____ DRIVER NAME (Print): _____
ADDRESS: _____ TRUCK NUMBER: _____
CITY/ST.: _____ PHONE #: _____
TRANSPORTER ID # _____

I hereby acknowledge receipt of the above described materials were received from the generator listed above and delivered to the disposal facility listed below without incident.

Driver Signature _____ Shipment Date _____ Driver Signature _____ Delivery Date _____

DISPOSAL FACILITY

SITE NAME: **Westside Recycle and Disposal Facility** PHONE NUMBER: **817-244-3500**
ADDRESS: 12180 U.S. Hwy 80 W, Aledo, TX 76008 Permit # 1019A
I hereby acknowledge receipt of the above described materials.

Name of Authorized Agent (Print) _____ Signature _____ Receipt Date 6 12 00

White-Original Canary-Disposer Retain Pink-Transporter Retain Gold-Generator Retain

627 140

42838

Waste Management Special Waste Services
P.O. Box 719
Lewisville, TX 75067
(972) 316-2296 / FAX (972) 316-2298

NON-HAZARDOUS MANIFEST

GENERATOR: [illegible]
ADDRESS: [illegible]
CTY/ST: [illegible]
Attn: [illegible]

I.D. #: [illegible]
SITE LOCATION: [illegible]
PHONE: [illegible]

Description of Waste Materials		Profile Number	Quantity	Units
[illegible]	[illegible]	20		Cubic Yards
				Gallons
				Drums

I hereby certify that the above described materials are not hazardous wastes as defined by 40 CFR Part 261 and does not contain free liquids as defined by 40 CFR Part 260.10 or any applicable state law. Have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable regulations.

AFC EE Joe Zuniga — Generator Authorized Agent Name (Print)
[illegible] — Signature
6-00 — Delivery Date

TRANSPORTER

TRANSPORTER NAME: [illegible]
ADDRESS: [illegible]
CITY/ST.: [illegible] TX
TRANSPORTER ID # 274701

DRIVER NAME (Print): [illegible] +245
TRUCK NUMBER: TV + 159
PHONE #: 300 · 442 6323

I hereby acknowledge receipt of the above described materials were received from the generator listed above and delivered to the disposal facility listed below without incident.

[illegible] +245 6,6,00 — Driver Signature / Shipment Date
[illegible] +245 6,6,00 — Driver Signature / Delivery Date

DISPOSAL FACILITY

SITE NAME: **Westside Recycle and Disposal Facility** PHONE NUMBER: **817-244-3500**
ADDRESS: **12180 U.S. Hwy 80 W, Aledo, TX 76008** **Permit # 1019A**
I hereby acknowledge receipt of the above described materials.

[illegible] — Name of Authorized Agent (Print)
[illegible] — Signature
6/6/02 — Receipt Date

White-Original Canary-Disposer Retain Pink-Transporter Retain Gold-Generator Retain

42839

627 141

WM

Waste Management Special Waste Services
P.O. Box 719
Lewisville, TX 75067
(972) 316-2296 / FAX (972) 316-2298

NON-HAZARDOUS MANIFEST

GENERATOR: [illegible]
ADDRESS: [illegible]
CTY/ST: [illegible]
Attn: [illegible]

I.D. #: [illegible]
SITE LOCATION: [illegible]
PHONE: [illegible]

Description of Waste Materials		Profile Number	Quantity	Units
[illegible]	[illegible]	20		Cubic Yards
				Gallons
				Drums

I hereby certify that the above described materials are not hazardous wastes as defined by 40 CFR Part 261 and does not contain free liquids as defined by 40 CFR Part 260.10 or any applicable state law. Have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable regulations.

[illegible] Generator Authorized Agent Name (Print)

[illegible] Signature

6-6-00 Delivery Date

TRANSPORTER

TRANSPORTER NAME: [illegible]
ADDRESS: [illegible]
CITY/ST.: [illegible]
TRANSPORTER ID # [illegible]

DRIVER NAME (Print): RAY J H [illegible]
TRUCK NUMBER: 424
PHONE #: [illegible]

I hereby acknowledge receipt of the above described materials were received from the generator listed above and delivered to the disposal facility listed below without incident.

[illegible] 6/6/2000
Driver Signature Shipment Date

[illegible] 6/6/2000
Driver Signature Delivery Date

DISPOSAL FACILITY

SITE NAME: **Westside Recycle and Disposal Facility** PHONE NUMBER: **817-244-3500**
ADDRESS: **12180 U.S. Hwy 80 W, Aledo, TX 76008** **Permit # 1019A**
I hereby acknowledge receipt of the above described materials.

[illegible]
Name of Authorized Agent (Print)

[illegible]
Signature

[illegible]
Receipt Date

White-Original Canary-Disposer Retain Pink-Transporter Retain Gold-Generator Retain

627 142

42852

WM

Waste Management Special Waste Services
P.O. Box 719
Lewisville, TX 75067
(972) 316-2296 / FAX (972) 316-2298

NON-HAZARDOUS MANIFEST

GENERATOR: Air Force Center for Environmental Exc.
ADDRESS: 1145 Hercules
CTY/ST: NAS - Fort Worth TX
Attn: Michael Deayk 2 W

I.D. #: TX0571924042
SITE LOCATION: NAS - Fort Worth
PHONE: (817) 782-7167

Description of Waste Materials		Profile Number	Quantity	Units
Waste Hydrocarbon Impacted Soils	WS12270	20		Cubic Yards
				Gallons
				Drums

I hereby certify that the above described materials are not hazardous wastes as defined by 40 CFR Part 261 and does not contain free liquids as defined by 40 CFR Part 260.10 or any applicable state law. Have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable regulations.

[illegible] 6-6-00

Generator Authorized Agent Name (Print) | Signature | Delivery Date

TRANSPORTER

TRANSPORTER NAME: Chaney Trucking
ADDRESS: Hwy 114
CITY/ST.: Rhome, Texas
TRANSPORTER ID #

DRIVER NAME (Print): [illegible]
TRUCK NUMBER: [illegible]
PHONE #:

I hereby acknowledge receipt of the above described materials were received from the generator listed above and delivered to the disposal facility listed below without incident.

Driver Signature | Shipment Date | Driver Signature | Delivery Date

DISPOSAL FACILITY

SITE NAME: **Westside Recycle and Disposal Facility** PHONE NUMBER: **817-244-3500**
ADDRESS: **12180 U.S. Hwy 80 W, Aledo, TX 76008** **Permit # 1019A**
I hereby acknowledge receipt of the above described materials.

Sandra Miller | Sandra Miller 6.6.00

Name of Authorized Agent (Print) | Signature | Receipt Date

White-Original | Canary-Disposer Retain | Pink-Transporter Retain | Gold-Generator Retain

42853

627 143

WM

Waste Management Special Waste Services
P.O. Box 719
Lewisville, TX 75067
(972) 316-2296 / FAX (972) 316-2298

NON-HAZARDOUS MANIFEST

GENERATOR: Air Force Center for Environmental Exc.
ADDRESS: 1145 Hercules
CTY/ST: NAS - Fort Worth, TX
Attn: Michael Sedyh, P.E.

I.D. #: TX0571024042
SITE LOCATION: NAS - Fort Worth
PHONE: (817) 782-7167

Description of Waste Materials		Profile Number	Quantity	Units
Waste Hydrocarbon Impacted Soils	WS12270	20		Cubic Yards
				Gallons
				Drums

hereby certify that the above described materials are not hazardous wastes as defined by 40 CFR Part 261 and does not contain free liquids as defined by 40 CFR Part 260.10 or any applicable state law. Have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable regulations.

Generator Authorized Agent Name (Print) — Signature — Delivery Date: 6-6-00

TRANSPORTER

TRANSPORTER NAME: Chaney Trucking
ADDRESS: Hwy 114
CITY/ST.: Rhome, Texas
TRANSPORTER ID # 274701

DRIVER NAME (Print): CL SATTERN +245
TRUCK NUMBER: 139
PHONE #: 322-443-6323

I hereby acknowledge receipt of the above described materials were received from the generator listed above and delivered to the disposal facility listed below without incident.

Driver Signature — Shipment Date: 6/6/00
Driver Signature — Delivery Date: 6/6/00

DISPOSAL FACILITY

SITE NAME: **Westside Recycle and Disposal Facility** PHONE NUMBER: **817-244-3500**
ADDRESS: **12180 U.S. Hwy 80 W, Aledo, TX 76008** Permit # 1019A

I hereby acknowledge receipt of the above described materials

Name of Authorized Agent (Print) — Signature — Receipt Date

White-Original — Canary-Disposer Retain — Pink-Transporter Retain — Gold-Generator Retain

627 144

42854

Waste Management Special Waste Services
P.O. Box 719
Lewisville, TX 75067
(972) 316-2296 / FAX (972) 316-2298

NON-HAZARDOUS MANIFEST

GENERATOR: Air Force Center for Environmental Exc.
ADDRESS: 1145 Hercules
CITY/ST: NAS - Fort Worth, TX
Attn: Michael Dudek, P.E.

I.D. #: [illegible]
SITE LOCATION: [illegible]
PHONE: (817) 782-7167

Description of Waste Materials		Profile Number	Quantity	Units
Waste Hydrocarbon Impacted Soils	WS12270	20		Cubic Yards
				Gallons
				Drums

I hereby certify that the above described materials are not hazardous wastes as defined by 40 CFR Part 261 and does not contain free liquids as defined by 40 CFR Part 260.10 or any applicable state law. Have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable regulations.

SFC FE Jose Zuniga — Generator Authorized Agent Name (Print)
Jose Zuniga — Signature
6-6-00 — Delivery Date

TRANSPORTER

TRANSPORTER NAME: Chaney Trucking
ADDRESS: Hwy 114
CITY/ST.: Rhome, Texas
TRANSPORTER ID #

DRIVER NAME (Print): B. Bruce #110
TRUCK NUMBER: 425
PHONE #: 800-442-4323

I hereby acknowledge receipt of the above described materials were received from the generator listed above and delivered to the disposal facility listed below without incident.

B. Bruce #110 6/6/00 — Driver Signature, Shipment Date
B. Bruce #110 6/6/00 — Driver Signature, Delivery Date

DISPOSAL FACILITY

SITE NAME: **Westside Recycle and Disposal Facility** PHONE NUMBER: **817-244-3500**
ADDRESS: 12180 U.S. Hwy 80 W, Aledo, TX 76008 Permit # 1019A

I hereby acknowledge receipt of the above described materials.

Paul Frost — Name of Authorized Agent (Print)
Paul Frost — Signature
Receipt Date

White-Original Canary-Disposer Retain Pink-Transporter Retain Gold-Generator Retain

42855

627 145

Waste Management Special Waste Services
P.O. Box 719
Lewisville, TX 75067
(972) 316-2296 / FAX (972) 316-2298

NON-HAZARDOUS MANIFEST

GENERATOR: Air Force Center for Environmental Exc.
ADDRESS: 1145 Hercules
CTY/ST: NAS - Fort Worth, TX
Attn: Michael Dudek, P.E.

I.D. #: TX0571924042
SITE LOCATION: NAS - Fort Worth
PHONE: (817) 782-7167

Description of Waste Materials		Profile Number	Quantity	Units
Petro Hydrocarbon Impacted Soils	WS12270	20		Cubic Yards
				Gallons
				Drums

I hereby certify that the above described materials are not hazardous wastes as defined by 40 CFR Part 261 and does not contain free liquids as defined by 40 CFR Part 260.10 or any applicable state law. Have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable regulations.

[illegible] — Generator Authorized Agent Name (Print)
[signature] — Signature
6-6-00 — Delivery Date

TRANSPORTER

TRANSPORTER NAME: Chaney Trucking
ADDRESS: Hwy 114
CITY/ST.: Rhome, Texas
TRANSPORTER ID #

DRIVER NAME (Print): Troy Hitch 4000
TRUCK NUMBER: 259
PHONE #: 1800 444 6323

I hereby acknowledge receipt of the above described materials were received from the generator listed above and delivered to the disposal facility listed below without incident.

[signature] 6/6/00 — Driver Signature / Shipment Date
[signature] 06/06/00 — Driver Signature / Delivery Date

DISPOSAL FACILITY

SITE NAME: Westside Recycle and Disposal Facility
ADDRESS: 12180 U.S. Hwy 80 W, Aledo, TX 76008
PHONE NUMBER: 817-244-3500
Permit # 1019A

I hereby acknowledge receipt of the above described materials

Sandy Miller — Name of Authorized Agent (Print)
Sandy Miller 6/6/00 — Signature / Receipt Date

White-Original Canary-Disposer Retain Pink-Transporter Retain Gold-Generator Retain

627 146

42856

WM

Waste Management Special Waste Services
P.O. Box 719
Lewisville, TX 75067
(972) 316-2296 / FAX (972) 316-2298

NON-HAZARDOUS MANIFEST

GENERATOR: Air Force Center for Environmental Exc.
ADDRESS: 1145 Hercules
CTY/ST: NAS - Fort Worth TX
Attn: Michael Dodyk P.E.

I.D. #: TX0571924042
SITE LOCATION: NAS - Fort Worth
PHONE: (817) 782-7167

Description of Waste Materials		Profile Number	Quantity	Units
Waste Hydrocarbon Impacted Soils	WS12270	20		Cubic Yards
				Gallons
				Drums

I hereby certify that the above described materials are not hazardous wastes as defined by 40 CFR Part 261 and does not contain free liquids as defined by 40 CFR Part 260.10 or any applicable state law. Have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable regulations.

AFC EF Jose Zuniga — Generator Authorized Agent Name (Print)
[signature] — Signature
6-6-00 — Delivery Date

TRANSPORTER

TRANSPORTER NAME: Chaney Trucking
ADDRESS: Hwy 114
CITY/ST.: Phone Texas
TRANSPORTER ID # 274707

DRIVER NAME (Print): C. SATTERN #24
TRUCK NUMBER: 139
PHONE #: 800 448 6323

I hereby acknowledge receipt of the above described materials were received from the generator listed above and delivered to the disposal facility listed below without incident.

C. SATTERN #245 6/6/00 — Driver Signature, Shipment Date
C. SATTERN #245 6/6/00 — Driver Signature, Delivery Date

DISPOSAL FACILITY

SITE NAME: **Westside Recycle and Disposal Facility** PHONE NUMBER: **817-244-3500**
ADDRESS: **12180 U.S. Hwy 80 W, Aledo, TX 76008** **Permit # 1019A**
I hereby acknowledge receipt of the above described materials.

[signature] — Name of Authorized Agent (Print)
[signature] 6/6/0 — Signature, Receipt Date

White-Original Canary-Disposer Retain Pink-Transporter Retain Gold-Generator Retain

42857 627 147

Sub Sect [illegible]

WM

Waste Management Special Waste Services
P.O. Box 719
Lewisville, TX 75067
(972) 316-2296 / FAX (972) 316-2298

NON-HAZARDOUS MANIFEST

GENERATOR: Air Force Center for Environmental Exc.
ADDRESS: 1145 Hercules
CTY/ST: NAS - Fort Worth, TX
Attn: Michael Dedyk, P.E.

I.D. #: TX)571924042
SITE LOCATION: NAS - Fort Worth
PHONE: (817) 782-7167

Description of Waste Materials		Profile Number	Quantity	Units
Waste Hydrocarbon Impacted Soils	WS12270	20		Cubic Yards
				Gallons
				Drums

I hereby certify that the above described materials are not hazardous wastes as defined by 40 CFR Part 261 and does not contain free liquids as defined by 40 CFR Part 260.10 or any applicable state law. Have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable regulations.

AFC EE [illegible] Zuniga — Generator Authorized Agent Name (Print)
[illegible] — Signature
6-6-00 — Delivery Date

TRANSPORTER

TRANSPORTER NAME: Chaney Trucking
ADDRESS: Hwy 114
CITY/ST.: Rhome, Texas
TRANSPORTER ID #

DRIVER NAME (Print): [illegible]
TRUCK NUMBER: [illegible]
PHONE #:

I hereby acknowledge receipt of the above described materials were received from the generator listed above and delivered to the disposal facility listed below without incident.

[illegible] 6/6/2000 — Driver Signature, Shipment Date
[illegible] 6/6/2000 — Driver Signature, Delivery Date

DISPOSAL FACILITY

SITE NAME: Westside Recycle and Disposal Facility
ADDRESS: 12180 U.S. Hwy 80 W, Aledo, TX 76008
PHONE NUMBER: 817-244-3500
Permit # 1019A

I hereby acknowledge receipt of the above described materials.

Paula Frost — Name of Authorized Agent (Print)
Paula Frost 6/6/00 — Signature, Receipt Date

White-Original Canary-Disposer Retain Pink-Transporter Retain Gold-Generator Retain

627 148

42858

WM

Waste Management Special Waste Services
P.O. Box 719
Lewisville, TX 75067
(972) 316-2296 / FAX (972) 316-2298

NON-HAZARDOUS MANIFEST

GENERATOR: Air Force Center for Environmental Exc.
ADDRESS: 1145 Hercules
CTY/ST: NAS - Fort Worth, TX
Attn: Michael Dedyk, P.E.

I.D. #: TX9571924042
SITE LOCATION: NAS - Fort Worth
PHONE: (817) 782-7167

Description of Waste Materials		Profile Number	Quantity	Units
Waste Hydrocarbon Impacted Soils	WS12270	20		Cubic Yards
				Gallons
				Drums

I hereby certify that the above described materials are not hazardous wastes as defined by 40 CFR Part 261 and does not contain free liquids as defined by 40 CFR Part 260.10 or any applicable state law. Have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable regulations.

AFC EE Jose Zuniga
Generator Authorized Agent Name (Print)

Signature

Delivery Date

TRANSPORTER

TRANSPORTER NAME: Chaney Trucking
ADDRESS: Hwy 114
CITY/ST.: Rhome, Texas
TRANSPORTER ID #

DRIVER NAME (Print): Troy Hilton (400)
TRUCK NUMBER: 2591
PHONE #: 18004486327

I hereby acknowledge receipt of the above described materials were received from the generator listed above and delivered to the disposal facility listed below without incident.

Driver Signature 400 06/06/00
Shipment Date

Driver Signature (400) 06/06/00
Delivery Date

DISPOSAL FACILITY

SITE NAME: Westside Recycle and Disposal Facility PHONE NUMBER: 817-244-3500
ADDRESS: 12180 U.S. Hwy 80 W, Aledo, TX 76008 Permit # 1019A
I hereby acknowledge receipt of the above described materials.

Name of Authorized Agent (Print)
Signature
Receipt Date

White-Original Canary-Disposer Retain Pink-Transporter Retain Gold-Generator Retain

42859 627 149

WM

Waste Management Special Waste Services
P.O. Box 719
Lewisville, TX 75067
(972) 316-2296 / FAX (972) 316-2298

NON-HAZARDOUS MANIFEST

GENERATOR: Air Force Center for Environmental Exc.
ADDRESS: 1145 Hercules
CTY/ST: NAS - Fort Worth, TX
Attn: Michael Dodyk, P.E.

I.D. #: TX9571924042
SITE LOCATION: NAS - Fort Worth
PHONE: (817) 782-7167

Description of Waste Materials		Profile Number	Quantity	Units
Waste Hydrocarbon Impacted Soils	WS12270	20		Cubic Yards
				Gallons
				Drums

I hereby certify that the above described materials are not hazardous wastes as defined by 40 CFR Part 261 and does not contain free liquids as defined by 40 CFR Part 260.10 or any applicable state law. Have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable regulations.

AFC E E Jose Quintana — Generator Authorized Agent Name (Print)
[signature] — Signature
6-6-00 — Delivery Date

TRANSPORTER

TRANSPORTER NAME: Chaney Trucking
ADDRESS: Hwy 114
CITY/ST.: Rhome, Texas
TRANSPORTER ID #

DRIVER NAME (Print): Bill Boock
TRUCK NUMBER: 1125
PHONE #: 800-443-6323

I hereby acknowledge receipt of the above described materials were received from the generator listed above and delivered to the disposal facility listed below without incident.

B Bu[illegible] #110 — Driver Signature
6 16 1000 — Shipment Date
B Bu[illegible] #110 — Driver Signature
6 16 1000 — Delivery Date

DISPOSAL FACILITY

SITE NAME: **Westside Recycle and Disposal Facility** PHONE NUMBER: **817-244-3500**
ADDRESS: **12180 U.S. Hwy 80 W, Aledo, TX 76008** **Permit # 1019A**

I hereby acknowledge receipt of the above described materials.

Paula Frost — Name of Authorized Agent (Print)
Paula Frost — Signature
6/6/00 — Receipt Date

White-Original Canary-Disposer Retain Pink-Transporter Retain Gold-Generator Retain

627 150 42860

WM

Waste Management Special Waste Services
P.O. Box 719
Lewisville, TX 75067
(972) 316-2296 / FAX (972) 316-2298

NON-HAZARDOUS MANIFEST

GENERATOR: Air Force Center for Environmental Exc.
ADDRESS: 1145 Hercules
CTY/ST: NAS - Fort Worth TX
Attn: Michael Dodyk, P.E.

I.D. #: TX0571924042
SITE LOCATION: NAS Fort Worth
PHONE: (817) 782-7167

Description of Waste Materials		Profile Number	Quantity	Units
Waste Hydrocarbon Impacted Soils	WS12270		20	Cubic Yards
				Gallons
				Drums

I hereby certify that the above described materials are not hazardous wastes as defined by 40 CFR Part 261 and does not contain free liquids as defined by 40 CFR Part 260.10 or any applicable state law. Have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable regulations.

NFC EE Tom Zuliga — Generator Authorized Agent Name (Print)
Signature — Delivery Date 6-6-00

TRANSPORTER

TRANSPORTER NAME: Chaney Trucking
ADDRESS: Hwy 114
CITY/ST.: Rhome Texas
TRANSPORTER ID #

DRIVER NAME (Print): BILL BROOK
TRUCK NUMBER: 425
PHONE #: 800-442-6327

I hereby acknowledge receipt of the above described materials were received from the generator listed above and delivered to the disposal facility listed below without incident.

B. Brook #110 6 6 00 — Driver Signature, Shipment Date
B. Brook #110 6 6 00 — Driver Signature, Delivery Date

DISPOSAL FACILITY

SITE NAME: **Westside Recycle and Disposal Facility** PHONE NUMBER: **817-244-3500**
ADDRESS: **12180 U.S. Hwy 80 W, Aledo, TX 76008** **Permit # 1019A**
I hereby acknowledge receipt of the above described materials.

Name of Authorized Agent (Print) — Signature — Receipt Date

White-Original Canary-Disposer Retain Pink-Transporter Retain Gold-Generator Retain

42861 627 151

WM

Waste Management Special Waste Services
P.O. Box 719
Lewisville, TX 75067
(972) 316-2296 / FAX (972) 316-2298

NON-HAZARDOUS MANIFEST

GENERATOR: Air Force Center for Environmental Exc.
ADDRESS: 1145 Hercules
CTY/ST: NAS - Fort Worth, TX
Attn: Michael Dodyk, P.E.

I.D. #: TX0571924042
SITE LOCATION: NAS - Fort Worth
PHONE: (817) 782-7167

Description of Waste Materials		Profile Number	Quantity	Units
Waste Hydrocarbon Impacted Soils	WS12270	20	Cubic Yards	
			Gallons	
			Drums	

I hereby certify that the above described materials are not hazardous wastes as defined by 40 CFR Part 261 and does not contain free liquids as defined by 40 CFR Part 260.10 or any applicable state law. Have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable regulations

AFC FF Jose Zuniga — Generator Authorized Agent Name (Print)
Jose Zuniga — Signature
6-6-00 — Delivery Date

TRANSPORTER

TRANSPORTER NAME: Chaney Trucking
ADDRESS: Hwy 114
CITY/ST.: Rhome, Texas
TRANSPORTER ID # 274701

DRIVER NAME (Print): CLSATTERY +245
TRUCK NUMBER: TK 159
PHONE #: 800-448-6325

I hereby acknowledge receipt of the above described materials were received from the generator listed above and delivered to the disposal facility listed below without incident.

CLSATTERY — Driver Signature
6/6/00 — Shipment Date
CLSATTERY +245 — Driver Signature
6/6/00 — Delivery Date

DISPOSAL FACILITY

SITE NAME: Westside Recycle and Disposal Facility
ADDRESS. 12180 U.S. Hwy 80 W, Aledo, TX 76008
PHONE NUMBER: 817-244-3500
Permit # 1019A

I hereby acknowledge receipt of the above described materials.

Paula Frost — Name of Authorized Agent (Print)
Paula Frost — Signature
6/6/00 — Receipt Date

White-Original Canary-Disposer Retain Pink-Transporter Retain Gold-Generator Retain

627 152

42862

WM

Waste Management Special Waste Services
P.O. Box 719
Lewisville, TX 75067
(972) 316-2296 / FAX (972) 316-2298

NON-HAZARDOUS MANIFEST

GENERATOR: Air Force Center for Environmental Exc.
ADDRESS: 1145 Hercules
CTY/ST: NAS - Fort Worth TX
Attn: Michael Dodyk P.E.

I.D. #: TX0571924042
SITE LOCATION: NAS - Fort Worth
PHONE: (817) 782-7167

Description of Waste Materials		Profile Number	Quantity	Units
Waste Hydrocarbon Impacted Soils	WS12270	20	Cubic Yards	
			Gallons	
			Drums	

I hereby certify that the above described materials are not hazardous wastes as defined by 40 CFR Part 261 and does not contain free liquids as defined by 40 CFR Part 260.10 or any applicable state law. Have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable regulations.

AFC EE Jose Zuniga — Generator Authorized Agent Name (Print)
Jose Zuniga — Signature
6-6-00 — Delivery Date

TRANSPORTER

TRANSPORTER NAME: Chaney Trucking
ADDRESS: Hwy 114
CITY/ST.: Rhome Texas
TRANSPORTER ID #

DRIVER NAME (Print): Ray Shockley #37
TRUCK NUMBER: 424
PHONE #:

I hereby acknowledge receipt of the above described materials were received from the generator listed above and delivered to the disposal facility listed below without incident.

[signature] #77 — Driver Signature
6/6/2000 — Shipment Date
[signature] #97 — Driver Signature
6/6/2000 — Delivery Date

DISPOSAL FACILITY

SITE NAME: **Westside Recycle and Disposal Facility** PHONE NUMBER: **817-244-3500**
ADDRESS: **12180 U.S. Hwy 80 W, Aledo, TX 76008** **Permit # 1019A**

I hereby acknowledge receipt of the above described materials.

Paula Frost — Name of Authorized Agent (Print)
Paula Frost — Signature
6/6/00 — Receipt Date

White-Original Canary-Disposer Retain Pink-Transporter Retain Gold-Generator Retain

42863

627 153

WM

Waste Management Special Waste Services
P.O. Box 719
Lewisville, TX 75067
(972) 316-2296 / FAX (972) 316-2298

NON-HAZARDOUS MANIFEST

GENERATOR: Air Force Center for Environmental Exc.
ADDRESS: 1145 Hercules
CTY/ST: NAS - Fort Worth TX
Attn: Michael Dodyk P.E.

I.D. #: TX0571924042
SITE LOCATION: NAS - Fort Worth
PHONE: (817) 782-7167

Description of Waste Materials		Profile Number	Quantity	Units
Waste Hydrocarbon Impacted Soils	WS12270	20	Cubic Yards	
			Gallons	
			Drums	

hereby certify that the above described materials are not hazardous wastes as defined by 40 CFR Part 261 and does not contain free liquids as defined by 40 CFR Part 260.10 or any applicable state law. Have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable regulations.

Afree Jac Zuniga — Generator Authorized Agent Name (Print)
[signature] — Signature
6-6-00 — Delivery Date

TRANSPORTER

TRANSPORTER NAME: Chaney Trucking
ADDRESS: Hwy 114
CITY/ST.: Rhome, Texas
TRANSPORTER ID #

DRIVER NAME (Print): TRoy Hillow 400
TRUCK NUMBER: 250
PHONE #: 1900 442 6373

I hereby acknowledge receipt of the above described materials were received from the generator listed above and delivered to the disposal facility listed below without incident.

[signature] 400 06/06/00 — Driver Signature, Shipment Date
[signature] 400 06/06/00 — Driver Signature, Delivery Date

DISPOSAL FACILITY

SITE NAME: Westside Recycle and Disposal Facility
ADDRESS: 12180 U.S. Hwy 80 W, Aledo, TX 76008
PHONE NUMBER: 817-244-3500
Permit # 1019A

I hereby acknowledge receipt of the above described materials.

[signature] — Name of Authorized Agent (Print)
[signature] 6/6/00 — Signature, Receipt Date

White-Original Canary-Disposer Retain Pink-Transporter Retain Gold-Generator Retain

TAB

APPENDIX B

APPENDIX B

DATA QUALITY ASSESSMENT

DATA QUALITY ASSESSMENT
FINAL RCRA FACILITY INVESTIGATION REPORT
AREA OF CONCERN 13
NAS FORT WORTH JRB, TEXAS

1.0 FIELD QUALITY ASSURANCE/QUALITY CONTROL

Field quality control samples were collected as described in the following sections. Note that the general description of field QC elements is applicable to all sampling events at AOC 13; however, specific discussions of the number of QC samples collected, sample identification protocols, and the effects of field QC elements on data quality are provided only for those sampling events performed by HydroGeoLogic.

1.1 AMBIENT BLANKS

Ambient blanks consist 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). 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) to the samples during sample collection. Ambient blanks are handled like environmental samples and transported to the laboratory for analysis. Depending on the analytes of interest at the associated site(s), ambient blanks are analyzed for VOCs, benzene, toluene, ethylbenzene, and xylenes (BTEX), and dissolved gases. No ambient blanks were collected during HydroGeoLogic's groundwater monitoring or soil sampling activities.

1.2 EQUIPMENT BLANKS

An equipment blank is a sample of ASTM Type II reagent grade water poured over 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. Equipment blanks are collected immediately after equipment has been decontaminated. Each blank is analyzed for all laboratory analyses requested for the environmental samples collected at the site. One equipment blank is collected per day for each type of sampling equipment used. The equipment blanks HydroGeoLogic collected in association with AOC 13 included one associated with the 1999 groundwater investigation samples, two associated with the 2000 groundwater investigation samples, and one associated with the Phase II soil investigation. Note that samples collected using dedicated or disposable equipment will have no associated equipment blank.

1.3 TRIP BLANKS

A trip blank consists of a VOC sample vial filled at the laboratory with ASTM Type II reagent grade water, transported to the sampling site, handled like an environmental sample, and returned to the laboratory for analysis. Trip blanks are not opened in the field. Trip blanks are prepared only when samples are collected and analyzed for VOC (or BTEX) analytes. Trip blanks are used to assess the potential introduction of contaminants from sample containers or during the transportation and storage procedures. The trip blanks HydroGeoLogic collected in association with AOC 13 included five associated with the 1999 groundwater investigation samples, two associated with the 2000 groundwater investigation samples, one associated with the UST/OWS removal action samples, and one associated with the Phase II soil investigation.

1.4 FIELD DUPLICATES

Duplicate sample results are used to assess precision of the sample collection process. Precision of soil samples to be analyzed for VOCs is assessed from collocated samples because the compositing process required to obtain uniform samples could result in loss of the compounds of interest.

Duplicate samples are collected simultaneously, or in immediate succession, using identical recovery techniques, and treated in an identical manner during storage, transportation, and analysis. The sample containers are assigned an identification number in the field so that they cannot be identified (blind duplicate) as duplicate samples by laboratory personnel performing the analysis. Specific locations were designated for collection of field duplicate samples prior to the beginning of sample collection. One duplicate sample was collected for every 10 field samples collected. HydroGeoLogic collected one field duplicate from a soil boring installed during the Phase II soil sampling investigation in association with AOC 13,.

1.5 SAMPLE TRACKING PROTOCOL

Each HydroGeoLogic sample was assigned a unique identification number that describes where and what type of sample was collected. The number that was used in the field consisted of a maximum 15 digit alphanumeric code. The alphanumeric code was truncated to 12 digits once the data was ready to be entered into the Environmental Resources Program Information Management System (ERPIMS) database. This system is explained in detail as follows:

abbbccccc(c)ddd-ee

where:

a — represents the medium (e.g., W=monitoring well, P = excavation perimeter sample, B = soil boring, U = surface water sample, or E = sediment sample).

bbb — represents HydroGeoLogic, Inc. designation (e.g. HGL)

ccccc(c) represents the SWMU/AOC number (e.g., SWMU16, SWMU42, AOC15.)

ddd represents the location identification (e.g., 001, 002)

-ee represents the interval from which the sample was obtained within a soil boring; i.e., a surface soil sample would be -01, a 5-foot sample would be -02, etc. These three digits are truncated prior to entry of the data into the ERPIMS database, as depth information in that database differentiates between sample intervals from the same boring.

For example, the surface soil sample collected from soil boring 2 located at AOC 13 was identified as "BHGLAOC13002-01." The second sample collected from soil boring 02 located at AOC13 was identified as "BHGLAOC13002-03", because it was collected from the 10-foot interval (no 5-foot interval sample was collected at this location).

In order to ensure that field duplicates were analyzed "blind" by the laboratory, each field duplicate sample was assigned a unique sample identification number that did not associate the duplicate with its parent sample. For example, the soil sample collected in the second sampling interval from BHGLSWMU13005 was identified as DUP06. The locations from which field duplicate samples were to be collected were determined prior to mobilization. Documentation was maintained in the field sampling logbook, and on the sample collection log, 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:

xxymmddy

where:

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

mmddyy represents the date (month, day, year)

For example, an equipment blank obtained on December 11, 2000, would be identified as EB121100. When multiple field blanks of a particular type were collected on the same day, alphabetical suffixes (A, B, C, and so forth) were attached to the identification numbers.

The Project Geologist/Field Coordinator maintained a list detailing 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 on a specific date.

2.0 LABORATORY ANALYSIS

Soil and groundwater samples collected as part of this RFI were analyzed for the lists of analytes presented in Section 3 of the RFI Report. HydroGeoLogic's sampling and analysis methodologies were in accordance with the Basewide QAPP (HydroGeoLogic, 1998) for the 1999 groundwater sampling events, and the 2000 Basewide QAPP (HydroGeoLogic, 2000b) for the OWS/UST removal action sampling, the Phase II soil investigation, and the 2000 groundwater sampling event. (These two documents will be jointly referenced as "the Basewide QAPP" in the remainder of this appendix.) The previous sampling programs conducted by Law and IT were performed in accordance with project-specific planning and QC documents.

2.1 ANALYTICAL PROGRAM

The data generated by this project is of sufficient quality and quantity to meet the overall project objective, which is closure of AOC 13 under the TNRCC RRS program. Data from the following categories were required for this study:

Site Characterization - Data were used to evaluate physical and chemical properties of soil. The data were also used to characterize the nature and extent of any contaminants detected.

Health and Safety - Data were used to establish the level of protection needed for the sampling team and other site-related personnel. These data were gathered by the use of organic vapor monitors during intrusive activities.

A combination of screening level data and definitive level data was used during this RFI. Health and safety data were collected as screening data. All soil and water samples were analyzed following EPA SW846 protocols, or by other methods requiring a comparable level of QC rigor. The definitions of screening data and definitive data, as established by the Data Quality Objectives Process for Superfund Interim Final Guidance (EPA/540/G-93/071, 1993) are described below:

- Screening Data with Definitive Confirmation - Screening data can be generated by rapid, less precise methods of analysis with less rigorous sample preparation. Sample preparation steps may be restricted to simple procedures such as dilution with a solvent, instead of elaborate extraction/digestion and cleanup. Screening data provides analyte identification and quantification. Although the quantification may be determined using analytical methods with QA/QC procedures and criteria associated with definitive data, screening data without associated confirmation data are not considered to be data of known quality.

- Definitive Data - Definitive data were generated using rigorous analytical methods, such as approved EPA reference methods. Data are analyte-specific, with confirmation of analyte identity and concentration. These methods produce

tangible raw data (e.g., chromatograms, spectra, digital values) in the form of paper printouts or computer-generated electronic files. Data may be generated at the site or at an off-site location, as long as the QA/QC requirements are satisfied. For the data to be definitive, either analytical or total measurement error must be determined.

The data generated by the laboratory analysis of samples were sufficiently sensitive to allow comparison of the results to the TNRCC RRS. The Basewide QAPP describes each method that was performed as part of the investigation and outlines the quality assurance measures the contract laboratory must follow. The methods of analysis selected for samples collected from NAS Fort Worth JRB produced screening as well as definitive data.

2.2 QUALITY ASSURANCE/QUALITY CONTROL PROGRAM

The primary project QA/QC document is the Basewide QAPP. The 1998 version of this document is based on versions 1.1 and 2.0 of AFCEE's Model QAPP, with some base-specific modifications. The 2000 version of the QAPP incorporates elements of the AFCEE Model QAPP, version 3.0, and updates to SW-846 methods. These documents are supplemented by the laboratory's Quality Assurance Plan. Together, these documents detail the requirements that must be followed in order to generate data of the level of quality required to support the project decision-making process. Among the requirements contained in these documents is the requirement for review of the data at several levels at the laboratory. Each benchtop chemist is responsible for a 100 percent review of all data generated, as is each laboratory section manager (or designee). Subsequent to analyst review, 10 percent of data are reviewed by the laboratory QA department prior to assembly of each data report. Each final data report is reviewed by the laboratory project manager prior to release from the laboratory.

2.2.1 Laboratory QA/QC Program

HydroGeoLogic's subcontractor laboratory QA/QC program was maintained in overall accordance with the Basewide QAPP. Where the laboratory performance was not in accordance with QAPP criteria, the affected data were qualified in the data validation process. The Data Validation Reports for HydroGeoLogic samples are presented in Appendix F. In order to provide data meeting the requirements for definitive data, the following QC elements were used by the laboratory to provide QC data applicable to the analytical results: laboratory control samples (LCSs), matrix spike/matrix spike duplicate (MS/MSD) samples, surrogate recoveries, internal standard performance, method blanks and calibration, instrument tuning and calibration, second source calibration checks, confirmation columns/detectors, interference check samples, recovery tests, laboratory duplicates, and serial dilutions. A description of each laboratory QC element can be found in Section 4.0 of the Basewide QAPP. The frequency and acceptance criteria for each laboratory QC element are described in general in Sections 4.0 and 8.0 of the Basewide QAPP, and in the method-specific subsections of Section 7.0 of the Basewide QAPP.

2.2.2 QA Activities

On March 25 and 26, 1998, the HydroGeoLogic project chemist, assisted by a Law Engineering project chemist, performed a QA audit of the facilities and practices of the analytical laboratory at Recra Labnet[1] in University Park, Illinois. The auditors reviewed the laboratory's Quality Assurance Plan, evaluated the laboratory's recent state certification performance evaluation sample results, reviewed the laboratory's standard operating procedures, and conducted an on-site inspection of the laboratory's facility. The laboratory was found to have sufficient expertise, resources, and procedures to generate definitive and legally defensible data.

2.2.3 QA/QC Program Performance

Evaluation of the project QC and analytical data provided by the laboratory showed that there was general compliance with the QA/QC program. There were cases where individual analytes or QC elements did not meet program criteria. If these QC failures were serious enough, the laboratory performed re-analysis after attempting corrective action. Where re-analysis was not performed or corrective action was not successful, the data were qualified in accordance with the method-specific requirements of Section 7.0 and the general requirements of Section 8.0 of the Basewide QAPP.

2.2.4 Completeness

Completeness was calculated for data generated from HydroGeoLogic's field sampling efforts at AOC 13. The validated project data set includes results from OWS/UST removal and Phase II RFI soil sampling, and the 1999 and 2000 rounds of groundwater sampling.

A total of 2,250 data points were generated by the analyses of project soil samples collected by HydroGeoLogic (OWS/UST removal action and Phase II investigation). Of these, 58 were rejected due to failure to achieve QA/QC program requirements. HydroGeoLogic's project soil data completeness is calculated to be 98.31 percent, which meets the project soil data completeness goal of 90 percent.

A total of 1,004 data points were generated by the analyses of project groundwater samples collected by HydroGeoLogic (this total also includes one soil SPLP extract, which is analyzed as a water sample). Of these, 16 were rejected due to failure to achieve QA/QC program requirements. HydroGeoLogic's project water data completeness is calculated to be 98.41 percent, which meets the project water data completeness goal of 95 percent.

[1] RCRA Labnet is currently doing business as Severn Trent Services.

3.0 DATA QUALITY EVALUATION

This section describes the analytical methods and quality control program utilized for the RFI of AOC 13 at NAS Fort Worth JRB. The analytical methods used for the analysis of the field samples are described in the Basewide QAPP.

3.1 DATA QUALITY EVALUATION OBJECTIVE

The objective of the DQE is to provide a professional review of the analytical data packages submitted by the laboratory. The DQE consists of a review of laboratory QC data and field QC data. This review is performed to indicate which data are usable, usable with qualification, or unusable. The analytical procedures used to generate field sample data are 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. One hundred percent of the field sample data generated during HydroGeoLogic's sampling activities were validated against the requirements of the Basewide QAPP.

The following items of laboratory QC data are 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 is evaluated through evaluating field duplicates, field blanks, field documentation, and shipping criteria.

After the laboratory data were received and validated, data entry and QC operations were performed on the laboratory's electronic data deliverables (EDDs) to ensure that each EDD was complete, correct, and compatible with the ERPIMS format. An EDD report in the ERPIMS format will be provided to AFCEE.

Data generated by the Law and IT sampling efforts were validated at project-specific frequencies, and were validated against the project-specific criteria required by the applicable QAPP.

3.2 METHODOLOGY FOR DATA QUALITY ASSESSMENT

The analytical results for samples HydroGeoLogic collected from AOC 13 were validated by HydroGeoLogic, or by HydroGeoLogic's validation subcontractor, Environmental Data

Services, Inc. (EDS) of Concord, New Hampshire. The data were evaluated in accordance with the procedures and acceptance criteria contained in the Basewide QAPP. All results from definitive analytical methods were evaluated with respect to the requirements of definitive data at the equivalent of a EPA level III review. The data review identified those data that were unusable due to serious QC deficiencies, as well as other data that were affected by QC problems but not of sufficient severity to warrant rejection. Rejected data were qualified 'R', while qualifiers of lesser severity were applied to usable data where necessary. The level III validation reports for each sample delivery group (SDG) are included in Appendix F.

Subsequent to the data validation process, the required data validation qualifiers were entered into the project database. The accuracy the validation and data entry process was checked at all stages. The "as received" accuracy of each EDD for each data package was verified by comparing the contents of each EDD to the hardcopy of that data package at a 10 percent rate. The accuracy of the validation qualifiers was also checked on the final database output at a rate of 10 percent.

TAB

APPENDIX C

APPENDIX C

SURVEY DATA

Soil Boring Survey Points

HydroGeoLogic, Inc.
Prime Contract No. F41624-95-D-8005
Subcontract AFC01I

SUBCONTRACTOR:
Baird, Hampton & Brown, Inc.

Description	Soil Boring	Northing	Easting	Ground Elevation
AOC 13	1145-SB01	Not available	Not available	Not available
AOC 13	1145-SB02	Not available	Not available	Not available
AOC 13	1145-SB03	Not available	Not available	Not available
AOC 13	1145-SB04	Not available	Not available	Not available
AOC 13	SB114501	Not available	Not available	Not available
AOC 13	SB114502	Not available	Not available	Not available
AOC 13	SB114503	Not available	Not available	Not available
AOC 13	SB114504	Not available	Not available	Not available
AOC 13	SB114506	Not available	Not available	Not available
AOC 13	SB114507	Not available	Not available	Not available
AOC 13	SB114508	Not available	Not available	Not available
AOC 13	BHGLAOC13001	6963198.96	2299644.66	577.98
AOC 13	BHGLAOC13002	6963171.14	2299638.75	577.4
AOC 13	BHGLAOC13003	6963160 84	2299654.60	576 95
AOC 13	BHGLAOC13004	6963154.39	2299628.93	576.88
AOC 13	BHGLAOC13005	6963184.04	2299611.28	578.01

Note: All coordinate values are NAD83 State Plane Coordinates, Texas North Central Zone, Feet.

Monitoring Well Survey Points

HydroGeoLogic, Inc.
Prime Contract No. F41624-95-D-8005
Subcontract AFC01I

SUBCONTRACTOR:
Baird, Hampton & Brown, Inc.

Well	Northing	Easting	Ground Elevation	Status	Category
WITCTA036	6963182.94	2299635.79	Not available	Abandoned	Monitoring Well
WITCTA040	6963259.78	2299514.54	579.50	Active	Monitoring Well
WITCTA041	6963168.75	2299642.10	578.43	Active	Monitoring Well
WITCTA042	6963108.38	2299653.16	576.76	Active	Monitoring Well
WITCTA043	6963110.05	2299724.86	576.72	Active	Monitoring Well
WITCTA044	6963055.72	2299836.00	576.35	Active	Monitoring Well

Note. All coordinate values are NAD83 State Plane Coordinates, Texas North Central Zone, Feet.

TAB

APPENDIX D

APPENDIX D

HYDROGEOLOGIC ANALYTICAL DATA SUMMARY TABLES

Table D.1
AOC 13 OWS Removal Confirmation Soil and SPLP Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	PHGL1145-E1 10 ft	PHGL1145-E2 10 ft	PHGL1145-E3 15 ft	PHGL1145-E4 15 ft	PHGL1145-E5 10 ft
SW6010	Arsenic	mg/kg	2.8 F	1.5 F	1.4 F	1.3 F	2.1 F
SW6010	Barium	mg/kg	115	116	86.3	93.1	125
SW6010	Beryllium	mg/kg	0.79	0.79	0.63	0.68	0.82
SW6010	Cadmium	mg/kg	0.27 F	0.33 F	0.2 F	0.26 F	0.37 F
SW6010	Chromium, total	mg/kg	14	16.7	13 9	17.9	18.6
SW6010	Cobalt	mg/kg	3 9 F	4 F	3.6 F	3.6 F	4.2 F
SW6010	Copper	mg/kg	9 F	10.1 F	7.6 F	10.6 F	8.8 F
SW6010	Nickel	mg/kg	9 2 F	9.9 F	8.1 F	10 F	9.9
SW6010	Tin	mg/kg	10.8 UJ	10.7 UJ	10.5 UJ	11.3 UJ	9.9 UJ
SW6010	Vanadium	mg/kg	28 2 F	29 8 F	22.9 F	31.5 F	34.6
SW6010	Zinc	mg/kg	27 F	31.5 F	24.1 F	33.9	31.3
SW7041	Antimony	mg/kg	0.55 UJ	0.55 UJ	0.57 UJ	0.56 UJ	0.51 UJ
SW7191	Chromium, total	mg/L	NA	NA	NA	NA	NA
SW7421	Lead	mg/kg	5 F	6.2 F	4.7 F	4.6 F	4.6 F
SW7471	Mercury	mg/kg	0.04 U	0 04 U	0.04 U	0.04 U	0.04 U
SW7740	Selenium	mg/kg	0.33 UJ	1.7 U	0.34 UJ	1.7 U	0.31 UJ
SW7761	Silver	mg/kg	0.22 UJ	0.22 UJ	0.23 UJ	0.23 UJ	0.21 UJ
SW7841	Thallium	mg/kg	1.1 UJ	1.1 UJ	1.1 UJ	1.1 UJ	1 UJ
SW8260B	1,1,1,2-Tetrachloroethane	mg/kg	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
SW8260B	1,1,1-Trichloroethane	mg/kg	0.005 U	0.005 U	0.005 U	0.005 U	0 005 U
SW8260B	1,1,2,2-Tetrachloroethane	mg/kg	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
SW8260B	1,1,2-Trichloroethane	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U
SW8260B	1,1-Dichloroethane	mg/kg	0.002 U	0.002 U	0.002 U	0.002 F	0.002 U
SW8260B	1,1-Dichloroethene	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U
SW8260B	1,2,3-Trichloropropane	mg/kg	0.006 U	0 006 U	0.006 U	0.006 U	0.006 U

Table D.1 (continued)
AOC 13 OWS Removal Confirmation Soil and SPLP Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	PHGL1145-E1 10 ft	PHGL1145-E2 10 ft	PHGL1145-E3 15 ft	PHGL1145-E4 15 ft	PHGL1145-E5 10 ft
SW8260B	1,2-Dibromo-3-chloropropane	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U
SW8260B	1,2-Dibromoethane (Ethylene dibromide)	mg/kg	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
SW8260B	1,2-Dichloroethane	mg/kg	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
SW8260B	1,2-Dichloropropane	mg/kg	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
SW8260B	2-Chloro-1,3-butadiene	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U
SW8260B	2-Hexanone	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U
SW8260B	Acetone	mg/kg	0.046	0.01	0.018	0.22	0.042
SW8260B	Acetonitrile	mg/kg	0.049 U	0.049 U	0.05 U	0.051 U	0 048 U
SW8260B	Acrolein	mg/kg	0.12 U	0.12 U	0.12 U	0.13 U	0.12 U
SW8260B	Acrylonitrile	mg/kg	0.049 U	0.049 U	0.05 U	0.051 U	0.048 U
SW8260B	Allyl chloride (3-Chloropropene)	mg/kg	0.012 U	0.012 U	0.012 U	0.013 U	0.012 U
SW8260B	Benzene	mg/kg	0.002 U	0 002 U	0.002 U	0.004	0.002 U
SW8260B	Bromodichloromethane	mg/kg	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
SW8260B	Bromoform	mg/kg	0.006 U	0.006 U	0.006 U	0 006 U	0.006 U
SW8260B	Bromomethane	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U
SW8260B	Carbon disulfide	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U
SW8260B	Carbon tetrachloride	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U
SW8260B	Chlorobenzene	mg/kg	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
SW8260B	Chloroethane	mg/kg	0.006 U	0.006 U	0.006 U	0 006 U	0.006 U
SW8260B	Chloroform	mg/kg	0.002 U	0.002 U	0.002 U	0 002 U	0.002 U
SW8260B	Chloromethane	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U
SW8260B	cis-1,2-Dichloroethene	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U
SW8260B	cis-1,3-Dichloropropene	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U
SW8260B	Dibromochloromethane	mg/kg	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
SW8260B	Dibromomethane	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U

Table D.1 (continued)
AOC 13 OWS Removal Confirmation Soil and SPLP Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	PHGL1145-E1 10 ft	PHGL1145-E2 10 ft	PHGL1145-E3 15 ft	PHGL1145-E4 15 ft	PHGL1145-E5 10 ft
SW8260B	Dichlorodifluoromethane	mg/kg	0.006 U	0.006 U	0.006 U	0 006 U	0.006 U
SW8260B	Ethyl methacrylate	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U
SW8260B	Ethylbenzene	mg/kg	0.002 F	0.004 U	0.004 U	0.067	0.004 U
SW8260B	Iodomethane (Methyl iodide)	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U
SW8260B	Isobutanol	mg/kg	0.24 U	0.24 U	0.25 U	0.26 U	0.24 U
SW8260B	m,p-Xylene (sum of isomers)	mg/kg	0.006	0.006 U	0.006 U	0.14	0.006 U
SW8260B	Methyl ethyl ketone (2-Butanone)	mg/kg	0.006 U	0.006 U	0.006 U	0.023	0.007
SW8260B	Methyl isobutyl ketone (4-Methyl-2-pentanone)	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U
SW8260B	Methyl methacrylate	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U
SW8260B	Methylacrylonitrile (Methacrylonitrile)	mg/kg	0.006 U	0.006 U	0 006 U	0.006 U	0.006 U
SW8260B	Methylene chloride	mg/kg	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
SW8260B	o-Xylene (1,2-Dimethylbenzene)	mg/kg	0.004 F	0.006 U	0 006 U	0.091	0.006 U
SW8260B	Pentachloroethane	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U
SW8260B	Propane nitrile (Propionitrile)	mg/kg	0.024 U	0.024 U	0.025 U	0.026 U	0.024 U
SW8260B	Styrene	mg/kg	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
SW8260B	tert-Butyl methyl ether	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U
SW8260B	Tetrachloroethene (PCE)	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U
SW8260B	Toluene	mg/kg	0.003 F	0.006 U	0.006 U	0.009	0.006 U
SW8260B	Trans-1,2-Dichloroethene	mg/kg	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
SW8260B	trans-1,3-Dichloropropene	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U
SW8260B	trans-1,4-Dichloro-2-butene	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U
SW8260B	Trichloroethene (TCE)	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U
SW8260B	Trichlorofluoromethane	mg/kg	0.005 R	0.005 R	0.005 R	0.005 U	0.005 R
SW8260B	Vinyl acetate	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U
SW8260B	Vinyl chloride	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U

Table D.1 (continued)
AOC 13 OWS Removal Confirmation Soil and SPLP Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	PHGL1145-E1 10 ft	PHGL1145-E2 10 ft	PHGL1145-E3 15 ft	PHGL1145-E4 15 ft	PHGL1145-E5 10 ft
SW8270C	1,2,4,5-Tetrachlorobenzene	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	1,2,4-Trichlorobenzene	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	1,2-Dichlorobenzene	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	1,3,5-Trinitrobenzene	mg/kg	1.6 U	1.6 U	1.6 U	1.7 U	1.6 U
SW8270C	1,3-Dichlorobenzene	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	1,3-Dinitrobenzene	mg/kg	0.81 U	0.81 U	0.81 U	0.85 U	0.79 U
SW8270C	1,4-Dichlorobenzene	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	1,4-Dioxane (p-Dioxane)	mg/kg	1.6 U	1.6 U	1.6 U	1.7 U	1.6 U
SW8270C	1,4-Naphthoquinone	mg/kg	2 U	2 U	2 U	2.1 U	2 U
SW8270C	1-Naphthylamine	mg/kg	0.81 U	0.81 U	0 81 U	0.85 U	0.79 U
SW8270C	2,2'-Oxybis(1-chloropropane)	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	2,3,4,6-Tetrachlorophenol	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	2,4,5-Trichlorophenol	mg/kg	2 U	2 U	2 U	2.1 U	2 U
SW8270C	2,4,6-Trichlorophenol	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	2,4-Dichlorophenol	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	2,4-Dimethylphenol	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	2,4-Dinitrophenol	mg/kg	2 R	2 R	2 U	2.1 R	2 R
SW8270C	2,4-Dinitrotoluene	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	2,6-Dichlorophenol	mg/kg	0.4 U	0.4 U	0.41 U	0 43 U	0.4 U
SW8270C	2,6-Dinitrotoluene	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	2-Acetylaminofluorene	mg/kg	0.81 U	0.81 U	0.81 U	0.85 U	0.79 U
SW8270C	2-Aminonaphthalene (beta-Naphthylamine)	mg/kg	0.81 U	0.81 U	0.81 U	0.85 U	0.79 U
SW8270C	2-Chloronaphthalene	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	2-Chlorophenol	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	2-Methylnaphthalene	mg/kg	0.4 U	0.4 U	0.41 U	2	0.4 U

Table D.1 (continued)
AOC 13 OWS Removal Confirmation Soil and SPLP Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	PHGL1145-E1 10 ft	PHGL1145-E2 10 ft	PHGL1145-E3 15 ft	PHGL1145-E4 15 ft	PHGL1145-E5 10 ft
SW8270C	2-Methylphenol (o-Cresol)	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	2-Nitroaniline	mg/kg	2 U	2 U	2 U	2.1 U	2 U
SW8270C	2-Nitrophenol	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	2-Picoline (alpha-Picoline)	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	3,3'-Dichlorobenzidine	mg/kg	0.81 U	0.81 U	0.81 U	0.85 U	0.79 U
SW8270C	3,3'-Dimethylbenzidine	mg/kg	2 U	2 U	2 U	2.1 U	2 U
SW8270C	3-Methylcholanthrene	mg/kg	0.4 U	0 4 U	0.41 U	0.43 U	0.4 U
SW8270C	3-Nitroaniline	mg/kg	2 U	2 U	2 U	2.1 U	2 U
SW8270C	4,6-Dinitro-2-methylphenol	mg/kg	2 U	2 U	2 UJ	2.1 U	2 U
SW8270C	4-Aminobiphenyl (4-Biphenylamine)	mg/kg	0.81 U	0.81 U	0.81 U	0.85 U	0.79 U
SW8270C	4-Bromophenyl phenyl ether	mg/kg	0.4 U	0.4 U	0.41 UJ	0.43 U	0.4 U
SW8270C	4-Chloro-3-methylphenol	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	4-Chloroaniline	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	4-Chlorophenyl phenyl ether	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	4-Nitroaniline	mg/kg	2 U	2 U	2 U	2.1 U	2 U
SW8270C	4-Nitrophenol	mg/kg	2 U	2 U	2 U	2.1 U	2 U
SW8270C	4-Nitroquinoline-1-oxide	mg/kg	2 U	2 U	2 U	2.1 U	2 U
SW8270C	5-Nitro-o-toluidine	mg/kg	0.81 U	0.81 U	0.81 U	0.85 U	0.79 U
SW8270C	7,12-Dimethylbenzo(a)anthracene	mg/kg	0.81 U	0.81 U	0.81 U	0.85 U	0.79 U
SW8270C	Acenaphthene	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	Acenaphthylene	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	Acetophenone	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	alpha, alpha-Dimethylphenethylamine	mg/kg	2 U	2 U	2 U	2.1 U	2 U
SW8270C	Aniline (Phenylamine, Aminobenzene)	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	Anthracene	mg/kg	0.4 U	0.4 U	0.41 UJ	0.43 U	0.4 U

Table D.1 (continued)
AOC 13 OWS Removal Confirmation Soil and SPLP Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	PHGL1145-E1 10 ft	PHGL1145-E2 10 ft	PHGL1145-E3 15 ft	PHGL1145-E4 15 ft	PHGL1145-E5 10 ft
SW8270C	Aramite (total)	mg/kg	0.81 U	0.81 U	0.81 U	0.85 U	0.79 U
SW8270C	Benzo(a)anthracene	mg/kg	0.4 U	0.4 U	0.41 U	0.12 F	0.4 U
SW8270C	Benzo(a)pyrene	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	Benzo(b)fluoranthene	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	Benzo(g,h,i)perylene	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	Benzo(k)fluoranthene	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	Benzoic acid	mg/kg	2 R	2 R	2 U	2.1 R	2 R
SW8270C	Benzyl alcohol	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	Benzyl butyl phthalate	mg/kg	0.4 U	0 4 U	0.41 U	0.43 U	0.4 U
SW8270C	bis(2-Chloroethoxy)methane	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	bis(2-Chloroethyl)ether (2-Chloroethyl ether)	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	bis(2-Ethylhexyl)phthalate	mg/kg	0.4 U	0.4 U	0.41 U	0.58	0.4 U
SW8270C	Chlorobenzilate	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	Chrysene	mg/kg	0.4 U	0.4 U	0.41 U	0.092 F	0.4 U
SW8270C	Cresols, m & p	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	Diallate (total of cis and trans isomers)	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	Dibenz(a,h)anthracene	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	Dibenzofuran	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	Diethyl phthalate	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0 4 U
SW8270C	Dimethyl phthalate	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0 4 U
SW8270C	Di-n-butyl phthalate	mg/kg	0.4 U	0.4 U	0.41 UJ	0.43 U	0.4 U
SW8270C	Di-n-octyl phthalate	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	Dinoseb	mg/kg	0.81 U	0.81 U	0.81 U	0.85 U	0.79 U
SW8270C	Diphenylamine	mg/kg	0.4 U	0.4 U	0.41 U	0 43 U	0.4 U
SW8270C	Ethyl methanesulfonate	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U

Table D.1 (continued)
AOC 13 OWS Removal Confirmation Soil and SPLP Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	PHGL1145-E1 10 ft	PHGL1145-E2 10 ft	PHGL1145-E3 15 ft	PHGL1145-E4 15 ft	PHGL1145-E5 10 ft
SW8270C	Fluoranthene	mg/kg	0.4 U	0.4 U	0.41 UJ	0.43 U	0.4 U
SW8270C	Fluorene	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	Hexachlorobenzene	mg/kg	0.4 U	0.4 U	0.41 UJ	0 43 U	0.4 U
SW8270C	Hexachlorobutadiene	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	Hexachlorocyclopentadiene	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	Hexachloroethane	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	Hexachlorophene	mg/kg	6.1 U	6.1 U	6.1 U	6.4 U	5.9 U
SW8270C	Hexachloropropene	mg/kg	2 U	2 U	2 U	2.1 U	2 U
SW8270C	Indeno(1,2,3-c,d)pyrene	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	Isophorone	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	Isosafrole	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	Methapyrilene	mg/kg	2 U	2 U	2 U	2 1 U	2 U
SW8270C	Methyl methanesulfonate	mg/kg	0.81 U	0.81 U	0.81 U	0.85 U	0.79 U
SW8270C	Naphthalene	mg/kg	0.4 U	0.4 U	0.41 U	0.89	0.4 U
SW8270C	Nitrobenzene	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	N-Nitrosodiethylamine	mg/kg	0.81 U	0.81 U	0.81 U	0 85 U	0.79 U
SW8270C	N-Nitrosodimethylamine	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	N-Nitrosodi-n-butylamine	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	N-Nitrosodi-n-propylamine	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	N-Nitrosodiphenylamine	mg/kg	0.4 U	0.4 U	0.41 UJ	0.43 U	0.4 U
SW8270C	N-Nitrosomethylethylamine	mg/kg	0.81 U	0.81 U	0.81 U	0.85 U	0.79 U
SW8270C	N-Nitrosomorpholine	mg/kg	0.81 U	0.81 U	0.81 U	0.85 U	0.79 U
SW8270C	N-Nitrosopiperidine	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	N-Nitrosopyrrolidine	mg/kg	2 U	2 U	2 U	2.1 U	2 U
SW8270C	o-Toluidine	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U

Table D.1 (continued)
AOC 13 OWS Removal Confirmation Soil and SPLP Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	PHGL1145-E1 10 ft	PHGL1145-E2 10 ft	PHGL1145-E3 15 ft	PHGL1145-E4 15 ft	PHGL1145-E5 10 ft
SW8270C	p-Dimethylaminoazobenzene	mg/kg	0.81 U	0.81 U	0.81 U	0.85 U	0.79 U
SW8270C	Pentachlorobenzene	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	Pentachloronitrobenzene	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	Pentachlorophenol	mg/kg	2 U	2 U	2 UJ	2.1 U	2 U
SW8270C	Phenacetin	mg/kg	0.81 U	0.81 U	0.81 U	0.85 U	0.79 U
SW8270C	Phenanthrene	mg/kg	0.4 U	0.4 U	0.41 UJ	0 28 F	0.4 U
SW8270C	Phenol	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
SW8270C	p-Phenylenediamine	mg/kg	1.6 U	1.6 U	1.6 U	1.7 U	1.6 U
SW8270C	Pronamide	mg/kg	0.81 U	0 81 U	0 81 U	0.85 U	0 79 U
SW8270C	Pyrene	mg/kg	0.4 U	0.4 U	0.41 U	0.28 F	0.4 U
SW8270C	Pyridine	mg/kg	0.81 R	0.81 R	0 81 R	0.85 R	0.79 R
SW8270C	Safrole	mg/kg	0.4 U	0.4 U	0.41 U	0.43 U	0.4 U
TX1005	TPH	mg/kg	50 U	50 U	50 U	54	50 U
TX1005	GRO	mg/kg	50 U	50 U	50 U	50 U	50 U
TX1005	DRO	mg/kg	50 U	50 U	8.2 F	49 F	50 U

Table D.1 (continued)
AOC 13 OWS Removal Confirmation Soil and SPLP Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	PHGL1145-N1 10 ft	PHGL1145-S1 10 ft	PHGL1145-W1 10 ft	PHGL1145-W2 10 ft	PHGL1145-W2 10 ft SPLP	PHGL1145-W3 10 ft
SW6010	Arsenic	mg/kg	1.8 F	1.9 F	1.3 F	0.59 F	NA	1.7 F
SW6010	Barium	mg/kg	93.9	101	110	108	NA	110
SW6010	Beryllium	mg/kg	0 61	0.71	0 88	0.79	NA	0.77
SW6010	Cadmium	mg/kg	0.27 F	0.25 F	0.31 F	0.22 F	NA	0.26 F
SW6010	Chromium, total	mg/kg	13 2	15.6	18.6	18.9	NA	12.5
SW6010	Cobalt	mg/kg	3.4 F	4 F	3.7 F	4 8 F	NA	3.5 F
SW6010	Copper	mg/kg	8 F	7.7 F	10.8	7.4 F	NA	9.1 F
SW6010	Nickel	mg/kg	7.5 F	9.2 F	10 7	10.6 F	NA	8.6 F
SW6010	Tin	mg/kg	10 UJ	10.9 UJ	10.6 UJ	10.7 UJ	NA	10.3 UJ
SW6010	Vanadium	mg/kg	27.4 F	31.6 F	32.1	26 7 F	NA	27.6 F
SW6010	Zinc	mg/kg	37.8	26.3 F	35.1	30.2 F	NA	24.9 F
SW7041	Antimony	mg/kg	0.54 UJ	0.54 UJ	0.56 UJ	0.57 UJ	NA	0.56 UJ
SW7191	Chromium, total	mg/L	NA	NA	NA	NA	0.0056 F	NA
SW7421	Lead	mg/kg	5.3 F	4.9 F	5 5 F	5 F	NA	3.9 F
SW7471	Mercury	mg/kg	0.04 U	0.04 U	0.04 U	0.04 U	NA	0 04 U
SW7740	Selenium	mg/kg	0.32 UJ	0.32 UJ	1.7 U	1.7 UJ	NA	1.7 UJ
SW7761	Silver	mg/kg	0.21 UJ	0 21 UJ	0.22 UJ	0.23 UJ	NA	0.23 UJ
SW7841	Thallium	mg/kg	1.1 UJ	1.1 UJ	1.1 UJ	1.1 UJ	NA	1.1 UJ
SW8260B	1,1,1,2-Tetrachloroethane	mg/kg	0.004 U	0 004 U	0.004 U	0.004 U	NA	0.004 U
SW8260B	1,1,1-Trichloroethane	mg/kg	0.005 U	0.005 U	0.005 U	0.005 U	NA	0.005 U
SW8260B	1,1,2,2-Tetrachloroethane	mg/kg	0.002 U	0.002 U	0.002 U	0.002 U	NA	0.002 U
SW8260B	1,1,2-Trichloroethane	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	NA	0.006 U
SW8260B	1,1-Dichloroethane	mg/kg	0 002 U	0.002 U	0.002 U	0.002 U	NA	0.002 U
SW8260B	1,1-Dichloroethene	mg/kg	0.006 U	0.006 U	0.006 U	0 006 U	NA	0.006 U

Table D.1 (continued)
AOC 13 OWS Removal Confirmation Soil and SPLP Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	PHGL1145-N1 10 ft	PHGL1145-S1 10 ft	PHGL1145-W1 10 ft	PHGL1145-W2 10 ft	PHGL1145-W2 10 ft SPLP	PHGL1145-W3 10 ft
SW8260B	1,2,3-Trichloropropane	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	NA	0.006 U
SW8260B	1,2-Dibromo-3-chloropropane	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	NA	0.006 U
SW8260B	1,2-Dibromoethane (Ethylene dibromide)	mg/kg	0.004 U	0.004 U	0.004 U	0.004 U	NA	0.004 U
SW8260B	1,2-Dichloroethane	mg/kg	0.004 U	0.004 U	0.004 U	0.004 U	NA	0.004 U
SW8260B	1,2-Dichloropropane	mg/kg	0.002 U	0.002 U	0.002 U	0.002 U	NA	0.002 U
SW8260B	2-Chloro-1,3-butadiene	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	NA	0.006 U
SW8260B	2-Hexanone	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	NA	0.006 U
SW8260B	Acetone	mg/kg	0.14	0.006 U	0.006 U	0.006 U	NA	0.006 U
SW8260B	Acetonitrile	mg/kg	0.048 U	0.048 U	0.049 U	0.049 U	NA	0.048 U
SW8260B	Acrolein	mg/kg	0.12 U	0.12 U	0.12 U	0.12 U	NA	0.12 U
SW8260B	Acrylonitrile	mg/kg	0.048 U	0.048 U	0.049 U	0.049 U	NA	0.048 U
SW8260B	Allyl chloride (3-Chloropropene)	mg/kg	0.012 U	0.012 U	0.012 U	0.012 U	NA	0.012 U
SW8260B	Benzene	mg/kg	0.002 U	0.002 U	0.002 U	0.002 U	NA	0.002 U
SW8260B	Bromodichloromethane	mg/kg	0.005 U	0.005 U	0.005 U	0.005 U	NA	0.005 U
SW8260B	Bromoform	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	NA	0.006 U
SW8260B	Bromomethane	mg/kg	0.006 U	0.006 U	0 006 U	0.006 U	NA	0.006 U
SW8260B	Carbon disulfide	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	NA	0.006 U
SW8260B	Carbon tetrachloride	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	NA	0.006 U
SW8260B	Chlorobenzene	mg/kg	0.002 U	0.002 U	0.002 U	0.002 U	NA	0.002 U
SW8260B	Chloroethane	mg/kg	0.006 U	0 006 U	0.006 U	0.006 U	NA	0.006 U
SW8260B	Chloroform	mg/kg	0.002 U	0.002 U	0.002 U	0.002 U	NA	0.002 U
SW8260B	Chloromethane	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	NA	0.006 U

Table D.1 (continued)
AOC 13 OWS Removal Confirmation Soil and SPLP Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	PHGL1145-N1 10 ft	PHGL1145-S1 10 ft	PHGL1145-W1 10 ft	PHGL1145-W2 10 ft	PHGL1145-W2 10 ft SPLP	PHGL1145-W3 10 ft
SW8260B	cis-1,2-Dichloroethene	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	NA	0.006 U
SW8260B	cis-1,3-Dichloropropene	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	NA	0.006 U
SW8260B	Dibromochloromethane	mg/kg	0.004 U	0.004 U	0.004 U	0.004 U	NA	0.004 U
SW8260B	Dibromomethane	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	NA	0.006 U
SW8260B	Dichlorodifluoromethane	mg/kg	0.006 U	0 006 U	0.006 U	0.006 U	NA	0.006 U
SW8260B	Ethyl methacrylate	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	NA	0.006 U
SW8260B	Ethylbenzene	mg/kg	0.036	0 004 U	0.004 U	0.004 U	NA	0.004 U
SW8260B	Iodomethane (Methyl iodide)	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	NA	0.006 U
SW8260B	Isobutanol	mg/kg	0.24 U	0 24 U	0.24 U	0.24 U	NA	0.24 U
SW8260B	m,p-Xylene (sum of isomers)	mg/kg	0 12	0.006 U	0.006 U	0.006 U	NA	0.006 U
SW8260B	Methyl ethyl ketone (2-Butanone)	mg/kg	0.013	0 006 U	0.006 U	0.006 U	NA	0.006 U
SW8260B	Methyl isobutyl ketone (4-Methyl-2-pentanone)	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	NA	0.006 U
SW8260B	Methyl methacrylate	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	NA	0.006 U
SW8260B	Methylacrylonitrile (Methacrylonitrile)	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	NA	0.006 U
SW8260B	Methylene chloride	mg/kg	0.002 U	0.002 U	0.002 U	0.002 U	NA	0.002 U
SW8260B	o-Xylene (1,2-Dimethylbenzene)	mg/kg	0.082	0.006 U	0.006 U	0.006 U	NA	0.006 U
SW8260B	Pentachloroethane	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	NA	0.006 U
SW8260B	Propane nitrile (Propionitrile)	mg/kg	0.024 U	0.024 U	0.024 U	0.024 U	NA	0.024 U
SW8260B	Styrene	mg/kg	0.002 U	0.002 U	0.002 U	0.002 U	NA	0.002 U
SW8260B	tert-Butyl methyl ether	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	NA	0.006 U
SW8260B	Tetrachloroethene (PCE)	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	NA	0.006 U

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Table D.1 (continued)
AOC 13 OWS Removal Confirmation Soil and SPLP Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	PHGL1145-N1 10 ft	PHGL1145-S1 10 ft	PHGL1145-W1 10 ft	PHGL1145-W2 10 ft	PHGL1145-W2 10 ft SPLP	PHGL1145-W3 10 ft
SW8260B	Toluene	mg/kg	0.013	0.006 U	0.006 U	0.006 U	NA	0.006 U
SW8260B	Trans-1,2-Dichloroethene	mg/kg	0.004 U	0.004 U	0.004 U	0.004 U	NA	0.004 U
SW8260B	trans-1,3-Dichloropropene	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	NA	0.006 U
SW8260B	trans-1,4-Dichloro-2-butene	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	NA	0.006 U
SW8260B	Trichloroethene (TCE)	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	NA	0.006 U
SW8260B	Trichlorofluoromethane	mg/kg	0.005 U	0.005 R	0.005 R	0.005 R	NA	0.005 R
SW8260B	Vinyl acetate	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	NA	0.006 U
SW8260B	Vinyl chloride	mg/kg	0.006 U	0.006 U	0.006 U	0.006 U	NA	0.006 U
SW8270C	1,2,4,5-Tetrachlorobenzene	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	1,2,4-Trichlorobenzene	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	1,2-Dichlorobenzene	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	1,3,5-Trinitrobenzene	mg/kg	1.6 U	1.6 U	1.6 U	1.6 U	NA	1.6 U
SW8270C	1,3-Dichlorobenzene	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	1,3-Dinitrobenzene	mg/kg	0.8 U	0.8 U	0.81 U	0.8 U	NA	0.8 U
SW8270C	1,4-Dichlorobenzene	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	1,4-Dioxane (p-Dioxane)	mg/kg	1.6 U	1.6 U	1.6 U	1.6 U	NA	1.6 U
SW8270C	1,4-Naphthoquinone	mg/kg	2 U	2 U	2 U	2 U	NA	2 U
SW8270C	1-Naphthylamine	mg/kg	0.8 U	0.8 U	0.81 U	0.8 U	NA	0.8 U
SW8270C	2,2'-Oxybis(1-chloropropane)	mg/kg	0.4 U	0 4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	2,3,4,6-Tetrachlorophenol	mg/kg	0.4 U	0.4 U	0.4 U	0 4 U	NA	0.4 U
SW8270C	2,4,5-Trichlorophenol	mg/kg	2 U	2 U	2 U	2 U	NA	2 U
SW8270C	2,4,6-Trichlorophenol	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	2,4-Dichlorophenol	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	2,4-Dimethylphenol	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U

Table D.1 (continued)
AOC 13 OWS Removal Confirmation Soil and SPLP Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	PHGL1145-N1 10 ft	PHGL1145-S1 10 ft	PHGL1145-W1 10 ft	PHGL1145-W2 10 ft	PHGL1145-W2 10 ft SPLP	PHGL1145-W3 10 ft
SW8270C	2,4-Dinitrophenol	mg/kg	2 R	2 R	2 R	2 R	NA	2 R
SW8270C	2,4-Dinitrotoluene	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	2,6-Dichlorophenol	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0 4 U
SW8270C	2,6-Dinitrotoluene	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	2-Acetylaminofluorene	mg/kg	0.8 U	0.8 U	0 81 U	0.8 U	NA	0.8 U
SW8270C	2-Aminonaphthalene (beta-Naphthylamine)	mg/kg	0.8 U	0.8 U	0.81 U	0.8 U	NA	0.8 U
SW8270C	2-Chloronaphthalene	mg/kg	0.4 U	0.4 U	0 4 U	0.4 U	NA	0.4 U
SW8270C	2-Chlorophenol	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	2-Methylnaphthalene	mg/kg	1.1	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	2-Methylphenol (o-Cresol)	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	2-Nitroaniline	mg/kg	2 U	2 U	2 U	2 U	NA	2 U
SW8270C	2-Nitrophenol	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	2-Picoline (alpha-Picoline)	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	3,3'-Dichlorobenzidine	mg/kg	0.8 U	0.8 U	0.81 U	0.8 U	NA	0.8 U
SW8270C	3,3'-Dimethylbenzidine	mg/kg	2 U	2 U	2 U	2 U	NA	2 U
SW8270C	3-Methylcholanthrene	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	3-Nitroaniline	mg/kg	2 U	2 U	2 U	2 U	NA	2 U
SW8270C	4,6-Dinitro-2-methylphenol	mg/kg	2 U	2 U	2 U	2 U	NA	2 U
SW8270C	4-Aminobiphenyl (4-Biphenylamine)	mg/kg	0.8 U	0.8 U	0.81 U	0.8 U	NA	0.8 U
SW8270C	4-Bromophenyl phenyl ether	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	4-Chloro-3-methylphenol	mg/kg	0.4 U	0.4 U	0 4 U	0.4 U	NA	0.4 U
SW8270C	4-Chloroaniline	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U

Table D.1 (continued)
AOC 13 OWS Removal Confirmation Soil and SPLP Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	PHGL1145-N1 10 ft	PHGL1145-S1 10 ft	PHGL1145-W1 10 ft	PHGL1145-W2 10 ft	PHGL1145-W2 10 ft SPLP	PHGL1145-W3 10 ft
SW8270C	4-Chlorophenyl phenyl ether	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	4-Nitroaniline	mg/kg	2 U	2 U	2 U	2 U	NA	2 U
SW8270C	4-Nitrophenol	mg/kg	2 U	2 U	2 U	2 U	NA	2 U
SW8270C	4-Nitroquinoline-1-oxide	mg/kg	2 U	2 U	2 U	2 U	NA	2 U
SW8270C	5-Nitro-o-toluidine	mg/kg	0.8 U	0.8 U	0.81 U	0.8 U	NA	0.8 U
SW8270C	7,12-Dimethylbenzo(a)anthracene	mg/kg	0.8 U	0.8 U	0.81 U	0.8 U	NA	0.8 U
SW8270C	Acenaphthene	mg/kg	0.4 U	0.4 U	0 4 U	0.4 U	NA	0.4 U
SW8270C	Acenaphthylene	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	Acetophenone	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	alpha, alpha-Dimethylphenethylamine	mg/kg	2 U	2 U	2 U	2 U	NA	2 U
SW8270C	Aniline (Phenylamine, Aminobenzene)	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	Anthracene	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	Aramite (total)	mg/kg	0.8 U	0.8 U	0.81 U	0.8 U	NA	0.8 U
SW8270C	Benzo(a)anthracene	mg/kg	0.1 F	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	Benzo(a)pyrene	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	Benzo(b)fluoranthene	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	Benzo(g,h,i)perylene	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	Benzo(k)fluoranthene	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	Benzoic acid	mg/kg	2 R	2 R	2 R	2 R	NA	2 R
SW8270C	Benzyl alcohol	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	Benzyl butyl phthalate	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	bis(2-Chloroethoxy)methane	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U

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Table D.1 (continued)
AOC 13 OWS Removal Confirmation Soil and SPLP Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	PHGL1145-N1 10 ft	PHGL1145-S1 10 ft	PHGL1145-W1 10 ft	PHGL1145-W2 10 ft	PHGL1145-W2 10 ft SPLP	PHGL1145-W3 10 ft
SW8270C	bis(2-Chloroethyl)ether (2-Chloroethyl ether)	mg/kg	0.4 U	0 4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	bis(2-Ethylhexyl)phthalate	mg/kg	0.54	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	Chlorobenzilate	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	Chrysene	mg/kg	0.069 F	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	Cresols, m & p	mg/kg	0.4 U	0.4 U	0 4 U	0.4 U	NA	0 4 U
SW8270C	Diallate (total of cis and trans isomers)	mg/kg	0.4 U	0 4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	Dibenz(a,h)anthracene	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	Dibenzofuran	mg/kg	0.4 U	0 4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	Diethyl phthalate	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	Dimethyl phthalate	mg/kg	0.4 U	0.4 U	0 4 U	0.4 U	NA	0.4 U
SW8270C	Di-n-butyl phthalate	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0 4 U
SW8270C	Di-n-octyl phthalate	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	Dinoseb	mg/kg	0.8 U	0.8 U	0.81 U	0.8 U	NA	0.8 U
SW8270C	Diphenylamine	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	Ethyl methanesulfonate	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	Fluoranthene	mg/kg	0.4 U	0.4 U	0 4 U	0.4 U	NA	0.4 U
SW8270C	Fluorene	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	Hexachlorobenzene	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	Hexachlorobutadiene	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	Hexachlorocyclopentadiene	mg/kg	0.4 U	0 4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	Hexachloroethane	mg/kg	0.4 U	0.4 U	0 4 U	0.4 U	NA	0.4 U
SW8270C	Hexachlorophene	mg/kg	6 U	6 U	6 U	6 U	NA	6 U

Table D.1 (continued)
AOC 13 OWS Removal Confirmation Soil and SPLP Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	PHGL1145-N1 10 ft	PHGL1145-S1 10 ft	PHGL1145-W1 10 ft	PHGL1145-W2 10 ft	PHGL1145-W2 10 ft SPLP	PHGL1145-W3 10 ft
SW8270C	Hexachloropropene	mg/kg	2 U	2 U	2 U	2 U	NA	2 U
SW8270C	Indeno(1,2,3-c,d)pyrene	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	Isophorone	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	Isosafrole	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	Methapyrilene	mg/kg	2 U	2 U	2 U	2 U	NA	2 U
SW8270C	Methyl methanesulfonate	mg/kg	0.8 U	0.8 U	0.81 U	0.8 U	NA	0.8 U
SW8270C	Naphthalene	mg/kg	0.36 F	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	Nitrobenzene	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	N-Nitrosodiethylamine	mg/kg	0.8 U	0.8 U	0.81 U	0.8 U	NA	0.8 U
SW8270C	N-Nitrosodimethylamine	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	N-Nitrosodi-n-butylamine	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	N-Nitrosodi-n-propylamine	mg/kg	0.4 U	0 4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	N-Nitrosodiphenylamine	mg/kg	0.4 U	0.4 U	0 4 U	0.4 U	NA	0.4 U
SW8270C	N-Nitrosomethylethylamine	mg/kg	0.8 U	0.8 U	0.81 U	0.8 U	NA	0.8 U
SW8270C	N-Nitrosomorpholine	mg/kg	0.8 U	0.8 U	0.81 U	0.8 U	NA	0.8 U
SW8270C	N-Nitrosopiperidine	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	N-Nitrosopyrrolidine	mg/kg	2 U	2 U	2 U	2 U	NA	2 U
SW8270C	o-Toluidine	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	p-Dimethylaminoazobenzene	mg/kg	0.8 U	0.8 U	0.81 U	0.8 U	NA	0.8 U
SW8270C	Pentachlorobenzene	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	Pentachloronitrobenzene	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	Pentachlorophenol	mg/kg	2 U	2 U	2 U	2 U	NA	2 U
SW8270C	Phenacetin	mg/kg	0.8 U	0.8 U	0.81 U	0.8 U	NA	0.8 U
SW8270C	Phenanthrene	mg/kg	0.18 F	0.4 U	0.4 U	0.4 U	NA	0.4 U

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Table D.1 (continued)
AOC 13 OWS Removal Confirmation Soil and SPLP Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	PHGL1145-N1 10 ft	PHGL1145-S1 10 ft	PHGL1145-W1 10 ft	PHGL1145-W2 10 ft	PHGL1145-W2 10 ft SPLP	PHGL1145-W3 10 ft
SW8270C	Phenol	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	p-Phenylenediamine	mg/kg	1.6 U	1.6 U	1.6 U	1.6 U	NA	1.6 U
SW8270C	Pronamide	mg/kg	0.8 U	0.8 U	0.81 U	0.8 U	NA	0.8 U
SW8270C	Pyrene	mg/kg	0.24 F	0.4 U	0.4 U	0.4 U	NA	0.4 U
SW8270C	Pyridine	mg/kg	0.8 R	0.8 R	0.81 R	0.8 R	NA	0.8 R
SW8270C	Safrole	mg/kg	0 4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U
TX1005	TPH	mg/kg	64	50 U	50 U	50 U	NA	50 U
TX1005	GRO	mg/kg	50 U	50 U	50 U	50 U	NA	50 U
TX1005	DRO	mg/kg	60	50 U	50 U	50 U	NA	50 U

Table D.2
AOC 13 Phase II Soil Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	BHGLAOC13001 05 ft	BHGLAOC13001 10 ft	BHGLAOC13002 00 ft	BHGLAOC13002 10 ft	BHGLAOC13003 00 ft	BHGLAOC13004 00 ft
SW6010	Arsenic	mg/kg	2 F	NA	2.1 F	NA	NA	2.5 F
SW6010	Cadmium	mg/kg	0.13 F	0.3 F	0.1 F	0.19 F	0.42	0.37 F
SW6010	Chromium, total	mg/kg	NA	NA	NA	NA	NA	NA
SW6010	Zinc	mg/kg	NA	NA	NA	NA	NA	34.9
SW7421	Lead	mg/kg	NA	NA	NA	NA	20.9	27
SW8260B	VOCs	mg/kg	NA	NA	NA	NA	NA	NA
SW8270C	SVOCs	mg/kg	NA	NA	NA	NA	NA	NA

Table D.2 (continued)
AOC 13 Phase II Soil Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	BHGLAOC13004 05 ft	BHGLAOC13004 10 ft	BHGLAOC13005 00 ft	BHGLAOC13005 05 ft	BHGLAOC13005 05 ft DUPLICATE
SW6010	Arsenic	mg/kg	NA	NA	NA	NA	NA
SW6010	Cadmium	mg/kg	0.33 F	0.2 F	0.07 F	0.28 F	0.21 F
SW6010	Chromium, total	mg/kg	NA	NA	7.2 U	15.7	12.8
SW6010	Zinc	mg/kg	NA	NA	NA	NA	NA
SW7421	Lead	mg/kg	NA	NA	NA	NA	NA
SW8260B	VOCs	mg/kg	NA	NA	NA	NA	NA
SW8270C	SVOCs	mg/kg	NA	NA	NA	NA	NA

Table D.2 (continued)
AOC 13 Phase II Soil Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	BHGLAOC13005 10 ft	BHGLAOC13005 15 ft
SW6010	Arsenic	mg/kg	NA	NA
SW6010	Cadmium	mg/kg	0.21 F	NA
SW6010	Chromium, total	mg/kg	15.9	NA
SW6010	Zinc	mg/kg	NA	NA
SW7421	Lead	mg/kg	NA	NA
SW8260B	1,1,1,2-Tetrachloroethane	mg/kg	0.003 U	0 003 U
SW8260B	1,1,1-Trichloroethane	mg/kg	0.004 U	0.005 U
SW8260B	1,1,2,2-Tetrachloroethane	mg/kg	0.002 U	0.002 U
SW8260B	1,1,2-Trichloroethane	mg/kg	0.005 U	0 006 U
SW8260B	1,1-Dichloroethane	mg/kg	0.002 U	0.002 U
SW8260B	1,1-Dichloroethene	mg/kg	0.005 U	0.006 U
SW8260B	1,2,3-Trichloropropane	mg/kg	0.005 U	0.006 U
SW8260B	1,2-Dibromo-3-chloropropane	mg/kg	0.005 U	0.006 U
SW8260B	1,2-Dibromoethane (Ethylene dibromide)	mg/kg	0.003 U	0.003 U
SW8260B	1,2-Dichloroethane	mg/kg	0.003 U	0.003 U
SW8260B	1,2-Dichloropropane	mg/kg	0 002 U	0.002 U
SW8260B	2-Chloro-1,3-butadiene	mg/kg	0.005 U	0.006 U
SW8260B	2-Hexanone	mg/kg	0.005 U	0.006 U
SW8260B	Acetone	mg/kg	0.005 U	0.006 U
SW8260B	Acetonitrile	mg/kg	0.041 U	0.046 U
SW8260B	Acrolein	mg/kg	0.1 U	0.12 U
SW8260B	Acrylonitrile	mg/kg	0.041 U	0.046 U
SW8260B	Allyl chloride (3-Chloropropene)	mg/kg	0.01 U	0.012 U
SW8260B	Benzene	mg/kg	0.002 U	0 002 U

Table D.2 (continued)
AOC 13 Phase II Soil Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	BHGLAOC13005 10 ft	BHGLAOC13005 15 ft
SW8260B	Bromodichloromethane	mg/kg	0.004 U	0.005 U
SW8260B	Bromoform	mg/kg	0.005 U	0.006 U
SW8260B	Bromomethane	mg/kg	0.005 U	0.006 U
SW8260B	Carbon disulfide	mg/kg	0 005 U	0.006 U
SW8260B	Carbon tetrachloride	mg/kg	0.005 U	0 006 U
SW8260B	Chlorobenzene	mg/kg	0.002 U	0.002 U
SW8260B	Chloroethane	mg/kg	0.005 U	0.006 U
SW8260B	Chloroform	mg/kg	0 002 U	0.002 U
SW8260B	Chloromethane	mg/kg	0.005 U	0.006 U
SW8260B	cis-1,2-Dichloroethene	mg/kg	0.005 U	0.006 U
SW8260B	cis-1,3-Dichloropropene	mg/kg	0.005 U	0.006 U
SW8260B	Dibromochloromethane	mg/kg	0.003 U	0.003 U
SW8260B	Dibromomethane	mg/kg	0.005 U	0.006 U
SW8260B	Dichlorodifluoromethane	mg/kg	0.005 U	0.006 U
SW8260B	Ethyl methacrylate	mg/kg	0.005 U	0.006 U
SW8260B	Ethylbenzene	mg/kg	0.003 U	0.003 U
SW8260B	Iodomethane (Methyl iodide)	mg/kg	0.005 U	0.006 U
SW8260B	Isobutanol	mg/kg	0.2 U	0.23 U
SW8260B	m,p-Xylene (sum of isomers)	mg/kg	0.005 U	0 006 U
SW8260B	Methyl ethyl ketone (2-Butanone)	mg/kg	0.005 U	0.006 U
SW8260B	Methyl isobutyl ketone (4-Methyl-2-pentanone)	mg/kg	0.005 U	0.006 U
SW8260B	Methyl methacrylate	mg/kg	0.005 U	0.006 U
SW8260B	Methylacrylonitrile (Methacrylonitrile)	mg/kg	0.005 U	0.006 U
SW8260B	Methylene chloride	mg/kg	0.002 U	0.002 U

Table D.2 (continued)
AOC 13 Phase II Soil Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	BHGLAOC13005 10 ft	BHGLAOC13005 15 ft
SW8260B	o-Xylene (1,2-Dimethylbenzene)	mg/kg	0.005 U	0.006 U
SW8260B	Pentachloroethane	mg/kg	0.005 U	0.006 U
SW8260B	Propane nitrile (Propionitrile)	mg/kg	0 02 U	0.023 U
SW8260B	Styrene	mg/kg	0.002 U	0.002 U
SW8260B	tert-Butyl methyl ether	mg/kg	0.005 U	0.006 U
SW8260B	Tetrachloroethene (PCE)	mg/kg	0.005 U	0.006 U
SW8260B	Toluene	mg/kg	0.005 U	0.006 U
SW8260B	Trans-1,2-Dichloroethene	mg/kg	0.003 U	0.003 U
SW8260B	trans-1,3-Dichloropropene	mg/kg	0.005 U	0.006 U
SW8260B	trans-1,4-Dichloro-2-butene	mg/kg	0 005 U	0.006 U
SW8260B	Trichloroethene (TCE)	mg/kg	0.005 U	0.006 U
SW8260B	Trichlorofluoromethane	mg/kg	0.004 U	0.005 U
SW8260B	Vinyl acetate	mg/kg	0.005 U	0.006 U
SW8260B	Vinyl chloride	mg/kg	0.005 U	0.006 U
SW8270C	1,2,4,5-Tetrachlorobenzene	mg/kg	0.4 U	0.42 U
SW8270C	1,2,4-Trichlorobenzene	mg/kg	0.4 U	0.42 U
SW8270C	1,2-Dichlorobenzene	mg/kg	0.4 U	0.42 U
SW8270C	1,3,5-Trinitrobenzene	mg/kg	1.6 U	1.7 U
SW8270C	1,3-Dichlorobenzene	mg/kg	0.4 U	0.42 U
SW8270C	1,3-Dinitrobenzene	mg/kg	0.81 U	0.85 U
SW8270C	1,4-Dichlorobenzene	mg/kg	0.4 U	0.42 U
SW8270C	1,4-Dioxane (p-Dioxane)	mg/kg	1.6 U	1.7 U
SW8270C	1,4-Naphthoquinone	mg/kg	2 U	2.1 U
SW8270C	1-Naphthylamine	mg/kg	0.81 U	0.85 U

Table D.2 (continued)
AOC 13 Phase II Soil Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	BHGLAOC13005 10 ft	BHGLAOC13005 15 ft
SW8270C	2,2'-Oxybis(1-chloropropane)	mg/kg	0.4 U	0.42 U
SW8270C	2,3,4,6-Tetrachlorophenol	mg/kg	0.4 U	0.42 U
SW8270C	2,4,5-Trichlorophenol	mg/kg	2 U	2.1 U
SW8270C	2,4,6-Trichlorophenol	mg/kg	0.4 U	0.42 U
SW8270C	2,4-Dichlorophenol	mg/kg	0.4 U	0.42 U
SW8270C	2,4-Dimethylphenol	mg/kg	0.4 U	0.42 U
SW8270C	2,4-Dinitrophenol	mg/kg	2 U	2.1 U
SW8270C	2,4-Dinitrotoluene	mg/kg	0.4 U	0.42 U
SW8270C	2,6-Dichlorophenol	mg/kg	0.4 U	0.42 U
SW8270C	2,6-Dinitrotoluene	mg/kg	0.4 U	0.42 U
SW8270C	2-Acetylaminofluorene	mg/kg	0.81 U	0.85 U
SW8270C	2-Aminonaphthalene (beta-Naphthylamine)	mg/kg	0.81 U	0.85 U
SW8270C	2-Chloronaphthalene	mg/kg	0.4 U	0.42 U
SW8270C	2-Chlorophenol	mg/kg	0.4 U	0.42 U
SW8270C	2-Methylnaphthalene	mg/kg	0.4 U	0.42 U
SW8270C	2-Methylphenol (o-Cresol)	mg/kg	0.4 U	0.42 U
SW8270C	2-Nitroaniline	mg/kg	2 U	2.1 U
SW8270C	2-Nitrophenol	mg/kg	0.4 U	0.42 U
SW8270C	2-Picoline (alpha-Picoline)	mg/kg	0 4 U	0.42 U
SW8270C	3,3'-Dichlorobenzidine	mg/kg	0.81 U	0.85 U
SW8270C	3,3'-Dimethylbenzidine	mg/kg	2 U	2.1 U
SW8270C	3-Methylcholanthrene	mg/kg	0.4 U	0.42 U
SW8270C	3-Nitroaniline	mg/kg	2 U	2.1 U
SW8270C	4,6-Dinitro-2-methylphenol	mg/kg	2 U	2.1 U

Table D.2 (continued)
AOC 13 Phase II Soil Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	BHGLAOC13005 10 ft	BHGLAOC13005 15 ft
SW8270C	4-Aminobiphenyl (4-Biphenylamine)	mg/kg	0.81 U	0.85 U
SW8270C	4-Bromophenyl phenyl ether	mg/kg	0.4 U	0.42 U
SW8270C	4-Chloro-3-methylphenol	mg/kg	0.4 U	0.42 U
SW8270C	4-Chloroaniline	mg/kg	0 4 U	0.42 U
SW8270C	4-Chlorophenyl phenyl ether	mg/kg	0 4 U	0.42 U
SW8270C	4-Nitroaniline	mg/kg	2 U	2.1 U
SW8270C	4-Nitrophenol	mg/kg	2 U	2.1 U
SW8270C	4-Nitroquinoline-1-oxide	mg/kg	2 U	2.1 U
SW8270C	5-Nitro-o-toluidine	mg/kg	0.81 U	0.85 U
SW8270C	7,12-Dimethylbenzo(a)anthracene	mg/kg	0.81 U	0.85 U
SW8270C	Acenaphthene	mg/kg	0.4 U	0.42 U
SW8270C	Acenaphthylene	mg/kg	0.4 U	0.42 U
SW8270C	Acetophenone	mg/kg	0.4 U	0.42 U
SW8270C	alpha, alpha-Dimethylphenethylamine	mg/kg	2 U	2.1 U
SW8270C	Aniline (Phenylamine, Aminobenzene)	mg/kg	0.4 U	0.42 U
SW8270C	Anthracene	mg/kg	0 4 U	0.42 U
SW8270C	Aramite (total)	mg/kg	0.81 U	0.85 U
SW8270C	Benzo(a)anthracene	mg/kg	0.4 U	0.42 U
SW8270C	Benzo(a)pyrene	mg/kg	0.4 U	0.42 U
SW8270C	Benzo(b)fluoranthene	mg/kg	0.4 U	0.42 U
SW8270C	Benzo(g,h,i)perylene	mg/kg	0.4 U	0.42 U
SW8270C	Benzo(k)fluoranthene	mg/kg	0.4 U	0.42 U
SW8270C	Benzoic acid	mg/kg	2 U	2.1 U
SW8270C	Benzyl alcohol	mg/kg	0.4 U	0.42 U

Table D.2 (continued)
AOC 13 Phase II Soil Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	BHGLAOC13005 10 ft	BHGLAOC13005 15 ft
SW8270C	Benzyl butyl phthalate	mg/kg	0.4 U	0.42 U
SW8270C	bis(2-Chloroethoxy)methane	mg/kg	0.4 U	0.42 U
SW8270C	bis(2-Chloroethyl)ether (2-Chloroethyl ether)	mg/kg	0.4 U	0.42 U
SW8270C	bis(2-Ethylhexyl)phthalate	mg/kg	0.4 U	0.18 F
SW8270C	Chlorobenzilate	mg/kg	0.4 U	0.42 U
SW8270C	Chrysene	mg/kg	0.4 U	0.42 U
SW8270C	Cresols, m & p	mg/kg	0.4 U	0.42 U
SW8270C	Diallate (total of cis and trans isomers)	mg/kg	0.4 U	0.42 U
SW8270C	Dibenz(a,h)anthracene	mg/kg	0.4 U	0.42 U
SW8270C	Dibenzofuran	mg/kg	0.4 U	0.42 U
SW8270C	Diethyl phthalate	mg/kg	0.4 U	0.42 U
SW8270C	Dimethyl phthalate	mg/kg	0.4 U	0.42 U
SW8270C	Di-n-butyl phthalate	mg/kg	0.4 U	0.42 U
SW8270C	Di-n-octyl phthalate	mg/kg	0.4 U	0.42 U
SW8270C	Dinoseb	mg/kg	0.81 R	0.85 R
SW8270C	Diphenylamine	mg/kg	0.4 U	0.42 U
SW8270C	Ethyl methanesulfonate	mg/kg	0.4 U	0.42 U
SW8270C	Fluoranthene	mg/kg	0.4 U	0.42 U
SW8270C	Fluorene	mg/kg	0.4 U	0.42 U
SW8270C	Hexachlorobenzene	mg/kg	0.4 U	0.42 U
SW8270C	Hexachlorobutadiene	mg/kg	0.4 U	0 42 U
SW8270C	Hexachlorocyclopentadiene	mg/kg	0.4 U	0.42 U
SW8270C	Hexachloroethane	mg/kg	0.4 U	0.42 U
SW8270C	Hexachlorophene	mg/kg	6 U	6.3 U

Table D.2 (continued)
AOC 13 Phase II Soil Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	BHGLAOC13005 10 ft	BHGLAOC13005 15 ft
SW8270C	Hexachloropropene	mg/kg	2 U	2.1 U
SW8270C	Indeno(1,2,3-c,d)pyrene	mg/kg	0.4 U	0.42 U
SW8270C	Isophorone	mg/kg	0.4 U	0.42 U
SW8270C	Isosafrole	mg/kg	0 4 U	0.42 U
SW8270C	Methapyrilene	mg/kg	2 U	2.1 U
SW8270C	Methyl methanesulfonate	mg/kg	0.81 U	0.85 U
SW8270C	Naphthalene	mg/kg	0.4 U	0.086 F
SW8270C	Nitrobenzene	mg/kg	0.4 U	0.42 U
SW8270C	N-Nitrosodiethylamine	mg/kg	0.81 U	0.85 U
SW8270C	N-Nitrosodimethylamine	mg/kg	0.4 U	0 42 U
SW8270C	N-Nitrosodi-n-butylamine	mg/kg	0.4 U	0.42 U
SW8270C	N-Nitrosodi-n-propylamine	mg/kg	0 4 U	0.42 U
SW8270C	N-Nitrosodiphenylamine	mg/kg	0.4 U	0.42 U
SW8270C	N-Nitrosomethylethylamine	mg/kg	0.81 U	0.85 U
SW8270C	N-Nitrosomorpholine	mg/kg	0.81 U	0.85 U
SW8270C	N-Nitrosopiperidine	mg/kg	0.4 U	0.42 U
SW8270C	N-Nitrosopyrrolidine	mg/kg	2 U	2 1 U
SW8270C	o-Toluidine	mg/kg	0.4 U	0.42 U
SW8270C	p-Dimethylaminoazobenzene	mg/kg	0.81 U	0.85 U
SW8270C	Pentachlorobenzene	mg/kg	0.4 U	0.42 U
SW8270C	Pentachloronitrobenzene	mg/kg	0.4 U	0.42 U
SW8270C	Pentachlorophenol	mg/kg	2 U	2.1 U
SW8270C	Phenacetin	mg/kg	0.81 U	0.85 U
SW8270C	Phenanthrene	mg/kg	0 4 U	0.42 U

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Table D.2 (continued)
AOC 13 Phase II Soil Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	BHGLAOC13005 10 ft	BHGLAOC13005 15 ft
SW8270C	Phenol	mg/kg	0.4 U	0.42 U
SW8270C	p-Phenylenediamine	mg/kg	1.6 U	1.7 U
SW8270C	Pronamide	mg/kg	0.81 U	0.85 U
SW8270C	Pyrene	mg/kg	0.4 U	0.42 U
SW8270C	Pyridine	mg/kg	0.81 U	0.85 U
SW8270C	Safrole	mg/kg	0.4 U	0.42 U

Table D.3
AOC 13 Groundwater Sampling Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	WITCTA040 2000-11-03	WITCTA041 1999-04-19	WITCTA041 2000-11-03	WITCTA042 2000-11-02	WITCTA043 2000-11-02
SW6010	Aluminum	mg/L	0.5 U	0.5 U	0.5 U	0 501	0.291 F
SW6010	Antimony	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
SW6010	Arsenic	mg/L	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U
SW6010	Barium	mg/L	0.11 F	0.12 F	0.115 F	0.121 F	0.134 F
SW6010	Beryllium	mg/L	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U
SW6010	Cadmium	mg/L	0.005 UJ	0.005 U	0.005 UJ	0.005 UJ	0.005 UJ
SW6010	Calcium	mg/L	141	135	141	126	143
SW6010	Cobalt	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
SW6010	Copper	mg/L	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ
SW6010	Iron	mg/L	0.554	0.297 U	0.355	0.294	0.165
SW6010	Magnesium	mg/L	5.86	6 1	6.57	5.73	6.39
SW6010	Manganese	mg/L	0.0488	0.02 U	0.0184 F	0.0071 F	0.02 U
SW6010	Molybdenum	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
SW6010	Nickel	mg/L	0.02 UJ	0.02 U	0.02 UJ	0.02 U	0.02 U
SW6010	Potassium	mg/L	1.77 F	0.903 F	0.842 F	0 948 F	0.976 F
SW6010	Silver	mg/L	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
SW6010	Sodium	mg/L	18.9	15	17.4	15.4	17 6
SW6010	Thallium	mg/L	NA	0.05 U	NA	NA	NA
SW6010	Vanadium	mg/L	0.01 U	0.01 U	0.01 U	0.0043 F	0.0047 F
SW6010	Zinc	mg/L	0.0737 F	0.1 U	0.0165 F	0.1 U	0.1 U
SW7191	Chromium, total	mg/L	0.01 UJ	0.005 UJ	0.005 UJ	0.005 UJ	0 005 UJ
SW7421	Lead	mg/L	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
SW7470	Mercury	mg/L	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
SW7740	Selenium	mg/L	0.005 U	0.005 UJ	0.005 U	0.005 U	0.005 U
SW7841	Thallium	mg/L	0.05 U	NA	0.05 U	0.05 U	0.05 U

Table D.3 (continued)
AOC 13 Groundwater Sampling Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	WITCTA040 2000-11-03	WITCTA041 1999-04-19	WITCTA041 2000-11-03	WITCTA042 2000-11-02	WITCTA043 2000-11-02
SW8260B	1,1,1,2-Tetrachloroethane	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SW8260B	1,1,1-Trichloroethane	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SW8260B	1,1,2,2-Tetrachloroethane	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SW8260B	1,1,2-Trichloroethane	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SW8260B	1,1-Dichloroethane	mg/L	0 0004 U	0.0004 U	0.002 J	0.0004 U	0.0004 U
SW8260B	1,1-Dichloroethene	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SW8260B	1,1-Dichloropropene	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0 0005 U
SW8260B	1,2,3-Trichlorobenzene	mg/L	0.0005 U	0 0005 U	0.0005 U	0.0005 U	0.0005 U
SW8260B	1,2,3-Trichloropropane	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SW8260B	1,2,4-Trichlorobenzene	mg/L	0.0004 U	0.0004 U	0.0004 U	0.0004 U	0.0004 U
SW8260B	1,2,4-Trimethylbenzene	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0 0006
SW8260B	1,2-Dibromo-3-chloropropane	mg/L	0.0005 U	0.0005 R	0.0005 U	0.0005 U	0.0005 U
SW8260B	1,2-Dibromoethane (Ethylene dibromide)	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SW8260B	1,2-Dichlorobenzene	mg/L	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.0003 U
SW8260B	1,2-Dichloroethane	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SW8260B	1,2-Dichloropropane	mg/L	0.0004 U	0.0004 U	0.0004 U	0.0004 U	0.0004 U
SW8260B	1,3,5-Trimethylbenzene (Mesitylene)	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SW8260B	1,3-Dichlorobenzene	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SW8260B	1,3-Dichloropropane	mg/L	0.0004 U	0.0004 U	0.0004 U	0.0004 U	0.0004 U
SW8260B	1,4-Dichlorobenzene	mg/L	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.0003 U
SW8260B	1-Chlorohexane	mg/L	0.0005 U	0 0005 R	0.0005 U	0.0005 U	0.0005 U
SW8260B	2,2-Dichloropropane	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SW8260B	2-Chloro-1,3-butadiene	mg/L	NA	NA	NA	NA	NA
SW8260B	2-Chlorotoluene	mg/L	0.0004 U	0.0004 U	0.0004 U	0.0004 U	0.0004 U
SW8260B	2-Hexanone	mg/L	NA	NA	NA	NA	NA

Table D.3 (continued)
AOC 13 Groundwater Sampling Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	WITCTA040 2000-11-03	WITCTA041 1999-04-19	WITCTA041 2000-11-03	WITCTA042 2000-11-02	WITCTA043 2000-11-02
SW8260B	4-Chlorotoluene	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SW8260B	Acetone	mg/L	NA	NA	NA	NA	NA
SW8260B	Acetonitrile	mg/L	NA	NA	NA	NA	NA
SW8260B	Acrolein	mg/L	NA	NA	NA	NA	NA
SW8260B	Acrylonitrile	mg/L	NA	NA	NA	NA	NA
SW8260B	Allyl chloride (3-Chloropropene)	mg/L	NA	NA	NA	NA	NA
SW8260B	Benzene	mg/L	0.0004 U	0.0004 U	0.0004 U	0.0004 U	0.0004 U
SW8260B	Bromobenzene	mg/L	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.0003 U
SW8260B	Bromochloromethane	mg/L	0.0004 U	0.0004 U	0.0004 U	0.0004 U	0.0004 U
SW8260B	Bromodichloromethane	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SW8260B	Bromoform	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SW8260B	Bromomethane	mg/L	0 0005 U	0.0005 U	0.0005 U	0.0005 U	0 0005 U
SW8260B	Carbon disulfide	mg/L	NA	NA	NA	NA	NA
SW8260B	Carbon tetrachloride	mg/L	0 0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SW8260B	Chlorobenzene	mg/L	0.0004 U	0.0004 U	0.0004 U	0.0004 U	0.0004 U
SW8260B	Chloroethane	mg/L	0.0005 U	0.0005 U	0.0005 U	0 0005 U	0.0005 U
SW8260B	Chloroform	mg/L	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.0003 U
SW8260B	Chloromethane	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SW8260B	cis-1,2-Dichloroethene	mg/L	0.013 J	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SW8260B	cis-1,3-Dichloropropene	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SW8260B	Dibromochloromethane	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SW8260B	Dibromomethane	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SW8260B	Dichlorodifluoromethane	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SW8260B	Ethyl methacrylate	mg/L	NA	NA	NA	NA	NA
SW8260B	Ethylbenzene	mg/L	0 0005 U	0.0005 U	0.0005 U	0.0005 U	0.001

Table D.3 (continued)
AOC 13 Groundwater Sampling Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	WITCTA040 2000-11-03	WITCTA041 1999-04-19	WITCTA041 2000-11-03	WITCTA042 2000-11-02	WITCTA043 2000-11-02
SW8260B	Hexachlorobutadiene	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SW8260B	Iodomethane (Methyl iodide)	mg/L	NA	NA	NA	NA	NA
SW8260B	Isobutanol	mg/L	NA	NA	NA	NA	NA
SW8260B	Isopropylbenzene (Cumene)	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SW8260B	m,p-Xylene (sum of isomers)	mg/L	0.0008 J	0.0005 U	0.0008 J	0.0005 U	0.003
SW8260B	Methyl ethyl ketone (2-Butanone)	mg/L	NA	NA	NA	NA	NA
SW8260B	Methyl isobutyl ketone (4-Methyl-2-pentanone)	mg/L	NA	NA	NA	NA	NA
SW8260B	Methyl methacrylate	mg/L	NA	NA	NA	NA	NA
SW8260B	Methylacrylonitrile (Methacrylonitrile)	mg/L	NA	NA	NA	NA	NA
SW8260B	Methylene chloride	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 R	0.0005 R
SW8260B	Naphthalene	mg/L	0.0005 U	0.0005 UJ	0.0005 U	0.0005 U	0.0005 U
SW8260B	n-Butylbenzene	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SW8260B	n-Propylbenzene	mg/L	0.0004 U	0.0004 U	0.0004 U	0.0004 U	0.0004 U
SW8260B	o-Xylene (1,2-Dimethylbenzene)	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0007
SW8260B	p-Cymene (p-Isopropyltoluene)	mg/L	0.0005 U	0.0005 U	0.0005 U	0 0005 U	0.0005 U
SW8260B	Propane nitrile (Propionitrile)	mg/L	NA	NA	NA	NA	NA
SW8260B	sec-Butylbenzene	mg/L	0.0005 U	0.0005 U	0.0005 U	0 0005 U	0.0005 U
SW8260B	Styrene	mg/L	0.0004 U	0.0004 UJ	0.0004 U	0.0004 U	0.0004 U
SW8260B	tert-Butyl methyl ether	mg/L	0.0005 U	NA	0.0005 U	0.0005 U	0.0005 U
SW8260B	tert-Butylbenzene	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SW8260B	Tetrachloroethene (PCE)	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SW8260B	Toluene	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005
SW8260B	trans-1,2-Dichloroethene	mg/L	0.0009 J	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SW8260B	trans-1,3-Dichloropropene	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SW8260B	trans-1,4-Dichloro-2-butene	mg/L	NA	NA	NA	NA	NA

Table D.3 (continued)
AOC 13 Groundwater Sampling Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	WITCTA040 2000-11-03	WITCTA041 1999-04-19	WITCTA041 2000-11-03	WITCTA042 2000-11-02	WITCTA043 2000-11-02
SW8260B	Trichloroethene (TCE)	mg/L	0.054	0 0005 UJ	0.001 J	0.0007	0.0005 U
SW8260B	Trichlorofluoromethane	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SW8260B	Vinyl acetate	mg/L	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
SW8260B	Vinyl chloride	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SW8270C	1,2,4-Trichlorobenzene	mg/L	0.01 U	NA	0.01 U	0 009 U	0.01 U
SW8270C	1,2-Dichlorobenzene	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	1,3-Dichlorobenzene	mg/L	0 01 U	NA	0 01 U	0.009 U	0.01 U
SW8270C	1,4-Dichlorobenzene	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	2,2'-Oxybis(1-chloropropane)	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	2,4,5-Trichlorophenol	mg/L	0.048 U	NA	0.048 U	0.047 U	0.05 U
SW8270C	2,4,6-Trichlorophenol	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	2,4-Dichlorophenol	mg/L	0.01 U	NA	0.01 U	0.009 U	0 01 U
SW8270C	2,4-Dimethylphenol	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	2,4-Dinitrophenol	mg/L	0.048 U	NA	0.048 U	0.047 U	0.05 U
SW8270C	2,4-Dinitrotoluene	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	2,6-Dinitrotoluene	mg/L	0.01 U	NA	0.01 U	0 009 U	0.01 U
SW8270C	2-Chloronaphthalene	mg/L	0.01 U	NA	0.01 U	0 009 U	0.01 U
SW8270C	2-Chlorophenol	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	2-Methylnaphthalene	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	2-Methylphenol (o-Cresol)	mg/L	0.01 U	NA	0 01 U	0.009 U	0 01 U
SW8270C	2-Nitroaniline	mg/L	0.048 U	NA	0.048 U	0.047 U	0.05 U
SW8270C	2-Nitrophenol	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	3,3'-Dichlorobenzidine	mg/L	0.019 U	NA	0.019 U	0 019 U	0.02 U
SW8270C	3-Nitroaniline	mg/L	0.048 U	NA	0.048 U	0.047 U	0.05 U
SW8270C	4,6-Dinitro-2-methylphenol	mg/L	0.048 U	NA	0.048 U	0.047 U	0.05 U

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Table D.3 (continued)
AOC 13 Groundwater Sampling Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	WITCTA040 2000-11-03	WITCTA041 1999-04-19	WITCTA041 2000-11-03	WITCTA042 2000-11-02	WITCTA043 2000-11-02
SW8270C	4-Bromophenyl phenyl ether	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	4-Chloro-3-methylphenol	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	4-Chloroaniline	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	4-Chlorophenyl phenyl ether	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	4-Methylphenol (p-Cresol)	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	4-Nitroaniline	mg/L	0.048 U	NA	0.048 U	0 047 U	0.05 U
SW8270C	4-Nitrophenol	mg/L	0.048 U	NA	0.048 U	0.047 U	0.05 U
SW8270C	Acenaphthene	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	Acenaphthylene	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	Anthracene	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	Benzo(a)anthracene	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	Benzo(a)pyrene	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	Benzo(b)fluoranthene	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	Benzo(g,h,i)perylene	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	Benzoic acid	mg/L	0.048 U	NA	0.048 U	0.047 U	0.05 U
SW8270C	Benzyl alcohol	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	Benzyl butyl phthalate	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	bis(2-Chloroethoxy)methane	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	bis(2-Chloroethyl)ether (2-Chloroethyl ether)	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	bis(2-Ethylhexyl)phthalate	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	Chrysene	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	Dibenz(a,h)anthracene	mg/L	0 01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	Dibenzofuran	mg/L	0.01 U	NA	0.01 U	0 009 U	0.01 U
SW8270C	Diethyl phthalate	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	Dimethyl phthalate	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U

Table D.3 (continued)
AOC 13 Groundwater Sampling Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	WITCTA040 2000-11-03	WITCTA041 1999-04-19	WITCTA041 2000-11-03	WITCTA042 2000-11-02	WITCTA043 2000-11-02
SW8270C	Di-n-butyl phthalate	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	Di-n-octyl phthalate	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	Fluoranthene	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	Fluorene	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	Hexachlorobenzene	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	Hexachlorobutadiene	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	Hexachlorocyclopentadiene	mg/L	0.01 R	NA	0.01 R	0.009 R	0 01 R
SW8270C	Hexachloroethane	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	Indeno(1,2,3-c,d)pyrene	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	Isophorone	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	Naphthalene	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	Nitrobenzene	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	N-Nitrosodi-n-propylamine	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	N-Nitrosodiphenylamine	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	Pentachlorophenol	mg/L	0.048 U	NA	0.048 U	0.047 U	0.05 U
SW8270C	Phenanthrene	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	Phenol	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U
SW8270C	Pyrene	mg/L	0.01 U	NA	0.01 U	0.009 U	0.01 U

Table D.3 (continued)
AOC 13 Groundwater Sampling Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	WITCTA044 1999-01-26	WITCTA044 1999-04-23	WITCTA044 1999-07-20	WITCTA044 1999-10-06	WITCTA044 2000-11-03
SW6010	Aluminum	mg/L	NA	NA	NA	NA	0.329 F
SW6010	Antimony	mg/L	NA	NA	NA	NA	0.01 U
SW6010	Arsenic	mg/L	NA	NA	NA	NA	0 05 U
SW6010	Barium	mg/L	NA	NA	NA	NA	0.129 F
SW6010	Beryllium	mg/L	NA	NA	NA	NA	0.003 U
SW6010	Cadmium	mg/L	NA	NA	NA	NA	0.005 UJ
SW6010	Calcium	mg/L	NA	NA	NA	NA	134
SW6010	Cobalt	mg/L	NA	NA	NA	NA	0.01 U
SW6010	Copper	mg/L	NA	NA	NA	NA	0 1 UJ
SW6010	Iron	mg/L	NA	NA	NA	NA	0.706
SW6010	Magnesium	mg/L	NA	NA	NA	NA	5.92
SW6010	Manganese	mg/L	NA	NA	NA	NA	0.0119 F
SW6010	Molybdenum	mg/L	NA	NA	NA	NA	0.01 U
SW6010	Nickel	mg/L	NA	NA	NA	NA	0.02 UJ
SW6010	Potassium	mg/L	NA	NA	NA	NA	1.11 F
SW6010	Silver	mg/L	NA	NA	NA	NA	0.005 U
SW6010	Sodium	mg/L	NA	NA	NA	NA	16.8
SW6010	Thallium	mg/L	NA	NA	NA	NA	NA
SW6010	Vanadium	mg/L	NA	NA	NA	NA	0.01 U
SW6010	Zinc	mg/L	NA	NA	NA	NA	0.0129 F
SW7191	Chromium, total	mg/L	NA	NA	NA	NA	0.005 UJ
SW7421	Lead	mg/L	NA	NA	NA	NA	0.002 U
SW7470	Mercury	mg/L	NA	NA	NA	NA	0.0002 U
SW7740	Selenium	mg/L	NA	NA	NA	NA	0.005 U
SW7841	Thallium	mg/L	NA	NA	NA	NA	0.05 UJ

Table D.3 (continued)
AOC 13 Groundwater Sampling Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	WITCTA044 1999-01-26	WITCTA044 1999-04-23	WITCTA044 1999-07-20	WITCTA044 1999-10-06	WITCTA044 2000-11-03
SW8260B	1,1,1,2-Tetrachloroethane	mg/L	0 0005 U	0.0005 U	0.001 U	0 0005 U	NA
SW8260B	1,1,1-Trichloroethane	mg/L	0.0005 U	0.0005 U	0.001 U	0.0005 U	NA
SW8260B	1,1,2,2-Tetrachloroethane	mg/L	0.0005 U	0.0005 U	0.001 U	0.0005 U	NA
SW8260B	1,1,2-Trichloroethane	mg/L	0.0005 U	0.0005 U	0.001 U	0.0005 U	NA
SW8260B	1,1-Dichloroethane	mg/L	0.0004 U	0.0004 U	0.001 U	0.0004 U	NA
SW8260B	1,1-Dichloroethene	mg/L	0.0005 U	0.0005 U	0.001 U	0.0005 U	NA
SW8260B	1,1-Dichloropropene	mg/L	0 0005 U	0.0005 U	0.001 U	0.0005 U	NA
SW8260B	1,2,3-Trichlorobenzene	mg/L	0 0005 U	0 0005 U	0.002 UJ	0.0005 U	NA
SW8260B	1,2,3-Trichloropropane	mg/L	0.0005 U	0.0005 U	0 003 U	0.0005 U	NA
SW8260B	1,2,4-Trichlorobenzene	mg/L	0.0004 U	0.0004 U	0.001 UJ	0.0004 U	NA
SW8260B	1,2,4-Trimethylbenzene	mg/L	0.0005 U	0.0005 U	0.001 UJ	0.0005 U	NA
SW8260B	1,2-Dibromo-3-chloropropane	mg/L	0.0005 U	0.0005 U	0.003 U	0.0005 U	NA
SW8260B	1,2-Dibromoethane (Ethylene dibromide)	mg/L	0.0005 U	0.0005 U	0.001 U	0.0005 U	NA
SW8260B	1,2-Dichlorobenzene	mg/L	0.0003 U	0.0003 U	0.001 U	0.0003 U	NA
SW8260B	1,2-Dichloroethane	mg/L	0.0005 U	0.0005 U	0.001 U	0 0005 U	NA
SW8260B	1,2-Dichloropropane	mg/L	0.0004 U	0.0004 U	0.001 U	0.0004 U	NA
SW8260B	1,3,5-Trimethylbenzene (Mesitylene)	mg/L	0 0005 U	0 0005 U	0.001 U	0.0005 U	NA
SW8260B	1,3-Dichlorobenzene	mg/L	0 0005 U	0 0005 U	0.001 U	0.0005 U	NA
SW8260B	1,3-Dichloropropane	mg/L	0.0004 U	0 0004 U	0.001 U	0.0004 U	NA
SW8260B	1,4-Dichlorobenzene	mg/L	0.0003 U	0.0003 U	0.001 UJ	0.0003 U	NA
SW8260B	1-Chlorohexane	mg/L	0.0005 U	0.0005 R	0.001 U	0.0005 U	NA
SW8260B	2,2-Dichloropropane	mg/L	0.0005 U	0.0005 U	0.004 UJ	0.0005 R	NA
SW8260B	2-Chloro-1,3-butadiene	mg/L	NA	NA	0.01 U	NA	NA
SW8260B	2-Chlorotoluene	mg/L	0.0004 U	0.0004 U	0.001 U	0.0004 U	NA
SW8260B	2-Hexanone	mg/L	NA	NA	0.02 U	NA	NA

Table D.3 (continued)
AOC 13 Groundwater Sampling Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	WITCTA044 1999-01-26	WITCTA044 1999-04-23	WITCTA044 1999-07-20	WITCTA044 1999-10-06	WITCTA044 2000-11-03
SW8260B	4-Chlorotoluene	mg/L	0.0005 U	0.0005 U	0 001 U	0.0005 U	NA
SW8260B	Acetone	mg/L	NA	NA	0.02 U	NA	NA
SW8260B	Acetonitrile	mg/L	NA	NA	0.1 U	NA	NA
SW8260B	Acrolein	mg/L	NA	NA	0.1 U	NA	NA
SW8260B	Acrylonitrile	mg/L	NA	NA	0.1 U	NA	NA
SW8260B	Allyl chloride (3-Chloropropene)	mg/L	NA	NA	0.01 U	NA	NA
SW8260B	Benzene	mg/L	0.0004 U	0.0004 U	0.001 U	0.0004 U	NA
SW8260B	Bromobenzene	mg/L	0.0003 U	0 0003 U	0.001 U	0.0003 U	NA
SW8260B	Bromochloromethane	mg/L	0.0004 U	0.0004 U	0.001 U	0.0004 U	NA
SW8260B	Bromodichloromethane	mg/L	0.0005 U	0.0005 U	0.001 U	0.0005 U	NA
SW8260B	Bromoform	mg/L	0.0005 U	0.0005 R	0.001 U	0.0005 U	NA
SW8260B	Bromomethane	mg/L	0.0005 U	0.0005 U	0 001 U	0.0005 U	NA
SW8260B	Carbon disulfide	mg/L	NA	NA	0.005 U	NA	NA
SW8260B	Carbon tetrachloride	mg/L	0.0005 U	0 0005 U	0.002 U	0.0005 U	NA
SW8260B	Chlorobenzene	mg/L	0.0004 U	0.0004 U	0.001 U	0.0004 U	NA
SW8260B	Chloroethane	mg/L	0.0005 U	0.0005 U	0.001 U	0.0005 U	NA
SW8260B	Chloroform	mg/L	0.0003 U	0.0003 U	0.001 U	0.0003 U	NA
SW8260B	Chloromethane	mg/L	0.0005 U	0.0005 U	0.001 U	0.0005 U	NA
SW8260B	cis-1,2-Dichloroethene	mg/L	0.0005 U	0.0005 U	0.001 U	0.0005 U	NA
SW8260B	cis-1,3-Dichloropropene	mg/L	0.0005 U	0.0005 U	0.001 UJ	0.0005 U	NA
SW8260B	Dibromochloromethane	mg/L	0.0005 U	0.0005 U	0.001 U	0.0005 U	NA
SW8260B	Dibromomethane	mg/L	0.0005 U	0.0005 U	0.002 U	0.0005 U	NA
SW8260B	Dichlorodifluoromethane	mg/L	0.0005 U	0.0005 R	0.001 U	0.0005 U	NA
SW8260B	Ethyl methacrylate	mg/L	NA	NA	0.005 U	NA	NA
SW8260B	Ethylbenzene	mg/L	0.0005 U	0.0005 U	0.001 U	0.0005 U	NA

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Table D.3 (continued)
AOC 13 Groundwater Sampling Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	WITCTA044 1999-01-26	WITCTA044 1999-04-23	WITCTA044 1999-07-20	WITCTA044 1999-10-06	WITCTA044 2000-11-03
SW8260B	Hexachlorobutadiene	mg/L	0.0005 U	0.0005 R	0.001 UJ	0.0005 U	NA
SW8260B	Iodomethane (Methyl iodide)	mg/L	NA	NA	0.005 U	NA	NA
SW8260B	Isobutanol	mg/L	NA	NA	0.2 U	NA	NA
SW8260B	Isopropylbenzene (Cumene)	mg/L	0.0005 U	0.0005 U	0.001 U	0.0005 U	NA
SW8260B	m,p-Xylene (sum of isomers)	mg/L	0.0005 U	0.0005 U	0 001 U	0.0005 U	NA
SW8260B	Methyl ethyl ketone (2-Butanone)	mg/L	NA	NA	0.02 U	NA	NA
SW8260B	Methyl isobutyl ketone (4-Methyl-2-pentanone)	mg/L	NA	NA	0.02 U	NA	NA
SW8260B	Methyl methacrylate	mg/L	NA	NA	0.005 U	NA	NA
SW8260B	Methylacrylonitrile (Methacrylonitrile)	mg/L	NA	NA	0.1 U	NA	NA
SW8260B	Methylene chloride	mg/L	0.0005 U	0.0005 U	0.001 UJ	0.0005 U	NA
SW8260B	Naphthalene	mg/L	0.0005 U	0.0005 R	0.002 UJ	0.0005 U	NA
SW8260B	n-Butylbenzene	mg/L	0.0005 U	0.0005 U	0.001 UJ	0 0005 U	NA
SW8260B	n-Propylbenzene	mg/L	0.0004 U	0 0004 U	0.001 U	0.0004 U	NA
SW8260B	o-Xylene (1,2-Dimethylbenzene)	mg/L	0.0005 U	0.0005 U	0.001 U	0 0005 U	NA
SW8260B	p-Cymene (p-Isopropyltoluene)	mg/L	0.0005 U	0.0005 U	0.001 UJ	0.0005 U	NA
SW8260B	Propane nitrile (Propionitrile)	mg/L	NA	NA	0.1 U	NA	NA
SW8260B	sec-Butylbenzene	mg/L	0.0005 U	0.0005 U	0.001 U	0.0005 U	NA
SW8260B	Styrene	mg/L	0.0004 UJ	0.0004 U	0.001 UJ	0.0004 U	NA
SW8260B	tert-Butyl methyl ether	mg/L	NA	NA	NA	NA	NA
SW8260B	tert-Butylbenzene	mg/L	0.0005 U	0.0005 U	0.001 U	0.0005 U	NA
SW8260B	Tetrachloroethene (PCE)	mg/L	0.0005 U	0.0005 R	0.001 UJ	0.0005 U	NA
SW8260B	Toluene	mg/L	0.0005 U	0.0005 U	0.001 U	0.0005 U	NA
SW8260B	trans-1,2-Dichloroethene	mg/L	0.0005 U	0.0005 U	0.001 U	0.0005 U	NA
SW8260B	trans-1,3-Dichloropropene	mg/L	0.0005 U	0.0005 U	0.001 U	0.0005 U	NA
SW8260B	trans-1,4-Dichloro-2-butene	mg/L	NA	NA	0.025 U	NA	NA

Table D.3 (continued)
AOC 13 Groundwater Sampling Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	WITCTA044 1999-01-26	WITCTA044 1999-04-23	WITCTA044 1999-07-20	WITCTA044 1999-10-06	WITCTA044 2000-11-03
SW8260B	Trichloroethene (TCE)	mg/L	0.0005 U	0.0005 U	0.001 U	0.0005 U	NA
SW8260B	Trichlorofluoromethane	mg/L	0.0005 U	0.0005 R	0.001 U	0.0005 U	NA
SW8260B	Vinyl acetate	mg/L	0.002 U	0.002 U	0.01 U	0.002 U	NA
SW8260B	Vinyl chloride	mg/L	0.0005 U	0.0005 U	0.001 U	0.0005 U	NA
SW8270C	1,2,4-Trichlorobenzene	mg/L	NA	NA	NA	NA	NA
SW8270C	1,2-Dichlorobenzene	mg/L	NA	NA	NA	NA	NA
SW8270C	1,3-Dichlorobenzene	mg/L	NA	NA	NA	NA	NA
SW8270C	1,4-Dichlorobenzene	mg/L	NA	NA	NA	NA	NA
SW8270C	2,2'-Oxybis(1-chloropropane)	mg/L	NA	NA	NA	NA	NA
SW8270C	2,4,5-Trichlorophenol	mg/L	NA	NA	NA	NA	NA
SW8270C	2,4,6-Trichlorophenol	mg/L	NA	NA	NA	NA	NA
SW8270C	2,4-Dichlorophenol	mg/L	NA	NA	NA	NA	NA
SW8270C	2,4-Dimethylphenol	mg/L	NA	NA	NA	NA	NA
SW8270C	2,4-Dinitrophenol	mg/L	NA	NA	NA	NA	NA
SW8270C	2,4-Dinitrotoluene	mg/L	NA	NA	NA	NA	NA
SW8270C	2,6-Dinitrotoluene	mg/L	NA	NA	NA	NA	NA
SW8270C	2-Chloronaphthalene	mg/L	NA	NA	NA	NA	NA
SW8270C	2-Chlorophenol	mg/L	NA	NA	NA	NA	NA
SW8270C	2-Methylnaphthalene	mg/L	NA	NA	NA	NA	NA
SW8270C	2-Methylphenol (o-Cresol)	mg/L	NA	NA	NA	NA	NA
SW8270C	2-Nitroaniline	mg/L	NA	NA	NA	NA	NA
SW8270C	2-Nitrophenol	mg/L	NA	NA	NA	NA	NA
SW8270C	3,3'-Dichlorobenzidine	mg/L	NA	NA	NA	NA	NA
SW8270C	3-Nitroaniline	mg/L	NA	NA	NA	NA	NA
SW8270C	4,6-Dinitro-2-methylphenol	mg/L	NA	NA	NA	NA	NA

Table D.3 (continued)
AOC 13 Groundwater Sampling Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	WITCTA044 1999-01-26	WITCTA044 1999-04-23	WITCTA044 1999-07-20	WITCTA044 1999-10-06	WITCTA044 2000-11-03
SW8270C	4-Bromophenyl phenyl ether	mg/L	NA	NA	NA	NA	NA
SW8270C	4-Chloro-3-methylphenol	mg/L	NA	NA	NA	NA	NA
SW8270C	4-Chloroaniline	mg/L	NA	NA	NA	NA	NA
SW8270C	4-Chlorophenyl phenyl ether	mg/L	NA	NA	NA	NA	NA
SW8270C	4-Methylphenol (p-Cresol)	mg/L	NA	NA	NA	NA	NA
SW8270C	4-Nitroaniline	mg/L	NA	NA	NA	NA	NA
SW8270C	4-Nitrophenol	mg/L	NA	NA	NA	NA	NA
SW8270C	Acenaphthene	mg/L	NA	NA	NA	NA	NA
SW8270C	Acenaphthylene	mg/L	NA	NA	NA	NA	NA
SW8270C	Anthracene	mg/L	NA	NA	NA	NA	NA
SW8270C	Benzo(a)anthracene	mg/L	NA	NA	NA	NA	NA
SW8270C	Benzo(a)pyrene	mg/L	NA	NA	NA	NA	NA
SW8270C	Benzo(b)fluoranthene	mg/L	NA	NA	NA	NA	NA
SW8270C	Benzo(g,h,i)perylene	mg/L	NA	NA	NA	NA	NA
SW8270C	Benzoic acid	mg/L	NA	NA	NA	NA	NA
SW8270C	Benzyl alcohol	mg/L	NA	NA	NA	NA	NA
SW8270C	Benzyl butyl phthalate	mg/L	NA	NA	NA	NA	NA
SW8270C	bis(2-Chloroethoxy)methane	mg/L	NA	NA	NA	NA	NA
SW8270C	bis(2-Chloroethyl)ether (2-Chloroethyl ether)	mg/L	NA	NA	NA	NA	NA
SW8270C	bis(2-Ethylhexyl)phthalate	mg/L	NA	NA	NA	NA	NA
SW8270C	Chrysene	mg/L	NA	NA	NA	NA	NA
SW8270C	Dibenz(a,h)anthracene	mg/L	NA	NA	NA	NA	NA
SW8270C	Dibenzofuran	mg/L	NA	NA	NA	NA	NA
SW8270C	Diethyl phthalate	mg/L	NA	NA	NA	NA	NA
SW8270C	Dimethyl phthalate	mg/L	NA	NA	NA	NA	NA

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Table D.3 (continued)
AOC 13 Groundwater Sampling Results
NAS Fort Worth JRB, Texas

Method	Analyte	Units	WITCTA044 1999-01-26	WITCTA044 1999-04-23	WITCTA044 1999-07-20	WITCTA044 1999-10-06	WITCTA044 2000-11-03
SW8270C	Di-n-butyl phthalate	mg/L	NA	NA	NA	NA	NA
SW8270C	Di-n-octyl phthalate	mg/L	NA	NA	NA	NA	NA
SW8270C	Fluoranthene	mg/L	NA	NA	NA	NA	NA
SW8270C	Fluorene	mg/L	NA	NA	NA	NA	NA
SW8270C	Hexachlorobenzene	mg/L	NA	NA	NA	NA	NA
SW8270C	Hexachlorobutadiene	mg/L	NA	NA	NA	NA	NA
SW8270C	Hexachlorocyclopentadiene	mg/L	NA	NA	NA	NA	NA
SW8270C	Hexachloroethane	mg/L	NA	NA	NA	NA	NA
SW8270C	Indeno(1,2,3-c,d)pyrene	mg/L	NA	NA	NA	NA	NA
SW8270C	Isophorone	mg/L	NA	NA	NA	NA	NA
SW8270C	Naphthalene	mg/L	NA	NA	NA	NA	NA
SW8270C	Nitrobenzene	mg/L	NA	NA	NA	NA	NA
SW8270C	N-Nitrosodi-n-propylamine	mg/L	NA	NA	NA	NA	NA
SW8270C	N-Nitrosodiphenylamine	mg/L	NA	NA	NA	NA	NA
SW8270C	Pentachlorophenol	mg/L	NA	NA	NA	NA	NA
SW8270C	Phenanthrene	mg/L	NA	NA	NA	NA	NA
SW8270C	Phenol	mg/L	NA	NA	NA	NA	NA
SW8270C	Pyrene	mg/L	NA	NA	NA	NA	NA

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TAB

APPENDIX E

APPENDIX E

BORING LOGS AND MONITORING WELL CONSTRUCTION FORMS

CORPORATION

VISUAL CLASSIFICATION OF SOILS

627 213

PROJECT NUMBER 768579	PROJECT NAME NAS FT WORTH JRB	
BORING NUMBER WITCTA036	COORDINATES	DATE 4-17-97
ELEVATION	GWL Depth Date/Time	DATE STARTED 4-17-97
ENGINEER/GEOLOGIST R. SCHOENLE	Depth Date/Time	DATE COMPLETED 4-17-97
DRILLING METHODS. HSA		PAGE 1 OF 1

DEPTH	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER	RECOVERY	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
5							
10				BLANK DRILL USE SB114501 LOG			
15							
20			48	GRAY, FG TO MED SAND, ~~LOOSE~~ MED DENSE, SATURATED, SHELL FRAGMENTS, BECOMING GRAVELLY @ 22', STRONG ODOR	SW		7.5YR/5/1
			60	LT BRN, FG TO MED SAND, MED DENSE, SATURATED, SOME GRAVEL, STRONG ODOR	SP		7.5YR/4/6
25				DRK GRAY, WEATHERED LS			
				TD 24'			

NOTES

AT DPT LOCATION SB114501

MEASURED DTW 13.9' BGS / 13.6' TOC

TD 23.7' BGS / 23.4' TOC

* FREE PRODUCT IN SAMPLE TUBE 19-24' INTERVAL

402-11 B

TECHNOLOGY CORPORATION

627 214

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER 768579 8202 0000	PROJECT NAME NAS Ft Worth JRB	
BORING NUMBER WICATA 04U	COORDINATES	DATE 1/19/98
ELEVATION 579.50	GWL: Depth 12' Date/Time 1/19/98	DATE STARTED 1/19/98
ENGINEER/GEOLOGIST B Musson	Depth Date/Time	DATE COMPLETED 1/19/98
DRILLING METHODS HSA		PAGE 1 OF 1

DEPTH Ft	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER	RECOVERY Ft	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS PID Results
			5' / 2'	Fill material, fine sand	Fill		0 ppm
5			5 / 2'	dk clay, stiff hard dry slightly plastic Becoming sandy @ depth	Cl		3.5 ppm throughout 2' length
10	▽		5' / 4'	9.5' lt grey sandy silt slightly moist non plastic. Same as above	ML		3.5 4.0 ppm to depth @ 15'
15			5' / 5'	12' change silty clay lt grey w/yellowish streaks plastic soft to stiff @ 14' moist. Same as above to 16.5'	Cl		4-5 ppm to depth
20			4' / 4'	Silty sandy clay w/gravel lt tan plastic moist to wet stiff @ 18.5' and dry again becoming lt brown	SC		4 ppm through out depth
25				Sand, loose, v wet, non sorted tan to brown Quartz w/ limestone @ 24' TD @ 24'	SP		

NOTES

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TECHNOLOGY CORPORATION

627 215

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER 168879 S202	PROJECT NAME NAS Ft Worth JRM		
BORING NUMBER WIRGATA 041	COORDINATES		DATE 1-20-98
ELEVATION 578.43	GWL Depth	Date/Time	DATE STARTED 1-20-98
ENGINEER/GEOLOGIST M. Brown	Depth	Date/Time	DATE COMPLETED 1-20-98
DRILLING METHODS HSA			PAGE 1 OF 1

DEPTH (FT)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 6"	RECOVERY	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
1	split spoon	N/A	100%	brown clay with cobbles and concrete fragments (fill material), dry, to 3.5'	fill	N/A	1 ppm at 1'
2							3 ppm at 2.5'
3							
4				very dk gray silty clay, slightly moist, moderately plastic, hard, no odor	CL		2 ppm at 4'
5							
6	split spoon		50%	(5'-10') - only 2.5' recovered			
7				description as above at 3.5', becoming very hard, with minor vfine white limestone grains, no odor			3 ppm at 8'
8							
9							
10	split spoon		60%	(10' 15') - only 3' recovered			
11				gray silty clay with yellowish-brown streaking throughout, dry, very friable, stiff to hard, with abundant small shell fragments, nonplastic, no odor			
12							2 ppm
13							
14							
15							
16	split spoon		0	15'-20' no recovery			
17							
18							
19							
20	split spoon		100%	at 20' gray sandy silt, wet, loose, nonplastic	ML		3 ppm at 21'
21				at 21.5': gravelly sand, poorly sorted, loose, wet, chunks of gray limestone, no odor	SP		
22				hit bedrock @ 22'			
				Total depth 22'			

NOTES

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TECHNOLOGY CORPORATION

627 216

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER 768579 SLO:OU	PROJECT NAME Ft. Worth NAS JRD	
BORING NUMBER W, TCTA 042	COORDINATES	DATE 01/19/98
ELEVATION	GWL Depth Date/Time	DATE STARTED 01/19/98
ENGINEER/GEOLOGIST B Missouri	Depth Date/Time	DATE COMPLETED 01/19/98
DRILLING METHODS HSA		PAGE 1 OF 1

DEPTH Ft	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER	RECOVERY Ft	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS PID
	SS		5' / 5'	Fill material 1-7 Dark Gray clay, stiff, plastic Dry w/ stringers of silt	Fill Ch		0 ppm
5	SS		5' / 5'	7-11 Lt Green clay w/ silty sand inclusion stiff, plastic, Dry	Cl		4 ppm
10	SS		5' / 2.5'	11-13 Silty clay, 40% silt, plastic soft to stiff Dry to moist TAN SAND, well sorted, loose, wet	Cl		5 ppm
15	SS		5' / 1'		SP		4.5 ppm
20	~~SS~~			TD 20'			
25							

NOTES

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TECHNOLOGY CORPORATION

627 217

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER 768579 8202 000	PROJECT NAME NAS Ft Worth JRB		
BORING NUMBER WITCATA043	COORDINATES		DATE 1-20-98
ELEVATION	GWL Depth	Date/Time	DATE STARTED 1-20-98
ENGINEER/GEOLOGIST B Massey	Depth	Date/Time	DATE COMPLETED
DRILLING METHODS. HSA			PAGE 1 OF 1

DEPTH Ft	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER	RECOVERY Ft	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS PID Readings
			5' / 5'	0-2' Fill material	Fill		1 ppm
				2-7' Dk gray silty clay (10-15% silt), plastic, stiff dry.	Cl		
5			5' / 5'	7-9' Tan to brown silty sandy clay, 10% silty sand, plastic stiff dry no odor			<1 ppm
				9-14' sandy silty clay. Non plastic dry no odor	Cl		
10			5' / 2'				<1 ppm
				14'- silty clay, 5% sand lt olive green plastic soft to stiff. dry	Cl		
15			5' / 2'				<1 ppm
				18-20 sand, tan poorly sorted loose v wet no odor	SP		
20				TDC 20			

NOTES

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TECHNOLOGY CORPORATION

627 218

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER 768579820200000	PROJECT NAME NAS Ft. Worth JRB	
BORING NUMBER WITCTA 044	COORDINATES	DATE 1-20-98
ELEVATION	GWL: Depth Date/Time	DATE STARTED 1-20-98
ENGINEER/GEOLOGIST B. Missoni	Depth Date/Time	DATE COMPLETED 1-20-98
DRILLING METHODS. HSA		PAGE 1 OF 1

DEPTH Ft	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER	RECOVERY Ft	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
			5' / 5'	DK 0-6' Fill material NON 5-4 Brown silty sandy clay (20%) plastic stiff, Dry no odor 4-6' dk olive green silty clay, plastic stiff to firm, Dry	Fill		2 ppm to depth
5			5' / 4'	6'-17 Tan sandy gravely clay, non plastic, stiff to firm, Dry Brown streaks Through out	Cl		3-4 ppm Thru out
10			5' / 2'				3 ppm
15			5' / 2'	Sandy clay 80% sand, plastic soft V wet. Silty sand, poorly sorted, loose V very wet no odor	SM		2 ppm
20				TD @ 20' Grey w/ yellowish Brown mottling streaky			

NOTES

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TECHNOLOGY CORPORATION

627 219

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER 768379	PROJECT NAME NAS FT WORTH JRS	
[illegible]ING NUMBER SB114501	COORDINATES	DATE 4-4-97
[illegible]VATION	GWL Depth 12.7' Date/Time 4-4-97/1250	DATE STARTED 4-4-97
ENGINEER/GEOLOGIST R SCHOENEWE	Depth Date/Time	DATE COMPLETED 4-4-97
DRILLING METHODS DPT		PAGE 1 OF 1

DEPTH	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER	RECOVERY	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
	MS 1520		24/24	FILL	N/A		N/A
			24/24	BLACK, CLAY, STIFF, SLT MOIST, SLT MOTTLED BRN	CL		7.5YR/2.5/1 > 0.0 ppm
5			24/24	DRK GRAY CLAY, MED STIFF, SLT MOIST HEMATITE STAINING, SOME FN CaCO3 NODULES	CL		10YR/5/7 > 0.0 ppm
			18/24	GRAYISH BRN CLAY, STIFF, SLT MOIST, SOME CaCO3 NODULES, CALCAREOUS			10YR/5/2 > N/A
10			20/24	SAME AS ABOVE			> N/A
			24/24	PRESENCE OF [illegible] FRAGMENTS @ 11.0'-13.0, MOIST, [illegible]	CL		> [illegible]
15	MS 1521		22/24	SAME AS ABOVE, MED STIFF, FUEL ODOR			> 36 [illegible]
3 ▽			18/24	GRAY, SANDY CLAY, MED STIFF, MOIST, FUEL ODOR, SLT MOTTLED	CL		10YR/5/1 > 86.0 ppm
			12/24	GRAY, FG SAND, MED DENSE, VIMOIST, STRONG FUEL ODOR	SP		10YR/5/1 > 92.0 ppm
20							
25							

NOTES

MEASURED DTW = 12.7'

~~FREE~~ PHASE SEPARATED PRODUCT IN BOREHOLE

402-11-86

INTERNATIONAL TECHNOLOGY CORPORATION

627 220

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER 768579	PROJECT NAME NAS FT WORTH JRB	
BORING NUMBER SB114502	COORDINATES	DATE 4-4-97
ELEVATION	GWL Depth N/A Date/Time	DATE STARTED 4-4-97
ENGINEER/GEOLOGIST R SCHOENEN	Depth Date/Time	DATE COMPLETED 4-4-97
DRILLING METHODS DPT		PAGE 1 OF 1

DEPTH	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER	RECOVERY	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
	MS 1522		24/24	FILL	N/A		N/A
				BLACK CLAY, STIFF, SLT MOIST, SLT MOTTLED BRN	CL		7.5YR/2.5/1
5							
10							
	MS 1523		24/24	GRAYISH BRN CLAY, STIFF, MOIST, CALCAREOUS, FUEL ODOR	CL		10YR/5/2 >25.0 ppm
15							
20							
25							

NOTES

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TECHNOLOGY CORPORATION

627 221

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER 768579	PROJECT NAME NAS Ft Worth - OWS RFI Addendum	
BORING NUMBER SB1.7503	COORDINATES	DATE 1-16-98
ELEVATION	GWL Depth Date/Time	DATE STARTED 1-16-98
ENGINEER/GEOLOGIST M. Brown	Depth Date/Time	DATE COMPLETED 1-16-98
DRILLING METHODS Stratoprobe		PAGE 1 OF 1

DEPTH (feet)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 1	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
1	CARS39 1700	N/A	75%	0-0.5 no recovery	fill	N/A	
2				brown sandy clay with gravel, sand, concrete fragments (fill), moist, soft, nonplastic			4ppm at 2'
3			60%	gravelly to 3.5'	CL		
4				at 4' dk. gray silty clay, hard, dry, nonplastic, friable			2ppm at 4'
5			100%				
6				at 6' description as at 4'			5ppm at 6'
7			100%				
8				light gray silty clay, dry, stiff to hard, slightly plastic, with white caliche nodules			5ppm at 8'
9			100%				
10				light gray silty clay with yellow sh-brown streaks and caliche nodules and veins, dry, hard, nonplastic, friable			5ppm at 10'
11			60%				
12				at 12' description as above			5ppm at 12'
13	CARS39 1700		100%				
14				at 14' gray silty clay, stiff, slightly moist, veins of calcite, slightly plastic, hydrocarbon odor at 14'			18ppm at 14'
15			100%				
16				at 16' light gray silty clay, soft to firm, moist, nonplastic, slight odor as at 14'			7ppm at 16
17	CARS39 1700		100%		ML		
18				at 18' gray sandy silt, moist, nonplastic, odor as above			15ppm at 18'
19			90%	wet at 18.5' sand starts	SM		
20				at 20' silty sand, gray sh-brown, loose, wet, slight odor as above			5ppm at 20'

Total depth 20'

NOTES

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TECHNOLOGY CORPORATION

627 222

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER 768579	PROJECT NAME OWS RFI Addendum-NAS Ft Worth	
BORING NUMBER S3114504	COORDINATES	DATE 1-15-98
ELEVATION	GWL Depth Date/Time	DATE STARTED 1-15-98
ENGINEER/GEOLOGIST M Brown	Depth Date/Time	DATE COMPLETED 1-15-98
DRILLING METHODS Stratapro be		PAGE 1 OF 1

DEPTH (feet)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 1	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
1	CAR539-1703	N/A	80%	at 1', beige colored fine sand (f.1) loose	f.11	N/A	6ppm at 2'
2	CAR539-GE-03			at 2' grey clay mixed with gravel & sand (f.11)			
3			80%	f.11 material ends about 3'	CL		
4				very dk. gray clay, hard, dry, nonplastic			0ppm at 4'
5			100%				
6				description as at 4', very friable			6ppm at 6'
7			100%				
8				gray silty clay, dry, hard, nonplastic,			8ppm at 8'
9			100%	pea-sized caliche nodules			
10				gray silty clay, dry, hard, with yellowish brown streaking			0.5 ppm at 10'
11			100%				
12	CAR539-GE-04			gray silty clay with yellow-brown streaks, slightly moist, nonplastic, friable			4ppm at 12'
13			100%				
14	CAR539-1704			description as at 12'	U		6ppm at 14'
15			100%	becoming wet, silty at 14.5'	ML		
16				light grayish-brown clayey silt, wet, nonplastic, firm			1.5 ppm at 16'
				Total depth 16.0'			

NOTES

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INTERNATIONAL TECHNOLOGY CORPORATION

627 223

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER 768579	PROJECT NAME SWS RFI Addendum - NAS Ft Worth JRB	
BORING NUMBER SB114506	COORDINATES	DATE 1-15-98
ELEVATION	GWL Depth Date/Time	DATE STARTED 1-15-98
ENGINEER/GEOLOGIST M.Brown	Depth Date/Time	DATE COMPLETED 1-15-98
DRILLING METHODS. Stratoprobe		PAGE 1 OF 1

DEPTH (ft)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER (-)	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
1	CARS39 1706	NA	100%	gray gravelly clay (fill), dry, nonplastic, ct. f.f, pebbles of concrete	fill	N/A	
2							
3			100%	fill ends at 3			
4				dk gray silty clay, hard, dry, non-plastic	CL		
5			100%				
6				description as at 4'			0ppm at 6'
7			100%				
8				gray silty clay, hard, dry, nonplastic, yellowish-brown patches			0ppm at 8'
9			100%				
10				description as at 8', with caliche (gravel-sized) nodules			0ppm at 10'
11			100%				
12				tight gray silty clay with fine-sand size limestone fragments, slightly moist, firm, nonplastic			6ppm at 12'
13	CARS39 1707		100%				
14				description as at 12'			4ppm at 14'
15			100%	at 14.5', grayish-brown silty sand, wet, loose	SM		0ppm at 16'
16							

Total depth 16'

NOTES

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CORPORATION

627 224

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER 768579	PROJECT NAME B12.1145 OWS Addendum-NAS Ft. Worth JRL	
BORING NUMBER SB114507	COORDINATES	DATE 1/15/98
ELEVATION	GWL. Depth Date/Time	DATE STARTED 1/15/98
ENGINEER/GEOLOGIST M. Brown	Depth Date/Time	DATE COMPLETED 1/15/98
DRILLING METHODS Stratoprobe		PAGE 1 OF 1

DEPTH (FT)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 6"	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
1	CARS39-1708	N/A	100%	dk. gray gravelly clay, stiff-hard, dry, slightly plastic	CL	N/A	
2	soil						PID of sample at 2', 1.0 ppm
3	CARS39-GE001-soil		100%				
4				dk gray silty clay, stiff-hard, dry, slightly plastic			2 ppm at 4' soil
5			no recovery				
6				dk gray silty clay, soft-firm, slightly moist, w/ in pockets of brown sand, clay			1.5 ppm at 6' in soil
7			100%				
8				dk gray silty clay, stiff-hard, dry, minor small gravels			0.5 ppm at 8'
9			100%				
10				light gray silty clay with yellowish brown streaks, hard, dry			1 ppm at 10'
11			100%				
12				description as at 10'			0 ppm at 12'
13			100%				
14	CARS39-GE002			light gray sandy silt, slightly moist, non plastic, soft to firm	ML		3 ppm at 14'
15			50%		SM		peak of 150 ppm at 15'
16	CARS39-1709	✓		light gray silty sand, wet, loose, sands very fine			
				TD 16.0'			
20							

NOTES

402-11-88

TECHNOLOGY CORPORATION

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VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER 768579	PROJECT NAME NAS Fr. Worth - OWS RFI Addendum		
BORING NUMBER SB114508	COORDINATES		DATE 1-15-98
ELEVATION	GWL: Depth	Date/Time	DATE STARTED 1-15-98
ENGINEER/GEOLOGIST MBrown	Depth	Date/Time	DATE COMPLETED 1-15-98
DRILLING METHODS Straight probe			PAGE 1 OF 1

DEPTH (feet)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 1	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
1	CARS29 1711	N/A	100%		fill	N/A	
2				dk gray gravelly clay (fill), stiff-hard, dry, slightly plastic			0ppm at 2'
3			100%				
4				dk gray silty clay, stiff-hard, dry, nonplastic, appears to be native soil	CL		0ppm at 4'
5			100%				
6				description as at 4'			0ppm at 6'
7			100%				
8				light gray silty clay with pea-seed caliche nodules, nonplastic, dry, stiff			0ppm at 8'
9			100%				
10				light gray silty clay with yellowish brown streaking, nonplastic, dry, hard			0ppm at 10'
11			100%				
12				light gray silty clay, stiff, nonplastic, slightly moist			0ppm at 12'
13	CARS39 1712		100%				
14				at approximately 13.5': light gray silty sand, loose, very moist, fine sands	SM		0ppm at 14'
15				Total depth 14'			

NOTES

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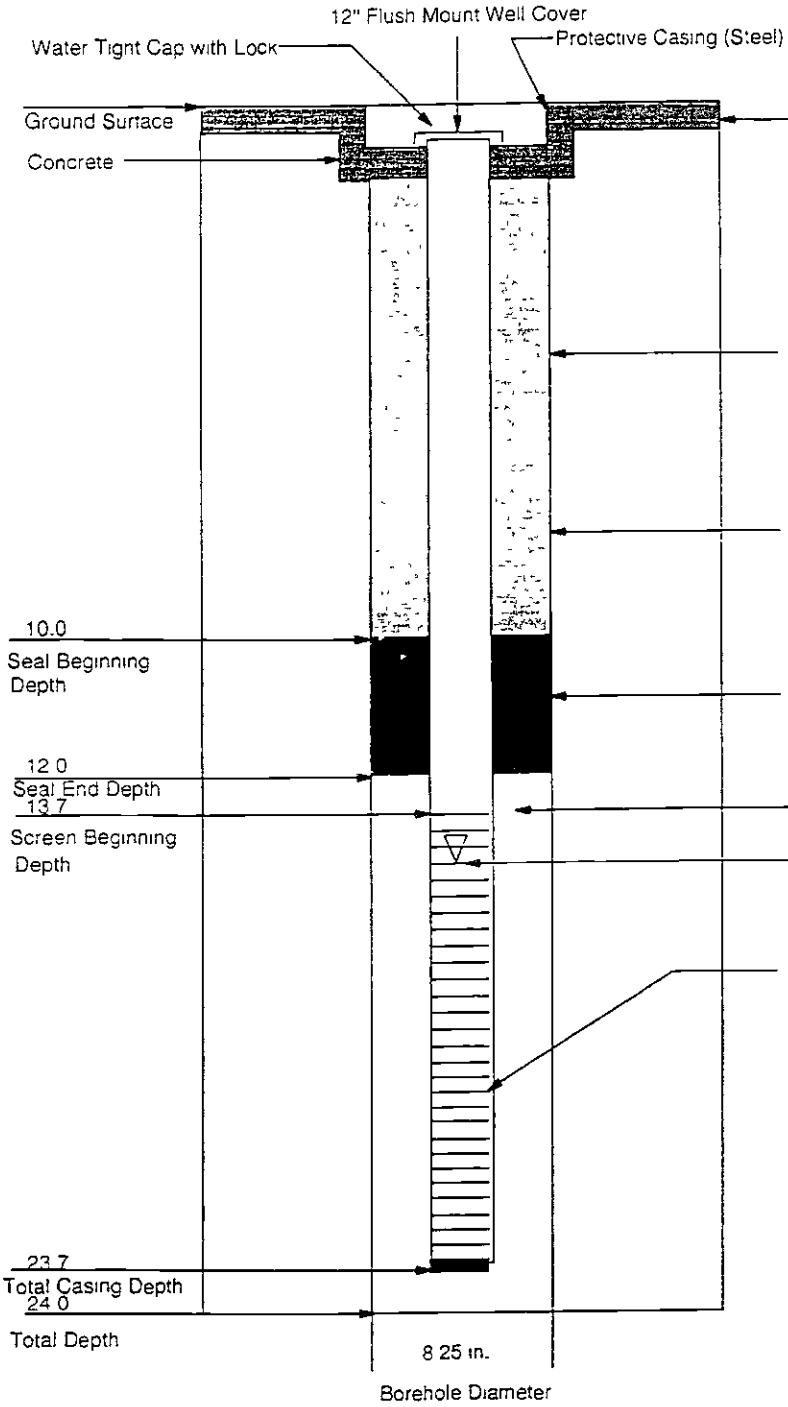
INTERNATIONAL TECHNOLOGY CORPORATION

Well Completion Information

prepared for

NAS FT Worth AFB TX (St)
Project # 768579 D O # 39
Well Owner USAF
Location I D WITCTA036
Installation Date 4/17/97
N T S

Depth (ft):



Casing Material PVC
Casing Inside Diameter 2.0 (in)

Cement Grout

Bentonite Seal

Sand Filter Pack
Length 12 0 (ft)

Encountered Groundwater at 13 9 (ft.)
on date 4/16/97 time 1230

Screen Material PVC
Screen Length 10 (ft)
Screen Inside Diameter 2 0 (in)
Screen Slot Size 0 010 (in)

Well Type MNW
Completion Method GS
Geologic Zone P
Sole Source Aquifer. UNK (other)
Elevation Top of Casing 578 75

SUPPLIES
20/40 Sand 325 lbs
Grout lbs
Bentonite 52 lbs
Other

036 drw\carswell\oct\4/15/98

HYDRO GeoLogic INC

WELL CONSTRUCTION DETAILS AND ABANDONMENT FORM

FIELD REPRESENTATIVE. Brad Nielsen

DRILLING CONTRACTOR GPI

DRILLING TECHNIQUE HSA
AUGER SIZE AND TYPE. 8 1/4

BOREHOLE IDENTIFICATION WHGLTA036
BOREHOLE DIAMETER. 10"
WELL IDENTIFICATION: WHGLTA036

WELL CONSTRUCTION START DATE:
WELL CONSTRUCTION COMPLETE DATE

SCREEN MATERIAL Sched 40 PVC 0.10" slot
SCREEN DIAMETER. 4"
STRATUM-SCREENED INTERVAL (FT) 14-24'

CASING MATERIAL Sched 40 PVC
CASING DIAMETER 4"

TYPE OF FILTER PACK Quartz silica sand
GRADIATION 20/40
AMOUNT OF FILTER PACK USED 10 - 50lb bags

TYPE OF BENTONITE Holeplug chips
AMOUNT BENTONITE USED. 1 bag

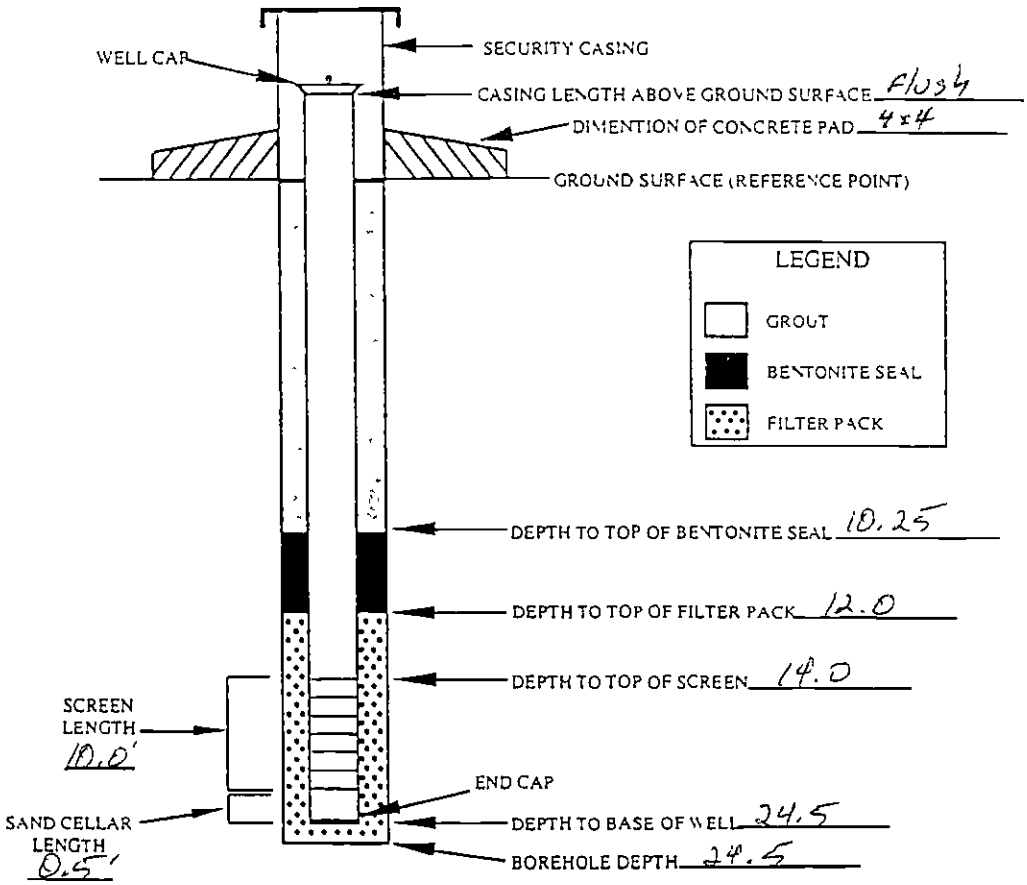
TYPE OF CEMENT: Portland cement
AMOUNT CEMENT USED. 4 - 100lb bags
GROUT MATERIALS USED. tremie

DIMENSIONS OF SECURITY CASING 12"

TYPE OF WELL CAP expanding
TYPE OF END CAP threaded PVC

COMMENTS

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: Benny Hiratosa INSTALLATION OBSERVED BY Brad Nielsen

DISCREPANCIES

627 228

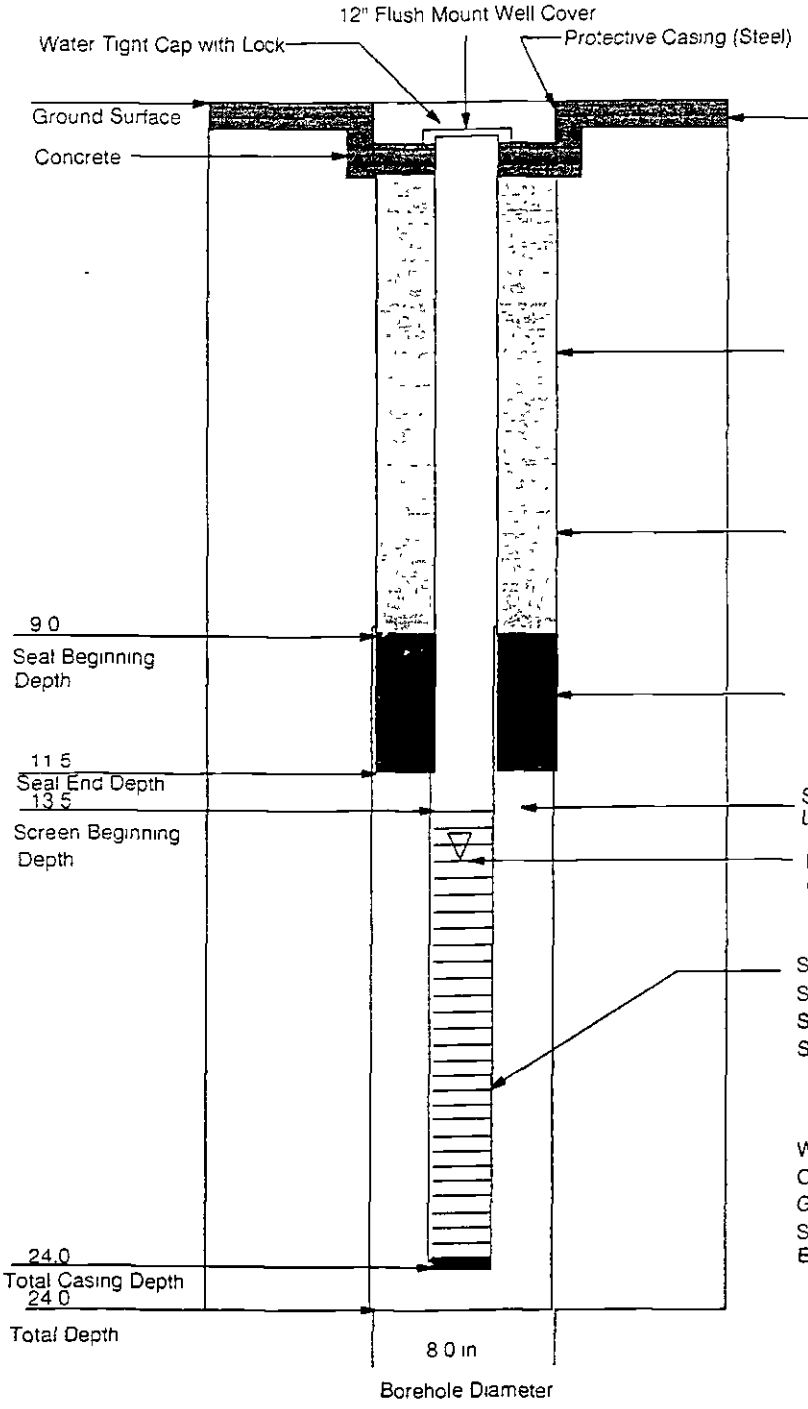
INTERNATIONAL TECHNOLOGY CORPORATION

Well Completion Information

prepared for

NAS FT Worth AFB TX (St)
Project # 768579 D O # 39
Well Owner USAF
Location I D WITCTA040
Installation Date 1/19/98
N T S

Depth (ft)



4 ft by 4 in concrete pad

Casing Material PVC
Casing Inside Diameter 2.00 (in)

Cement Grout

Bentonite Seal

Sand Filter Pack
Length 12.50 (ft)

Encountered Groundwater at 10.20 (ft)
on date 1/21/98 time 1400

Screen Material PVC
Screen Length 10 (ft)
Screen Inside Diameter 2.0 (in)
Screen Slot Size 0.010 (in)

Well Type MNW
Completion Method GS
Geologic Zone P
Sole Source Aquifer. UNK (other)
Elevation Top of Casing 579 11

SUPPLIES
20/40 Sand 400 lbs.
Grout 350 lbs.
Bentonite 25 lbs.
Other Flush Mount and Pad

040 drw\carswell\pc\7/2/98

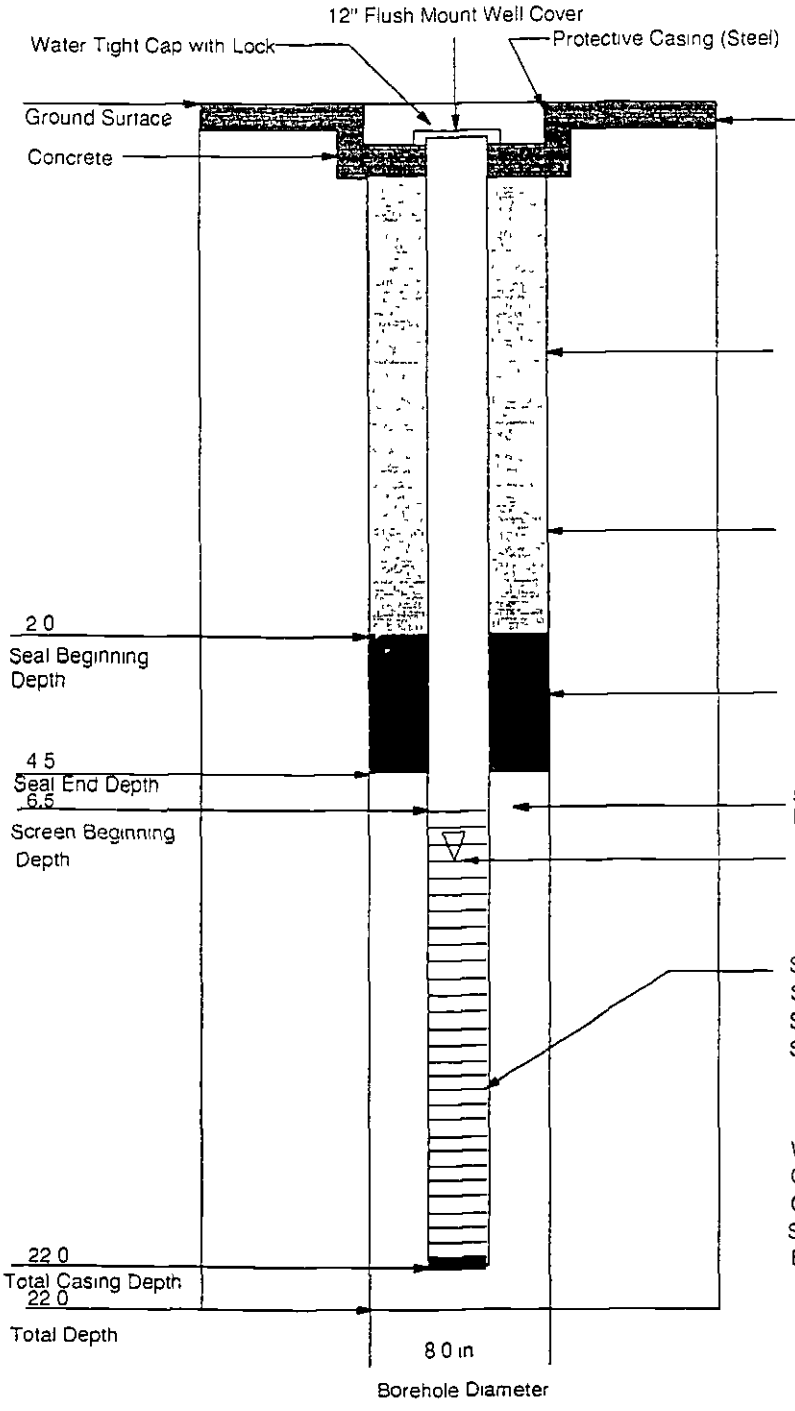
INTERNATIONAL TECHNOLOGY CORPORATION

Well Completion Information

prepared for

NAS FT Worth AFB TX (St)
Project # 768579 D O # 39
Well Owner USAF
Location I D WITCTA041
Installation Date 1/20/98
N T S

Depth (ft.):



Well Type MNW
Completion Method GS
Geologic Zone
Sole Source Aquifer UNK (other)
Elevation Top of Casing 577.97

SUPPLIES		
20/40 Sand	600	lbs.
Grout	2.5	lbs
Bentonite	25	lbs
Other	Flush Mount and Pad	

041 drw\carswell\pc\4/15/98

627 230

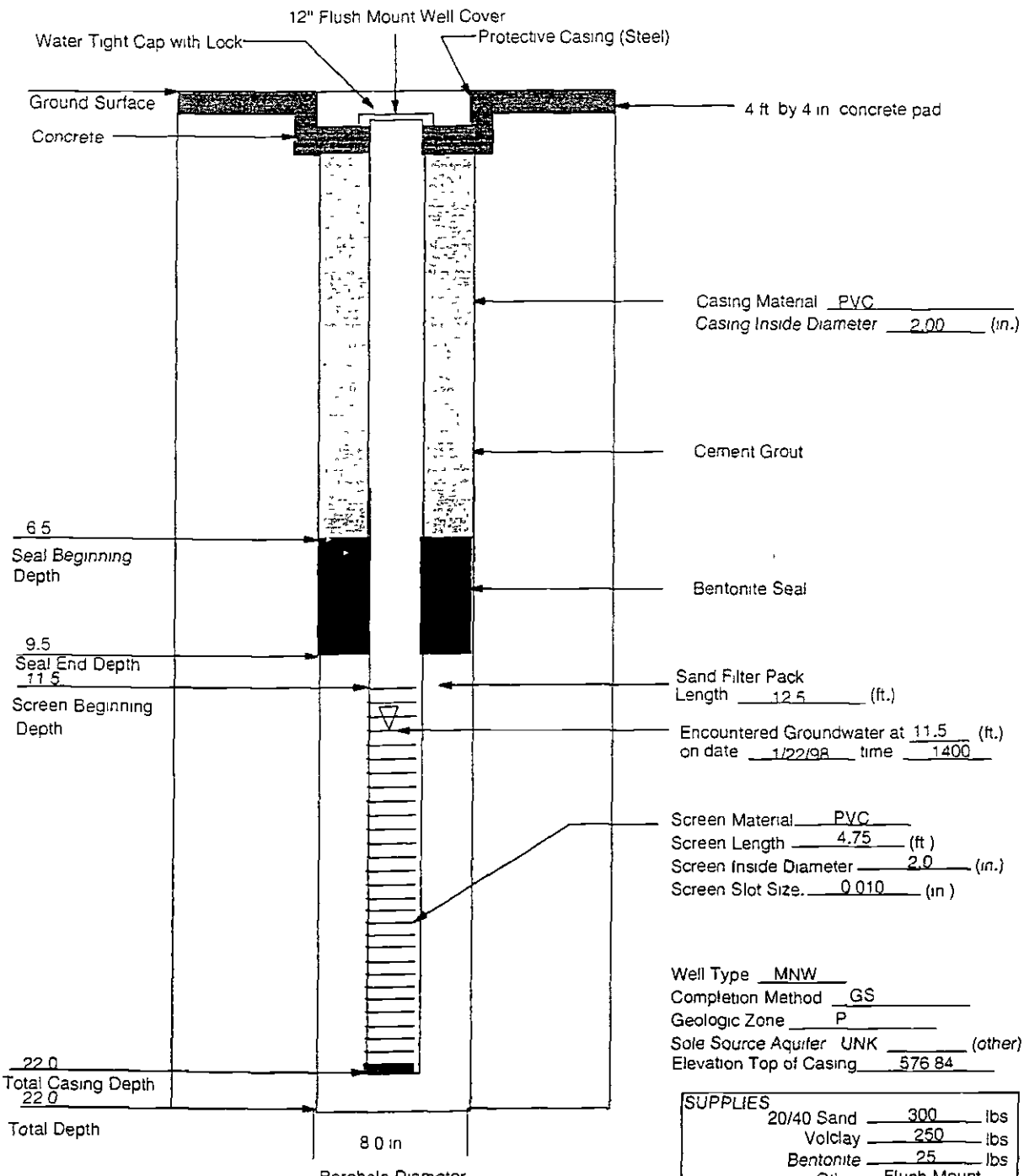
INTERNATIONAL TECHNOLOGY CORPORATION

Well Completion Information

prepared for

NAS FT Worth AFB TX (St)
Project # 768579 D O # 39
Well Owner USAF
Location I.D WITCTA042
Installation Date 1/19/98
N T S

Depth (ft.):



SUPPLIES
20/40 Sand 300 lbs
Volclay 250 lbs
Bentonite 25 lbs
Other Flush Mount and Pad

044 drw\carswell\pc\4/15/98

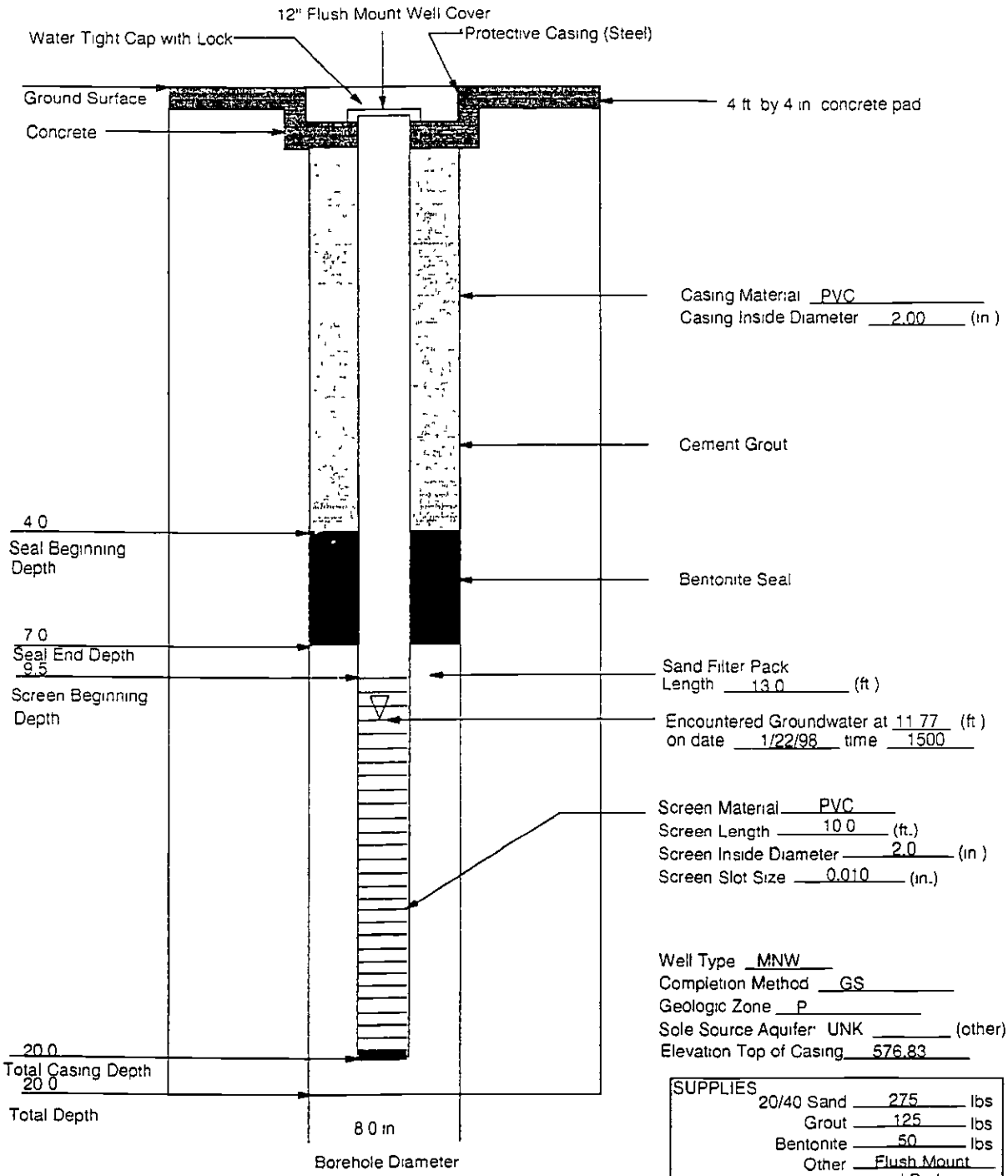
INTERNATIONAL TECHNOLOGY CORPORATION

Well Completion Information

prepared for

NAS FT Worth AFB TX (St)
Project # 768579 D O # 39
Well Owner USAF
Location I D WITCTA043
Installation Date 1/20/98
N T S

Depth (ft.)



Well Type MNW
Completion Method GS
Geologic Zone P
Sole Source Aquifer UNK (other)
Elevation Top of Casing 576.83

SUPPLIES
20/40 Sand 275 lbs
Grout 125 lbs
Bentonite 50 lbs
Other Flush Mount and Pad

043 drw\carswell\pc\7/2/98

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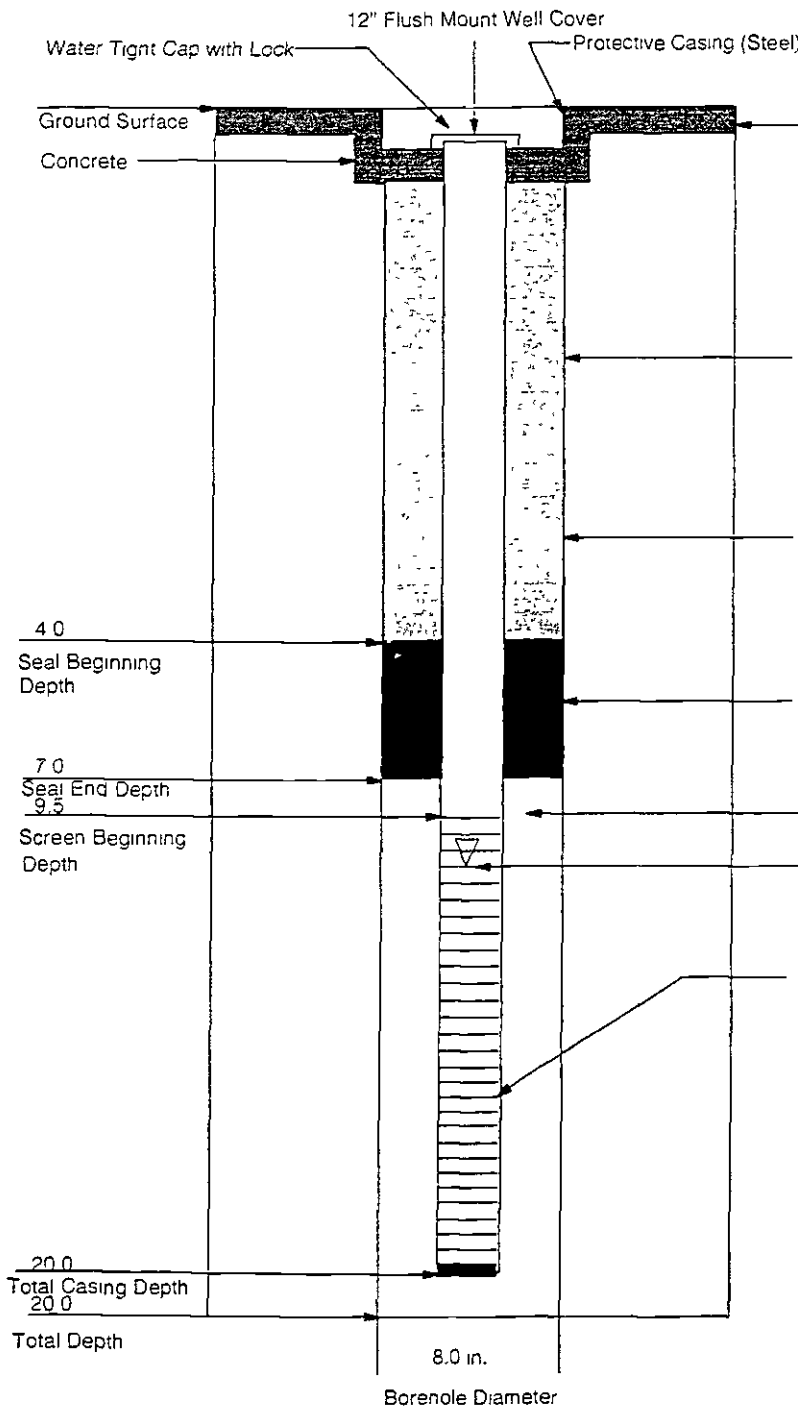
INTERNATIONAL TECHNOLOGY CORPORATION

Well Completion Information

prepared for

NAS FT Worth AFB TX (St)
Project # 768579 D O.# 39
Well Owner USAF
Location I D WITCTA044
Installation Date 1/20/98
N T.S

Depth (ft).



Well Type MNW
Completion Method GS
Geologic Zone. P
Sole Source Aquifer. UNK (other)
Elevation Top of Casing 575 76

SUPPLIES		
20/40 Sand	275	lbs
Grout	125	lbs.
Bentonite	50	lbs.
Other	Flush Mount and Pad	

044 drwcarswell\pc\4/15/98

HYDRO GeoLogic INC

Project No: AFC001-16BBB
Project: Phase II RFI
Client: AFCEE
Location: NAS FW JRB - AOC 13
Northing:

Borehole ID: BHGLAOC13001
Date: 12/11/00 0905
Geologist: K Duran
Ground Surface Elevation:
Easting:

SUBSURFACE PROFILE					SAMPLE			
Depth	Symbol	Description	Elevation	ASTM	Recovery	Moisture	PID (ppm)	Remarks
		Concrete	0					
1		***Blind Probe***						
2								
3			-3					
4		***Clay*** 10 YR 3/2, very dark grayish brown, stiff, dry, alphatic material from slough above, no odor, very calcareous material, <10% silt				Dry	0 0	
5							0 0	Collect BHGLAOC13001-2 from 4-6' at 0920
6			-6					
7		***Blind Probe***						
8								
9			-9					
10		***Clay*** 10 YR 5/3 brown, silty, stiff, dry, no odor, few calcareous nodules, homogeneous, some gray mottling toward 12'						Collect BHGLAOC13001-03 from 9' - 11' at 0930
11						Dry	0 0	
12								End boring at 12' bgs
13								
14								
15								
16								

Drilled By ESN
Drill Method DPT
Drilling Equipment Strataprobe

HydroGeoLogic, Inc
1155 Herndon Pkwy, Suite 900
Herndon, VA 20170
(703) 478-5186 FAX (703) 471-4180

Hole Size. 2"
Total Depth Drilled. 12'
Sheet. 1 of 1

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HYDRO GeoLogic INC.

Project No: AFC001-16BBB
Project: Phase II RFI
Client: AFCEE
Location: NAS FW JRB - AOC 13
Northing:

Borehole ID: BHGLAOC13002
Date: 12/11/00 1030
Geologist: K Duran
Ground Surface Elevation:
Easting:

SUBSURFACE PROFILE					SAMPLE			
Depth	Symbol	Description	Elevation	ASTM	Recovery	Moisture	PID (ppm)	Remarks
		Concrete	-1					Collect BHGLAOC13002-01 at 1015 from 1' - 2'
1		***Silty Clay*** 10 YR 4/2 dark grayish brown silty clay fill material with 10% (<=0 5"), dry, medium plasticity, strong odor						
2			-3		90%	Dry	0.0	
		Silty Clay 10 YR 3/2 very dark grayish brown silty clay, 3% calcareous nodules	-3					
3								
4		***Silty Clay*** 10 YR 3/2 very dark grayish borwn silty clay, damp,medium stiff, medium plastic, no odor						
5					100%	Damp	0 0	
			-6					
6		***Silty Clay*** Same as above, moist, no odor, 3" sand lense at 6 5', then back to 10 YR 4/2 dark grayish borwn silty clay						
7								
8						Moist	0 0	
			-9					
9		***Silty Clay*** 10 YR 5/2 grayish brown, silty clay, stiff, medium plastic, no odor, homogeneous						
10								Collect BHGLAOC13002-03 from 9-11' at 1030
11						Damp		
12								End boring at 12' bgs
13								
14								
15								
16								

Drilled By ESN
Drill Method. DPT
Drilling Equipment Strataprobe

HydroGeoLogic, Inc.
1155 Herndon Pkwy, Suite 900
Herndon, VA 20170
(703) 478-5186 FAX (703) 471-4180

Hole Size. 2"
Total Depth Drilled: 12'
Sheet. 1 of 1

HYDRO GeoLogic INC.

Project No: AFC001-16BBB
Project: Phase II RFI
Client: AFCEE
Location: NAS FW JRB
Northing:

Borehole ID: BHGLAOC13003
Date: 12/11/00 1045
Geologist: K. Duran
Ground Surface Elevation:
Easting:

SUBSURFACE PROFILE					SAMPLE			
Depth	Symbol	Description	Elevation	ASTM	Recovery	Moisture	PID (ppm)	Remarks
		Concrete	-1					
1		***Silty Clay*** 10 YR 3/1 very dark gray silty clay, some roots in top foot, slight odor, damp medium plasticity, medium stiff	-2		100			Collect BHGLAOC13003-01 from 0 5'-1 5' at 1055
2		***Calcareous Layer*** 10 YR 3/2 very pale brown calcareous layer	-3				0 0	
		Silty Clay 10 YR 3/1 very dark gray silty clay homogeneous silty clay						End boring at 3' bgs
4								
5								
6								
7								
8								

Drilled By: ESN
Drill Method: DPT
Drilling Equipment: Strataprobe

HydroGeoLogic, Inc.
1155 Herndon Pkwy, Suite 900
Herndon, VA 20170
(703) 478-5186 FAX (703) 471-4180

Hole Size: 2"
Total Depth Drilled. 3'
Sheet: 1 of 1

627 236

HYDRO GeoLogic INC.

Project No: AFC001-16BBB
Project: Phase II RFI
Client: AFCEE
Location: NAS FW JRB - AOC 13
Northing:

Borehole ID: BHGLAOC13004

Date: 12/11/00 1110
Geologist: K Duran
Ground Surface Elevation:
Easting:

SUBSURFACE PROFILE					SAMPLE			
Depth	Symbol	Description	Elevation	ASTM	Recovery	Moisture	PID (ppm)	Remarks
		Concrete	-1					
1		***Clay*** 10 YR 3/1 very dark gray, stiff, gravel 10-15%, <1cm diameter, damp, semi-plastic, no odor						Collect BHGLAOC13004-01 from 0.5-1.5' at 1120
2								
			-3					
3		***Silty Clay*** 10 YR 4/1 dark gray silty clay, homogeneous, no odor, soft, damp, medium plasticity				Damp	0 0	
4								
5						Damp		Collect BHGLAOC13004-02 from 4-6' at 1125
			-6					
6		***Silty Clay*** 10 YR 5/2 grayish brown silty clay, homogeneous, no odor, soft, damp, medium plasticity, more stiff toward 9' and mottling, 10YR 4/6 dark yellowish brown						
7								
8						Damp		
			-9					
9		***Silty Clay*** 10 YR 6/2 light brownish gray silty clay, stiff, damp, no odor, medium plasticity, homogeneous						
10						Damp		Collect BHGLAOC13004-03 at 1135
11								
12							0.0	End boring at 12' bgs
13								
14								
15								
16								

Drilled By: ESN
Drill Method: DPT
Drilling Equipment. Strataprobe

HydroGeoLogic, Inc
1155 Herndon Pkwy, Suite 900
Herndon, VA 20170
(703) 478-5186 FAX (703) 471-4180

Hole Size: 2"
Total Depth Drilled: 12'
Sheet: 1 of 1

HYDRO GeoLogic INC.

Project No: AFC001-16BBB
Project: Phase II RFI
Client: AFCEE
Location: NAS FW JRB - AOC 13
Northing:

Borehole ID: BHGLAOC13005
Date: 12/11/00 1320
Geologist: K.Duran
Ground Surface Elevation:
Easting:

SUBSURFACE PROFILE					SAMPLE			
Depth	Symbol	Description	Elevation	ASTM	Recovery	Moisture	PID (ppm)	Remarks
		Root Zone Organic material	0					
1		***Sand*** 10 YR 6/6 brownish yellow, sand, silty base fill, damp, well sorted	-2			Dry	0 0	Collect BHGLAOC13005-01 from 0- 5' at 1325
2								
3		***Silty Clay*** 10 YR 4/2 dark grayish brown, stiff, silty, calcareous material, >10% occurance, gravel >10cm, chert layer at 3', dry	-3					
4						Damp		
5		***Silty Clay*** 10 YR 3/1 very dark gray silty clay, damp, medium plasticity, no odor, homogeneous						Collect BHGLAOC13005-02 and DUP06 from 4-6' to 1330
6			-6					
		Silty Clay 10 YR 4/2 dark grayish brown silty clay, damp, med plasticity, no odor, homogeneous				Damp	0 0	
8								
9			-9					
		Silty Clay 10 YR 5/3 brown, stiff, damp, no calcareous material, no odor						
10								Collect BHGLAOC13005-03 from 9-11' at 1345
11						Damp	0.0	
12			-12					
		Silty Clay 10 YR 6/2 brown, soft, moist, no calcareous material, mottled with gray, 10 YR 6/2 light brownish gray						
13								
14						Moist	0 0	
15			-15					
		Silty Clay 10YR 5/2 grayish brown silty clay, homogeneous, stiff at top, soft at bottom, plastic, odor, increasing moisture with depth						Collect BHGLAOC13005-04 at 1400 from 14-16'. Water table at 16'
16								
17								
18								

Drilled By ESN
Drill Method DPT
Drilling Equipment: Strataprobe

HydroGeoLogic, Inc.
1155 Herndon Pkwy, Suite 900
Herndon, VA 20170
(703) 478-5186 FAX (703) 471-4180

Hole Size: 2"
Total Depth Drilled: 18'
Sheet. 1 of 1

TAB

APPENDIX F

APPENDIX F

DATA VALIDATION REPORTS

AFCEE VOCs
SW8260B
USEPA Level III Review

Site Naval Air Station Fort Worth JRB, Texas SDG # 9901G005

Laboratory STL (Recra) Date 03/11/99

HydroGeoLogic, Inc Reviewer. Ken Rapuano

Client Sample ID	Laboratory Sample ID	Matrix
WITCTA016WG07	9901G005-001	Water
ST14-W11WG07	9901G005-002	Water
DUP02	9901G005-003	Water
TB012699	9901G005-005	Water
WITCTA044WG07	9901G005-006	Water
WHGLTA601WG07	9901G005-007	Water
WCHMHTA013WG07	9901G005-009	Water

Sample Delivery and Condition - The samples arrived at the laboratory in acceptable condition and temperature. Proper custody (internal and external) was documented. No qualification required.

Holding Times - All samples were analyzed within the required holding times for preserved water samples No qualification required

GC/MS Tuning - All BFB tunes associated with initial and continuing calibrations were in control. No qualification necessary

Initial Calibration - The initial calibrations had acceptable %RSD and mean RRF values No qualification required

Continuing Calibration - All continuing calibration %Ds and RRFs were in control. No qualification necessary

Surrogates - All surrogate recoveries were in control. No qualification necessary.

Laboratory Control Samples - All LCSs associated with the analytical results for all samples had a high %R for 2,2-dichloropropane This compound was not detected in any sample and no qualification is necessary. Some %Rs in the LCSs associated with diluted runs were not in control; however, none of these compounds are reported in the diluted results, and no qualification is necessary.

MS/MSD - No MS/MSD was submitted with this package. Project MS/MSDs were in control, with the exception of the styrene %Rs in package 9901G043, which were below the LCL. Styrene was not detected in any sample in this SDG UJ-qualify all styrene results

Internal Standards - All internal standard data were in control No qualification necessary

Method Blanks - All method blanks were free from contamination. No qualification is necessary

Field Blanks - The trip blank associated with the samples were free from contamination. No equipment blanks were evaluated because all samples were collected from dedicated pumps. No qualification necessary

Field Duplicates - DUP02 is a field duplicate of ST14-W11WG07 No VOCs were detected in either member of the duplicate pair No qualification required

Compound Quantitation - All elements detected below the PQL are qualified 'F' Samples WITCTA016WG07 and WHGLTA601WG07 were analyzed at a secondary dilution in order to quantitate some analytes at concentrations above the calibrated range

Qualification Summary Table

Sample ID	Analyte	Lab Val	Lab Qual	HGL Val	HGL Qual
All samples	Styrene	PQL	U	PQL	UJ

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TCL VOLATILE ORGANIC COMPOUNDS
USEPA SW846 Method 8260B
USEPA Level III Review

Site: Naval Air Station Fort Worth JRB, Texas SDG #: 9904G057

Client: HydroGeoLogic, Inc Date: June 5, 1999

Laboratory: Severn Trent Laboratories, Chicago, IL Reviewer: Nancy Weaver

Client Sample ID	Laboratory Sample ID	Matrix
WITCTA041WG08	9904G057-001	Water
EB041999	9904G057-002	Water

Holding Times - All samples were analyzed within the recommended holding time of 14 days for preserved water samples as specified in Table 5 1 2-1 of the NAS Fort Worth JRB Basewide Quality Assurance Project Plan (QAPP), February, 1998. No qualifications were required

GC/MS Tuning - All of the BFB tunes in the initial and continuing calibrations met the percent relative abundance criteria. No qualifications were required.

Initial Calibration - The initial calibrations analyzed on 1/23/99 and 1/24/99 exhibited acceptable %RSD and mean RRF values. No qualifications were required

Continuing Calibration - The continuing calibration analyzed on 4/28/99 (0833) exhibited high %D values for dichlorodifluoromethane and trichlorofluoromethane of 28.9% and 27.9%, respectively. Both compounds have been rejected (R) in sample EB041999.

The continuing calibration analyzed on 4/28/99 (1836) exhibited high %D values for 1-chlorohexane and 1,2-dibromo-3-chloropropane of 32.0% and 33.7%, respectively. Both compounds have been rejected (R) in sample WITCTA041WG08

Surrogates - All samples exhibited acceptable surrogate %R values. No qualifications were required.

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Laboratory Control Samples - LCS samples VBLKYS and VBLKRY exhibited acceptable %R values No qualifications were required.

MS/MSD - MS/MSD sample WHGLTA007WG08 (from SDG 9904G141) exhibited high MS/MSD %R values for bromochloromethane, tetrachloroethene, bromoform, and 1,1,2,2-tetrachloroethane of 212%/198%, 128%/ok, 140%/132%, and 148%/131%, respectively, and a high RPD value for 1,2,3-trichloropropane of 23. All associated results are non-detect and no qualifications were required.

MS/MSD sample FT09-12CWG08 (from SDG 9904G121) exhibited a low MSD %R value for naphthalene of 26% and high MS/MSD %R values for bromochloromethane, trichloroethene, tetrachloroethene, 1,2-dibromoethane, and bromoform of 212%/213%, 127%/126%, 127%/130%, 128%/129%, and 146%/146%, respectively. Trichloroethene has been qualified (J) for positive results in all samples. Naphthalene has been qualified (J) for positive results and (UJ) for non-detects in all samples. All other associated results are non-detect and no further qualifications were required

MS/MSD sample WHGLTA003WG08 (from SDG 9904G981) exhibited a high MS %R value for trichloroethene of 131% and a high RPD value for trichloroethene of 32. All associated results are non-detect or already qualified and no qualifications were required.

MS/MSD sample GMI-22-06MWG08 (from SDG 9904G094) exhibited a high MS %R value for trichloroethene of 138%, low MS/MSD %R values for trichloroethene and styrene of ok/-6% and 6%/5%, respectively, and a high RPD value for cis-1,2-dichloroethene of 21. Trichloroethene and styrene have been qualified (J) for positive results and (UJ) for non-detects in all samples. Cis-1,2-Dichloroethene has been qualified (J) for positive results in all samples.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria. No qualifications were required

Method Blank - Method blanks VBLKYS (4/28/99) and VBLKRY (4/28/98) were free of contamination. No qualifications were required.

Trip, field, equipment blank - Equipment blank EB041999 exhibited contamination for 1,1-dichloroethane, cis-1,2-dichloroethene, and trichloroethene, however, all results are non-detect in associated sample WITCTA041WG08 and no qualifications were required.

Field Duplicates - Field duplicate samples were not analyzed with this data package.

Tentatively Identified Compounds (TICs) - TICs were not detected in either sample.

Compound Quantitation - No discrepancies were identified.

Comments - The analyses of environmental samples and quality control samples are valid within the constraints identified with the data quality flags as presented in the continuing calibration and MS/MSD sections of this report. The NAS Fort Worth JRB Basewide Quality Assurance Project Plan, February, 1998, data validation criteria were used in evaluating the data in this summary report.

Data Validation Summary Table - The following table summarizes all qualifications as described in this data validation summary report.

Qualification Summary Table - Volatiles SDG 9904G057					
Sample No	Compound(s)	Reported		Validated	
		Conc	Qualifier	Conc	Qualifier
WITCTA041WG08	Trichloroethene	0 5	U	0 5	UJ
	1-Chlorohexane	0 5	U	0 5	R
	Styrene	0.4	U	0.4	UJ
	1,2-Dibromo-3-chloropropane	0 5	U	0 5	R
	Naphthalene	0.5	U	0.5	UJ
EB041999	Dichlorodifluoromethane	0 5	U	0 5	R
	Trichlorofluoromethane	0.5	U	0.5	R
	Cis-1,2-Dichloroethene	0 5	-	0 5	J
	Trichloroethene	3	-	3	J
	Styrene	0 4	U	0 4	UJ
	Naphthalene	0 5	U	0 5	UJ

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METALS
USEPA SW846 Methods 6010A, 7471
USEPA Level III Review

Site. Naval Air Station Fort Worth JRB, Texas SDG # 9904G057

Client HydroGeoLogic, Inc. Date: June 5, 1999

Laboratory. Severn Trent Laboratories, Chicago, IL Reviewer: Nancy Weaver

Client Sample ID	Laboratory Sample ID	Matrix
WITCTA041WG08	9904G057-001	Water
EB041999	9904G057-002	Water

Holding Times - All samples were extracted and analyzed within the recommended holding time of 180 days for all metals except 28 days for mercury as specified in Table 5 1.2-1 of the NAS Fort Worth JRB Basewide Quality Assurance Project Plan (QAPP), February, 1998. No qualifications were required.

Calibration - All initial and continuing calibration verifications exhibited acceptable %R values. No qualifications were required.

Method Blanks - The water preparation blank PBW (5/8/99), initial and continuing calibration blanks exhibited contamination for several compounds, however, all associated results were non-detect or greater than 5X the blank concentration with the exception of the following Aluminum, iron, and silver have been qualified (U) in both samples. Calcium, magnesium, and potassium have been qualified (U) in sample EB041999. Manganese has been qualified (U) in sample WITCTA041WG08.

Field and equipment blank - Equipment blank EB041999 exhibited barium, molybdenum, thallium, and zinc contamination at 0 63 ug/L, 1.6 ug/L, 4.4 ug/L, and 3.7 ug/L, respectively. Molybdenum, thallium, and zinc have been qualified (U) in sample WITCTA041WG08. Barium is greater than 5X the blank concentration in the associated sample and no further qualifications were required.

ICP Interference Check Sample - All % recovery values met the QC acceptance criteria No qualifications were required.

LCS - The LCS analysis met the QC acceptance criteria of as specified in the QAPP No qualifications were required

ICP Serial Dilutions - ICP serial dilution sample WITCTA017WG08 (in SDG 9904G055) exhibited a high %D value for potassium of 10 1% Potassium has been qualified (J) in sample WITCTA041WG08

ICP serial dilution sample ST14-24WG08 (in SDG 9904G094) exhibited acceptable %D values No qualifications were required.

Matrix Spike - Matrix spike sample WHGLTA007WG08 (in SDG 9904G141) exhibited a low %R value for chromium of 65 0% and a high %R value for lead of 177 6%. Chromium has been qualified (UJ) in both samples. Lead is non-detect in both samples and no further qualifications were required.

Matrix spike sample WHGLTA003WG08 (in SDG 9904G981) exhibited low %R values for arsenic and chromium of 74.8% and 68.4%, respectively. Arsenic has been qualified (UJ) in both samples. Chromium has already been qualified in both samples due to the other matrix spike sample and no further qualifications were required.

Matrix Spike Duplicate - Matrix duplicate sample WHGLTA007WG08 (in SDG 9904G141) exhibited an acceptable RPD value for mercury. No qualifications were required.

Matrix duplicate sample WHGLTA003WG08 (in SDG 9904G981) exhibited an acceptable RPD value for mercury. No qualifications were required.

Field Duplicates - Field duplicate samples were not analyzed with this data package.

Graphite Furnace Atomic Absorption (GFAA) Analysis - Sample WITCTA041WG08 exhibited a postdigestion spike for selenium analysis out of control limits (85-115%) and sample absorbance is less than 50% of spike absorbance The laboratory flagged this result (W) and the reviewer further qualified this result (UJ).

Compound Quantitation - All results between the MDL and the PQL have been qualified (F).

Comments - The analyses of environmental samples and quality control samples are valid within the constraints identified with the data quality flags as presented in the method blank, field blank, ICP serial dilution, matrix spike, GFAA, and compound quantitation sections of this report. The NAS Fort Worth JRB Basewide Quality Assurance Project Plan, February, 1998, data validation criteria were used in evaluating the data in this summary report.

Data Validation Summary Table - The following table summarizes all qualifications as described in this data validation summary report.

Qualification Summary Table - Metals SDG. 9904G057					
Sample No	Compound(s)	Reported		Validated	
		Conc	Qualifier	Conc.	Qualifier
WITCTA041WG08	Aluminum	263	B	263	U
	Arsenic	3 5	U	3 5	UJ
	Barium	120	B	120	F
	Chromium	1 2	U	1 2	UJ
	Iron	297	-	297	U
	Manganese	0 88	B	0.88	U
	Molybdenum	2 1	B	2 1	U
	Potassium	903	B	903	~~J~~ F
	Selenium	1 7	UW	1.7	UJ
	Silver	1 8	B	1.8	U
	Zinc	9 0	B	9 0	U
EB041999	Aluminum	52 7	B	52 7	U
	Arsenic	3 5	U	3 5	UJ
	Barium	0 63	B	0 63	F
	Calcium	110	B	110	U
	Chromium	1 2	U	1.2	UJ
	Iron	36 4	B	36 4	U
	Magnesium	23 4	B	23.4	U
	Molybdenum	1 6	B	1 6	F
	Potassium	59 2	B	59 2	U
	Silver	0 65	B	0 65	U
	Thallium	4 4	B	4,4	F
	Zinc	3.7	B	3 7	F

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TCL VOLATILE ORGANIC COMPOUNDS
USEPA SW846 Method 8260B
USEPA Level III Review

Site: Naval Air Station Fort Worth JRB, Texas SDG #: 9904G9121

Client: HydroGeoLogic, Inc. Date: June 6, 1999

Laboratory: Severn Trent Laboratories, Chicago, IL Reviewer: Nancy Weaver

Client Sample ID	Laboratory Sample ID	Matrix
TB042399	9904G121-001	Water
FT09-12CWG08	9904G121-002	Water
FT09-12CWG08MS	9904G121-002MS	Water
FT09-12CWG08MSD	9904G121-002MSD	Water
WHCTA044WG08	9904G121-003	Water
WHGLTA004WG08	9904G121-004	Water
WHGLTA004WG08DL1	9904G121-004DL1	Water
WHGLTA004WG08DL2	9904G121-004DL2	Water
LF05-5WG08	9904G121-009	Water
LF05-5WG08DL	9904G121-009DL	Water

Holding Times - All samples were analyzed within the recommended holding time of 14 days for preserved water samples as specified in Table 5.1.2-1 of the NAS Fort Worth JRB Basewide Quality Assurance Project Plan (QAPP), February, 1998. No qualifications were required.

GC/MS Tuning - All of the BFB tunes in the initial and continuing calibrations met the percent relative abundance criteria. No qualifications were required.

Initial Calibration - The initial calibrations analyzed on 1/23/99 and 1/24/99 exhibited acceptable %RSD and mean RRF values. No qualifications were required.

Continuing Calibration - The continuing calibration analyzed on 5/2/99 exhibited high %D values for trichlorofluoromethane, tetrachloroethene, 1-chlorohexane, bromoform, hexachlorobutadiene, and naphthalene of 30 5%, 39.5%, 40.9%, 38 5%, 25.8%, and 35.9%, respectively. All of the above compounds have been rejected (R) in samples TB042399, FT09-12CWG08, WHCTA044WG08, WHGLTA004WG08.

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The continuing calibration analyzed on 5/5/99 exhibited high %D values for tetrachloroethene and bromoform of 27 0% and 28 6%, respectively. All of the above compounds have been rejected (R) in samples WHGLTA004WG08DL1, WHGLTA004WG08DL2, LF05-5WG08, and LF05-5WG08DL

Surrogates - All samples exhibited acceptable surrogate %R values. No qualifications were required.

Laboratory Control Samples - LCS sample VBLKYU exhibited high %R values for bromochloromethane, tetrachloroethene, and hexachlorobutadiene of 178%, 138%, and 140%, respectively, however, all associated results are non-detect and no qualifications were required

MS/MSD - MS/MSD sample FT09-12CWG08 exhibited a low MSD %R value for naphthalene of 26% and high MS/MSD %R values for bromochloromethane, trichloroethene, tetrachloroethene, 1,2-dibromoethane, and bromoform of 212%/213%, 127%/126%, 127%/130%, 128%/129%, and 146%/146%, respectively. Bromochloromethane, trichloroethene, tetrachloroethene, 1,2-dibromoethane, and bromoform has been qualified (J) for positive results in all samples. Naphthalene has been qualified (J) for positive results and (UJ) for non-detects in all samples unless already rejected (R) due to calibration problems

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria. No qualifications were required.

Method Blank - Method blanks VBLKYU (5/2/99) and VBLKCX (5/5/99) were free of contamination. No qualifications were required.

Trip, field, equipment blank - Trip blank TB042399 exhibited naphthalene contamination at 2 ug/L, however, all associated results are non-detect and no qualifications were required.

Field Duplicates - Field duplicate samples were not analyzed with this data package.

Tentatively Identified Compounds (TICs) - All TICs were qualified (T).

Compound Quantitation - Two samples exhibited several compounds which exceeded the linear range of the instrument and these results were flagged (E) by the laboratory. The samples were diluted and reanalyzed and the original results for these compounds were replaced on the Form I with the dilution results. All results on the original Form Is should be used for reporting purposes.

Comments - The analyses of environmental samples and quality control samples are valid within the constraints identified with the data quality flags as presented in the continuing calibration, MS/MSD, and TICs sections of this report. The NAS Fort Worth JRB Basewide Quality Assurance Project Plan, February, 1998, data validation criteria were used in evaluating the data in this summary report.

Data Validation Summary Table - The following table summarizes all qualifications as described in this data validation summary report

Qualification Summary Table - Volatiles
SDG 9904G121

Sample No	Compound(s)	Reported		Validated	
		Conc	Qualifier	Conc	Qualifier
TB042399	Trichlorofluoromethane	0 5	U	0.5	R
	Tetrachloroethene	0.5	U	0.5	R
	1-Chlorohexane	0.5	U	0.5	R
	Bromoform	0.5	U	0.5	R
	Hexachlorobutadiene	0 5	U	0 5	R
	Naphthalene	2	-	2	R
FT09-12CWG08	Trichlorofluoromethane	0 5	U	0.5	R
	Trichloroethene	1	-	1	J
	Tetrachloroethene	0 5	U	0 5	R
	1-Chlorohexane	0 5	U	0 5	R
	Bromoform	0 5	U	0 5	R
	Hexachlorobutadiene	0 5	U	0.5	R
	Naphthalene	0.5	U	0.5	R
WHCTA044WG08	Trichlorofluoromethane	0 5	U	0 5	R
	Tetrachloroethene	0 5	U	0 5	R
	1-Chlorohexane	0.5	U	0 5	R
	Bromoform	0 5	U	0 5	R
	Hexachlorobutadiene	0.5	U	0.5	R
	Naphthalene	0 5	U	0 5	R
WHGLTA004WG08	Trichlorofluoromethane	0 5	U	0 5	R
	Trichloroethene	570	E	1300	J
	Tetrachloroethene	0 5	U	0 5	R
	1-Chlorohexane	0 5	U	0.5	R
	Bromoform	0.5	U	0 5	R
	Hexachlorobutadiene	0 5	U	0 5	R
	Naphthalene	0 5	U	0 5	R
WHGLTA004WG08DL1	Trichloroethene	940	DE	1300	J

Qualification Summary Table - Volatiles SDG 9904G121					
Sample No	Compound(s)	Reported		Validated	
		Conc	Qualifier	Conc	Qualifier
	Tetrachloroethene	5	U	5	R
	Bromoform	5	U	5	R
	Naphthalene	5	U	5	UJ
WHGLTA004WG08DL2	Trichloroethene	1300	D	1300	J
	Tetrachloroethene	250	U	250	R
	Bromoform	250	U	250	R
	Naphthalene	250	U	250	UJ
LF05-5WG08	Trichloroethene	71	E	560	J
	Tetrachloroethene	0 5	U	0 5	R
	Bromoform	0 5	U	0 5	R
	Naphthalene	0 5	U	0 5	UJ
LF05-5WG08DL	Trichloroethene	560	D	560	J
	Tetrachloroethene	25	U	25	R
	Bromoform	25	U	25	R
	Naphthalene	25	U	25	UJ

Received 9/10/99

627 252

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email EnvData@aol com

TCL VOLATILE ORGANIC COMPOUNDS
USEPA SW846 Method 8260B - Level III Review

Site: Naval Air Station Fort Worth - DO26 SDG #: 990940

Client. HydroGeoLogic, Inc Date: September 8, 1999

Laboratory. Severn Trent Laboratories, Baltimore, MD Reviewer: Cathy Shelby

Client Sample ID	Laboratory Sample ID	Matrix
TB072099	9907385	Water
WITCTA016WG09	9907386	Water
WITCTA017WG09	9907387	Water
WITCTA044WG09	9907388	Water

Holding Times - All samples were analyzed within the recommended holding time of 14 days for preserved water samples as specified in Table 5 1 2-1 of the NAS Fort Worth JRB Basewide Quality Assurance Project Plan (QAPP), February, 1998. No qualifications were required.

GC/MS Tuning - All of the BFB tunes in the initial and continuing calibrations met the percent relative abundance criteria. No qualifications were required.

Initial Calibration - The initial calibrations analyzed on 07/19/99 and 07/22/99 exhibited acceptable %RSD values and/or correlation coefficients No qualifications were required.

Continuing Calibration - The continuing calibration analyzed on 07/22/99 exhibited acceptable %D values. No qualifications were required.

The continuing calibration analyzed on 07/21/99 exhibited a high %D value for methylene chloride of 41.3% Methylene chloride has been rejected (R) in sample TB072099.

Surrogates - All samples exhibited acceptable surrogate %R values. No qualifications were required

Laboratory Control Samples - LCS samples VLCS01 and VLCS02 exhibited acceptable %R values No qualifications were required.

MS/MSD - MS/MSD sample WHGLTA011WG09 (from another data package) exhibited low MS and/or MSD %R values for several compounds which have been summarized in the table below. All of these compounds have been qualified (J/UJ) in all samples unless already qualified due to other problems

Compound	MS %R	MSD %R	Action
Methylene Chloride	74%	Ok	J/UJ
Cis-1,2-Dichloropropene	73%	Ok	J/UJ
Tetrachloroethene	62%	63%	J/UJ
1,2,3-Trichlorobenzene	68%	74%	J/UJ
1,2,4-Trichlorobenzene	68%	67%	J/UJ
1,2,4-Trimethylbenzene	68%	Ok	J/UJ
1,4-Dichlorobenzene	71%	71%	J/UJ
Styrene	18%	18%	J/UJ
2,2-Dichloropropane	37%	38%	J/UJ
Hexachlorobutadiene	57%	58%	J/UJ
n-Butylbenzene	71%	70%	J/UJ
Naphthalene	70%	Ok	J/UJ
p-Isopropyltoluene	Ok	72%	J/UJ

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria. No qualifications were required.

Method Blank - Method blanks VBLK01 (07/22/99) and VBLK02 (07/22/99) were free of contamination No qualifications were required

Trip, field, equipment blank - Trip blank TB072099 was free of contamination. No qualifications were required.

Field Duplicates - Field duplicate samples were not analyzed with this data package.

Compound Quantitation - No discrepancies were identified.

Comments - The analyses of environmental samples and quality control samples are valid within the constraints identified with the data quality flags as presented in the MS/MSD section of this report with the exception of methylene chloride which was rejected in sample TB072099 due to a calibration problem. The NAS Fort Worth JRB Basewide Quality Assurance Project Plan, February, 1998, data validation criteria were used in evaluating the data in this summary report.

Data Validation Summary Table - The following table summarizes all qualifications as described in this data validation summary report

Qualification Summary Table - Volatiles SDG 990940					
Sample No	Compound(s)	Reported		Validated	
		Conc	Qualifier	Conc	Qualifier
TB072099	Methylene Chloride	1	U	1	R
	Cis-1,2-Dichloropropene	1	U	1	UJ
	Tetrachloroethene	1	U	1	UJ
	1,2,3-Trichlorobenzene	2	U	2	UJ
	1,2,4-Trichlorobenzene	1	U	1	UJ
	1,2,4-Trimethylbenzene	1	U	1	UJ
	1,4-Dichlorobenzene	1	U	1	UJ
	Styrene	1	U	1	UJ
	2,2-Dichloropropane	4	U	4	UJ
	Hexachlorobutadiene	1	U	1	UJ
	n-Butylbenzene	1	U	1	UJ
	Naphthalene	2	U	2	UJ
	p-Isopropyltoluene	1	U	1	UJ
WITCTA016WG09	Methylene Chloride	5	U	5	UJ
	Cis-1,2-Dichloropropene	5	U	5	UJ
	Tetrachloroethene	7	U	7	UJ
	1,2,3-Trichlorobenzene	10	U	10	UJ
	1,2,4-Trichlorobenzene	5	U	5	UJ
	1,2,4-Trimethylbenzene	6	U	6	UJ
	1,4-Dichlorobenzene	5	U	5	UJ
	Styrene	5	U	5	UJ
	2,2-Dichloropropane	18	U	18	UJ
	Hexachlorobutadiene	6	U	6	UJ
	n-Butylbenzene	6	U	6	UJ
	Naphthalene	10	U	10	UJ
	p-Isopropyltoluene	6	U	6	UJ
WITCTA017WG09	Methylene Chloride	1	U	1	UJ
	Cis-1,2-Dichloropropene	1	U	1	UJ
	Tetrachloroethene	1	U	1	UJ
	1,2,3-Trichlorobenzene	2	U	2	UJ
	1,2,4-Trichlorobenzene	1	U	1	UJ
	1,2,4-Trimethylbenzene	1	U	1	UJ
	1,4-Dichlorobenzene	1	U	1	UJ
	Styrene	1	U	1	UJ
	2,2-Dichloropropane	4	U	4	UJ
	Hexachlorobutadiene	1	U	1	UJ
	n-Butylbenzene	1	U	1	UJ
	Naphthalene	2	U	2	UJ
	p-Isopropyltoluene	1	U	1	UJ
WITCTA044WG09	Methylene Chloride	1	U	1	UJ
	Cis-1,2-Dichloropropene	1	U	1	UJ
	Tetrachloroethene	1	U	1	UJ
	1,2,3-Trichlorobenzene	2	U	2	UJ
	1,2,4-Trichlorobenzene	1	U	1	UJ
	1,2,4-Trimethylbenzene	1	U	1	UJ

Qualification Summary Table - Volatiles SDG 990940					
Sample No	Compound(s)	Reported		Validated	
		Conc	Qualifier	Conc	Qualifier
	1,4-Dichlorobenzene	1	U	1	UJ
	Styrene	1	U	1	UJ
	2,2-Dichloropropane	4	U	4	UJ
	Hexachlorobutadiene	1	U	1	UJ
	n-Butylbenzene	1	U	1	UJ
	Naphthalene	2	U	2	UJ
	p-Isopropyltoluene	1	U	1	UJ

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TCL VOLATILE ORGANIC COMPOUNDS

USEPA SW846 Method 8260B/8020 - Level III Review

Site: Naval Air Station Fort Worth - DO26 SDG #: 9910G263

Client: HydroGeoLogic, Inc. Date: December 8, 1999

Laboratory: Severn Trent Laboratories, Chicago, IL Reviewer: Cathy Shelby

Client Sample ID	Laboratory Sample ID	Matrix
TB100699	9910G263-001	Water
EB100699	9910G263-002	Water
LF04-4CWG10	9910G263-004	Water
WJETA535WG10	9910G263-005	Water
WITCTA044WG10	9910G263-006	Water
WHGLTA009WG10	9910G263-007	Water
WHGLTA009WG10DL	9910G263-007DL	Water
WP07-10CWG10	9910G263-008	Water
WP07-10CWG10DL	9910G263-008DL	Water
DUP06	9910G263-009	Water
DUP06DL	9910G263-009DL	Water

Holding Times - All samples were analyzed within the recommended holding time of 14 days for preserved water samples as specified in Table 5.1.2-1 of the NAS Fort Worth JRB Basewide Quality Assurance Project Plan (QAPP), February, 1998 No qualifications were required.

Samples WP07-10CWG10 and DUP06 appeared to exhibit bubbles in the sample vials as noted on the chain of custody. No action was taken on this basis.

GC/MS Tuning - All of the BFB tunes in the initial and continuing calibrations met the percent relative abundance criteria. No qualifications were required.

Initial Calibration - The initial calibration analyzed on 10/01/99 exhibited acceptable %RSD values and/or correlation coefficients. No qualifications were required.

Continuing Calibration - The continuing calibration analyzed on 10/14/99 exhibited a high %D value for 2,2-dichloropropane of 34.3%. 2,2-Dichloropropane has been rejected (R) in all original analysis samples.

The continuing calibration analyzed on 10/15/99 exhibited a high %D value for 2,2-dichloropropane of 38.9%. 2,2-Dichloropropane has been rejected (R) in all dilution analysis samples.

Surrogates - All samples exhibited acceptable surrogate %R values. No qualifications were required.

Laboratory Control Samples - LCS sample VBLKWABS exhibited a low %R value for 2,2-dichloropropane of 25%, however, 2,2-dichloropropane has already been rejected in all associated samples due to the continuing calibration and no qualifications were required.

LCS sample VBLKW1BS exhibited a low %R value for 2,2-dichloropropane, however, 2,2-dichloropropane of 26%, however, 2,2-dichloropropane has already been rejected in all associated samples due to the continuing calibration and no qualifications were required.

MS/MSD - A MS/MSD sample was not analyzed with this data package.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria. No qualifications were required.

Method Blank - Method blanks VBLKWA (10/14/99) and VBLKW1 (10/15/99) were free of contamination. No qualifications were required.

Trip, field, equipment blank - Trip blank TB100699 was free of contamination. No qualifications were required.

Equipment blank EB100699 was free of contamination. No qualifications were required.

Field Duplicates - Field duplicate results are summarized in the table below. No qualifications were required.

Compound	WP07-10CWG10 ug/L	DUP06 ug/L	RPD
Vinyl Chloride	17	17	0
1,1-Dichloroethene	2	2	0
Trans-1,2-Dichloroethene	28	27	3.6
Cis-1,2-Dichloroethene	260	250	3.9
Trichloroethene	1200	1100	8 7
1,4-Dichlorobenzene	3	3	0

Compound Quantitation - Three samples were analyzed at a dilution due to target analytes exceeding the linear range of the instrument.

Tentatively Identified Compounds - All TICs were qualified (T).

Comments - The analyses of environmental samples and quality control samples are valid with the exception of 2,2-dichloropropane which was rejected in all samples due to calibration problems. The NAS Fort Worth JRB Basewide Quality Assurance Project Plan, February, 1998, data validation criteria were used in evaluating the data in this summary report.

Data Validation Summary Table - The following table summarizes all qualifications as described in this data validation summary report.

Qualification Summary Table - Volatiles SDG· 9910G263					
Sample No	Compound(s)	Reported		Validated	
		Conc	Qualifier	Conc.	Qualifier
TB100699	2,2-Dichloropropane	0.5	U	0 5	R
EB100699	2,2-Dichloropropane	0.5	U	0.5	R
LF04-4CWG10	2,2-Dichloropropane	0.5	U	0.5	R
WJETA535WG10	2,2-Dichloropropane	0 5	U	0.5	R
WITCTA044WG10	2,2-Dichloropropane	0.5	U	0.5	R
WHGLTA009WG10	2,2-Dichloropropane	0 5	U	0.5	R
WHGLTA009WG10DL	2,2-Dichloropropane	12	U	12	R
WP07-10CWG10	2,2-Dichloropropane	0 5	U	0.5	R
WP07-10CWG10DL	2,2-Dichloropropane	50	U	50	R
DUP06	2,2-Dichloropropane	0.5	U	0 5	R
DUP06DL	2,2-Dichloropropane	50	U	50	R

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APPENDIX IX VOLATILE ORGANIC COMPOUNDS

USEPA SW 846 Method 8260B - Level III Review

Site Naval Air Station Fort Worth - DO16EAB SDG #. 9A05G373

Client HydroGeoLogic, Inc Date· July 19, 2000

Laboratory. Severn Trent Laboratories, Chicago, IL Reviewer Cathy Shelby

Client Sample ID	Laboratory Sample ID	Matrix
PHGL1145-E1	9A05G373-001	Soil
PHGL1145-E4	9A05G373-002	Soil
PHGL1145-E2	9A05G373-003	Soil
PHGL1145-E3	9A05G373-004	Soil
PHGL1145-N1	9A05G373-005	Soil
PHGL1145-E5	9A05G373-006	Soil
PHGL1145-S1	9A05G373-007	Soil
PHGL1145-W3	9A05G373-008	Soil
PHGL1145-W2	9A05G373-009	Soil
PHGL1145-W1	9A05G373-010	Soil
TB051800B	9A05G373-011	Water

Holding Times - All samples were analyzed within 14 days for preserved water and soil samples as specified in the NAS Fort Worth JRB 2000 Basewide Quality Assurance Project Plan (QAPP). March 2000 No qualifications were required

GC/MS Tuning - All of the BFB tunes in the initial and continuing calibrations met the percent relative abundance criteria. No qualifications were required

Initial Calibration - The initial calibration analyzed between 01/14/00-05/19/00, 01/12/00-05/31/00 and 05/16/00-05/31/00 exhibited acceptable %RSD values and/or correlation coefficients and mean RRF values No qualifications were required.

Continuing Calibration - The continuing calibration analyzed on 05/31/00 exhibited a high %D value for trichlorofluoromethane of 47.3%, however, all associated TCFM results have already been rejected due to the LCS and no further qualifications were required

The continuing calibration analyzed on 06/01/00 (0820) exhibited high %D values for methyl-tert-butyl ether and bromoform of 38 5% and 30 44%. respectively Both compounds have been rejected (R) in sample TB051800B

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The continuing calibration analyzed on 06/01/00 (0952) exhibited acceptable %D and RRF values No qualifications were required

Surrogates - All samples exhibited acceptable surrogate %R values No qualifications were required

Laboratory Control Samples - LCS sample VBLKQA exhibited high %R values for bromomethane and bromoform of 140% and 138%, respectively, and a low %R value for trichlorofluoromethane of 47% Trichlorofluoromethane has been rejected (R) in samples E1, E2, E3, E5, S1, W3, W2 and W1. Bromomethane and bromoform are non-detect in all associated samples and no further qualifications were required

LCS sample VBLKPC exhibited high %R values for eleven compounds, however, all associated results are non-detect and no qualifications were required

LCS sample VBLKPY exhibited a high %R value for 1,1,2-trichloroethane of 109%, however, all associated results are non-detect and no qualifications were required

MS/MSD - A MS/MSD sample was not analyzed with this data package

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria No qualifications were required.

Method Blank - Method blanks VBLKQA (05/31/00), VBLKPC (06/01/00) and VBLKPY (06/01/00) were free of contamination No qualifications were required

Trip, field, equipment blank - Trip blank TB051800B was free of contamination. No qualifications were required.

Field Duplicates - Field duplicate samples were not analyzed with this data package

Tentatively Identified Compounds - All TICs were qualified (T).

Compound Quantitation - All results between the MDL and the PQL have been qualified (F)

Comments - The analyses of environmental samples and quality control samples are valid within the constraints identified with the data quality flags as presented in the TICs and compound quantitation sections of this report with the exception of several compounds which were rejected due to the continuing calibration and LCS The NAS Basewide Quality Assurance Project Plan, March 2000, data validation criteria were used in evaluating the data in this summary report.

Data Validation Summary Table - The following table summarizes all qualifications as described in this data validation summary report.

Qualification Summary Table - Volatiles SDG 9A05G373					
Sample No	Compound(s)	Reported		Validated	
		Conc	Qualifier	Conc	Qualifier
PHGL1145-E1	Trichlorofluoromethane	5	U	5	R
	Toluene	3	J	3	F
	Ethylbenzene	2	J	2	F
	o-Xylene	4	J	4	F
PHGL1145-E4	1,1-Dichloroethane	2	J	2	F
PHGL1145-E2	Trichlorofluoromethane	5	U	5	R
PHGL1145-E3	Trichlorofluoromethane	5	U	5	R
PHGL1145-E5	Trichlorofluoromethane	5	U	5	R
PHGL1145-S1	Trichlorofluoromethane	5	U	5	R
PHGL1145-W3	Trichlorofluoromethane	5	U	5	R
PHGL1145-W2	Trichlorofluoromethane	5	U	5	R
PHGL1145-W1	Trichlorofluoromethane	5	U	5	R
TB051800B	Methyl-tert-butyl ether	0 5	U	0 5	R
	Bromoform	0 5	U	0 5	R

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APPENDIX IX SEMIVOLATILE ORGANIC COMPOUNDS

USEPA SW 846 Method 8270C - Level III Review

Site. Naval Air Station Fort Worth - DO16EAB SDG # 9A05G373

Client HydroGeoLogic Inc Date July 19, 2000

Laboratory Severn Trent Laboratories, Chicago, IL Reviewer Cathy Shelby

Client Sample ID	Laboratory Sample ID	Matrix
PHGL1145-E1	9A05G373-001	Soil
PHGL1145-E4	9A05G373-002	Soil
PHGL1145-E2	9A05G373-003	Soil
PHGL1145-F3	9A05G373-004	Soil
PHGL1145-E3RE	9A05G373-004RE	Soil
PHGL1145-N1	9A05G373-005	Soil
PHGL1145-E5	9A05G373-006	Soil
PHGL1145-S1	9A05G373-007	Soil
PHGL1145-W3	9A05G373-008	Soil
PHGL1145-W2	9A05G373-009	Soil
PHGL1145-W1	9A05G373-010	Soil

Holding Times - All samples were extracted within 14 days for soil samples and analyzed within 40 days for all samples as specified in the NAS Fort Worth JRB 2000 Basewide Quality Assurance Project Plan (QAPP) March 2000. No qualifications were required

GC/MS Tuning - All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria No qualifications were required

Initial Calibration - The initial calibrations analyzed between 03/02/00-06/01/00 exhibited a high %RSD value for pyridine of 53 7% Pyridine has been rejected (R) in all samples

Continuing Calibration - The continuing calibration analyzed on 06/07/00 exhibited high %D values for 2,4-dinitrophenol and benzoic acid of 47 62% and 34.6%, respectively. Both compounds have been rejected (R) in all samples except E3 and E3RE

The continuing calibration analyzed on 06/08/00 exhibited acceptable %D and RRF values No qualifications were required

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Surrogates - All samples exhibited acceptable surrogate %R values No qualifications were required

Laboratory Control Samples - LCS sample SBLKRX-BS exhibited acceptable %R values No qualifications were required.

MS/MSD - A MS/MSD sample was not analyzed with this data package.

Internal Standard (IS) Area Performance - Sample E3 exhibited low area counts for internal standards IS4-phenanthrene-d10 and IS5-chrysene-d12. All IS4 and IS5 associated compounds have been qualified (J/UJ) in this sample

Sample E3RE exhibited a low area count for internal standard IS4-phenanthrene-d10 All IS4 associated compounds have been qualified (J/UJ) in this sample Due to less qualifications, the reanalysis sample results should be used for reporting purposes

Method Blank - Method blank SBLKRX (05/25/00) was free of contamination No qualifications were required.

Field. equipment blank - Field QC samples were not analyzed with this data package.

Field Duplicates - Field duplicate samples were not analyzed with this data package.

Tentatively Identified Compounds (TICs) - TICs were not reported with the samples in this data package

Compound Quantitation - All results between the MDL and PQL have been qualified (F).

Comments - The analyses of environmental samples and quality control samples are valid within the constraints identified with the data quality flags as presented in the internal standard and compound quantitation sections of this report with the exception of three compounds which were rejected due to the initial and continuing calibration The NAS Fort Worth JRB 2000 Basewide Quality Assurance Project Plan. March 2000, data validation criteria were used in evaluating the data in this summary report

Data Validation Summary Table - The following table summarizes all qualifications as described in this data validation summary report.

Qualification Summary Table - Semivolatiles SDG 9A05G373					
Sample No	Compound(s)	Reported		Validated	
		Conc	Qualifier	Conc	Qualifier
PHGL1145-E1	2,4-Dinitrophenol	2000	U	2000	R
	Benzoic Acid	2000	U	2000	R
	Pyridine	810	U	810	R
PHGL1145-E4	2,4-Dinitrophenol	2100	U	2100	R
	Phenanthrene	280	J	280	F
	Pyrene	280	J	280	F
	Benzo(a)anthracene	120	J	120	F
	Chrysene	92	J	92	F
	Benzoic Acid	2100	U	2100	R
	Pyridine	850	U	850	R
PHGL1145-E2	2,4-Dinitrophenol	2000	U	2000	R
	Benzoic Acid	2000	U	2000	R
	Pyridine	810	U	810	R
PHGL1145-E3	IS4 Compounds	-	U	-	UJ
	IS5 Compounds	-	U	-	UJ
	Pyridine	810	U	810	R
PHGL1145-E3RE	IS4 Compounds	-	U	-	UJ
	Pyridine	810	U	810	R
PHGL1145-N1	Naphthalene	360	J	360	F
	2,4-Dinitrophenol	2000	U	2000	R
	Phenanthrene	180	J	180	F
	Pyrene	240	J	240	F
	Benzo(a)anthracene	100	J	100	F
	Chrysene	69	J	69	F
	Benzoic Acid	2000	U	2000	R
	Pyridine	800	U	800	R
PHGL1145-E5	2,4-Dinitrophenol	2000	U	2000	R
	Benzoic Acid	2000	U	2000	R
	Pyridine	790	U	790	R
PHGL1145-S1	2,4-Dinitrophenol	2000	U	2000	R
	Benzoic Acid	2000	U	2000	R
	Pyridine	800	U	800	R
PHGL1145-W3	2,4-Dinitrophenol	2000	U	2000	R
	Benzoic Acid	2000	U	2000	R
	Pyridine	800	U	800	R
PHGL1145-W2	2,4-Dinitrophenol	2000	U	2000	R
	Benzoic Acid	2000	U	2000	R
	Pyridine	800	U	800	R
PHGL1145-W1	2,4-Dinitrophenol	2000	U	2000	R
	Benzoic Acid	2000	U	2000	R
	Pyridine	810	U	810	R

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METALS

USEPA SW846 Methods 6010B/7000 - Level III Review

Site. Naval Air Station Fort Worth - DO16EAB SDG # 9A05G373

Client HydroGeoLogic, Inc Date· June 19, 2000

Laboratory Severn Trent Laboratories, Chicago, IL Reviewer Tara Lambert

Client Sample ID	Laboratory Sample ID	Matrix
PHGL1145-E1	9A05G373-001	Soil
PHGL1145-E4	9A05G373-002	Soil
PHGL1145-E2	9A05G373-003	Soil
PHGL1145-E3	9A05G373-004	Soil
PHGL1145-N1	9A05G373-005	Soil
PHGL1145-E5	9A05G373-006	Soil
PHGL1145-S1	9A05G373-007	Soil
PHGL1145-W3	9A05G373-008	Soil
PHGL1145-W2	9A05G373-009	Soil
PHGL1145-W1	9A05G373-010	Soil

Holding Times - All samples were extracted and analyzed within 28 days for mercury and 180 days for all other metals as specified in the NAS Fort Worth JRB 2000 Basewide Quality Assurance Project Plan (QAPP), March 2000 No qualifications were required

Calibration - All initial and continuing calibration verifications exhibited acceptable %R values No qualifications were required

Method Blanks - The soil preparation blank PBS, initial and continuing calibration blanks exhibited contamination for copper, nickel, tin and vanadium at 0 220 mg/kg, 1 6 ug/L, 0 83 mg/kg and 2 3 ug/L, respectively Tin has been qualified (U) in all samples All other associated results are greater than 5X the blank concentration or less than the PQL and no further qualifications were required

The soil preparation blank PBS, initial and continuing calibration blanks exhibited negative contamination for antimony, arsenic, beryllium, cadmium, cobalt, copper, lead, nickel, silver and tin at -2 8 ug/L, -0 67 mg/kg, -0.12 mg/kg, -0 10 mg/kg, -0 29 mg/kg, -1 8 ug/L, -1 7 ug/L, -0 58 mg/kg, -0 9 ug/L and -5 4 ug/L, respectively. Antimony, silver and tin have been qualified (UJ) in all samples All other associated results are greater than 5X the blank concentration or less than the PQL and no further qualifications were required.

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Field and equipment blank - Field QC samples were not analyzed with this data package

ICP Interference Check Sample - All % recovery values met the QC acceptance criteria No qualifications were required

LCS - The LCS sample exhibited acceptable %R values. No qualifications were required

ICP Serial Dilution - An ICP serial dilution sample was not analyzed with this data package.

Matrix Spike/Duplicate - A matrix spike/duplicate sample was not analyzed with this data package

Field Duplicates - Field duplicate samples were not analyzed with this data package

Graphite Furnace Atomic Absorption (GFAA) Analysis - Several samples exhibited a postdigestion spike for several analytes out of control limits (85-115%) and sample absorbance is less than 50% of spike absorbance The laboratory flagged these results (W) and the reviewer further qualified these results as estimated (J/UJ) unless already qualified.

Compound Quantitation - All results between the MDL and the PQL have been qualified (F)

Comments - The analyses of environmental samples and quality control samples are valid within the constraints identified with the data quality flags as presented in the method blanks, GFAA and compound quantitation sections of this report The NAS Fort Worth JRB 2000 Basewide Quality Assurance Project Plan, March 2000, data validation criteria were used in evaluating the data in this summary report.

Data Validation Summary Table - The following table summarizes all qualifications as described in this data validation summary report

Qualification Summary Table - Metals SDG 9A05G373					
Sample No	Compound(s)	Reported		Validated	
		Conc	Qualifier	Conc	Qualifier
PHGL1145-E1	Antimony	0 31	U	0 31	UJ

Qualification Summary Table - Metals SDG 9A05G373					
Sample No	Compound(s)	Reported		Validated	
		Conc	Qualifier	Conc	Qualifier
	Arsenic	2 8	B	2 8	F
	Cadmium	0 27	B	0 27	F
	Cobalt	3 9	B	3 9	F
	Copper	9 0	B	9 0	F
	Lead	5 0	BW	5 0	F
	Nickel	9 2	B	9 2	F
	Selenium	0 22	UW	0 22	UJ
	Silver	0 01	U	0 01	UJ
	Thallium	0 22	UW	0 22	UJ
	Tin	1 8	B	1 8	UJ
	Vanadium	28 2	B	28 2	F
	Zinc	27 0	B	27 0	F
PHGL1145-E4	Antimony	0 32	U	0 32	UJ
	Arsenic	1 3	B	1 3	F
	Cadmium	0 26	B	0 26	F
	Cobalt	3 6	B	3 6	F
	Copper	10 6	B	10 6	F
	Lead	4 6	BW	4 6	F
	Nickel	10	B	10	F
	Silver	0 01	U	0 01	UJ
	Thallium	0 23	UW	0 23	UJ
	Tin	1 8	B	1 8	UJ
	Vanadium	31 5	B	31 5	F
PHGL1145-E2	Antimony	0 31	U	0 31	UJ
	Arsenic	1 5	B	1 5	F
	Cadmium	0 33	B	0 33	F
	Cobalt	4 0	B	4 0	F
	Copper	10 1	B	10 1	F
	Lead	6 2	BW	6 2	F
	Nickel	9 9	B	9 9	F
	Silver	0 01	U	0 01	UJ
	Thallium	0 22	UW	0 22	UJ
	Tin	1 7	B	1 7	UJ
	Vanadium	29 8	B	29 8	F
	Zinc	31 5	B	31 5	F
PHGL1145-E3	Antimony	0 32	U	0 32	UJ
	Arsenic	1 4	B	1 4	F
	Cadmium	0 20	B	0 20	F
	Cobalt	3 6	B	3 6	F
	Copper	7 6	B	7 6	F
	Lead	4 7	BW	4 7	F
	Nickel	8 1	B	8 1	F
	Selenium	0 23	UW	0 23	UJ
	Silver	0 01	U	0 01	UJ
	Thallium	0 23	UW	0 23	UJ
	Tin	1 4	B	1 4	UJ
	Vanadium	22 9	B	22 9	F
	Zinc	24 1	B	24 1	F
PHGL1145-N1	Antimony	0 30	U	0 30	UJ

Qualification Summary Table - Metals SDG 9A05G373					
Sample No	Compound(s)	Reported		Validated	
		Conc	Qualifier	Conc	Qualifier
	Arsenic	1 8	B	1 8	F
	Cadmium	0 27	B	0 27	F
	Cobalt	3 4	B	3 4	F
	Copper	8 0	B	8 0	F
	Lead	5 3	BW	5 3	F
	Nickel	7 5	B	7 5	F
	Selenium	0 21	UW	0 21	UJ
	Silver	0 01	U	0 01	UJ
	Thallium	0 21	UW	0 21	UJ
	Tin	1 3	B	1 3	UJ
	Vanadium	27 4	B	27 4	F
PHGL1145-E5	Antimony	0 29	U	0 29	UJ
	Arsenic	2 1	B	2 1	F
	Cadmium	0 37	B	0 37	F
	Cobalt	4 2	B	4 2	F
	Copper	8 8	B	8 8	F
	Lead	4 6	BW	4 6	F
	Selenium	0 21	UW	0 21	UJ
	Silver	0 01	U	0 01	UJ
	Thallium	0 21	UW	0 21	UJ
	Tin	1 8	B	1 8	UJ
PHGL1145-S1	Antimony	0 30	U	0 30	UJ
	Arsenic	1 9	B	1 9	F
	Cadmium	0 25	B	0 25	F
	Cobalt	4 0	B	4 0	F
	Copper	7 7	B	7 7	F
	Lead	4 9	BW	4 9	F
	Nickel	9 2	B	9 2	F
	Selenium	0 21	UW	0 21	UJ
	Silver	0 01	U	0 01	UJ
	Thallium	0 21	UW	0 21	UJ
	Tin	1 3	B	1 3	UJ
	Vanadium	31 6	B	31 6	F
	Zinc	26 3	B	26 3	F
PHGL1145-W3	Antimony	0 32	U	0 32	UJ
	Arsenic	1 7	B	1 7	F
	Cadmium	0 26	B	0 26	F
	Cobalt	3 5	B	3 5	F
	Copper	9 1	B	9 1	F
	Lead	3 9	BW	3 9	F
	Nickel	8 6	B	8 6	F
	Selenium	1 1	UW	1.1	UJ
	Silver	0 01	U	0 01	UJ
	Thallium	0 23	UW	0 23	UJ
	Tin	1 4	B	1 4	UJ
	Vanadium	27 6	B	27 6	F
	Zinc	24 9	B	24 9	F
PHGL1145-W2	Antimony	0 32	UW	0 32	UJ
	Arsenic	0 59	B	0 59	F

Qualification Summary Table - Metals SDG 9A05G373					
Sample No	Compound(s)	Reported		Validated	
		Conc	Qualifier	Conc	Qualifier
	Cadmium	0 22	B	0 22	F
	Cobalt	4 8	B	4 8	F
	Copper	7 4	B	7 4	F
	Lead	5 0	BW	5 0	F
	Nickel	10 6	B	10 6	F
	Selenium	1 1	UW	1 1	UJ
	Silver	0 01	U	0 01	UJ
	Thallium	0 23	UW	0 23	UJ
	Tin	2 0	B	2 0	UJ
	Vanadium	26 7	B	26 7	F
	Zinc	30 2	B	30 2	F
PHGL1145-W1	Antimony	0 31	U	0 31	UJ
	Arsenic	1 3	B	1 3	F
	Cadmium	0 31	B	0 31	F
	Cobalt	3 7	B	3 7	F
	Lead	5 5	BW	5 5	F
	Silver	0 01	U	0 01	UJ
	Thallium	0 22	UW	0 22	UJ
	Tin	1 6	B	1 6	UJ

Data Services, Inc.

TOTAL PETROLEUM HYDROCARBONS

Texas Method 1005 (Rev 4/98) - Level III Review

Site: Naval Air Station Fort Worth - D016EAB SDG #: 9A05G374

Client HydroGeoLogic, Inc Date June 19, 2000

Laboratory Severn Trent Laboratories, Chicago, IL Reviewer Cathy Shelby

Client Sample ID	Laboratory Sample ID	Matrix
PHGL1145-E1	9A05G374-001	Soil
PHGL1145-E4	9A05G374-002	Soil
PHGL1145-E2	9A05G374-003	Soil
PHGL1145-E3	9A05G374-004	Soil
PHGL1145-N1	9A05G374-005	Soil
PHGL1145-E5	9A05G374-006	Soil
PHGL1145-S1	9A05G374-007	Soil
PHGL1145-W3	9A05G374-008	Soil
PHGL1145-W2	9A05G374-009	Soil
PHGL1145-W1	9A05G374-0010	Soil

Holding Times - All samples were analyzed within 14 days for soil samples as specified in the NAS Fort Worth JRB Basewide Quality Assurance Project Plan (QAPP), March 2000

Initial Calibration - The initial calibration analyzed on 04/28/00 exhibited acceptable %RSD and mean RRF values No qualifications were required

Continuing Calibration - The continuing calibrations analyzed on 05/25/00 exhibited acceptable %D and RRF values. No qualifications were required

Laboratory Control Samples - LCS sample DDNQ3102 exhibited acceptable %R values No qualifications were required

MS/MSD - A MS/MSD sample was not analyzed with this data package

Method Blank - Method blank DDNQ3101 (05/25/00) was free of contamination No qualifications were required.

Field, equipment blank - Field QC samples were not associated with the samples in this data package

Field Duplicates - Field duplicate samples were not analyzed with this data package

Compound Quantitation - All results between MDL and RL have been qualified (F)

Comments - The analyses of environmental samples and quality control samples are valid within the constraints identified with the data quality flags as presented in the compound quantitation section of this report. The NAS Fort Worth JRB Basewide Quality Assurance Project Plan, March 2000, data validation criteria were used in evaluating the data in this summary report

Data Validation Summary Table - The following table summarizes all qualifications as described in this data validation summary report

Qualification Summary Table - TPH SDG 9A05G374					
Sample No	Compound(s)	Reported		Validated	
		Conc	Qualifier	Conc	Qualifier
PHGL1145-E4	>C10-C28	49	F	49	F
PHGL1145-E3	>C10-C28	8 2	F	8 2	F

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APPENDIX IX VOLATILE ORGANIC COMPOUNDS

USEPA SW846 Method 8260B - Level III Review

Site Naval Air Station Fort Worth - DO16BBD SDG # 9A11G935

Client HydroGeoLogic, Inc Date December 20, 2000

Laboratory Severn Trent Laboratories, Chicago, IL Reviewer Nancy Weaver

Client Sample ID	Laboratory Sample ID	Matrix
TB110200	9A11G935-001	Water
BGSMW05WG13	9A11G935-002	Water
MW-5WG13	9A11G935-003	Water
WHGLTA037WG013	9A11G935-004	Water
WHGLTA037WG013DL1	9A11G935-004DL1	Water
WHGLTA037WG013DL2	9A11G935-004DL2	Water
WHGLTA036WG013	9A11G935-005	Water
WITCTA043WG01	9A11G935-006	Water
WITCTA042WG01	9A11G935-007	Water
EB110200	9A11G935-008	Water

Holding Times - All samples were analyzed within 14 days for preserved water samples as specified in the NAS Fort Worth JRB 2000 Basewide Quality Assurance Project Plan (QAPP), March 2000 No qualifications were required

GC/MS Tuning - All of the BFB tunes in the initial and continuing calibrations met the percent relative abundance criteria No qualifications were required

Initial Calibration - The initial calibrations analyzed on 1/14/00-11/13/00 exhibited acceptable %RSD values and/or correlation coefficients and mean RRF values No qualifications were required

The initial calibrations analyzed on 01/15/00-11/13/00 exhibited acceptable %RSD values and/or correlation coefficients and mean RRF values No qualifications were required

Continuing Calibration - The continuing calibration analyzed on 11/14/00 and 11/15/00 exhibited acceptable %D and RRF values No qualifications were required

Surrogates - Sample WHGLTA037WG013 exhibited a high surrogate recovery for S2-toluene-d8 of 153% Positive results have been qualified (J) in this sample

Laboratory Control Samples - LCS samples VBLKJN and VBLKJP exhibited low %R values for methylene chloride of 68% and 68%, respectively, and high %R values for MTBE of 139% and 129%, respectively. Methylene chloride has been rejected (R) in all samples. MTBE has been qualified (J) in sample MW-5WG13

MS/MSD - A MS/MSD sample was not analyzed with this data package.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria No qualifications were required

Method Blank - Method blanks VBLKJN (11/14/00) and VBLKJP (11/15/00) were free of contamination No qualifications were required

Trip, field, equipment blank - Trip blank TB110200 was free of contamination. No qualifications were required.

Equipment blank EB110200 was free of contamination No qualifications were required

Field Duplicates - Field duplicate samples were not analyzed with this data package

Tentatively Identified Compounds - All TICs were qualified (T).

Compound Quantitation - Sample WHGLTA037WG013 exhibited several compounds which exceeded the linear range of the instrument and were flagged (E) by the laboratory. The sample was diluted and reanalyzed and the original results for these compounds were replaced on the Form Is with the dilution results. All results on the original analysis Form Is should be used for reporting purposes

Comments - The analyses of environmental samples and quality control samples are valid within the constraints identified with the data quality flags as presented in the surrogate, LCS and TIC sections of this report with the exception of several compounds rejected due to the continuing calibration and LCS. The NAS Basewide Quality Assurance Project Plan, March 2000, data validation criteria were used in evaluating the data in this summary report

Data Validation Summary Table - The following table summarizes all qualifications as described in this data validation summary report

Qualification Summary Table - Volatiles SDG 9A11G935					
Sample No	Compound(s)	Reported		Validated	
		Conc	Qualifier	Conc	Qualifier
TB110200	Methylene Chloride	0 5	U	0 5	R
BGSMW05WG13	Methylene Chloride	0 5	U	0 5	R
MW-5WG13	Methylene Chloride	0 5	U	0 5	R
	MTBE	4	-	4	J
WHGLTA037WG013	Chloromethane	6	-	6	J
	Methylene Chloride	2	U	2	R
	Isopropylbenzene	170	-	170	J
	p-Isopropyltoluene	29	-	29	J
	n-Butylbenzene	40	-	40	J
WHGLTA036WG013	Methylene Chloride	0 5	U	0 5	R
WITCTA043WG01	Methylene Chloride	0 5	U	0 5	R
WITCTA042WG01	Methylene Chloride	0 5	U	0 5	R
EB110200	Methylene Chloride	0 5	U	0 5	R

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APPENDIX IX SEMIVOLATILE ORGANIC COMPOUNDS

USEPA SW846 Method 8270C - Level III Review

Site Naval Air Station Fort Worth - DO16BBD SDG #: 9A11G935

Client HydroGeoLogic, Inc Date: December 20, 2000

Laboratory Severn Trent Laboratories, Chicago, IL Reviewer Nancy Weaver

Client Sample ID	Laboratory Sample ID	Matrix
WITCTA043WG01	9A11G935-006	Water
WITCTA042WG01	9A11G935-007	Water
EB110200	9A11G935-008	Water

Holding Times - All samples were extracted within 7 days for water samples and analyzed within 40 days as specified in the NAS Fort Worth JRB 2000 Basewide Quality Assurance Project Plan (QAPP), March 2000 No qualifications were required

GC/MS Tuning - All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria. No qualifications were required.

Initial Calibration - The initial calibration analyzed between 11/06/00 exhibited a high %RSD value for hexachlorocyclopentadiene of 32 5% Hexachlorocyclopentadiene has been rejected (R) in all samples

Continuing Calibration - The continuing calibrations analyzed on 11/07/00 and 11/08/00 exhibited acceptable %D and RRF values. No qualifications were required.

Surrogates - All samples exhibited acceptable surrogate %R values. No qualifications were required

Laboratory Control Samples - LCS sample SBLKZZ exhibited acceptable %R values No qualifications were required

MS/MSD - A MS/MSD sample was not analyzed with this data package.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria No qualifications were required

Method Blank - Method blank SBLKZZ (11/06/00) was free of contamination. No qualifications were required

Field, equipment blank - Equipment blank EB110200 was free of contamination No qualifications were required

Field Duplicates - Field duplicate samples were not analyzed with this data package

Tentatively Identified Compounds (TICs) - TICs were not reported with the samples in this data package

Compound Quantitation - No discrepancies were identified

Comments - The analyses of environmental samples and quality control samples are valid with the exception of one compound which was rejected in all samples due to the initial calibration. The NAS Fort Worth JRB 2000 Basewide Quality Assurance Project Plan, March 2000, data validation criteria were used in evaluating the data in this summary report.

Data Validation Summary Table - The following table summarizes all qualifications as described in this data validation summary report.

Qualification Summary Table - Semivolatiles SDG 9A11G935					
Sample No	Compound(s)	Reported		Validated	
		Conc	Qualifier	Conc	Qualifier
WITCTA043WG01	Hexachlorocyclopentadiene	10	U	10	R
WITCTA042WG01	Hexachlorocyclopentadiene	9	U	9	R
EB110200	Hexachlorocyclopentadiene	10	U	10	R

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METALS

USEPA SW846 Methods 6010B/7041/7191/7421/7470A/7841 - Level III Review

Site Naval Air Station Fort Worth - DO16BBD SDG # 9A11G935

Client HydroGeoLogic, Inc Date December 20 2000

Laboratory Severn Trent Laboratories, Chicago, IL Reviewer Nancy Weaver

Client Sample ID	Laboratory Sample ID	Matrix
WITCTA043WG01	9A11G935-006	Water
WITCTA042WG01	9A11G935-007	Water
EB110200	9A11G935-008	Water

Holding Times - All samples were extracted and analyzed within 28 days for mercury and 180 days for all other metals as specified in the NAS Fort Worth JRB 2000 Basewide Quality Assurance Project Plan (QAPP), March 2000 No qualifications were required

Calibration - All initial and continuing calibration verifications exhibited acceptable %R values No qualifications were required

Method Blanks - The water preparation blank PBW, initial and/or continuing calibration blanks exhibited contamination for several compounds, however, all associated results are non-detect or greater than 5X the blank concentration except the following Aluminum has been qualified (U) in sample EB110200. Manganese has been qualified (U) in sample WITCTA043WG01 Molybdenum has been qualified (U) in sample WITCTA042WG01

The water preparation blank PBW, initial and/or continuing calibration blanks exhibited negative contamination for cadmium, chromium and copper at -0 6 ug/L, -1 9 ug/L and -1.3 ug/L, respectively. Cadmium, chromium and copper have been qualified (UJ) in all samples

Field and equipment blank - Equipment blank EB110200 exhibited calcium contamination at 70 2 ug/L, however, the associated results are greater than 5X the blank concentration and no qualifications were required

ICP Interference Check Sample - All %R values were acceptable No qualifications were required

LCS - The LCS sample exhibited acceptable %R values. No qualifications were required

ICP Serial Dilution - An ICP serial dilution sample was not analyzed with this data package

Matrix Spike/Duplicate - A matrix spike/duplicate sample was not analyzed with this data package

Field Duplicates - Field duplicate samples were not analyzed with this data package

Graphite Furnace Atomic Absorption (GFAA) Analysis - Sample EB110200 exhibited a postdigestion spike for the chromium analysis out of control limits (85-115%) and sample absorbance is less than 50% of spike absorbance The laboratory flagged this result (W), however, the reviewer already qualified this result due to the method blanks and no further qualifications were required.

Compound Quantitation - All results between the MDL and the PQL have been qualified (F)

Comments - The analyses of environmental samples and quality control samples are valid within the constraints identified with the data quality flags as presented in the method blanks and compound quantitation sections of this report The NAS Fort Worth JRB 2000 Basewide Quality Assurance Project Plan, March 2000, data validation criteria were used in evaluating the data in this summary report

Data Validation Summary Table - The following table summarizes all qualifications as described in this data validation summary report

Qualification Summary Table - Metals SDG 9A11G935					
Sample No.	Compound(s)	Reported		Validated	
		Conc	Qualifier	Conc	Qualifier
WITCTA043WG01	Aluminum	291	B	291	F
	Barium	134	B	134	F
	Cadmium	0 40	U	0 40	UJ
	Chromium	1 7	U	1 7	UJ
	Copper	1 2	U	1 2	UJ
	Manganese	3 4	B	3 4	U
	Potassium	976	B	976	F
	Vanadium	4 7	B	4 7	F

WITCTA042WG01	Barium	121	B	121	F
	Cadmium	0 40	U	0 40	UJ
	Chromium	1 7	U	1 7	UJ
	Copper	1 2	U	1 2	UJ
	Manganese	7 1	B	7 1	F
	Molybdenum	2 2	B	2 2	U
	Potassium	948	B	948	F
	Vanadium	4 3	B	4 3	F
EB110200	Aluminum	49 3	B	49 3	U
	Cadmium	0 40	U	0 40	UJ
	Calcium	70 2	B	70 2	F
	Chromium	1 7	UW	1 7	UJ
	Copper	1 2	U	1 2	UJ

Volatile Organic Compounds
SW-846 Method 8260B
USEPA Level III Review

Site NAS Fort Worth JRB | SDG # 9A11G936

Laboratory STL-Chicago | Date 01 10 01

HydroGeoLogic, Inc Reviewer Kimberly Evers | Project AFC001-16BBD

Client Sample ID	Laboratory Sample ID	Matrix
TB110300	9A11G936-001	Water
WITCTA040WG01	9A11G936-003	Water
WITCTA041WG01	9A11G936-004	Water
EB110300	9A11G936-005	Water

Sample Delivery and Condition - The samples arrived at the laboratory in acceptable condition and temperature, and properly preserved Proper custody was documented No qualification required

Holding Times - All samples were analyzed within the required holding times for preserved water samples No qualification required

GC/MS Tuning [Form 5] - The initial calibration and sample analytical sequences were all performed within 12 hours of an acceptable MS tune No qualification required.

Initial Calibration [Form 6] - The initial calibration had acceptable average RRFs for all SPCCs The mean %RSD for all analytes was below 15%, all compound %RSDs were <30% No Qualification required

Continuing Calibration [Form 7] - Two continuing calibration verifications (CCVs) are associated with this SDG, a CCV run on 11 15 00 and one run on 11.16 00 All SPCCs had CCRFs in control All CCC %Ds were <20%; all other compound %Ds were in control with the following exceptions

11 15 00. Acrolein listed in Appendix A of the QAPP had a %D that did not meet the %D requirements; however, no corrective action is required for these compounds No qualification necessary

11 15.00 Trichlorotrifluoroethane had a %D of 26.70%. This compound is not reported for this project and no qualification is required

11 16.00 Dichlorodifluoromethane had a %D of 32 41% No dichlorodifluoromethane results were reported from this run, and no qualification necessary

11.16 00. 1,2-Dichloroethane-d4 had a %D of -30 85% This is a surrogate compound and no qualification is required

11 16 00 Acrolein listed in Appendix A of the QAPP had a %D that did not meet the %D requirements, however, no corrective action is required for these compounds No qualification necessary

Surrogates [Form 2] -The original run for sample WITCTA040WG01 had a high recovery outside of QC limits for surrogate dibromofluoromethane All detections from this run should be J flagged with the exception of trichloroethene which is reported from a diluted run that had all surrogates in control The original run for sample WITCTA041WG01 had a high recovery outside of QC limits for surrogate dibromofluoromethane The lab re-analyzed this sample and the % recovery for surrogate 1,2-dichloroethane-d4 was high Use results of original analysis and J flag all detections

Laboratory Control Samples [Form 3] - All %R results for LSC VBLKJP met established control limits except for a high %R value for methyl-*tert*-butyl ether of 129% and a low %R for methylene chloride of 68% All results for methyl-*tert*-butyl ether are non-detect and no qualifications are required All results for methylene chloride should be R qualified All %R results for LSC VBLKJR met established control limits except for a high %R value for methyl-*tert*-butyl ether of 161%, 1,1-dichloropropene of 129%, 1-chlorohexane of 128% and 1,2,3-trichloropropane of 129% However, all associated results are non-detect and no qualifications are required

MS/MSD [Form 3] - Sample WITCTA041WG01 was used for the MS/MSD All RPDs were in control All %Rs were in control except for high %R for methyl-*tert*-butyl ether, 1,1-dichloropropene, 1,2-dichloroethane in the MS and MSD and 1-chlorohexane in the MSD There were no detections of the affected compounds No qualification necessary

Internal Standard Performance [Form 8] - All internal standards met area and retention time criteria No qualification necessary

Method Blanks [Form 1] - Both method blanks were free from contamination. No qualification necessary

Equipment and Trip Blanks [Form 1] - Trip blank TB110300 and EB110300 were free from contamination No qualification necessary

Field Duplicates [Form 1] - No duplicate pairs were submitted with this SDG No qualification required

Compound Quantitation - Sample WITCTA040WG01 was analyzed at a 5 fold dilution due to high levels of TCE.

Qualification Summary Table

Sample ID	Analyte	Lab Val	Lab Qual	HGL Val	HGL Qual
WITCTA040WG01	trans-1,2-dichloroethene	0 9	--	0 9	J
	cis-1,2-dichloroethene	13	--	13	J
	trichloroethene	53	E	53	EX
	p,m-xylene	0 8	--	0 8	J
WITCTA040WG01DL	trichloroethene	54	D	54	--
WITCTA041WG01	1,1-dichloroethane	2	--	2	J
	trichloroethene	1 0	--	1 0	J

	p,m-xylene	0 8	--	0 8	J
WITCTA041WG01RE	All Results	Varies	Varies	Varies	Add "X"

Appendix IX SVOCs
SW8270C
USEPA Level III Review

Site Naval Air Station Fort Worth JRB, Texas SDG # 9A11G936

Laboratory STL-Chicago Date 01.16 01

HydroGeoLogic, Inc Reviewer Kimberly Evers Project AFC001-16BBD

Client Sample ID	Laboratory Sample ID	Matrix
WITCTA040WG01	9A11G936-003	Water
WITCTA041WG01	9A11G936-004	Water
EB110300	9A11G936-005	Water

Sample Delivery and Condition - The samples arrived at the laboratory in acceptable condition and temperature Proper custody (internal and external) was documented No qualification required

Holding Times - All samples were extracted and analyzed within the required holding times for water samples No qualification required

GC/MS Tuning [Form 5] - All DFTPP tunes associated with initial and continuing calibrations were in control No qualification necessary

Initial Calibration [Form 6] - The mean %RSD for all analytes was below 15%; all compounds %RSDs were <30% except for hexachlorocyclopentadiene which had a %RSD of 32 5% All results for this analyte should be R qualified The initial calibration had acceptable average RRFs for all SPCCs. No qualification required

Continuing Calibration [Form 7]- One continuing calibration verification (CCV) was run on 11.07 00 All continuing calibration %Ds and RRFs were in control No qualification required

Surrogates [Form 2] - All surrogate recoveries were in control with the exception of the base/neutral surrogate terphenyl-*d14* for the analyses of WITCTA040WG01 and WITCTA041WG01, which was below the LCL The %R of for this compound was above 10% in both samples and no qualification is necessary.

Laboratory Control Samples [Form 3] - The LCS associated with the analytical results for all samples is in control for all compounds No qualification necessary.

MS/MSD [Form 3] - No MS/MSD was submitted with this package No qualification required.

Internal Standards [Form 8] - All six ISs were in control for retention time and peak area for all sample analyses No qualification necessary

Method Blanks [Form 1] - The method blank associated with samples in this SDG was free from contamination No qualification is necessary.

Field Blanks [Form 1]- The equipment blank, EB110300, associated with the samples was free from contamination No qualification necessary

Field Duplicates [Form 1] - No field duplicate is associated with the samples in this SDG No qualification required

Compound Quantitation - No discrepancies were reported in this data package

Qualification Summary Table

Sample ID	Analyte	Lab Val	Lab Qual	HGL Val	HGL Qual
WITCTA040WG01	hexachlorocyclopentadiene	10	U	10	R
WITCTA041WG01	hexachlorocyclopentadiene	10	U	10	R

Appendix IX Metals
SW-846 ICP and AA methods
USEPA Level III Review

Site Naval Air Station Fort Worth JRB, Texas — SDG # 9A11G936

Laboratory STL-Chicago — Date 01 17 01

HydroGeoLogic, Inc Reviewer Kimberly Evers — Project AFC001-16BBD

Client Sample ID	Laboratory Sample ID	Matrix
WITCTA044WG01	9A11G936-002	Water
WITCTA040WG01	9A11G936-003	Water
WITCTA041WG01	9A11G936-004	Water
EB110300	9A11G936-005	Water

Sample Delivery and Condition - The samples arrived at the laboratory in acceptable condition and temperature Proper custody (internal and external) was documented No qualification required

Holding Times - All samples were analyzed within the required holding times for preserved water samples No qualification required

Calibration [Form 2A] - The initial and continuing calibration verification standards had acceptable recoveries No qualification required The CRDL standards had acceptable recoveries

Method and Calibration Blanks [Form 3] - See the following table for the effects of positive and negative contamination in the preparation blank, initial calibration blanks, and continuing calibration blanks

Analtye	Greatest Blank	Action Level	Affected samples
Aluminum	39 3	196 5	WITCTA040WG01, WITCTA041WG01
Cadmium	-0 5	(-3 0)	WITCTA044WG01, WITCTA040WG01, WITCTA041WG01
Calcium	35	170	No effect on sample results
Chromium	-1 9	(-9.5)	WITCTA044WG01, WITCTA040WG01, WITCTA041WG01
Copper	-1 3	(-6.5)	WITCTA044WG01, WITCTA040WG01, WITCTA041WG01
Iron	24.6	123	No effect on sample results
Magnesium	34 6	173	No effect on sample results
Manganese	1 0	5.0	No effect on sample results
Molybdenum	2.4	12	WITCTA041WG01
Nickle	(-2 1)	(-10 5)	WITCTA044WG01, WITCTA040WG01, WITCTA041WG01
Vanadium	1 0	5 0	WITCTA044WG01, WITCTA041WG01

Due to a positive detection of aluminum, calcium, iron, magnesium, manganese, molybdenum and vanadium in associated blanks, vanadium should be U-qualified at the PQL in WITCTA044WG01 and WITCTA041WG01, aluminum should be U-qualified at the PQL in WITCTA040WG01 and WITCTA041WG01 and molybdenum should be U-qualified at the PQL in WITCTA041WG01 All other results were for these elements were non-detect or above 5X the blank concentration and no qualification is necessary

The preparation blank, initial calibration blank or continuing calibration blank showed negative baseline drift for cadmium, chromium, copper and nickel All four elements are non-detect in all three of the samples and should be UJ flagged at the PQL

Equipment Blanks [Form 1] - The equipment blank associated with these samples is EB110100 The equipment blank had a detection of 48 3 µg/l for aluminum, 6 4 µg/l for barium, 73 6 µg/l for calcium, 31.2 µg/l for iron and 10 9 µg/l for zinc, leading to action levels of 241 5 µg/l, 32 0 µg/l, 368 µg/l, 156 µg/l, and 54 5 µg/l, respectively All other associated results were above 5X the equipments blank concentration with the exception of the following The aluminum detection in sample WITCTA040WG01 and WITCTA041WG01 is below the action level, however, it has been U-qualified at the PQL due to continuing calibration blank contamination. No further qualification necessary

ICP Interference Check Sample [Form 4] - All %Rs were in control No qualification necessary

ICP Serial Dilution [Form 9] - No serial dilution performed No qualification necessary.

Laboratory Control Samples [Form 7] - All LCSs had acceptable recoveries No qualification required

GFAA Recovery Tests [Form 14] - The recovery test result was above the UCL for thallium in sample WITCTA044WG01. The affected results are non-detects and are qualified UJ at the PQL

MS [Form 5] - A matrix spike/matrix spike duplicate was not analyzed with this data package No qualification required.

Laboratory Duplicates [Form 6] - A laboratory duplicate was not analyzed with this data package No qualification necessary

Field Duplicates [Form 1] - No field duplicate is associated with the samples in this SDG No qualification required.

Compound Quantitation - No issues

Qualification Summary Table

Sample ID	Analyte	Lab Val	Lab Qual	HGL Val	HGL Qual
WITCTA044WG01	Cadmium	0.4	U	PQL	UJ
	Chromium	1.7	U	PQL	UJ
	Copper	1 2	U	PQL	UJ
	Nickel	1 6	U	PQL	UJ
	Vanadium	1 3	B	PQL	U

WITCTA040WG01	Aluminum	77 2	B	PQL	U
	Cadmium	0 4	U	PQL	UJ
	Chromium	3 4	U	PQL	UJ
	Copper	1 2	U	PQL	UJ
	Nickel	1 6	U	PQL	UJ
WITCTA041WG01	Aluminum	147	B	PQL	U
	Cadmium	0 4	U	PQL	UJ
	Chromium	1 7	U	PQL	UJ
	Copper	1 2	U	PQL	UJ
	Molybdenum	2 1	B	PQL	U
	Nickel	1 6	U	PQL	UJ
	Vanadium	3 8	B	PQL	U

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APPENDIX IX VOLATILE ORGANIC COMPOUNDS

USEPA SW846 Method 8260B - Level III Review

Site. Naval Air Station Fort Worth - DO16BBB SDG # 9A12G079

Client HydroGeoLogic, Inc Date January 20 2001

Laboratory Severn Trent Laboratories Chicago, IL Reviewer Nancy Weaver

Client Sample ID	Laboratory Sample ID	Matrix
BHGLAOC13005-03	9A12G079-011	Soil
BHGLAOC13005-04	9A12G079-012	Soil
BHGL1140-1001-01	9A12G079-014	Soil
BHGL1140-1001-02	9A12G079-015	Soil
BHGL1140-1001-03	9A12G079-016	Soil
BHGL1140-1002-01	9A12G079-017	Soil
BHGL1140-1002-02	9A12G079-018	Soil
BHGL1140-1002-03	9A12G079-019	Soil
EB121100	9A12G079-020	Water
TB121100	9A12G079-021	Water

Holding Times - All samples were analyzed within 14 days for preserved water and soil samples as specified in the NAS Fort Worth JRB 2000 Basewide Quality Assurance Project Plan (QAPP), March 2000 No qualifications were required

GC/MS Tuning - All of the BFB tunes in the initial and continuing calibrations met the percent relative abundance criteria No qualifications were required

Initial Calibration - The initial calibrations analyzed on 1/14/00-12/05/00 exhibited acceptable %RSD values and/or correlation coefficients and mean RRF values No qualifications were required.

The initial calibrations analyzed on 08/14/00-12/15/00 exhibited acceptable %RSD values and/or correlation coefficients and mean RRF values No qualifications were required.

Continuing Calibration - The continuing calibrations analyzed on 12/16/00, 12/18/00 and 12/19/00 exhibited acceptable high %D values for four Appendix IX compounds, however, no qualifications were required per the QAPP.

Surrogates - Samples BHGLAOC13005-04 and BHGL1140-1002-01 exhibited high surrogate recoveries for surrogate compounds S2-toluene-d8 and S4-dibromofluoromethane of ok/139% and 142%/153%, respectively, however, all results are non-detect and no qualifications were required

Laboratory Control Samples - LCS sample VBLKPR exhibited a low %R value for methylene chloride of 67% Methylene chloride has been rejected (R) in samples EB121100 and TB121100

LCS sample VBLKUI exhibited high %R values for bromomethane and 1,1,1,2-tetrachloroethane of 150% and 124%, however, all associated results are non-detect and no qualifications were required

LCS sample VBLKUG exhibited high %R values for dichlorodifluoromethane and 1,1,1,2-tetrachloroethane of 132% and 112%, however, all associated results are non-detect and no qualifications were required

MS/MSD - A MS/MSD sample was not analyzed with this data package

Internal Standard (IS) Area Performance - Sample BHGL1140-1002-01 exhibited a low area count for internal standard IS4 All IS4 associated compounds have been qualified (UJ).

Sample BHGL1140-1001-02 exhibited low area counts for internal standards IS1, IS2 and IS4 All IS1, IS2 and IS4 associated compounds have been qualified (UJ).

Method Blank - Method blanks VBLKPR (12/16/00), VBLKUI (12/18/00) and VBLKUG (12/19/00) were free of contamination No qualifications were required

Trip, field, equipment blank - Trip blank TB121100 was free of contamination No qualifications were required

Equipment blank EB121100 was free of contamination No qualifications were required

Field Duplicates - Field duplicate samples were not analyzed with this data package

Tentatively Identified Compounds - All TICs were qualified (T)

Compound Quantitation - No discrepancies were identified

Comments - The analyses of environmental samples and quality control samples are valid within the constraints identified with the data quality flags as presented in the internal standard and TIC sections of this report with the exception of one compound rejected in two samples due to the LCS. The NAS Basewide Quality Assurance Project Plan, March 2000, data validation criteria were used in evaluating the data in this summary report

Data Validation Summary Table - The following table summarizes all qualifications as described in this data validation summary report.

Qualification Summary Table - Volatiles SDG 9A12G079					
Sample No	Compound(s)	Reported		Validated	
		Conc	Qualifier	Conc	Qualifier
BHGL1140-1001-02	All IS1, IS2, IS4 Compounds	--	U	--	UJ
BHGL1140-1002-01	Trans-1,4-Dichloro-2-butene	5	U	5	UJ
	1,1,2,2-Tetrachloroethane	2	U	2	UJ
	1,2,3-Trichloropropane	5	U	5	UJ
	Pentachloroethane	5	U	5	UJ
	1,2-Dibromo-3-chloropropane	5	U	5	UJ
EB121100	Methylene Chloride	0 5	U	0 5	R
TB121100	Methylene Chloride	0 5	U	0 5	R

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APPENDIX IX SEMIVOLATILE ORGANIC COMPOUNDS
USEPA SW846 Method 8270C - Level III Review

Site Naval Air Station Fort Worth - DO16BBB SDG # 9A12G079

Client HydroGeoLogic, Inc Date January 20, 2001

Laboratory: Severn Trent Laboratories, Chicago, IL Reviewer Nancy Weaver

Client Sample ID	Laboratory Sample ID	Matrix
BHGLAOC13005-03	9A12G079-011	Soil
BHGLAOC13005-04	9A12G079-012	Soil
EB121100	9A12G079-020	Water

Holding Times - All samples were extracted within 7 days for water samples and 14 days for soil samples and analyzed within 40 days as specified in the NAS Fort Worth JRB 2000 Basewide Quality Assurance Project Plan (QAPP), March 2000 No qualifications were required

GC/MS Tuning - All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria No qualifications were required

Initial Calibration - The initial calibration analyzed between 12/15/00 exhibited a high %RSD value for 2-sec-butyl-4,6-dinitrophenol of 34 3% 2-Sec-butyl-4,6-dinitrophenol has been rejected (R) in all samples

Continuing Calibration - The continuing calibration analyzed on 01/04/01 exhibited high %D values for two Appendix IX compounds, however, no qualifications were required per the QAPP

Surrogates - Sample EB121100 exhibited a low %R value for surrogate compound S2-phenol-d5 of 21%, however, no action is required for only one surrogate outside of QC limits

Laboratory Control Samples - LCS sample SBLKBR exhibited acceptable %R values No qualifications were required

LCS sample SBLKBK exhibited a low %R value for 2,4-dimethylphenol of 9% 2,4-Dimethylphenol has been rejected (R) in sample EB121100

MS/MSD - A MS/MSD sample was not analyzed with this data package

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria No qualifications were required

Method Blank - Method blanks SBLKBK (12/14/00) and SBLKBR (12/22/00) were free of contamination No qualifications were required

Field. equipment blank - Equipment blank EB121100 was free of contamination. No qualifications were required.

Field Duplicates - Field duplicate samples were not analyzed with this data package

Tentatively Identified Compounds (TICs) - TICs were not reported with the samples in this data package

Compound Quantitation - All results between the MDL and PQL have been qualified (F)

Comments - The analyses of environmental samples and quality control samples are valid within the constraints identified with the data quality flags as presented in the compound quantitation section of this report with the exception of rejected compounds due to the initial calibration and LCS The NAS Fort Worth JRB 2000 Basewide Quality Assurance Project Plan, March 2000, data validation criteria were used in evaluating the data in this summary report

Data Validation Summary Table - The following table summarizes all qualifications as described in this data validation summary report

Qualification Summary Table - Semivolatiles SDG 9A12G079					
Sample No	Compound(s)	Reported		Validated	
		Conc	Qualifier	Conc	Qualifier
BHGLAOC13005-03	2-sec-Butyl-4,6-Dinitrophenol	810	U	810	R
BHGLAOC13005-04	Naphthalene	86	U	86	F
	Bis(2-ethylhexyl)phthalate	180	U	180	F
	2-sec-Butyl-4,6-Dinitrophenol	850	U	850	R

EB121100	2,4-Dimethylphenol	9	U	9	R
	2-sec-Butyl-4,6-Dinitrophenol	18	U	18	R

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METALS

USEPA SW846 Methods 6010B/7191/7421/7470A/7740/7841 - Level III Review

Site Naval Air Station Fort Worth - DO16BBB SDG #: 9A12G079

Client HydroGeoLogic, Inc Date January 20, 2001

Laboratory Severn Trent Laboratories, Chicago, IL Reviewer Nancy Weaver

Client Sample ID	Laboratory Sample ID	Matrix
BHGLAOC13001-02	9A12G079-001	Soil
BHGLAOC13001-03	9A12G079-002	Soil
BHGLAOC13002-01	9A12G079-003	Soil
BHGLAOC13002-03	9A12G079-004	Soil
BHGLAOC13003-01	9A12G079-005	Soil
BHGLAOC13004-01	9A12G079-006	Soil
BHGLAOC13004-02	9A12G079-007	Soil
BHGLAOC13004-03	9A12G079-008	Soil
BHGLAOC13005-01	9A12G079-009	Soil
BHGLAOC13005-02	9A12G079-010	Soil
BHGLAOC13005-03	9A12G079-011	Soil
DUP06	9A12G079-013	Soil
BHGL1140-1001-01	9A12G079-014	Soil
BHGL1140-1001-02	9A12G079-015	Soil
BHGL1140-1001-03	9A12G079-016	Soil
BHGL1140-1002-01	9A12G079-017	Soil
BHGL1140-1002-02	9A12G079-018	Soil
BHGL1140-1002-03	9A12G079-019	Soil
FB121100	9A12G079-020	Water

Holding Times - All samples were extracted and analyzed within 28 days for mercury and 180 days for all other metals as specified in the NAS Fort Worth JRB 2000 Basewide Quality Assurance Project Plan (QAPP), March 2000 No qualifications were required

Calibration - All initial and continuing calibration verifications exhibited acceptable %R values. No qualifications were required

Method Blanks - The soil preparation blank PBS, initial and/or continuing calibration blanks exhibited contamination for several compounds, however, all associated results are non-detect or greater than 5X the blank concentration except the following Beryllium has been qualified (U) in sample BHGL1140-1002-03

The soil preparation blank PBS, initial and/or continuing calibration blanks exhibited negative contamination for antimony, arsenic, cadmium, silver and thallium at -2 9 ug/L, -0 380 ug/L, -0 050 ug/L, -0 8 ug/L and -2 1 ug L, respectively Antimony, arsenic, silver and thallium have been qualified (UJ) in samples BHGL1140-1001-01, BHGL1140-1001-02, BHGL1140-1001-03, BHGL1140-1002-01, BHGL1140-1002-02 and BHGL1140-1002-03 Cadmium has been qualified (UJ) in samples BHGLAOC13001-02, BHGLAOC13002-01, BHGLAOC13002-03, BHGLAOC13004-03, BHGLAOC13005-01, BHGLAOC13005-03, DUP06, BHGL1140-1001-01, BHGL1140-1001-02, BHGL1140-1001-03, BHGL1140-1002-01 and BHGL1140-1002-03

The water preparation blank PBW, initial and/or continuing calibration blanks exhibited contamination for several compounds, however, all associated results are non-detect or greater than 5X the blank concentration except the following. Copper, iron, magnesium and manganese have been qualified (U) in sample EB121100

The water preparation blank PBW initial and/or continuing calibration blanks exhibited negative contamination for cadmium and nickel at -0 4 ug/L and -3 0 ug/L, respectively. Cadmium and nickel have been qualified (UJ) in sample EB121100

Field and equipment blank - Equipment blank EB121100 exhibited aluminum, calcium, chromium, potassium and sodium contamination at 922 ug/L, 252 ug/L, 1 9 ug/L, 1030 ug/L and 963000 ug/L, respectively Aluminum has been qualified (U) in sample BHGL1140-1002-03 Chromium has been qualified (U) in samples BHGLAOC13005-01, BHGL1140-1001-02 and BHGL1140-1002-03 Potassium and sodium have been qualified (U) in samples BHGL1140-1001-01, BHGL1140-1001-02, BHGL1140-1001-03, BHGL1140-1002-01, BHGL1140-1002-02 and BHGL1140-1002-03

ICP Interference Check Sample - All %R values were acceptable. No qualifications were required

LCS - The LCS sample exhibited acceptable %R values. No qualifications were required

ICP Serial Dilution - An ICP serial dilution sample was not analyzed with this data package

Matrix Spike/Duplicate - A matrix spike/duplicate sample was not analyzed with this data package

Field Duplicates - Field duplicate results are summarized in the table below No qualifications were required.

Compound	BHGLAOC13005-02 mg/kg	DUP06 mg/kg	RPD
Cadmium	0 28	0 21	29%
Chromium	15 7	12 8	20%

Graphite Furnace Atomic Absorption (GFAA) Analysis - Several samples exhibited a postdigestion spike for the antimony chromium, selenium, silver and thallium analyses out of control limits (85-115%) and sample absorbance is less than 50% of spike absorbance. The laboratory flagged these results (W), however, the reviewer already qualified these results with the exception of the following Selenium has been qualified (UJ) in samples BHGL1140-1001-01, BHGL1140-1001-02, BHGL1140-1001-03, BHGL1140-1002-01, BHGL1140-1002-02, BHGL1140-1002-03 and EB121100

Compound Quantitation - All results between the MDL and the PQL have been qualified (F)

Comments - The analyses of environmental samples and quality control samples are valid within the constraints identified with the data quality flags as presented in the method blanks, field blank, GFAA and compound quantitation sections of this report The NAS Fort Worth JRB 2000 Basewide Quality Assurance Project Plan, March 2000, data validation criteria were used in evaluating the data in this summary report

Data Validation Summary Table - The following table summarizes all qualifications as described in this data validation summary report

Qualification Summary Table - Metals SDG 9A12G079					
Sample No	Compound(s)	Reported		Validated	
		Conc.	Qualifier	Conc	Qualifier
BHGLAOC13001-02	Arsenic	2 0	B	2 0	F
	Cadmium	0 13	B	0 13	UJ
BHGLAOC13001-03	Cadmium	0 30	B	0 30	F
BHGLAOC13002-01	Arsenic	2 1	B	2 1	F
	Cadmium	0 10	B	0 10	UJ
BHGLAOC13002-03	Cadmium	0 19	B	0 19	UJ

BHGLAOC13004-01	Arsenic	2 5	B	2 5	F
	Cadmium	0 37	B	0 37	F
BHGLAOC13004-02	Cadmium	0 33	B	0 33	F
BHGLAOC13004-03	Cadmium	0 20	B	0 20	UJ
BHGLAOC13005-01	Cadmium	0 07	B	0 07	UJ
	Chromium	7 2	-	7 2	U
BHGLAOC13005-02	Cadmium	0 28	B	0 28	F
BHGLAOC13005-03	Cadmium	0 21	B	0 21	UJ
DUP06	Cadmium	0 21	B	0 21	UJ
BHGL1140-1001-01	Antimony	0 49	W	0 49	UJ
	Arsenic	2 4	B	2 4	F
	Cadmium	0 21	B	0 21	UJ
	Cobalt	3 5	B	3 5	F
	Potassium	3050	-	3050	U
	Selenium	0 19	UW	0 19	UJ
	Silver	0 01	UW	0 01	UJ
	Sodium	1230	-	1230	U
	Thallium	0 19	UW	0 19	UJ
BHGL1140-1001-02	Antimony	0 24	U	0 24	UJ
	Arsenic	0 20	B	0 20	UJ
	Cadmium	0 03	U	0 03	UJ
	Chromium	6 1	B	6 1	U
	Cobalt	2 1	B	2 1	F
	Copper	4 2	B	4 2	F
	Nickel	5 5	B	5 5	F
	Potassium	800	-	800	U
	Selenium	0 17	UW	0 17	UJ
	Silver	0 01	UW	0 01	UJ
	Sodium	573	-	573	U
	Thallium	0 17	U	0 17	UJ
	Vanadium	11 2	B	11 2	F
	Zinc	14 4	B	14 4	F
BHGL1140-1001-03	Antimony	0 26	UW	0 26	UJ
	Arsenic	0 46	B	0 46	UJ
	Cadmium	0 07	B	0 07	UJ
	Cobalt	2 0	B	2 0	F
	Copper	5 0	B	5 0	F
	Nickel	5 8	B	5 8	F
	Potassium	1610	-	1610	U
	Selenium	0 18	UW	0 18	UJ
	Silver	0 01	UW	0 01	UJ
	Sodium	725	-	725	U
	Thallium	0 18	UW	0 18	UJ
	Vanadium	14 2	B	14.2	F
	Zinc	16 7	B	16 7	F

BHGL1140-1002-01	Antimony	0 25	U	0 25	UJ
	Arsenic	0 78	B	0 78	UJ
	Cadmium	0 14	B	0 14	UJ
	Cobalt	3 9	B	3 9	F
	Potassium	2670	-	2670	U
	Selenium	0 18	UW	0 18	UJ
	Silver	0 01	UW	0 01	UJ
	Sodium	1070	-	1070	U
	Thallium	0 18	UW	0 18	UJ
	Vanadium	17 5	B	17 5	F
BHGL1140-1002-02	Antimony	0 30	B	0 30	UJ
	Arsenic	1 5	B	1 5	UJ
	Cadmium	0 28	B	0 28	F
	Cobalt	3 2	B	3 2	F
	Potassium	3430	-	3430	U
	Selenium	0 18	UW	0 18	UJ
	Silver	0 01	UW	0 01	UJ
	Sodium	1280	-	1280	U
	Thallium	0 18	UW	0 18	UJ
BHGL1140-1002-03	Aluminum	2330	-	2330	U
	Antimony	0 24	U	0 24	UJ
	Arsenic	0 21	U	0 21	UJ
	Barium	18 5	B	18 5	F
	Beryllium	0 22	B	0 22	U
	Cadmium	0 03	U	0 03	UJ
	Chromium	3 9	B	3 9	U
	Cobalt	1 0	B	1 0	F
	Copper	2 5	B	2 5	F
	Nickel	2 9	B	2 9	F
	Potassium	442	-	442	U
	Selenium	0 17	UW	0 17	UJ
	Silver	0 01	UW	0 01	UJ
	Sodium	389	-	389	U
	Thallium	0 17	UW	0 17	UJ
	Vanadium	4 4	B	4 4	F
	Zinc	8 0	B	8 0	F
EB121100	Cadmium	0 40	U	0 40	UJ
	Calcium	252	B	252	F
	Chromium	1 9	BW	1 9	F
	Copper	3 7	B	3 7	U
	Iron	58 8	B	58 8	U
	Magnesium	29 7	B	29 7	U
	Manganese	1 3	B	1 3	U
	Nickel	1.6	U	1 6	UJ
	Potassium	1030	B	1030	F
	Selenium	1 9	UW	1 9	UJ

FINAL PAGE

ADMINISTRATIVE RECORD

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