FINAL

GROUNDWATER MONITORING REPORT

for the November 2000 Sampling Event
at Air Force Plant 59

Prepared for:

Air Force Center for Environmental Excellence
and
Aeronautical Systems Center

Prepared by:

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Contract No. F41624-97-D-8018
Delivery Order No. 0072

February 2001

DISCLAIMER

This *Final Groundwater Monitoring Report for the November 2000 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.

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PREFACE

This *Final Groundwater Monitoring Report for the November 2000 Sampling Event* has been prepared by Earth Tech to describe field and laboratory operations conducted as part of the 2000/2001 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 0072. 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.

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13.ABSTRACT *(Maximum 200 words)*

This document is the *Final Groundwater Monitoring Report for the November 2000 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.

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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

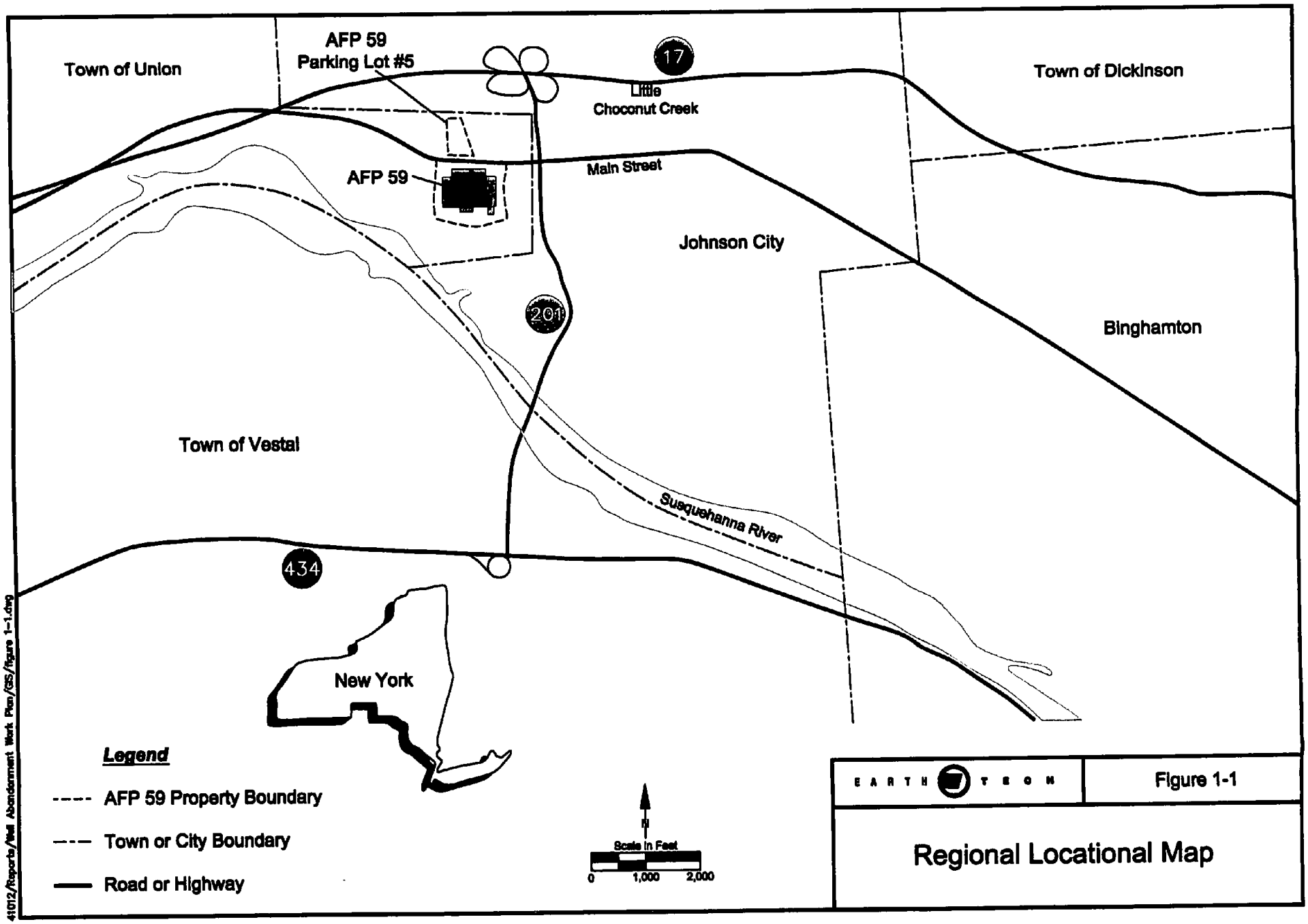
1.0 INTRODUCTION

This *Final Groundwater Monitoring Report for the November 2000 Sampling Event* has been prepared by Earth Tech to describe field and laboratory operations during the November 2000 groundwater sampling event. The November 2000 sampling event was conducted as part of the 2000/2001 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.

This report has been prepared in accordance with the United States Environmental Protection Agency (USEPA) document *Guidance for Conducting Remedial Investigations and Feasibility Studies Under Comprehensive Environmental, Response, Compensation, and Liability Act (CERCLA)* (USEPA, 1988). The report also follows the format and content requirements of the United States Air Force (USAF) document *Handbook for the Installation Restoration Program (IRP), Remedial Investigations and Feasibility Studies (RI/FS)* (USAF, 1993). 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 2000 sampling event, Section 3 summarizes the analytical results, and Section 4 presents conclusions from the investigation.


Town of Union
AFP 59
Parking Lot #5
17
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
Figure 1-1
Regional Locational Map
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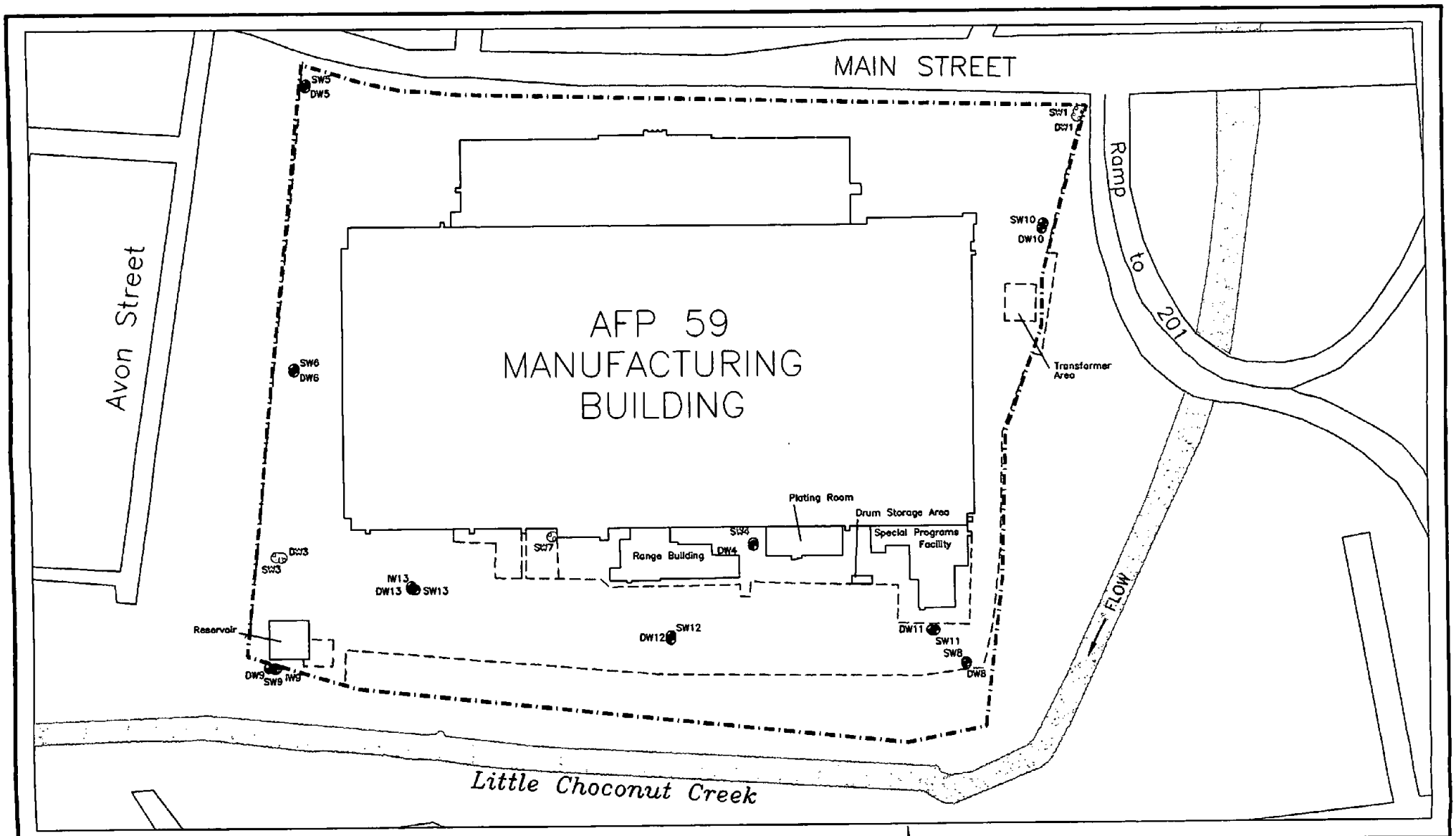

LEGEND

- AFP 59 Property Boundary
- Fence
- DW3 – AFP 59 Monitoring Well
- DW12 – AFP 59 Monitoring Well Abandoned In September 2000

0 100 200

SCALE IN FEET

EARTH TECH

FIGURE 1-2

SITE LOCATION MAP

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2.0 PROJECT ACTIVITIES

This section summarizes activities conducted during the November 2000 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

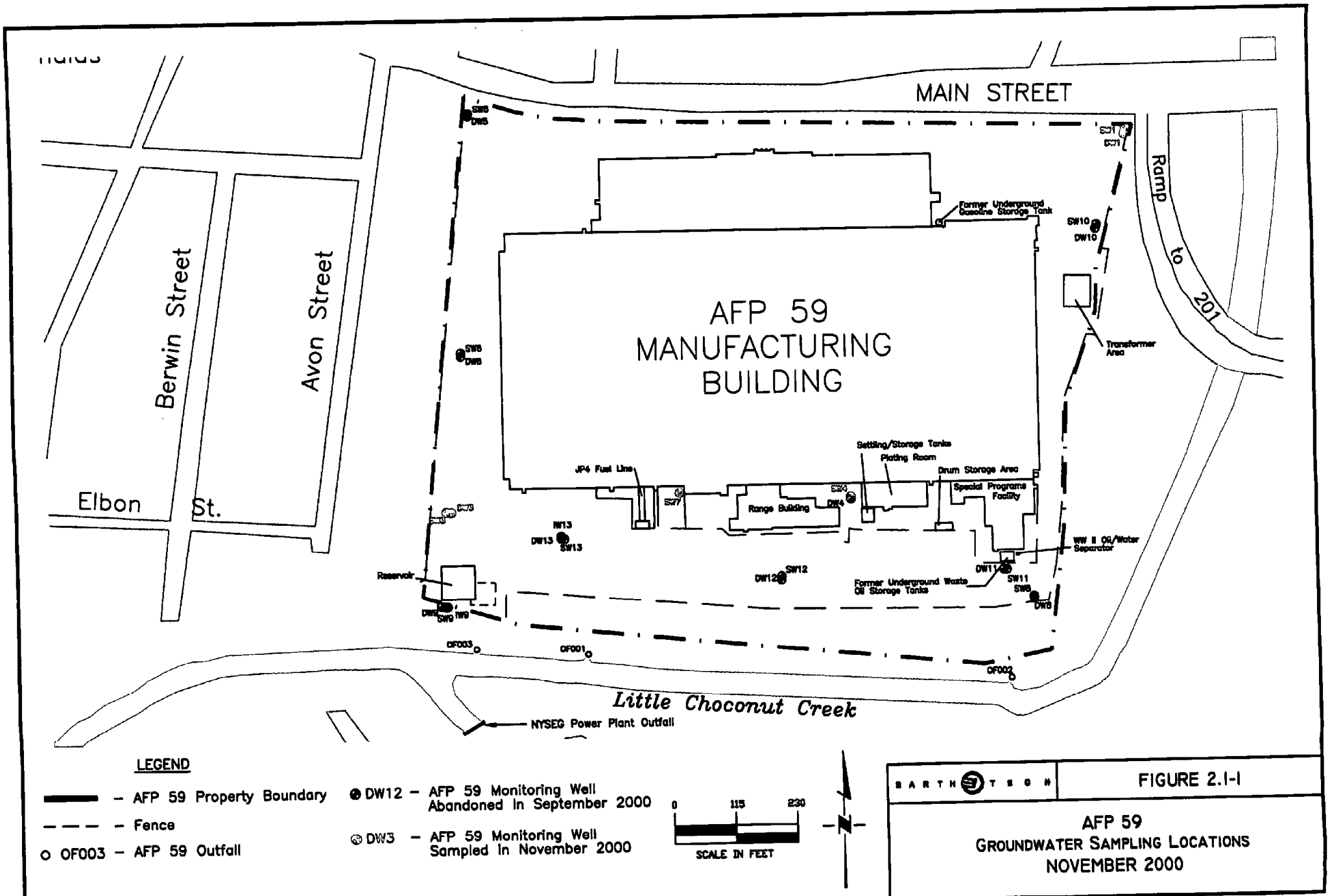
On the basis of conclusions presented in the *Final Remedial Investigation Report* (Earth Tech, 1996) and recommendations made by the NYSDEC, it was determined that VOCs represent the only chemicals of potential concern in groundwater at AFP 59. As a result, the *Record of Decision* (Earth Tech, 1999b) 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 2000 sampling event, which represents the third 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 2000 sampling event, and Figure 2.1-1 shows the locations of the on-site monitoring wells sampled during the November 2000 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 2000 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 2000 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 2000 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.

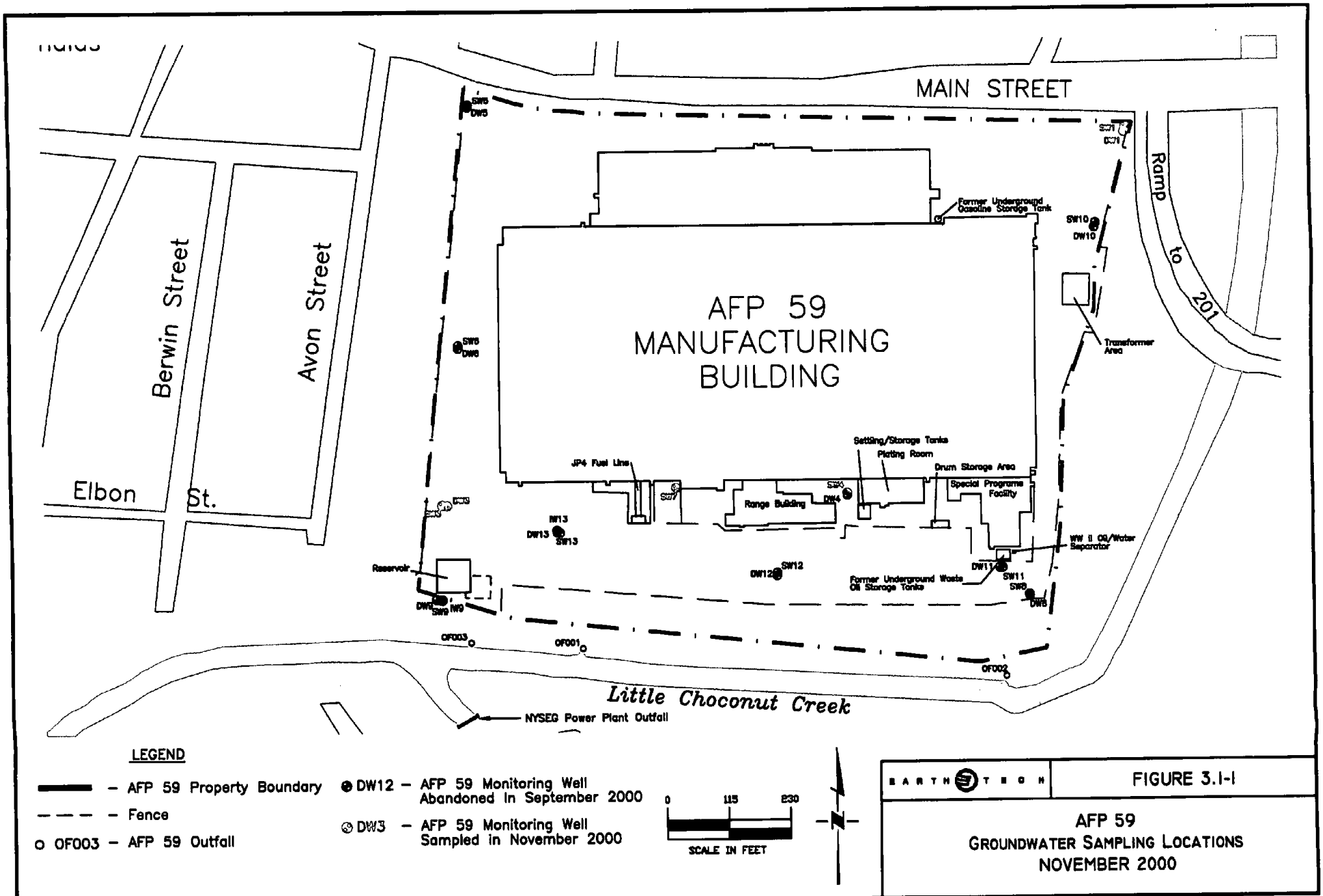
- **R** The data are unusable due to deficiencies in the ability to analyze the sample and meet quality control criteria.
- **M** A matrix effect was present.
- **F** The analyte was positively identified, but the associated numerical value is below the RL.
- **U** The analyte was analyzed for, but not 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	0.051	µg/L	0.5	µg/L
	1,1,1-TCA	0.049	µg/L	0.8	µg/L
	1,1,2,2-Tetrachloroethane	0.052	µg/L	0.5	µg/L
	1,1,2-TCA	0.08	µg/L	1.0	µg/L
	1,1-DCA	0.054	µg/L	0.4	µg/L
	1,1-DCE	0.144	µg/L	1.2	µg/L
	1,1-Dichloropropene	0.07	µg/L	1.0	µg/L
	1,2,3-Trichlorobenzene	0.063	µg/L	0.3	µg/L
	1,2,3-Trichloropropane	0.075	µg/L	3.2	µg/L
	1,2,4-Trichlorobenzene	0.062	µg/L	0.4	µg/L
	1,2,4-Trimethylbenzene	0.014	µg/L	1.3	µg/L
	1,2-DCA	0.067	µg/L	0.6	µg/L
	1,2-DCB	0.028	µg/L	0.3	µg/L
	trans-1,2-Dichloroethene	0.14	µg/L	0.6	µg/L
	1,2-Dibromo-3-chloropropane	0.33	µg/L	2.6	µg/L
	1,2-Dibromoethane	0.068	µg/L	0.6	µg/L
	1,2-Dichloropropane	0.067	µg/L	0.4	µg/L
	1,3,5-Trimethylbenzene	0.018	µg/L	0.5	µg/L
	1,3-DCB	0.048	µg/L	1.2	µg/L
	1,3-Dichloropropane	0.05	µg/L	0.4	µg/L
	1,4-DCB	0.023	µg/L	0.3	µg/L
	2,2-Dichloropropane	0.026	µg/L	3.5	µg/L
	2-Chlorotoluene	0.019	µg/L	0.4	µg/L
	4-Chlorotoluene	0.015	µg/L	0.6	µg/L
	Benzene	0.032	µg/L	0.4	µg/L
	Bromobenzene	0.091	µg/L	0.3	µg/L
	Bromochloromethane	0.114	µg/L	0.4	µg/L
	Bromodichloromethane	0.025	µg/L	0.8	µg/L
	Bromoform	0.108	µg/L	1.2	µg/L
	Bromomethane	0.059	µg/L	1.1	µg/L
	n-Butylbenzene	0.037	µg/L	1.1	µg/L
	sec-Butylbenzene	0.026	µg/L	1.3	µg/L
	tert-Butylbenzene	0.024	µg/L	1.4	µg/L
	Carbon tetrachloride	0.06	µg/L	2.1	µg/L
	Chlorobenzene	0.014	µg/L	0.4	µg/L
	Chloroethane	0.07	µg/L	1.0	µg/L
	Chloroform	0.061	µg/L	0.3	µg/L
	Chloromethane	0.073	µg/L	1.3	µg/L
	cis-1,2-DCE	0.145	µg/L	1.2	µg/L
	cis-1,3-Dichloropropene	0.05	µg/L	1.0	µg/L
	Dibromochloromethane	0.049	µg/L	0.5	µg/L
	Dibromomethane	0.036	µg/L	2.4	µg/L
	Dichlorodifluoromethane	0.06	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	trans-1,3-Dichloropropene	0.06	µg/L	1.0	µg/L
SW8260B	Ethylbenzene	0.015	µg/L	0.6	µg/L
	Hexachlorobutadiene	0.102	µg/L	1.1	µg/L
	Isopropylbenzene	0.014	µg/L	0.5	µg/L
	p-Isopropyltoluene	0.029	µg/L	1.2	µg/L
	Methylene Chloride	0.06	µg/L	2.0	µg/L
	Naphthalene	0.05	µg/L	1.0	µg/L
	n-Propylbenzene	0.018	µg/L	0.4	µg/L
	Styrene	0.011	µg/L	0.5	µg/L
	Tetrachloroethene	0.087	µg/L	1.4	µg/L
	Trichloroethene	0.06	µg/L	1.0	µg/L
	Trichlorofluoromethane	0.018	µg/L	0.8	µg/L
	Toluene	0.017	µg/L	1.1	µg/L
	Vinyl Chloride	0.019	µg/L	1.1	µg/L
	(m&p)-Xylene	0.024	µg/L	0.6	µg/L
	o-Xylene	0.013	µg/L	1.1	µg/L
	Xylene (total)	0.024	µg/L	1.1	µg/L



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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 2000 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 2000 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 SW3, SW4, and SW7; no VOCs were detected in groundwater sample collected from well SW1 (see Figure 3.1-2). Chlorinated hydrocarbons were the only detected VOCs in the samples collected from the shallow zone of the aquifer.

The following maximum concentrations were detected in the groundwater sample collected from monitoring well SW4: trichloroethene (TCE) at 15.2 M micrograms per liter (µg/L); 1,1,1-trichloroethane (1,1,1-TCA) at 1.14 µg/L; 1,1-dichloroethene (1,1-DCE) at 0.29 M µg/L; 1,1-dichloroethane (1,1-DCA) at 15.25 M µg/L; tetrachloroethene at 0.62 F µg/L; trichlorofluoromethane at 0.91 M µg/L; dichlorodifluoromethane at 4.8 M µg/L; and vinyl chloride at 1.49 M µg/L. The maximum concentration of cis-1,2-dichloroethene (cis-1,2-DCE) was detected in sample collected from SW7 (16.06 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 wells (see Figure 3.1-2). Table 3.1-4 summarizes all VOCs detected in groundwater samples

Table 3.1-2. Groundwater Data Summary for VOCs

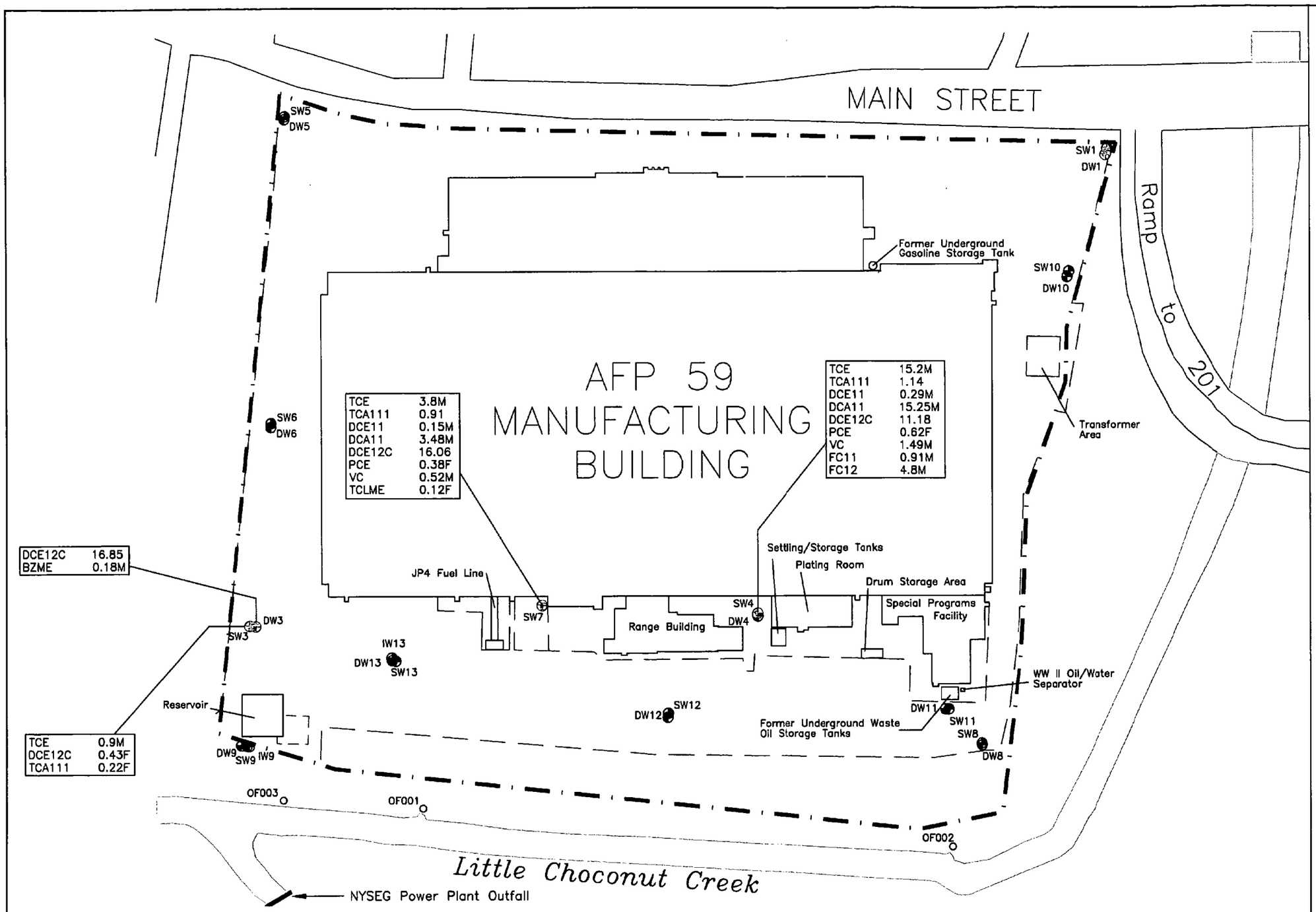
Parameters	Action Levels*	59SW1WG1	59DW1WG1	59SW3WG1	59DW3WG1
1,1,1-Trichloroethane	5	--	--	0.43 F	--
Trichloroethene	5	--	--	0.9 M	--
1,1-Dichloroethene	5	--	--	--	--
Cis-1,2-Dichloroethene	5	--	--	0.22 F	**16.85**
Dichlorodifluoromethane	5	--	--	--	--
Chloroform	7	--	--	--	--
1,1-Dichloroethane	5	--	--	--	--
Trichlorofluoromethane	5	--	--	--	--
Tetrachloroethene	5	--	--	--	--
Vinyl Chloride	2	--	--	--	--
Toluene	5	--	--	--	0.18 M

Parameters	Action Levels*	59DW3WG9 (Duplicate Sample)	59SW4WG1	59SW7WG1
1,1,1-Trichloroethane	5	--	1.14	0.91
Trichloroethene	5	--	**15.2 M**	3.8 M
1,1-Dichloroethene	5	--	0.29 M	0.15 M
Cis-1,2-Dichloroethene	5	**15.87**	**11.18**	**16.06**
Dichlorodifluoromethane	5	--	4.8 M	--
Chloroform	7	--	--	0.12 F
1,1-Dichloroethane	5	--	**15.25 M**	3.48 M
Trichlorofluoromethane	5	--	0.91 M	--
Tetrachloroethene	5	--	0.62 F	0.38 F
Vinyl Chloride	2	--	1.49 M	0.52 M
Toluene	5	0.18 M	--	--

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

Qualifiers: F = The analyte was positively identified, but the associated numerical value is below the reporting limit.
M = A matrix effect was present.

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 November 2000

AFP 59 Outfall

TCLME	=	Chloroform
FC12	=	Dichlorodifluoromethane
DCA11	=	1,1-dichloroethane
DCE11	=	1,1-dichloroethene
DCE12C	=	cis-1,2-dichloroethene
FC11	=	Trichlorofluoromethane
PCE	=	Tetrachloroethane
TCA111	=	1,1,1-trichloroethane
TCE	=	Trichloroethene
VC	=	Vinyl Chloride
BZME	=	Toluene

F = The analyte was positively identified, but the associated numerical value is below the reporting limit.

Notes:

1. Concentrations are reported in ug/L
2. If no data are presented 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.

50 25 0 50 100

SCALE IN FEET

EARTH TECH

FIGURE 3.1-2

AFP 59
VOC'S DETECTED IN GROUNDWATER
NOVEMBER 2000

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	3 of 4	0.43 F	1.14	SW4
Trichloroethene	3 of 4	0.9 M	15.2 M	SW4
1,1-Dichloroethene	2 of 4	0.15 M	0.29 M	SW4
Cis-1,2-Dichloroethene	3 of 4	0.22 F	16.06	SW7
1,1-Dichloroethane	2 of 4	3.48 M	15.25 M	SW4
Trichlorofluoromethane	1 of 4	0.91 M	0.91 M	SW4
Tetrachloroethene	2 of 4	0.38 F	0.62 F	SW4
Dichlorodifluoromethane	1 of 4	4.8 M	4.8 M	SW4
Chloroform	1 of 4	0.12 F	0.12 F	SW7
Vinyl Chloride	2 of 4	0.52 M	1.49 M	SW4

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

Qualifiers: F = The analyte was positively identified, but the associated numerical value is below the reporting limit.
M = A matrix effect was present.

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

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]	2 of 3	15.87	16.85	DW3
Toluene [2]	2 of 3	0.18 M	0.18 M	DW3

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

Qualifiers: F = The analyte was positively identified, but the associated numerical value is below the reporting limit.

(1) cis-1,2-Dichloroethene was only detected at monitoring well DW3; the maximum concentration was detected in the normal sample.

(2) Toluene was only detected at monitoring well DW3; the same concentration was detected in the normal and the duplicate sample.

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

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.

One chlorinated hydrocarbon (cis-1,2-DCE) and one petroleum hydrocarbon (toluene) was detected in the samples collected from the deep zone of the aquifer. The following VOCs were detected in the normal and duplicate groundwater samples, respectively, collected from monitoring well DW3: cis-1,2-DCE at 16.85 µg/L and 15.87 µg/L; toluene at 0.18 µg/L (in both the normal and duplicate samples). 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 2000 sampling event, concentrations of the chlorinated hydrocarbons in monitoring wells SW1 (no VOCs were detected) and SW3 remained relatively constant compared to the previous sampling event. Concentrations of chlorinated hydrocarbons increased slightly in the groundwater samples collected from SW4 and SW7. In the groundwater samples collected from the deep monitoring wells during the November 2000 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]	–	–	–	–	–	–
DW1	Jan. 1992[2]	0.6	–	–	–	–	–
	Dec. 1994[3]	–	–	–	–	1.8 (c)	–
	Nov. 1999[3]	–	–	–	–	–	–
	May 2000[3]	–	–	–	–	–	–
	Nov. 2000[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)	–
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	–
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
	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

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
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

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 2000 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 2000 sampling event are similar to the VOCs that have been detected during previous investigations. Chlorinated hydrocarbons were the primary VOCs detected in site groundwater, with TCE, 1,1,1-TCA, 1,1-DCA, cis-1,2-DCE, 1,1-DCE, and vinyl chloride being the most commonly detected. No VOCs were detected in background monitoring wells SW1 and 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 2000, the highest concentrations of VOCs were again detected at SW4 and SW7, and concentrations at SW4 and SW7 increased slightly compared to the previous sampling event. The following detections were above New York State drinking water standards: TCE (15.2 M µg/L), cis-1,2-DCE (11.18 µg/L), and 1,1-DCA (15.25 M µg/L) in SW4; and cis-1,2-DCE (16.06 µg/L) in SW7. No other detections from the November 2000 sampling event exceeded New York State drinking water standards.

Three 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 chlorinated hydrocarbon detected in the groundwater sample collected from deep monitoring well DW3 was cis-1,2-DCE (16.85 µg/L in the normal sample and 15.87 µg/L in the duplicate sample). Although the 16.85 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.

No VOCs were detected in background monitoring wells SW1 and DW1.

A trend analysis of chlorinated hydrocarbon levels over time at AFP 59 is presented in Section 3.1.4. Despite a slight increase in concentrations of selected chlorinated hydrocarbons at SW4 and SW7 relative to the May 2000 sampling event, historic data indicate that levels of chorinated 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.*

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APPENDIX B. FIELD DATA

GROUNDWATER PURGING AND SAMPLING RECORD

Date: 11/14/00 Well ID: DW1 Sample Number: 59DW1W61 Recorded By: BV, GC

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

Project Number: 41012.06.05

EQUIPMENT

pH/Conductivity/Temperature Meter #: Horiba U10 Purging Equipment: Grundfos Ready Flo

PID #: NA Sampling Equipment: Disposable Bailer

Electric Sounder #: WDC 311

WELL DATA

Elevation: Water Column in Well: 47.32' Total Vol. Extr.: 207.99

Well Diameter: 4" Borehole Diameter: 6" Ambient PID: NA

Well Depth: 62.52' Water Column in Borehole: 47.32' Well Mouth PID: NA

Depth to Well Water: 18.2' Standing Water Vol.: 69.33

Ground Condition of Well: OK

Remarks:

		PURGING				SAMPLING	
		1	2	3	4	x5	x6
Time	0920	0925	0930	0935	0940	0945	0950
Rate	2.5	3.0	3.0	3.0	3.0	3.0	3.0
Temperature	11.9	12.2	12.2	12.2	12.2	12.3	12.3
pH	7.27	7.21	7.23	7.24	7.21	7.22	7.24
Conductivity	1.62	1.61	1.82	1.60	1.61	1.61	1.60
Vol. Purged	0	15	30	45	65	80	95
Remarks	229	20	10	10	10	10	10

COLLECTED SAMPLES

	1	2	3	4	5	6
Sample Time	1038					
Analytical Param	VOCs (SW8260)					
Volume Required	3 40 mL vials					
Preservation	HCl, 4°C					
Field Filtered	NO					
Time						

0461.FIG

GROUNDWATER PURGING AND SAMPLING RECORD

Date: 11/14/00	Well ID: DW1 (cont.)	Sample Number:	Recorded By:
Project Name:	Well Location:	Duplicate Number:	Checked By:
Project Number:			

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	1000	1010	1020	1028		
Rate	3.0	3.0	3.0	3.0		
Temperature	12.2	12.2	12.2	12.2		
pH	7.23	7.26	7.22	7.23		
Conductivity	1.61	1.61	1.61	1.61		
Vol. Purged	120	150	180	208		
Remarks	10	10	10	10		

COLLECTED SAMPLES

	1	2	3	4	5	6
Sample Time						
Analytical Param						
Volume Required						
Preservation						
Field Filtered						
Time						

0461.FIG

GROUNDWATER PURGING AND SAMPLING RECORD

Date: 11/14/00 Well ID: SW1 Sample Number: 59SW1WG1 Recorded By: BW/GC
Project Name: AFP59 Well Location: AFP59 Duplicate Number: Checked By:
Project Number: 41012.06.05

EQUIPMENT

pH/Conductivity/Temperature Meter #: Horiba U10 Purging Equipment: Grundfos Ready Flo
PID #: NA Sampling Equipment: Disposable Bailer
Electric Sounder #: WDC 311

WELL DATA

Elevation: Water Column in Well: 10.03' Total Vol. Extr.: 78.3
Well Diameter: 2" Borehole Diameter: 8" Ambient PID: NA
Well Depth: 28.33' Water Column in Borehole: 10.03' Well Mouth PID: NA
Depth to Well Water: 18.30' Standing Water Vol.: 26.1

Ground Condition of Well: OK
Remarks:

		PURGING				SAMPLING	
		1	2	3	4	1	2
Time	0818	0823	0829	0834	0839	0844	0846
Rate gal/min	2.25	2.25	2.25	2.25	2.25	2.0	2.0
Temperature	12.8	13.1	13.2	13.3	13.3	13.3	13.3
pH	6.76	7.05	7.08	7.09	7.09	7.13	7.11
Conductivity mS/cm	2.17	2.18	2.17	2.13	2.13	2.13	2.11
Vol. Purged	0	15	30	~~55~~ 40	55	75	80
Remarks	538	10	10	10	10	10	10

COLLECTED SAMPLES

	1	2	3	4	5	6
Sample Time	0852					
Analytical Param	VOCs (SW8260)					
Volume Required	3 40mL vials					
Preservation	HCl, 4°C					
Field Filtered	No					
Time						

0461.FIG

GROUNDWATER PURGING AND SAMPLING RECORD

Date: 11/14/00 Well ID: DW3 Sample Number: 59DW3W61 Recorded By: BW, GC

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

Project Number: 41012.06.05

EQUIPMENT

pH/Conductivity/Temperature Meter #: Horiba U10 Purging Equipment: Grundfos Ready F/o

PID #: NA Sampling Equipment: Disposable Bailer

Electric Sounder #: WDC 311

WELL DATA

Elevation: Water Column in Well: 71.95' Total Vol. Extr.: 316.26

Well Diameter: 4" Borehole Diameter: 6" Ambient PID: NA

Well Depth: 88.0' Water Column in Borehole: 71.95' Well Mouth PID: NA

Depth to Well Water: 16.05 Standing Water Vol.: 105.42

Ground Condition of Well: ok

Remarks:

		PURGING				SAMPLING	
		1	2	3	4	1	2
Time	1255	1310	1325	1415	1430	1445	1500
Rate (gal/min)	2.5	2.25	2.6	2.25	2.6	2.0	2.5
Temperature °C	15.0	13.4	13.5	13.4	13.3	13.2	13.4
pH	11.43	7.46	7.26	7.26	7.24	7.23	7.26
Conductivity uS/cm	1.0	1.36	1.36	1.37	1.37	1.37	1.38
Vol. Purged gal	0	40	80	130	170	200	230
Turb ~~Remarks~~	10	10	10	10	10	10	10

COLLECTED SAMPLES

	1	2	3	4	5	6
Sample Time	1535					
Analytical Param	VOCs (SW8260)					
Volume Required	3 40 ml vials					
Preservation	HCl, 4°C					
Field Filtered	No					
Time						

0461.FIG

GROUNDWATER PURGING AND SAMPLING RECORD

Date: 11/14/00	Well ID: DW3 (cont.)	Sample Number:	Recorded By:
Project Name:	Well Location:	Duplicate Number:	Checked By:
Project Number:			

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	1515	1527				
Rate	2.3	3.3				
Temperature	13.3	13.2				
pH	7.24	7.24				
Conductivity	1.37	1.37				
Vol. Purged	265	315				
Remarks	10	10				

COLLECTED SAMPLES

	1	2	3	4	5	6
Sample Time						
Analytical Param						
Volume Required						
Preservation						
Field Filtered						
Time						

0461.FIG

GROUNDWATER PURGING AND SAMPLING RECORD

Date: 11/14/00 Well ID: SW3 Sample Number: 5953W311 Recorded By: BV, GC

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

Project Number: 41012.06.05

EQUIPMENT

pH/Conductivity/Temperature Meter #: Horiba U10 Purging Equipment: Grundfos Ready Flo

PID #: NA Sampling Equipment: Disposalle Bailer

Electric Sounder #: WDC311

WELL DATA

Elevation: Water Column in Well: 11.86 Total Vol. Extr.: 92.6

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

Well Depth: 30.81' Water Column in Borehole: 11.86 Well Mouth PID: NA

Depth to Well Water: 18.95' Standing Water Vol.: 30.88

Ground Condition of Well: OK

Remarks:

	PURGING					SAMPLING	
		1	2	3	4	x5	x6
Time	1145	1200	1205	1210	1215	1220	1225
Rate gal/min	2.0	2.0	2.0	3.25	4.0	4.0	3.0
Temperature °C	14.8	15.1	16.2	15.9	16.1	16.2	16.3
pH	7.25	7.21	7.18	7.10	7.11	7.10	7.11
Conductivity	1.32	1.34	1.32	1.37	1.36	1.37	1.37
Vol. Purged	0	5	15	30	50	70	85
Remarks	NA	999	480	10	10	10	10

	7
	1228
	3.0
	16.3
	7.12
	1.37
	92
	10

COLLECTED SAMPLES

	1	2	3	4	5	6
Sample Time	1232					
Analytical Param	VOCs (SW8260)					
Volume Required	3 40ml vials					
Preservation	ACL, 4°C					
Field Filtered	NO					
Time						

0461.F10

GROUNDWATER PURGING AND SAMPLING RECORD

Date: 11/15/00 Well ID: SW4 Sample Number: 595W4W61 Recorded By: BGW, GC
Project Name: AFP 59 Well Location: AFP 59 Duplicate Number: 595W4W61 DUP Checked By:
Project Number: 41012.0.605

EQUIPMENT

pH/Conductivity/Temperature Meter #: Horiba U10 Purging Equipment: Grundfos Ready Flo
PID #: NA Sampling Equipment: Disposable Bailer
Electric Sounder #: WDC 311

WELL DATA

Elevation: Water Column in Well: 15.85 Total Vol. Extr.: 124 gal.
Well Diameter: 2" Borehole Diameter: 8" Ambient PID: NA
Well Depth: 27.7' Water Column in Borehole: 15.85 Well Mouth PID: NA
Depth to Well Water: 13.15' Standing Water Vol.: 41.28

Ground Condition of Well: OK
Remarks:

		PURGING				SAMPLING	
		1	2	3	4	#5	#6
Time	0800	0805	0810	0830	0855	0925	1003
Rate gal/min	2.0	1.0	1.0	1.0	1.0	1.0	0.5
Temperature °C	11.8	15.4°	16.10	15.5	16.2	16.4	16.5°
pH	7.04	7.11	7.18	7.17	7.14	7.12	7.09
Conductivity mS/cm	0.797	0.904	0.904	0.918	0.895	0.891	0.91
Vol. Purged	0	5	10	20	35	45	70
Turb (NTU) Remarks	915	585	10	10	5	10	10

COLLECTED SAMPLES

	1	2	3	4	5	6
Sample Time	1205					
Analytical Param	VOCs (SW8260)					
Volume Required	3 40 ml vials					
Preservation	HCL, 4°C					
Field Filtered	No					
Time						

0461.FIG

GROUNDWATER PURGING AND SAMPLING RECORD

Date: 11/15/00	Well ID: SW4 (cont.)	Sample Number:	Recorded By:
Project Name:	Well Location:	Duplicate Number:	Checked By:
Project Number:			

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	
	7	8	3	4	1	2
Time	1035	1135				
Rate	0.6	0.5				
Temperature	16.9	16.7				
pH	7.23	7.21				
Conductivity	0.92	0.95				
Vol. Purged	90	125				
Remarks	10	10				

COLLECTED SAMPLES

	1	2	3	4	5	6
Sample Time	1205					
Analytical Param	VOCs (SW8260)					
Volume Required	3 40mL vials					
Preservation	HCL, 4°C					
Field Filtered	No					
Time						

0461.FIG

GROUNDWATER PURGING AND SAMPLING RECORD

Date: 11/14/00 Well ID: SW7 Sample Number: 59SW7W61 Recorded By: BW, GC

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

Project Number: 41012.06.05

EQUIPMENT

pH/Conductivity/Temperature Meter #: Horiba U10 Purging Equipment: Grundfos Ready Flo

PID #: NA Sampling Equipment: Disposable Bailer

Electric Sounder #: WDC 311

WELL DATA

Elevation: Water Column in Well: 6.95 Total Vol. Extr.: 54.3

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

Well Depth: 26.5' Water Column in Borehole: 6.95 Well Mouth PID: NA

Depth to Well Water: 19.55 Standing Water Vol.: 18.1

Ground Condition of Well: OK

Remarks:

		PURGING				SAMPLING	
		1	2	3	4	1	2
Time	1610	1615	1620	1623			
Rate (gal/min)	2.5	4.0	4.0	4.0			
Temperature °C	14.9	16.4	16.9	16.8			
pH	7.37	7.23	7.25	7.25			
Conductivity mS/cm	1.12	1.12	1.12	1.17			
Vol. Purged (gal)	0	20	40	55			
Turb (NTU) ~~Remarks~~	999	10	10	10			

COLLECTED SAMPLES

	1	2	3	4	5	6
Sample Time	1636					
Analytical Param	VOCs (SW8260)					
Volume Required	3 40mL vials					
Preservation	HCL, 4°C					
Field Filtered	No					
Time						

0461.FIG

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 Tyco INTERNATIONAL LTD. COMPANY

PAGE ___ OF ___

Laboratory	Project Name	Chain of Custody No.
O'Brien & Gere Lab	AFP59-41012-0605	No 0029
Address	**Point of Contact / Phone No.**	
5000 Brittonfield Parkway	Dave Parse 703-706-0508	
City / **State** / **Zip Code**	**Site Contact / Phone No.**	Comment
East Syracuse / NY / 13057	Brandon Watts 703-706-9401	

ERPIMS Information					Other Sample Information						Analysis
LOCID	SBD	SED	SACODE	SAMPNO	Sample I.D.	Date	Time	Matrix	No. of Con.	Cooler No.	VOCs (SW626B)
SW1	0	0	N	1	59SW1WG1	11/14/00	0852	WG	3	1	X
DW1	0	0	N	1	59DW1WG1	11/14/00	1038	WG	3	1	X
SW3	0	0	N	1	59SW3WG1	11/14/00	1232	WG	3	1	X
DW2	0	0	N	1	59DW2WG1	11/14/00	1535	WG	3	1	X
DW3	0	0	~~FD~~ N	1	59DW3WG1DUP	11/14/00	1535	WG	3	1	X
SW7	0	0	N	1	~~59DW~~ 59SW7WG1 (BGW)	11/14/00	1636	WG	3	1	X
Field QC	0	0	TB	1	TB111500	11/15/00	1200	WG	3	1	X
SW4	0	0	N	1	59SW4WG1	11/15/00	1205	WG	3	1	X
SW4	0	0	~~MS~~ N	1	59SW4WG1MS	11/15/00	1205	WG	3	1	X
SW4	0	0	MD (BGW)	1	59SW4WG1MSD	11/15/00	1205	WG	3	1	X
Field QC	0	0	AB	1	AB111500	11/15/00	1208	WG	3	1	X
					BGW 11/15/00						

	Relinquished By / Company	Date	Time	Received By / Company	Date	Time
1.	Brandon Watts / Earth Tech	11/15/00	1340	1.		
2.				2.		
3.				3.		
4.				4.		
5.				5.		

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, Johnson City, NY
Contract F41624-97-D-8018, Delivery Order 0072

Volatile Organic Compounds Analysis by Method SW8260B

This data quality review pertains to groundwater samples collected on November 14-15, 2000 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 (VOCs) 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
59SW1WG1	R6009
59DW1WG1	R6010
59SW3WG1	R6011
59DW3WG1	R6012
59DW3WG9	R6013

Field Sample ID	Lab Sample ID
59SW7WG1	R6014
TB111500	R6015
59SW4WG1	R6016
59SW4WG1MS	R6016MS
59SW4WG1MSD	R6016MSD

During the data quality review process, laboratory 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 and trip blanks), matrix spike/matrix spike duplicates (MS/MSD), surrogate recoveries, and field duplicates. Changes to the data are reflected on the Form Is in Attachment 1. Chain-of-custody forms are provided in Attachment 2.

Table DQR-2: AFCEE Data Qualifiers

Qualifier	Description
R	The data are unusable due to deficiencies in the ability to analyze the sample and meet quality control criteria.
M	A matrix effect was present.
F	The analyte was positively identified, but the associated numerical value is below the reporting limit (RL).
U	The analyte was analyzed for, but not detected. The associated numerical value is at or below the method detection limit (MDL).

Holding Times

All of the groundwater samples were analyzed for VOCs 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, 1.0, 2.0, 10, 20, and 40 micrograms per liter (µg/L).

Continuing calibration verifications were performed at the required frequency and response factors (RFs) for target analytes were within 20 percent of the expected value except for carbon tetrachloride and 1,2-dibromoethane. Results for these analytes were qualified **R.** No further qualification of the data was necessary.

Blanks

Two preparation blanks (PB112800W1 and PB112400W2) were analyzed. No analytes were detected; therefore, qualification was not considered necessary.

One trip blank was collected and analyzed for VOCs. No constituents were detected above the MDL in the trip blank sample. One ambient blank sample was collected but was not analyzed due to vial mislabeling at the laboratory. The vials were inadvertently mislabeled as R6016MSD's and spiked for analysis and no additional sample was available.

Matrix Spike/Matrix Spike Duplicate

Sample 59SW4WG1 served as the MS/MSD sample for this sample delivery group. With the following exceptions, constituent recoveries were within quality control limits. Detections for m+p xylene, 1,1,2,2-tetrachloroethane, 1,1-dichloroethane, 1,1-dichloroethene, 1,1-dichloropropene, 1,2,3-trichlorobenzene, 1,2,3-trichloropropane, 1,2,4-trichlorobenzene, 1,2,4-trimethylbenzene, 1,2-dibromo-3-chloropropane, 1,2-dichloropropane, 1,3,5-trimethylbenzene, 1-chlorohexane, 4-chlorotoluene, benzene, chloroethane, chloromethane, dichlorodifluoromethane, ethylbenzene, isopropylbenzene, n-butylbenzene, n-propylbenzene, o-

xylene, p-isoropropyltoluene, sec-butylbenzene, styrene, toluene, trans-1,2-dichloroethene, trichloroethene, trichlorfluoromethane, vinyl chloride, and total xylene were qualified **M**. The MSD sample was analyzed outside holding time due to O'Brien & Gere mislabeling vials. Therefore, the relative percent difference (RPD) precision may have been affected. No further qualification of the data was necessary.

Laboratory Control Sample

The compound 2,2-dichloropropane did not meet laboratory control sample recovery criteria. Therefore, 2,2-dichloropropane results were qualified **R** for all the samples.

Surrogate Recovery

Four surrogates were used for the monitoring of volatile organic compounds. All surrogate recoveries met the corresponding QC criteria.

Field Duplicates

A field duplicate was collected for sample 59DW3WG1. Only cis-1,2-dichloroethene and toluene were detected. A comparison of field sample and duplicate is presented in Table DQR-3. No qualification was necessary.

Table DQR-3: O'Brien & Gere Field Duplicate Comparison (µg/L)

Analyte	Reporting Limit (RL)	59DW3WG1	59DW3WG9	Relative Percent Difference (RPD)
cis-1,2-Dichloroethene	1.2	16.85	15.87	6.0%
Toluene	1.1	0.18M	0.18M	0.0%

Summary

The data completeness is 97%. There was not 100% completeness as a result of rejected 1,2-dibromoethane, carbon tetrachloride, and 2,2-dichloropropane data points. All of the other data points for the volatile analysis of groundwater samples are useable with the appropriate qualifiers.

Table DQR-4
Summary of Detected Chemicals at Former Air Force Plant 59
Ground Water Sampling - November 2000 Event

Location ID Date Sampled	SW1 11/14/00	DW1 11/14/00	SW3 11/14/00	DW3 11/14/00	DW3 (DUP) 11/14/00	SW4 11/15/00	SW7 11/14/00
Analyte	**Volatiles by EPA SW-846 Method 8260 (ug/L)**						
1,1,1-Trichloroethane	0.8 U	0.8 U	**0.43 F**	0.8 U	0.8 U	**1.14**	**0.91**
1,1-Dichloroethane	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	**15.25 M**	**3.48 M**
1,1-Dichloroethene	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	**0.29 M**	**0.15 M**
Chloroform	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	**0.12 F**
cis-1,2-Dichloroethene	1.2 U	1.2 U	**0.22 F**	**16.85**	**15.87**	**11.18**	**16.06**
Dichlorodifluoromethane	1 U	1 U	1 U	1 U	1 U	**4.8 M**	1 U
Tetrachloroethene	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	**0.62 F**	**0.38 F**
Toluene	1.1 U	1.1 U	1.1 U	**0.18 M**	**0.18 M**	1.1 U	1.1 U
Trichloroethene	1 U	1 U	**0.9 M**	1 U	1 U	**15.2 M**	**3.8 M**
Trichlorofluoromethane	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	**0.91 M**	0.8 U
Vinyl chloride	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	**1.49 M**	**0.52 M**

Key:
- F = The analyte was positively identified, but the associated numerical value is below the reporting limit (RL).
- U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the method detection limit (MDL).
- DUP = Duplicate sample taken in the field.
- M = A matrix effect was present.

Notes: Bolded values indicate the analyte was detected above the associated MDL.

Attachment 1
Form Is

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 112400W4

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0072

Field Sample ID: SW1 (WG1) Lab Sample ID: R6009 Matrix:Water

%Solids: Initial Calibration ID: GN21AF30.M

Date Received: 11/16/00 Date Prepared:11/24/00 Date Analyzed:11/24/00

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

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
(m+p)-Xylene	.024	.6	.024	1		U
1,1,1,2-Tetrachloroethane	.051	.5	.051	1		U
1,1,1-Trichloroethane	.049	.8	.049	1		U
1,1,2,2-Tetrachloroethane	.052	.5	.052	1		U
1,1,2-Trichloroethane	.08	1.	.08	1		U
1,1-Dichloroethane	.054	.4	.054	1		U
1,1-Dichloroethene	.144	1.2	.144	1		U
1,1-Dichloropropene	.07	1.	.07	1		U
1,2,3-Trichlorobenzene	.063	.3	.063	1		U
1,2,3-Trichloropropane	.075	3.2	.075	1		U
1,2,4-Trichlorobenzene	.062	.4	.062	1		U
1,2,4-Trimethylbenzene	.014	1.3	.014	1		U
1,2-Dibromo-3-chloropropane	.33	2.6	.33	1		U
1,2-Dibromoethane	.068	.6	.068	1		R
1,2-Dichlorobenzene	.028	.3	.028	1		U
1,2-Dichloroethane	.067	.6	.067	1		U
1,2-Dichloropropane	.067	.4	.067	1		U
1,3,5-Trimethylbenzene	.018	.5	.018	1		U
1,3-Dichlorobenzene	.048	1.2	.048	1		U
1,3-Dichloropropane	.05	.4	.05	1		U
1,4-Dichlorobenzene	.023	.3	.023	1		U
1-Chlorohexane	.066	.5	.066	1		U
2,2-Dichloropropane	.026	3.5	.026	1		R
2-Chlorotoluene	.019	.4	.019	1		U
4-Chlorotoluene	.015	.6	.015	1		U
Benzene	.032	.4	.032	1		U
Bromobenzene	.091	.3	.091	1		U
Bromochloromethane	.114	.4	.114	1		U
Bromodichloromethane	.025	.8	.025	1		U
Bromoform	.108	1.2	.108	1		U
Bromomethane	.059	1.1	.059	1		U

Comments:

AFCEE FORM O-2

DS 1/15/01

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ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 112400W4

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0072

Field Sample ID: SW1 (WG1) Lab Sample ID: R6009 Matrix:Water

%Solids: Initial Calibration ID: G021AF30.M

Date Received: 11/16/00 Date Prepared:11/24/00 Date Analyzed:11/24/00

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

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
Carbon tetrachloride	.06	2.1	.06	1		R
Chlorobenzene	.014	.4	.014	1		U
Chloroethane	.07	1.	.07	1		U
Chloroform	.061	.3	.061	1		U
Chloromethane	.073	1.3	.073	1		U
cis-1,2-Dichloroethene	.145	1.2	.145	1		U
cis-1,3-Dichloropropene	.05	1.	.05	1		U
Dibromochloromethane	.049	.5	.049	1		U
Dibromomethane	.036	2.4	.036	1		U
Dichlorodifluoromethane	.06	1.	.06	1		U
Ethylbenzene	.015	.6	.015	1		U
Hexachlorobutadiene	.102	1.1	.102	1		U
Isopropylbenzene	.014	.5	.014	1		U
Methylene chloride	.06	2.	.06	1		U
n-Butylbenzene	.037	1.1	.037	1		U
n-Propylbenzene	.018	.4	.018	1		U
Naphthalene	.05	1.	.05	1		U
o-Xylene	.013	1.1	.013	1		U
p-Isopropyltoluene	.029	1.2	.029	1		U
sec-Butylbenzene	.026	1.3	.026	1		U
Styrene	.011	.5	.011	1		U
tert-Butylbenzene	.024	1.4	.024	1		U
Tetrachloroethene	.087	1.4	.087	1		U
Toluene	.017	1.1	.017	1		U
trans-1,2-Dichloroethene	.14	.6	.14	1		U
trans-1,3-Dichloropropene	.06	1.	.06	1		U
Trichloroethene	.06	1.	.06	1		U
Trichlorofluoromethane	.018	.8	.018	1		U
Vinyl chloride	.019	1.1	.019	1		U
Xylene (total)	.024	1.1	.024	1		U

Comments:

AFCEE FORM O-2

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ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 112400W4

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0072

Field Sample ID: SW1 (WG1) Lab Sample ID: R6009 Matrix:Water

%Solids: Initial Calibration ID: 6N21AF30.11

Date Received: 11/16/00 Date Prepared:11/24/00 Date Analyzed:11/24/00

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

Surrogate	Recovery	Control Limits	Qualifier
1,2-Dichloroethane-d4 (surrogate)	93	62-139	
Bromofluorobenzene (surrogate)	105	75-125	
Dibromofluoromethane (surrogate)	101	75-125	
Toluene-d8 (surrogate)	102	75-125	

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

Comments:

AFCEE FORM O-2

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ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 112400W4

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0072

Field Sample ID: DW1 (WG1) Lab Sample ID: R6010 Matrix:Water

%Solids: Initial Calibration ID: GN2WAF30.M

Date Received: 11/16/00 Date Prepared:11/24/00 Date Analyzed:11/24/00

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

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
(m+p)-Xylene	.024	.6	.024	1		U
1,1,1,2-Tetrachloroethane	.051	.5	.051	1		U
1,1,1-Trichloroethane	.049	.8	.049	1		U
1,1,2,2-Tetrachloroethane	.052	.5	.052	1		U
1,1,2-Trichloroethane	.08	1.	.08	1		U
1,1-Dichloroethane	.054	.4	.054	1		U
1,1-Dichloroethene	.144	1.2	.144	1		U
1,1-Dichloropropene	.07	1.	.07	1		U
1,2,3-Trichlorobenzene	.063	.3	.063	1		U
1,2,3-Trichloropropane	.075	3.2	.075	1		U
1,2,4-Trichlorobenzene	.062	.4	.062	1		U
1,2,4-Trimethylbenzene	.014	1.3	.014	1		U
1,2-Dibromo-3-chloropropane	.33	2.6	.33	1		U
1,2-Dibromoethane	.068	.6	.068	1		R
1,2-Dichlorobenzene	.028	.3	.028	1		U
1,2-Dichloroethane	.067	.6	.067	1		U
1,2-Dichloropropane	.067	.4	.067	1		U
1,3,5-Trimethylbenzene	.018	.5	.018	1		U
1,3-Dichlorobenzene	.048	1.2	.048	1		U
1,3-Dichloropropane	.05	.4	.05	1		U
1,4-Dichlorobenzene	.023	.3	.023	1		U
1-Chlorohexane	.066	.5	.066	1		U
2,2-Dichloropropane	.026	3.5	.026	1		R
2-Chlorotoluene	.019	.4	.019	1		U
4-Chlorotoluene	.015	.6	.015	1		U
Benzene	.032	.4	.032	1		U
Bromobenzene	.091	.3	.091	1		U
Bromochloromethane	.114	.4	.114	1		U
Bromodichloromethane	.025	.8	.025	1		U
Bromoform	.108	1.2	.108	1		U
Bromomethane	.059	1.1	.059	1		U

Comments:

AFCEE FORM O-2

DS 11/30/01

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 112400W4

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0072

Field Sample ID: DW1 (WG1) Lab Sample ID: R6010 Matrix:Water

%Solids: Initial Calibration ID: GN21AF30.M

Date Received: 11/16/00 Date Prepared:11/24/00 Date Analyzed:11/24/00

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

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
Carbon tetrachloride	.06	2.1	.06	1		R
Chlorobenzene	.014	.4	.014	1		U
Chloroethane	.07	1.	.07	1		U
Chloroform	.061	.3	.061	1		U
Chloromethane	.073	1.3	.073	1		U
cis-1,2-Dichloroethene	.145	1.2	.145	1		U
cis-1,3-Dichloropropene	.05	1.	.05	1		U
Dibromochloromethane	.049	.5	.049	1		U
Dibromomethane	.036	2.4	.036	1		U
Dichlorodifluoromethane	.06	1.	.06	1		U
Ethylbenzene	.015	.6	.015	1		U
Hexachlorobutadiene	.102	1.1	.102	1		U
Isopropylbenzene	.014	.5	.014	1		U
Methylene chloride	.06	2.	.06	1		U
n-Butylbenzene	.037	1.1	.037	1		U
n-Propylbenzene	.018	.4	.018	1		U
Naphthalene	.05	1.	.05	1		U
o-Xylene	.013	1.1	.013	1		U
p-Isopropyltoluene	.029	1.2	.029	1		U
sec-Butylbenzene	.026	1.3	.026	1		U
Styrene	.011	.5	.011	1		U
tert-Butylbenzene	.024	1.4	.024	1		U
Tetrachloroethene	.087	1.4	.087	1		U
Toluene	.017	1.1	.017	1		U
trans-1,2-Dichloroethene	.14	.6	.14	1		U
trans-1,3-Dichloropropene	.06	1.	.06	1		U
Trichloroethene	.06	1.	.06	1		U
Trichlorofluoromethane	.018	.8	.018	1		U
Vinyl chloride	.019	1.1	.019	1		U
Xylene (total)	.024	1.1	.024	1		U

Comments:

AFCEE FORM O-2

D3 11/30/01

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 112400W4

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0072

Field Sample ID: DW1 (WG1) Lab Sample ID: R6010 Matrix:Water

%Solids: Initial Calibration ID: GN21AF30.M

Date Received: 11/16/00 Date Prepared:11/24/00 Date Analyzed:11/24/00

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

Surrogate	Recovery	Control Limits	Qualifier
1,2-Dichloroethane-d4 (surrogate)	98	62-139	
Bromofluorobenzene (surrogate)	109	75-125	
Dibromofluoromethane (surrogate)	103	75-125	
Toluene-d8 (surrogate)	103	75-125	

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

Comments:

AFCEE FORM O-2

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11/30/01

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 112400W4

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0072

Field Sample ID: SW3 (WG1) Lab Sample ID: R6011 Matrix:Water

%Solids: Initial Calibration ID: G1021AF30.M

Date Received: 11/16/00 Date Prepared:11/24/00 Date Analyzed:11/24/00

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

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
(m+p)-Xylene	.024	.6	.024	1		U
1,1,1,2-Tetrachloroethane	.051	.5	.051	1		U
1,1,1-Trichloroethane	.049	.8	.43	1		F
1,1,2,2-Tetrachloroethane	.052	.5	.052	1		U
1,1,2-Trichloroethane	.08	1.	.08	1		U
1,1-Dichloroethane	.054	.4	.054	1		U
1,1-Dichloroethene	.144	1.2	.144	1		U
1,1-Dichloropropene	.07	1.	.07	1		U
1,2,3-Trichlorobenzene	.063	.3	.063	1		U
1,2,3-Trichloropropane	.075	3.2	.075	1		U
1,2,4-Trichlorobenzene	.062	.4	.062	1		U
1,2,4-Trimethylbenzene	.014	1.3	.014	1		U
1,2-Dibromo-3-chloropropane	.33	2.6	.33	1		U
1,2-Dibromoethane	.068	.6	.068	1		R
1,2-Dichlorobenzene	.028	.3	.028	1		U
1,2-Dichloroethane	.067	.6	.067	1		U
1,2-Dichloropropane	.067	.4	.067	1		U
1,3,5-Trimethylbenzene	.018	.5	.018	1		U
1,3-Dichlorobenzene	.048	1.2	.048	1		U
1,3-Dichloropropane	.05	.4	.05	1		U
1,4-Dichlorobenzene	.023	.3	.023	1		U
1-Chlorohexane	.066	.5	.066	1		U
2,2-Dichloropropane	.026	3.5	.026	1		R
2-Chlorotoluene	.019	.4	.019	1		U
4-Chlorotoluene	.015	.6	.015	1		U
Benzene	.032	.4	.032	1		U
Bromobenzene	.091	.3	.091	1		U
Bromochloromethane	.114	.4	.114	1		U
Bromodichloromethane	.025	.8	.025	1		U
Bromoform	.108	1.2	.108	1		U
Bromomethane	.059	1.1	.059	1		U

Comments:

AFCEE FORM O-2

DB 1/15/01

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 112400W4

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0072

Field Sample ID: SW3 (WG1) Lab Sample ID: R6011 Matrix:Water

%Solids: Initial Calibration ID: GW214F30.M

Date Received: 11/16/00 Date Prepared:11/24/00 Date Analyzed:11/24/00

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

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
Carbon tetrachloride	.06	2.1	.06	1		R
Chlorobenzene	.014	.4	.014	1		U
Chloroethane	.07	1.	.07	1		U
Chloroform	.061	.3	.061	1		U
Chloromethane	.073	1.3	.073	1		U
cis-1,2-Dichloroethene	.145	1.2	.22	1		F
cis-1,3-Dichloropropene	.05	1.	.05	1		U
Dibromochloromethane	.049	.5	.049	1		U
Dibromomethane	.036	2.4	.036	1		U
Dichlorodifluoromethane	.06	1.	.06	1		U
Ethylbenzene	.015	.6	.015	1		U
Hexachlorobutadiene	.102	1.1	.102	1		U
Isopropylbenzene	.014	.5	.014	1		U
Methylene chloride	.06	2.	.06	1		U
n-Butylbenzene	.037	1.1	.037	1		U
n-Propylbenzene	.018	.4	.018	1		U
Naphthalene	.05	1.	.05	1		U
o-Xylene	.013	1.1	.013	1		U
p-Isopropyltoluene	.029	1.2	.029	1		U
sec-Butylbenzene	.026	1.3	.026	1		U
Styrene	.011	.5	.011	1		U
tert-Butylbenzene	.024	1.4	.024	1		U
Tetrachloroethene	.087	1.4	.087	1		U
Toluene	.017	1.1	.017	1		U
trans-1,2-Dichloroethene	.14	.6	.14	1		U
trans-1,3-Dichloropropene	.06	1.	.06	1		U
Trichloroethene	.06	1.	.9	1		FM
Trichlorofluoromethane	.018	.8	.018	1		U
Vinyl chloride	.019	1.1	.019	1		U
Xylene (total)	.024	1.1	.024	1		U

Comments:

AFCEE FORM O-2

11/15/01

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 112400W4

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0072

Field Sample ID: SW3 (WG1) Lab Sample ID: R6011 Matrix:Water

%Solids: Initial Calibration ID: GN21AF30.M

Date Received: 11/16/00 Date Prepared:11/24/00 Date Analyzed:11/24/00

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

Surrogate	Recovery	Control Limits	Qualifier
1,2-Dichloroethane-d4 (surrogate)	91	62-139	
Bromofluorobenzene (surrogate)	110	75-125	
Dibromofluoromethane (surrogate)	99	75-125	
Toluene-d8 (surrogate)	104	75-125	

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

Comments:

AFCEE FORM O-2

DO 11/30/1

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 112400W4

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0072

Field Sample ID: DW3 (WG1) Lab Sample ID: R6012 Matrix:Water

%Solids: Initial Calibration ID: GN21AF30.M

Date Received: 11/16/00 Date Prepared:11/24/00 Date Analyzed:11/24/00

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

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
(m+p)-Xylene	.024	.6	.024	1		U
1,1,1,2-Tetrachloroethane	.051	.5	.051	1		U
1,1,1-Trichloroethane	.049	.8	.049	1		U
1,1,2,2-Tetrachloroethane	.052	.5	.052	1		U
1,1,2-Trichloroethane	.08	1.	.08	1		U
1,1-Dichloroethane	.054	.4	.054	1		U
1,1-Dichloroethene	.144	1.2	.144	1		U
1,1-Dichloropropene	.07	1.	.07	1		U
1,2,3-Trichlorobenzene	.063	.3	.063	1		U
1,2,3-Trichloropropane	.075	3.2	.075	1		U
1,2,4-Trichlorobenzene	.062	.4	.062	1		U
1,2,4-Trimethylbenzene	.014	1.3	.014	1		U
1,2-Dibromo-3-chloropropane	.33	2.6	.33	1		U
1,2-Dibromoethane	.068	.6	.068	1		R
1,2-Dichlorobenzene	.028	.3	.028	1		U
1,2-Dichloroethane	.067	.6	.067	1		U
1,2-Dichloropropane	.067	.4	.067	1		U
1,3,5-Trimethylbenzene	.018	.5	.018	1		U
1,3-Dichlorobenzene	.048	1.2	.048	1		U
1,3-Dichloropropane	.05	.4	.05	1		U
1,4-Dichlorobenzene	.023	.3	.023	1		U
1-Chlorohexane	.066	.5	.066	1		U
2,2-Dichloropropane	.026	3.5	.026	1		R
2-Chlorotoluene	.019	.4	.019	1		U
4-Chlorotoluene	.015	.6	.015	1		U
Benzene	.032	.4	.032	1		U
Bromobenzene	.091	.3	.091	1		U
Bromochloromethane	.114	.4	.114	1		U
Bromodichloromethane	.025	.8	.025	1		U
Bromoform	.108	1.2	.108	1		U
Bromomethane	.059	1.1	.059	1		U

Comments:

AFCEE FORM O-2

P3
11/30/

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 112400W4

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0072

Field Sample ID: DW3 (WG1) Lab Sample ID: R6012 Matrix:Water

%Solids: Initial Calibration ID: GN21AF30.M

Date Received: 11/16/00 Date Prepared:11/24/00 Date Analyzed:11/24/00

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

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
Carbon tetrachloride	.06	2.1	.06	1		R
Chlorobenzene	.014	.4	.014	1		U
Chloroethane	.07	1.	.07	1		U
Chloroform	.061	.3	.061	1		U
Chloromethane	.073	1.3	.073	1		U
cis-1,2-Dichloroethene	.145	1.2	16.85	1		
cis-1,3-Dichloropropene	.05	1.	.05	1		U
Dibromochloromethane	.049	.5	.049	1		U
Dibromomethane	.036	2.4	.036	1		U
Dichlorodifluoromethane	.06	1.	.06	1		U
Ethylbenzene	.015	.6	.015	1		U
Hexachlorobutadiene	.102	1.1	.102	1		U
Isopropylbenzene	.014	.5	.014	1		U
Methylene chloride	.06	2.	.06	1		U
n-Butylbenzene	.037	1.1	.037	1		U
n-Propylbenzene	.018	.4	.018	1		U
Naphthalene	.05	1.	.05	1		U
o-Xylene	.013	1.1	.013	1		U
p-Isopropyltoluene	.029	1.2	.029	1		U
sec-Butylbenzene	.026	1.3	.026	1		U
Styrene	.011	.5	.011	1		U
tert-Butylbenzene	.024	1.4	.024	1		U
Tetrachloroethene	.087	1.4	.087	1		U
Toluene	.017	1.1	.18	1		J M
trans-1,2-Dichloroethene	.14	.6	.14	1		U
trans-1,3-Dichloropropene	.06	1.	.06	1		U
Trichloroethene	.06	1.	.06	1		U
Trichlorofluoromethane	.018	.8	.018	1		U
Vinyl chloride	.019	1.1	.019	1		U
Xylene (total)	.024	1.1	.024	1		U

Comments:

AFCEE FORM O-2

DB 1/15/01

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 112400W4

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0072

Field Sample ID: DW3 (WG1) Lab Sample ID: R6012 Matrix:Water

%Solids: Initial Calibration ID: 6N21AF30.M

Date Received: 11/16/00 Date Prepared:11/24/00 Date Analyzed:11/24/00

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

Surrogate	Recovery	Control Limits	Qualifier
1,2-Dichloroethane-d4 (surrogate)	96	62-139	
Bromofluorobenzene (surrogate)	107	75-125	
Dibromofluoromethane (surrogate)	100	75-125	
Toluene-d8 (surrogate)	105	75-125	

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

Comments:

AFCEE FORM O-2

D3
11/5/01

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 112400W4

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0072

Field Sample ID: DW3 (Dup) Lab Sample ID: R6013 Matrix:Water

%Solids: Initial Calibration ID: GN21AF30.M

Date Received: 11/16/00 Date Prepared:11/24/00 Date Analyzed:11/24/00

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

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
(m+p)-Xylene	.024	.6	.024	1		U
1,1,1,2-Tetrachloroethane	.051	.5	.051	1		U
1,1,1-Trichloroethane	.049	.8	.049	1		U
1,1,2,2-Tetrachloroethane	.052	.5	.052	1		U
1,1,2-Trichloroethane	.08	1.	.08	1		U
1,1-Dichloroethane	.054	.4	.054	1		U
1,1-Dichloroethene	.144	1.2	.144	1		U
1,1-Dichloropropene	.07	1.	.07	1		U
1,2,3-Trichlorobenzene	.063	.3	.063	1		U
1,2,3-Trichloropropane	.075	3.2	.075	1		U
1,2,4-Trichlorobenzene	.062	.4	.062	1		U
1,2,4-Trimethylbenzene	.014	1.3	.014	1		U
1,2-Dibromo-3-chloropropane	.33	2.6	.33	1		U
1,2-Dibromoethane	.068	.6	.068	1		R
1,2-Dichlorobenzene	.028	.3	.028	1		U
1,2-Dichloroethane	.067	.6	.067	1		U
1,2-Dichloropropane	.067	.4	.067	1		U
1,3,5-Trimethylbenzene	.018	.5	.018	1		U
1,3-Dichlorobenzene	.048	1.2	.048	1		U
1,3-Dichloropropane	.05	.4	.05	1		U
1,4-Dichlorobenzene	.023	.3	.023	1		U
1-Chlorohexane	.066	.5	.066	1		U
2,2-Dichloropropane	.026	3.5	.026	1		R
2-Chlorotoluene	.019	.4	.019	1		U
4-Chlorotoluene	.015	.6	.015	1		U
Benzene	.032	.4	.032	1		U
Bromobenzene	.091	.3	.091	1		U
Bromochloromethane	.114	.4	.114	1		U
Bromodichloromethane	.025	.8	.025	1		U
Bromoform	.108	1.2	.108	1		U
Bromomethane	.059	1.1	.059	1		U

Comments:

AFCEE FORM O-2

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 112400W4

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0072

Field Sample ID: DW3 (Dup) Lab Sample ID: R6013 Matrix:Water

%Solids: Initial Calibration ID: GNZWAF30.M

Date Received: 11/16/00 Date Prepared:11/24/00 Date Analyzed:11/24/00

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

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
Carbon tetrachloride	.06	2.1	.06	1		R
Chlorobenzene	.014	.4	.014	1		U
Chloroethane	.07	1.	.07	1		U
Chloroform	.061	.3	.061	1		U
Chloromethane	.073	1.3	.073	1		U
cis-1,2-Dichloroethene	.145	1.2	15.87	1		
cis-1,3-Dichloropropene	.05	1.	.05	1		U
Dibromochloromethane	.049	.5	.049	1		U
Dibromomethane	.036	2.4	.036	1		U
Dichlorodifluoromethane	.06	1.	.06	1		U
Ethylbenzene	.015	.6	.015	1		U
Hexachlorobutadiene	.102	1.1	.102	1		U
Isopropylbenzene	.014	.5	.014	1		U
Methylene chloride	.06	2.	.06	1		U
n-Butylbenzene	.037	1.1	.037	1		U
n-Propylbenzene	.018	.4	.018	1		U
Naphthalene	.05	1.	.05	1		U
o-Xylene	.013	1.1	.013	1		U
p-Isopropyltoluene	.029	1.2	.029	1		U
sec-Butylbenzene	.026	1.3	.026	1		U
Styrene	.011	.5	.011	1		U
tert-Butylbenzene	.024	1.4	.024	1		U
Tetrachloroethene	.087	1.4	.087	1		U
Toluene	.017	1.1	.18	1		M
trans-1,2-Dichloroethene	.14	.6	.14	1		U
trans-1,3-Dichloropropene	.06	1.	.06	1		U
Trichloroethene	.06	1.	.06	1		U
Trichlorofluoromethane	.018	.8	.018	1		U
Vinyl chloride	.019	1.1	.019	1		U
Xylene (total)	.024	1.1	.024	1		U

Comments:

AFCEE FORM O-2

DO 11/30/01

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 112400W4

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0072

Field Sample ID: DW3 (Dup) Lab Sample ID: R6013 Matrix:Water

%Solids: Initial Calibration ID: GN21AF30.M

Date Received: 11/16/00 Date Prepared:11/24/00 Date Analyzed:11/24/00

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

Surrogate	Recovery	Control Limits	Qualifier
1,2-Dichloroethane-d4 (surrogate)	98	62-139	
Bromofluorobenzene (surrogate)	106	75-125	
Dibromofluoromethane (surrogate)	100	75-125	
Toluene-d8 (surrogate)	104	75-125	

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

Comments:

AFCEE FORM O-2

DW 11/30/01

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 112400W4

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0072

Field Sample ID: SW7 (WG1) Lab Sample ID: R6014 Matrix:Water

%Solids: Initial Calibration ID: G1021AF30.M

Date Received: 11/16/00 Date Prepared:11/24/00 Date Analyzed:11/24/00

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

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
(m+p)-Xylene	.024	.6	.024	1		U
1,1,1,2-Tetrachloroethane	.051	.5	.051	1		U
1,1,1-Trichloroethane	.049	.8	.91	1		
1,1,2,2-Tetrachloroethane	.052	.5	.052	1		U
1,1,2-Trichloroethane	.08	1.	.08	1		U
1,1-Dichloroethane	.054	.4	3.48	1		M
1,1-Dichloroethene	.144	1.2	.15	1		M
1,1-Dichloropropene	.07	1.	.07	1		U
1,2,3-Trichlorobenzene	.063	.3	.063	1		U
1,2,3-Trichloropropane	.075	3.2	.075	1		U
1,2,4-Trichlorobenzene	.062	.4	.062	1		U
1,2,4-Trimethylbenzene	.014	1.3	.014	1		U
1,2-Dibromo-3-chloropropane	.33	2.6	.33	1		U
1,2-Dibromoethane	.068	.6	.068	1		R
1,2-Dichlorobenzene	.028	.3	.028	1		U
1,2-Dichloroethane	.067	.6	.067	1		U
1,2-Dichloropropane	.067	.4	.067	1		U
1,3,5-Trimethylbenzene	.018	.5	.018	1		U
1,3-Dichlorobenzene	.048	1.2	.048	1		U
1,3-Dichloropropane	.05	.4	.05	1		U
1,4-Dichlorobenzene	.023	.3	.023	1		U
1-Chlorohexane	.066	.5	.066	1		U
2,2-Dichloropropane	.026	3.5	.026	1		R
2-Chlorotoluene	.019	.4	.019	1		U
4-Chlorotoluene	.015	.6	.015	1		U
Benzene	.032	.4	.032	1		U
Bromobenzene	.091	.3	.091	1		U
Bromochloromethane	.114	.4	.114	1		U
Bromodichloromethane	.025	.8	.025	1		U
Bromoform	.108	1.2	.108	1		U
Bromomethane	.059	1.1	.059	1		U

Comments:

AFCEE FORM O-2

DS 1/15/01

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 112400W4

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0072

Field Sample ID: SW7 (WG1) Lab Sample ID: R6014 Matrix:Water

%Solids: Initial Calibration ID: 6N21AF30.M

Date Received: 11/16/00 Date Prepared:11/24/00 Date Analyzed:11/24/00

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

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
Carbon tetrachloride	.06	2.1	.06	1		R
Chlorobenzene	.014	.4	.014	1		U
Chloroethane	.07	1.	.07	1		U
Chloroform	.061	.3	.12	1		F
Chloromethane	.073	1.3	.073	1		U
cis-1,2-Dichloroethene	.145	1.2	16.06	1		
cis-1,3-Dichloropropene	.05	1.	.05	1		U
Dibromochloromethane	.049	.5	.049	1		U
Dibromomethane	.036	2.4	.036	1		U
Dichlorodifluoromethane	.06	1.	.06	1		U
Ethylbenzene	.015	.6	.015	1		U
Hexachlorobutadiene	.102	1.1	.102	1		U
Isopropylbenzene	.014	.5	.014	1		U
Methylene chloride	.06	2.	.06	1		U
n-Butylbenzene	.037	1.1	.037	1		U
n-Propylbenzene	.018	.4	.018	1		U
Naphthalene	.05	1.	.05	1		U
o-Xylene	.013	1.1	.013	1		U
p-Isopropyltoluene	.029	1.2	.029	1		U
sec-Butylbenzene	.026	1.3	.026	1		U
Styrene	.011	.5	.011	1		U
tert-Butylbenzene	.024	1.4	.024	1		U
Tetrachloroethene	.087	1.4	.38	1		F
Toluene	.017	1.1	.017	1		U
trans-1,2-Dichloroethene	.14	.6	.14	1		U
trans-1,3-Dichloropropene	.06	1.	.06	1		U
Trichloroethene	.06	1.	3.8	1		M
Trichlorofluoromethane	.018	.8	.018	1		U
Vinyl chloride	.019	1.1	.52	1		M
Xylene (total)	.024	1.1	.024	1		U

Comments:

AFCEE FORM O-2

D3 11/30/01

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 112400W4

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0072

Field Sample ID: SW7 (WG1) Lab Sample ID: R6014 Matrix:Water

%Solids: Initial Calibration ID: GN2(AF30.M

Date Received: 11/16/00 Date Prepared:11/24/00 Date Analyzed:11/24/00

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

Surrogate	Recovery	Control Limits	Qualifier
1,2-Dichloroethane-d4 (surrogate)	96	62-139	
Bromofluorobenzene (surrogate)	110	75-125	
Dibromofluoromethane (surrogate)	102	75-125	
Toluene-d8 (surrogate)	104	75-125	

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

Comments:

AFCEE FORM O-2

DB 11/15/01

AFCEE

ORGANIC ANALYSES DATA SHEET 2

RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 112800W1

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0072

Field Sample ID: FIELDQC (TB) Lab Sample ID: R6015 Matrix:Water

%Solids: Initial Calibration ID: GN21AF30.M

Date Received: 11/16/00 Date Prepared:11/28/00 Date Analyzed:11/28/00

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

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
(m+p)-Xylene	.019	.6	.019	1		U
1,1,1,2-Tetrachloroethane	.017	.5	.017	1		U
1,1,1-Trichloroethane	.014	.8	.014	1		U
1,1,2,2-Tetrachloroethane	.09	.5	.09	1		U
1,1,2-Trichloroethane	.01	1.	.01	1		U
1,1-Dichloroethane	.009	.4	.009	1		U
1,1-Dichloroethene	.025	1.2	.025	1		U
1,1-Dichloropropene	.02	1.	.02	1		U
1,2,3-Trichlorobenzene	.05	.3	.05	1		U
1,2,3-Trichloropropane	.072	3.2	.072	1		U
1,2,4-Trichlorobenzene	.021	.4	.021	1		U
1,2,4-Trimethylbenzene	.011	1.3	.011	1		U
1,2-Dibromo-3-chloropropane	.205	2.6	.205	1		U
1,2-Dibromoethane	.053	.6	.053	1		U
1,2-Dichlorobenzene	.013	.3	.013	1		U
1,2-Dichloroethane	.012	.6	.012	1		U
1,2-Dichloropropane	.014	.4	.014	1		U
1,3,5-Trimethylbenzene	.012	.5	.012	1		U
1,3-Dichlorobenzene	.01	1.2	.01	1		U
1,3-Dichloropropane	.012	.4	.012	1		U
1,4-Dichlorobenzene	.014	.3	.014	1		U
1-Chlorohexane	.018	.5	.018	1		U
2,2-Dichloropropane	.013	3.5	.013	1		U
2-Chlorotoluene	.015	.4	.015	1		U
4-Chlorotoluene	.011	.6	.011	1		U
Benzene	.009	.4	.009	1		U
Bromobenzene	.037	.3	.037	1		U
Bromochloromethane	.014	.4	.014	1		U
Bromodichloromethane	.011	.8	.011	1		U
Bromoform	.042	1.2	.042	1		U
Bromomethane	.074	1.1	.074	1		U

Comments:

AFCEE FORM O-2

DB 11/5/01

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 112800W1

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0072

Field Sample ID: FIELDQC (TB) Lab Sample ID: R6015 Matrix:Water

XSolids: Initial Calibration ID: GN21AF30.M

Date Received: 11/16/00 Date Prepared:11/28/00 Date Analyzed:11/28/00

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

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
Carbon tetrachloride	.007	2.1	.007	1		U
Chlorobenzene	.005	.4	.005	1		U
Chloroethane	.01	1.	.01	1		U
Chloroform	.011	.3	.011	1		U
Chloromethane	.046	1.3	.046	1		U
cis-1,2-Dichloroethene	.062	1.2	.062	1		U
cis-1,3-Dichloropropene	.01	1.	.01	1		U
Dibromochloromethane	.012	.5	.012	1		U
Dibromomethane	.04	2.4	.04	1		U
Dichlorodifluoromethane	.01	1.	.01	1		U
Ethylbenzene	.008	.6	.008	1		U
Hexachlorobutadiene	.031	1.1	.031	1		U
Isopropylbenzene	.015	.5	.015	1		U
Methylene chloride	.03	2.	.03	1		U
n-Butylbenzene	.015	1.1	.015	1		U
n-Propylbenzene	.016	.4	.016	1		U
Naphthalene	.04	1.	.04	1		U
o-Xylene	.012	1.1	.012	1		U
p-Isopropyltoluene	.031	1.2	.031	1		U
sec-Butylbenzene	.015	1.3	.015	1		U
Styrene	.015	.5	.015	1		U
tert-Butylbenzene	.016	1.4	.016	1		U
Tetrachloroethene	.008	1.4	.008	1		U
Toluene	.011	1.1	.011	1		U
trans-1,2-Dichloroethene	.077	.6	.077	1		U
trans-1,3-Dichloropropene	.02	1.	.02	1		U
Trichloroethene	.01	1.	.01	1		U
Trichlorofluoromethane	.01	.8	.01	1		U
Vinyl chloride	.013	1.1	.013	1		U
Xylene (total)	.019	1.1	.019	1		U

Comments:

AFCEE FORM O-2

DB 11/30/01

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 112800W1

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0072

Field Sample ID: FIELDQC (TB) Lab Sample ID: R6015 Matrix:Water

%Solids: Initial Calibration ID: GN21AF3C.M

Date Received: 11/16/00 Date Prepared:11/28/00 Date Analyzed:11/28/00

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

Surrogate	Recovery	Control Limits	Qualifier
1,2-Dichloroethane-d4 (surrogate)	87	62-139	
Bromofluorobenzene (surrogate)	86	75-125	
Dibromofluoromethane (surrogate)	91	75-125	
Toluene-d8 (surrogate)	103	75-125	

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

Comments:

AFCEE FORM O-2

D3
11/15/01

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 112400W4

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0072

Field Sample ID: SW4 (WG1) Lab Sample ID: R6016 Matrix:Water

%Solids: Initial Calibration ID: GN2IAF30.M

Date Received: 11/16/00 Date Prepared:11/24/00 Date Analyzed:11/24/00

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

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
(m+p)-Xylene	.024	.6	.024	1		U
1,1,1,2-Tetrachloroethane	.051	.5	.051	1		U
1,1,1-Trichloroethane	.049	.8	1.14	1		
1,1,2,2-Tetrachloroethane	.052	.5	.052	1		U
1,1,2-Trichloroethane	.08	1.	.08	1		U
1,1-Dichloroethane	.054	.4	15.25	1		M
1,1-Dichloroethene	.144	1.2	.29	1		J M
1,1-Dichloropropene	.07	1.	.07	1		U
1,2,3-Trichlorobenzene	.063	.3	.063	1		U
1,2,3-Trichloropropane	.075	3.2	.075	1		U
1,2,4-Trichlorobenzene	.062	.4	.062	1		U
1,2,4-Trimethylbenzene	.014	1.3	.014	1		U
1,2-Dibromo-3-chloropropane	.33	2.6	.33	1		U
1,2-Dibromoethane	.068	.6	.068	1		R
1,2-Dichlorobenzene	.028	.3	.028	1		U
1,2-Dichloroethane	.067	.6	.067	1		U
1,2-Dichloropropane	.067	.4	.067	1		U
1,3,5-Trimethylbenzene	.018	.5	.018	1		U
1,3-Dichlorobenzene	.048	1.2	.048	1		U
1,3-Dichloropropane	.05	.4	.05	1		U
1,4-Dichlorobenzene	.023	.3	.023	1		U
1-Chlorohexane	.066	.5	.066	1		U
2,2-Dichloropropane	.026	3.5	.026	1		R
2-Chlorotoluene	.019	.4	.019	1		U
4-Chlorotoluene	.015	.6	.015	1		U
Benzene	.032	.4	.032	1		U
Bromobenzene	.091	.3	.091	1		U
Bromochloromethane	.114	.4	.114	1		U
Bromodichloromethane	.025	.8	.025	1		U
Bromoform	.108	1.2	.108	1		U
Bromomethane	.059	1.1	.059	1		U

Comments:

AFCEE FORM O-2

DS 111301

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 112400W4

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0072

Field Sample ID: SW4 (WG1) Lab Sample ID: R6016 Matrix:Water

%Solids: Initial Calibration ID: GN21AF30.M

Date Received: 11/16/00 Date Prepared:11/24/00 Date Analyzed:11/24/00

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

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
Carbon tetrachloride	.06	2.1	.06	1		R
Chlorobenzene	.014	.4	.014	1		U
Chloroethane	.07	1.	.07	1		U
Chloroform	.061	.3	.061	1		U
Chloromethane	.073	1.3	.073	1		U
cis-1,2-Dichloroethene	.145	1.2	11.18	1		
cis-1,3-Dichloropropene	.05	1.	.05	1		U
Dibromochloromethane	.049	.5	.049	1		U
Dibromomethane	.036	2.4	.036	1		U
Dichlorodifluoromethane	.06	1.	4.8	1		M
Ethylbenzene	.015	.6	.015	1		U
Hexachlorobutadiene	.102	1.1	.102	1		U
Isopropylbenzene	.014	.5	.014	1		U
Methylene chloride	.06	2.	.06	1		U
n-Butylbenzene	.037	1.1	.037	1		U
n-Propylbenzene	.018	.4	.018	1		U
Naphthalene	.05	1.	.05	1		U
o-Xylene	.013	1.1	.013	1		U
p-Isopropyltoluene	.029	1.2	.029	1		U
sec-Butylbenzene	.026	1.3	.026	1		U
Styrene	.011	.5	.011	1		U
tert-Butylbenzene	.024	1.4	.024	1		U
Tetrachloroethene	.087	1.4	.62	1		F
Toluene	.017	1.1	.017	1		U
trans-1,2-Dichloroethene	.14	.6	.14	1		U
trans-1,3-Dichloropropene	.06	1.	.06	1		U
Trichloroethene	.06	1.	15.2	1		M
Trichlorofluoromethane	.018	.8	.91	1		M
Vinyl chloride	.019	1.1	1.49	1		M
Xylene (total)	.024	1.1	.024	1		U

Comments:

AFCEE FORM O-2

DS 1/15/01

AFCEE
ORGANIC ANALYSES DATA SHEET 2
RESULTS

Analytical Method: 8260 Preparatory Method:5030 AAB#: 112400W4

Lab Name: O'Brien & Gere Laboratories, Inc. Contract #: F41624-97-D-8018/0072

Field Sample ID: SW4 (WG1) Lab Sample ID: R6016 Matrix:Water

%Solids: Initial Calibration ID: GN2AF30.M

Date Received: 11/16/00 Date Prepared:11/24/00 Date Analyzed:11/24/00

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

Surrogate	Recovery	Control Limits	Qualifier
1,2-Dichloroethane-d4 (surrogate)	82	62-139	
Bromofluorobenzene (surrogate)	104	75-125	
Dibromofluoromethane (surrogate)	94	75-125	
Toluene-d8 (surrogate)	103	75-125	

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

Comments:

AFCEE FORM O-2

Attachment 2
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 TYCO INTERNATIONAL LTD. COMPANY

PAGE ___ OF ___

Laboratory	Project Name	Analysis	Chain of Custody No.
O'Brien & Gere Lab	AFP59-41012-0605	VOCs (8260B)	No. [redacted]
Address	Point of Contact / Phone No.		
1000 Brittonfield Parkway	Dave Parse 703 706-0508		
City / State / Zip Code	Site Contact / Phone No.		Comment
East Syracuse NY 13057	Brandon Watts 703-706-9461		

ERPIMS Information					Other Sample Information					
LOCID	SBD	SED	SACODE	SAMPNO	Sample I.D.	Date	Time	Matrix	No. of Con.	Cooler No.
SW1	0	0	N	1	59SW1WG1	11/14/00	0852	WG	3	1
DW1	0	0	N	1	59DW1WG1	11/14/00	1038	WG	3	1
SW3	0	0	N	1	59SW3WG1	11/14/00	1232	WG	3	1
DW2	0	0	N	1	59DW2WG1	11/14/00	1535	WG	3	1
DW3	0	0	~~DUP~~ N	1	59DW3WG1DUP	11/14/00	1535	WG	3	1
SW7	0	0	N	1	~~59DW~~ 59SW7WG1	11/14/00	1636	WG	3	1
Field QC	0	0	TB	1	TB111500	11/15/00	1200	WG	3	1
SW4	0	0	N	1	59SW4WG1	11/15/00	1205	WG	3	1
SW4	0	0	~~MS~~	1	59SW4WG1MS	11/15/00	1205	WG	3	1
SW4	0	0	MD	1	59SW4WG1MSD	11/15/00	1205	WG	3	1
Field QC	0	0	AB	1	AB111500	11/15/00	1208	WG	3	1

	Relinquished By / Company	Date	Time	Received By / Company	Date	Time
1.	Brandon Watts / Earth Tech	11/15/00	1340	1.		
2.				2.		
3.				3.		
4.				4.		
5.				5.		

Comments:

Shipment Method/Airbill No.:

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

AFP 59
12006 12.04