FINAL

GROUNDWATER MONITORING REPORT

for the November 2001 Sampling Event
at Air Force Plant 59

Prepared for:

Air Force Center for Environmental Excellence
and
Aeronautical Systems Center

Prepared by:

Earth Tech, Inc.
1420 King Street, Suite 600
Alexandria, Virginia 22314

Contract No. F41624-97-D-8018
Delivery Order No. 0063

February 2002

DISCLAIMER

This *Final Groundwater Monitoring Report for the November 2001 Sampling Event* has been prepared for the United States Air Force (USAF) by Earth Tech for the purpose of satisfying the groundwater monitoring requirements defined in the April 27, 1999 letter to the New York State Department of Environmental Conservation (Earth Tech, 1999a) and *the Record of Decision* (Earth Tech, 1999b) for Air Force Plant 59. Acceptance of this report in performance of the contract under which it is prepared does not mean that the USAF adopts the conclusions, recommendations, or other views expressed herein, which are those of Earth Tech only and do not necessarily reflect the official position of the USAF.

Government agencies and their contractors registered with the Defense Technical Information Center should direct requests for copies of this report to Defense Technical Information Center, 8725 John J. Kingman Road, Suite 0944, Fort Belvoir, Virginia 22060-6218. Non-government agencies may purchase copies of this document from the National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161.

PREFACE

This *Final Groundwater Monitoring Report for the November 2001 Sampling Event* has been prepared by Earth Tech to describe field and laboratory operations conducted as part of the semiannual groundwater monitoring at Air Force Plant 59 (AFP 59), Johnson City, New York. Fieldwork followed guidelines set forth in the *Final Work Plan for Groundwater Monitoring at AFP 59* (Earth Tech, 1998), the Air Force Center for Environmental Excellence (AFCEE) *Model Work Plan* (United States Air Force [USAF], 1996), and the AFCEE *Model Field Sampling Plan, Version 1.1* (USAF, 1997). All work was completed under AFCEE Contract Number F41624-97-D-8018, Delivery Order 0063. The groundwater monitoring is being conducted to accomplish the following objective:

- To satisfy the groundwater monitoring requirements defined in the April 27, 1999 letter to the New York State Department of Environmental Conservation (Earth Tech, 1999a) and the *Record of Decision* (Earth Tech, 1999b) for Air Force Plant 59.

The AFCEE Restoration Team Chief is John McCown. The Air Force Aeronautical Systems Center Integrated Product Team Chief is John Doepker. The Earth Tech Project Manager is Dave Parse.

Approved:

Brian J. Burgher
Vice President
Program Manager

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. AGENCY USE ONLY *(Leave Blank)*	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	February 2002	**Final**

4. TITLE AND SUBTITLE	5. FUNDING NUMBERS
Final Groundwater Monitoring Report for the November 2001 Sampling Event at Air Force Plant 59	**Contract No. F41624-97-D-8018; Delivery Order 0063**
6. AUTHOR(S) **Earth Tech**	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **Earth Tech** **1420 King Street, Suite 600** **Alexandria, VA 22314**	8. PERFORMING ORGANIZATION REPORT NUMBER **N/A**
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) **AFCEE/ERD** **3207 North Road** **Brooks AFB, Texas 78235-5363**	10. SPONSORING/MONITORING AGENCY REPORT NUMBER **N/A**
11. SUPPLEMENTARY NOTES **None**	
12a. DISTRIBUTION/AVAILABILITY STATEMENT **Approved for Public Release; Distribution is Unlimited.**	12b. DISTRIBUTION CODE

13.ABSTRACT *(Maximum 200 words)*

This document is the *Final Groundwater Monitoring Report for the November 2001 Sampling Event at Air Force Plant 59 (AFP 59)*, Johnson City, New York. It summarizes the fieldwork completed during the semiannual groundwater monitoring. The monitoring was conducted to accomplish the following objective: to satisfy the groundwater monitoring requirements defined in the April 27, 1999 letter to the New York State Department of Environmental Conservation and the *Record of Decision* for Air Force Plant 59.

14. SUBJECT TERMS	15. NUMBER OF PAGES **24**
IRP Groundwater Monitoring, Air Force Plant 59	16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
Unclassified	**Unclassified**	**Unclassified**	**UL**

NSN 7540-01-280-5500

Standard Form 298 (Rev. 2-89)

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ACRONYMS AND ABBREVIATIONS

AFCEE	Air Force Center for Environmental Excellence
AFP 59	Air Force Plant 59
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
1,1-DCA	1,1-Dichloroethane
1,1-DCE	1,1-Dichloroethene
cis-1,2-DCE	cis-1,2-Dichloroethene
trans-1,2-DCE	trans-1,2-Dichloroethene
IRP	Installation Restoration Program
µg/L	Micrograms per Liter
MDL	Method Detection Limit
N/A	Not Applicable
NYSDEC	New York State Department of Environmental Conservation
QAPP	Quality Assurance Project Plan
RI/FS	Remedial Investigation/Feasibility Study
RL	Reporting Limit
1,1,1-TCA	1,1,1-Trichloroethane
TCE	Trichloroethene
USAF	United States Air Force
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

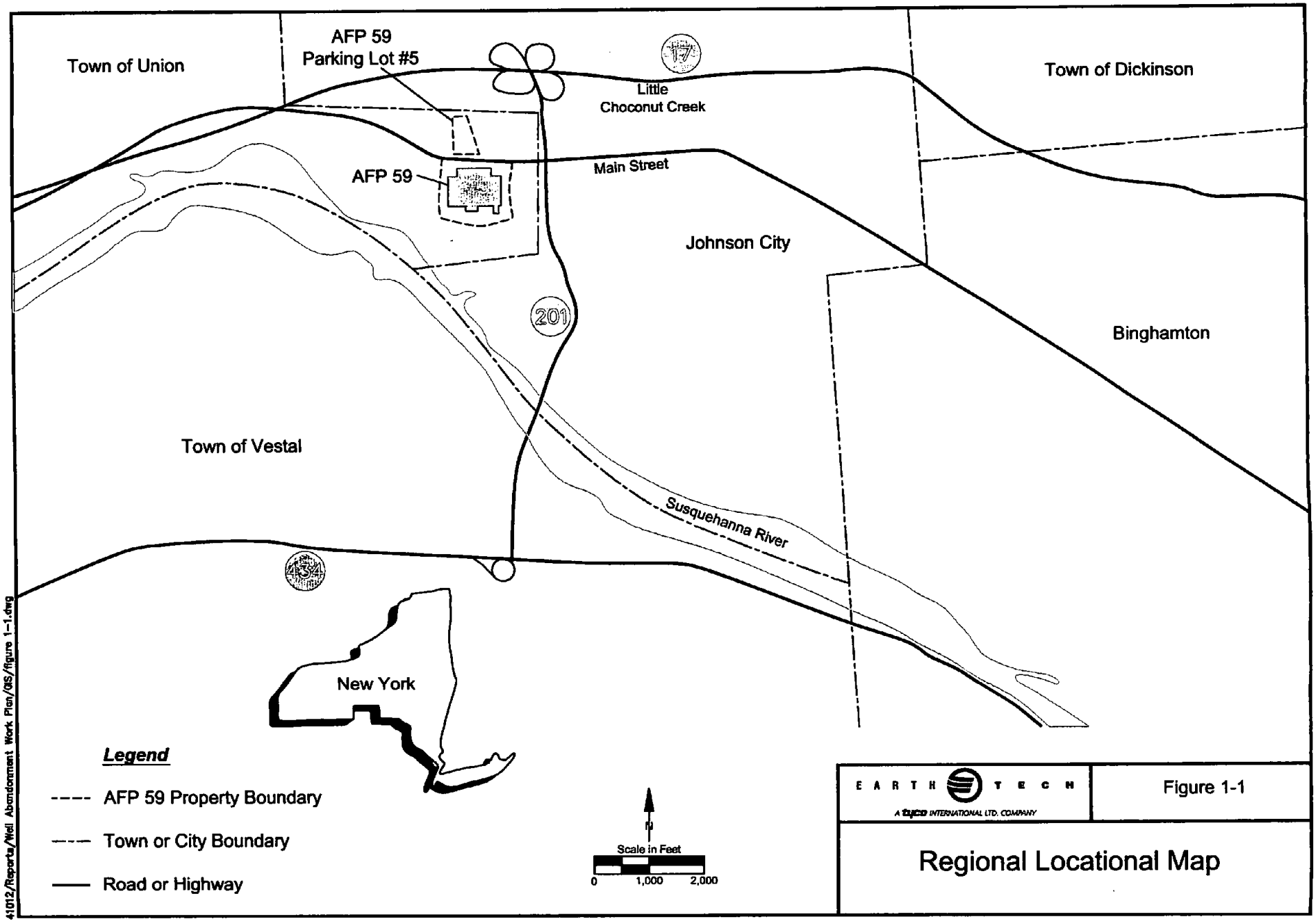
1.0 INTRODUCTION

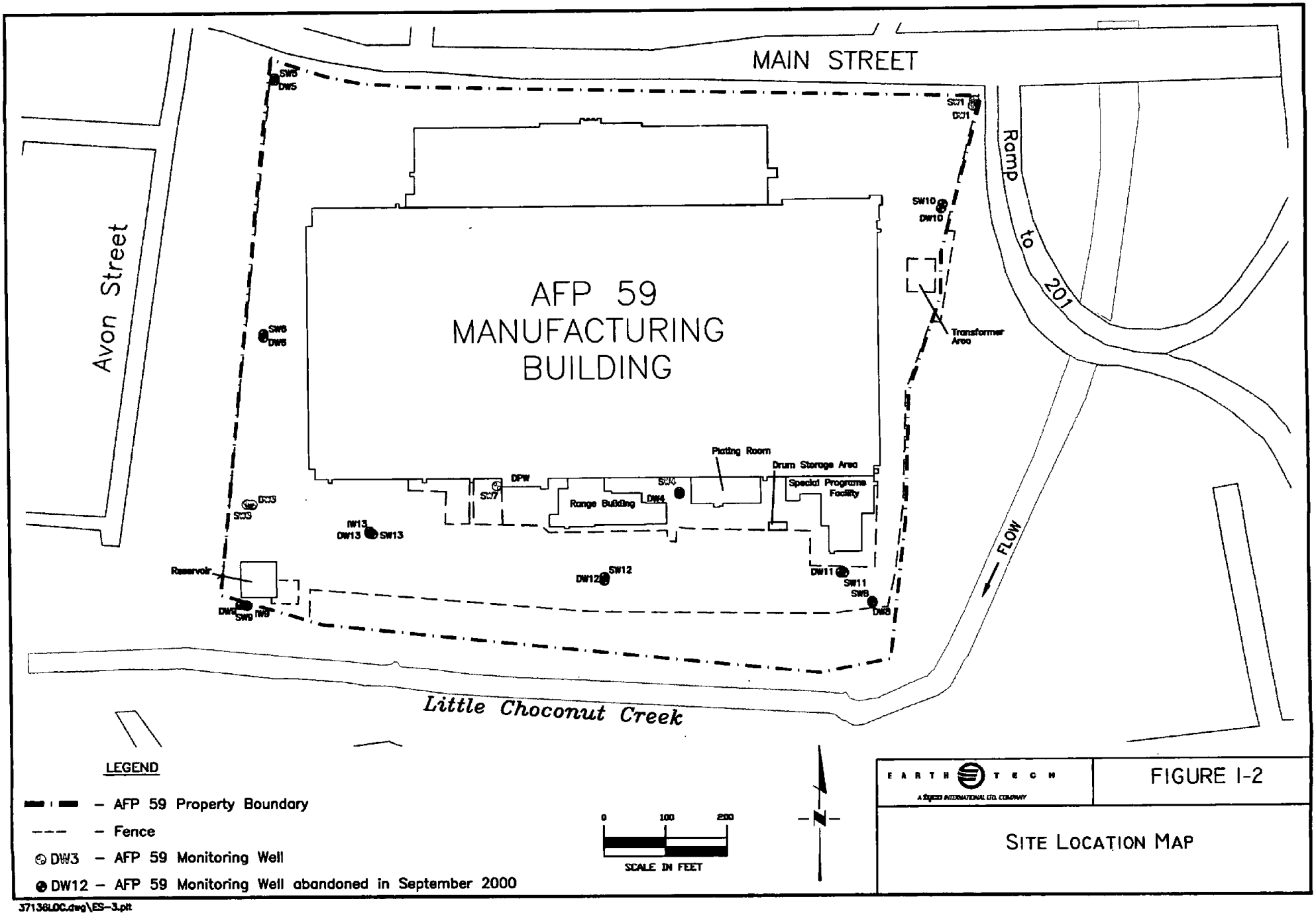
This *Final Groundwater Monitoring Report for the November 2001 Sampling Event* has been prepared by Earth Tech to describe field and laboratory operations during the November 2001 groundwater sampling event. The November 2001 sampling event was conducted as part of the semiannual groundwater monitoring at Air Force Plant 59 (AFP 59), Johnson City, New York. Earth Tech was contracted by the Air Force Center for Environmental Excellence (AFCEE) to perform two rounds of groundwater sampling (semiannual sampling) at AFP 59. Figure 1-1 shows the general location of AFP 59. Figure 1-2 shows the locations of buildings and monitoring wells at AFP 59. The groundwater monitoring is being conducted to accomplish the following objective:

- To satisfy the groundwater monitoring requirements defined in the April 27, 1999 letter to the New York State Department of Environmental Conservation (NYSDEC) (Earth Tech, 1999a) and the *Record of Decision* (Earth Tech, 1999b) for Air Force Plant 59.

All sampling activities followed protocols presented in the *Final Work Plan for Groundwater Monitoring at AFP 59* (Earth Tech, 1998), the *Final Sampling and Analysis Plan* (Earth Tech, 1994), the AFCEE *Model Work Plan* (USAF, 1996), and the AFCEE *Model Field Sampling Plan, Version 1.1* (USAF, 1997).

This report contains the following four sections: Section 1 provides the objectives of the semiannual sampling events, Section 2 provides a summary of the activities conducted during the November 2001 sampling event, Section 3 summarizes the analytical results, and Section 4 presents conclusions from the investigation.


Town of Union
AFP 59
Parking Lot #5
Little
Choconut Creek
Town of Dickinson
AFP 59
Main Street
Johnson City
201
Binghamton
Town of Vestal
Susquehanna River
434
New York
Legend
AFP 59 Property Boundary
Town or City Boundary
Road or Highway
N
Scale in Feet
0
1,000
2,000
EARTH TECH
A TYCO INTERNATIONAL LTD. COMPANY
Figure 1-1
Regional Locational Map
41012/Reports/Well Abandonment Work Plan/GIS/figure 1-1.dwg



37136LOC.dwg\ES-3.plt

2.0 PROJECT ACTIVITIES

This section summarizes activities conducted during the November 2001 sampling event. Section 2.1 summarizes the rationale for selecting the analyses performed on samples collected during the investigation. Section 2.2 outlines the groundwater sampling procedures.

2.1 Sample Analysis Summary

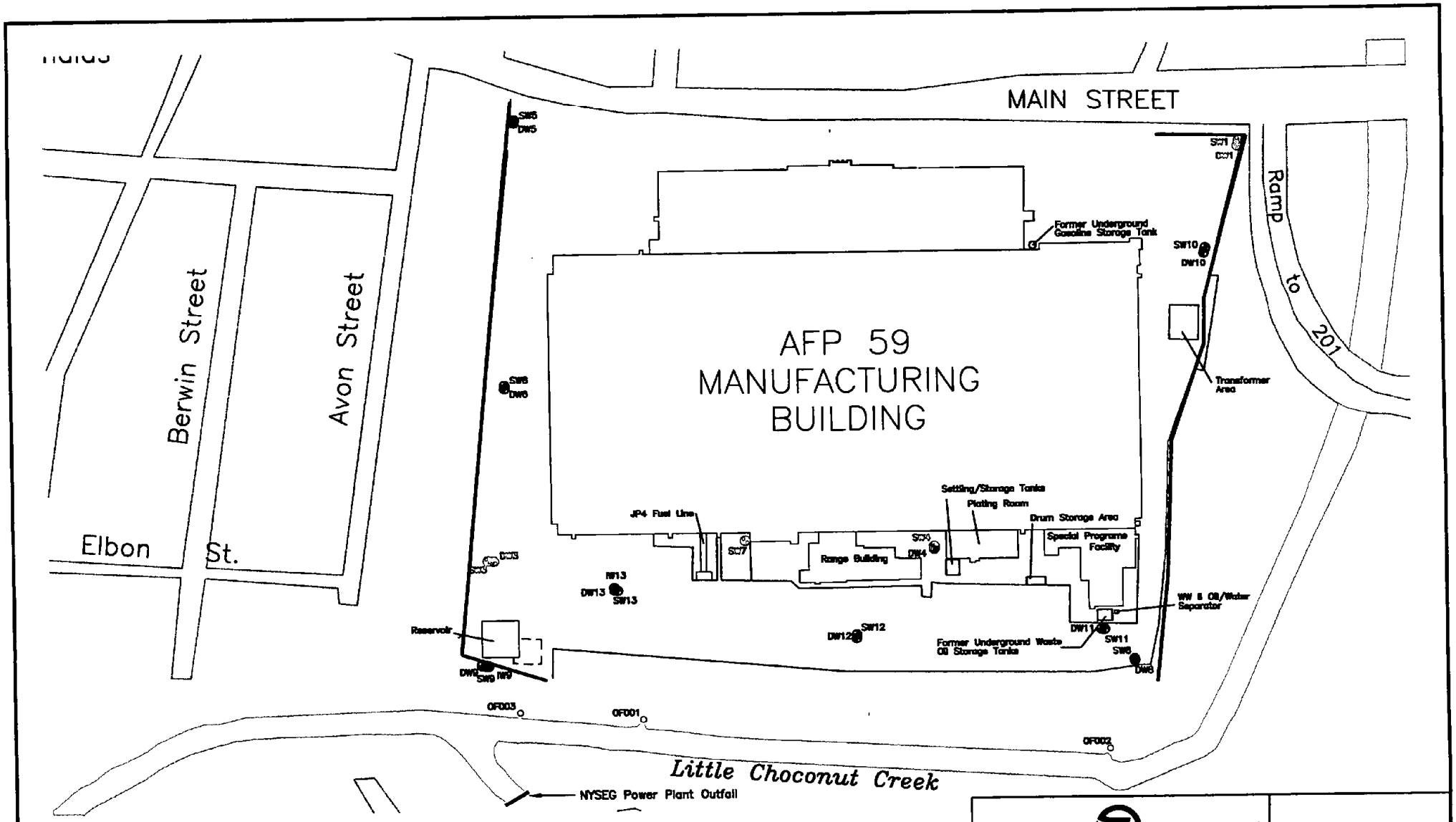
On the basis of conclusions presented in the *Final Remedial Investigation Report* (Earth Tech, 1996) and recommendations made by the NYSDEC, it was determined that VOCs represent the only chemicals of potential concern in groundwater at AFP 59. As a result, the *Record of Decision* (Earth Tech, 1999b) for AFP 59 describes the remedial alternative (i.e., the upgrade of the Camden Street Well Field groundwater treatment system) chosen as most appropriate for treating the VOCs in groundwater at AFP 59. As part of the requirements defined in the *Record of Decision* (Earth Tech, 1999b), a long-term groundwater monitoring program was established for AFP 59. The monitoring program, which is defined in the April 27, 1999 letter to the NYSDEC (Earth Tech, 1999a), is being conducted on a semiannual basis and includes sampling the following monitoring wells: SW1, DW1, SW3, DW3, SW4, and SW7. Monitoring wells SW1 and DW1 represent upgradient (background) wells; monitoring wells SW3 and DW3 represent downgradient wells; monitoring wells SW4 and SW7 have historically had the highest concentrations of VOCs.

The groundwater samples collected during the November 2001 sampling event, which represents the fifth sampling event of the long-term groundwater monitoring program, were analyzed for VOCs by USEPA Method SW8260. Table 2.1-1 lists the total number of groundwater samples collected for each sample type (e.g., environmental sample, duplicate sample) during the November 2001 sampling event, and Figure 2.1-1 shows the locations of the on-site monitoring wells sampled during November 2001 sampling event.

Table 2.1-1. Sample Analysis Summary

Method	Matrix	# Samples	# Equipment Blanks	# Ambient Blanks	# Trip Blanks	# Field Duplicates	Total # Samples
SW8260B Volatile Organics	Ground-water	6	0(1)	1	1	1	9

(1) No equipment blanks were collected because disposable bailers were used during groundwater sampling.



41012/Rep/Well Aband Work Plan/GIS/371360SL.DWG

2.2 Field Activities

The primary field activity was sampling of the monitoring wells shown in Figure 2.1-1. A summary of the field activities is provided in Table 2.2-1.

Table 2.2-1. Field Activities Summary

Activity
Measure the groundwater level in all on-site monitoring wells.
Collect groundwater samples from six on-site monitoring wells.

Groundwater sampling methods followed protocols presented in the *Final Work Plan for Groundwater Monitoring at AFP 59* (Earth Tech, 1998) and in the *Final Sampling and Analysis Plan* (Earth Tech, 1994) that was prepared for the remedial investigation conducted at AFP 59. The primary objective of the groundwater sampling event was to satisfy groundwater monitoring requirements defined in the April 27, 1999 letter to the NYSDEC (Earth Tech, 1999a) and the *Record of Decision* (Earth Tech, 1999b) for Air Force Plant 59.

Groundwater sampling procedures included:

1. Measuring groundwater levels in all on-site monitoring wells;
2. Purging select on-site monitoring wells prior to sampling;
3. Measuring field-derived parameters (including temperature, pH, specific conductance, and turbidity) during monitoring well purging; and
4. Collecting groundwater samples from the purged monitoring wells.

Refer to the *Final Work Plan for Groundwater Monitoring at AFP 59* (Earth Tech, 1998) and the *Final Sampling and Analysis Plan* (Earth Tech, 1994) for a detailed description of all sampling activities and protocols.

Water level measurements were taken in all monitoring wells to determine the elevation of the water table (in the shallow zone of the aquifer) or piezometric surface (in the deep zone of the aquifer) once within a single 24-hour period. Any conditions that affected water levels were recorded in the field log. Water level measurements were taken with an electric sounder and were measured to the nearest 0.01-foot. All measuring equipment was decontaminated according to the specifications in the *Final Sampling and Analysis Plan* (Earth Tech, 1994).

Static water levels were measured each time a monitoring well was sampled and before any equipment entered the monitoring well. If the casing cap was airtight, the air pressure within the monitoring well was allowed to equilibrate after the cap was removed and prior to measurement of the water level.

3.0 INVESTIGATION RESULTS

The results of the November 2001 sampling event at AFP 59 are summarized in this section. Section 3.1 summarizes the analytical results, and Section 3.2 provides conclusions concerning the analytical and hydrogeological data. Field data are provided in Appendix B, chain-of-custody forms are provided in Appendix C, and analytical data are provided in Appendix D.

3.1 Sampling and Analysis Results

This section summarizes the data collection activities completed during the November 2001 sampling event, presents the laboratory analytical results, and provides a trend analysis of identified VOCs.

3.1.1 Review of Field and Laboratory Data

All field procedures, sample handling documentation, and laboratory procedures followed protocols presented in the *Final Work Plan for Groundwater Monitoring at AFP 59* (Earth Tech, 1998) and the *Final Sampling and Analysis Plan* (Earth Tech, 1994). All analytical data generated as a result of the November 2001 sampling event were reported as AFCEE definitive data. Analytical protocols utilized in sample preparation, analysis, and reporting were in accordance with the specific analytical method and the guidelines given in the AFCEE *Quality Assurance Project Plan (QAPP), Version 3.0* (USAF, 1998). Laboratory analyses were performed by O'Brien & Gere Laboratories, located in Syracuse, New York. Analytical methods and O'Brien & Gere Laboratories' associated method detection limits (MDLs) and reporting limits (RLs) are listed in Table 3.1-1. No data validation was performed by Earth Tech.

Data flags were applied to the analytical data by the laboratory. During the data review process, Earth Tech reviewed the analytical data and associated data flags and assigned data qualifiers as per the guidelines given in the AFCEE *QAPP, Version 3.0* (USAF, 1998); the data quality review summary is provided in Appendix D. The following data qualifiers were assigned to the data as a result of the data review process and are defined below.

- **R** Unreliable result. Analyze may or may not be present in the sample. Supporting data necessary to confirm result.
- **B** Not detected substantially above the level reported in the laboratory or field blanks.
- **J** This is an estimated value.
- **UJ** Not detected, quantitation limit may be inaccurate or imprecise.
- **U** The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.

Table 3.1-1. Analytical Parameters, Method Detection Limits, and Reporting Limits for O'Brien & Gere Laboratories

Parameter/Method	Analyte	Water			
		MDL	Unit	RL	Unit
VOCs SW8260B	1,1,1,2-Tetrachloroethane	0.013	µg/L	0.5	µg/L
	1,1,1-TCA	0.012	µg/L	0.8	µg/L
	1,1,2,2-Tetrachloroethane	0.028	µg/L	0.5	µg/L
	1,1,2-TCA	0.02	µg/L	1.0	µg/L
	1,1-DCA	0.005	µg/L	0.4	µg/L
	1,1-DCE	0.025	µg/L	1.2	µg/L
	1,1-Dichloropropene	0.01	µg/L	1.0	µg/L
	1,2,3-Trichlorobenzene	0.05	µg/L	0.3	µg/L
	1,2,3-Trichloropropane	0.023	µg/L	3.2	µg/L
	1,2,4-Trichlorobenzene	0.041	µg/L	0.4	µg/L
	1,2,4-Trimethylbenzene	0.015	µg/L	1.3	µg/L
	1,2-DCA	0.009	µg/L	0.6	µg/L
	1,2-DCB	0.01	µg/L	0.3	µg/L
	trans-1,2-Dichloroethene	0.032	µg/L	0.6	µg/L
	1,2-Dibromo-3-chloropropane	0.15	µg/L	2.6	µg/L
	1,2-Dibromoethane	0.011	µg/L	0.6	µg/L
	1,2-Dichloropropane	0.014	µg/L	0.4	µg/L
	1,3,5-Trimethylbenzene	0.075	µg/L	0.5	µg/L
	1,3-DCB	0.012	µg/L	1.2	µg/L
	1,3-Dichloropropane	0.01	µg/L	0.4	µg/L
	1,4-DCB	0.031	µg/L	0.3	µg/L
	2,2-Dichloropropane	0.01	µg/L	3.5	µg/L
	2-Chlorotoluene	0.012	µg/L	0.4	µg/L
	4-Chlorotoluene	0.01	µg/L	0.6	µg/L
	Benzene	0.008	µg/L	0.4	µg/L
	Bromobenzene	0.019	µg/L	0.3	µg/L
	Bromochloromethane	0.01	µg/L	0.4	µg/L
	Bromodichloromethane	0.008	µg/L	0.8	µg/L
	Bromoform	0.013	µg/L	1.2	µg/L
	Bromomethane	0.023	µg/L	1.1	µg/L
	n-Butylbenzene	0.016	µg/L	1.1	µg/L
	sec-Butylbenzene	0.007	µg/L	1.3	µg/L
	tert-Butylbenzene	0.013	µg/L	1.4	µg/L
	Carbon tetrachloride	0.008	µg/L	2.1	µg/L
	Chlorobenzene	0.01	µg/L	0.4	µg/L
	Chloroethane	0.02	µg/L	1.0	µg/L
	Chloroform	0.011	µg/L	0.3	µg/L
	Chloromethane	0.034	µg/L	1.3	µg/L
	cis-1,2-DCE	0.026	µg/L	1.2	µg/L
	cis-1,3-Dichloropropene	0.02	µg/L	1.0	µg/L
	Dibromochloromethane	0.007	µg/L	0.5	µg/L
	Dibromomethane	0.016	µg/L	2.4	µg/L
	Dichlorodifluoromethane	0.01	µg/L	1.0	µg/L

Table 3.1-1. Analytical Parameters, Method Detection Limits, and Reporting Limits for O'Brien & Gere Laboratories (Continued)

Parameter/Method	Analyte	Water			
		MDL	Unit	RL	Unit
VOCs SW8260B	trans-1,3-Dichloropropene	0.01	µg/L	1.0	µg/L
	Ethylbenzene	0.006	µg/L	0.6	µg/L
	Hexachlorobutadiene	0.092	µg/L	1.1	µg/L
	Isopropylbenzene	0.01	µg/L	0.5	µg/L
	p-Isopropyltoluene	0.013	µg/L	1.2	µg/L
	Methylene Chloride	0.04	µg/L	2.0	µg/L
	Naphthalene	0.02	µg/L	1.0	µg/L
	n-Propylbenzene	0.006	µg/L	0.4	µg/L
	Styrene	0.008	µg/L	0.5	µg/L
	Tetrachloroethene	0.012	µg/L	1.4	µg/L
	Trichloroethene	0.01	µg/L	1.0	µg/L
	Trichlorofluoromethane	0.014	µg/L	0.8	µg/L
	Toluene	0.012	µg/L	1.1	µg/L
	Vinyl Chloride	0.021	µg/L	1.1	µg/L
	(m&p)-Xylene	0.021	µg/L	0.6	µg/L
	o-Xylene	0.007	µg/L	1.1	µg/L
	Xylene (total)	0.021	µg/L	1.1	µg/L

3.1.2 Data Summary

The number and locations of groundwater samples are outlined below. Figure 3.1-1 shows the locations of the monitoring wells sampled during the November 2001 sampling event.

The following monitoring wells were sampled:

- Shallow monitoring wells SW1, SW3, SW4, and SW7; and
- Deep monitoring wells DW1 and DW3.

3.1.3 VOCs Detected in Groundwater Samples

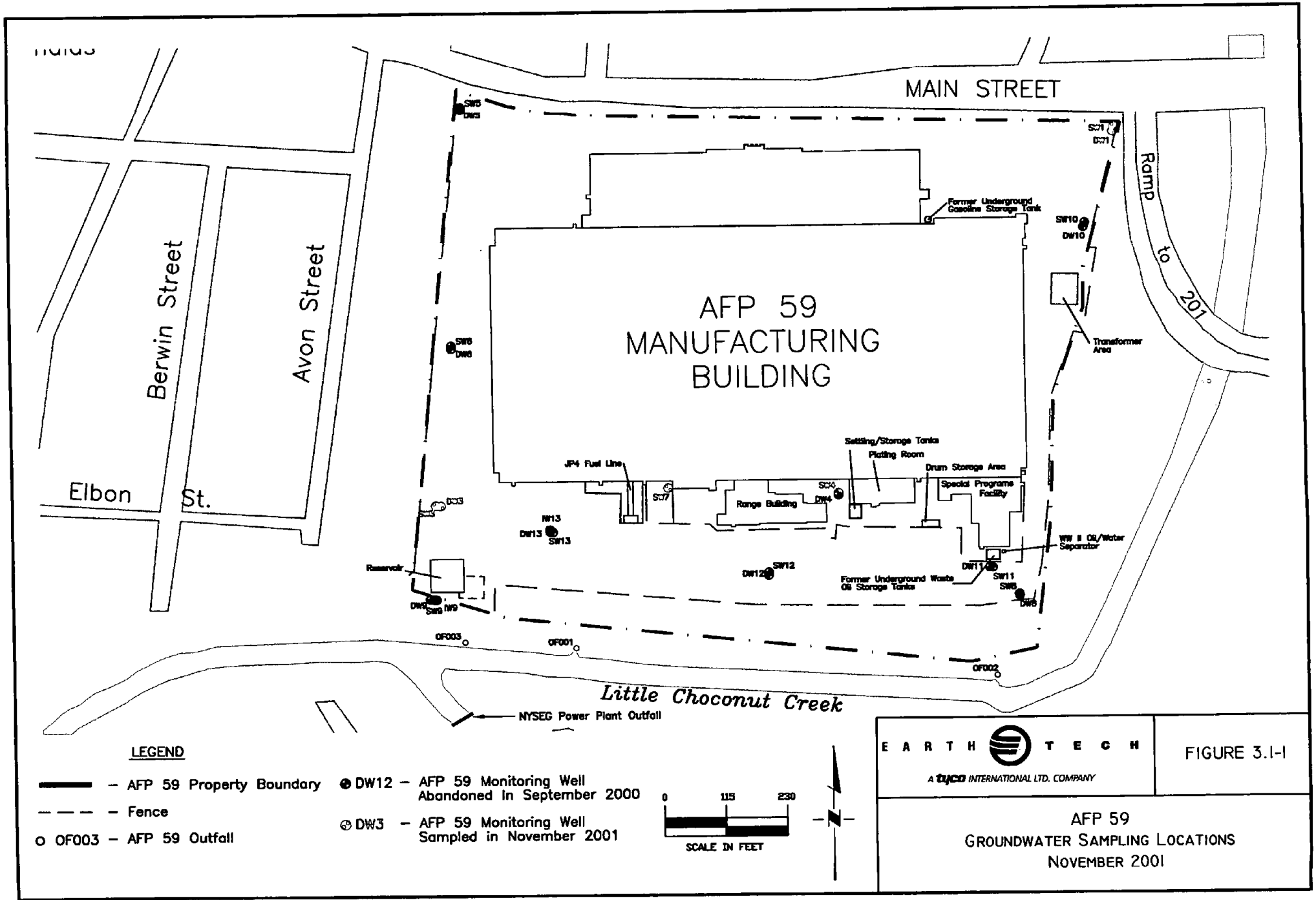
This section discusses the VOCs that were detected in the groundwater samples, including those samples collected from both site and background monitoring wells. The analytical results for groundwater samples collected from monitoring wells installed in the shallow and deep zones of the aquifer are discussed separately below. The analytical results for all groundwater samples collected during the November 2001 sampling event are summarized in Table 3.1-2. Appendix D provides a complete listing of all groundwater analytical results.

Shallow Zone of the Aquifer. VOCs detected in groundwater samples are shown in Figure 3.1-2. Table 3.1-3 summarizes all VOCs detected in groundwater samples collected from monitoring wells screened in the shallow zone, the number of samples above the laboratory MDL, the minimum and maximum concentrations detected, and the location of the maximum concentration.

VOCs were detected in the groundwater samples collected from monitoring wells SW1, SW3, SW4, and SW7 (see Figure 3.1-2). Chlorinated hydrocarbons were the only detected VOCs in the samples collected from the shallow zone of the aquifer.

One VOC, 1,1,1-trichloroethane (1,1,1-TCA), was detected at 0.11 J µg/L in the groundwater sample collected from monitoring well SW1. No other VOCs were detected at SW1. The following maximum concentrations were detected in the groundwater sample collected from monitoring well SW4: trichloroethene (TCE) at 5.7 micrograms per liter (µg/L); 1,1,1-TCA at 0.88 µg/L; 1,1-dichloroethane (1,1-DCA) at 7.18 µg/L; tetrachloroethene (PCE) at 0.62 J µg/L; chloromethane at 0.42 J µg/L and trichlorofluoromethane at 0.5 J µg/L. Maximum concentrations detected in the normal and duplicate samples collected from monitoring well SW7 included: cis-1,2-dichloroethene (cis-1,2-DCE) at 25.89 µg/L, 1,1-dichloroethene (1,1-DCE) at 0.19 J µg/L, trans-1,2-dichloroethene (trans-1,2-DCE) at 0.13 J µg/L, vinyl chloride at 0.85 J µg/L and chloroform at 0.12 J µg/L.

Deep Zone of the Aquifer. Fewer VOCs were detected in groundwater samples collected from the deep monitoring wells than in groundwater samples collected from the shallow monitoring



41012/Rep/Well Aband Work Plan/GIS/37136GSL.DWG

Table 3.1-2. Groundwater Data Summary for VOCs

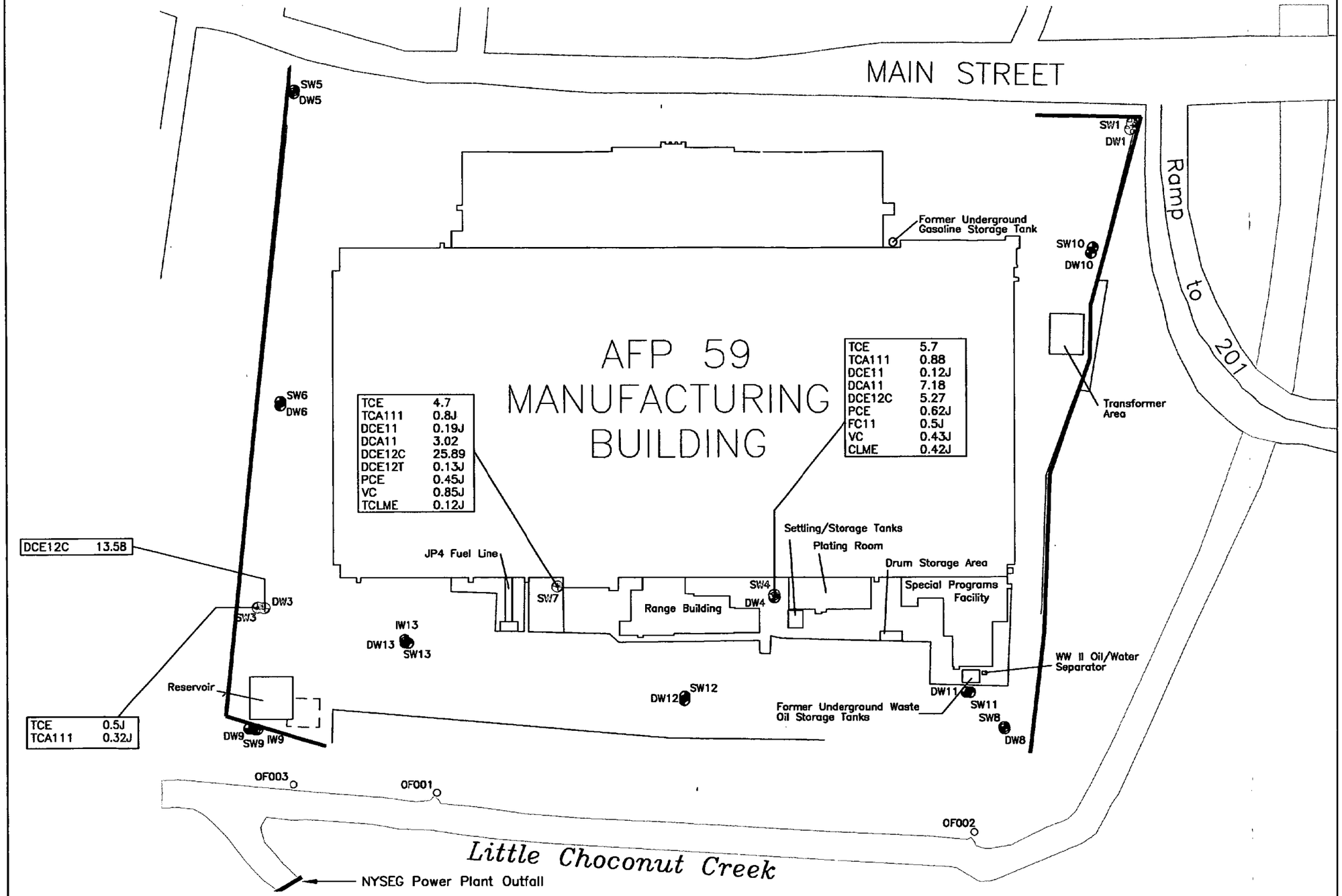
Parameters	Action Levels*	59SW1WG1	59DW1WG1	59SW3WG1	59DW3WG1
1,1,1-Trichloroethane	5	0.11 J	--	0.32 J	--
Trichloroethene	5	--	--	0.5 J	--
1,1-Dichloroethene	5	--	--	--	--
Cis-1,2-Dichloroethene	5	--	--	--	**13.58**
Trans-1,2-Dichloroethene	5	--	--	--	--
1,1-Dichloroethane	5	--	--	--	--
Trichlorofluoromethane	5	--	--	--	--
Tetrachloroethene	5	--	--	--	--
Vinyl	2	--	--	--	--
Chlorform	7	--	--	--	--
Chloromethane	--	--	--	--	--

Parameters	Action Levels*	59SW4WG1	59SW7WG1	59SW7WG9 (Duplicate Sample)
1,1,1-Trichloroethane	5	0.88	0.8 J	0.67 J
Trichloroethene	5	**5.7**	4.7	4.1
1,1-Dichloroethene	5	0.12 J	0.19 J	0.16 J
Cis-1,2-Dichloroethene	5	**5.27**	**25.89**	**21.02**
Trans-1,2-Dichloroethene	5	--	0.13 J	--
1,1-Dichloroethane	5	**7.18**	3.02	2.4
Trichlorofluoromethane	5	0.5 J	--	--
Tetrachloroethene	5	0.62 J	0.45 J	0.41 J
Vinyl Chloride	2	0.43 J	0.85 J	0.66 J
Chloroform	7	--	0.11 J	0.12 J
Chloromethane	--	0.42 J	--	--

Key: * = New York State Drinking Water Standard.
-- = Analyte was analyzed for but not detected.

Qualifiers: J = The analyte was positively identified, but the quantitation is an estimation.

Note: Concentrations in bold font and shaded cells exceed the New York State Drinking Water Standard for the associated compound.



Boundary

Fence

Monitoring Well Abandoned September 2000

Monitoring Well Sampled May 2001

AFP 59 Outfall

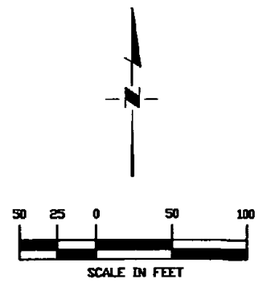
DCA11	=	1,1–dichloroethane
DCE11	=	1,1–dichloroethene
DCE12C	=	cis–1,2–dichloroethene
FC11	=	Trichlorofluoromethane
PCE	=	Tetrachloroethane
TCA111	=	1,1,1–trichloroethane
TCE	=	Trichloroethene
DCE12T	=	trans–1,2–dichloroethene
TCLME	=	Chloroform
VC	=	Vinyl Chloride
CLME	=	Chloromethane

J = Analyte was positively identified, but the quantitation is estimated.

B = The analyte was found in an associated blank, as well as in the sample.

Notes:

1. Concentrarions are reported in ug/L.
2. If no data is present at a monitoring well location, no VOCs were detected in the groundwater sample
3. At locations where duplicates were collected, the maximum concentration is presented



EARTH TECH
A tyco INTERNATIONAL LTD. COMPANY

FIGURE 3.1-2

AFP 59
VOC'S DETECTED IN GROUNDWATER
NOVEMBER 2001

41012/Rep/Well Aband Work Plan/GIS/37136GSL.DWG

Table 3.1-3. VOCs Detected in Shallow Zone Groundwater Samples

Analyte	Number of Samples Above MDL	Range (µg/L)		Location of Maximum Detection
		Minimum Detected	Maximum Detected	
1,1,1-Trichloroethane	5 of 5	0.11 J	0.88	SW4
Trichloroethene(3)	4 of 5	0.5 J	5.7	SW4
1,1-Dichloroethene(2)	3 of 5	0.12 J	0.19 J	SW7
Cis-1,2-Dichloroethene(2)	3 of 5	5.27	25.89	SW7
1,1-Dichloroethane(1)	3 of 5	2.4	7.18	SW4
Trichlorofluoromethane	1 of 5	0.5 J	0.5 J	SW4
Tetrachloroethene(1)	3 of 5	0.3 J	0.64 J	SW4
Trans-1,2-Dichloroethene	1 of 5	0.13 J	0.13 J	SW7
Vinyl Chloride(2)	3 of 5	0.43 J	0.85 J	SW7
Chloroform(4)	2 of 5	0.11 J	0.12 J	SW7
Chloromethane	1 of 5	0.42 J	0.42 J	SW4

Key: µg/L = Micrograms per liter
MDL = Method detection limit

Qualifiers: J = The analyte was positively identified, but the quantitation is an estimation.
B = The analyte was found in an associated blank, as well as in the sample.

(1) 1,1-Dichloroethane and tetrachloroethene were only detected at monitoring wells SW4 and SW7 (normal and duplicate samples).

(2) 1,1-Dichloroethene, cis-1,2-dichloroethene, and vinyl chloride were only detected at monitoring wells SW4 and SW7; the maximum concentrations were detected in the normal sample from SW7.

(3) Trichloroethene was only detected at monitoring wells SW3, SW4, and SW7 (normal and duplicate samples).

(4) Chloroform was only detected at monitoring well SW7; the maximum concentration was detected in the normal sample.

Note: Only analytes detected in one or more of the groundwater samples are included in this summary table.

wells (see Figure 3.1-2). Table 3.1-4 summarizes all VOCs detected in groundwater samples collected from monitoring wells screened in the deep zone of the aquifer, the number of samples above the laboratory MDL, the minimum and maximum concentrations detected, and the location of the maximum concentration.

Table 3.1-4. VOCs Detected in Deep Zone Groundwater Samples

Analyte	Number of Samples Above MDL	Range (µg/L)		Location of Maximum Detection
		Minimum Detected	Maximum Detected	
cis-1,2-Dichloroethene	1 of 2	13.58	13.58	DW3

Key: µg/L = Micrograms per liter
MDL = Method detection limit

Note: Only analytes detected in one or more samples are included in this summary table.

One VOC, cis-1,2-DCE (13.58 µg), was detected in the groundwater sample collected from monitoring well DW3. This was the only VOC detected in the samples collected from the deep zone of the aquifer. No VOCs were detected in groundwater sample collected from well DW1 (see Figure 3.1-2).

3.1.4 Trend Analysis

Table 3.1-5 presents concentrations of the most commonly detected chlorinated hydrocarbons in groundwater at AFP 59 over time. Only monitoring wells that were sampled as part of the groundwater monitoring program are included in the table.

In the groundwater samples collected from the shallow monitoring wells during the November 2001 sampling event, concentrations of the chlorinated hydrocarbons in monitoring wells SW1 and SW3 remained relatively constant compared to the previous sampling event. The concentration of VOCs, particularly TCE (34 µg/L to 5.7 µg/L), detected at monitoring well SW4 decreased compared to the May 2001 sampling event. The collective concentrations of chlorinated hydrocarbons increased slightly in the groundwater sample collected from SW7. The concentration of cis-1,2-DCE detected in the groundwater sample collected from SW7 increased significantly (1.46 µg/L to 25.89 µg/L) relative to the May 2001 sampling event. In the groundwater samples collected from the deep monitoring wells during the November 2001 sampling event, concentrations of chlorinated hydrocarbons remained relatively constant compared to the previous sampling event.

Table 3.1-5. Trend Analysis of VOCs in Groundwater

Well ID	Date Sampled	Concentration of Analyte in Groundwater (µg/L)					
		TCA	TCE	VC	11DCE	12DCE	11DCA
SW1	Sept. 1986[1]	--	--	--	--	--	--
	Jan. 1992[2]	0.5	--	--	--	--	--
	Dec. 1994[3]	--	--	--	--	--	--
	Nov. 1999[3]	--	--	--	--	--	--
	May 2000[3]	--	--	--	--	--	--
	Nov. 2000[3]	--	--	--	--	--	--
	May 2001[3]	--	--	--	--	--	--
	Nov. 2001[3]	0.11 J	--	--	--	--	--
DW1	Jan. 1992[2]	0.6	--	--	--	--	--
	Dec. 1994[3]	--	--	--	--	1.8 (c)	--
	Nov. 1999[3]	--	--	--	--	--	--
	May 2000[3]	--	--	--	--	--	--
	Nov. 2000[3]	--	--	--	--	--	--
	May 2001[3]	--	--	--	--	--	--
	Nov. 2001[3]	--	--	--	--	--	--
SW3	Sept. 1986[1]	--	6	--	--	--	--
	Jan. 1992[2]	12	9	--	--	--	5
	Dec. 1994[3]	0.50	1.8	--	--	--	--
	Dec. 1995[3]	0.86	2.8	--	--	0.44 (c)	--
	July 1997[4]	--	1	--	--	--	--
	Nov. 1998[3]	0.22	0.81	--	--	0.10 (c)	--
	Apr. 1999[3]	0.51	0.71	--	--	0.17 (c)	--
	Nov. 1999[3]	0.29	0.9	--	--	0.39 (c)	--
	May 2000[3]	0.69	1	--	--	1.29 (c)	0.55
	Nov. 2000[3]	0.43	0.9	--	--	0.22 (c)	--
	May 2001[3]	0.46	0.8	--	--	1.29 (c)	0.32
	Nov. 2001[3]	0.32 J	0.5 J	--	--	--	--
DW3	Jan. 1992[2]	0.3	--	--	--	--	0.3
	Dec. 1994[3]	--	--	0.28	--	36 (c)	0.26
	Dec. 1995[3]	--	--	--	--	5.2 (c)	--
	April 1997[4]	--	--	--	--	41 (c)	--
	July 1997[4]	--	--	--	--	49 (c)	--
	Nov. 1998[3]	--	--	0.35	--	66 (c)	0.34
	Apr. 1999[3]	--	--	0.28	0.11	67.00 (c)	0.35
	Nov 1999[3]	--	--	--	--	--	0.11
	May 2000[3]	--	--	--	--	0.25 (t) 24.98 (c)	0.16
	Nov. 2000[3]	--	--	--	--	16.85	--
	May 2001[3]	--	--	--	--	13.29	--
	Nov. 2001[3]	--	--	--	--	13.58	--
SW4	Jan. 1992[2]	2	97	--	0.3	--	0.6
	Dec. 1994[3]	20	370	--	2.1	19 (c)	8.5
	Dec. 1995[3]	34	1200	--	4.9	2.1 (t) 34 (c)	6.9
	April 1997[4]	--	--	--	--	71 (c)	7.1
	July 1997[4]	23	290	--	--	15 (c)	--
	Nov. 1998[3]	8.0	46	0.42	0.82	10 (c)	9.0

Table 3.1-5. Trend Analysis of VOCs in Groundwater (Continued)

Well ID	Date Sampled	Concentration of Analyte in Groundwater (µg/L)					
		TCA	TCE	VC	11DCE	12DCE	11DCA
SW4 (cont)	Apr. 1999[3]	1.9	9.53	--	--	1.85 (c)	0.87
	Nov. 1999[3]	2.13	9.5	--	0.18	7.15 (c)	7.7
	May 2000[3]	2.88	8	0.11	0.21	0.49 (t) 4.3 (c)	1.67
	Nov. 2000[3]	1.14	15.2	1.49	0.29	11.18 (c)	15.25
	May 2001[3]	3.35	34	--	0.36	0.38 (t) 3.19 (c)	1.3
	Nov. 2001[3]	0.88	5.7	0.43 J	0.12 J	5.27 (c)	7.18
SW7	Jan. 1992[2]	0.2	0.4	--	--	--	--
	Dec. 1994[3]	4.6	15	6.2	1	0.3(t) 150(c)	33
	Dec. 1995[3]	2.2	7.9	6.8	0.80	130 (c)	20
	July 1997[4]	--	4	--	--	2 (c)	--
	Nov. 1998[3]	2.5	11	3.4	0.65	0.28 (t) 82 (c)	12
	Apr. 1999[3]	1.23	3.95	--	--	5.25 (c)	1.46
	Nov. 1999[3]	1.01	5.7	--	0.19	18.8 (c)	3.38
	May 2000[3]	0.67	1.5	--	--	0.12 (t) 2.43 (c)	0.71
	Nov. 2000[3]	0.91	3.8	0.52	0.15	16.06 (c)	3.48
	May 2001[3]	1.18	1.9	--	--	1.46 (c)	0.47
	Nov. 2001[3]	0.8 J	4.7	0.85 J	0.19 J	0.13 J (t) 25.89 (c)	3.02

Key:

µg/L	=	Micrograms per liter	VC	=	Vinyl chloride
(c)	=	cis-1,2-Dichloroethene	11DCE	=	1,1-Dichloroethene
(t)	=	trans-1,2-Dichloroethene	12DCE	=	1,2-Dichloroethene
TCA	=	1,1,1-Trichloroethane	11DCA	=	1,1-Dichloroethane
TCE	=	Trichloroethene	DPW	=	Deep production well
(1)	=	Fred C. Hart Associates	(3)	=	Earth Tech
(2)	=	Argonne National Laboratories	(4)	=	United States Geological Services

Notes:

1. At monitoring well locations where a duplicate groundwater sample was collected, the higher analytical value between the normal and duplicate samples is reported in this table.
2. For 1992 data, the maximum value of either round A or B of sampling was used.
3. A double dash (--) indicates the analyte was not detected during the sampling event.

4.0 CONCLUSIONS

This section provides conclusions from analytical data generated as a result of the November 2001 sampling event. As defined in Section 1.0, the objective of the groundwater sampling event was to satisfy groundwater monitoring requirements defined in the April 27, 1999 letter to the NYSDEC (Earth Tech, 1999a) and the *Record of Decision* (Earth Tech, 1999b) for Air Force Plant 59.

The VOCs detected in groundwater samples collected from monitoring wells screened in the shallow and deep zones of the aquifer during the November 2001 sampling event are similar to the VOCs that have been detected during previous investigations. Chlorinated hydrocarbons were the only VOCs detected in site groundwater, with TCE, 1,1,1-TCA, 1,1-DCA, 1,1-DCE, tetrachloroethene, vinyl chloride and cis-1,2-DCE being the most commonly detected. A negligible concentration of 1,1,1-TCA (0.11 J µg/L) was detected in background monitoring well SW1, and no VOCs were detected in background monitoring well DW1.

Historically, the highest concentrations of VOCs in the shallow zone of the aquifer at AFP 59 have been detected in groundwater samples collected from monitoring wells SW4 and SW7, which are located immediately downgradient of the Plating Room (the suspected source of VOCs in groundwater). In November 2001, the concentrations of VOCs detected at monitoring well SW4 decreased relative to the May 2001 sampling event, and the highest concentrations of VOCs were detected at SW7. The following detections were above New York State drinking water standards: TCE (5.7 µg/L), cis-1,2-DCE (5.27 µg/L), and 1,1-DCA (7.18 µg/L) in SW4; and TCE (4.7 µg/L) and cis-1,2-DCE (25.89 µg/L) in SW7 The New York State drinking water standard for the aforementioned constituents is 5 µg/L.

Two VOCs were detected in the groundwater sample collected from monitoring well SW3, which was the only shallow monitoring well sampled along the western (downgradient) boundary of the site during this event. None of these detections exceeded New York State drinking water standards. Therefore, groundwater in the shallow zone of the aquifer that migrates off site toward the Camden Street Well Field complies with New York State drinking water standards.

The only VOC detected in the groundwater sample collected from deep monitoring well DW3 was cis-1,2-DCE (13.58 µg/L). Although the 13.58 µg/L detection of cis-1,2-DCE exceeds the New York State drinking water standard, it does not exceed the Federal drinking water standard of 70 µg/L.

A trend analysis of chlorinated hydrocarbon levels over time at AFP 59 is presented in Section 3.1.4. Despite an increase in the concentration of cis-1,2-DCE at SW7 relative to the May 2001 sampling event, historic data indicate that levels of chlorinated hydrocarbons have remained constant or decreased through time (see Table 3.1-5).

Appendix A. References

APPENDIX A. REFERENCES

Earth Tech, 1994. *Installation Restoration Program Investigation - Final Sampling and Analysis Plan.*

Earth Tech, 1996. *Installation Restoration Program Remedial Investigation - Final Remedial Investigation Report.*

Earth Tech, 1998. *Final Work Plan for Groundwater Monitoring at Air Force Plant 59.*

Earth Tech, 1999a. Letter to Jim Lister of the NYSDEC defining the groundwater monitoring and well abandonment programs at AFP 59.

Earth Tech, 1999b. *Record of Decision, Air Force Plant 59.*

United States Air Force (USAF), 1993. *Handbook for the Installation Restoration Program (IRP), Remedial Investigations and Feasibility Studies (RI/FS).*

United States Air Force (USAF), 1996. *Model Work Plan.*

United States Air Force (USAF), 1997. *Model Field Sampling Plan, Version 1.1.*

United States Air Force (USAF), 1998. *Quality Assurance Project Plan, Version 3.0.*

United States Environmental Protection Agency (USEPA), 1988. *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Interim Final, EPA/540/6-89/004.* Office of Emergency and Remedial Response, Washington, D.C.

APPENDIX B. FIELD DATA

GROUNDWATER PURGING AND SAMPLING RECORD

Date: 11/06/01 | Well ID: SW1 | Sample Number: 59SW1WG1 | Recorded By: BW/DB

Project Name: AFP 59 | Well Location: | Duplicate Number: | Checked By:

Project Number: 51373

EQUIPMENT

pH/Conductivity/Temperature Meter #: Horiba U-10 | Purging Equipment: Grundfos Ready Flo

PID #: NA | Sampling Equipment: Disposable B

Electric Sounder #: WDC 311C

WELL DATA

Elevation: | Water Column in Well: 9.74 | Total Vol. Extr.: 75 gal

Well Diameter: 2" | Borehole Diameter: 8" | Ambient PID: NA

Well Depth: 28.40 | Water Column in Borehole: | Well Mouth PID: NA

Depth to Well Water: 18.66 | Standing Water Vol.: 25.3 gal

Ground Condition of Well:

Remarks:

	PURGING				SAMPLING	
C725	1	2	3	4	x5	x6
Time	0726	0731	0737	0742	0747	0752
Rate (gal/min)	2.0	2.0	2.0	2.0	2.1	2.0
Temperature (C)	12.4	12.7	12.7	12.8	12.8	12.8
pH	6.57	6.93	7.04	7.05	7.08	~~6.8~~ 7.09
Conductivity (mS/cm)	2.15	2.12	2.09	2.07	2.09	2.09
Vol. Purged (gal)	5	12.0	22.0	32.0	43.0	53.0
~~Remarks~~ Turb. (NTU)	24	10	3.0	6.0	7.0	8.0

COLLECTED SAMPLES

	1	2	3	4	5	6
Sample Time	0810					
Analytical Param	VOCs (8260B)					
Volume Required	3 40ml vials					
Preservation	HCl, 4°C					
Field Filtered	No					
Time						

GROUNDWATER PURGING AND SAMPLING RECORD

Date: 11/06/01 Well ID: SW1 Sample Number: 595W1W61 Recorded By: BW/DB

Project Name: AFP59 Well Location: Duplicate Number: Checked By:

Project Number: 51373

EQUIPMENT

pH/Conductivity/Temperature Meter #: Purging Equipment:

PID #: Sampling Equipment:

Electric Sounder #:

WELL DATA

Elevation: Water Column in Well: Total Vol. Extr.:

Well Diameter: Borehole Diameter: Ambient PID:

Well Depth: Water Column in Borehole: Well Mouth PID:

Depth to Well Water: Standing Water Vol.:

Ground Condition of Well:
Remarks:

	PURGING				SAMPLING	
	x7	2	3	4	1	2
Time	0757	0802	0		0803	
Rate (gal/min)	2.0	2.0			2.0	
Temperature(C)	12.9	12.9			12.9	
pH	7.10	7.12			7.12	
Conductivity(mS/cm)	2.02	2.03			2.03	
Vol. Purged(gal)	63	73			75	
Turb (NTU) Remarks	9.0	9.0			9.0	

COLLECTED SAMPLES

	1	2	3	4	5	6
Sample Time	0810					
Analytical Param	VOCs (8260B)					
Volume Required	3 40ml vials					
Preservation	HCl, 4°C					
Field Filtered	No					
Time						

GROUNDWATER PURGING AND SAMPLING RECORD

Date: 11/06/01 | Well ID: DW1 | Sample Number: 59DW1WG1 | Recorded By: BW/DB
Project Name: AFP59 | Well Location: | Duplicate Number: | Checked By:
Project Number: 51373

EQUIPMENT

pH/Conductivity/Temperature Meter #: Horiba U-10 | Purging Equipment: Grundfos Ready Flo
PID #: NA | Sampling Equipment: Disposable Bailer
Electric Sounder #: WDC 311

WELL DATA

Elevation: | Water Column in Well: 43.74 | Total Vol. Extr.: 194 gal
Well Diameter: 4" | Borehole Diameter: 6" | Ambient PID: NA
Well Depth: 62.42' | Water Column in Borehole: | Well Mouth PID: NA
Depth to Well Water: ~~17.02'~~ 18.68 | Standing Water Vol.: ~~66.5 g~~ 64 gal
Ground Condition of Well: BGW ~~1363~~ BGW
Remarks:

	PURGING				SAMPLING	
	1	2	3	4	5	6
Time	0840	0850	0900	0910	0920	0930
Rate (gal/min)	3.0	3.1	3.0	3.1	2.9	3.0
Temperature °C	11.8	11.9	11.5	11.4	11.5	11.8
pH	6.99	7.23	7.34	7.33	7.30	7.30
Conductivity (mS/cm)	3.2	1.53	1.54	1.53	1.53	1.53
Vol. Purged (gal)	0.0	30	60	91	110	140
Turb. (NTU)	~~40~~ 78	15	1	1	5	6
~~Remarks~~						

COLLECTED SAMPLES

	1	2	3	4	5	6
Sample Time	0955					
Analytical Param	VOCs (8260B)					
Volume Required	3 40mL vials					
Preservation	HCL, 4°C					
Field Filtered	No					
Time						

GROUNDWATER PURGING AND SAMPLING RECORD

Date: 11/06/01 | Well ID: DW1 | Sample Number: 59DW1W01 | Recorded By: BW/DB

Project Name: AFP 59 | Well Location: | Duplicate Number: | Checked By:

Project Number: 51373

EQUIPMENT

pH/Conductivity/Temperature Meter #: | Purging Equipment:

PID #: | Sampling Equipment:

Electric Sounder #:

WELL DATA

Elevation: | Water Column in Well: | Total Vol. Extr.:

Well Diameter: | Borehole Diameter: | Ambient PID:

Well Depth: | Water Column in Borehole: | Well Mouth PID:

Depth to Well Water: | Standing Water Vol.:

Ground Condition of Well:

Remarks:

	PURGING				SAMPLING	
	1	2	3	4	1	2
Time	0940	0			0948	
Rate (gal/min)	3.0				3.0	
Temperature (°C)	11.7				11.7	
pH	7.32				7.31	
Conductivity (mS/cm)	1.53				1.53	
Vol. Purged (gal)	170				194	
~~Remarks~~ Turb. (NTU)	6				5	

COLLECTED SAMPLES

	1	2	3	4	5	6
Sample Time	0955					
Analytical Param	VOCs (8260B)					
Volume Required	3, 40mL vials					
Preservation	HCL, 4°C					
Field Filtered	No					
Time						

GROUNDWATER PURGING AND SAMPLING RECORD

Date: 11/06/01	Well ID: SW3	Sample Number: 595W3W61	Recorded By: BV/DB
Project Name: AFP 59	Well Location:	Duplicate Number:	Checked By:
Project Number: 51373			

EQUIPMENT

pH/Conductivity/Temperature Meter #: Horiba U-10	Purging Equipment: Grundfos Ready Flo
PID #: NA	Sampling Equipment: Disposable Bailer
Electric Sounder #: WDC311C	

WELL DATA

Elevation:	Water Column in Well: 10.78	Total Vol. Extr.: 84 gal
Well Diameter: 2"	Borehole Diameter: 8"	Ambient PID: NA
Well Depth: 30.81'	Water Column in Borehole:	Well Mouth PID: NA
Depth to Well Water: 20.03"	Standing Water Vol.: 28.1	

Ground Condition of Well:
Remarks:

	PURGING				SAMPLING	
	1	2	3	4	5	6
Time	1035	1045	1050	1055	1100	1105
Rate (gal/min)	2.0	1.9	2.0	2.0	2.1	2.0
Temperature (C)	15.2	16.5	16.7	16.8	16.8	16.9
pH	7.10	7.16	7.18	7.17	7.17	7.17
Conductivity (mS/cm)	1.34	1.25	1.25	1.24	1.24	1.25
Vol. Purged (gal)	0	20	30	40	50	60
~~Remarks~~ Turb. (NTU)	36	6	3	2	3	8

COLLECTED SAMPLES

	1	2	3	4	5	6
Sample Time	1125					
Analytical Param	VOCs (8260B)					
Volume Required	3, 40mL vials					
Preservation	HCL, 4°C					
Field Filtered	NO					
Time						

GROUNDWATER PURGING AND SAMPLING RECORD

Date: 11/06/01 Well ID: SW3 Sample Number: 595W361 Recorded By: BW/DB

Project Name: AFP 59 Well Location: Duplicate Number: Checked By:

Project Number: 51373

EQUIPMENT

pH/Conductivity/Temperature Meter #: Purging Equipment:

PID #: Sampling Equipment:

Electric Sounder #:

WELL DATA

Elevation: Water Column in Well: Total Vol. Extr.:

Well Diameter: Borehole Diameter: Ambient PID:

Well Depth: Water Column in Borehole: Well Mouth PID:

Depth to Well Water: Standing Water Vol.:

Ground Condition of Well:

Remarks:

	PURGING				SAMPLING	
	1*	2	3	4	1	2
Time	1110	~~1115~~			1117	
Rate (gal/min)	2.0				1.9	
Temperature (°C)	16.3				16.8	
pH	7.18				7.12	
Conductivity (mS/cm)	1.23				1.23	
Vol. Purged (gal)	70				84	
Turb (NTU)	1.32				6	
Remarks						

COLLECTED SAMPLES

	1	2	3	4	5	6
Sample Time	1125					
Analytical Param	VOCs (8260B)					
Volume Required	3, 40mL vials					
Preservation	HCL, 4°C					
Field Filtered	No					
Time						

GROUNDWATER PURGING AND SAMPLING RECORD

59DW3W61

Date: 11/06/01 | Well ID: DW3 | Sample Number: ~~DW3~~ 8&V | Recorded By: BV/DB

Project Name: AFP59 | Well Location: | Duplicate Number: | Checked By:

Project Number: 51373

EQUIPMENT

pH/Conductivity/Temperature Meter #: Horiba U-10 | Purging Equipment: Grundfos Ready Flo

PID #: NA | Sampling Equipment: Disposable Bailer

Electric Sounder #: WDC 311C

WELL DATA

Elevation:

Well Diameter: 4"

Well Depth: 88.0'

Depth to Well Water: 17.25

Water Column in Well: 70.75

Borehole Diameter: 6"

Water Column in Borehole:

Standing Water Vol.: 103 gal

Total Vol. Extr.: 300 gal

Ambient PID: NA

Well Mouth PID: NA

Ground Condition of Well:

Remarks:

	PURGING				SAMPLING	
	1	2	3	4	15	2
Time	1140	1155	1235 *	1250	1305	1320
Rate (gal/min)	3.6	4.0	4.0	4.0	4.0	4.0
Temperature (°C)	13.3	13.3	13.7	13.6	13.6	13.6
pH	7.31	7.31	7.30	7.38	7.38	7.38
Conductivity (mS/cm)	4.32	1.31	1.31	1.31	1.31	1.32
Vol. Purged (gal)	0	60	120	180	240	300
~~Turb~~ Remarks (NTU)	62	15	120	28	13	4

COLLECTED SAMPLES

	1	2	3	4	5	6
Sample Time	1325					
Analytical Param	VOCs (8260B)					
Volume Required	3, 40mL Vials					
Preservation	HCL, 4°C					
Field Filtered	No					
Time						

0461.FIG

GROUNDWATER PURGING AND SAMPLING RECORD

Date: 11/06/01	Well ID: SW4	Sample Number: 59SW4WG1	Recorded By: BW/DB
Project Name: AFP 59	Well Location:	Duplicate Number:	Checked By:
Project Number: 51373			

EQUIPMENT

pH/Conductivity/Temperature Meter #: Horiba U-10	Purging Equipment: Grundfos Ready Flo
PID #: NA	Sampling Equipment: Disposable Bailer
Electric Sounder #: WDC 311C	

WELL DATA

Elevation:	Water Column in Well: 13.35	Total Vol. Extr.: ~~105~~ 68 gal
Well Diameter: 2"	Borehole Diameter: 8"	Ambient PID: NA
Well Depth: ~~29.8~~ 27.7	Water Column in Borehole:	Well Mouth PID: NA
Depth to Well Water: 13.82	Standing Water Vol.: 36	

Ground Condition of Well:
Remarks:

	PURGING				SAMPLING	
	1	2	3	4	x5	x6
Time	1535	1545	1555	1605	1615	1625
Rate (gal/min)	0.5	1.0	~~0.10~~ 1.0	0.8	1.0	1.0
Temperature (°C)	14.7	16.1	14.9	15.6	15.3	15.5
pH	6.79	7.04	7.00	7.15	7.05	7.10
Conductivity (mS/cm)	0.934	0.879	0.840	0.881	0.880	0.892
Vol. Purged (gal)	0	10	20	28	35	48
~~Remarks~~ Turb. (NTU)	151	93	39	211	1	10

COLLECTED SAMPLES

	1	2	3	4	5	6
Sample Time	1650					
Analytical Param	VOCs (8260B)					
Volume Required	3, 40mL Vials					
Preservation	HCL, 4°C					
Field Filtered	No					
Time						

GROUNDWATER PURGING AND SAMPLING RECORD

Date: 11/06/01 Well ID: SW4 Sample Number: 595W4W6 Recorded By: BW/DB

Project Name: AFP 59 Well Location: Duplicate Number: Checked By:

Project Number: 51373

EQUIPMENT

pH/Conductivity/Temperature Meter #: Purging Equipment:

PID #: Sampling Equipment:

Electric Sounder #:

WELL DATA

Elevation: Water Column in Well: Total Vol. Extr.:

Well Diameter: Borehole Diameter: Ambient PID:

Well Depth: Water Column in Borehole: Well Mouth PID:

Depth to Well Water: Standing Water Vol.:

Ground Condition of Well:

Remarks:

	PURGING				SAMPLING	
	1	2	3	4	1	2
Time	1635				1645	
Rate	1.0				1.0	
Temperature	15.6				15.7	
pH	7.12				7.10	
Conductivity	0.849				0.896	
Vol. Purged	58				68	
~~Remarks~~ TVB	5				4	

COLLECTED SAMPLES

	1	2	3	4	5	6
Sample Time	1650					
Analytical Param	VOCs (8260B)					
Volume Required	3, 40ml vials					
Preservation	HCl, 4°C					
Field Filtered	N/A					
Time						

GROUNDWATER PURGING AND SAMPLING RECORD

Date: 11/06/01 Well ID: SW7 Sample Number: 595W7W61 Recorded By: RL/DB

Project Name: Well Location: Duplicate Number: 595W7W69 Checked By:

Project Number: 51373

EQUIPMENT

pH/Conductivity/Temperature Meter #: Horiba U-10 Purging Equipment: Grundfos Ready Flo

PID #: NA Sampling Equipment: Disposable Bailer

Electric Sounder #: WDC 311C

WELL DATA

Elevation: Water Column in Well: 7.55 Total Vol. Extr.: 59 (60 gal)

Well Diameter: 2" Borehole Diameter: 8" Ambient PID: NA

Well Depth: ~~26.5~~ 28.0 Water Column in Borehole: Well Mouth PID: NA

Depth to Well Water: 20.45 Standing Water Vol.: 19.6

Ground Condition of Well:

Remarks:

	PURGING				SAMPLING	
	1	2	3	4	1	2
Time	1405	1410	1415	1420	1425	1430
Rate (gal/min)	1.8	2.0	2.0	2.0	2.0	2.0
Temperature (°C)	16.7	16.6	16.6	16.7	16.8	16.8
pH	7.26	7.28	7.30	7.32	7.32	7.32
Conductivity (mS/cm)	1.07	1.04	1.03	1.02	0.97	0.92
Vol. Purged (gal)	0	10	20	30	40	50
Remarks (Turb (NTU))	353	64	29	5	3	2

COLLECTED SAMPLES

	1	2	3	4	5	6
Sample Time	1445					
Analytical Param	VOCs (8260B)					
Volume Required	3, 40mL VOAs					
Preservation	HCL, 4°C					
Field Filtered	No					
Time						

GROUNDWATER PURGING AND SAMPLING RECORD

Date: 11/06/01 Well ID: SW7 Sample Number: 595W7W61 Recorded By: BW/DB

Project Name: AFP59 Well Location: Duplicate Number: 595W7W69 Checked By:

Project Number: 51373

EQUIPMENT

pH/Conductivity/Temperature Meter #: Purging Equipment:

PID #: Sampling Equipment:

Electric Sounder #:

WELL DATA

Elevation:	Water Column in Well:	Total Vol. Extr.:
Well Diameter:	Borehole Diameter:	Ambient PID:
Well Depth:	Water Column in Borehole:	Well Mouth PID:
Depth to Well Water:	Standing Water Vol.:	

Ground Condition of Well:
Remarks:

	PURGING				SAMPLING	
	1	2	3	4	1	2
Time	~~1435~~ BW				1435	
Rate (gal/min)	~~2.0~~ BW				2.0	
Temperature (°C)					16.7	
pH					7.31	
Conductivity (mS/cm)					0.92	
Vol. Purged (gal)					60	
Remarks Turb (NTU)					2	

COLLECTED SAMPLES

	1	2	3	4	5	6
Sample Time	1445					
Analytical Param	VOCs (8260B)					
Volume Required	3, 40ml vials					
Preservation	HCl, 4°C					
Field Filtered	N					
Time						

APPENDIX C. CHAIN-OF-CUSTODY FORMS

Earth Tech
1420 King Street, Suite 600
Alexandria, Virginia 22314
Phone No. (703) 549-8728; Fax No. (703) 549-9134

Chain of Custody

EARTH TECH
A TETRA TECH INTERNATIONAL LTD. COMPANY

PAGE ___ OF ___

Laboratory	Project Name	Chain of Custody No.
O'Brien & Gere Laboratories	AFP 59	№ 0001
Address	**Point of Contact / Phone No.**	
5000 Brittonfield Parkway	Dave Paise 703-706-0506	
City / **State** / **Zip Code**	**Site Contact / Phone No.**	
East Syracuse / NY / 13057	Brandon Watts 703-706-9401	

ERPIMS Information					Other Sample Information						Analysis	Comments
LOCID	SBD	SED	SACODE	SAMPNO	Sample I.D.	Date	Time	Matrix	No. of Con.	Cooler No.	VOCs (SW8260B)	
SW1	0	0	N	1	595W1WG1	11/06/01	0810	WG	3	1	X	
SW1	0	0	MS	1	595W1WG1MS	11/06/01	0810	WG	3	1	X	
SW1	0	0	MD	1	595W1WG1MSD	11/06/01	0810	WG	3	1	X	
DW1	0	0	N	1	59DW1WG1	11/06/01	0955	WG	3	1	X	
SW3	0	0	N	1	595W3WG1	11/06/01	1125	WG	3	1	X	
DW3	0	0	N	1	59DW3WG1	11/06/01	1325	WG	3	1	X	
SW7	0	0	N	1	595W7WG1	11/06/01	1445	WG	3	1	X	
SW7	0	0	FD	1	595W7WG9	11/06/01	1445	WG	3	1	X	
SW4	0	0	N	1	595W4WG1	11/06/01	1650	WG	3	1	X	
Field QC	0	0	TB	1	TB110601	11/06/01	0700	WG	3	1	X	
Field QC	0	0	AB	1	AB110601	11/06/01	1700	WG	3	1	X	
	0	0			(illegible)							

		Date	Time		Date	Time
1. Relinquished By / Company	Brandon Watts / Earth Tech	11/07/01	0900	1. Received By / Company		
2. Relinquished By / Company				2. Received By / Company		
3. Relinquished By / Company				3. Received By / Company		
4. Relinquished By / Company				4. Received By / Company		
5. Relinquished By / Company				5. Received By / Company		

Comments

Shipment Method/Airbill No.

DISTRIBUTION: WHITE - Stays with sample; CANARY - Returned to Client with Report; PINK - Field Copy

APPENDIX D. DATA QUALITY REVIEW SUMMARY AND GROUNDWATER ANALYTICAL DATA

Data Quality Review

Air Force Plant 59 #41012-06.05, Johnson City, NY
F41624-97-D-8018/0063

Volatile Organic Analysis by Method SW8260B - Aqueous Samples
Data Package

This data quality review pertains to groundwater samples collected on November 6, 2001 at Air Force Plant 59 (AFP 59). The samples were analyzed following EPA Test Methods for Evaluating Solid Waste (SW-846) Method 8260B for volatile organic compounds at O'Brien & Gere Laboratories, Inc. (O'Brien & Gere) in Syracuse, New York. All samples were analyzed for the full list of volatile constituents included in the method.

Recommendations from the AFCEE *Quality Assurance Project Plan, Version 3.0* (USAF, 1998) were utilized by O'Brien and Gere for quality control limits and data flagging criteria.

Table DQR-1 provides a cross-reference list for field sample IDs and lab sample IDs from O'Brien & Gere.

Table DQR-1
Field Sample ID/Lab Sample ID Cross Reference

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
SW-WG1	4973	SW4-WG1	4979
DW1-WG1	4974	AMBIENT BLANK	4980
SW3-WG1	4975	TRIP BLANK	4981
DW3-WG1	4976		
SW7-WG1	4977		
SW7-WG9	4978		

During the data quality review process, laboratory qualified and unqualified data are verified against all available supporting documentation. Based on this review, qualifier codes may be added, deleted, or modified by the validator. Final results are therefore either qualified or unqualified. A summary of the data quality review flags is presented in Table DQR-2, listed in order of most severe to least severe. The data quality review process includes a review of sample holding times, calibrations, blanks (preparation, ambient, and trip blanks), matrix spike/matrix spike duplicates, surrogate recoveries, and field duplicates. Changes to the data are reflected on the Form I's in Appendix A.

Table DQR-2
Data Qualifiers

Qualifier	Description
R	Unreliable result. Analyte may or may not be present in the sample. Supporting data necessary to confirm result.
B	Not detected substantially above the level reported in laboratory or field blanks.
J	This is an estimated value.
UJ	Not detected, quantitation limit may be inaccurate or imprecise.
U	The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.

Holding Times

All of the groundwater samples were analyzed for volatile organic compounds within the recommended holding time of 14 days. No qualification was necessary.

Calibration Criteria

Initial calibration criteria were met for all standards. Standards were run at 0.30, 0.50, 4, 10, 20, and 40 micrograms per liter (µg/L).

Continuing calibration verifications were performed at the required frequency and reporting factors (RFs) for target analytes were within 20 percent of the expected value. No qualification was considered necessary.

As is standard practice, and unless otherwise noted herein, the validator qualifies **J** those positive results which fall between the method detection limit (MDL) and the reporting limit (RL), removing the F flag assigned by the laboratory.

Laboratory Control Samples

In laboratory control sample (LCS) L110901W1, all constituent recoveries were within the corresponding control ranges. No qualification is necessary.

Blanks

No constituents were detected in the single Preparation Blank (PB) 110901W1 associated with these samples.

One trip blank and one ambient blank were collected and analyzed for volatile organic compounds. Methylene chloride was detected in the ambient blank at a concentration of 0.1 µg/L. No constituents were detected above the MDL in the trip blank sample. Normally, the validator would qualify **B** those positive methylene chloride values which

are less than or equal to 1 µg/L. Since there were no positive values for methylene chloride, no qualification was necessary.

Matrix Spike/Matrix Spike Duplicate

Sample SW1 served as the MS/MSD sample for this sample delivery group. Constituent recoveries were within quality control limits, and RPD values were less than 20%. No qualification was necessary.

Surrogate Recovery

Four surrogates were used for the monitoring of volatiles in all samples. All surrogate recoveries met the corresponding QC criteria.

Field Duplicates

Field duplicate results (in µg/L units) are summarized below.

	(SW7-WG1)	(SW7-WG9)	RPD (%)
1,1,1-Trichloroethane	0.8	0.67	18
1,1-Dichloroethane	3.02	2.4	23
1,1-Dichloroethene	0.19	0.16	17
Chloroform	0.11	0.12	8
cis-1,2-Dichloroethene	25.89	21.02	21
Tetrachloroethene	0.45	0.41	9
trans-1,2-Dichloroethene	0.13	Not detected	Not calculated
Trichloroethene	4.7	4.2	11
Vinyl Chloride	0.85	0.66	25

When considering that several of the results were between the corresponding MDL and RL, agreement was excellent, and no qualification was necessary.

Summary

The data completeness is 100%. All of the data points for the analysis of groundwater samples are useable with the appropriate qualifiers. A summary of all detected compounds appears in Table DQR-3.

APPENDIX A
FORM I's

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 110901W1

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0063

Field Sample ID: DW1 [WG1] Lab Sample ID: T4974 Matrix:Water

%Solids: Initial Calibration ID: J018AF30.M

Date Received: 11/08/01 Date Prepared:11/09/01 Date Analyzed:11/09/01

Concentration Units(mg/L or mg/Kg dry weight): ug/L

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
(m+p)-Xylene	.021	.6	.021	1		U U
1,1,1,2-Tetrachloroethane	.013	.5	.013	1		U
1,1,1-Trichloroethane	.012	.8	.012	1		U
1,1,2,2-Tetrachloroethane	.028	.5	.028	1		U
1,1,2-Trichloroethane	.02	1.	.02	1		U
1,1-Dichloroethane	.005	.4	.005	1		U
1,1-Dichloroethene	.025	1.2	.025	1		U
1,1-Dichloropropene	.01	1.	.01	1		U
1,2,3-Trichlorobenzene	.05	.3	.05	1		U
1,2,3-Trichloropropane	.023	3.2	.023	1		U
1,2,4-Trichlorobenzene	.041	.4	.041	1		U
1,2,4-Trimethylbenzene	.015	1.3	.015	1		U
1,2-Dibromo-3-chloropropane	.15	2.6	.15	1		U
1,2-Dibromoethane	.011	.6	.011	1		U
1,2-Dichlorobenzene	.01	.3	.01	1		U
1,2-Dichloroethane	.009	.6	.009	1		U
1,2-Dichloropropane	.014	.4	.014	1		U
1,3,5-Trimethylbenzene	.075	.5	.075	1		U
1,3-Dichlorobenzene	.012	1.2	.012	1		U
1,3-Dichloropropane	.01	.4	.01	1		U
1,4-Dichlorobenzene	.031	.3	.031	1		U
1-Chlorohexane	.012	.5	.012	1		U
2,2-Dichloropropane	.01	3.5	.01	1		U
2-Chlorotoluene	.012	.4	.012	1		U
4-Chlorotoluene	.01	.6	.01	1		U
Benzene	.008	.4	.008	1		U
Bromobenzene	.019	.3	.019	1		U
Bromochloromethane	.01	.4	.01	1		U
Bromodichloromethane	.008	.8	.008	1		U
Bromoform	.013	1.2	.013	1		U
Bromomethane	.023	1.1	.023	1		U

Comments:

12.18.01

AFCEE FORM O-2

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 110901W1

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0063

Field Sample ID: DW1 (WG1) Lab Sample ID: T4974 Matrix:Water

%Solids: Initial Calibration ID: J018AF30.M

Date Received: 11/08/01 Date Prepared:11/09/01 Date Analyzed:11/09/01

Concentration Units(mg/L or mg/Kg dry weight): ug/L

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
Carbon tetrachloride	.008	2.1	.008	1	U	U
Chlorobenzene	.01	.4	.01	1	U	
Chloroethane	.02	1.	.02	1	U	
Chloroform	.011	.3	.011	1	U	
Chloromethane	.034	1.3	.034	1	U	
cis-1,2-Dichloroethene	.026	1.2	.026	1	U	
cis-1,3-Dichloropropene	.02	1.	.02	1	U	
Dibromochloromethane	.007	.5	.007	1	U	
Dibromomethane	.016	2.4	.016	1	U	
Dichlorodifluoromethane	.01	1.	.01	1	U	
Ethylbenzene	.006	.6	.006	1	U	
Hexachlorobutadiene	.092	1.1	.092	1	U	
Isopropylbenzene	.01	.5	.01	1	U	
Methylene chloride	.04	2.	.04	1	U	
n-Butylbenzene	.016	1.1	.016	1	U	
n-Propylbenzene	.006	.4	.006	1	U	
Naphthalene	.02	1.	.02	1	U	
o-Xylene	.007	1.1	.007	1	U	
p-Isopropyltoluene	.013	1.2	.013	1	U	
sec-Butylbenzene	.007	1.3	.007	1	U	
Styrene	.008	.5	.008	1	U	
tert-Butylbenzene	.013	1.4	.013	1	U	
Tetrachloroethene	.012	1.4	.012	1	U	
Toluene	.012	1.1	.012	1	U	
trans-1,2-Dichloroethene	.032	.6	.032	1	U	
trans-1,3-Dichloropropene	.01	1.	.01	1	U	
Trichloroethene	.01	1.	.01	1	U	
Trichlorofluoromethane	.014	.8	.014	1	U	
Vinyl chloride	.014	1.1	.014	1	U	
Xylene (total)	.021	1.1	.021	1	U	

JMC 12.18.01

Comments:

AFCEE FORM O-2

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 110901W1

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0063

Field Sample ID: DW1 [WG1] Lab Sample ID: T4974 Matrix:Water

%Solids: Initial Calibration ID: J018AF30.M

Date Received: 11/08/01 Date Prepared:11/09/01 Date Analyzed:11/09/01

Concentration Units(mg/L or mg/Kg dry weight): ug/L

Surrogate	Recovery	Control Limits	Qualifier
1,2-Dichloroethane-d4 (surrogate)	110	62-139	
Bromofluorobenzene (surrogate)	100	75-125	
Dibromofluoromethane (surrogate)	107	75-125	
Toluene-d8 (surrogate)	103	75-125	

Internal Std.	Qualifier
1,4-Dichlorobenzene-d4	
Chlorobenzene-d5	
Fluorobenzene	

Comments:

AFCEE FORM O-2

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 110901W1

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0063

Field Sample ID: DW3 [WG1] Lab Sample ID: T4976 Matrix:Water

%Solids: Initial Calibration ID: J018AF30.M

Date Received: 11/08/01 Date Prepared:11/09/01 Date Analyzed:11/09/01

Concentration Units(mg/L or mg/Kg dry weight): ug/L

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
(m+p)-Xylene	.021	.6	.021	1		U
1,1,1,2-Tetrachloroethane	.013	.5	.013	1		U
1,1,1-Trichloroethane	.012	.8	.012	1		U
1,1,2,2-Tetrachloroethane	.028	.5	.028	1		U
1,1,2-Trichloroethane	.02	1.	.02	1		U
1,1-Dichloroethane	.005	.4	.005	1		U
1,1-Dichloroethene	.025	1.2	.025	1		U
1,1-Dichloropropene	.01	1.	.01	1		U
1,2,3-Trichlorobenzene	.05	.3	.05	1		U
1,2,3-Trichloropropane	.023	3.2	.023	1		U
1,2,4-Trichlorobenzene	.041	.4	.041	1		U
1,2,4-Trimethylbenzene	.015	1.3	.015	1		U
1,2-Dibromo-3-chloropropane	.15	2.6	.15	1		U
1,2-Dibromoethane	.011	.6	.011	1		U
1,2-Dichlorobenzene	.01	.3	.01	1		U
1,2-Dichloroethane	.009	.6	.009	1		U
1,2-Dichloropropane	.014	.4	.014	1		U
1,3,5-Trimethylbenzene	.075	.5	.075	1		U
1,3-Dichlorobenzene	.012	1.2	.012	1		U
1,3-Dichloropropane	.01	.4	.01	1		U
1,4-Dichlorobenzene	.031	.3	.031	1		U
1-Chlorohexane	.012	.5	.012	1		U
2,2-Dichloropropane	.01	3.5	.01	1		U
2-Chlorotoluene	.012	.4	.012	1		U
4-Chlorotoluene	.01	.6	.01	1		U
Benzene	.008	.4	.008	1		U
Bromobenzene	.019	.3	.019	1		U
Bromochloromethane	.01	.4	.01	1		U
Bromodichloromethane	.008	.8	.008	1		U
Bromoform	.013	1.2	.013	1		U
Bromomethane	.023	1.1	.023	1		U

Comments:

JAL 12.18.01

AFCEE FORM O-2

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 110901W1

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0063

Field Sample ID: DW3 [WG1] Lab Sample ID: T4976 Matrix:Water

%Solids: Initial Calibration ID: J018AF30.M

Date Received: 11/08/01 Date Prepared:11/09/01 Date Analyzed:11/09/01

Concentration Units(mg/L or mg/Kg dry weight): ug/L

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
Carbon tetrachloride	.008	2.1	.008	1		U
Chlorobenzene	.01	.4	.01	1		U
Chloroethane	.02	1.	.02	1		U
Chloroform	.011	.3	.011	1		U
Chloromethane	.034	1.3	.034	1		U
cis-1,2-Dichloroethene	.026	1.2	13.58	1		
cis-1,3-Dichloropropene	.02	1.	.02	1		U
Dibromochloromethane	.007	.5	.007	1		U
Dibromomethane	.016	2.4	.016	1		U
Dichlorodifluoromethane	.01	1.	.01	1		U
Ethylbenzene	.006	.6	.006	1		U
Hexachlorobutadiene	.092	1.1	.092	1		U
Isopropylbenzene	.01	.5	.01	1		U
Methylene chloride	.04	2.	.04	1		U
n-Butylbenzene	.016	1.1	.016	1		U
n-Propylbenzene	.006	.4	.006	1		U
Naphthalene	.02	1.	.02	1		U
o-Xylene	.007	1.1	.007	1		U
p-Isopropyltoluene	.013	1.2	.013	1		U
sec-Butylbenzene	.007	1.3	.007	1		U
Styrene	.008	.5	.008	1		U
tert-Butylbenzene	.013	1.4	.013	1		U
Tetrachloroethene	.012	1.4	.012	1		U
Toluene	.012	1.1	.012	1		U
trans-1,2-Dichloroethene	.032	.6	.032	1		U
trans-1,3-Dichloropropene	.01	1.	.01	1		U
Trichloroethene	.01	1.	.01	1		U
Trichlorofluoromethane	.014	.8	.014	1		U
Vinyl chloride	.014	1.1	.014	1		U
Xylene (total)	.021	1.1	.021	1		U

Comments:

12.18.01

AFCEE FORM O-2

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 110901W1

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0063

Field Sample ID: DW3 [WG1] Lab Sample ID: T4976 Matrix:Water

%Solids: Initial Calibration ID: JO184F30.M

Date Received: 11/08/01 Date Prepared:11/09/01 Date Analyzed:11/09/01

Concentration Units(mg/L or mg/Kg dry weight): ug/L

Surrogate	Recovery	Control Limits	Qualifier
1,2-Dichloroethane-d4 (surrogate)	113	62-139	
Bromofluorobenzene (surrogate)	95	75-125	
Dibromofluoromethane (surrogate)	108	75-125	
Toluene-d8 (surrogate)	102	75-125	

Internal Std.	Qualifier
1,4-Dichlorobenzene-d4	
Chlorobenzene-d5	
Fluorobenzene	

Comments:

AFCEE FORM O-2

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 110901W1

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0063

Field Sample ID: SW1 [WG1] Lab Sample ID: T4973 Matrix:Water

%Solids: Initial Calibration ID: JO18AF30.M

Date Received: 11/08/01 Date Prepared:11/09/01 Date Analyzed:11/09/01

Concentration Units(mg/L or mg/Kg dry weight): ug/L

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
(m+p)-Xylene	.021	.6	.021	1	U	U
1,1,1,2-Tetrachloroethane	.013	.5	.013	1	U	U
1,1,1-Trichloroethane	.012	.8	.11	1	F	J
1,1,2,2-Tetrachloroethane	.028	.5	.028	1	U	U
1,1,2-Trichloroethane	.02	1.	.02	1	U	
1,1-Dichloroethane	.005	.4	.005	1	U	
1,1-Dichloroethene	.025	1.2	.025	1	U	
1,1-Dichloropropene	.01	1.	.01	1	U	
1,2,3-Trichlorobenzene	.05	.3	.05	1	U	
1,2,3-Trichloropropane	.023	3.2	.023	1	U	
1,2,4-Trichlorobenzene	.041	.4	.041	1	U	
1,2,4-Trimethylbenzene	.015	1.3	.015	1	U	
1,2-Dibromo-3-chloropropane	.15	2.6	.15	1	U	
1,2-Dibromoethane	.011	.6	.011	1	U	
1,2-Dichlorobenzene	.01	.3	.01	1	U	
1,2-Dichloroethane	.009	.6	.009	1	U	
1,2-Dichloropropane	.014	.4	.014	1	U	
1,3,5-Trimethylbenzene	.075	.5	.075	1	U	
1,3-Dichlorobenzene	.012	1.2	.012	1	U	
1,3-Dichloropropane	.01	.4	.01	1	U	
1,4-Dichlorobenzene	.031	.3	.031	1	U	
1-Chlorohexane	.012	.5	.012	1	U	
2,2-Dichloropropane	.01	3.5	.01	1	U	
2-Chlorotoluene	.012	.4	.012	1	U	
4-Chlorotoluene	.01	.6	.01	1	U	
Benzene	.008	.4	.008	1	U	
Bromobenzene	.019	.3	.019	1	U	
Bromochloromethane	.01	.4	.01	1	U	
Bromodichloromethane	.008	.8	.008	1	U	
Bromoform	.013	1.2	.013	1	U	
Bromomethane	.023	1.1	.023	1	U	

Comments:

JM 12.18.01

AFCEE FORM O-2

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 110901W1

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0063

Field Sample ID: SW1 [WG1] Lab Sample ID: T4973 Matrix:Water

%Solids: Initial Calibration ID: J018AF30.M

Date Received: 11/08/01 Date Prepared:11/09/01 Date Analyzed:11/09/01

Concentration Units(mg/L or mg/Kg dry weight): ug/L

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
Carbon tetrachloride	.008	2.1	.008	1	U	U
Chlorobenzene	.01	.4	.01	1	U	
Chloroethane	.02	1.	.02	1	U	
Chloroform	.011	.3	.011	1	U	
Chloromethane	.034	1.3	.034	1	U	
cis-1,2-Dichloroethene	.026	1.2	.026	1	U	
cis-1,3-Dichloropropene	.02	1.	.02	1	U	
Dibromochloromethane	.007	.5	.007	1	U	
Dibromomethane	.016	2.4	.016	1	U	
Dichlorodifluoromethane	.01	1.	.01	1	U	
Ethylbenzene	.006	.6	.006	1	U	
Hexachlorobutadiene	.092	1.1	.092	1	U	
Isopropylbenzene	.01	.5	.01	1	U	
Methylene chloride	.04	2.	.04	1	U	
n-Butylbenzene	.016	1.1	.016	1	U	
n-Propylbenzene	.006	.4	.006	1	U	
Naphthalene	.02	1.	.02	1	U	
o-Xylene	.007	1.1	.007	1	U	
p-Isopropyltoluene	.013	1.2	.013	1	U	
sec-Butylbenzene	.007	1.3	.007	1	U	
Styrene	.008	.5	.008	1	U	
tert-Butylbenzene	.013	1.4	.013	1	U	
Tetrachloroethene	.012	1.4	.012	1	U	
Toluene	.012	1.1	.012	1	U	
trans-1,2-Dichloroethene	.032	.6	.032	1	U	
trans-1,3-Dichloropropene	.01	1.	.01	1	U	
Trichloroethene	.01	1.	.01	1	U	
Trichlorofluoromethane	.014	.8	.014	1	U	
Vinyl chloride	.014	1.1	.014	1	U	
Xylene (total)	.021	1.1	.021	1	U	

Comments:

JRL 12.18.01

AFCEE FORM O-2

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 110901W1

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0063

Field Sample ID: SW1 [WG1] Lab Sample ID: T4973 Matrix:Water

%Solids: Initial Calibration ID: J018AF30.M

Date Received: 11/08/01 Date Prepared:11/09/01 Date Analyzed:11/09/01

Concentration Units(mg/L or mg/Kg dry weight): ug/L

Surrogate	Recovery	Control Limits	Qualifier
1,2-Dichloroethane-d4 (surrogate)	107	62-139	
Bromofluorobenzene (surrogate)	94	75-125	
Dibromofluoromethane (surrogate)	105	75-125	
Toluene-d8 (surrogate)	100	75-125	

Internal Std.	Qualifier
1,4-Dichlorobenzene-d4	
Chlorobenzene-d5	
Fluorobenzene	

Comments:

AFCEE FORM O-2

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 110901W1

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0063

Field Sample ID: SW1 [MS1] Lab Sample ID: T4973MS Matrix:Water

%Solids: Initial Calibration ID: J018AF30.M

Date Received: 11/08/01 Date Prepared:11/09/01 Date Analyzed:11/09/01

Concentration Units(mg/L or mg/Kg dry weight): ug/L

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
(m+p)-Xylene	.021	.6	21.5921	1		
1,1,1,2-Tetrachloroethane	.013	.5	10.7748	1		
1,1,1-Trichloroethane	.012	.8	10.8666	1		
1,1,2,2-Tetrachloroethane	.028	.5	9.801	1		
1,1,2-Trichloroethane	.02	1.	10.4242	1		
1,1-Dichloroethane	.005	.4	10.5133	1		
1,1-Dichloroethene	.025	1.2	10.0841	1		
1,1-Dichloropropene	.01	1.	11.0045	1		
1,2,3-Trichlorobenzene	.05	.3	9.7799	1		
1,2,3-Trichloropropane	.023	3.2	9.5357	1		
1,2,4-Trichlorobenzene	.041	.4	9.9835	1		
1,2,4-Trimethylbenzene	.015	1.3	10.4177	1		
1,2-Dibromo-3-chloropropane	.15	2.6	9.6118	1		
1,2-Dibromoethane	.011	.6	11.058	1		
1,2-Dichlorobenzene	.01	.3	9.9427	1		
1,2-Dichloroethane	.009	.6	11.0693	1		
1,2-Dichloropropane	.014	.4	10.4491	1		
1,3,5-Trimethylbenzene	.075	.5	9.5048	1		
1,3-Dichlorobenzene	.012	1.2	9.762	1		
1,3-Dichloropropane	.01	.4	10.1006	1		
1,4-Dichlorobenzene	.031	.3	9.3952	1		
1-Chlorohexane	.012	.5	10.0595	1		
2,2-Dichloropropane	.01	3.5	11.3027	1		
2-Chlorotoluene	.012	.4	8.8397	1		
4-Chlorotoluene	.01	.6	9.7803	1		
Benzene	.008	.4	10.3795	1		
Bromobenzene	.019	.3	8.9235	1		
Bromochloromethane	.01	.4	10.5462	1		
Bromodichloromethane	.008	.8	10.6631	1		
Bromoform	.013	1.2	11.9912	1		
Bromomethane	.023	1.1	9.6152	1		

Comments:

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 110901W1

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0063

Field Sample ID: SW1 [MS1] Lab Sample ID: T4973MS Matrix:Water

%Solids: Initial Calibration ID: J018AF30.M

Date Received: 11/08/01 Date Prepared:11/09/01 Date Analyzed:11/09/01

Concentration Units(mg/L or mg/Kg dry weight): ug/L

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
Carbon tetrachloride	.008	2.1	12.0426	1		
Chlorobenzene	.01	.4	9.8367	1		
Chloroethane	.02	1.	10.4078	1		
Chloroform	.011	.3	9.6016	1		
Chloromethane	.034	1.3	8.3275	1		
cis-1,2-Dichloroethene	.026	1.2	10.3546	1		
cis-1,3-Dichloropropene	.02	1.	10.8488	1		
Dibromochloromethane	.007	.5	10.7002	1		
Dibromomethane	.016	2.4	10.4587	1		
Dichlorodifluoromethane	.01	1.	8.3066	1		
Ethylbenzene	.006	.6	10.2768	1		
Hexachlorobutadiene	.092	1.1	10.0439	1		
Isopropylbenzene	.01	.5	9.0611	1		
Methylene chloride	.04	2.	9.7632	1		
n-Butylbenzene	.016	1.1	10.0019	1		
n-Propylbenzene	.006	.4	9.2317	1		
Naphthalene	.02	1.	9.5034	1		
o-Xylene	.007	1.1	10.256	1		
p-Isopropyltoluene	.013	1.2	10.1723	1		
sec-Butylbenzene	.007	1.3	10.2108	1		
Styrene	.008	.5	8.7481	1		
tert-Butylbenzene	.013	1.4	9.6855	1		
Tetrachloroethene	.012	1.4	10.7666	1		
Toluene	.012	1.1	10.8231	1		
trans-1,2-Dichloroethene	.032	.6	10.874	1		
trans-1,3-Dichloropropene	.01	1.	11.2633	1		
Trichloroethene	.01	1.	10.1287	1		
Trichlorofluoromethane	.014	.8	10.7774	1		
Vinyl chloride	.014	1.1	8.7848	1		
Xylene (total)	.021	1.1	31.8481	1		

Comments:

AFCEE FORM O-2

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 110901W1

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0063

Field Sample ID: SW1 [MS1] Lab Sample ID: T4973MS Matrix:Water

%Solids: Initial Calibration ID: J018AF30.M

Date Received: 11/08/01 Date Prepared:11/09/01 Date Analyzed:11/09/01

Concentration Units(mg/L or mg/Kg dry weight): ug/L

Surrogate	Recovery	Control Limits	Qualifier
1,2-Dichloroethane-d4 (surrogate)	111	62-139	
Bromofluorobenzene (surrogate)	105	75-125	
Dibromofluoromethane (surrogate)	105	75-125	
Toluene-d8 (surrogate)	103	75-125	

Internal Std.	Qualifier
1,4-Dichlorobenzene-d4	
Chlorobenzene-d5	
Fluorobenzene	

Comments:

AFCEE FORM O-2

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 110901W1

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0063

Field Sample ID: SW1 (SD1) Lab Sample ID: I4973MSD Matrix:Water

%Solids: Initial Calibration ID: JO18AF30.M

Date Received: 11/08/01 Date Prepared:11/09/01 Date Analyzed:11/09/01

Concentration Units(mg/L or mg/Kg dry weight): ug/L

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
(m+p)-Xylene	.021	.6	22.2527	1		
1,1,1,2-Tetrachloroethane	.013	.5	10.9344	1		
1,1,1-Trichloroethane	.012	.8	10.9763	1		
1,1,2,2-Tetrachloroethane	.028	.5	9.4402	1		
1,1,2-Trichloroethane	.02	1.	10.547	1		
1,1-Dichloroethane	.005	.4	10.5103	1		
1,1-Dichloroethene	.025	1.2	10.3493	1		
1,1-Dichloropropene	.01	1.	11.0396	1		
1,2,3-Trichlorobenzene	.05	.3	10.0893	1		
1,2,3-Trichloropropane	.023	3.2	9.2554	1		
1,2,4-Trichlorobenzene	.041	.4	10.3182	1		
1,2,4-Trimethylbenzene	.015	1.3	10.7271	1		
1,2-Dibromo-3-chloropropane	.15	2.6	9.6786	1		
1,2-Dibromoethane	.011	.6	10.9201	1		
1,2-Dichlorobenzene	.01	.3	9.932	1		
1,2-Dichloroethane	.009	.6	11.078	1		
1,2-Dichloropropane	.014	.4	10.3416	1		
1,3,5-Trimethylbenzene	.075	.5	9.8682	1		
1,3-Dichlorobenzene	.012	1.2	9.867	1		
1,3-Dichloropropane	.01	.4	10.4945	1		
1,4-Dichlorobenzene	.031	.3	9.4803	1		
1-Chlorohexane	.012	.5	10.2799	1		
2,2-Dichloropropane	.01	3.5	11.2595	1		
2-Chlorotoluene	.012	.4	8.8925	1		
4-Chlorotoluene	.01	.6	9.9065	1		
Benzene	.008	.4	10.25	1		
Bromobenzene	.019	.3	8.7523	1		
Bromochloromethane	.01	.4	10.8239	1		
Bromodichloromethane	.008	.8	10.6848	1		
Bromoform	.013	1.2	12.1037	1		
Bromomethane	.023	1.1	9.7242	1		

Comments:

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 110901W1

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0063

Field Sample ID: SW1 [SD1] Lab Sample ID: T4973MSD Matrix:Water

%Solids: Initial Calibration ID: J018AF30.M

Date Received: 11/08/01 Date Prepared:11/09/01 Date Analyzed:11/09/01

Concentration Units(mg/L or mg/Kg dry weight): ug/L

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
Carbon tetrachloride	.008	2.1	11.8201	1		
Chlorobenzene	.01	.4	9.9888	1		
Chloroethane	.02	1.	10.1735	1		
Chloroform	.011	.3	9.4839	1		
Chloromethane	.034	1.3	8.5509	1		
cis-1,2-Dichloroethene	.026	1.2	10.4515	1		
cis-1,3-Dichloropropene	.02	1.	10.8487	1		
Dibromochloromethane	.007	.5	10.9909	1		
Dibromomethane	.016	2.4	10.3976	1		
Dichlorodifluoromethane	.01	1.	8.6409	1		
Ethylbenzene	.006	.6	10.3659	1		
Hexachlorobutadiene	.092	1.1	10.5749	1		
Isopropylbenzene	.01	.5	9.0925	1		
Methylene chloride	.04	2.	9.7869	1		
n-Butylbenzene	.016	1.1	10.623	1		
n-Propylbenzene	.006	.4	9.4521	1		
Naphthalene	.02	1.	10.8062	1		
o-Xylene	.007	1.1	10.5508	1		
p-Isopropyltoluene	.013	1.2	10.6917	1		
sec-Butylbenzene	.007	1.3	10.7374	1		
Styrene	.008	.5	9.4388	1		
tert-Butylbenzene	.013	1.4	10.0503	1		
Tetrachloroethene	.012	1.4	10.8911	1		
Toluene	.012	1.1	10.7324	1		
trans-1,2-Dichloroethene	.032	.6	10.9174	1		
trans-1,3-Dichloropropene	.01	1.	11.0805	1		
Trichloroethene	.01	1.	10.0577	1		
Trichlorofluoromethane	.014	.8	10.7243	1		
Vinyl chloride	.014	1.1	9.0623	1		
Xylene (total)	.021	1.1	32.8035	1		

Comments:

AFCEE FORM O-2

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 110901W1

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0063

Field Sample ID: SW1 [SD1] Lab Sample ID: T4973MSD Matrix:Water

%Solids: Initial Calibration ID: JO18AF30.M

Date Received: 11/08/01 Date Prepared:11/09/01 Date Analyzed:11/09/01

Concentration Units(mg/L or mg/Kg dry weight): ug/L

Surrogate	Recovery	Control Limits	Qualifier
1,2-Dichloroethane-d4 (surrogate)	110	62-139	
Bromofluorobenzene (surrogate)	107	75-125	
Dibromofluoromethane (surrogate)	106	75-125	
Toluene-d8 (surrogate)	102	75-125	

Internal Std.	Qualifier
1,4-Dichlorobenzene-d4	
Chlorobenzene-d5	
Fluorobenzene	

Comments:

AFCEE FORM O-2

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 110901W1

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0063

Field Sample ID: SW3 (WG1) Lab Sample ID: T4975 Matrix:Water

%Solids: Initial Calibration ID: J018AF30.M

Date Received: 11/08/01 Date Prepared:11/09/01 Date Analyzed:11/09/01

Concentration Units(mg/L or mg/Kg dry weight): ug/L

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
(m+p)-Xylene	.021	.6	.021	1		U U
1,1,1,2-Tetrachloroethane	.013	.5	.013	1		U U
1,1,1-Trichloroethane	.012	.8	.32	1		J J
1,1,2,2-Tetrachloroethane	.028	.5	.028	1		U U
1,1,2-Trichloroethane	.02	1.	.02	1		U
1,1-Dichloroethane	.005	.4	.005	1		U
1,1-Dichloroethene	.025	1.2	.025	1		U
1,1-Dichloropropene	.01	1.	.01	1		U
1,2,3-Trichlorobenzene	.05	.3	.05	1		U
1,2,3-Trichloropropane	.023	3.2	.023	1		U
1,2,4-Trichlorobenzene	.041	.4	.041	1		U
1,2,4-Trimethylbenzene	.015	1.3	.015	1		U
1,2-Dibromo-3-chloropropane	.15	2.6	.15	1		U
1,2-Dibromoethane	.011	.6	.011	1		U
1,2-Dichlorobenzene	.01	.3	.01	1		U
1,2-Dichloroethane	.009	.6	.009	1		U
1,2-Dichloropropane	.014	.4	.014	1		U
1,3,5-Trimethylbenzene	.075	.5	.075	1		U
1,3-Dichlorobenzene	.012	1.2	.012	1		U
1,3-Dichloropropane	.01	.4	.01	1		U
1,4-Dichlorobenzene	.031	.3	.031	1		U
1-Chlorohexane	.012	.5	.012	1		U
2,2-Dichloropropane	.01	3.5	.01	1		U
2-Chlorotoluene	.012	.4	.012	1		U
4-Chlorotoluene	.01	.6	.01	1		U
Benzene	.008	.4	.008	1		U
Bromobenzene	.019	.3	.019	1		U
Bromochloromethane	.01	.4	.01	1		U
Bromodichloromethane	.008	.8	.008	1		U
Bromoform	.013	1.2	.013	1		U
Bromomethane	.023	1.1	.023	1		U

JAL 12.18.01

Comments:

AFCEE FORM O-2

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 110901W1

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0063

Field Sample ID: SW3 [WG1] Lab Sample ID: T4975 Matrix:Water

%Solids: Initial Calibration ID: JO18AF30.M

Date Received: 11/08/01 Date Prepared:11/09/01 Date Analyzed:11/09/01

Concentration Units(mg/L or mg/Kg dry weight): ug/L

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
Carbon tetrachloride	.008	2.1	.008	1	U	U
Chlorobenzene	.01	.4	.01	1	U	
Chloroethane	.02	1.	.02	1	U	
Chloroform	.011	.3	.011	1	U	
Chloromethane	.034	1.3	.034	1	U	
cis-1,2-Dichloroethene	.026	1.2	.026	1	U	
cis-1,3-Dichloropropene	.02	1.	.02	1	U	
Dibromochloromethane	.007	.5	.007	1	U	
Dibromomethane	.016	2.4	.016	1	U	
Dichlorodifluoromethane	.01	1.	.01	1	U	
Ethylbenzene	.006	.6	.006	1	U	
Hexachlorobutadiene	.092	1.1	.092	1	U	
Isopropylbenzene	.01	.5	.01	1	U	
Methylene chloride	.04	2.	.04	1	U	
n-Butylbenzene	.016	1.1	.016	1	U	
n-Propylbenzene	.006	.4	.006	1	U	
Naphthalene	.02	1.	.02	1	U	
o-Xylene	.007	1.1	.007	1	U	
p-Isopropyltoluene	.013	1.2	.013	1	U	
sec-Butylbenzene	.007	1.3	.007	1	U	
Styrene	.008	.5	.008	1	U	
tert-Butylbenzene	.013	1.4	.013	1	U	
Tetrachloroethene	.012	1.4	.012	1	U	
Toluene	.012	1.1	.012	1	U	
trans-1,2-Dichloroethene	.032	.6	.032	1	U	
trans-1,3-Dichloropropene	.01	1.	.01	1	U	
Trichloroethene	.01	1.	.5	1	J	J
Trichlorofluoromethane	.014	.8	.014	1	U	U
Vinyl chloride	.014	1.1	.014	1	U	U
Xylene (total)	.021	1.1	.021	1	U	U

JPL 12.18.01

Comments:

AFCEE FORM O-2

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 110901W1

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0063

Field Sample ID: SW3 [WG1] Lab Sample ID: T4975 Matrix:Water

%Solids: Initial Calibration ID: J018AF30.M

Date Received: 11/08/01 Date Prepared:11/09/01 Date Analyzed:11/09/01

Concentration Units(mg/L or mg/Kg dry weight): ug/L

Surrogate	Recovery	Control Limits	Qualifier
1,2-Dichloroethane-d4 (surrogate)	106	62-139	
Bromofluorobenzene (surrogate)	96	75-125	
Dibromofluoromethane (surrogate)	105	75-125	
Toluene-d8 (surrogate)	101	75-125	

Internal Std.	Qualifier
1,4-Dichlorobenzene-d4	
Chlorobenzene-d5	
Fluorobenzene	

Comments:

AFCEE FORM O-2

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 110901W1

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0063

Field Sample ID: SW4 [WG1] Lab Sample ID: T4979 Matrix:Water

%Solids: Initial Calibration ID: JO18AF30.M

Date Received: 11/08/01 Date Prepared:11/09/01 Date Analyzed:11/09/01

Concentration Units(mg/L or mg/Kg dry weight): ug/L

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
(m+p)-Xylene	.021	.6	.021	1		U U
1,1,1,2-Tetrachloroethane	.013	.5	.013	1		U U
1,1,1-Trichloroethane	.012	.8	.88	1		
1,1,2,2-Tetrachloroethane	.028	.5	.028	1		U U
1,1,2-Trichloroethane	.02	1.	.02	1		U U
1,1-Dichloroethane	.005	.4	7.18	1		
1,1-Dichloroethene	.025	1.2	.12	1		J J
1,1-Dichloropropene	.01	1.	.01	1		U U
1,2,3-Trichlorobenzene	.05	.3	.05	1		U
1,2,3-Trichloropropane	.023	3.2	.023	1		U
1,2,4-Trichlorobenzene	.041	.4	.041	1		U
1,2,4-Trimethylbenzene	.015	1.3	.015	1		U
1,2-Dibromo-3-chloropropane	.15	2.6	.15	1		U
1,2-Dibromoethane	.011	.6	.011	1		U
1,2-Dichlorobenzene	.01	.3	.01	1		U
1,2-Dichloroethane	.009	.6	.009	1		U
1,2-Dichloropropane	.014	.4	.014	1		U
1,3,5-Trimethylbenzene	.075	.5	.075	1		U
1,3-Dichlorobenzene	.012	1.2	.012	1		U
1,3-Dichloropropane	.01	.4	.01	1		U
1,4-Dichlorobenzene	.031	.3	.031	1		U
1-Chlorohexane	.012	.5	.012	1		U
2,2-Dichloropropane	.01	3.5	.01	1		U
2-Chlorotoluene	.012	.4	.012	1		U
4-Chlorotoluene	.01	.6	.01	1		U
Benzene	.008	.4	.008	1		U
Bromobenzene	.019	.3	.019	1		U
Bromochloromethane	.01	.4	.01	1		U
Bromodichloromethane	.008	.8	.008	1		U
Bromoform	.013	1.2	.013	1		U
Bromomethane	.023	1.1	.023	1		U

Comments:

12.18.01

AFCEE FORM O-2

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 110901W1

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0063

Field Sample ID: SW4 (WG1) Lab Sample ID: T4979 Matrix:Water

%Solids: Initial Calibration ID: JD18AF30.M

Date Received: 11/08/01 Date Prepared:11/09/01 Date Analyzed:11/09/01

Concentration Units(mg/L or mg/Kg dry weight): ug/L

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
Carbon tetrachloride	.008	2.1	.008	1		U U
Chlorobenzene	.01	.4	.01	1		U U
Chloroethane	.02	1.	.02	1		U U
Chloroform	.011	.3	.011	1		U U
Chloromethane	.034	1.3	.42	1		~~U~~ J
cis-1,2-Dichloroethene	.026	1.2	5.27	1		
cis-1,3-Dichloropropene	.02	1.	.02	1		U U
Dibromochloromethane	.007	.5	.007	1		U
Dibromomethane	.016	2.4	.016	1		U
Dichlorodifluoromethane	.01	1.	.01	1		U
Ethylbenzene	.006	.6	.006	1		U
Hexachlorobutadiene	.092	1.1	.092	1		U
Isopropylbenzene	.01	.5	.01	1		U
Methylene chloride	.04	2.	.04	1		U
n-Butylbenzene	.016	1.1	.016	1		U
n-Propylbenzene	.006	.4	.006	1		U
Naphthalene	.02	1.	.02	1		U
o-Xylene	.007	1.1	.007	1		U
p-Isopropyltoluene	.013	1.2	.013	1		U
sec-Butylbenzene	.007	1.3	.007	1		U
Styrene	.008	.5	.008	1		U
tert-Butylbenzene	.013	1.4	.013	1		U
Tetrachloroethene	.012	1.4	.62	1		~~U~~ J
Toluene	.012	1.1	.012	1		U U
trans-1,2-Dichloroethene	.032	.6	.032	1		U
trans-1,3-Dichloropropene	.01	1.	.01	1		U
Trichloroethene	.01	1.	5.7	1		
Trichlorofluoromethane	.014	.8	.5	1		~~U~~ J
Vinyl chloride	.014	1.1	.43	1		~~U~~ J
Xylene (total)	.021	1.1	.021	1		U U

Comments:

12.18.01

AFCEE FORM O-2

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 110901W1

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0063

Field Sample ID: SW4 [WG1] Lab Sample ID: T4979 Matrix:Water

%Solids: Initial Calibration ID: J018AF30.M

Date Received: 11/08/01 Date Prepared:11/09/01 Date Analyzed:11/09/01

Concentration Units(mg/L or mg/Kg dry weight): ug/L

Surrogate	Recovery	Control Limits	Qualifier
1,2-Dichloroethane-d4 (surrogate)	104	62-139	
Bromofluorobenzene (surrogate)	92	75-125	
Dibromofluoromethane (surrogate)	102	75-125	
Toluene-d8 (surrogate)	98	75-125	

Internal Std.	Qualifier
1,4-Dichlorobenzene-d4	
Chlorobenzene-d5	
Fluorobenzene	

Comments:

AFCEE FORM O-2

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 110901W1

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0063

Field Sample ID: SW7 [WG1] Lab Sample ID: T4977 Matrix:Water

%Solids: Initial Calibration ID: JO18AF30.M

Date Received: 11/08/01 Date Prepared:11/09/01 Date Analyzed:11/09/01

Concentration Units(mg/L or mg/Kg dry weight): ug/L

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
(m+p)-Xylene	.021	.6	.021	1		U U
1,1,1,2-Tetrachloroethane	.013	.5	.013	1		U J
1,1,1-Trichloroethane	.012	.8	.8	1		
1,1,2,2-Tetrachloroethane	.028	.5	.028	1		U U
1,1,2-Trichloroethane	.02	1.	.02	1		U J
1,1-Dichloroethane	.005	.4	3.02	1		
1,1-Dichloroethene	.025	1.2	.19	1		J J
1,1-Dichloropropene	.01	1.	.01	1		U U
1,2,3-Trichlorobenzene	.05	.3	.05	1		U
1,2,3-Trichloropropane	.023	3.2	.023	1		U
1,2,4-Trichlorobenzene	.041	.4	.041	1		U
1,2,4-Trimethylbenzene	.015	1.3	.015	1		U
1,2-Dibromo-3-chloropropane	.15	2.6	.15	1		U
1,2-Dibromoethane	.011	.6	.011	1		U
1,2-Dichlorobenzene	.01	.3	.01	1		U
1,2-Dichloroethane	.009	.6	.009	1		U
1,2-Dichloropropane	.014	.4	.014	1		U
1,3,5-Trimethylbenzene	.075	.5	.075	1		U
1,3-Dichlorobenzene	.012	1.2	.012	1		U
1,3-Dichloropropane	.01	.4	.01	1		U
1,4-Dichlorobenzene	.031	.3	.031	1		U
1-Chlorohexane	.012	.5	.012	1		U
2,2-Dichloropropane	.01	3.5	.01	1		U
2-Chlorotoluene	.012	.4	.012	1		U
4-Chlorotoluene	.01	.6	.01	1		U
Benzene	.008	.4	.008	1		U
Bromobenzene	.019	.3	.019	1		U
Bromochloromethane	.01	.4	.01	1		U
Bromodichloromethane	.008	.8	.008	1		U
Bromoform	.013	1.2	.013	1		U
Bromomethane	.023	1.1	.023	1		U

Comments:

12.18.01

AFCEE FORM O-2

AFCEE

ORGANIC ANALYSES DATA SHEET 2

RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 110901W1

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0063

Field Sample ID: SW7 [WG1] Lab Sample ID: T4977 Matrix:Water

%Solids: Initial Calibration ID: J018AF30.M

Date Received: 11/08/01 Date Prepared:11/09/01 Date Analyzed:11/09/01

Concentration Units(mg/L or mg/Kg dry weight): ug/L

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
Carbon tetrachloride	.008	2.1	.008	1		U U
Chlorobenzene	.01	.4	.01	1		U U
Chloroethane	.02	1.	.02	1		U U
Chloroform	.011	.3	.11	1		F J
Chloromethane	.034	1.3	.034	1		U U
cis-1,2-Dichloroethene	.026	1.2	25.89	1		
cis-1,3-Dichloropropene	.02	1.	.02	1		U U
Dibromochloromethane	.007	.5	.007	1		U
Dibromomethane	.016	2.4	.016	1		U
Dichlorodifluoromethane	.01	1.	.01	1		U
Ethylbenzene	.006	.6	.006	1		U
Hexachlorobutadiene	.092	1.1	.092	1		U
Isopropylbenzene	.01	.5	.01	1		U
Methylene chloride	.04	2.	.04	1		U
n-Butylbenzene	.016	1.1	.016	1		U
n-Propylbenzene	.006	.4	.006	1		U
Naphthalene	.02	1.	.02	1		U
o-Xylene	.007	1.1	.007	1		U
p-Isopropyltoluene	.013	1.2	.013	1		U
sec-Butylbenzene	.007	1.3	.007	1		U
Styrene	.008	.5	.008	1		U
tert-Butylbenzene	.013	1.4	.013	1		U
Tetrachloroethene	.012	1.4	.45	1		F J
Toluene	.012	1.1	.012	1		U U
trans-1,2-Dichloroethene	.032	.6	.13	1		F J
trans-1,3-Dichloropropene	.01	1.	.01	1		U U
Trichloroethene	.01	1.	4.7	1		
Trichlorofluoromethane	.014	.8	.014	1		U U
Vinyl chloride	.014	1.1	.85	1		F J
Xylene (total)	.021	1.1	.021	1		U U

Jnl 12.18.01

Comments:

AFCEE FORM O-2

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 110901W1

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0063

Field Sample ID: SW7 [WG1] Lab Sample ID: T4977 Matrix:Water

%Solids: Initial Calibration ID: JO18AF30.M

Date Received: 11/08/01 Date Prepared:11/09/01 Date Analyzed:11/09/01

Concentration Units(mg/L or mg/Kg dry weight): ug/L

Surrogate	Recovery	Control Limits	Qualifier
1,2-Dichloroethane-d4 (surrogate)	111	62-139	
Bromofluorobenzene (surrogate)	95	75-125	
Dibromofluoromethane (surrogate)	109	75-125	
Toluene-d8 (surrogate)	102	75-125	

Internal Std.	Qualifier
1,4-Dichlorobenzene-d4	
Chlorobenzene-d5	
Fluorobenzene	

Comments:

AFCEE FORM O-2

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 110901W1

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0063

Field Sample ID: SW7 [WG9] Lab Sample ID: T4978 Matrix:Water

%Solids: Initial Calibration ID: J018AF30.M

Date Received: 11/08/01 Date Prepared:11/09/01 Date Analyzed:11/09/01

Concentration Units(mg/L or mg/Kg dry weight): ug/L

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
(m+p)-Xylene	.021	.6	.021	1		U J
1,1,1,2-Tetrachloroethane	.013	.5	.013	1		U J
1,1,1-Trichloroethane	.012	.8	.67	1		~~U~~ J
1,1,2,2-Tetrachloroethane	.028	.5	.028	1		U J
1,1,2-Trichloroethane	.02	1.	.02	1		U J
1,1-Dichloroethane	.005	.4	2.4	1		
1,1-Dichloroethene	.025	1.2	.16	1		~~U~~ J
1,1-Dichloropropene	.01	1.	.01	1		U J
1,2,3-Trichlorobenzene	.05	.3	.05	1		U
1,2,3-Trichloropropane	.023	3.2	.023	1		U
1,2,4-Trichlorobenzene	.041	.4	.041	1		U
1,2,4-Trimethylbenzene	.015	1.3	.015	1		U
1,2-Dibromo-3-chloropropane	.15	2.6	.15	1		U
1,2-Dibromoethane	.011	.6	.011	1		U
1,2-Dichlorobenzene	.01	.3	.01	1		U
1,2-Dichloroethane	.009	.6	.009	1		U
1,2-Dichloropropane	.014	.4	.014	1		U
1,3,5-Trimethylbenzene	.075	.5	.075	1		U
1,3-Dichlorobenzene	.012	1.2	.012	1		U
1,3-Dichloropropane	.01	.4	.01	1		U
1,4-Dichlorobenzene	.031	.3	.031	1		U
1-Chlorohexane	.012	.5	.012	1		U
2,2-Dichloropropane	.01	3.5	.01	1		U
2-Chlorotoluene	.012	.4	.012	1		U
4-Chlorotoluene	.01	.6	.01	1		U
Benzene	.008	.4	.008	1		U
Bromobenzene	.019	.3	.019	1		U
Bromochloromethane	.01	.4	.01	1		U
Bromodichloromethane	.008	.8	.008	1		U
Bromoform	.013	1.2	.013	1		U
Bromomethane	.023	1.1	.023	1		U

12.18.01

Comments:

AFCEE FORM O-2

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 110901W1

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0063

Field Sample ID: SW7 [WG9] Lab Sample ID: T4978 Matrix:Water

%Solids: Initial Calibration ID: JO18AF30.m

Date Received: 11/08/01 Date Prepared:11/09/01 Date Analyzed:11/09/01

Concentration Units(mg/L or mg/Kg dry weight): ug/L

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
Carbon tetrachloride	.008	2.1	.008	1		U U
Chlorobenzene	.01	.4	.01	1		U U
Chloroethane	.02	1.	.02	1		U U
Chloroform	.011	.3	.12	1		~~F~~ J
Chloromethane	.034	1.3	.034	1		U U
cis-1,2-Dichloroethene	.026	1.2	21.02	1		
cis-1,3-Dichloropropene	.02	1.	.02	1		U U
Dibromochloromethane	.007	.5	.007	1		U
Dibromomethane	.016	2.4	.016	1		U
Dichlorodifluoromethane	.01	1.	.01	1		U
Ethylbenzene	.006	.6	.006	1		U
Hexachlorobutadiene	.092	1.1	.092	1		U
Isopropylbenzene	.01	.5	.01	1		U
Methylene chloride	.04	2.	.04	1		U
n-Butylbenzene	.016	1.1	.016	1		U
n-Propylbenzene	.006	.4	.006	1		U
Naphthalene	.02	1.	.02	1		U
o-Xylene	.007	1.1	.007	1		U
p-Isopropyltoluene	.013	1.2	.013	1		U
sec-Butylbenzene	.007	1.3	.007	1		U
Styrene	.008	.5	.008	1		U
tert-Butylbenzene	.013	1.4	.013	1		U
Tetrachloroethene	.012	1.4	.41	1		~~F~~ J
Toluene	.012	1.1	.012	1		U U
trans-1,2-Dichloroethene	.032	.6	.032	1		U U
trans-1,3-Dichloropropene	.01	1.	.01	1		U U
Trichloroethene	.01	1.	4.1	1		
Trichlorofluoromethane	.014	.8	.014	1		U U
Vinyl chloride	.014	1.1	.66	1		~~F~~ J
Xylene (total)	.021	1.1	.021	1		U U

Comments:

12.18.01

AFCEE FORM O-2

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 110901W1

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0063

Field Sample ID: SW7 [WG9] Lab Sample ID: T4978 Matrix:Water

%Solids: Initial Calibration ID: J018AF30.M

Date Received: 11/08/01 Date Prepared:11/09/01 Date Analyzed:11/09/01

Concentration Units(mg/L or mg/Kg dry weight): ug/L

Surrogate	Recovery	Control Limits	Qualifier
1,2-Dichloroethane-d4 (surrogate)	105	62-139	
Bromofluorobenzene (surrogate)	93	75-125	
Dibromofluoromethane (surrogate)	104	75-125	
Toluene-d8 (surrogate)	99	75-125	

Internal Std.	Qualifier
1,4-Dichlorobenzene-d4	
Chlorobenzene-d5	
Fluorobenzene	

Comments:

AFCEE FORM O-2