



## DEPARTMENT OF THE AIR FORCE

HEADQUARTERS 27th FIGHTER WING (ACC)  
CANNON AIR FORCE BASE, NEW MEXICO

15 MAY 1996

W. P. Ard, Colonel, USAF  
Commander, 27th Support Group  
100 S DL Ingram Blvd Suite 200  
Cannon AFB NM 88103-5217

Ms. Barbara Hoditschek  
Program Manager, RCRA Permits  
Hazardous and Radioactive Materials Bureau  
New Mexico Environment Department  
2044 Galisteo St.  
P.O. Box 26110  
Santa Fe NM 87502

Dear Ms. Hoditschek

We are providing the attached monitoring results for Landfill 5 Cell 3 (SWMU 113) and for wells N at Landfill 4 (SWMU 104), O at Landfill 3 (SWMU 105), and P (new monitoring well) near the playa lake (SWMU 103). The Landfill 3 and Landfill 4 wells were sampled because of previous hits of gasoline and diesel range organics in wells N and O (see RFI report). Wells N, O, and P still show hits of xylene. It is indeterminate whether the concentrations are decreasing because different analytical results were used. The picture is also somewhat clouded because xylene was detected in the trip blanks for those wells and may indicate a lab error.

We believe natural attenuation will cause the reduction of organics in these wells but we will continue to resample them and provide the results to your staff.

If you have any questions, please contact Mr. Sanford Hutsell or Mr. John Constantine at (505) 784-4348.

Sincerely

W. P. ARD, Colonel, USAF  
Commander, 27th Support Group

Attachments:

RCRA Ground-Water Sampling at Landfill 5 and at the Playa Lake, 26-29 Feb 96 and 7 Mar 96

cc:

EPA Region VI (D. Neleigh)  
NMED GW Bureau (J. Jacobs)  
HQ ACC CES/ESVW w/o Atch (M. Calvert)  
HQ/CEVC w/o Atch (R. Shannon)



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Cannon Air Force Base, New Mexico

RCRA Ground-Water Sampling at Landfill 5  
and at Playa Lake

Data Report for February 26-29, and March 7, 1996 Sampling

Prepared for

United States Air Force Air Combat Command  
Cannon Air Force Base, New Mexico 88103

April 1996

Prepared by

U.S. Geological Survey, Water Resources Division  
4501 Indian School Road NE  
Suite 200  
Albuquerque, New Mexico 87110

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New Mexico Environment Department monitoring well data forms

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Analytical Results from Quanterra Environmental Services Laboratory for Ground-Water Samples Collected February 26-29, and March 7, 1996

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Quality Control Report from Quanterra Environmental Services Laboratory for Ground-Water Samples Collected February 26-29, and March 7, 1996

### APPENDIX III

Field Notes for Ground-Water Sampling Conducted February 26-29, and March 7, 1996 at Landfill 5 and Playa Lake, Cannon Air Force Base, New Mexico

## EXECUTIVE SUMMARY

The U.S. Geological Survey (USGS), Water Resources Division and the U.S. Air Force Air Combat Command (ACC) have a memorandum of understanding that addresses the USGS assisting any ACC base in their hydrology or environmental programs. The USGS has agreed to assist Cannon Air Force Base (CAFB), an ACC base, in their RCRA ground-water sampling program. Cannon AFB is located in east-central New Mexico about 7 miles west of Clovis as shown on Figure 1. The ground-water sampling is at Landfill 5 and at Playa Lake on the southeast corner and east of the base as shown on Figure 2. The detection sampling is conducted semi-annually as part of the July 13, 1990 Compliance Agreement between CAFB and the New Mexico Environment Department (NMED).

This report presents the data resulting from sampling four wells around landfill 5 (figure 3) and three wells around Playa lake (figure 2), CAFB during February 26-29, and March 7, 1996. The monitoring wells sampled at the landfill are well A (upgradient), and downgradient wells I, L, and M as shown on figure 3. These four wells (A, I, L, and M) were sampled for the following Appendix-IX parameters: Volatile organic compounds (Method SW8240), Semivolatile organic compounds (Method SW8270), Pesticides and PCB's (Method SW8080), Herbicides (Method SW8150), Phenolics (Method SW9065), Total organic carbon (Method E415.1), Total organic halogens (Method SW9020), Total metals (Methods SW6010, SW7060, SW7421, SW7470, SW7740, and SW7841), Cyanide (Method SW9010), Sulfide (Method SW9030), and Chloride and Sulfate (Method E300.0). The monitoring wells sampled at the Playa Lake are wells N, O, and P (background well). These three wells were sampled for the following Appendix - IX parameters: Volatile organic compounds (Method SW8240), and Semivolatile organic compounds (Method SW8270). Concentrations of detected analytes in ground-water for the monitoring wells around Landfill 5 and for the Playa Lake are summarized in table 1. The interim status detection monitoring semi-annual indicator parameter reports for monitoring wells are presented in appropriate NMED data forms following table 1. Quanterra Environmental Services is the USGS contracting laboratory in Arvada, Colorado. The analytical results from Quanterra Environmental Services Laboratory are listed in Appendix I. The Quality Control Report for the analytical results from Quanterra is in Appendix II. Field activities, observations, and water-quality measurements for the February 26-29, and March 7, 1996 semi-annual ground-water detection monitoring are in Appendix III.

As part of the quality assurance and quality control (QA/QC) procedures for the

Landfill 5 and Playa Lake sites, trip blank, equipment blank, duplicate, matrix spike, and matrix spike duplicate samples were collected. 12 ug/L of xylenes (total) was detected in a trip blank associated with samples CAFB-N-0296-1, CAFB-O-0296-1, and CAFB-P-0296-3 by method SW8240. The data results of associated samples that are similar to the trip blank should be used with caution and note that similar results were detected also in the trip blank. No other target parameters other than the parameters associated with the duplicate analysis were detected in the QA/QC samples mentioned above.

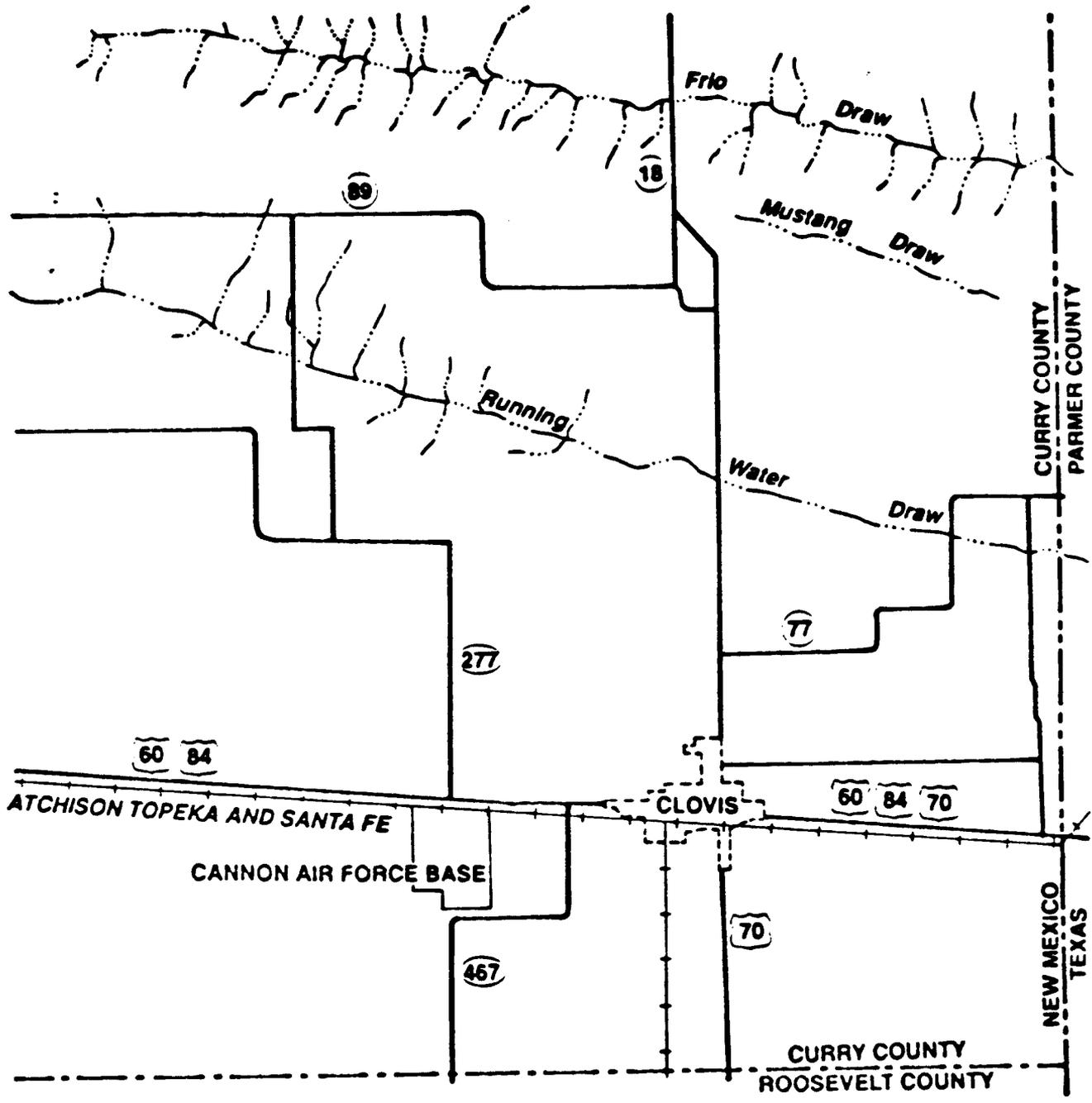


Figure 1.--Location of Cannon Air Force Base, New Mexico.

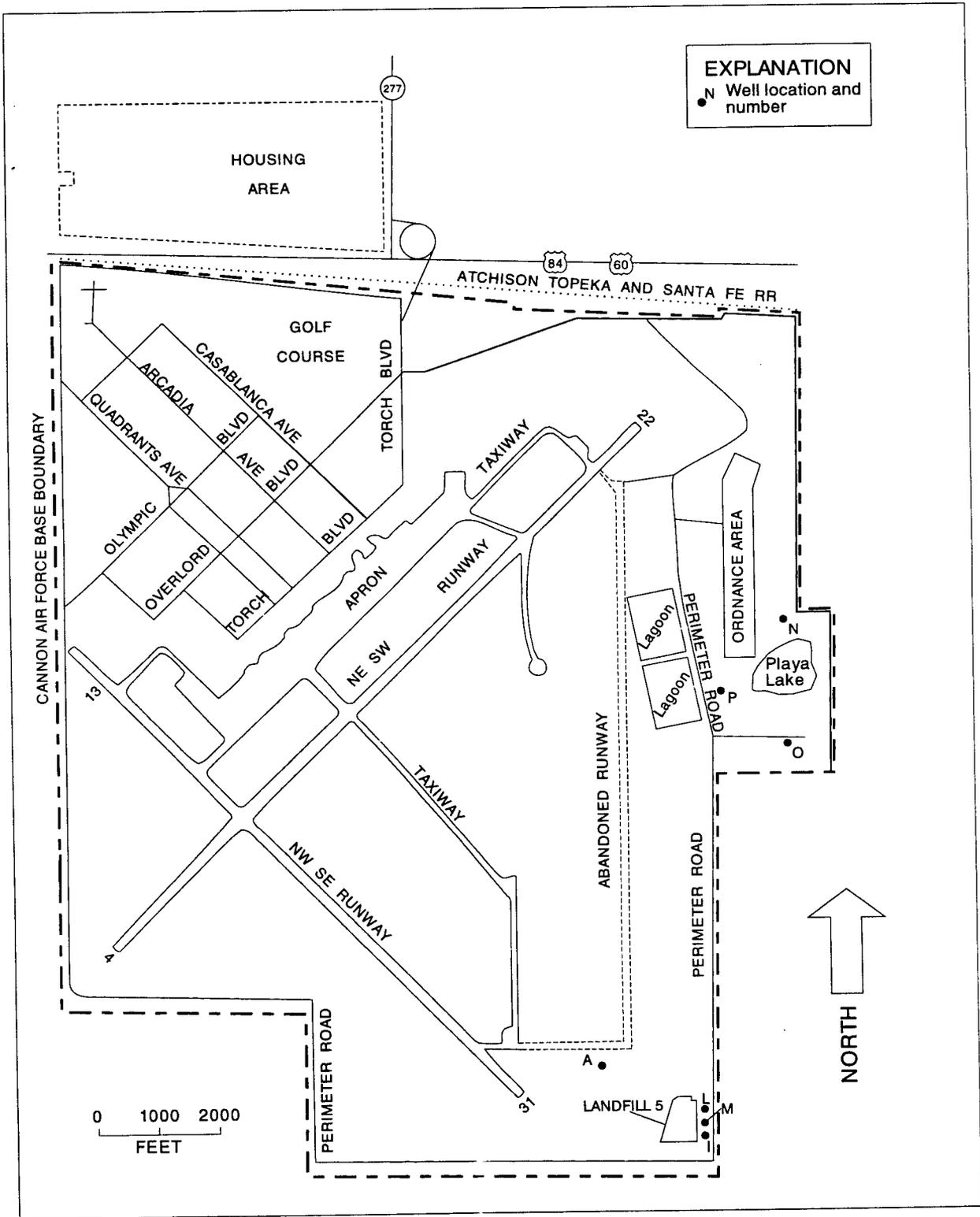


Figure 2.--Cannon Air Force Base and location of Landfill 5 and Playa Lake.

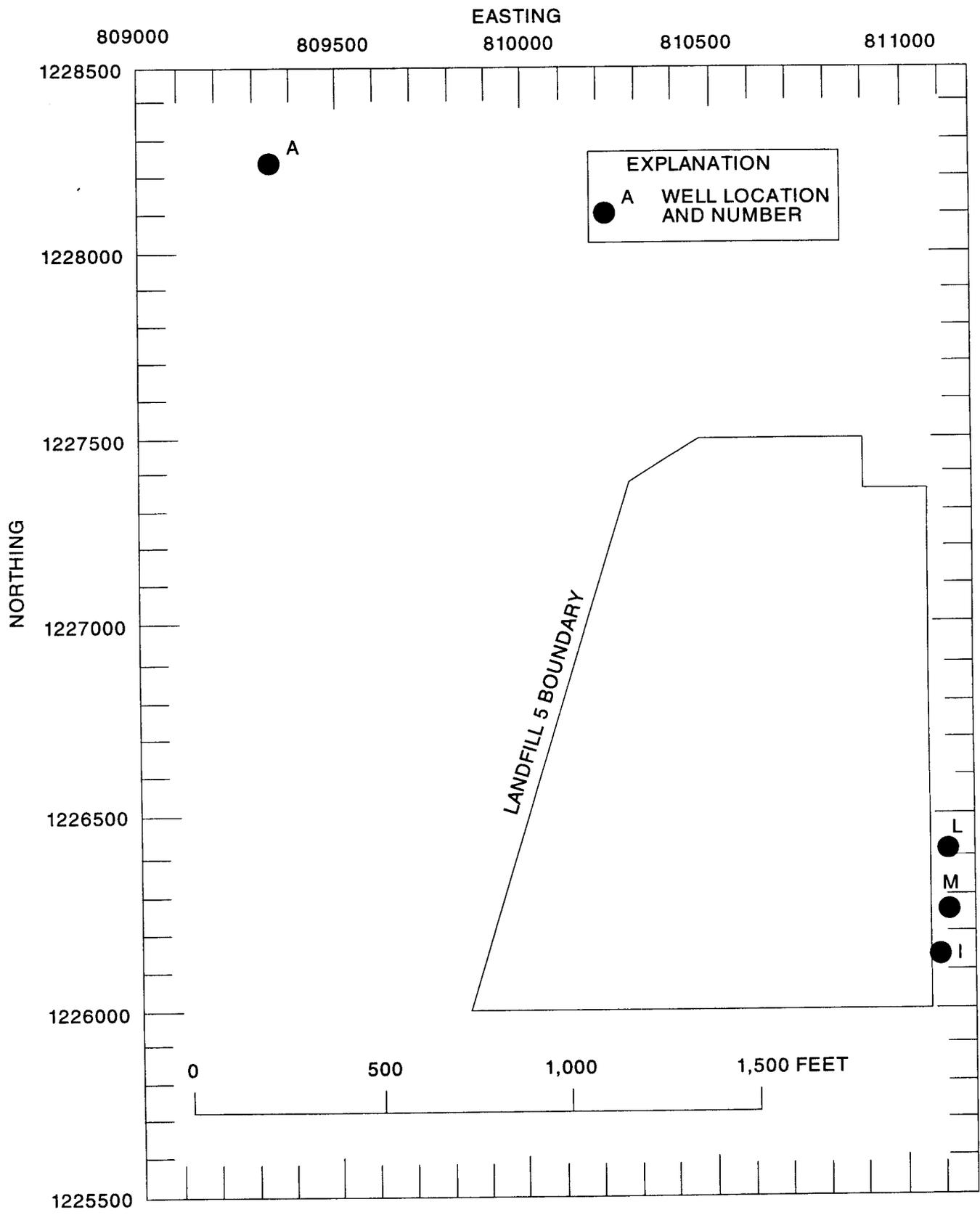


Figure 3.--Location of monitoring wells around Landfill 5.

Table 1. Summary of concentrations of analytes in ground-water from wells A, I, L, M around Landfill 5, and wells N, O, P at Playa Lake for samples collected on February 26-29, and March 7, 1996, Cannon Air Force Base, New Mexico. [G, Reporting limit raised due to the matrix of the sample; ND, Not Detected; RL, Reporting Limit; t, Sample diluted due to the concentration of target compounds; --, Not sampled for.]

Well/sample ID: Date sampled:	A/CAFB-A-0296-1 2-28-96		I/CAFB-I-0296-1 2-29-96		I/CAFB-I-0296-2 2-29-96 Duplicate		L/CAFB-L-0296-1 2-28-96		M/CAFB-M-0296-1 3-7-96		N/CAFB-N-0296-1 2-27-96		O/CAFB-O-0296-1 2-27-96		P/CAFB-P-0296-3 2-27-96	
Analytes and Method	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
Appendix-IX, Volatile Organic Compounds, SW8240 (ug/L) Xylenes (total)	ND	5.0	ND	5.0	ND	5.0	ND	5.0	ND	5.0	36.0	5.0	36.0	5.0	13 <sup>a</sup> .0	5.0
Appendix-IX, Metals, Total (mg/L)																
Barium SW6010	0.04	0.01	0.034	0.01	0.035	0.01	0.041	0.01	0.045	0.01	--	--	--	--	--	--
Chromium SW6010	ND	0.01	0.019	0.01	0.016	0.01	ND	0.01	0.036	0.01	--	--	--	--	--	--
Iron SW6010	0.26	0.1	ND	0.1	ND	0.1	0.28	0.1	0.68	0.1	--	--	--	--	--	--
Manganese SW6010	ND	0.01	ND	0.01	ND	0.01	0.011	0.01	0.028	0.01	--	--	--	--	--	--
Nickel SW6010	0.091	0.04	ND	0.04	ND	0.04	0.092	0.04	0.27	0.04	--	--	--	--	--	--
Selenium SW7740	ND	0.01G	0.0065	0.005	0.0066	0.005	ND	0.01G	ND	0.02G	--	--	--	--	--	--
Sodium SW6010	46.5	5.0	42.7	5.0	44.3	5.0	45.8	5.0	47.4	5.0	--	--	--	--	--	--
Vanadium SW6010	0.017	0.01	0.024	0.01	0.025	0.01	0.018	0.01	0.015	0.01	--	--	--	--	--	--
Zinc SW6010	ND	0.02	ND	0.02	ND	0.02	ND	0.02	0.074	0.02	--	--	--	--	--	--
General Inorganics (mg/L)																
Chloride E300.0	89.3	3.0	80.8	3.0	80.4	3.0	89.0	3.0	112	6.0t	--	--	--	--	--	--
Sulfate E300.0	129	10.0t	138	10.0t	138	10.0t	129	10.0t	129	10.0t	--	--	--	--	--	--

a. Sample CAFB-P-0296-1 (trip blank) associated with samples CAFB-N-0296-1, CAFB-O-0296-1, and CAFB-P-0296-3 had xylenes at 12 ug/L (RL = 5.0). Use associated data results with caution for xylenes and note that xylenes were also detected in the trip blank.

# MONITORING WELL IDENTIFICATION REPORT

NEW MEXICO ENVIRONMENT DEPARTMENT  
HAZARDOUS AND RADIOACTIVE MATERIALS BUREAU  
525 CAMINO DE LOS MARQUES, SUITE 4  
SANTA FE, NEW MEXICO 87502

FACILITY NAME Cannon Air Force Base

EPA I.D. NUMBER NM 7572124454

COUNTY Curry

WELL NUMBER A

WELL LOCATION (LONGITUDE) 103° 18' 26"

WELL LOCATION (LATITUDE) 34° 22' 18"

AQUIFER NAME Ogalalla

AQUIFER CONFINED \_\_\_\_\_ UNCONFINED X

WELL INSTALLATION DATE 01-07-85

DRILLING METHOD HYDRT

INNER CASING DIAMETER 4"

BOREHOLE DIAMETER 8"

CASING MATERIAL PVC

METHOD OF DEVELOPMENT AIRFT

ELEV BOTTOM OF BOREHOLE 3902.05

ELEV BOTTOM OF WELL CASING 3924.05

ELEV BOTTOM OF SCREENED INT 3924.05

ELEV OF TOP OF SCREENED INT 3939.05

SURVEYED ELEV OF CASING TOP 4267.05

DATE OF REPORT 01-07-85 SIGNATURE \_\_\_\_\_

NAME (TYPED) Sanford Hutsell

# MONITORING WELL IDENTIFICATION REPORT

NEW MEXICO ENVIRONMENT DEPARTMENT  
HAZARDOUS AND RADIOACTIVE MATERIALS BUREAU  
525 CAMINO DE LOS MARQUES, SUITE 4  
SANTA FE, NEW MEXICO 87502

FACILITY NAME Cannon Air Force Base

EPA I.D. NUMBER NM 7572124454

COUNTY Curry

WELL NUMBER I

WELL LOCATION (LONGITUDE) 103° 18' 06.8"

WELL LOCATION (LATITUDE) 34° 21' 58.8"

AQUIFER NAME Ogalalla

AQUIFER CONFINED \_\_\_\_\_ UNCONFINED X

WELL INSTALLATION DATE 08-19-88

DRILLING METHOD HYDRT

INNER CASING DIAMETER 6"

BOREHOLE DIAMETER 9 7/8"

CASING MATERIAL PVC

METHOD OF DEVELOPMENT BALD

ELEV BOTTOM OF BOREHOLE 3959.36

ELEV BOTTOM OF WELL CASING 3969.36

ELEV BOTTOM OF SCREENED INT 3969.36

ELEV OF TOP OF SCREENED INT 3989.36

SURVEYED ELEV OF CASING TOP 4262.36

DATE OF REPORT 02-24-89 SIGNATURE \_\_\_\_\_

NAME (TYPED) Sanford Hutsell

## MONITORING WELL IDENTIFICATION REPORT

NEW MEXICO ENVIRONMENT DEPARTMENT  
HAZARDOUS AND RADIOACTIVE MATERIALS BUREAU  
525 CAMINO DE LOS MARQUES, SUITE 4  
SANTA FE, NEW MEXICO 87502

FACILITY NAME Cannon Air Force Base

EPA I.D. NUMBER NM 7572124454

COUNTY Curry

WELL NUMBER L

WELL LOCATION (LONGITUDE) 103° 18' 00"

WELL LOCATION (LATITUDE) 34° 22' 02"

AQUIFER NAME Ogalalla

AQUIFER CONFINED \_\_\_\_\_ UNCONFINED X

WELL INSTALLATION DATE 06-02-92

DRILLING METHOD HYDRT

INNER CASING DIAMETER 4" inside 5.8"

BOREHOLE DIAMETER 12"

CASING MATERIAL PVC

METHOD OF DEVELOPMENT BAILD

ELEV BOTTOM OF BOREHOLE 3972.72

ELEV BOTTOM OF WELL CASING 3977.72

ELEV BOTTOM OF SCREENED INT 3981.72

ELEV OF TOP OF SCREENED INT 4001.72

SURVEYED ELEV OF CASING TOP 4264.72

DATE OF REPORT 10-21-92 SIGNATURE \_\_\_\_\_

NAME (TYPED) Sanford Hutsell

# MONITORING WELL IDENTIFICATION REPORT

NEW MEXICO ENVIRONMENT DEPARTMENT  
HAZARDOUS AND RADIOACTIVE MATERIALS BUREAU  
525 CAMINO DE LOS MARQUES, SUITE 4  
SANTA FE, NEW MEXICO 87502

FACILITY NAME Cannon Air Force Base

EPA I.D. NUMBER NM 7572124454

COUNTY Curry

WELL NUMBER M

WELL LOCATION (LONGITUDE) 103° 18' 00"

WELL LOCATION (LATITUDE) 34° 22' 01"

AQUIFER NAME Ogalalla

AQUIFER CONFINED \_\_\_\_\_ UNCONFINED X

WELL INSTALLATION DATE 02-04-92

DRILLING METHOD HYDRT

INNER CASING DIAMETER 5.8"

BOREHOLE DIAMETER 12"

CASING MATERIAL PVC

METHOD OF DEVELOPMENT BALD

ELEV BOTTOM OF BOREHOLE 3975.29

ELEV BOTTOM OF WELL CASING 3975.29

ELEV BOTTOM OF SCREENED INT 3980.29

ELEV OF TOP OF SCREENED INT 4000.29

SURVEYED ELEV OF CASING TOP 4264.29

DATE OF REPORT 10-21-92 SIGNATURE \_\_\_\_\_

NAME (TYPED) Sanford Hutsell

# MONITORING WELL IDENTIFICATION REPORT

NEW MEXICO ENVIRONMENT DEPARTMENT  
HAZARDOUS AND RADIOACTIVE MATERIALS BUREAU  
525 CAMINO DE LOS MARQUES, SUITE 4  
SANTA FE, NEW MEXICO 87502

FACILITY NAME Cannon Air Force Base

EPA I.D. NUMBER NM 7572124454

COUNTY Curry

WELL NUMBER N

WELL LOCATION (LONGITUDE) 103° 17' 47"

WELL LOCATION (LATITUDE) 34° 23' 17"

AQUIFER NAME Ogalalla

AQUIFER CONFINED \_\_\_\_\_ UNCONFINED X

WELL INSTALLATION DATE 12-13-94

DRILLING METHOD AIRRT

INNER CASING DIAMETER 4"

BOREHOLE DIAMETER 9 3/4"

CASING MATERIAL PVC

METHOD OF DEVELOPMENT PUMPD

ELEV BOTTOM OF BOREHOLE 3964.59

ELEV BOTTOM OF WELL CASING 3970.09

ELEV BOTTOM OF SCREENED INT 3970.09

ELEV OF TOP OF SCREENED INT 3999.59

SURVEYED ELEV OF CASING TOP 4269.72

DATE OF REPORT 12-14-94 SIGNATURE \_\_\_\_\_

NAME (TYPED) Sanford Hutsell

# MONITORING WELL IDENTIFICATION REPORT

NEW MEXICO ENVIRONMENT DEPARTMENT  
HAZARDOUS AND RADIOACTIVE MATERIALS BUREAU  
525 CAMINO DE LOS MARQUES, SUITE 4  
SANTA FE, NEW MEXICO 87502

FACILITY NAME Cannon Air Force Base

EPA I.D. NUMBER NM 7572124454

COUNTY Curry

WELL NUMBER 0

WELL LOCATION (LONGITUDE) 103° 17' 44"

WELL LOCATION (LATITUDE) 34° 23' 04"

AQUIFER NAME Ogalalla

AQUIFER CONFINED \_\_\_\_\_ UNCONFINED X

WELL INSTALLATION DATE 10-30-94

DRILLING METHOD AIRRT

INNER CASING DIAMETER 4"

BOREHOLE DIAMETER 9 3/4"

CASING MATERIAL PVC

METHOD OF DEVELOPMENT PUMPD

ELEV BOTTOM OF BOREHOLE 3967.70

ELEV BOTTOM OF WELL CASING 3967.10

ELEV BOTTOM OF SCREENED INT 3967.10

ELEV OF TOP OF SCREENED INT 3997.10

SURVEYED ELEV OF CASING TOP 4273.06

DATE OF REPORT 10-30-94 SIGNATURE \_\_\_\_\_

NAME (TYPED) Sanford Hutsell

# MONITORING WELL IDENTIFICATION REPORT

NEW MEXICO ENVIRONMENT DEPARTMENT  
HAZARDOUS AND RADIOACTIVE MATERIALS BUREAU  
525 CAMINO DE LOS MARQUES, SUITE 4  
SANTA FE, NEW MEXICO 87502

FACILITY NAME Cannon Air Force Base

EPA I.D. NUMBER \_\_\_\_\_

COUNTY Curry

WELL NUMBER P

WELL LOCATION (LONGITUDE) 103° 18' 06"

WELL LOCATION (LATITUDE) 34° 23' 09"

AQUIFER NAME Ogalalla

AQUIFER CONFINED \_\_\_\_\_ UNCONFINED X

WELL INSTALLATION DATE 07-16-95

DRILLING METHOD HYDRT

INNER CASING DIAMETER 4"

BOREHOLE DIAMETER 8"

CASING MATERIAL PVC

METHOD OF DEVELOPMENT BALD

ELEV BOTTOM OF BOREHOLE 3971.90

ELEV BOTTOM OF WELL CASING 3976.90

ELEV BOTTOM OF SCREENED INT 3981.90

ELEV OF TOP OF SCREENED INT 4001.90

SURVEYED ELEV OF CASING TOP 4273.39

DATE OF REPORT 10-30-95 SIGNATURE *Jerry D. Larson*

NAME (TYPED) Jerry D. Larson

**INTERIM STATUS DETECTION MONITORING SEMI-ANNUAL INDICATOR  
PARAMETER REPORT**

This set of data sheets should be completed by facilities in semi-annual detection monitoring, HWMR-6, Part VI, Section 265.92 (d) (2) and (e) and Section 265.94 (a). These data sheets should be completed semi-annually and submitted annually. The raw lab data sheets should be submitted in addition to the Semi-Annual Report. **In order to be acceptable** the raw lab data sheets must include 1) the date the sample was taken, 2) the sample extraction date, if any, and 3) the date of analysis.

FACILITY NAME Cannon Air Force Base EPA I.D. NUMBER NM7572124454  
WELL NUMBER CAFB-A-0296-1

**FIRST SAMPLING EVENT  
SEMI-ANNUAL REPORT**

LABORATORY NAME Quanterra Environmental Services DATE SAMPLED 02-28-96  
SAMPLED BY Jerry Larson LABORATORY SAMPLE I.D.# 047577-0001-SA  
TIME SAMPLED 1045 DATE RECEIVED BY LAB 02-29-96

PARAMETERS	STORET CODE	UNITS	VALUE	DATE ANALYZED
Elevation of G. Water	71993	ft.	<u>3991.91</u>	<u>02-28-96</u>
Well Depth	----	ft.	<u>343.00</u>	<u>01-07-85</u>
Well Casing Volume	----	gal.	<u>44.30</u>	<u>02-28-96</u>
Pump Rate	----	gal/min	<u>0.73</u>	<u>02-28-96</u>
Pump Period	72004	min.	<u>82.00</u>	<u>02-28-96</u>
Volume Evacuated	73675	gal.	<u>60.00</u>	<u>02-28-96</u>

Sampler Material: TEFLN Well Sampling Method: PSPMP

**FIRST SAMPLING EVENT  
SEMI-ANNUAL REPORT  
(continued)**

PARAMETERS	STORET CODE	UNITS	VALUE	DETECTION LIMIT	DATE ANALYZED	METHOD USED
pH	00400	S.U.	<u>8.12</u>	<u>N/A</u>	<u>02-28-96</u>	
	00400	S.U.	_____	_____	_____	<u>(f)</u>
	00400	S.U.	_____	_____	_____	
	00400	S.U.	_____	_____	_____	
Specific Conductivity	00095	umhos/cm	<u>636</u>	<u>N/A</u>	<u>02-28-96</u>	
	00095	umhos/cm	_____	_____	_____	<u>(f)</u>
	00095	umhos/cm	_____	_____	_____	
	00095	umhos/cm	_____	_____	_____	
T.O.X.	70354	ug/l	<u>ND</u>	<u>30.0</u>	<u>03-12-96</u>	
	70354	ug/l	_____	_____	_____	<u>SW9020</u>
	70354	ug/l	_____	_____	_____	
	70354	ug/l	_____	_____	_____	
T.O.C.	00680	mg/l	<u>ND</u>	<u>1.0</u>	<u>03-05-96</u>	
	00680	mg/l	_____	_____	_____	<u>E415.1</u>
	00680	mg/l	_____	_____	_____	
	00680	mg/l	_____	_____	_____	

SIGNATURE: *F. Eileen Roybal*  
NAME (PRINTED): F. Eileen Roybal

**INTERIM STATUS DETECTION MONITORING SEMI-ANNUAL INDICATOR  
PARAMETER REPORT**

This set of data sheets should be completed by facilities in semi-annual detection monitoring, HWMR-6, Part VI, Section 265.92 (d) (2) and (e) and Section 265.94 (a). These data sheets should be completed semi-annually and submitted annually. The raw lab data sheets should be submitted in addition to the Semi-Annual Report. **In order to be acceptable** the raw lab data sheets must include 1) the date the sample was taken, 2) the sample extraction date, if any, and 3) the date of analysis.

FACILITY NAME Cannon Air Force Base EPA I.D. NUMBER NM7572124454  
WELL NUMBER CAFB-I-0296-1

**FIRST SAMPLING EVENT  
SEMI-ANNUAL REPORT**

LABORATORY NAME Quanterra Environmental Services DATE SAMPLED 02-29-96  
SAMPLED BY Jerry Larson LABORATORY SAMPLE I.D.# 047596-0001-SA  
TIME SAMPLED 1020 DATE RECEIVED BY LAB 03-01-96

PARAMETERS	STORET CODE	UNITS	VALUE	DATE ANALYZED
Elevation of G. Water	71993	ft.	<u>3982.29</u>	<u>02-29-96</u>
Well Depth	----	ft.	<u>293.00</u>	<u>08-19-88</u>
Well Casing Volume	----	gal.	<u>18.98</u>	<u>02-29-96</u>
Pump Rate	----	gal/min	<u>0.89</u>	<u>02-29-96</u>
Pump Period	72004	min.	<u>56.00</u>	<u>02-29-96</u>
Volume Evacuated	73675	gal.	<u>50.00</u>	<u>02-29-96</u>

Sampler Material: TEFLN Well Sampling Method: PSPMP

**FIRST SAMPLING EVENT  
SEMI-ANNUAL REPORT  
(continued)**

PARAMETERS	STORET CODE	UNITS	VALUE	DETECTION LIMIT	DATE ANALYZED	METHOD USED
pH	00400	S.U.	<u>7.31</u>	<u>N/A</u>	<u>02-29-96</u>	
	00400	S.U.	_____	_____	_____	<u>(f)</u>
	00400	S.U.	_____	_____	_____	
	00400	S.U.	_____	_____	_____	
Specific Conductivity	00095	umhos/cm	<u>832</u>	<u>N/A</u>	<u>02-29-96</u>	
	00095	umhos/cm	_____	_____	_____	<u>(f)</u>
	00095	umhos/cm	_____	_____	_____	
	00095	umhos/cm	_____	_____	_____	
T.O.X.	70354	ug/l	<u>ND</u>	<u>30.0</u>	<u>03-12-96</u>	
	70354	ug/l	_____	_____	_____	<u>SW9020</u>
	70354	ug/l	_____	_____	_____	
	70354	ug/l	_____	_____	_____	
T.O.C.	00680	mg/l	<u>ND</u>	<u>1.0</u>	<u>03-05-96</u>	
	00680	mg/l	_____	_____	_____	<u>E415.1</u>
	00680	mg/l	_____	_____	_____	
	00680	mg/l	_____	_____	_____	

SIGNATURE: *F. Eileen Roybal*  
NAME (PRINTED): F. Eileen Roybal

**INTERIM STATUS DETECTION MONITORING SEMI-ANNUAL INDICATOR  
PARAMETER REPORT**

This set of data sheets should be completed by facilities in semi-annual detection monitoring, HWMR-6, Part VI, Section 265.92 (d) (2) and (e) and Section 265.94 (a). These data sheets should be completed semi-annually and submitted annually. The raw lab data sheets should be submitted in addition to the Semi-Annual Report. **In order to be acceptable** the raw lab data sheets must include 1) the date the sample was taken, 2) the sample extraction date, if any, and 3) the date of analysis.

FACILITY NAME Cannon Air Force Base EPA I.D. NUMBER NM7572124454  
WELL NUMBER CAFB-L-0296-1

**FIRST SAMPLING EVENT  
SEMI-ANNUAL REPORT**

LABORATORY NAME Quanterra Environmental Services DATE SAMPLED 02-28-96  
SAMPLED BY Jerry Larson LABORATORY SAMPLE I.D.# 047577-0003-SA  
TIME SAMPLED 1400 DATE RECEIVED BY LAB 02-29-96

PARAMETERS	STORET CODE	UNITS	VALUE	DATE ANALYZED
Elevation of G. Water	71993	ft.	<u>3984.27</u>	<u>02-28-96</u>
Well Depth	----	ft.	<u>287.00</u>	<u>10-21-92</u>
Well Casing Volume	----	gal.	<u>4.28</u>	<u>02-28-96</u>
Pump Rate	----	gal/min	<u>0.44</u>	<u>02-28-96</u>
Pump Period	72004	min.	<u>70.00</u>	<u>02-28-96</u>
Volume Evacuated	73675	gal.	<u>31.00</u>	<u>02-28-96</u>

Sampler Material: TEFLN Well Sampling Method: PSPMP

**FIRST SAMPLING EVENT  
SEMI-ANNUAL REPORT  
(continued)**

PARAMETERS	STORET CODE	UNITS	VALUE	DETECTION LIMIT	DATE ANALYZED	METHOD USED
pH	00400	S.U.	<u>7.29</u>	<u>N/A</u>	<u>02-28-96</u>	
	00400	S.U.	<u>      </u>	<u>      </u>	<u>      </u>	<u>(f)</u>
	00400	S.U.	<u>      </u>	<u>      </u>	<u>      </u>	
	00400	S.U.	<u>      </u>	<u>      </u>	<u>      </u>	
Specific Conductivity	00095	umhos/cm	<u>776</u>	<u>N/A</u>	<u>02-28-96</u>	
	00095	umhos/cm	<u>      </u>	<u>      </u>	<u>      </u>	<u>(f)</u>
	00095	umhos/cm	<u>      </u>	<u>      </u>	<u>      </u>	
	00095	umhos/cm	<u>      </u>	<u>      </u>	<u>      </u>	
T.O.X.	70354	ug/l	<u>ND</u>	<u>30.0</u>	<u>03-12-96</u>	
	70354	ug/l	<u>      </u>	<u>      </u>	<u>      </u>	<u>SW9020</u>
	70354	ug/l	<u>      </u>	<u>      </u>	<u>      </u>	
	70354	ug/l	<u>      </u>	<u>      </u>	<u>      </u>	
T.O.C.	00680	mg/l	<u>ND</u>	<u>1.0</u>	<u>03-05-96</u>	
	00680	mg/l	<u>      </u>	<u>      </u>	<u>      </u>	<u>E415.1</u>
	00680	mg/l	<u>      </u>	<u>      </u>	<u>      </u>	
	00680	mg/l	<u>      </u>	<u>      </u>	<u>      </u>	

SIGNATURE: F. Eileen Roybal  
NAME (PRINTED): F. Eileen Roybal

**INTERIM STATUS DETECTION MONITORING SEMI-ANNUAL INDICATOR  
PARAMETER REPORT**

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FACILITY NAME Cannon Air Force Base EPA I.D. NUMBER NM7572124454  
WELL NUMBER CAFB-M-0296-1

**FIRST SAMPLING EVENT  
SEMI-ANNUAL REPORT**

LABORATORY NAME Quanterra Environmental Services DATE SAMPLED 03-07-96  
SAMPLED BY Jerry Larson LABORATORY SAMPLE I.D.# 047724-0001-SA  
TIME SAMPLED 0900 DATE RECEIVED BY LAB 03-08-96

PARAMETERS	STORET CODE	UNITS	VALUE	DATE ANALYZED
Elevation of G. Water	71993	ft.	<u>3984.61</u>	<u>02-29-96</u>
Well Depth	-----	ft.	<u>289.00</u>	<u>10-21-92</u>
Well Casing Volume	-----	gal.	<u>12.78</u>	<u>02-29-96</u>
Pump Rate	-----	gal/min	_____	_____
Pump Period	72004	min.	_____	_____
Volume Evacuated	73675	gal.	<u>5.00</u>	<u>03-07-96</u>

Sampler Material: TEFLN Well Sampling Method: PSPMP

**FIRST SAMPLING EVENT  
SEMI-ANNUAL REPORT  
(continued)**

PARAMETERS	STORET CODE	UNITS	VALUE	DETECTION LIMIT	DATE ANALYZED	METHOD USED
pH	00400	S.U.	<u>7.50</u>	<u>N/A</u>	<u>03-07-96</u>	
	00400	S.U.	_____	_____	_____	<u>(f)</u>
	00400	S.U.	_____	_____	_____	
	00400	S.U.	_____	_____	_____	
Specific Conductivity	00095	umhos/cm	<u>861</u>	<u>N/A</u>	<u>03-07-96</u>	
	00095	umhos/cm	_____	_____	_____	<u>(f)</u>
	00095	umhos/cm	_____	_____	_____	
	00095	umhos/cm	_____	_____	_____	
T.O.X.	70354	ug/l	<u>ND</u>	<u>30.0</u>	<u>03-12-96</u>	
	70354	ug/l	_____	_____	_____	<u>SW9020</u>
	70354	ug/l	_____	_____	_____	
	70354	ug/l	_____	_____	_____	
T.O.C.	00680	mg/l	<u>ND</u>	<u>1.0</u>	<u>03-12-96</u>	
	00680	mg/l	_____	_____	_____	<u>E415.1</u>
	00680	mg/l	_____	_____	_____	
	00680	mg/l	_____	_____	_____	

SIGNATURE: *F. Eileen Roybal*

NAME (PRINTED): F. Eileen Roybal

**INTERIM STATUS DETECTION MONITORING SEMI-ANNUAL INDICATOR  
PARAMETER REPORT**

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FACILITY NAME Cannon Air Force Base EPA I.D. NUMBER NM7572124454  
WELL NUMBER CAFB-N-0296-1

**FIRST SAMPLING EVENT  
SEMI-ANNUAL REPORT**

LABORATORY NAME Quanterra Environmental Services DATE SAMPLED 02-27-96  
SAMPLED BY Jerry Larson LABORATORY SAMPLE I.D.# 047558-0001-SA  
TIME SAMPLED 1030 DATE RECEIVED BY LAB 02-28-96

PARAMETERS	STORET CODE	UNITS	VALUE	DATE ANALYZED
Elevation of G. Water	71993	ft.	<u>3994.28</u>	<u>02-27-96</u>
Well Depth	----	ft.	<u>299.63</u>	<u>12-13-94</u>
Well Casing Volume	----	gal.	<u>15.79</u>	<u>02-27-96</u>
Pump Rate	----	gal/min	<u>0.79</u>	<u>02-27-96</u>
Pump Period	72004	min.	<u>38.00</u>	<u>02-27-96</u>
Volume Evacuated	73675	gal.	<u>30.00</u>	<u>02-27-96</u>

Sampler Material: TEFLN Well Sampling Method: PSPMP

**FIRST SAMPLING EVENT  
SEMI-ANNUAL REPORT  
(continued)**

PARAMETERS	STORET CODE	UNITS	VALUE	DETECTION LIMIT	DATE ANALYZED	METHOD USED
pH	00400	S.U.	<u>7.68</u>	<u>N/A</u>	<u>02-27-96</u>	
	00400	S.U.	_____	_____	_____	<u>(f)</u>
	00400	S.U.	_____	_____	_____	
	00400	S.U.	_____	_____	_____	
Specific Conductivity	00095	umhos/cm	<u>785</u>	<u>N/A</u>	<u>02-27-96</u>	
	00095	umhos/cm	_____	_____	_____	<u>(f)</u>
	00095	umhos/cm	_____	_____	_____	
	00095	umhos/cm	_____	_____	_____	
T.O.X.	70354	ug/l	_____	_____	_____	
	70354	ug/l	_____	_____	_____	
	70354	ug/l	_____	_____	_____	
	70354	ug/l	_____	_____	_____	
T.O.C.	00680	mg/l	_____	_____	_____	
	00680	mg/l	_____	_____	_____	
	00680	mg/l	_____	_____	_____	
	00680	mg/l	_____	_____	_____	

SIGNATURE: *F. Eileen Roybal*

NAME (PRINTED): F. Eileen Roybal

**INTERIM STATUS DETECTION MONITORING SEMI-ANNUAL INDICATOR  
PARAMETER REPORT**

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FACILITY NAME Cannon Air Force Base EPA I.D. NUMBER NM7572124454  
WELL NUMBER CAFB-O-0296-1

**FIRST SAMPLING EVENT  
SEMI-ANNUAL REPORT**

LABORATORY NAME Quanterra Environmental Services DATE SAMPLED 02-27-96  
SAMPLED BY Jerry Larson LABORATORY SAMPLE I.D.# 047558-0002-SA  
TIME SAMPLED 1235 DATE RECEIVED BY LAB 02-28-96

PARAMETERS	STORET CODE	UNITS	VALUE	DATE ANALYZED
Elevation of G. Water	71993	ft.	<u>3990.40</u>	<u>02-27-96</u>
Well Depth	----	ft.	<u>305.96</u>	<u>10-30-94</u>
Well Casing Volume	----	gal.	<u>15.20</u>	<u>02-27-96</u>
Pump Rate	----	gal/min	<u>0.81</u>	<u>02-27-96</u>
Pump Period	72004	min.	<u>31.00</u>	<u>02-27-96</u>
Volume Evacuated	73675	gal.	<u>25.00</u>	<u>02-27-96</u>

Sampler Material: TEFLN Well Sampling Method: PSPMP

**FIRST SAMPLING EVENT  
SEMI-ANNUAL REPORT  
(continued)**

PARAMETERS	STORET CODE	UNITS	VALUE	DETECTION LIMIT	DATE ANALYZED	METHOD USED
pH	00400	S.U.	<u>6.82</u>	<u>N/A</u>	<u>02-27-96</u>	
	00400	S.U.	_____	_____	_____	<u>(f)</u>
	00400	S.U.	_____	_____	_____	
	00400	S.U.	_____	_____	_____	
Specific Conductivity	00095	umhos/cm	<u>1988</u>	<u>N/A</u>	<u>02-27-96</u>	
	00095	umhos/cm	_____	_____	_____	<u>(f)</u>
	00095	umhos/cm	_____	_____	_____	
	00095	umhos/cm	_____	_____	_____	
T.O.X.	70354	ug/l	_____	_____	_____	
	70354	ug/l	_____	_____	_____	
	70354	ug/l	_____	_____	_____	
	70354	ug/l	_____	_____	_____	
T.O.C.	00680	mg/l	_____	_____	_____	
	00680	mg/l	_____	_____	_____	
	00680	mg/l	_____	_____	_____	
	00680	mg/l	_____	_____	_____	

SIGNATURE: F. Eileen Roybal  
NAME (PRINTED): F. Eileen Roybal

**INTERIM STATUS DETECTION MONITORING SEMI-ANNUAL INDICATOR  
PARAMETER REPORT**

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FACILITY NAME Cannon Air Force Base EPA I.D. NUMBER NM7572124454  
WELL NUMBER CAFB-P-0296-3

**FIRST SAMPLING EVENT  
SEMI-ANNUAL REPORT**

LABORATORY NAME Quanterra Environmental Services DATE SAMPLED 02-27-96  
SAMPLED BY Jerry Larson LABORATORY SAMPLE I.D.# 047558-0005-SA  
TIME SAMPLED 0840 DATE RECEIVED BY LAB 02-28-96

PARAMETERS	STORET CODE	UNITS	VALUE	DATE ANALYZED
Elevation of G. Water	71993	ft.	<u>3995.45</u>	<u>02-27-96</u>
Well Depth	----	ft.	<u>296.49</u>	<u>07-16-95</u>
Well Casing Volume	----	gal.	<u>12.10</u>	<u>02-27-96</u>
Pump Rate	----	gal/min	<u>0.83</u>	<u>02-27-96</u>
Pump Period	72004	min.	<u>36.00</u>	<u>02-27-96</u>
Volume Evacuated	73675	gal.	<u>30.00</u>	<u>02-27-96</u>

Sampler Material: TEFLN Well Sampling Method: PSPMP

**FIRST SAMPLING EVENT  
SEMI-ANNUAL REPORT  
(continued)**

PARAMETERS	STORET CODE	UNITS	VALUE	DETECTION LIMIT	DATE ANALYZED	METHOD USED
pH	00400	S.U.	<u>7.29</u>	<u>N/A</u>	<u>02-27-96</u>	
	00400	S.U.	_____	_____	_____	<u>(f)</u>
	00400	S.U.	_____	_____	_____	
	00400	S.U.	_____	_____	_____	
Specific Conductivity	00095	umhos/cm	<u>1880</u>	<u>N/A</u>	<u>02-27-96</u>	
	00095	umhos/cm	_____	_____	_____	<u>(f)</u>
	00095	umhos/cm	_____	_____	_____	
	00095	umhos/cm	_____	_____	_____	
T.O.X.	70354	ug/l	_____	_____	_____	
	70354	ug/l	_____	_____	_____	
	70354	ug/l	_____	_____	_____	_____
	70354	ug/l	_____	_____	_____	
T.O.C.	00680	mg/l	_____	_____	_____	
	00680	mg/l	_____	_____	_____	
	00680	mg/l	_____	_____	_____	_____
	00680	mg/l	_____	_____	_____	

SIGNATURE: *F. Eileen Roybal*

NAME (PRINTED): F. Eileen Roybal

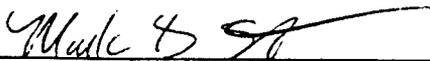
Quanterra Incorporated  
4955 Yarrow Street  
Arvada, Colorado 80002

303 421-6611 Telephone  
303 431-7171 Fax

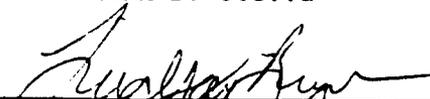
**ANALYTICAL RESULTS**  
**FOR**  
**U.S. GEOLOGICAL SURVEY**  
**QUANTERRA NO. 047577**

**MARCH 22, 1996**

Prepared by:

  
\_\_\_\_\_  
Mark D. Stella

Reviewed by:

  
\_\_\_\_\_  
Lindsay Breyer

## I. OVERVIEW

On February 29, 1996, Quanterra Environmental Services, Denver received three aqueous samples from the U.S. Geological Survey.

This report presents the analytical results as well as supporting information to aid in the evaluation and interpretation of the data and is arranged in the following order:

- I. Overview
- II. Sample Description Information/Analytical Test Requests
- III. Analytical Results
- IV. Quality Control Report

### Volatile Organics by GC/MS:

The trip blank (USGS sample identification CAFB-A-0296-2) was canceled due to contamination of the sample by the laboratory. On March 14, 1996, Mr. Fred Gebhardt was notified of the problem.

### Semivolatile Organics by GC/MS:

1,2,4-Trichlorobenzene is reported outside control limits in the matrix spike duplicate. Since the average matrix spike/spike duplicate (MS/SD) recovery is within control limits, the data were reported.

### Chlorinated Pesticides/PCB's:

The relative percent difference (RPD) for heptachlor is reported outside control limits in the duplicate control samples (DCS). All other spike compounds in the DCS were within control limits. In addition, the MS/SD recoveries were within control limits for all compounds. For these reasons, the data were reported.

Metals:

Selenium was recovered below control limits in the MS/SD due to a potential matrix interference. Since the DCS were within control limits, the data were reported.

Mercury recovery exceeded control limits in the MS/SD, indicating a possible matrix effect. The DCS were within control limits, so the data were reported.

General Inorganics:

The MS/SD recoveries are reported outside control limits for the Total Organic Halogen (TOX) analysis. The problem can be potentially attributed to target analyte detected below the reporting limit. Since the DCS were within control limits, the data were reported.

The high distilled cyanide standard was recovered below control limits. Cyanide was not detected in the samples. The DCS were within control limits, so the data were reported.

With the exceptions noted either above or on the data sheets, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory QC samples analyzed in conjunction with the samples in this project were within established control limits.

## **II. SAMPLE DESCRIPTION INFORMATION/ANALYTICAL TEST REQUESTS**

### Sample Description Information:

The Sample Description Information lists all of the samples received in this project together with the internal laboratory identification number assigned for each sample. Each project received at Quanterra's Denver laboratory is assigned a unique six digit number. Samples within the project are numbered sequentially. The laboratory identification number is a combination of the six digit project code and the sample sequence number.

Also given in the Sample Description Information is the Sample Type (matrix), Date of Sampling (if known) and Date of Receipt at the laboratory.

### Analytical Test Requests:

The Analytical Test Requests lists the analyses that were performed on each sample. The Custom Test column indicates where tests have been modified to conform to the specific requirements of this project.

SAMPLE DESCRIPTION INFORMATION  
for  
U.S. Geological Survey

Lab ID	Client ID	Matrix	Sampled		Received
			Date	Time	
047577-0001-SA	CAFB-A-0296-1	AQUEOUS	28 FEB 96	10:45	29 FEB 96
047577-0002-TB	CAFB-A-0296-2	AQUEOUS	28 FEB 96	10:40	29 FEB 96
047577-0003-SA	CAFB-L-0296-1	AQUEOUS	28 FEB 96	14:00	29 FEB 96
047577-0003-MS	CAFB-L-0296-2	AQUEOUS	28 FEB 96	14:00	29 FEB 96
047577-0003-SD	CAFB-L-0296-3	AQUEOUS	28 FEB 96	14:00	29 FEB 96

**ANALYTICAL TEST REQUESTS  
for  
U.S. Geological Survey**

Lab ID: 047577	Group Code	Analysis Description	Custom Test?
0001 , 0003	A	Volatile Organics	N
		Appendix IX List	N
		Screen - Volatile Organics	N
		Volatiles Library Search (10 Compound TID)	N
		Semivolatiles Library Search (20 Compound TID)	N
		Appendix IX Herbicides	N
		Prep - Herbicides by GC	N
		Appendix IX Herbicides	N
		Total Organic Halogen (TOX)	N
		Cyanide, Total	N
		Prep - Cyanide, Total	N
		Sulfide, Total	N
		Chloride, Ion Chromatography	N
		Sulfate, Ion Chromatography	N
		Appendix IX Metals (Total) done by ICP	Y
		Prep - Total Metals, ICP	N
		Lead, Furnace AA (Total)	N
		Prep - Total Metals, Furnace AA	N
		Arsenic, Furnace AA (Total)	N
		Prep - Arsenic, Selenium - Total, Furnace AA	N
		Selenium, Furnace AA (Total)	N
		Thallium, Furnace AA (Total)	N
		STD-Total Organic Carbon (TOC)-415.1	N
		Semivolatile Organics	N
		Appendix IX List	
		Prep - Semivolatile Organics by GC/MS	N
		Chlorinated Pesticides and PCB's	N
		Appendix IX List	
		Prep - Organochlorine Pesticides/PCBs by GC	N
		Chlorinated Pesticides and PCB's	N
		Appendix IX List	
		Phenolics, Manual(4-AAP)	N
		Prep - Phenolics	N
Mercury, Cold Vapor AA (Total)	N		
Prep - Mercury, Cold Vapor AA (Total)	N		
0002	B	Volatile Organics	N
		Appendix IX List	N
		Screen - Volatile Organics	N
		Volatiles Library Search (10 Compound TID)	N

### III. ANALYTICAL RESULTS

The analytical results for this project are presented in the following data tables. Each data table includes sample identification information, and when available and appropriate, dates sampled, received, authorized, prepared and analyzed. The authorization date is the date when the project was defined by the client such that laboratory work could begin. The date prepared is typically the date an extraction or digestion was initiated. For volatile organic compounds in water, the date prepared is the date the screening of the sample was performed.

Data sheets contain a listing of the parameters measured in each test, the analytical results and the Quanterra reporting limit. Reporting limits are adjusted to reflect dilution of the sample, when appropriate. Solid and waste samples are reported on an "as received" basis, i.e. no correction is made for moisture content.

Quanterra does not routinely blank-correct analytical data. Uncorrected analytical results are reported, along with associated blank results, for all organic and metals analyses. Analytical results and blank results are reported for conventional inorganic parameters as specified in the method.

In addition, surrogate recovery data is presented for all GC/MS analyses. The surrogate recovery is an indication of the affect of the sample matrix on the performance of the method.

The analytical data reported are subject to the following limitations of the analytical methodology:

GC/MS Semivolatile Organics:

Benzo(b) and benzo(k) fluoranthene cannot be differentiated based on their mass spectra and their retention times are almost identical. The isomer which is the closest in retention time to the sample is reported.

1,2-diphenylhydrazine is measured as azobenzene.

N-nitrosodiphenylamine degrades to diphenylamine in the injection port of the instrument. Therefore, these two compounds cannot be distinguished from one another.

3-Methyl phenol and 4-methyl phenol cannot be differentiated based on their mass spectra and retention times are identical. Results are reported as 3/4-methyl phenol (or m&p-cresols).

Several compounds are not consistently recovered using Method 8270 and reporting limits cannot be established. These compounds include hexachlorophene and benzenethiol.

Two Refinery compounds, pyridine and quinoline, are not recovered after alumina column cleanup.

### Tentatively Identified Compounds:

This report presents results for the "identification" of unknown compounds that were detected in the GC/MS analysis. The results from this work are presented as "tentatively identified compounds" (TICs). The approach used for reporting TICs was based on the protocol established for this purpose in the EPA Superfund methods and on guidelines established by the American Chemical Society (ACS).

In summary, the mass spectra of chromatographic peaks in concentrations in excess of 10% of the internal standard were obtained. Normally, the number of unknown compounds identified is limited to 10 compounds in the volatile fraction and 20 compounds in the semivolatile fraction. Each mass spectrum was then compared to a library of over 30,000 reference spectra in a computerized "library search." The three "best" matches obtained by the computer were hardcopied along with the mass spectrum of the unknown peak. This information was then reviewed by an analyst who "identified" the compound based on the available information.

All identifications were based on the "Guidelines for GC/MS Identification" developed by the American Chemical Society (Environmental Science and Technology, 1982, 16 143A). As recommended in these guidelines, identifications of unknown substances were reported with a level of confidence. The three levels of confidence cited in the ACS guidelines and used in this report are as follows:

#### Level 3: Confirmed Identification:

The identification is based on the analysis of an authentic standard.

#### Level 2: Confident Identification:

Good agreement was observed between the unknown compound and a specific library spectrum.

Level 1: Tentative Identification:

The unknown compound is only indicative of a specific library spectrum.

Class Identification:

The unknown compound was not similar to a specific library spectrum, but it did contain ions characteristic of a class of compounds (saturated hydrocarbon, chlorinated hydrocarbon, etc.).

If there were no library spectra similar to the unknown, and it could not be assigned to a particular class of compounds, the compound is reported as "unknown."

Quantitation of TICs is based on the total ionization peak area relative to an internal standard, assuming a response factor of one. Accordingly, the reported concentration is an estimate.

In general, mass spectrometry cannot distinguish isomers (compounds with the same molecular formula). Therefore, an identified compound may be any one of several different isomers.

The tentatively identified compounds in this report may include some compounds reported as "siloxanes." Siloxanes are common laboratory and field artifacts or contaminants. Potential sources include silicon-based grease in the field or laboratory plus the liquid phase coating on gas chromatography columns, as well as other equipment in the laboratory. However, siloxanes may also be present in environmental samples from spills of silicone oils or lubricating oils with siloxane additives.

### Chromatography:

Analyte identification in chromatographic analysis is based upon retention time. Since it is possible for more than one compound to have the same retention time, analyte identification by these methods is not definitive. Most methods require analysis on a second dissimilar chromatographic column to confirm the presence of target analytes detected in a sample. Only confirmed hits are reported without further qualification or supporting data.

Some analytes (e.g. technical chlordane, toxaphene, and the aroclors) consist of mixtures of a number of different compounds. These multicomponent analytes produce distinct patterns of peaks in the chromatograms and do not have a single retention time. The pattern of peaks observed is characteristic of the analyte and provides qualitative information about the analyte(s) present in the sample. For these analytes, second column confirmations are not generally required. Instead, identification is based on matching the patterns of peaks observed in the samples to the patterns for standards containing known concentrations of the analyte of interest.

All analytes are quantitated against multipoint calibration curves as specified in the applicable analytical methods. In some cases it is not practical to maintain multipoint calibration curves for every analyte on every instrument. These analytes include three Appendix IX compounds (diallate, isodrin and kepone) and the multicomponent analytes (technical chlordane, toxaphene and aroclors) analyzed by method 8080. For these analytes, a single calibration standard at the reporting limit is analyzed to establish instrument sensitivity for each compound. If the analyte is detected in any sample at greater than half the reporting limit, a multipoint calibration curve is prepared and the sample re-analyzed for quantitation against this curve.

## Metals:

All nominal reporting limits for metals have been established from instrument detection limit (IDL) and method detection limit (MDL) evaluations and represent the level above which reliable data can be routinely obtained. On a periodic basis, low-level standards are analyzed seven times on three non-consecutive days on each instrument. The standard deviations of the three runs are summed to yield the IDL. MDL studies are performed on an annual basis in accordance with 40 CFR 136 Appendix B. Nominal reporting limits are generally 2-5 times the IDL or MDL (consistent with the American Chemical Society definition for the Limit of Quantification). IDL and MDL studies for metals are necessarily performed on reagent water and do not account for matrix effects. Elevation of the reporting limits above the nominal levels are sometimes required as discussed below.

Reporting limits for metals analyzed by Inductively Coupled Plasma (ICP) are typically raised only for dilution due to an analyte exceeding the instrument linear range. Background and interelement interferences are corrected automatically and do not require dilution.

Metals analyzed by Graphite Furnace Atomic Absorption (GFAA) are subject to matrix interferences. Consequently, Quanterra Environmental Services, Denver laboratory's protocol is to analyze a spiked aliquot with every sample. The severity of the interference, based upon analyte level and spike recovery, is assessed against specific criteria and the need for an elevated reporting limit or dilution is determined.

The analysis of mercury by Cold Vapor Atomic Absorption (CVAA) is generally free from matrix interferences. As with ICP, reporting limits are raised only for dilution due to a sample concentration exceeding the linear range of the instrument.

## Footnotes and Data Qualifiers

The data sheets contained in this report may contain a variety of footnotes and data qualifiers. Those used to indicate the confidence level for Tentatively Identified Compounds (GC/MS methods) are described above. Other footnotes are used with specific tests; for example, footnotes used with the GC/FID Petroleum Hydrocarbon methods to indicate (in the analysts judgment) the product that appears to be present. Finally, there are a number of general qualifiers that serve to identify problems and pertinent observations made during sample analysis that are not discussed in the Overview. These are described below:

**B** Compound is also detected in the blank.

The indicated compound was detected in the sample as well as the method blank. Please note that the B flag is not used when the sample result is ND (Not Detected).

**G** Reporting limit raised due to the matrix of the sample.

Indicates that reporting limits were raised due to the presence of non-target compounds or other matrix interferences. The sample may or may not have been diluted. For inorganic methods, the footnote applies only to the flagged analyte. For organic methods, the footnote pertains to all analytes determined by the method.

**T** Preferred values unless footnoted on secondary column test.

This footnote is used with GC tests to indicate the primary column results. The footnote will be listed only for the first compound but pertains to all analytes determined by the method. It is used in conjunction the footnote V.

**V** Secondary column is the preferred value.

This footnote is used for GC tests in conjunction the T footnote. It indicates that the value from the second column is preferred over the primary column result and pertains only to the indicated compound.

**t** Sample diluted due to the concentration of target compounds.

Indicates that reporting limits were raised due to the presence of target analytes outside the calibration range of the method. For multi-analyte methods, the footnote will appear only for the first analyte but pertains to all analytes determined by the method.

Volatile Organics  
Appendix IX List  
Method 8240

Client Name: U.S. Geological Survey  
Client ID: CAFB-A-0296-1  
Lab ID: 047577-0001-SA  
Matrix: AQUEOUS  
Authorized: 29 FEB 96

Sampled: 28 FEB 96  
Received: 29 FEB 96

Prepared: 01 MAR 96  
Analyzed: 09 MAR 96

Parameter	Result	Units	Reporting Limit
Acetone	ND	ug/L	10
Acetonitrile	ND	ug/L	200
Acrolein	ND	ug/L	100
Acrylonitrile	ND	ug/L	100
Allyl chloride	ND	ug/L	10
Benzene	ND	ug/L	5.0
Bromodichloromethane	ND	ug/L	5.0
Bromoform	ND	ug/L	5.0
Bromomethane	ND	ug/L	10
2-Butanone (MEK)	ND	ug/L	10
Carbon disulfide	ND	ug/L	5.0
Carbon tetrachloride	ND	ug/L	5.0
Chlorobenzene	ND	ug/L	5.0
Chloroethane	ND	ug/L	10
Chloroform	ND	ug/L	5.0
Chloromethane	ND	ug/L	10
Isoprene	ND	ug/L	5.0
Bromochloromethane	ND	ug/L	5.0
1,2-Dibromo-3-chloro- propane (DBCP)	ND	ug/L	10
1,2-Dibromoethane (EDB)	ND	ug/L	10
Dibromomethane	ND	ug/L	5.0
trans-1,4-Dichloro-2-butene	ND	ug/L	5.0
Dichlorodifluoromethane	ND	ug/L	20
1,1-Dichloroethane	ND	ug/L	5.0
1,2-Dichloroethane	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	5.0
1,2-Dichloroethene (total)	ND	ug/L	5.0
1,2-Dichloropropane	ND	ug/L	5.0
cis-1,3-Dichloropropene	ND	ug/L	5.0
trans-1,3-Dichloropropene	ND	ug/L	5.0
1,4-Dioxane	ND	ug/L	500
Ethylbenzene	ND	ug/L	5.0
Ethyl methacrylate	ND	ug/L	20
Iodomethane	ND	ug/L	5.0
Isobutanol (2-Methyl-1-propanol)	ND	ug/L	200
2-Hexanone	ND	ug/L	10
Methacrylonitrile	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
Methyl methacrylate	ND	ug/L	20
4-Methyl-2-pentanone (MIBK)	ND	ug/L	10

Dilution factor is 1.0. All results and limits are corrected for dilution.

= Not Detected

Reported By: Sandra Jones

Approved By: Dawn M. Basko



Environmental  
Services  
(cont.)

Volatile Organics  
Appendix IX List  
Method 8240

Client Name: U.S. Geological Survey  
Client ID: CAFB-A-0296-1  
Lab ID: 047577-0001-SA  
Matrix: AQUEOUS  
Authorized: 29 FEB 96

Sampled: 28 FEB 96  
Received: 29 FEB 96

Prepared: 01 MAR 96  
Analyzed: 09 MAR 96

Parameter	Result	Units	Reporting Limit
Propionitrile	ND	ug/L	5.0
Styrene	ND	ug/L	5.0
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0
Tetrachloroethene	ND	ug/L	5.0
Toluene	ND	ug/L	5.0
1,1,1-Trichloroethane	ND	ug/L	5.0
1,1,2-Trichloroethane	ND	ug/L	5.0
Trichloroethene	ND	ug/L	5.0
Trichlorofluoromethane	ND	ug/L	5.0
1,2,3-Trichloropropane	ND	ug/L	5.0
Vinyl acetate	ND	ug/L	10
Vinyl chloride	ND	ug/L	10
Xylenes (total)	ND	ug/L	5.0
Surrogate	Recovery		Limits
Toluene-d8	100	%	88-110
Bromofluorobenzene	104	%	86-115
1,2-Dichloroethane-d4	100	%	76-114

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones

Approved By: Dawn M. Basko

Volatiles Library Search (10 Compound TID)  
Method 8240

Client Name: U.S. Geological Survey  
Client ID: CAFB-A-0296-1  
Lab ID: 047577-0001-SA  
Matrix: AQUEOUS  
Authorized: 29 FEB 96

Sampled: 28 FEB 96  
Received: 29 FEB 96

Prepared: NA  
Analyzed: 09 MAR 96

Parameter	Result	Units	Reporting Limit
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones

Approved By: Dawn M. Basko

Volatile Organics  
Appendix IX List  
Method 8240

Client Name: U.S. Geological Survey  
Client ID: CAFB-L-0296-1  
Lab ID: 047577-0003-SA  
Matrix: AQUEOUS  
Authorized: 29 FEB 96

Sampled: 28 FEB 96  
Received: 29 FEB 96

Prepared: 01 MAR 96  
Analyzed: 12 MAR 96

Parameter	Result	Units	Reporting Limit
Acetone	ND	ug/L	10
Acetonitrile	ND	ug/L	200
Acrolein	ND	ug/L	100
Acrylonitrile	ND	ug/L	100
Allyl chloride	ND	ug/L	10
Benzene	ND	ug/L	5.0
Bromodichloromethane	ND	ug/L	5.0
Bromoform	ND	ug/L	5.0
Bromomethane	ND	ug/L	10
2-Butanone (MEK)	ND	ug/L	10
Carbon disulfide	ND	ug/L	5.0
Carbon tetrachloride	ND	ug/L	5.0
Chlorobenzene	ND	ug/L	5.0
Chloroethane	ND	ug/L	10
Chloroform	ND	ug/L	5.0
Chloromethane	ND	ug/L	10
Chloroprene	ND	ug/L	5.0
bromochloromethane	ND	ug/L	5.0
1,2-Dibromo-3-chloro- propane (DBCP)	ND	ug/L	10
1,2-Dibromoethane (EDB)	ND	ug/L	10
Dibromomethane	ND	ug/L	5.0
trans-1,4-Dichloro-2-butene	ND	ug/L	5.0
Dichlorodifluoromethane	ND	ug/L	20
1,1-Dichloroethane	ND	ug/L	5.0
1,2-Dichloroethane	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	5.0
1,2-Dichloroethene (total)	ND	ug/L	5.0
1,2-Dichloropropane	ND	ug/L	5.0
cis-1,3-Dichloropropene	ND	ug/L	5.0
trans-1,3-Dichloropropene	ND	ug/L	5.0
1,4-Dioxane	ND	ug/L	500
Ethylbenzene	ND	ug/L	5.0
Ethyl methacrylate	ND	ug/L	20
Iodomethane	ND	ug/L	5.0
Isobutanol (2-Methyl-1-propanol)	ND	ug/L	200
2-Hexanone	ND	ug/L	10
Methacrylonitrile	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
Methyl methacrylate	ND	ug/L	20
4-Methyl-2-pentanone (MIBK)	ND	ug/L	10

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Mike Hoffman

Approved By: Dawn M. Basko

Volatile Organics  
Appendix IX List  
Method 8240

Client Name: U.S. Geological Survey  
Client ID: CAFB-L-0296-1  
Lab ID: 047577-0003-SA  
Matrix: AQUEOUS  
Authorized: 29 FEB 96

Sampled: 28 FEB 96  
Received: 29 FEB 96

Prepared: 01 MAR 96  
Analyzed: 12 MAR 96

Parameter	Result	Units	Reporting Limit
Propionitrile	ND	ug/L	5.0
Styrene	ND	ug/L	5.0
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0
Tetrachloroethene	ND	ug/L	5.0
Toluene	ND	ug/L	5.0
1,1,1-Trichloroethane	ND	ug/L	5.0
1,1,2-Trichloroethane	ND	ug/L	5.0
Trichloroethene	ND	ug/L	5.0
Trichlorofluoromethane	ND	ug/L	5.0
1,2,3-Trichloropropane	ND	ug/L	5.0
Vinyl acetate	ND	ug/L	10
Vinyl chloride	ND	ug/L	10
Xylenes (total)	ND	ug/L	5.0
Surrogate	Recovery		Limits
Toluene-d8	102	%	88-110
4-Bromofluorobenzene	102	%	86-115
1,2-Dichloroethane-d4	97	%	76-114

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Mike Hoffman

Approved By: Dawn M. Basko

Volatiles Library Search (10 Compound TID)  
Method 8240

Client Name: U.S. Geological Survey  
Client ID: CAFB-L-0296-1  
Lab ID: 047577-0003-SA  
Matrix: AQUEOUS  
Authorized: 29 FEB 96

Sampled: 28 FEB 96  
Received: 29 FEB 96

Prepared: NA  
Analyzed: 12 MAR 96

Parameter	Result	Units	Reporting Limit
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Mike Hoffman

Approved By: Dawn M. Basko

Semivolatile Organics  
Appendix IX List  
Method 8270



Client Name: U.S. Geological Survey  
Client ID: CAFB-A-0296-1  
Lab ID: 047577-0001-SA  
Matrix: AQUEOUS  
Authorized: 29 FEB 96

Sampled: 28 FEB 96  
Received: 29 FEB 96

Prepared: 06 MAR 96  
Analyzed: 15 MAR 96

Parameter	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	10
Acenaphthylene	ND	ug/L	10
Acetophenone	ND	ug/L	10
2-Acetylaminofluorene	ND	ug/L	100
4-Aminobiphenyl	ND	ug/L	10
Aniline	ND	ug/L	10
Anthracene	ND	ug/L	10
Aramite	ND	ug/L	10
Benzo(a)anthracene	ND	ug/L	10
Benzo(b)fluoranthene	ND	ug/L	10
Benzo(k)fluoranthene	ND	ug/L	10
Benzo(g,h,i)perylene	ND	ug/L	10
Benzo(a)pyrene	ND	ug/L	10
Benzyl alcohol	ND	ug/L	10
4-Bromophenyl phenyl ether	ND	ug/L	10
Butyl benzyl phthalate	ND	ug/L	10
2-sec-Butyl-4,6-dinitro-phenol	ND	ug/L	10
4-Chloroaniline	ND	ug/L	10
Bis(2-Chloroethoxy)methane	ND	ug/L	10
Bis(2-Chloroethyl) ether	ND	ug/L	10
Bis(2-Chloroisopropyl)ether	ND	ug/L	10
4-Chloro-3-methylphenol	ND	ug/L	10
2-Chloronaphthalene	ND	ug/L	10
2-Chlorophenol	ND	ug/L	10
4-Chlorophenyl phenyl ether	ND	ug/L	10
Chrysene	ND	ug/L	10
Dibenz(a,h)anthracene	ND	ug/L	10
Dibenzofuran	ND	ug/L	10
Di-n-butyl phthalate	ND	ug/L	10
1,2-Dichlorobenzene	ND	ug/L	10
1,3-Dichlorobenzene	ND	ug/L	10
1,4-Dichlorobenzene	ND	ug/L	10
3,3'-Dichlorobenzidine	ND	ug/L	20
2,4-Dichlorophenol	ND	ug/L	10
2,6-Dichlorophenol	ND	ug/L	10
Diethyl phthalate	ND	ug/L	10
Dimethoate	ND	ug/L	50
p-Dimethylaminoazobenzene	ND	ug/L	10
7,12-Dimethylbenz(a)-anthracene	ND	ug/L	10
3,3'-Dimethylbenzidine	ND	ug/L	10
a,a-Dimethylphenethyl-amine	ND	ug/L	10

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Dan Albritton

Approved By: Audrey Cornell

Appendix IX List  
Method 8270



Client Name: U.S. Geological Survey  
 Client ID: CAFB-A-0296-1  
 Job ID: 047577-0001-SA  
 Matrix: AQUEOUS  
 Authorized: 29 FEB 96

Sampled: 28 FEB 96  
 Received: 29 FEB 96

Prepared: 06 MAR 96  
 Analyzed: 15 MAR 96

Parameter	Result	Units	Reporting Limit
2,4-Dimethylphenol	ND	ug/L	10
Dimethyl phthalate	ND	ug/L	10
1,3-Dinitrobenzene	ND	ug/L	10
4,6-Dinitro-2-methylphenol	ND	ug/L	50
2,4-Dinitrophenol	ND	ug/L	50
2,4-Dinitrotoluene	ND	ug/L	10
2,6-Dinitrotoluene	ND	ug/L	10
Di-n-octyl phthalate	ND	ug/L	10
Diphenylamine	ND	ug/L	10
Disulfoton	ND	ug/L	50
bis(2-Ethylhexyl)phthalate	ND	ug/L	10
Ethyl methanesulfonate	ND	ug/L	10
Famphur	ND	ug/L	50
Fluoranthene	ND	ug/L	10
Fluorene	ND	ug/L	10
Hexachlorobenzene	ND	ug/L	10
Hexachlorobutadiene	ND	ug/L	10
Hexachlorocyclopentadiene	ND	ug/L	10
Hexachloroethane	ND	ug/L	10
Hexachlorophene	ND	ug/L	--
Hexachloropropene	ND	ug/L	10
Indeno(1,2,3-cd)pyrene	ND	ug/L	10
Isophorone	ND	ug/L	10
Isosafrole	ND	ug/L	20
Methapyrilene	ND	ug/L	10
3-Methylcholanthrene	ND	ug/L	10
Methyl methanesulfonate	ND	ug/L	10
2-Methylnaphthalene	ND	ug/L	10
Methyl parathion	ND	ug/L	50
2-Methylphenol	ND	ug/L	10
3/4-Methylphenol	ND	ug/L	10
Naphthalene	ND	ug/L	10
1,4-Naphthoquinone	ND	ug/L	10
1-Naphthylamine	ND	ug/L	10
2-Naphthylamine	ND	ug/L	10
2-Nitroaniline	ND	ug/L	50
3-Nitroaniline	ND	ug/L	50
4-Nitroaniline	ND	ug/L	50
Nitrobenzene	ND	ug/L	10
2-Nitrophenol	ND	ug/L	10
4-Nitrophenol	ND	ug/L	50

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Dan Albritton

Approved By: Audrey Cornell

Appendix IX List  
Method 8270



Client Name: U.S. Geological Survey  
Client ID: CAFB-A-0296-1  
Lab ID: 047577-0001-SA  
Matrix: AQUEOUS  
Authorized: 29 FEB 96

Sampled: 28 FEB 96  
Received: 29 FEB 96

Prepared: 06 MAR 96  
Analyzed: 15 MAR 96

Parameter	Result	Units	Reporting Limit
4-Nitroquinoline-1-oxide	ND	ug/L	100
N-Nitroso-di-n-butylamine	ND	ug/L	10
N-Nitrosodiethylamine	ND	ug/L	10
N-Nitrosodimethylamine	ND	ug/L	10
N-Nitrosodiphenylamine	ND	ug/L	10
N-Nitroso-di-n-propylamine	ND	ug/L	10
N-Nitrosomethylethylamine	ND	ug/L	10
N-Nitrosomorpholine	ND	ug/L	10
N-Nitrosopiperidine	ND	ug/L	10
N-Nitrosopyrrolidine	ND	ug/L	10
5-Nitro-o-toluidine	ND	ug/L	10
Parathion	ND	ug/L	50
Pentachlorobenzene	ND	ug/L	10
Pentachloroethane	ND	ug/L	10
Pentachloronitrobenzene	ND	ug/L	50
Pentachlorophenol	ND	ug/L	50
Phenacetin	ND	ug/L	10
Phenanthrene	ND	ug/L	10
Phenol	ND	ug/L	10
4-Phenylenediamine	ND	ug/L	100
4-Nitrophenol	ND	ug/L	100
4-Picoline	ND	ug/L	10
Pronamide	ND	ug/L	10
Pyrene	ND	ug/L	10
Pyridine	ND	ug/L	20
Safrole	ND	ug/L	10
Sulfotep	ND	ug/L	50
1,2,4,5-Tetrachloro-benzene	ND	ug/L	10
2,3,4,6-Tetrachlorophenol	ND	ug/L	50
Thionazin	ND	ug/L	50
2-Toluidine	ND	ug/L	10
1,2,4-Trichlorobenzene	ND	ug/L	10
2,4,5-Trichlorophenol	ND	ug/L	50
2,4,6-Trichlorophenol	ND	ug/L	10
0,0,0-Triethylphosphoro-thioate	ND	ug/L	10
1,3,5-Trinitrobenzene	ND	ug/L	10

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Dan Albritton

Approved By: Audrey Cornell

Semivolatile Organics  
Appendix IX List  
Method 8270

Client Name: U.S. Geological Survey  
Client ID: CAFB-A-0296-1  
Lab ID: 047577-0001-SA  
Matrix: AQUEOUS  
Authorized: 29 FEB 96

Sampled: 28 FEB 96  
Received: 29 FEB 96

Prepared: 06 MAR 96  
Analyzed: 15 MAR 96

Parameter	Result	Units	Reporting Limit
Surrogate	Recovery		Limits
Nitrobenzene-d5	75	%	35-114
2-Fluorobiphenyl	61	%	43-116
Terphenyl-d14	71	%	33-141
Phenol-d5	76	%	54-105
2-Fluorophenol	71	%	21-100
2,4,6-Tribromophenol	83	%	10-123

Dilution factor is 1.0. All results and limits are corrected for dilution.

Reported By: Dan Albritton

Approved By: Audrey Cornell

Semivolatiles Library Search (20 Compound TID)  
Method 8270



Client Name: U.S. Geological Survey  
Client ID: CAFB-A-0296-1  
Lab ID: 047577-0001-SA  
Matrix: AQUEOUS  
Authorized: 29 FEB 96

Sampled: 28 FEB 96  
Received: 29 FEB 96

Prepared: NA  
Analyzed: 15 MAR 96

Parameter	Result	Units	Reporting Limit
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Dan Albritton

Approved By: Audrey Cornell

Semivolatile Organics  
Appendix IX List  
Method 8270



Client Name: U.S. Geological Survey  
Client ID: CAFB-L-0296-1  
Lab ID: 047577-0003-SA  
Matrix: AQUEOUS  
Authorized: 29 FEB 96

Sampled: 28 FEB 96  
Received: 29 FEB 96

Prepared: 06 MAR 96  
Analyzed: 15 MAR 96

Parameter	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	10
Acenaphthylene	ND	ug/L	10
Acetophenone	ND	ug/L	10
2-Acetylaminofluorene	ND	ug/L	100
4-Aminobiphenyl	ND	ug/L	10
Aniline	ND	ug/L	10
Anthracene	ND	ug/L	10
Aramite	ND	ug/L	10
Benzo(a)anthracene	ND	ug/L	10
Benzo(b)fluoranthene	ND	ug/L	10
Benzo(k)fluoranthene	ND	ug/L	10
Benzo(g,h,i)perylene	ND	ug/L	10
Benzo(a)pyrene	ND	ug/L	10
Benzyl alcohol	ND	ug/L	10
4-Bromophenyl phenyl ether	ND	ug/L	10
Butyl benzyl phthalate	ND	ug/L	10
2-sec-Butyl-4,6-dinitro-phenol	ND	ug/L	10
4-Chloroaniline	ND	ug/L	10
1,2-bis(2-Chloroethoxy)methane	ND	ug/L	10
1,2-bis(2-Chloroethyl) ether	ND	ug/L	10
1,2-bis(2-Chloroisopropyl)ether	ND	ug/L	10
4-Chloro-3-methylphenol	ND	ug/L	10
2-Chloronaphthalene	ND	ug/L	10
2-Chlorophenol	ND	ug/L	10
4-Chlorophenyl phenyl ether	ND	ug/L	10
Chrysene	ND	ug/L	10
Dibenz(a,h)anthracene	ND	ug/L	10
Dibenzofuran	ND	ug/L	10
Di-n-butyl phthalate	ND	ug/L	10
1,2-Dichlorobenzene	ND	ug/L	10
1,3-Dichlorobenzene	ND	ug/L	10
1,4-Dichlorobenzene	ND	ug/L	10
3,3'-Dichlorobenzidine	ND	ug/L	20
2,4-Dichlorophenol	ND	ug/L	10
2,6-Dichlorophenol	ND	ug/L	10
Diethyl phthalate	ND	ug/L	10
Dimethoate	ND	ug/L	50
p-Dimethylaminoazobenzene	ND	ug/L	10
7,12-Dimethylbenz(a)-anthracene	ND	ug/L	10
3,3'-Dimethylbenzidine	ND	ug/L	10
N,N-Dimethylphenethyl-amine	ND	ug/L	10

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Dan Albritton

Approved By: Audrey Cornell

Appendix IX List  
Method 8270



Client Name: U.S. Geological Survey  
 Client ID: CAFB-L-0296-1  
 Lab ID: 047577-0003-SA  
 Matrix: AQUEOUS  
 Authorized: 29 FEB 96

Sampled: 28 FEB 96  
 Received: 29 FEB 96

Prepared: 06 MAR 96  
 Analyzed: 15 MAR 96

Parameter	Result	Units	Reporting Limit
2,4-Dimethylphenol	ND	ug/L	10
Dimethyl phthalate	ND	ug/L	10
1,3-Dinitrobenzene	ND	ug/L	10
4,6-Dinitro-2-methylphenol	ND	ug/L	50
2,4-Dinitrophenol	ND	ug/L	50
2,4-Dinitrotoluene	ND	ug/L	10
2,6-Dinitrotoluene	ND	ug/L	10
Di-n-octyl phthalate	ND	ug/L	10
Diphenylamine	ND	ug/L	10
Disulfoton	ND	ug/L	50
bis(2-Ethylhexyl)phthalate	ND	ug/L	10
Ethyl methanesulfonate	ND	ug/L	10
Famphur	ND	ug/L	50
Fluoranthene	ND	ug/L	10
Fluorene	ND	ug/L	10
Hexachlorobenzene	ND	ug/L	10
Hexachlorobutadiene	ND	ug/L	10
Hexachlorocyclopentadiene	ND	ug/L	10
Hexachloroethane	ND	ug/L	10
Hexachlorophene	ND	ug/L	--
Hexachloropropene	ND	ug/L	10
Indeno(1,2,3-cd)pyrene	ND	ug/L	10
Isophorone	ND	ug/L	10
Isosafrole	ND	ug/L	20
Methapyrilene	ND	ug/L	10
3-Methylcholanthrene	ND	ug/L	10
Methyl methanesulfonate	ND	ug/L	10
2-Methylnaphthalene	ND	ug/L	10
Methyl parathion	ND	ug/L	50
2-Methylphenol	ND	ug/L	10
3/4-Methylphenol	ND	ug/L	10
Naphthalene	ND	ug/L	10
1,4-Naphthoquinone	ND	ug/L	10
1-Naphthylamine	ND	ug/L	10
2-Naphthylamine	ND	ug/L	10
2-Nitroaniline	ND	ug/L	50
3-Nitroaniline	ND	ug/L	50
4-Nitroaniline	ND	ug/L	50
Nitrobenzene	ND	ug/L	10
2-Nitrophenol	ND	ug/L	10
4-Nitrophenol	ND	ug/L	50

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Dan Albritton

Approved By: Audrey Cornell

Appendix IX List  
Method 8270



Client Name: U.S. Geological Survey  
 Client ID: CAFB-L-0296-1  
 Lab ID: 047577-0003-SA  
 Matrix: AQUEOUS  
 Authorized: 29 FEB 96

Sampled: 28 FEB 96  
 Received: 29 FEB 96

Prepared: 06 MAR 96  
 Analyzed: 15 MAR 96

Parameter	Result	Units	Reporting Limit
4-Nitroquinoline-1-oxide	ND	ug/L	100
N-Nitroso-di-n-butylamine	ND	ug/L	10
N-Nitrosodiethylamine	ND	ug/L	10
N-Nitrosodimethylamine	ND	ug/L	10
N-Nitrosodiphenylamine	ND	ug/L	10
N-Nitroso-di-n-propylamine	ND	ug/L	10
N-Nitrosomethylethylamine	ND	ug/L	10
N-Nitrosomorpholine	ND	ug/L	10
N-Nitrosopiperidine	ND	ug/L	10
N-Nitrosopyrrolidine	ND	ug/L	10
5-Nitro-o-toluidine	ND	ug/L	10
Parathion	ND	ug/L	50
Pentachlorobenzene	ND	ug/L	10
Pentachloroethane	ND	ug/L	10
Pentachloronitrobenzene	ND	ug/L	50
Pentachlorophenol	ND	ug/L	50
Phenacetin	ND	ug/L	10
Phenanthrene	ND	ug/L	10
Phenol	ND	ug/L	10
Phenylenediamine	ND	ug/L	100
Phorate	ND	ug/L	100
2-Picoline	ND	ug/L	10
Pronamide	ND	ug/L	10
Pyrene	ND	ug/L	10
Pyridine	ND	ug/L	20
Safrole	ND	ug/L	10
Sulfotepp	ND	ug/L	50
1,2,4,5-Tetrachloro-benzene	ND	ug/L	10
2,3,4,6-Tetrachlorophenol	ND	ug/L	50
Thionazin	ND	ug/L	50
2-Toluidine	ND	ug/L	10
1,2,4-Trichlorobenzene	ND	ug/L	10
2,4,5-Trichlorophenol	ND	ug/L	50
2,4,6-Trichlorophenol	ND	ug/L	10
0,0,0-Triethylphosphoro-thioate	ND	ug/L	10
1,3,5-Trinitrobenzene	ND	ug/L	10

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Dan Albritton

Approved By: Audrey Cornell

Semivolatile Organics  
Appendix IX List  
Method 8270



Client Name: U.S. Geological Survey  
Client ID: CAFB-L-0296-1  
Lab ID: 047577-0003-SA  
Matrix: AQUEOUS  
Authorized: 29 FEB 96

Sampled: 28 FEB 96  
Received: 29 FEB 96

Prepared: 06 MAR 96  
Analyzed: 15 MAR 96

Parameter	Result	Units	Reporting Limit
Surrogate	Recovery		Limits
Nitrobenzene-d5	74	%	35-114
2-Fluorobiphenyl	60	%	43-116
Terphenyl-d14	77	%	33-141
Phenol-d5	76	%	54-105
2-Fluorophenol	74	%	21-100
2,4,6-Tribromophenol	82	%	10-123

Dilution factor is 1.0. All results and limits are corrected for dilution.

Reported By: Dan Albritton

Approved By: Audrey Cornell

Semivolatiles Library Search (20 Compound TID)  
Method 8270



Client Name: U.S. Geological Survey  
Client ID: CAFB-L-0296-1  
Lab ID: 047577-0003-SA  
Matrix: AQUEOUS  
Authorized: 29 FEB 96

Sampled: 28 FEB 96  
Received: 29 FEB 96

Prepared: NA  
Analyzed: 15 MAR 96

Parameter	Result	Units	Reporting Limit
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Dan Albritton

Approved By: Audrey Cornell

Chlorinated Pesticides and PCB's  
Appendix IX List  
Method 8080A

Client Name: U.S. Geological Survey  
Client ID: CAFB-A-0296-1  
Lab ID: 047577-0001-SA  
Matrix: AQUEOUS  
Authorized: 29 FEB 96

Sampled: 28 FEB 96  
Received: 29 FEB 96

Prepared: 01 MAR 96  
Analyzed: 05 MAR 96

Parameter	Result	Units	Reporting Limit	
Aldrin	ND	ug/L	0.050	T
Aroclor 1016	ND	ug/L	1.0	
Aroclor 1221	ND	ug/L	1.0	
Aroclor 1232	ND	ug/L	1.0	
Aroclor 1242	ND	ug/L	1.0	
Aroclor 1248	ND	ug/L	1.0	
Aroclor 1254	ND	ug/L	1.0	
Aroclor 1260	ND	ug/L	1.0	
alpha-BHC	ND	ug/L	0.050	
beta-BHC	ND	ug/L	0.050	
delta-BHC	ND	ug/L	0.050	
gamma-BHC (Lindane)	ND	ug/L	0.050	
alpha-Chlordane	ND	ug/L	0.050	
gamma-Chlordane	ND	ug/L	0.050	
Chlorobenzilate	ND	ug/L	1.0	
4,4'-DDD	ND	ug/L	0.10	
4'-DDE	ND	ug/L	0.10	
4'-DDT	ND	ug/L	0.10	
Dallate	ND	ug/L	1.0	
Dieldrin	ND	ug/L	0.10	
Endosulfan I	ND	ug/L	0.050	
Endosulfan II	ND	ug/L	0.10	
Endosulfan sulfate	ND	ug/L	0.10	
Endrin	ND	ug/L	0.10	
Endrin aldehyde	ND	ug/L	0.10	
Heptachlor	ND	ug/L	0.050	
Heptachlor epoxide	ND	ug/L	0.050	
Isodrin	ND	ug/L	0.10	
Kepone	ND	ug/L	1.0	
Methoxychlor	ND	ug/L	0.50	
Toxaphene	ND	ug/L	5.0	
Surrogate	Recovery		Limits	
Tetrachloro-m-xylene	86	%	54-106	
Dibutyl chlorendate	90	%	56-138	
Decachlorobiphenyl	98	%	65-145	

Dilution factor is 1.0. All results and limits are corrected for dilution.

T = Preferred values unless footnoted on secondary column test.

N = Not Detected

Reported By: Dianna Link

Approved By: Audrey Cornell

Chlorinated Pesticides and PCB's  
Appendix IX List  
Method 8080A

Client Name: U.S. Geological Survey  
Client ID: CAFB-L-0296-1  
Lab ID: 047577-0003-SA  
Matrix: AQUEOUS  
Authorized: 29 FEB 96

Sampled: 28 FEB 96  
Received: 29 FEB 96

Prepared: 01 MAR 96  
Analyzed: 05 MAR 96

Parameter	Result	Units	Reporting Limit	
Aldrin	ND	ug/L	0.050	T
Aroclor 1016	ND	ug/L	1.0	
Aroclor 1221	ND	ug/L	1.0	
Aroclor 1232	ND	ug/L	1.0	
Aroclor 1242	ND	ug/L	1.0	
Aroclor 1248	ND	ug/L	1.0	
Aroclor 1254	ND	ug/L	1.0	
Aroclor 1260	ND	ug/L	1.0	
alpha-BHC	ND	ug/L	0.050	
beta-BHC	ND	ug/L	0.050	
delta-BHC	ND	ug/L	0.050	
gamma-BHC (Lindane)	ND	ug/L	0.050	
alpha-Chlordane	ND	ug/L	0.050	
gamma-Chlordane	ND	ug/L	0.050	
Chlorobenzilate	ND	ug/L	1.0	
4,4'-DDD	ND	ug/L	0.10	
4'-DDE	ND	ug/L	0.10	
4'-DDT	ND	ug/L	0.10	
Diallate	ND	ug/L	1.0	
Dieldrin	ND	ug/L	0.10	
Endosulfan I	ND	ug/L	0.050	
Endosulfan II	ND	ug/L	0.10	
Endosulfan sulfate	ND	ug/L	0.10	
Endrin	ND	ug/L	0.10	
Endrin aldehyde	ND	ug/L	0.10	
Heptachlor	ND	ug/L	0.050	
Heptachlor epoxide	ND	ug/L	0.050	
Isodrin	ND	ug/L	0.10	
Kepone	ND	ug/L	1.0	
Methoxychlor	ND	ug/L	0.50	
Toxaphene	ND	ug/L	5.0	
<b>Surrogate</b>	<b>Recovery</b>		<b>Limits</b>	
Tetrachloro-m-xylene	88	%	54-106	
Dibutyl chloredate	92	%	56-138	
Decachlorobiphenyl	100	%	65-145	

Dilution factor is 1.0. All results and limits are corrected for dilution.

T = Preferred values unless footnoted on secondary column test.  
= Not Detected

Reported By: Dianna Link

Approved By: Audrey Cornell

Appendix IX Herbicides  
Method 8150

Client Name: U.S. Geological Survey  
 Client ID: CAFB-A-0296-1  
 Lab ID: 047577-0001-SA  
 Matrix: AQUEOUS  
 Authorized: 29 FEB 96

Sampled: 28 FEB 96  
 Received: 29 FEB 96

Prepared: 05 MAR 96  
 Analyzed: 09 MAR 96

Parameter	Result	Units	Reporting Limit	
2,4-D	ND	ug/L	1.2	T
2,4,5-TP (Silvex)	ND	ug/L	0.17	
2,4,5-T	ND	ug/L	0.20	
Surrogate	Recovery		Limits	
DCAA	77	%	45-123	

Dilution factor is 1.0. All results and limits are corrected for dilution.

T = Preferred values unless footnoted on secondary column test.

) = Not Detected

Reported By: Joseph Aten

Approved By: Audrey Cornell

Appendix IX Herbicides  
Method 8150

Client Name: U.S. Geological Survey  
 Client ID: CAFB-L-0296-1  
 Lab ID: 047577-0003-SA  
 Matrix: AQUEOUS  
 Authorized: 29 FEB 96

Sampled: 28 FEB 96  
 Received: 29 FEB 96

Prepared: 05 MAR 96  
 Analyzed: 09 MAR 96

Parameter	Result	Units	Reporting Limit	
2,4-D	ND	ug/L	1.2	T
2,4,5-TP (Silvex)	ND	ug/L	0.17	
2,4,5-T	ND	ug/L	0.20	
Surrogate	Recovery		Limits	
DCAA	87	%	45-123	

Dilution factor is 1.0. All results and limits are corrected for dilution.

T = Preferred values unless footnoted on secondary column test.  
 ND = Not Detected

Reported By: Joseph Aten

Approved By: Audrey Cornell

**Metals  
Total Metals**

Client Name: U.S. Geological Survey  
 Client ID: CAFB-A-0296-1  
 Lab ID: 047577-0001-SA  
 Matrix: AQUEOUS  
 Authorized: 29 FEB 96

Sampled: 28 FEB 96  
 Prepared: See Below

Received: 29 FEB 96  
 Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Antimony	ND		1.0	0.060	mg/L	6010	11 MAR 96	12 MAR 96
Arsenic	ND		1.0	0.0050	mg/L	7060	11 MAR 96	15 MAR 96
Barium	0.040		1.0	0.010	mg/L	6010	11 MAR 96	12 MAR 96
Beryllium	ND		1.0	0.0020	mg/L	6010	11 MAR 96	12 MAR 96
Cadmium	ND		1.0	0.0050	mg/L	6010	11 MAR 96	12 MAR 96
Chromium	ND		1.0	0.010	mg/L	6010	11 MAR 96	12 MAR 96
Cobalt	ND		1.0	0.010	mg/L	6010	11 MAR 96	12 MAR 96
Copper	ND		1.0	0.020	mg/L	6010	11 MAR 96	12 MAR 96
Iron	0.26		1.0	0.10	mg/L	6010	11 MAR 96	12 MAR 96
Lead	ND		1.0	0.0050	mg/L	7421	13 MAR 96	14 MAR 96
Manganese	ND		1.0	0.010	mg/L	6010	11 MAR 96	12 MAR 96
Mercury	ND		1.0	0.00020	mg/L	7470	13 MAR 96	14 MAR 96
Nickel	0.091		1.0	0.040	mg/L	6010	11 MAR 96	12 MAR 96
Silver	ND		1.0	0.010	mg/L	6010	11 MAR 96	12 MAR 96
Selenium	ND	G	1.0	0.010	mg/L	7740	11 MAR 96	12 MAR 96
Sodium	46.5		1.0	5.0	mg/L	6010	11 MAR 96	12 MAR 96
Thallium	ND	G	1.0	0.010	mg/L	7841	13 MAR 96	15 MAR 96
Tin	ND		1.0	0.10	mg/L	6010	11 MAR 96	12 MAR 96
Vanadium	0.017		1.0	0.010	mg/L	6010	11 MAR 96	12 MAR 96
Zinc	ND		1.0	0.020	mg/L	6010	11 MAR 96	12 MAR 96

G = Reporting limit raised due to the matrix of the sample.  
 ND = Not Detected

Reported By: Norma Baier

Approved By: Richard Persichitte

**Metals  
Total Metals**

Client Name: U.S. Geological Survey  
 Client ID: CAFB-L-0296-1  
 Lab ID: 047577-0003-SA  
 Matrix: AQUEOUS  
 Authorized: 29 FEB 96

Sampled: 28 FEB 96  
 Prepared: See Below

Received: 29 FEB 96  
 Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Antimony	ND		1.0	0.060	mg/L	6010	11 MAR 96	12 MAR 96
Arsenic	ND		1.0	0.0050	mg/L	7060	11 MAR 96	15 MAR 96
Barium	0.041		1.0	0.010	mg/L	6010	11 MAR 96	12 MAR 96
Beryllium	ND		1.0	0.0020	mg/L	6010	11 MAR 96	12 MAR 96
Cadmium	ND		1.0	0.0050	mg/L	6010	11 MAR 96	12 MAR 96
Chromium	ND		1.0	0.010	mg/L	6010	11 MAR 96	12 MAR 96
Cobalt	ND		1.0	0.010	mg/L	6010	11 MAR 96	12 MAR 96
Copper	ND		1.0	0.020	mg/L	6010	11 MAR 96	12 MAR 96
Iron	0.28		1.0	0.10	mg/L	6010	11 MAR 96	12 MAR 96
Lead	ND		1.0	0.0050	mg/L	7421	13 MAR 96	14 MAR 96
Manganese	0.011		1.0	0.010	mg/L	6010	11 MAR 96	12 MAR 96
Mercury	ND		1.0	0.00020	mg/L	7470	13 MAR 96	14 MAR 96
Nickel	0.092		1.0	0.040	mg/L	6010	11 MAR 96	12 MAR 96
Silver	ND		1.0	0.010	mg/L	6010	11 MAR 96	12 MAR 96
Selenium	ND	G	1.0	0.010	mg/L	7740	11 MAR 96	12 MAR 96
Sodium	45.8		1.0	5.0	mg/L	6010	11 MAR 96	12 MAR 96
Thallium	ND	G	1.0	0.010	mg/L	7841	13 MAR 96	15 MAR 96
Tin	ND		1.0	0.10	mg/L	6010	11 MAR 96	12 MAR 96
Vanadium	0.018		1.0	0.010	mg/L	6010	11 MAR 96	12 MAR 96
Zinc	ND		1.0	0.020	mg/L	6010	11 MAR 96	12 MAR 96

G = Reporting limit raised due to the matrix of the sample.  
 ND = Not Detected

Reported By: Norma Baier

Approved By: Richard Persichitte

General Inorganics

Client Name: U.S. Geological Survey  
 Client ID: CAFB-A-0296-1  
 Lab ID: 047577-0001-SA  
 Matrix: AQUEOUS  
 Authorized: 29 FEB 96

Sampled: 28 FEB 96  
 Prepared: See Below

Received: 29 FEB 96  
 Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Chloride	89.3		1.0	3.0	mg/L	300.0	NA	07 MAR 96
Cyanide	ND		1.0	0.010	mg/L	9012	05 MAR 96	06 MAR 96
Sulfide, Total	ND		1.0	0.050	mg/L	376.2	NA	04 MAR 96
Sulfate	129	t	2.0	10.0	mg/L	300.0	NA	07 MAR 96
Total Organic Carbon	ND		1.0	1.0	mg/L	415.1	NA	05 MAR 96
Total Organic Halogen as Cl	ND		1.0	30.0	ug/L	9020	NA	12 MAR 96
Phenolics	ND		1.0	0.0050	mg/L	9065	11 MAR 96	11 MAR 96

t = Sample diluted due to the concentration of target compounds.  
 ND = Not Detected

Reported By: Damon Lona

Approved By: Roxanne Sullivan

General Inorganics

Client Name: U.S. Geological Survey  
 Client ID: CAFB-L-0296-1  
 Lab ID: 047577-0003-SA  
 Matrix: AQUEOUS  
 Authorized: 29 FEB 96

Sampled: 28 FEB 96  
 Prepared: See Below

Received: 29 FEB 96  
 Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Chloride	89.0		1.0	3.0	mg/L	300.0	NA	07 MAR 96
Cyanide	ND		1.0	0.010	mg/L	9012	05 MAR 96	06 MAR 96
Sulfide, Total	ND		1.0	0.050	mg/L	376.2	NA	04 MAR 96
Sulfate	129	t	2.0	10.0	mg/L	300.0	NA	07 MAR 96
Total Organic Carbon	ND		1.0	1.0	mg/L	415.1	NA	05 MAR 96
Total Organic Halogen as Cl	ND		1.0	30.0	ug/L	9020	NA	12 MAR 96
Phenolics	ND		1.0	0.0050	mg/L	9065	11 MAR 96	11 MAR 96

t = Sample diluted due to the concentration of target compounds.  
 ND = Not Detected

Reported By: Damon Lona

Approved By: Roxanne Sullivan

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**ANALYTICAL RESULTS**  
**FOR**  
**U.S. GEOLOGICAL SURVEY**  
**QUANTERRA NO. 047596**

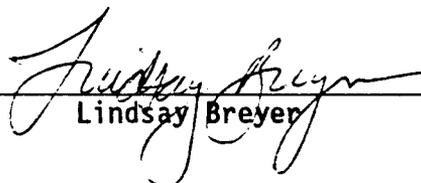
**MARCH 26, 1996**

Prepared by:



Mark D. Stella

Reviewed by:



Lindsay Breyer

## I. OVERVIEW

On March 1, 1996, Quanterra Environmental Services, Denver received three aqueous samples from the U.S. Geological Survey.

This report presents the analytical results as well as supporting information to aid in the evaluation and interpretation of the data and is arranged in the following order:

- I. Overview
- II. Sample Description Information/Analytical Test Requests
- III. Analytical Results
- IV. Quality Control Report

### General Inorganics:

The high distilled cyanide standard was recovered below control limits. Cyanide was not detected in the samples. Since the duplicate control samples were within control limits, the data were reported.

With the exceptions noted either above or on the data sheets, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory QC samples analyzed in conjunction with the samples in this project were within established control limits.

## II. SAMPLE DESCRIPTION INFORMATION/ANALYTICAL TEST REQUESTS

### Sample Description Information:

The Sample Description Information lists all of the samples received in this project together with the internal laboratory identification number assigned for each sample. Each project received at Quanterra's Denver laboratory is assigned a unique six digit number. Samples within the project are numbered sequentially. The laboratory identification number is a combination of the six digit project code and the sample sequence number.

Also given in the Sample Description Information is the Sample Type (matrix), Date of Sampling (if known) and Date of Receipt at the laboratory.

### Analytical Test Requests:

The Analytical Test Requests lists the analyses that were performed on each sample. The Custom Test column indicates where tests have been modified to conform to the specific requirements of this project.

SAMPLE DESCRIPTION INFORMATION  
for  
U.S. Geological Survey

Lab ID	Client ID	Matrix	Sampled Date	Time	Received Date
047596-0001-SA	CAFB-I-0296-1	AQUEOUS	29 FEB 96	10:20	01 MAR 96
047596-0002-SA	CAFB-I-0296-2	AQUEOUS	29 FEB 96	10:20	01 MAR 96
047596-0003-TB	CAFB-I-0296-3	AQUEOUS	29 FEB 96	09:00	01 MAR 96



### III. ANALYTICAL RESULTS

The analytical results for this project are presented in the following data tables. Each data table includes sample identification information, and when available and appropriate, dates sampled, received, authorized, prepared and analyzed. The authorization date is the date when the project was defined by the client such that laboratory work could begin. The date prepared is typically the date an extraction or digestion was initiated. For volatile organic compounds in water, the date prepared is the date the screening of the sample was performed.

Data sheets contain a listing of the parameters measured in each test, the analytical results and the Quanterra reporting limit. Reporting limits are adjusted to reflect dilution of the sample, when appropriate. Solid and waste samples are reported on an "as received" basis, i.e. no correction is made for moisture content.

Quanterra does not routinely blank-correct analytical data. Uncorrected analytical results are reported, along with associated blank results, for all organic and metals analyses. Analytical results and blank results are reported for conventional inorganic parameters as specified in the method.

In addition, surrogate recovery data is presented for all GC/MS analyses. The surrogate recovery is an indication of the affect of the sample matrix on the performance of the method.

The analytical data reported are subject to the following limitations of the analytical methodology:

GC/MS Semivolatile Organics:

Benzo(b) and benzo(k) fluoranthene cannot be differentiated based on their mass spectra and their retention times are almost identical. The isomer which is the closest in retention time to the sample is reported.

1,2-diphenylhydrazine is measured as azobenzene.

N-nitrosodiphenylamine degrades to diphenylamine in the injection port of the instrument. Therefore, these two compounds cannot be distinguished from one another.

3-Methyl phenol and 4-methyl phenol cannot be differentiated based on their mass spectra and retention times are identical. Results are reported as 3/4-methyl phenol (or m&p-cresols).

Several compounds are not consistently recovered using Method 8270 and reporting limits cannot be established. These compounds include hexachlorophene and benzenethiol.

Two Refinery compounds, pyridine and quinoline, are not recovered after alumina column cleanup.

### Tentatively Identified Compounds:

This report presents results for the "identification" of unknown compounds that were detected in the GC/MS analysis. The results from this work are presented as "tentatively identified compounds" (TICs). The approach used for reporting TICs was based on the protocol established for this purpose in the EPA Superfund methods and on guidelines established by the American Chemical Society (ACS).

In summary, the mass spectra of chromatographic peaks in concentrations in excess of 10% of the internal standard were obtained. Normally, the number of unknown compounds identified is limited to 10 compounds in the volatile fraction and 20 compounds in the semivolatile fraction. Each mass spectrum was then compared to a library of over 30,000 reference spectra in a computerized "library search." The three "best" matches obtained by the computer were hardcopied along with the mass spectrum of the unknown peak. This information was then reviewed by an analyst who "identified" the compound based on the available information.

All identifications were based on the "Guidelines for GC/MS Identification" developed by the American Chemical Society (Environmental Science and Technology, 1982, 16 143A). As recommended in these guidelines, identifications of unknown substances were reported with a level of confidence. The three levels of confidence cited in the ACS guidelines and used in this report are as follows:

#### Level 3: Confirmed Identification:

The identification is based on the analysis of an authentic standard.

#### Level 2: Confident Identification:

Good agreement was observed between the unknown compound and a specific library spectrum.

Level 1: Tentative Identification:

The unknown compound is only indicative of a specific library spectrum.

Class Identification:

The unknown compound was not similar to a specific library spectrum, but it did contain ions characteristic of a class of compounds (saturated hydrocarbon, chlorinated hydrocarbon, etc.).

If there were no library spectra similar to the unknown, and it could not be assigned to a particular class of compounds, the compound is reported as "unknown."

Quantitation of TICs is based on the total ionization peak area relative to an internal standard, assuming a response factor of one. Accordingly, the reported concentration is an estimate.

In general, mass spectrometry cannot distinguish isomers (compounds with the same molecular formula). Therefore, an identified compound may be any one of several different isomers.

The tentatively identified compounds in this report may include some compounds reported as "siloxanes." Siloxanes are common laboratory and field artifacts or contaminants. Potential sources include silicon-based grease in the field or laboratory plus the liquid phase coating on gas chromatography columns, as well as other equipment in the laboratory. However, siloxanes may also be present in environmental samples from spills of silicone oils or lubricating oils with siloxane additives.

### Chromatography:

Analyte identification in chromatographic analysis is based upon retention time. Since it is possible for more than one compound to have the same retention time, analyte identification by these methods is not definitive. Most methods require analysis on a second dissimilar chromatographic column to confirm the presence of target analytes detected in a sample. Only confirmed hits are reported without further qualification or supporting data.

Some analytes (e.g. technical chlordane, toxaphene, and the aroclors) consist of mixtures of a number of different compounds. These multicomponent analytes produce distinct patterns of peaks in the chromatograms and do not have a single retention time. The pattern of peaks observed is characteristic of the analyte and provides qualitative information about the analyte(s) present in the sample. For these analytes, second column confirmations are not generally required. Instead, identification is based on matching the patterns of peaks observed in the samples to the patterns for standards containing known concentrations of the analyte of interest.

All analytes are quantitated against multipoint calibration curves as specified in the applicable analytical methods. In some cases it is not practical to maintain multipoint calibration curves for every analyte on every instrument. These analytes include three Appendix IX compounds (diallate, isodrin and kepone) and the multicomponent analytes (technical chlordane, toxaphene and aroclors) analyzed by method 8080. For these analytes, a single calibration standard at the reporting limit is analyzed to establish instrument sensitivity for each compound. If the analyte is detected in any sample at greater than half the reporting limit, a multipoint calibration curve is prepared and the sample re-analyzed for quantitation against this curve.

## Metals:

All nominal reporting limits for metals have been established from instrument detection limit (IDL) and method detection limit (MDL) evaluations and represent the level above which reliable data can be routinely obtained. On a periodic basis, low-level standards are analyzed seven times on three non-consecutive days on each instrument. The standard deviations of the three runs are summed to yield the IDL. MDL studies are performed on an annual basis in accordance with 40 CFR 136 Appendix B. Nominal reporting limits are generally 2-5 times the IDL or MDL (consistent with the American Chemical Society definition for the Limit of Quantification). IDL and MDL studies for metals are necessarily performed on reagent water and do not account for matrix effects. Elevation of the reporting limits above the nominal levels are sometimes required as discussed below.

Reporting limits for metals analyzed by Inductively Coupled Plasma (ICP) are typically raised only for dilution due to an analyte exceeding the instrument linear range. Background and interelement interferences are corrected automatically and do not require dilution.

Metals analyzed by Graphite Furnace Atomic Absorption (GFAA) are subject to matrix interferences. Consequently, Quanterra Environmental Services, Denver laboratory's protocol is to analyze a spiked aliquot with every sample. The severity of the interference, based upon analyte level and spike recovery, is assessed against specific criteria and the need for an elevated reporting limit or dilution is determined.

The analysis of mercury by Cold Vapor Atomic Absorption (CVAA) is generally free from matrix interferences. As with ICP, reporting limits are raised only for dilution due to a sample concentration exceeding the linear range of the instrument.

## Footnotes and Data Qualifiers

The data sheets contained in this report may contain a variety of footnotes and data qualifiers. Those used to indicate the confidence level for Tentatively Identified Compounds (GC/MS methods) are described above. Other footnotes are used with specific tests; for example, footnotes used with the GC/FID Petroleum Hydrocarbon methods to indicate (in the analysts judgment) the product that appears to be present. Finally, there are a number of general qualifiers that serve to identify problems and pertinent observations made during sample analysis that are not discussed in the Overview. These are described below:

**B** Compound is also detected in the blank.

The indicated compound was detected in the sample as well as the method blank. Please note that the B flag is not used when the sample result is ND (Not Detected).

**G** Reporting limit raised due to the matrix of the sample.

Indicates that reporting limits were raised due to the presence of non-target compounds or other matrix interferences. The sample may or may not have been diluted. For inorganic methods, the footnote applies only to the flagged analyte. For organic methods, the footnote pertains to all analytes determined by the method.

**T** Preferred values unless footnoted on secondary column test.

This footnote is used with GC tests to indicate the primary column results. The footnote will be listed only for the first compound but pertains to all analytes determined by the method. It is used in conjunction the footnote V.

**V** Secondary column is the preferred value.

This footnote is used for GC tests in conjunction the T footnote. It indicates that the value from the second column is preferred over the primary column result and pertains only to the indicated compound.

**t** Sample diluted due to the concentration of target compounds.

Indicates that reporting limits were raised due to the presence of target analytes outside the calibration range of the method. For multi-analyte methods, the footnote will appear only for the first analyte but pertains to all analytes determined by the method.

Volatile Organics  
Appendix IX List  
Method 8240



Client Name: U.S. Geological Survey  
Client ID: CAFB-I-0296-1  
Lab ID: 047596-0001-SA  
Matrix: AQUEOUS  
Authorized: 01 MAR 96

Sampled: 29 FEB 96  
Received: 01 MAR 96

Prepared: 04 MAR 96  
Analyzed: 11 MAR 96

Parameter	Result	Units	Reporting Limit
Acetone	ND	ug/L	10
Acetonitrile	ND	ug/L	200
Acrolein	ND	ug/L	100
Acrylonitrile	ND	ug/L	100
Allyl chloride	ND	ug/L	10
Benzene	ND	ug/L	5.0
Bromodichloromethane	ND	ug/L	5.0
Bromoform	ND	ug/L	5.0
Bromomethane	ND	ug/L	10
2-Butanone (MEK)	ND	ug/L	10
Carbon disulfide	ND	ug/L	5.0
Carbon tetrachloride	ND	ug/L	5.0
Chlorobenzene	ND	ug/L	5.0
Chloroethane	ND	ug/L	10
Chloroform	ND	ug/L	5.0
Chloromethane	ND	ug/L	10
Chloroprene	ND	ug/L	5.0
Dibromochloromethane	ND	ug/L	5.0
2-Dibromo-3-chloro- propane (DBCP)	ND	ug/L	10
1,2-Dibromoethane (EDB)	ND	ug/L	10
Dibromomethane	ND	ug/L	5.0
trans-1,4-Dichloro-2-butene	ND	ug/L	5.0
Dichlorodifluoromethane	ND	ug/L	20
1,1-Dichloroethane	ND	ug/L	5.0
1,2-Dichloroethane	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	5.0
1,2-Dichloroethene (total)	ND	ug/L	5.0
1,2-Dichloropropane	ND	ug/L	5.0
cis-1,3-Dichloropropene	ND	ug/L	5.0
trans-1,3-Dichloropropene	ND	ug/L	5.0
1,4-Dioxane	ND	ug/L	500
Ethylbenzene	ND	ug/L	5.0
Ethyl methacrylate	ND	ug/L	20
Iodomethane	ND	ug/L	5.0
Isobutanol (2-Methyl-1-propanol)	ND	ug/L	200
2-Hexanone	ND	ug/L	10
Methacrylonitrile	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
Methyl methacrylate	ND	ug/L	20
4-Methyl-2-pentanone (MIBK)	ND	ug/L	10

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones

Approved By: Dawn M. Basko

Volatile Organics  
Appendix IX List  
Method 8240

Client Name: U.S. Geological Survey  
Client ID: CAFB-I-0296-1  
Lab ID: 047596-0001-SA  
Matrix: AQUEOUS  
Authorized: 01 MAR 96

Sampled: 29 FEB 96  
Received: 01 MAR 96

Prepared: 04 MAR 96  
Analyzed: 11 MAR 96

Parameter	Result	Units	Reporting Limit
Propionitrile	ND	ug/L	5.0
Styrene	ND	ug/L	5.0
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0
Tetrachloroethene	ND	ug/L	5.0
Toluene	ND	ug/L	5.0
1,1,1-Trichloroethane	ND	ug/L	5.0
1,1,2-Trichloroethane	ND	ug/L	5.0
Trichloroethene	ND	ug/L	5.0
Trichlorofluoromethane	ND	ug/L	5.0
1,2,3-Trichloropropane	ND	ug/L	5.0
Vinyl acetate	ND	ug/L	10
Vinyl chloride	ND	ug/L	10
Xylenes (total)	ND	ug/L	5.0
Surrogate	Recovery		Limits
Toluene-d8	100	%	88-110
Bromofluorobenzene	99	%	86-115
2-Dichloroethane-d4	97	%	76-114

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones

Approved By: Dawn M. Basko

Volatiles Library Search (10 Compound TID)  
Method 8240



Client Name: U.S. Geological Survey  
Client ID: CAFB-I-0296-1  
Lab ID: 047596-0001-SA  
Matrix: AQUEOUS  
Authorized: 01 MAR 96

Sampled: 29 FEB 96  
Received: 01 MAR 96

Prepared: NA  
Analyzed: 11 MAR 96

Parameter	Result	Units	Reporting Limit
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones

Approved By: Dawn M. Basko

Volatile Organics  
Appendix IX List  
Method 8240



Client Name: U.S. Geological Survey  
Client ID: CAFB-I-0296-2  
Sub ID: 047596-0002-SA  
Matrix: AQUEOUS  
Authorized: 01 MAR 96

Sampled: 29 FEB 96  
Received: 01 MAR 96

Prepared: 04 MAR 96  
Analyzed: 11 MAR 96

Parameter	Result	Units	Reporting Limit
Acetone	ND	ug/L	10
Acetonitrile	ND	ug/L	200
Acrolein	ND	ug/L	100
Acrylonitrile	ND	ug/L	100
Allyl chloride	ND	ug/L	10
Benzene	ND	ug/L	5.0
Bromodichloromethane	ND	ug/L	5.0
Bromoform	ND	ug/L	5.0
Bromomethane	ND	ug/L	10
2-Butanone (MEK)	ND	ug/L	10
Carbon disulfide	ND	ug/L	5.0
Carbon tetrachloride	ND	ug/L	5.0
Chlorobenzene	ND	ug/L	5.0
Chloroethane	ND	ug/L	10
Chloroform	ND	ug/L	5.0
Chloromethane	ND	ug/L	10
Chloroprene	ND	ug/L	5.0
Dibromochloromethane	ND	ug/L	5.0
1,2-Dibromo-3-chloro- propane (DBCP)	ND	ug/L	10
1,2-Dibromoethane (EDB)	ND	ug/L	10
Dibromomethane	ND	ug/L	5.0
trans-1,4-Dichloro-2-butene	ND	ug/L	5.0
Dichlorodifluoromethane	ND	ug/L	20
1,1-Dichloroethane	ND	ug/L	5.0
1,2-Dichloroethane	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	5.0
1,2-Dichloroethene (total)	ND	ug/L	5.0
1,2-Dichloropropane	ND	ug/L	5.0
cis-1,3-Dichloropropene	ND	ug/L	5.0
trans-1,3-Dichloropropene	ND	ug/L	5.0
1,4-Dioxane	ND	ug/L	500
Ethylbenzene	ND	ug/L	5.0
Ethyl methacrylate	ND	ug/L	20
Iodomethane	ND	ug/L	5.0
Isobutanol (2-Methyl-1-propanol)	ND	ug/L	200
2-Hexanone	ND	ug/L	10
Methacrylonitrile	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
Methyl methacrylate	ND	ug/L	20
4-Methyl-2-pentanone (MIBK)	ND	ug/L	10

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones

Approved By: Dawn M. Basko

Volatile Organics  
Appendix IX List  
Method 8240

Client Name: U.S. Geological Survey  
Client ID: CAFB-I-0296-2  
Lab ID: 047596-0002-SA  
Matrix: AQUEOUS  
Authorized: 01 MAR 96

Sampled: 29 FEB 96  
Received: 01 MAR 96

Prepared: 04 MAR 96  
Analyzed: 11 MAR 96

Parameter	Result	Units	Reporting Limit
Propionitrile	ND	ug/L	5.0
Styrene	ND	ug/L	5.0
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0
Tetrachloroethene	ND	ug/L	5.0
Toluene	ND	ug/L	5.0
1,1,1-Trichloroethane	ND	ug/L	5.0
1,1,2-Trichloroethane	ND	ug/L	5.0
Trichloroethene	ND	ug/L	5.0
Trichlorofluoromethane	ND	ug/L	5.0
1,2,3-Trichloropropane	ND	ug/L	5.0
Vinyl acetate	ND	ug/L	10
Vinyl chloride	ND	ug/L	10
Xylenes (total)	ND	ug/L	5.0
Surrogate	Recovery		Limits
Toluene-d8	100	%	88-110
4-Bromofluorobenzene	100	%	86-115
2-Dichloroethane-d4	96	%	76-114

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones

Approved By: Dawn M. Basko

Volatiles Library Search (10 Compound TID)  
Method 8240



Client Name: U.S. Geological Survey  
Client ID: CAFB-I-0296-2  
Job ID: 047596-0002-SA  
Matrix: AQUEOUS  
Authorized: 01 MAR 96

Sampled: 29 FEB 96  
Received: 01 MAR 96

Prepared: NA  
Analyzed: 11 MAR 96

Parameter	Result	Units	Reporting Limit
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones

Approved By: Dawn M. Basko

Volatile Organics  
Appendix IX List  
Method 8240



Client Name: U.S. Geological Survey  
Client ID: CAFB-I-0296-3  
Lab ID: 047596-0003-TB  
Matrix: AQUEOUS  
Authorized: 01 MAR 96

Sampled: 29 FEB 96  
Received: 01 MAR 96

Prepared: 04 MAR 96  
Analyzed: 11 MAR 96

Parameter	Result	Units	Reporting Limit
Acetone	ND	ug/L	10
Acetonitrile	ND	ug/L	200
Acrolein	ND	ug/L	100
Acrylonitrile	ND	ug/L	100
Allyl chloride	ND	ug/L	10
Benzene	ND	ug/L	5.0
Bromodichloromethane	ND	ug/L	5.0
Bromoform	ND	ug/L	5.0
Bromomethane	ND	ug/L	10
2-Butanone (MEK)	ND	ug/L	10
Carbon disulfide	ND	ug/L	5.0
Carbon tetrachloride	ND	ug/L	5.0
Chlorobenzene	ND	ug/L	5.0
Chloroethane	ND	ug/L	10
Chloroform	ND	ug/L	5.0
Chloromethane	ND	ug/L	10
Chloroprene	ND	ug/L	5.0
Dibromochloromethane	ND	ug/L	5.0
1,2-Dibromo-3-chloro- propane (DBCP)	ND	ug/L	10
1,2-Dibromoethane (EDB)	ND	ug/L	10
Dibromomethane	ND	ug/L	5.0
trans-1,4-Dichloro-2-butene	ND	ug/L	5.0
Dichlorodifluoromethane	ND	ug/L	20
1,1-Dichloroethane	ND	ug/L	5.0
1,2-Dichloroethane	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	5.0
1,2-Dichloroethene (total)	ND	ug/L	5.0
1,2-Dichloropropane	ND	ug/L	5.0
cis-1,3-Dichloropropene	ND	ug/L	5.0
trans-1,3-Dichloropropene	ND	ug/L	5.0
1,4-Dioxane	ND	ug/L	500
Ethylbenzene	ND	ug/L	5.0
Ethyl methacrylate	ND	ug/L	20
Iodomethane	ND	ug/L	5.0
Isobutanol (2-Methyl-1-propanol)	ND	ug/L	200
2-Hexanone	ND	ug/L	10
Methacrylonitrile	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
Methyl methacrylate	ND	ug/L	20
4-Methyl-2-pentanone (MIBK)	ND	ug/L	10

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones

Approved By: Dawn M. Basko

Volatile Organics  
Appendix IX List  
Method 8240

Client Name: U.S. Geological Survey  
Client ID: CAFB-I-0296-3  
Lab ID: 047596-0003-TB  
Matrix: AQUEOUS  
Authorized: 01 MAR 96

Sampled: 29 FEB 96  
Received: 01 MAR 96

Prepared: 04 MAR 96  
Analyzed: 11 MAR 96

Parameter	Result	Units	Reporting Limit
Propionitrile	ND	ug/L	5.0
Styrene	ND	ug/L	5.0
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0
Tetrachloroethene	ND	ug/L	5.0
Toluene	ND	ug/L	5.0
1,1,1-Trichloroethane	ND	ug/L	5.0
1,1,2-Trichloroethane	ND	ug/L	5.0
Trichloroethene	ND	ug/L	5.0
Trichlorofluoromethane	ND	ug/L	5.0
1,2,3-Trichloropropane	ND	ug/L	5.0
Vinyl acetate	ND	ug/L	10
Vinyl chloride	ND	ug/L	10
Xylenes (total)	ND	ug/L	5.0
Surrogate	Recovery		Limits
Toluene-d8	99	%	88-110
Bromofluorobenzene	100	%	86-115
2-Dichloroethane-d4	96	%	76-114

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones

Approved By: Dawn M. Basko

Volatiles Library Search (10 Compound TID)  
Method 8240



Client Name: U.S. Geological Survey  
Client ID: CAFB-I-0296-3  
Lab ID: 047596-0003-TB  
Matrix: AQUEOUS  
Authorized: 01 MAR 96

Sampled: 29 FEB 96  
Received: 01 MAR 96

Prepared: NA  
Analyzed: 11 MAR 96

Parameter	Result	Units	Reporting Limit
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones

Approved By: Dawn M. Basko

Semivolatile Organics  
Appendix IX List  
Method 8270



Client Name: U.S. Geological Survey  
Client ID: CAFB-I-0296-1  
Lab ID: 047596-0001-SA  
Matrix: AQUEOUS  
Authorized: 01 MAR 96

Sampled: 29 FEB 96  
Received: 01 MAR 96

Prepared: 06 MAR 96  
Analyzed: 18 MAR 96

Parameter	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	10
Acenaphthylene	ND	ug/L	10
Acetophenone	ND	ug/L	10
2-Acetylaminofluorene	ND	ug/L	100
4-Aminobiphenyl	ND	ug/L	10
Aniline	ND	ug/L	10
Anthracene	ND	ug/L	10
Aramite	ND	ug/L	10
Benzo(a)anthracene	ND	ug/L	10
Benzo(b)fluoranthene	ND	ug/L	10
Benzo(k)fluoranthene	ND	ug/L	10
Benzo(g,h,i)perylene	ND	ug/L	10
Benzo(a)pyrene	ND	ug/L	10
Benzyl alcohol	ND	ug/L	10
4-Bromophenyl phenyl ether	ND	ug/L	10
Butyl benzyl phthalate	ND	ug/L	10
2-sec-Butyl-4,6-dinitro-phenol	ND	ug/L	10
4-Chloroaniline	ND	ug/L	10
s(2-Chloroethoxy)methane	ND	ug/L	10
s(2-Chloroethyl) ether	ND	ug/L	10
is(2-Chloroisopropyl)ether	ND	ug/L	10
4-Chloro-3-methylphenol	ND	ug/L	10
2-Chloronaphthalene	ND	ug/L	10
2-Chlorophenol	ND	ug/L	10
4-Chlorophenyl phenyl ether	ND	ug/L	10
Chrysene	ND	ug/L	10
Dibenz(a,h)anthracene	ND	ug/L	10
Dibenzofuran	ND	ug/L	10
Di-n-butyl phthalate	ND	ug/L	10
1,2-Dichlorobenzene	ND	ug/L	10
1,3-Dichlorobenzene	ND	ug/L	10
1,4-Dichlorobenzene	ND	ug/L	10
3,3'-Dichlorobenzidine	ND	ug/L	20
2,4-Dichlorophenol	ND	ug/L	10
2,6-Dichlorophenol	ND	ug/L	10
Diethyl phthalate	ND	ug/L	10
Dimethoate	ND	ug/L	50
p-Dimethylaminoazobenzene	ND	ug/L	10
7,12-Dimethylbenz(a)-anthracene	ND	ug/L	10
3,3'-Dimethylbenzidine	ND	ug/L	10
a,a-Dimethylphenethyl-amine	ND	ug/L	10

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Dan Albritton

Approved By: Audrey Cornell

Appendix IX List  
Method 8270



Client Name: U.S. Geological Survey  
 Client ID: CAFB-I-0296-1  
 Job ID: 047596-0001-SA  
 Matrix: AQUEOUS  
 Authorized: 01 MAR 96

Sampled: 29 FEB 96  
 Received: 01 MAR 96

Prepared: 06 MAR 96  
 Analyzed: 18 MAR 96

Parameter	Result	Units	Reporting Limit
2,4-Dimethylphenol	ND	ug/L	10
Dimethyl phthalate	ND	ug/L	10
1,3-Dinitrobenzene	ND	ug/L	10
4,6-Dinitro-2-methylphenol	ND	ug/L	50
2,4-Dinitrophenol	ND	ug/L	50
2,4-Dinitrotoluene	ND	ug/L	10
2,6-Dinitrotoluene	ND	ug/L	10
Di-n-octyl phthalate	ND	ug/L	10
Diphenylamine	ND	ug/L	10
Disulfoton	ND	ug/L	50
bis(2-Ethylhexyl)phthalate	ND	ug/L	10
Ethyl methanesulfonate	ND	ug/L	10
Famphur	ND	ug/L	50
Fluoranthene	ND	ug/L	10
Fluorene	ND	ug/L	10
Hexachlorobenzene	ND	ug/L	10
Hexachlorobutadiene	ND	ug/L	10
Hexachlorocyclopentadiene	ND	ug/L	10
Hexachloroethane	ND	ug/L	10
Hexachlorophene	ND	ug/L	--
Hexachloropropene	ND	ug/L	10
Indeno(1,2,3-cd)pyrene	ND	ug/L	10
Isophorone	ND	ug/L	10
Isosafrole	ND	ug/L	20
Methapyrilene	ND	ug/L	10
3-Methylcholanthrene	ND	ug/L	10
Methyl methanesulfonate	ND	ug/L	10
2-Methylnaphthalene	ND	ug/L	10
Methyl parathion	ND	ug/L	50
2-Methylphenol	ND	ug/L	10
3/4-Methylphenol	ND	ug/L	10
Naphthalene	ND	ug/L	10
1,4-Naphthoquinone	ND	ug/L	10
1-Naphthylamine	ND	ug/L	10
2-Naphthylamine	ND	ug/L	10
2-Nitroaniline	ND	ug/L	50
3-Nitroaniline	ND	ug/L	50
4-Nitroaniline	ND	ug/L	50
Nitrobenzene	ND	ug/L	10
2-Nitrophenol	ND	ug/L	10
4-Nitrophenol	ND	ug/L	50

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Dan Albritton

Approved By: Audrey Cornell

Appendix IX List  
Method 8270



Client Name: U.S. Geological Survey  
 Client ID: CAFB-I-0296-1  
 Lab ID: 047596-0001-SA  
 Matrix: AQUEOUS  
 Authorized: 01 MAR 96

Sampled: 29 FEB 96  
 Received: 01 MAR 96

Prepared: 06 MAR 96  
 Analyzed: 18 MAR 96

Parameter	Result	Units	Reporting Limit
4-Nitroquinoline-1-oxide	ND	ug/L	100
N-Nitroso-di-n-butylamine	ND	ug/L	10
N-Nitrosodiethylamine	ND	ug/L	10
N-Nitrosodimethylamine	ND	ug/L	10
N-Nitrosodiphenylamine	ND	ug/L	10
N-Nitroso-di-n-propylamine	ND	ug/L	10
N-Nitrosomethylethylamine	ND	ug/L	10
N-Nitrosomorpholine	ND	ug/L	10
N-Nitrosopiperidine	ND	ug/L	10
N-Nitrosopyrrolidine	ND	ug/L	10
5-Nitro-o-toluidine	ND	ug/L	10
Parathion	ND	ug/L	50
Pentachlorobenzene	ND	ug/L	10
Pentachloroethane	ND	ug/L	10
Pentachloronitrobenzene	ND	ug/L	50
Pentachlorophenol	ND	ug/L	50
Phenacetin	ND	ug/L	10
Phenanthrene	ND	ug/L	10
Phenol	ND	ug/L	10
p-Phenylenediamine	ND	ug/L	100
Propylate	ND	ug/L	100
o-Picoline	ND	ug/L	10
Pronamide	ND	ug/L	10
Pyrene	ND	ug/L	10
Pyridine	ND	ug/L	20
Safrole	ND	ug/L	10
Sulfotep	ND	ug/L	50
1,2,4,5-Tetrachloro-benzene	ND	ug/L	10
2,3,4,6-Tetrachlorophenol	ND	ug/L	50
Thionazin	ND	ug/L	50
2-Toluidine	ND	ug/L	10
1,2,4-Trichlorobenzene	ND	ug/L	10
2,4,5-Trichlorophenol	ND	ug/L	50
2,4,6-Trichlorophenol	ND	ug/L	10
0,0,0-Triethylphosphoro-thioate	ND	ug/L	10
1,3,5-Trinitrobenzene	ND	ug/L	10

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Dan Albritton

Approved By: Audrey Cornell

Semivolatile Organics  
Appendix IX List  
Method 8270

Client Name: U.S. Geological Survey  
Client ID: CAFB-I-0296-1  
Lab ID: 047596-0001-SA  
Matrix: AQUEOUS  
Authorized: 01 MAR 96

Sampled: 29 FEB 96  
Received: 01 MAR 96

Prepared: 06 MAR 96  
Analyzed: 18 MAR 96

Parameter	Result	Units	Reporting Limit
Surrogate	Recovery		Limits
Nitrobenzene-d5	67	%	35-114
2-Fluorobiphenyl	57	%	43-116
Terphenyl-d14	89	%	33-141
Phenol-d5	68	%	54-105
2-Fluorophenol	68	%	21-100
2,4,6-Tribromophenol	62	%	10-123

Dilution factor is 1.0. All results and limits are corrected for dilution.

Reported By: Dan Albritton

Approved By: Audrey Cornell

Semivolatiles Library Search (20 Compound TID)  
Method 8270



Client Name: U.S. Geological Survey  
Client ID: CAFB-I-0296-1  
Lab ID: 047596-0001-SA  
Matrix: AQUEOUS  
Authorized: 01 MAR 96

Sampled: 29 FEB 96  
Received: 01 MAR 96

Prepared: NA  
Analyzed: 18 MAR 96

Parameter	Result	Units	Reporting Limit
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Dan Albritton

Approved By: Audrey Cornell

Semivolatile Organics  
Appendix IX List  
Method 8270



Client Name: U.S. Geological Survey  
Client ID: CAFB-I-0296-2  
Lab ID: 047596-0002-SA  
Matrix: AQUEOUS  
Authorized: 01 MAR 96

Sampled: 29 FEB 96  
Received: 01 MAR 96

Prepared: 06 MAR 96  
Analyzed: 18 MAR 96

Parameter	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	10
Acenaphthylene	ND	ug/L	10
Acetophenone	ND	ug/L	10
2-Acetylaminofluorene	ND	ug/L	100
4-Aminobiphenyl	ND	ug/L	10
Aniline	ND	ug/L	10
Anthracene	ND	ug/L	10
Aramite	ND	ug/L	10
Benzo(a)anthracene	ND	ug/L	10
Benzo(b)fluoranthene	ND	ug/L	10
Benzo(k)fluoranthene	ND	ug/L	10
Benzo(g,h,i)perylene	ND	ug/L	10
Benzo(a)pyrene	ND	ug/L	10
Benzyl alcohol	ND	ug/L	10
4-Bromophenyl phenyl ether	ND	ug/L	10
Butyl benzyl phthalate	ND	ug/L	10
2-sec-Butyl-4,6-dinitro-phenol	ND	ug/L	10
4-Chloroaniline	ND	ug/L	10
bis(2-Chloroethoxy)methane	ND	ug/L	10
bis(2-Chloroethyl) ether	ND	ug/L	10
bis(2-Chloroisopropyl)ether	ND	ug/L	10
4-Chloro-3-methylphenol	ND	ug/L	10
2-Chloronaphthalene	ND	ug/L	10
2-Chlorophenol	ND	ug/L	10
4-Chlorophenyl phenyl ether	ND	ug/L	10
Chrysene	ND	ug/L	10
Dibenz(a,h)anthracene	ND	ug/L	10
Dibenzofuran	ND	ug/L	10
Di-n-butyl phthalate	ND	ug/L	10
1,2-Dichlorobenzene	ND	ug/L	10
1,3-Dichlorobenzene	ND	ug/L	10
1,4-Dichlorobenzene	ND	ug/L	10
3,3'-Dichlorobenzidine	ND	ug/L	20
2,4-Dichlorophenol	ND	ug/L	10
2,6-Dichlorophenol	ND	ug/L	10
Diethyl phthalate	ND	ug/L	10
Dimethoate	ND	ug/L	50
p-Dimethylaminoazobenzene	ND	ug/L	10
7,12-Dimethylbenz(a)-anthracene	ND	ug/L	10
3,3'-Dimethylbenzidine	ND	ug/L	10
a,a-Dimethylphenethyl-amine	ND	ug/L	10

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Dan Albritton

Approved By: Audrey Cornell

Appendix IX List  
Method 8270



Client Name: U.S. Geological Survey  
 Client ID: CAFB-I-0296-2  
 Lab ID: 047596-0002-SA  
 Matrix: AQUEOUS  
 Authorized: 01 MAR 96

Sampled: 29 FEB 96  
 Received: 01 MAR 96

Prepared: 06 MAR 96  
 Analyzed: 18 MAR 96

Parameter	Result	Units	Reporting Limit
2,4-Dimethylphenol	ND	ug/L	10
Dimethyl phthalate	ND	ug/L	10
1,3-Dinitrobenzene	ND	ug/L	10
4,6-Dinitro-2-methylphenol	ND	ug/L	50
2,4-Dinitrophenol	ND	ug/L	50
2,4-Dinitrotoluene	ND	ug/L	10
2,6-Dinitrotoluene	ND	ug/L	10
Di-n-octyl phthalate	ND	ug/L	10
Diphenylamine	ND	ug/L	10
Disulfoton	ND	ug/L	50
bis(2-Ethylhexyl)phthalate	ND	ug/L	10
Ethyl methanesulfonate	ND	ug/L	10
Famphur	ND	ug/L	50
Fluoranthene	ND	ug/L	10
Fluorene	ND	ug/L	10
Hexachlorobenzene	ND	ug/L	10
Hexachlorobutadiene	ND	ug/L	10
Hexachlorocyclopentadiene	ND	ug/L	10
Hexachloroethane	ND	ug/L	10
Hexachlorophene	ND	ug/L	--
Hexachloropropene	ND	ug/L	10
Indeno(1,2,3-cd)pyrene	ND	ug/L	10
Isophorone	ND	ug/L	10
Isosafrole	ND	ug/L	20
Methapyrilene	ND	ug/L	10
3-Methylcholanthrene	ND	ug/L	10
Methyl methanesulfonate	ND	ug/L	10
2-Methylnaphthalene	ND	ug/L	10
Methyl parathion	ND	ug/L	50
2-Methylphenol	ND	ug/L	10
3/4-Methylphenol	ND	ug/L	10
Naphthalene	ND	ug/L	10
1,4-Naphthoquinone	ND	ug/L	10
1-Naphthylamine	ND	ug/L	10
2-Naphthylamine	ND	ug/L	10
2-Nitroaniline	ND	ug/L	50
3-Nitroaniline	ND	ug/L	50
4-Nitroaniline	ND	ug/L	50
Nitrobenzene	ND	ug/L	10
2-Nitrophenol	ND	ug/L	10
4-Nitrophenol	ND	ug/L	50

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Dan Albritton

Approved By: Audrey Cornell

Appendix IX List  
Method 8270



Client Name: U.S. Geological Survey  
 Client ID: CAFB-I-0296-2  
 Lab ID: 047596-0002-SA  
 Matrix: AQUEOUS  
 Authorized: 01 MAR 96

Sampled: 29 FEB 96  
 Received: 01 MAR 96

Prepared: 06 MAR 96  
 Analyzed: 18 MAR 96

Parameter	Result	Units	Reporting Limit
4-Nitroquinoline-1-oxide	ND	ug/L	100
N-Nitroso-di-n-butylamine	ND	ug/L	10
N-Nitrosodiethylamine	ND	ug/L	10
N-Nitrosodimethylamine	ND	ug/L	10
N-Nitrosodiphenylamine	ND	ug/L	10
N-Nitroso-di-n-propylamine	ND	ug/L	10
N-Nitrosomethylethylamine	ND	ug/L	10
N-Nitrosomorpholine	ND	ug/L	10
N-Nitrosopiperidine	ND	ug/L	10
N-Nitrosopyrrolidine	ND	ug/L	10
5-Nitro-o-toluidine	ND	ug/L	10
Parathion	ND	ug/L	50
Pentachlorobenzene	ND	ug/L	10
Pentachloroethane	ND	ug/L	10
Pentachloronitrobenzene	ND	ug/L	50
Pentachlorophenol	ND	ug/L	50
Phenacetin	ND	ug/L	10
Phenanthrene	ND	ug/L	10
Phenol	ND	ug/L	10
4'-Phenylenediamine	ND	ug/L	100
chlorate	ND	ug/L	100
2-Picoline	ND	ug/L	10
Pronamide	ND	ug/L	10
Pyrene	ND	ug/L	10
Pyridine	ND	ug/L	20
Safrole	ND	ug/L	10
Sulfotepp	ND	ug/L	50
1,2,4,5-Tetrachloro-benzene	ND	ug/L	10
2,3,4,6-Tetrachlorophenol	ND	ug/L	50
Thionazin	ND	ug/L	50
2-Toluidine	ND	ug/L	10
1,2,4-Trichlorobenzene	ND	ug/L	10
2,4,5-Trichlorophenol	ND	ug/L	50
2,4,6-Trichlorophenol	ND	ug/L	10
0,0,0-Triethylphosphoro-thioate	ND	ug/L	10
1,3,5-Trinitrobenzene	ND	ug/L	10

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Dan Albritton

Approved By: Audrey Cornell

Semivolatile Organics  
Appendix IX List  
Method 8270

Client Name: U.S. Geological Survey  
Client ID: CAFB-I-0296-2  
Lab ID: 047596-0002-SA  
Matrix: AQUEOUS  
Authorized: 01 MAR 96

Sampled: 29 FEB 96  
Received: 01 MAR 96

Prepared: 06 MAR 96  
Analyzed: 18 MAR 96

Parameter	Result	Units	Reporting Limit
Surrogate	Recovery		Limits
Nitrobenzene-d5	70	%	35-114
2-Fluorobiphenyl	61	%	43-116
Terphenyl-d14	84	%	33-141
Phenol-d5	70	%	54-105
2-Fluorophenol	67	%	21-100
2,4,6-Tribromophenol	69	%	10-123

Dilution factor is 1.0. All results and limits are corrected for dilution.

Reported By: Dan Albritton

Approved By: Audrey Cornell





Quanterra Incorporated  
4955 Yarrow Street  
Arvada, Colorado 80002

303 421-6611 Telephone  
303 431-7171 Fax

April 9, 1996

Mr. Fred Gebhardt  
U.S. Geological Survey  
4501 Indian School Rd., NE  
Suite 200  
Albuquerque, NM 87110

Dear Fred:

Enclosed are reissued TIC data sheets for method 8270 for one sample (CAFB-I-0296-2) which was recently reported to you. Due to an instrument programming error, the TICs were not pulled correctly for the report originally issued to you. All data produced on the instrument in question has been reprocessed, and it has been determined that all other samples reported to you were not affected by this error. I apologize for the inconvenience.

Please call if you have any questions.

Sincerely,

A handwritten signature in cursive script, appearing to read "Lindsay Breyer".

Lindsay Breyer  
Program Manager

cc: Mr. Bob Brock, USGS, NWQL

Quanterra #047596

Semivolatiles Library Search (20 Compound TID)

Method 8270

Client Name: U.S. Geological Survey  
 Client ID: CAFB-I-0296-2  
 Lab ID: 047596-0002-SA  
 Matrix: AQUEOUS  
 Authorized: 01 MAR 96

Sampled: 29 FEB 96  
 Prepared: NA

Received: 01 MAR 96  
 Analyzed: 18 MAR 96

Parameter	Result	Units	Reporting Limit
Siloxane	5.0	ug/L	
Siloxane	4.0	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	

ND = Not detected  
 NA = Not applicable

Reported By: Dan Albritton

Approved By: Audrey Cornell

Date: 18-MAR-96 18:45

Client ID:

Instrument: S.i

Sample Info: 47596-02 100/1 1060ml

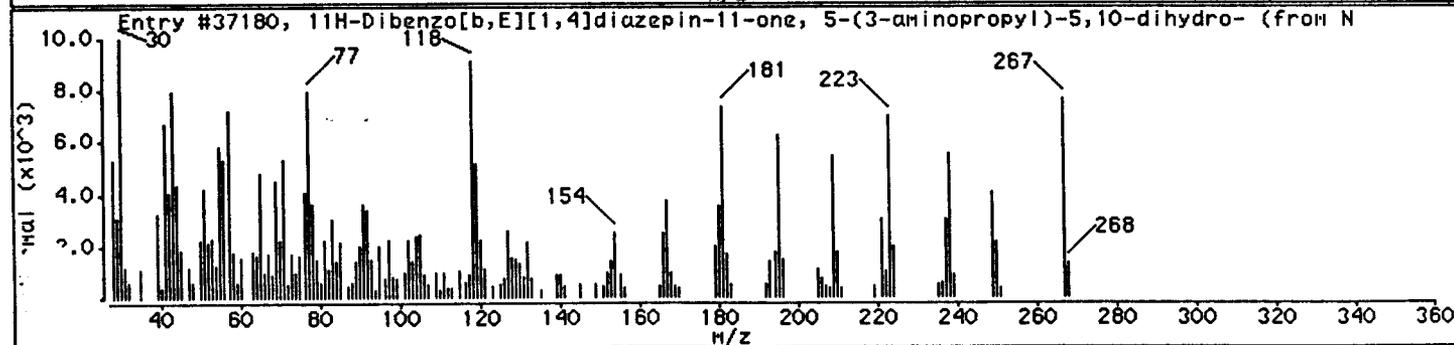
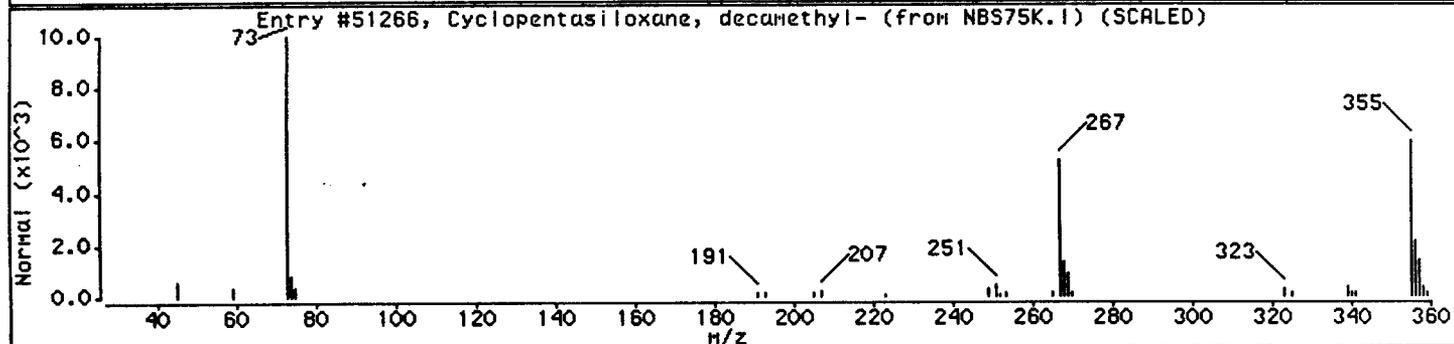
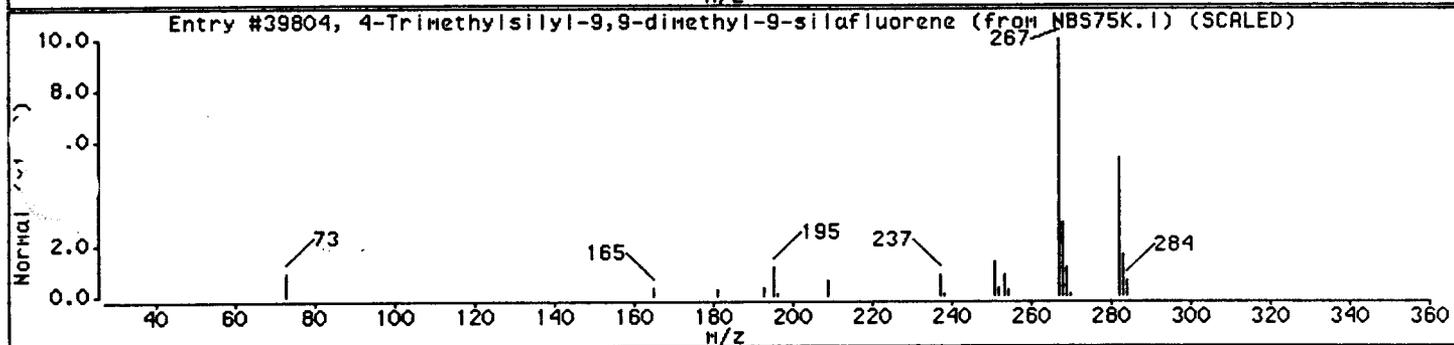
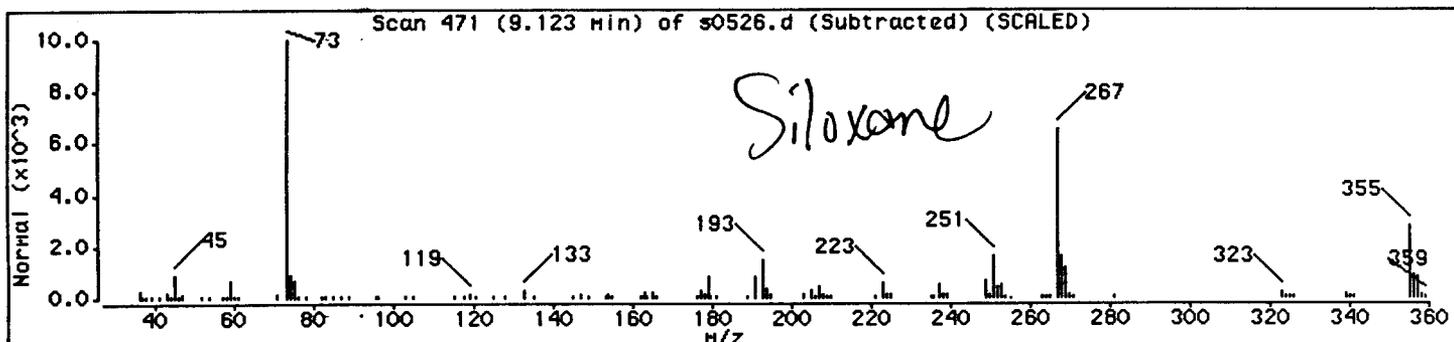
Volume injected (uL): 1.0

Operator: da

Column phase: DB-5.625 30M 0.5um

Column diameter: 0.32

Library Search Compound Match	CAS Number	Library	Entry	Quality	Formula	Weight
4-Trimethylsilyl-9,9-dimethyl-9-silafluorene	58263-56-2	NBS75K.1	39804	42	C17H22Si2	282
Cyclopentasiloxane, decamethyl-	541-02-6	NBS75K.1	51266	40	C10H30O5Si3	370
11H-Dibenzo[b,E][1,4]diazepin-11-one, 5-	13450-73-2	NBS75K.1	37180	38	C16H17N3O	267



Date: 18-MAR-96 18:45

Client ID:

Instrument: S.i

Sample Info: 47596-02 100/1 1060ml

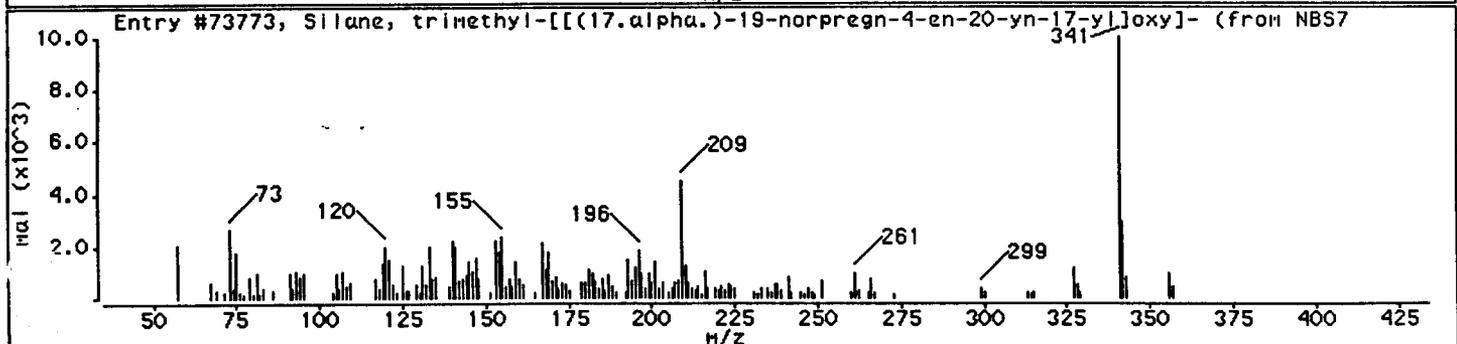
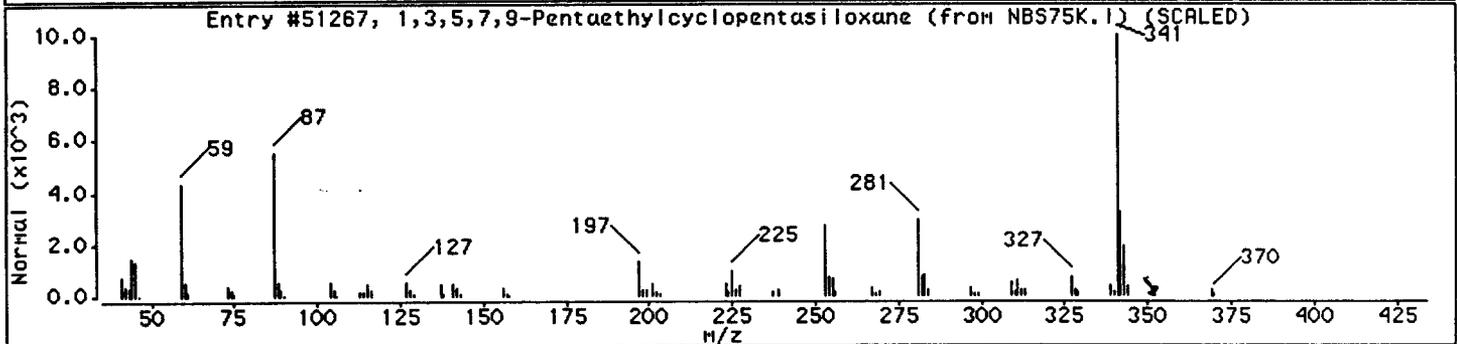
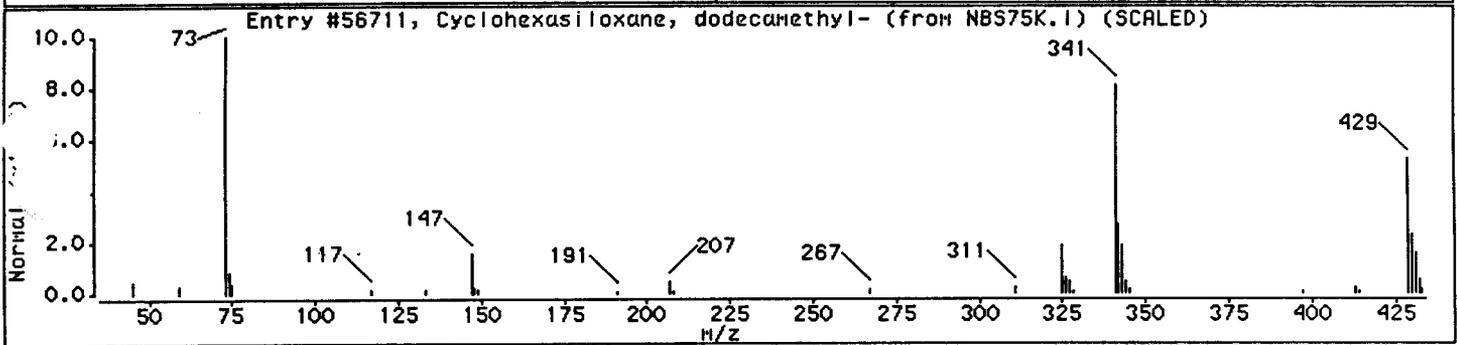
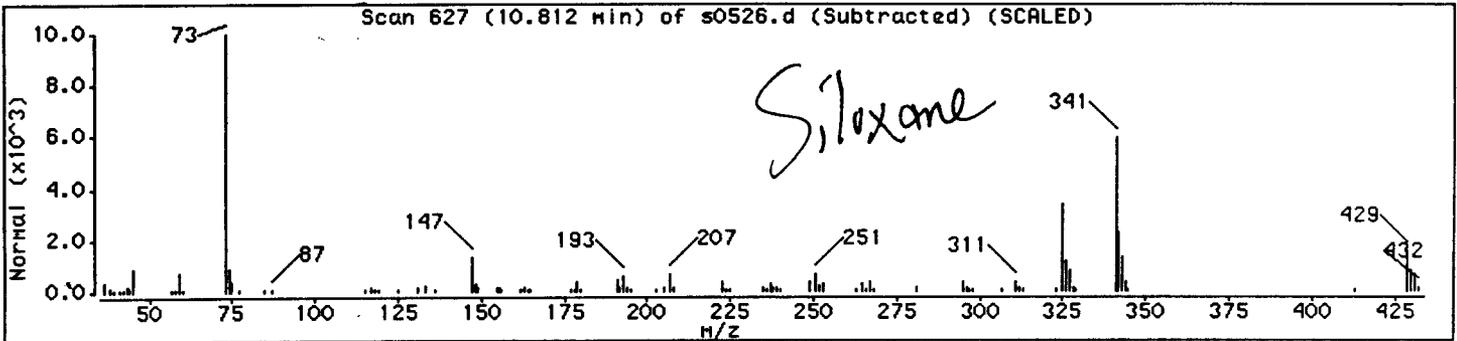
Volume Injected (uL): 1.0

Operator: da

Column phase: DB-5.625 30m 0.5um

Column diameter: 0.32

Library Search Compound Match	CAS Number	Library	Entry	Quality	Formula	Weight
Cyclohexasiloxane, dodecamethyl-	540-97-6	NBS75K.I	56711	58	C <sub>12</sub> H <sub>36</sub> O <sub>6</sub> Si <sub>6</sub> 444	
1,3,5,7,9-Pentaethylcyclopentasiloxane	17995-44-7	NBS75K.I	51267	38	C <sub>10</sub> H <sub>30</sub> O <sub>5</sub> Si <sub>5</sub> 370	
Silane, trimethyl-[[[(17.alpha.)-19-norpr	56771-62-1	NBS75K.I	73773	23	C <sub>23</sub> H <sub>36</sub> O <sub>5</sub> Si	356



Quanterra Denver

Unknown Compounds Quantitation Report

Data file : /chem/S.i/031896.b/s0526.d  
 Lab Smp Id:  
 Inj Date : 18-MAR-96 18:45  
 Operator : da  
 Smp Info : 47596-02 100/1 1060ml  
 Misc Info :  
 Comment : SOP#LM-RMA-3013  
 Method : /chem/S.i/031896.b/BNA.m  
 Meth Date : 27-Mar-1996 12:31 targets  
 Cal Date : 18-MAR-1996 13:57  
 Als bottle: 1  
 Dil Factor: 1.000  
 Integrator: HP RTE  
 Sample Matrix: WATER  
 Quantitative Mode : Use RF of Nearest Std  
 Concentration Formula:  $Vi * (1000 * Vt / (Vo * (100 - M) / 100))$

Inst ID: S.i

Cal File: s0519.d

Target Version: 3.12

Compound Sublist: HSL+AP9.sub

Name	Value	Description
Vi	1.000	Injection Volume
Vt	1.000	FinalVolume
Vo	1060.000	Initial sample volume
M	0.000	% moisture

	RT	AREA	AMOUNT
* 45 Naphthalene-d8	9.957	1674077	40.000

RT	CONCENTRATIONS			QUAL	QUANT		
	AREA	ON-COL(ug/ml)	FINAL( ug/L)		LIBRARY	LIB ENTRY	CPND #
Siloxane							CAS #:
9.123	222923	5.33	5.02	0		0	45
Siloxane							CAS #:
10.812	176758	4.22	3.98	0		0	45

Appendix IX Herbicides  
Method 8150

Client Name: U.S. Geological Survey  
 Client ID: CAFB-I-0296-1  
 Lab ID: 047596-0001-SA  
 Matrix: AQUEOUS  
 Authorized: 01 MAR 96

Sampled: 29 FEB 96  
 Received: 01 MAR 96

Prepared: 05 MAR 96  
 Analyzed: 09 MAR 96

Parameter	Result	Units	Reporting Limit	
2,4-D	ND	ug/L	1.2	T
2,4,5-TP (Silvex)	ND	ug/L	0.17	
2,4,5-T	ND	ug/L	0.20	
Surrogate	Recovery		Limits	
DCAA	89	%	45-123	

Dilution factor is 1.0. All results and limits are corrected for dilution.

T = Preferred values unless footnoted on secondary column test.  
 ND = Not Detected

Reported By: Joseph Aten

Approved By: Audrey Cornell

Appendix IX Herbicides  
Method 8150

Client Name: U.S. Geological Survey  
 Client ID: CAFB-I-0296-2  
 Lab ID: 047596-0002-SA  
 Matrix: AQUEOUS  
 Authorized: 01 MAR 96

Sampled: 29 FEB 96  
 Received: 01 MAR 96

Prepared: 05 MAR 96  
 Analyzed: 09 MAR 96

Parameter	Result	Units	Reporting Limit	
2,4-D	ND	ug/L	1.2	T
2,4,5-TP (Silvex)	ND	ug/L	0.17	
2,4,5-T	ND	ug/L	0.20	
Surrogate	Recovery		Limits	
DCAA	58	%	45-123	

Dilution factor is 1.0. All results and limits are corrected for dilution.

T = Preferred values unless footnoted on secondary column test.

D = Not Detected

Reported By: Joseph Aten

Approved By: Audrey Cornell

Chlorinated Pesticides and PCB's  
Appendix IX List  
Method 8080A

Client Name: U.S. Geological Survey  
Client ID: CAFB-I-0296-1  
Lab ID: 047596-0001-SA  
Matrix: AQUEOUS  
Authorized: 01 MAR 96

Sampled: 29 FEB 96  
Received: 01 MAR 96

Prepared: 05 MAR 96  
Analyzed: 09 MAR 96

Parameter	Result	Units	Reporting Limit	
Aldrin	ND	ug/L	0.050	T
Aroclor 1016	ND	ug/L	1.0	
Aroclor 1221	ND	ug/L	1.0	
Aroclor 1232	ND	ug/L	1.0	
Aroclor 1242	ND	ug/L	1.0	
Aroclor 1248	ND	ug/L	1.0	
Aroclor 1254	ND	ug/L	1.0	
Aroclor 1260	ND	ug/L	1.0	
alpha-BHC	ND	ug/L	0.050	
beta-BHC	ND	ug/L	0.050	
delta-BHC	ND	ug/L	0.050	
gamma-BHC (Lindane)	ND	ug/L	0.050	
alpha-Chlordane	ND	ug/L	0.050	
gamma-Chlordane	ND	ug/L	0.050	
Chlorobenzilate	ND	ug/L	1.0	
4,4'-DDD	ND	ug/L	0.10	
4,4'-DDE	ND	ug/L	0.10	
4'-DDT	ND	ug/L	0.10	
Dallate	ND	ug/L	1.0	
Dieldrin	ND	ug/L	0.10	
Endosulfan I	ND	ug/L	0.050	
Endosulfan II	ND	ug/L	0.10	
Endosulfan sulfate	ND	ug/L	0.10	
Endrin	ND	ug/L	0.10	
Endrin aldehyde	ND	ug/L	0.10	
Heptachlor	ND	ug/L	0.050	
Heptachlor epoxide	0.054	ug/L	0.050	
Isodrin	ND	ug/L	0.10	
Kepone	ND	ug/L	1.0	
Methoxychlor	ND	ug/L	0.50	
Toxaphene	ND	ug/L	5.0	
Surrogate	Recovery		Limits	
Tetrachloro-m-xylene	82	%	54-106	
Dibutyl chlorendate	101	%	56-138	
Decachlorobiphenyl	113	%	65-145	

Dilution factor is 1.0. All results and limits are corrected for dilution.

T = Preferred values unless footnoted on secondary column test.

ND = Not Detected

Reported By: Houa Vue

Approved By: Audrey Cornell

Chlorinated Pesticides and PCB's  
Appendix IX List  
Method 8080A - Second Column

Client Name: U.S. Geological Survey  
Client ID: CAFB-I-0296-1  
Lab ID: 047596-0001-SA  
Matrix: AQUEOUS  
Authorized: 01 MAR 96

Sampled: 29 FEB 96  
Received: 01 MAR 96

Prepared: 05 MAR 96  
Analyzed: 09 MAR 96

Parameter	Result	Units	Reporting Limit	
Aldrin	ND	ug/L	0.050	
Aroclor 1016	ND	ug/L	1.0	
Aroclor 1221	ND	ug/L	1.0	
Aroclor 1232	ND	ug/L	1.0	
Aroclor 1242	ND	ug/L	1.0	
Aroclor 1248	ND	ug/L	1.0	
Aroclor 1254	ND	ug/L	1.0	
Aroclor 1260	ND	ug/L	1.0	
alpha-BHC	ND	ug/L	0.050	
beta-BHC	ND	ug/L	0.050	
delta-BHC	ND	ug/L	0.050	
gamma-BHC (Lindane)	ND	ug/L	0.050	
alpha-Chlordane	ND	ug/L	0.050	
gamma-Chlordane	ND	ug/L	0.050	
Chlorobenzilate	ND	ug/L	1.0	
4,4'-DDD	ND	ug/L	0.10	
4,4'-DDE	ND	ug/L	0.10	
4,4'-DDT	ND	ug/L	0.10	
Diallate	ND	ug/L	1.0	
Dieldrin	ND	ug/L	0.10	
Endosulfan I	ND	ug/L	0.050	
Endosulfan II	ND	ug/L	0.10	
Endosulfan sulfate	ND	ug/L	0.10	
Endrin	ND	ug/L	0.10	
Endrin aldehyde	ND	ug/L	0.10	
Heptachlor	ND	ug/L	0.050	
Heptachlor epoxide	ND	ug/L	0.050	V
Isodrin	ND	ug/L	0.10	
Kepone	ND	ug/L	1.0	
Methoxychlor	ND	ug/L	0.50	
Toxaphene	ND	ug/L	5.0	
Surrogate	Recovery		Limits	
Tetrachloro-m-xylene	94	%	54-106	
Dibutyl chlorendate	101	%	56-138	
Decachlorobiphenyl	122	%	65-145	

Dilution factor is 1.0. All results and limits are corrected for dilution.

V = Secondary column result is the preferred value.

ND = Not Detected

Reported By: Houa Vue

Approved By: Audrey Cornell

Chlorinated Pesticides and PCB's  
Appendix IX List  
Method 8080A

Client Name: U.S. Geological Survey  
Client ID: CAFB-I-0296-2  
Lab ID: 047596-0002-SA  
Matrix: AQUEOUS  
Authorized: 01 MAR 96

Sampled: 29 FEB 96  
Received: 01 MAR 96

Prepared: 05 MAR 96  
Analyzed: 09 MAR 96

Parameter	Result	Units	Reporting Limit	
Aldrin	ND	ug/L	0.050	T
Aroclor 1016	ND	ug/L	1.0	
Aroclor 1221	ND	ug/L	1.0	
Aroclor 1232	ND	ug/L	1.0	
Aroclor 1242	ND	ug/L	1.0	
Aroclor 1248	ND	ug/L	1.0	
Aroclor 1254	ND	ug/L	1.0	
Aroclor 1260	ND	ug/L	1.0	
alpha-BHC	ND	ug/L	0.050	
beta-BHC	ND	ug/L	0.050	
delta-BHC	ND	ug/L	0.050	
gamma-BHC (Lindane)	ND	ug/L	0.050	
alpha-Chlordane	ND	ug/L	0.050	
gamma-Chlordane	ND	ug/L	0.050	
Chlorobenzilate	ND	ug/L	1.0	
4,4'-DDD	ND	ug/L	0.10	
4,4'-DDE	ND	ug/L	0.10	
4,4'-DDT	ND	ug/L	0.10	
Diallate	ND	ug/L	1.0	
Dieldrin	ND	ug/L	0.10	
Endosulfan I	ND	ug/L	0.050	
Endosulfan II	ND	ug/L	0.10	
Endosulfan sulfate	ND	ug/L	0.10	
Endrin	ND	ug/L	0.10	
Endrin aldehyde	ND	ug/L	0.10	
Heptachlor	ND	ug/L	0.050	
Heptachlor epoxide	ND	ug/L	0.050	
Isodrin	ND	ug/L	0.10	
Kepone	ND	ug/L	1.0	
Methoxychlor	ND	ug/L	0.50	
Toxaphene	ND	ug/L	5.0	
<b>Surrogate</b>	<b>Recovery</b>		<b>Limits</b>	
Tetrachloro-m-xylene	82	%	54-106	
Dibutyl chlorendate	102	%	56-138	
Decachlorobiphenyl	113	%	65-145	

Dilution factor is 1.0. All results and limits are corrected for dilution.

T = Preferred values unless footnoted on secondary column test.

D = Not Detected

Reported By: Houa Vue

Approved By: Audrey Cornell

**Metals  
Total Metals**

Client Name: U.S. Geological Survey  
 Client ID: CAFB-I-0296-1  
 Lab ID: 047596-0001-SA  
 Matrix: AQUEOUS  
 Authorized: 01 MAR 96

Sampled: 29 FEB 96  
 Prepared: See Below

Received: 01 MAR 96  
 Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Antimony	ND		1.0	0.060	mg/L	6010	11 MAR 96	12 MAR 96
Arsenic	ND		1.0	0.0050	mg/L	7060	04 MAR 96	11 MAR 96
Barium	0.034		1.0	0.010	mg/L	6010	11 MAR 96	12 MAR 96
Beryllium	ND		1.0	0.0020	mg/L	6010	11 MAR 96	12 MAR 96
Cadmium	ND		1.0	0.0050	mg/L	6010	11 MAR 96	12 MAR 96
Chromium	0.019		1.0	0.010	mg/L	6010	11 MAR 96	12 MAR 96
Cobalt	ND		1.0	0.010	mg/L	6010	11 MAR 96	12 MAR 96
Copper	ND		1.0	0.020	mg/L	6010	11 MAR 96	12 MAR 96
Iron	ND		1.0	0.10	mg/L	6010	11 MAR 96	12 MAR 96
Lead	ND		1.0	0.0050	mg/L	7421	12 MAR 96	13 MAR 96
Manganese	ND		1.0	0.010	mg/L	6010	11 MAR 96	12 MAR 96
Mercury	ND		1.0	0.00020	mg/L	7470	07 MAR 96	07 MAR 96
Nickel	ND		1.0	0.040	mg/L	6010	11 MAR 96	12 MAR 96
Silver	ND		1.0	0.010	mg/L	6010	11 MAR 96	12 MAR 96
Selenium	0.0065		1.0	0.0050	mg/L	7740	04 MAR 96	10 MAR 96
Sodium	42.7		1.0	5.0	mg/L	6010	11 MAR 96	12 MAR 96
Thallium	ND	G	1.0	0.010	mg/L	7841	12 MAR 96	15 MAR 96
Tin	ND		1.0	0.10	mg/L	6010	11 MAR 96	12 MAR 96
Vanadium	0.024		1.0	0.010	mg/L	6010	11 MAR 96	12 MAR 96
Zinc	ND		1.0	0.020	mg/L	6010	11 MAR 96	12 MAR 96

G = Reporting limit raised due to the matrix of the sample.  
 ND = Not Detected

Reported By: Norma Baier

Approved By: Richard Persichitte

**Metals  
Total Metals**

Client Name: U.S. Geological Survey  
 Client ID: CAFB-I-0296-2  
 Lab ID: 047596-0002-SA  
 Matrix: AQUEOUS  
 Authorized: 01 MAR 96

Sampled: 29 FEB 96  
 Prepared: See Below

Received: 01 MAR 96  
 Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Antimony	ND		1.0	0.060	mg/L	6010	11 MAR 96	12 MAR 96
Arsenic	ND		1.0	0.0050	mg/L	7060	04 MAR 96	11 MAR 96
Barium	0.035		1.0	0.010	mg/L	6010	11 MAR 96	12 MAR 96
Beryllium	ND		1.0	0.0020	mg/L	6010	11 MAR 96	12 MAR 96
Cadmium	ND		1.0	0.0050	mg/L	6010	11 MAR 96	12 MAR 96
Chromium	0.016		1.0	0.010	mg/L	6010	11 MAR 96	12 MAR 96
Cobalt	ND		1.0	0.010	mg/L	6010	11 MAR 96	12 MAR 96
Copper	ND		1.0	0.020	mg/L	6010	11 MAR 96	12 MAR 96
Iron	ND		1.0	0.10	mg/L	6010	11 MAR 96	12 MAR 96
Lead	ND		1.0	0.0050	mg/L	7421	12 MAR 96	13 MAR 96
Manganese	ND		1.0	0.010	mg/L	6010	11 MAR 96	12 MAR 96
Mercury	ND		1.0	0.00020	mg/L	7470	07 MAR 96	07 MAR 96
Nickel	ND		1.0	0.040	mg/L	6010	11 MAR 96	12 MAR 96
Silver	ND		1.0	0.010	mg/L	6010	11 MAR 96	12 MAR 96
Selenium	0.0066		1.0	0.0050	mg/L	7740	04 MAR 96	10 MAR 96
Sodium	44.3		1.0	5.0	mg/L	6010	11 MAR 96	12 MAR 96
Thallium	ND	G	2.0	0.010	mg/L	7841	12 MAR 96	15 MAR 96
Tin	ND		1.0	0.10	mg/L	6010	11 MAR 96	12 MAR 96
Vanadium	0.025		1.0	0.010	mg/L	6010	11 MAR 96	12 MAR 96
Zinc	ND		1.0	0.020	mg/L	6010	11 MAR 96	12 MAR 96

G = Reporting limit raised due to the matrix of the sample.  
 ND = Not Detected

Reported By: Norma Baier

Approved By: Richard Persichitte

General Inorganics

Client Name: U.S. Geological Survey  
 Client ID: CAFB-I-0296-1  
 Lab ID: 047596-0001-SA  
 Matrix: AQUEOUS  
 Authorized: 01 MAR 96

Sampled: 29 FEB 96  
 Prepared: See Below

Received: 01 MAR 96  
 Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Chloride	80.8		1.0	3.0	mg/L	300.0	NA	07 MAR 96
Cyanide	ND		1.0	0.010	mg/L	9012	05 MAR 96	06 MAR 96
Sulfide, Total	ND		1.0	0.050	mg/L	376.2	NA	04 MAR 96
Sulfate	138	t	2.0	10.0	mg/L	300.0	NA	07 MAR 96
Total Organic Carbon	ND		1.0	1.0	mg/L	415.1	NA	05 MAR 96
Total Organic Halogen as Cl	ND		1.0	30.0	ug/L	9020	NA	12 MAR 96
Phenolics	ND		1.0	0.0050	mg/L	9065	11 MAR 96	11 MAR 96

t = Sample diluted due to the concentration of target compounds.  
 ND = Not Detected

Reported By: Damon Lona

Approved By: Roxanne Sullivan

General Inorganics

Client Name: U.S. Geological Survey  
 Client ID: CAFB-I-0296-2  
 Lab ID: 047596-0002-SA  
 Matrix: AQUEOUS  
 Authorized: 01 MAR 96

Sampled: 29 FEB 96  
 Prepared: See Below

Received: 01 MAR 96  
 Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Chloride	80.4		1.0	3.0	mg/L	300.0	NA	07 MAR 96
Cyanide	ND		1.0	0.010	mg/L	9012	05 MAR 96	06 MAR 96
Sulfide, Total	ND		1.0	0.050	mg/L	376.2	NA	04 MAR 96
Sulfate	138	t	2.0	10.0	mg/L	300.0	NA	07 MAR 96
Total Organic Carbon	ND		1.0	1.0	mg/L	415.1	NA	05 MAR 96
Total Organic Halogen as Cl	ND		1.0	30.0	ug/L	9020	NA	12 MAR 96
Phenolics	ND		1.0	0.0050	mg/L	9065	11 MAR 96	11 MAR 96

t = Sample diluted due to the concentration of target compounds.  
 ND = Not Detected

Reported By: Damon Lona

Approved By: Roxanne Sullivan

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**ANALYTICAL RESULTS**  
**FOR**  
**U.S. GEOLOGICAL SURVEY**  
**QUANTERRA NO. 047724**

**MARCH 30, 1996**

Prepared by:



Mark D. Stella

Reviewed by:



Lindsay Breyer

## I. OVERVIEW

On March 8, 1996, Quanterra Environmental Services, Denver received one aqueous sample from the U.S. Geological Survey.

This report presents the analytical results as well as supporting information to aid in the evaluation and interpretation of the data and is arranged in the following order:

- I. Overview
- II. Sample Description Information/Analytical Test Requests
- III. Analytical Results
- IV. Quality Control Report

### Semivolatile Organics by GC/MS:

1,2,4-Trichlorobenzene is reported outside control limits in the duplicate control samples (DCS). This compound was not detected in the sample. Since the matrix spike/spike duplicate (MS/SD) associated with this QC lot was within control limits for all spike compounds, the data were reported.

### General Inorganics:

The low distilled cyanide standard was recovered below control limits. Cyanide was not detected in the sample. Since the DCS were within control limits, the data were reported.

With the exceptions noted either above or on the data sheets, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory QC samples analyzed in conjunction with the samples in this project were within established control limits.

## II. SAMPLE DESCRIPTION INFORMATION/ANALYTICAL TEST REQUESTS

### Sample Description Information:

The Sample Description Information lists all of the samples received in this project together with the internal laboratory identification number assigned for each sample. Each project received at Quanterra's Denver laboratory is assigned a unique six digit number. Samples within the project are numbered sequentially. The laboratory identification number is a combination of the six digit project code and the sample sequence number.

Also given in the Sample Description Information is the Sample Type (matrix), Date of Sampling (if known) and Date of Receipt at the laboratory.

### Analytical Test Requests:

The Analytical Test Requests lists the analyses that were performed on each sample. The Custom Test column indicates where tests have been modified to conform to the specific requirements of this project.

SAMPLE DESCRIPTION INFORMATION  
for  
U.S. Geological Survey

Lab ID	Client ID	Matrix	Sampled Date	Time	Received Date
047724-0001-SA	CAFB-M-0296-1	AQUEOUS	07 MAR 96	09:00	08 MAR 96

ANALYTICAL TEST REQUESTS  
for  
U.S. Geological Survey

Lab ID: 047724	Group Code	Analysis Description	Custom Test?
0001	A	Volatile Organics	N
		Appendix IX List	N
		Screen - Volatile Organics	N
		Volatiles Library Search (10 Compound TID)	N
		Semivolatiles Library Search (20 Compound TID)	N
		Appendix IX Herbicides	N
		Prep - Herbicides by GC	N
		Appendix IX Herbicides	N
		Total Organic Halogen (TOX)	N
		Cyanide, Total	N
		Prep - Cyanide, Total	N
		Sulfide, Total	N
		Chloride, Ion Chromatography	N
		Sulfate, Ion Chromatography	N
		Appendix IX Metals (Total) done by ICP	Y
		Prep - Total Metals, ICP	N
		Lead, Furnace AA (Total)	N
		Prep - Total Metals, Furnace AA	N
		Arsenic, Furnace AA (Total)	N
		Prep - Arsenic, Selenium - Total, Furnace AA	N
		Selenium, Furnace AA (Total)	N
		Thallium, Furnace AA (Total)	N
		STD-Total Organic Carbon (TOC)-415.1	N
		Semivolatile Organics	N
		Appendix IX List	
		Prep - Semivolatile Organics by GC/MS	N
		Chlorinated Pesticides and PCB's	N
		Appendix IX List	
		Prep - Organochlorine Pesticides/PCBs by GC	N
		Chlorinated Pesticides and PCB's	N
		Appendix IX List	
		Phenolics, Manual(4-AAP)	N
		Prep - Phenolics	N
		Mercury, Cold Vapor AA (Total)	N
		Prep - Mercury, Cold Vapor AA (Total)	N

### III. ANALYTICAL RESULTS

The analytical results for this project are presented in the following data tables. Each data table includes sample identification information, and when available and appropriate, dates sampled, received, authorized, prepared and analyzed. The authorization date is the date when the project was defined by the client such that laboratory work could begin. The date prepared is typically the date an extraction or digestion was initiated. For volatile organic compounds in water, the date prepared is the date the screening of the sample was performed.

Data sheets contain a listing of the parameters measured in each test, the analytical results and the Quanterra reporting limit. Reporting limits are adjusted to reflect dilution of the sample, when appropriate. Solid and waste samples are reported on an "as received" basis, i.e. no correction is made for moisture content.

Quanterra does not routinely blank-correct analytical data. Uncorrected analytical results are reported, along with associated blank results, for all organic and metals analyses. Analytical results and blank results are reported for conventional inorganic parameters as specified in the method.

In addition, surrogate recovery data is presented for all GC/MS analyses. The surrogate recovery is an indication of the affect of the sample matrix on the performance of the method.

The analytical data reported are subject to the following limitations of the analytical methodology:

GC/MS Semivolatile Organics:

Benzo(b) and benzo(k) fluoranthene cannot be differentiated based on their mass spectra and their retention times are almost identical. The isomer which is the closest in retention time to the sample is reported.

1,2-diphenylhydrazine is measured as azobenzene.

N-nitrosodiphenylamine degrades to diphenylamine in the injection port of the instrument. Therefore, these two compounds cannot be distinguished from one another.

3-Methyl phenol and 4-methyl phenol cannot be differentiated based on their mass spectra and retention times are identical. Results are reported as 3/4-methyl phenol (or m&p-cresols).

Several compounds are not consistently recovered using Method 8270 and reporting limits cannot be established. These compounds include hexachlorophene and benzenethiol.

Two Refinery compounds, pyridine and quinoline, are not recovered after alumina column cleanup.

### Tentatively Identified Compounds:

This report presents results for the "identification" of unknown compounds that were detected in the GC/MS analysis. The results from this work are presented as "tentatively identified compounds" (TICs). The approach used for reporting TICs was based on the protocol established for this purpose in the EPA Superfund methods and on guidelines established by the American Chemical Society (ACS).

In summary, the mass spectra of chromatographic peaks in concentrations in excess of 10% of the internal standard were obtained. Normally, the number of unknown compounds identified is limited to 10 compounds in the volatile fraction and 20 compounds in the semivolatle fraction. Each mass spectrum was then compared to a library of over 30,000 reference spectra in a computerized "library search." The three "best" matches obtained by the computer were hardcopied along with the mass spectrum of the unknown peak. This information was then reviewed by an analyst who "identified" the compound based on the available information.

All identifications were based on the "Guidelines for GC/MS Identification" developed by the American Chemical Society (Environmental Science and Technology, 1982, 16 143A). As recommended in these guidelines, identifications of unknown substances were reported with a level of confidence. The three levels of confidence cited in the ACS guidelines and used in this report are as follows:

#### Level 3: Confirmed Identification:

The identification is based on the analysis of an authentic standard.

#### Level 2: Confident Identification:

Good agreement was observed between the unknown compound and a specific library spectrum.

Level 1: Tentative Identification:

The unknown compound is only indicative of a specific library spectrum.

Class Identification:

The unknown compound was not similar to a specific library spectrum, but it did contain ions characteristic of a class of compounds (saturated hydrocarbon, chlorinated hydrocarbon, etc.).

If there were no library spectra similar to the unknown, and it could not be assigned to a particular class of compounds, the compound is reported as "unknown."

Quantitation of TICs is based on the total ionization peak area relative to an internal standard, assuming a response factor of one. Accordingly, the reported concentration is an estimate.

In general, mass spectrometry cannot distinguish isomers (compounds with the same molecular formula). Therefore, an identified compound may be any one of several different isomers.

The tentatively identified compounds in this report may include some compounds reported as "siloxanes." Siloxanes are common laboratory and field artifacts or contaminants. Potential sources include silicon-based grease in the field or laboratory plus the liquid phase coating on gas chromatography columns, as well as other equipment in the laboratory. However, siloxanes may also be present in environmental samples from spills of silicone oils or lubricating oils with siloxane additives.

### Chromatography:

Analyte identification in chromatographic analysis is based upon retention time. Since it is possible for more than one compound to have the same retention time, analyte identification by these methods is not definitive. Most methods require analysis on a second dissimilar chromatographic column to confirm the presence of target analytes detected in a sample. Only confirmed hits are reported without further qualification or supporting data.

Some analytes (e.g. technical chlordane, toxaphene, and the aroclors) consist of mixtures of a number of different compounds. These multicomponent analytes produce distinct patterns of peaks in the chromatograms and do not have a single retention time. The pattern of peaks observed is characteristic of the analyte and provides qualitative information about the analyte(s) present in the sample. For these analytes, second column confirmations are not generally required. Instead, identification is based on matching the patterns of peaks observed in the samples to the patterns for standards containing known concentrations of the analyte of interest.

All analytes are quantitated against multipoint calibration curves as specified in the applicable analytical methods. In some cases it is not practical to maintain multipoint calibration curves for every analyte on every instrument. These analytes include three Appendix IX compounds (diallate, isodrin and kepone) and the multicomponent analytes (technical chlordane, toxaphene and aroclors) analyzed by method 8080. For these analytes, a single calibration standard at the reporting limit is analyzed to establish instrument sensitivity for each compound. If the analyte is detected in any sample at greater than half the reporting limit, a multipoint calibration curve is prepared and the sample re-analyzed for quantitation against this curve.

## Metals:

All nominal reporting limits for metals have been established from instrument detection limit (IDL) and method detection limit (MDL) evaluations and represent the level above which reliable data can be routinely obtained. On a periodic basis, low-level standards are analyzed seven times on three non-consecutive days on each instrument. The standard deviations of the three runs are summed to yield the IDL. MDL studies are performed on an annual basis in accordance with 40 CFR 136 Appendix B. Nominal reporting limits are generally 2-5 times the IDL or MDL (consistent with the American Chemical Society definition for the Limit of Quantification). IDL and MDL studies for metals are necessarily performed on reagent water and do not account for matrix effects. Elevation of the reporting limits above the nominal levels are sometimes required as discussed below.

Reporting limits for metals analyzed by Inductively Coupled Plasma (ICP) are typically raised only for dilution due to an analyte exceeding the instrument linear range. Background and interelement interferences are corrected automatically and do not require dilution.

Metals analyzed by Graphite Furnace Atomic Absorption (GFAA) are subject to matrix interferences. Consequently, Quanterra Environmental Services, Denver laboratory's protocol is to analyze a spiked aliquot with every sample. The severity of the interference, based upon analyte level and spike recovery, is assessed against specific criteria and the need for an elevated reporting limit or dilution is determined.

The analysis of mercury by Cold Vapor Atomic Absorption (CVAA) is generally free from matrix interferences. As with ICP, reporting limits are raised only for dilution due to a sample concentration exceeding the linear range of the instrument.

### Footnotes and Data Qualifiers

The data sheets contained in this report may contain a variety of footnotes and data qualifiers. Those used to indicate the confidence level for Tentatively Identified Compounds (GC/MS methods) are described above. Other footnotes are used with specific tests; for example, footnotes used with the GC/FID Petroleum Hydrocarbon methods to indicate (in the analysts judgment) the product that appears to be present. Finally, there are a number of general qualifiers that serve to identify problems and pertinent observations made during sample analysis that are not discussed in the Overview. These are described below:

**B** Compound is also detected in the blank.

The indicated compound was detected in the sample as well as the method blank. Please note that the B flag is not used when the sample result is ND (Not Detected).

**G** Reporting limit raised due to the matrix of the sample.

Indicates that reporting limits were raised due to the presence of non-target compounds or other matrix interferences. The sample may or may not have been diluted. For inorganic methods, the footnote applies only to the flagged analyte. For organic methods, the footnote pertains to all analytes determined by the method.

**T** Preferred values unless footnoted on secondary column test.

This footnote is used with GC tests to indicate the primary column results. The footnote will be listed only for the first compound but pertains to all analytes determined by the method. It is used in conjunction the footnote V.

**V** Secondary column is the preferred value.

This footnote is used for GC tests in conjunction the T footnote. It indicates that the value from the second column is preferred over the primary column result and pertains only to the indicated compound.

**t** Sample diluted due to the concentration of target compounds.

Indicates that reporting limits were raised due to the presence of target analytes outside the calibration range of the method. For multi-analyte methods, the footnote will appear only for the first analyte but pertains to all analytes determined by the method.

Volatile Organics  
Appendix IX List  
Method 8240

 Client Name: U.S. Geological Survey  
 Client ID: CAFB-M-0296-1  
 Lab ID: 047724-0001-SA  
 Matrix: AQUEOUS  
 Authorized: 08 MAR 96

 Sampled: 07 MAR 96  
 Received: 08 MAR 96

 Prepared: 11 MAR 96  
 Analyzed: 12 MAR 96

Parameter	Result	Units	Reporting Limit
Acetone	ND	ug/L	10
Acetonitrile	ND	ug/L	200
Acrolein	ND	ug/L	100
Acrylonitrile	ND	ug/L	100
Allyl chloride	ND	ug/L	10
Benzene	ND	ug/L	5.0
Bromodichloromethane	ND	ug/L	5.0
Bromoform	ND	ug/L	5.0
Bromomethane	ND	ug/L	10
2-Butanone (MEK)	ND	ug/L	10
Carbon disulfide	ND	ug/L	5.0
Carbon tetrachloride	ND	ug/L	5.0
Chlorobenzene	ND	ug/L	5.0
Chloroethane	ND	ug/L	10
Chloroform	ND	ug/L	5.0
Chloromethane	ND	ug/L	10
Chloroprene	ND	ug/L	5.0
bromochloromethane	ND	ug/L	5.0
1,2-Dibromo-3-chloro- propane (DBCP)	ND	ug/L	10
1,2-Dibromoethane (EDB)	ND	ug/L	10
Dibromomethane	ND	ug/L	5.0
trans-1,4-Dichloro-2-butene	ND	ug/L	5.0
Dichlorodifluoromethane	ND	ug/L	20
1,1-Dichloroethane	ND	ug/L	5.0
1,2-Dichloroethane	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	5.0
1,2-Dichloroethene (total)	ND	ug/L	5.0
1,2-Dichloropropane	ND	ug/L	5.0
cis-1,3-Dichloropropene	ND	ug/L	5.0
trans-1,3-Dichloropropene	ND	ug/L	5.0
1,4-Dioxane	ND	ug/L	500
Ethylbenzene	ND	ug/L	5.0
Ethyl methacrylate	ND	ug/L	20
Iodomethane	ND	ug/L	5.0
Isobutanol (2-Methyl-1-propanol)	ND	ug/L	200
2-Hexanone	ND	ug/L	10
Methacrylonitrile	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
Methyl methacrylate	ND	ug/L	20
4-Methyl-2-pentanone (MIBK)	ND	ug/L	10

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Mike Hoffman

Approved By: Audrey Cornell



Environmental  
Services

(cont.)

Volatile Organics  
Appendix IX List  
Method 8240

Client Name: U.S. Geological Survey  
Client ID: CAFB-M-0296-1  
Lab ID: 047724-0001-SA  
Matrix: AQUEOUS  
Authorized: 08 MAR 96

Sampled: 07 MAR 96  
Received: 08 MAR 96

Prepared: 11 MAR 96  
Analyzed: 12 MAR 96

Parameter	Result	Units	Reporting Limit
Propionitrile	ND	ug/L	5.0
Styrene	ND	ug/L	5.0
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0
Tetrachloroethene	ND	ug/L	5.0
Toluene	ND	ug/L	5.0
1,1,1-Trichloroethane	ND	ug/L	5.0
1,1,2-Trichloroethane	ND	ug/L	5.0
Trichloroethene	ND	ug/L	5.0
Trichlorofluoromethane	ND	ug/L	5.0
1,2,3-Trichloropropane	ND	ug/L	5.0
Vinyl acetate	ND	ug/L	10
Vinyl chloride	ND	ug/L	10
Xylenes (total)	ND	ug/L	5.0
Surrogate	Recovery		Limits
toluene-d8	101	%	88-110
4-Bromofluorobenzene	104	%	86-115
1,2-Dichloroethane-d4	99	%	76-114

Dilution factor is 1.0. All results and limits are corrected for dilution.

'D' = Not Detected

Reported By: Mike Hoffman

Approved By: Audrey Cornell

Volatiles Library Search (10 Compound TID)  
Method 8240



Client Name: U.S. Geological Survey  
Client ID: CAFB-M-0296-1  
ID: 047724-0001-SA  
Matrix: AQUEOUS  
Authorized: 08 MAR 96

Sampled: 07 MAR 96  
Received: 08 MAR 96

Prepared: NA  
Analyzed: 12 MAR 96

Parameter	Result	Units	Reporting Limit
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Mike Hoffman

Approved By: Audrey Cornell

Semivolatile Organics  
Appendix IX List  
Method 8270



Client Name: U.S. Geological Survey  
Client ID: CAFB-M-0296-1  
Lab ID: 047724-0001-SA  
Matrix: AQUEOUS  
Authorized: 08 MAR 96

Sampled: 07 MAR 96  
Received: 08 MAR 96

Prepared: 11 MAR 96  
Analyzed: 15 MAR 96

Parameter	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	10
Acenaphthylene	ND	ug/L	10
Acetophenone	ND	ug/L	10
2-Acetylaminofluorene	ND	ug/L	100
4-Aminobiphenyl	ND	ug/L	10
Aniline	ND	ug/L	10
Anthracene	ND	ug/L	10
Aramite	ND	ug/L	10
Benzo(a)anthracene	ND	ug/L	10
Benzo(b)fluoranthene	ND	ug/L	10
Benzo(k)fluoranthene	ND	ug/L	10
Benzo(g,h,i)perylene	ND	ug/L	10
Benzo(a)pyrene	ND	ug/L	10
Benzyl alcohol	ND	ug/L	10
4-Bromophenyl phenyl ether	ND	ug/L	10
Butyl benzyl phthalate	ND	ug/L	10
2-sec-Butyl-4,6-dinitro-phenol	ND	ug/L	10
4-Chloroaniline	ND	ug/L	10
Bis(2-Chloroethoxy)methane	ND	ug/L	10
Bis(2-Chloroethyl) ether	ND	ug/L	10
Bis(2-Chloroisopropyl)ether	ND	ug/L	10
4-Chloro-3-methylphenol	ND	ug/L	10
2-Chloronaphthalene	ND	ug/L	10
2-Chlorophenol	ND	ug/L	10
4-Chlorophenyl phenyl ether	ND	ug/L	10
Chrysene	ND	ug/L	10
Dibenz(a,h)anthracene	ND	ug/L	10
Dibenzofuran	ND	ug/L	10
Di-n-butyl phthalate	ND	ug/L	10
1,2-Dichlorobenzene	ND	ug/L	10
1,3-Dichlorobenzene	ND	ug/L	10
1,4-Dichlorobenzene	ND	ug/L	10
3,3'-Dichlorobenzidine	ND	ug/L	20
2,4-Dichlorophenol	ND	ug/L	10
2,6-Dichlorophenol	ND	ug/L	10
Diethyl phthalate	ND	ug/L	10
Dimethoate	ND	ug/L	50
p-Dimethylaminoazobenzene	ND	ug/L	10
7,12-Dimethylbenz(a)-anthracene	ND	ug/L	10
3,3'-Dimethylbenzidine	ND	ug/L	10
o,o-Dimethylphenethyl-amine	ND	ug/L	10

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Ann Biegelsen

Approved By: Audrey Cornell

Appendix IX List  
Method 8270



Client Name: U.S. Geological Survey  
 Client ID: CAFB-M-0296-1  
 Lab ID: 047724-0001-SA  
 Matrix: AQUEOUS  
 Authorized: 08 MAR 96

Sampled: 07 MAR 96  
 Received: 08 MAR 96

Prepared: 11 MAR 96  
 Analyzed: 15 MAR 96

Parameter	Result	Units	Reporting Limit
2,4-Dimethylphenol	ND	ug/L	10
Dimethyl phthalate	ND	ug/L	10
1,3-Dinitrobenzene	ND	ug/L	10
4,6-Dinitro-2-methylphenol	ND	ug/L	50
2,4-Dinitrophenol	ND	ug/L	50
2,4-Dinitrotoluene	ND	ug/L	10
2,6-Dinitrotoluene	ND	ug/L	10
Di-n-octyl phthalate	ND	ug/L	10
Diphenylamine	ND	ug/L	10
Disulfoton	ND	ug/L	50
bis(2-Ethylhexyl)phthalate	ND	ug/L	10
Ethyl methanesulfonate	ND	ug/L	10
Famphur	ND	ug/L	50
Fluoranthene	ND	ug/L	10
Fluorene	ND	ug/L	10
Hexachlorobenzene	ND	ug/L	10
Hexachlorobutadiene	ND	ug/L	10
Hexachlorocyclopentadiene	ND	ug/L	10
Hexachloroethane	ND	ug/L	10
Hexachlorophene	ND	ug/L	--
Hexachloropropene	ND	ug/L	10
Indeno(1,2,3-cd)pyrene	ND	ug/L	10
Isophorone	ND	ug/L	10
Isosafrole	ND	ug/L	20
Methapyrilene	ND	ug/L	10
3-Methylcholanthrene	ND	ug/L	10
Methyl methanesulfonate	ND	ug/L	10
2-Methylnaphthalene	ND	ug/L	10
Methyl parathion	ND	ug/L	50
2-Methylphenol	ND	ug/L	10
3/4-Methylphenol	ND	ug/L	10
Naphthalene	ND	ug/L	10
1,4-Naphthoquinone	ND	ug/L	10
1-Naphthylamine	ND	ug/L	10
2-Naphthylamine	ND	ug/L	10
2-Nitroaniline	ND	ug/L	50
3-Nitroaniline	ND	ug/L	50
4-Nitroaniline	ND	ug/L	50
Nitrobenzene	ND	ug/L	10
2-Nitrophenol	ND	ug/L	10
4-Nitrophenol	ND	ug/L	50

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Ann Biegelsen

Approved By: Audrey Cornell

Appendix IX List  
Method 8270



Client Name: U.S. Geological Survey  
 Client ID: CAFB-M-0296-1  
 Lab ID: 047724-0001-SA  
 Matrix: AQUEOUS  
 Authorized: 08 MAR 96

Sampled: 07 MAR 96  
 Received: 08 MAR 96

Prepared: 11 MAR 96  
 Analyzed: 15 MAR 96

Parameter	Result	Units	Reporting Limit
4-Nitroquinoline-1-oxide	ND	ug/L	100
N-Nitroso-di-n-butylamine	ND	ug/L	10
N-Nitrosodiethylamine	ND	ug/L	10
N-Nitrosodimethylamine	ND	ug/L	10
N-Nitrosodiphenylamine	ND	ug/L	10
N-Nitroso-di-n-propylamine	ND	ug/L	10
N-Nitrosomethylethylamine	ND	ug/L	10
N-Nitrosomorpholine	ND	ug/L	10
N-Nitrosopiperidine	ND	ug/L	10
N-Nitrosopyrrolidine	ND	ug/L	10
5-Nitro-o-toluidine	ND	ug/L	10
Parathion	ND	ug/L	50
Pentachlorobenzene	ND	ug/L	10
Pentachloroethane	ND	ug/L	10
Pentachloronitrobenzene	ND	ug/L	50
Pentachlorophenol	ND	ug/L	50
Phenacetin	ND	ug/L	10
Phenanthrene	ND	ug/L	10
Phenol	ND	ug/L	10
Phenylenediamine	ND	ug/L	100
orate	ND	ug/L	100
z-Picoline	ND	ug/L	10
Pronamide	ND	ug/L	10
Pyrene	ND	ug/L	10
Pyridine	ND	ug/L	20
Safrole	ND	ug/L	10
Sulfotepp	ND	ug/L	50
1,2,4,5-Tetrachloro-benzene	ND	ug/L	10
2,3,4,6-Tetrachlorophenol	ND	ug/L	50
Thionazin	ND	ug/L	50
2-Toluidine	ND	ug/L	10
1,2,4-Trichlorobenzene	ND	ug/L	10
2,4,5-Trichlorophenol	ND	ug/L	50
2,4,6-Trichlorophenol	ND	ug/L	10
0,0,0-Triethylphosphoro-thioate	ND	ug/L	10
1,3,5-Trinitrobenzene	ND	ug/L	10

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Ann Biegelsen

Approved By: Audrey Cornell

Semivolatile Organics  
Appendix IX List  
Method 8270

Client Name: U.S. Geological Survey  
Client ID: CAFB-M-0296-1  
Lab ID: 047724-0001-SA  
Matrix: AQUEOUS  
Authorized: 08 MAR 96

Sampled: 07 MAR 96  
Received: 08 MAR 96

Prepared: 11 MAR 96  
Analyzed: 15 MAR 96

Parameter	Result	Units	Reporting Limit
Surrogate	Recovery		Limits
Nitrobenzene-d5	63	%	35-114
2-Fluorobiphenyl	49	%	43-116
Terphenyl-d14	65	%	33-141
Phenol-d5	61	%	54-105
2-Fluorophenol	55	%	21-100
2,4,6-Tribromophenol	62	%	10-123

Dilution factor is 1.0. All results and limits are corrected for dilution.

Reported By: Ann Biegelsen

Approved By: Audrey Cornell

Semivolatiles Library Search (20 Compound TID)  
Method 8270



Client Name: U.S. Geological Survey  
Client ID: CAFB-M-0296-1  
Lab ID: 047724-0001-SA  
Matrix: AQUEOUS  
Authorized: 08 MAR 96

Sampled: 07 MAR 96  
Received: 08 MAR 96

Prepared: NA  
Analyzed: 15 MAR 96

Parameter	Result	Units	Reporting Limit
Nitrogen compound	11	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Ann Biegelsen

Approved By: Audrey Cornell

Appendix IX Herbicides  
Method 8150



Client Name: U.S. Geological Survey  
Client ID: CAFB-M-0296-1  
Lab ID: 047724-0001-SA  
Matrix: AQUEOUS  
Authorized: 08 MAR 96

Sampled: 07 MAR 96  
Received: 08 MAR 96

Prepared: 12 MAR 96  
Analyzed: 25 MAR 96

Parameter	Result	Units	Reporting Limit	
2,4-D	ND	ug/L	1.2	T
2,4,5-TP (Silvex)	ND	ug/L	0.17	
2,4,5-T	ND	ug/L	0.20	
Surrogate	Recovery		Limits	
DCAA	76	%	45-123	

Dilution factor is 1.0. All results and limits are corrected for dilution.

T = Preferred values unless footnoted on secondary column test.  
ND = Not Detected

Reported By: Joseph Aten

Approved By: Audrey Cornell

Chlorinated Pesticides and PCB's  
Appendix IX List  
Method 8080A



Client Name: U.S. Geological Survey  
Client ID: CAFB-M-0296-1  
Lab ID: 047724-0001-SA  
Matrix: AQUEOUS  
Authorized: 08 MAR 96

Sampled: 07 MAR 96  
Received: 08 MAR 96

Prepared: 14 MAR 96  
Analyzed: 20 MAR 96

Parameter	Result	Units	Reporting Limit	
Aldrin	ND	ug/L	0.050	T
Aroclor 1016	ND	ug/L	1.0	
Aroclor 1221	ND	ug/L	1.0	
Aroclor 1232	ND	ug/L	1.0	
Aroclor 1242	ND	ug/L	1.0	
Aroclor 1248	ND	ug/L	1.0	
Aroclor 1254	ND	ug/L	1.0	
Aroclor 1260	ND	ug/L	1.0	
alpha-BHC	ND	ug/L	0.050	
beta-BHC	ND	ug/L	0.050	
delta-BHC	ND	ug/L	0.050	
gamma-BHC (Lindane)	ND	ug/L	0.050	
alpha-Chlordane	ND	ug/L	0.050	
gamma-Chlordane	ND	ug/L	0.050	
Chlorobenzilate	ND	ug/L	1.0	
4,4'-DDD	ND	ug/L	0.10	
4,4'-DDE	ND	ug/L	0.10	
4,4'-DDT	ND	ug/L	0.10	
dallate	ND	ug/L	1.0	
deldrin	ND	ug/L	0.10	
Endosulfan I	ND	ug/L	0.050	
Endosulfan II	ND	ug/L	0.10	
Endosulfan sulfate	ND	ug/L	0.10	
Endrin	ND	ug/L	0.10	
Endrin aldehyde	ND	ug/L	0.10	
Heptachlor	ND	ug/L	0.050	
Heptachlor epoxide	ND	ug/L	0.050	
Isodrin	ND	ug/L	0.10	
Kepone	ND	ug/L	1.0	
Methoxychlor	ND	ug/L	0.50	
Toxaphene	ND	ug/L	5.0	
Surrogate	Recovery		Limits	
Tetrachloro-m-xylene	81	%	54-106	
Dibutyl chlorendate	105	%	56-138	
Decachlorobiphenyl	109	%	65-145	

Dilution factor is 1.0. All results and limits are corrected for dilution.

T = Preferred values unless footnoted on secondary column test.  
ND = Not Detected

ported By: Houa Vue

Approved By: Audrey Cornell

**Metals**  
**Total Metals**

Client Name: U.S. Geological Survey  
 Contract ID: CAFB-M-0296-1  
 Project #: 047724-0001-SA  
 Matrix: AQUEOUS  
 Authorized: 08 MAR 96

Sampled: 07 MAR 96  
 Prepared: See Below

Received: 08 MAR 96  
 Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Antimony	ND		1.0	0.060	mg/L	6010	11 MAR 96	12 MAR 96
Arsenic	ND		1.0	0.0050	mg/L	7060	11 MAR 96	12 MAR 96
Barium	0.045		1.0	0.010	mg/L	6010	11 MAR 96	12 MAR 96
Beryllium	ND		1.0	0.0020	mg/L	6010	11 MAR 96	12 MAR 96
Cadmium	ND		1.0	0.0050	mg/L	6010	11 MAR 96	12 MAR 96
Chromium	0.036		1.0	0.010	mg/L	6010	11 MAR 96	12 MAR 96
Cobalt	ND		1.0	0.010	mg/L	6010	11 MAR 96	12 MAR 96
Copper	ND		1.0	0.020	mg/L	6010	11 MAR 96	12 MAR 96
Iron	0.68		1.0	0.10	mg/L	6010	11 MAR 96	12 MAR 96
Lead	ND		1.0	0.0050	mg/L	7421	12 MAR 96	20 MAR 96
Manganese	0.028		1.0	0.010	mg/L	6010	11 MAR 96	12 MAR 96
Mercury	ND		1.0	0.00020	mg/L	7470	13 MAR 96	14 MAR 96
Nickel	0.27		1.0	0.040	mg/L	6010	11 MAR 96	12 MAR 96
Silver	ND		1.0	0.010	mg/L	6010	11 MAR 96	12 MAR 96
Selenium	ND	G	2.0	0.020	mg/L	7740	11 MAR 96	12 MAR 96
Sodium	47.4		1.0	5.0	mg/L	6010	11 MAR 96	12 MAR 96
Thallium	ND	G	5.0	0.050	mg/L	7841	12 MAR 96	21 MAR 96
Tin	ND		1.0	0.10	mg/L	6010	11 MAR 96	12 MAR 96
Vanadium	0.015		1.0	0.010	mg/L	6010	11 MAR 96	12 MAR 96
Zinc	0.074		1.0	0.020	mg/L	6010	11 MAR 96	12 MAR 96

G = Reporting limit raised due to the matrix of the sample.  
 ND = Not Detected

Reported By: Norma Baier

Approved By: Richard Persichitte

General Inorganics

Name: U.S. Geological Survey  
 ID: CAFB-M-0296-1  
 Lab ID: 047724-0001-SA  
 Matrix: AQUEOUS  
 Authorized: 08 MAR 96

Sampled: 07 MAR 96  
 Prepared: See Below

Received: 08 MAR 96  
 Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Chloride	112	t	2.0	6.0	mg/L	300.0	NA	13 MAR 96
Cyanide	ND		1.0	0.010	mg/L	9012	12 MAR 96	12 MAR 96
Sulfide, Total	ND		1.0	0.050	mg/L	376.2	NA	13 MAR 96
Sulfate	129	t	2.0	10.0	mg/L	300.0	NA	13 MAR 96
Total Organic Carbon	ND		1.0	1.0	mg/L	415.1	NA	12 MAR 96
Total Organic Halogen as Cl	ND		1.0	30.0	ug/L	9020	NA	12 MAR 96
Phenolics	ND		1.0	0.0050	mg/L	9065	11 MAR 96	11 MAR 96

t = Sample diluted due to the concentration of target compounds.  
 ND = Not Detected

Reported By: Damon Lona

Approved By: Roxanne Sullivan

Quanterra Incorporated  
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Arvada, Colorado 80002

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303 431-7171 Fax

**ANALYTICAL RESULTS**  
**FOR**  
**U.S. GEOLOGICAL SURVEY**  
**QUANTERRA NO. 047558**

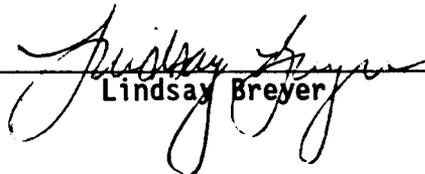
**MARCH 15, 1996**

Prepared by:



Mark D. Stella

Reviewed by:



Lindsay Breyer

## I. OVERVIEW

On February 28, 1996, Quanterra Environmental Services, Denver received five aqueous samples from the U.S. Geological Survey.

This report presents the analytical results as well as supporting information to aid in the evaluation and interpretation of the data and is arranged in the following order:

- I. Overview
- II. Sample Description Information/Analytical Test Requests
- III. Analytical Results
- IV. Quality Control Report

### Semivolatile Organics by GC/MS:

The extracts for the acid fractions and the base/neutral fractions for these samples were concentrated and analyzed separately. Normally, the two fractions are combined prior to analysis. No target compounds were detected in any of the extracts, and the surrogates were within control limits, so the data were reported.

With the exceptions noted either above or on the data sheets, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory QC samples analyzed in conjunction with the samples in this project were within established control limits.

## II. SAMPLE DESCRIPTION INFORMATION/ANALYTICAL TEST REQUESTS

### Sample Description Information:

The Sample Description Information lists all of the samples received in this project together with the internal laboratory identification number assigned for each sample. Each project received at Quanterra's Denver laboratory is assigned a unique six digit number. Samples within the project are numbered sequentially. The laboratory identification number is a combination of the six digit project code and the sample sequence number.

Also given in the Sample Description Information is the Sample Type (matrix), Date of Sampling (if known) and Date of Receipt at the laboratory.

### Analytical Test Requests:

The Analytical Test Requests lists the analyses that were performed on each sample. The Custom Test column indicates where tests have been modified to conform to the specific requirements of this project.

**SAMPLE DESCRIPTION INFORMATION**  
for  
**U.S. Geological Survey**

Lab ID	Client ID	Matrix	Sampled		Received
			Date	Time	
047558-0001-SA	CAFB-N-0296-1	AQUEOUS	27 FEB 96	10:30	28 FEB 96
047558-0002-SA	CAFB-O-0296-1	AQUEOUS	27 FEB 96	12:35	28 FEB 96
047558-0003-TB	CAFB-P-0296-1	AQUEOUS	27 FEB 96	07:50	28 FEB 96
047558-0004-EB	CAFB-P-0296-2	AQUEOUS	26 FEB 96	15:15	28 FEB 96
047558-0005-SA	CAFB-P-0296-3	AQUEOUS	27 FEB 96	08:40	28 FEB 96

**ANALYTICAL TEST REQUESTS  
for  
U.S. Geological Survey**

Lab ID: 047558	Group Code	Analysis Description	Custom Test?
0001 - 0002, 0004 - 0005	A	Volatile Organics Appendix IX List Screen - Volatile Organics Volatiles Library Search (10 Compound TID) Semivolatile Organics Appendix IX List Prep - Semivolatile Organics by GC/MS Semivolatiles Library Search (20 Compound TID)	N N N N N N N
0003	B	Volatile Organics Appendix IX List Screen - Volatile Organics Volatiles Library Search (10 Compound TID)	N N N N

### III. ANALYTICAL RESULTS

The analytical results for this project are presented in the following data tables. Each data table includes sample identification information, and when available and appropriate, dates sampled, received, authorized, prepared and analyzed. The authorization date is the date when the project was defined by the client such that laboratory work could begin. The date prepared is typically the date an extraction or digestion was initiated. For volatile organic compounds in water, the date prepared is the date the screening of the sample was performed.

Data sheets contain a listing of the parameters measured in each test, the analytical results and the Quanterra reporting limit. Reporting limits are adjusted to reflect dilution of the sample, when appropriate. Solid and waste samples are reported on an "as received" basis, i.e. no correction is made for moisture content.

Quanterra does not routinely blank-correct analytical data. Uncorrected analytical results are reported, along with associated blank results, for all organic and metals analyses. Analytical results and blank results are reported for conventional inorganic parameters as specified in the method.

In addition, surrogate recovery data is presented for all GC/MS analyses. The surrogate recovery is an indication of the affect of the sample matrix on the performance of the method.

The analytical data reported are subject to the following limitations of the analytical methodology:

GC/MS Semivolatile Organics:

Benzo(b) and benzo(k) fluoranthene cannot be differentiated based on their mass spectra and their retention times are almost identical. The isomer which is the closest in retention time to the sample is reported.

1,2-diphenylhydrazine is measured as azobenzene.

N-nitrosodiphenylamine degrades to diphenylamine in the injection port of the instrument. Therefore, these two compounds cannot be distinguished from one another.

3-Methyl phenol and 4-methyl phenol cannot be differentiated based on their mass spectra and retention times are identical. Results are reported as 3/4-methyl phenol (or m&p-cresols).

Several compounds are not consistently recovered using Method 8270 and reporting limits cannot be established. These compounds include hexachlorophene and benzenethiol.

Two Refinery compounds, pyridine and quinoline, are not recovered after alumina column cleanup.

Tentatively Identified Compounds:

This report presents results for the "identification" of unknown compounds that were detected in the GC/MS analysis. The results from this work are presented as "tentatively identified compounds" (TICs). The approach used for reporting TICs was based on the protocol established for this purpose in the EPA Superfund methods and on guidelines established by the American Chemical Society (ACS).

In summary, the mass spectra of chromatographic peaks in concentrations in excess of 10% of the internal standard were obtained. Normally, the number of unknown compounds identified is limited to 10 compounds in the volatile fraction and 20 compounds in the semivolatile fraction. Each mass spectrum was then compared to a library of over 30,000 reference spectra in a computerized "library search." The three "best" matches obtained by the computer were hardcopied along with the mass spectrum of the unknown peak. This information was then reviewed by an analyst who "identified" the compound based on the available information.

All identifications were based on the "Guidelines for GC/MS Identification" developed by the American Chemical Society (Environmental Science and Technology, 1982, 16 143A). As recommended in these guidelines, identifications of unknown substances were reported with a level of confidence. The three levels of confidence cited in the ACS guidelines and used in this report are as follows:

Level 3: Confirmed Identification:

The identification is based on the analysis of an authentic standard.

Level 2: Confident Identification:

Good agreement was observed between the unknown compound and a specific library spectrum.

Level 1: Tentative Identification:

The unknown compound is only indicative of a specific library spectrum.

Class Identification:

The unknown compound was not similar to a specific library spectrum, but it did contain ions characteristic of a class of compounds (saturated hydrocarbon, chlorinated hydrocarbon, etc.).

If there were no library spectra similar to the unknown, and it could not be assigned to a particular class of compounds, the compound is reported as "unknown."

Quantitation of TICs is based on the total ionization peak area relative to an internal standard, assuming a response factor of one. Accordingly, the reported concentration is an estimate.

In general, mass spectrometry cannot distinguish isomers (compounds with the same molecular formula). Therefore, an identified compound may be any one of several different isomers.

The tentatively identified compounds in this report may include some compounds reported as "siloxanes." Siloxanes are common laboratory and field artifacts or contaminants. Potential sources include silicon-based grease in the field or laboratory plus the liquid phase coating on gas chromatography columns, as well as other equipment in the laboratory. However, siloxanes may also be present in environmental samples from spills of silicone oils or lubricating oils with siloxane additives.

## Footnotes and Data Qualifiers

The data sheets contained in this report may contain a variety of footnotes and data qualifiers. Those used to indicate the confidence level for Tentatively Identified Compounds (GC/MS methods) are described above. Other footnotes are used with specific tests; for example, footnotes used with the GC/FID Petroleum Hydrocarbon methods to indicate (in the analysts judgment) the product that appears to be present. Finally, there are a number of general qualifiers that serve to identify problems and pertinent observations made during sample analysis that are not discussed in the Overview. These are described below:

**B** Compound is also detected in the blank.

The indicated compound was detected in the sample as well as the method blank. Please note that the B flag is not used when the sample result is ND (Not Detected).

**G** Reporting limit raised due to the matrix of the sample.

Indicates that reporting limits were raised due to the presence of non-target compounds or other matrix interferences. The sample may or may not have been diluted. For inorganic methods, the footnote applies only to the flagged analyte. For organic methods, the footnote pertains to all analytes determined by the method.

**T** Preferred values unless footnoted on secondary column test.

This footnote is used with GC tests to indicate the primary column results. The footnote will be listed only for the first compound but pertains to all analytes determined by the method. It is used in conjunction the footnote V.

**V** Secondary column is the preferred value.

This footnote is used for GC tests in conjunction the T footnote. It indicates that the value from the second column is preferred over the primary column result and pertains only to the indicated compound.

**t** Sample diluted due to the concentration of target compounds.

Indicates that reporting limits were raised due to the presence of target analytes outside the calibration range of the method. For multi-analyte methods, the footnote will appear only for the first analyte but pertains to all analytes determined by the method.

Volatile Organics  
Appendix IX List  
Method 8240



Client Name: U.S. Geological Survey  
Client ID: CAFB-N-0296-1  
Lab ID: 047558-0001-SA  
Matrix: AQUEOUS  
Authorized: 28 FEB 96

Sampled: 27 FEB 96  
Received: 28 FEB 96

Prepared: 29 FEB 96  
Analyzed: 09 MAR 96

Parameter	Result	Units	Reporting Limit
Acetone	ND	ug/L	10
Acetonitrile	ND	ug/L	200
Acrolein	ND	ug/L	100
Acrylonitrile	ND	ug/L	100
Allyl chloride	ND	ug/L	10
Benzene	ND	ug/L	5.0
Bromodichloromethane	ND	ug/L	5.0
Bromoform	ND	ug/L	5.0
Bromomethane	ND	ug/L	10
2-Butanone (MEK)	ND	ug/L	10
Carbon disulfide	ND	ug/L	5.0
Carbon tetrachloride	ND	ug/L	5.0
Chlorobenzene	ND	ug/L	5.0
Chloroethane	ND	ug/L	10
Chloroform	ND	ug/L	5.0
Chloromethane	ND	ug/L	10
Chloroprene	ND	ug/L	5.0
Dibromochloromethane	ND	ug/L	5.0
1,2-Dibromo-3-chloro- propane (DBCP)	ND	ug/L	10
1,2-Dibromoethane (EDB)	ND	ug/L	10
Dibromomethane	ND	ug/L	5.0
trans-1,4-Dichloro-2-butene	ND	ug/L	5.0
Dichlorodifluoromethane	ND	ug/L	20
1,1-Dichloroethane	ND	ug/L	5.0
1,2-Dichloroethane	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	5.0
1,2-Dichloroethene (total)	ND	ug/L	5.0
1,2-Dichloropropane	ND	ug/L	5.0
cis-1,3-Dichloropropene	ND	ug/L	5.0
trans-1,3-Dichloropropene	ND	ug/L	5.0
1,4-Dioxane	ND	ug/L	500
Ethylbenzene	ND	ug/L	5.0
Ethyl methacrylate	ND	ug/L	20
Iodomethane	ND	ug/L	5.0
Isobutanol (2-Methyl-1-propanol)	ND	ug/L	200
2-Hexanone	ND	ug/L	10
Methacrylonitrile	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
Methyl methacrylate	ND	ug/L	20
4-Methyl-2-pentanone (MIBK)	ND	ug/L	10

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones

Approved By: Dawn M. Basko

Volatile Organics  
Appendix IX List  
Method 8240

Client Name: U.S. Geological Survey  
Client ID: CAFB-N-0296-1  
Lab ID: 047558-0001-SA  
Matrix: AQUEOUS  
Authorized: 28 FEB 96

Sampled: 27 FEB 96  
Received: 28 FEB 96

Prepared: 29 FEB 96  
Analyzed: 09 MAR 96

Parameter	Result	Units	Reporting Limit
Propionitrile	ND	ug/L	5.0
Styrene	ND	ug/L	5.0
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0
Tetrachloroethene	ND	ug/L	5.0
Toluene	ND	ug/L	5.0
1,1,1-Trichloroethane	ND	ug/L	5.0
1,1,2-Trichloroethane	ND	ug/L	5.0
Trichloroethene	ND	ug/L	5.0
Trichlorofluoromethane	ND	ug/L	5.0
1,2,3-Trichloropropane	ND	ug/L	5.0
Vinyl acetate	ND	ug/L	10
Vinyl chloride	ND	ug/L	10
Xylenes (total)	36	ug/L	5.0
Surrogate	Recovery		Limits
Toluene-d8	100	%	88-110
4-Bromofluorobenzene	106	%	86-115
1,2-Dichloroethane-d4	103	%	76-114

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones

Approved By: Dawn M. Basko

Volatiles Library Search (10 Compound TID)  
Method 8240



Client Name: U.S. Geological Survey  
Client ID: CAFB-N-0296-1  
ID: 047558-0001-SA  
Matrix: AQUEOUS  
Authorized: 28 FEB 96

Sampled: 27 FEB 96  
Received: 28 FEB 96

Prepared: NA  
Analyzed: 09 MAR 96

Parameter	Result	Units	Reporting Limit
Benzene, 1,2,3,5-tetramethyl-	5.2	ug/L	1
Benzene, 1,2,3-trimethyl-	12	ug/L	2
Benzene, 1,2-diethyl-	8.1	ug/L	1
Benzene, 1-ethyl-2-methyl-	9.5	ug/L	2
Benzene, 1-ethyl-3-methyl-	13	ug/L	2
None Detected	ND	ug/L	
None Detected	ND	ug/L	
Saturated Hydrocarbon: <C10	5.8	ug/L	
Saturated Hydrocarbon: C10-C20	11	ug/L	
Saturated Hydrocarbon: C10-C20	5.6	ug/L	

Dilution factor is 1.0. All results and limits are corrected for dilution.

1 = Tentative Identification  
2 = Confident Identification  
ND = Not Detected

Reported By: Sandra Jones

Approved By: Dawn M. Basko

Volatile Organics  
Appendix IX List  
Method 8240



Client Name: U.S. Geological Survey  
Client ID: CAFB-0-0296-1  
Lab ID: 047558-0002-SA  
Matrix: AQUEOUS  
Authorized: 28 FEB 96

Sampled: 27 FEB 96  
Received: 28 FEB 96

Prepared: 29 FEB 96  
Analyzed: 09 MAR 96

Parameter	Result	Units	Reporting Limit
Acetone	ND	ug/L	10
Acetonitrile	ND	ug/L	200
Acrolein	ND	ug/L	100
Acrylonitrile	ND	ug/L	100
Allyl chloride	ND	ug/L	10
Benzene	ND	ug/L	5.0
Bromodichloromethane	ND	ug/L	5.0
Bromoform	ND	ug/L	5.0
Bromomethane	ND	ug/L	10
2-Butanone (MEK)	ND	ug/L	10
Carbon disulfide	ND	ug/L	5.0
Carbon tetrachloride	ND	ug/L	5.0
Chlorobenzene	ND	ug/L	5.0
Chloroethane	ND	ug/L	10
Chloroform	ND	ug/L	5.0
Chloromethane	ND	ug/L	10
Chloroprene	ND	ug/L	5.0
1,1-Dibromochloromethane	ND	ug/L	5.0
1,2-Dibromo-3-chloro- propane (DBCP)	ND	ug/L	10
1,2-Dibromoethane (EDB)	ND	ug/L	10
Dibromomethane	ND	ug/L	5.0
trans-1,4-Dichloro-2-butene	ND	ug/L	5.0
Dichlorodifluoromethane	ND	ug/L	20
1,1-Dichloroethane	ND	ug/L	5.0
1,2-Dichloroethane	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	5.0
1,2-Dichloroethene (total)	ND	ug/L	5.0
1,2-Dichloropropane	ND	ug/L	5.0
cis-1,3-Dichloropropene	ND	ug/L	5.0
trans-1,3-Dichloropropene	ND	ug/L	5.0
1,4-Dioxane	ND	ug/L	500
Ethylbenzene	ND	ug/L	5.0
Ethyl methacrylate	ND	ug/L	20
Iodomethane	ND	ug/L	5.0
Isobutanol (2-Methyl-1-propanol)	ND	ug/L	200
2-Hexanone	ND	ug/L	10
Methacrylonitrile	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
Methyl methacrylate	ND	ug/L	20
4-Methyl-2-pentanone (MIBK)	ND	ug/L	10

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones

Approved By: Dawn M. Basko

Volatile Organics  
Appendix IX List  
Method 8240

Client Name: U.S. Geological Survey  
Client ID: CAFB-0-0296-1  
ID: 047558-0002-SA  
Matrix: AQUEOUS  
Authorized: 28 FEB 96

Sampled: 27 FEB 96  
Received: 28 FEB 96

Prepared: 29 FEB 96  
Analyzed: 09 MAR 96

Parameter	Result	Units	Reporting Limit
Propionitrile	ND	ug/L	5.0
Styrene	ND	ug/L	5.0
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0
Tetrachloroethene	ND	ug/L	5.0
Toluene	ND	ug/L	5.0
1,1,1-Trichloroethane	ND	ug/L	5.0
1,1,2-Trichloroethane	ND	ug/L	5.0
Trichloroethene	ND	ug/L	5.0
Trichlorofluoromethane	ND	ug/L	5.0
1,2,3-Trichloropropane	ND	ug/L	5.0
Vinyl acetate	ND	ug/L	10
Vinyl chloride	ND	ug/L	10
Xylenes (total)	36	ug/L	5.0
Surrogate	Recovery		Limits
Toluene-d8	101	%	88-110
4-Bromofluorobenzene	107	%	86-115
1,2-Dichloroethane-d4	101	%	76-114

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones

Approved By: Dawn M. Basko

Volatiles Library Search (10 Compound TID)  
Method 8240



Client Name: U.S. Geological Survey  
Client ID: CAFB-0-0296-1  
Job ID: 047558-0002-SA  
Matrix: AQUEOUS  
Authorized: 28 FEB 96

Sampled: 27 FEB 96  
Received: 28 FEB 96

Prepared: NA  
Analyzed: 09 MAR 96

Parameter	Result	Units	Reporting Limit
Benzene, 1,2,3,5-tetramethyl-	9.0	ug/L	1
Benzene, 1,2,3-trimethyl-	17	ug/L	2
Benzene, 1,2-diethyl-	6.4	ug/L	1
Benzene, 1-ethyl-3-methyl-	12	ug/L	2
Saturated Hydrocarbon: <C10	6.4	ug/L	
Saturated Hydrocarbon: <C10	11	ug/L	
Saturated Hydrocarbon: C10-C20	34	ug/L	
Saturated Hydrocarbon: C10-C20	14	ug/L	
Saturated Hydrocarbon: C10-C20	7.4	ug/L	
Unsaturated Hydrocarbon	7.7	ug/L	

Dilution factor is 1.0. All results and limits are corrected for dilution.

1 = Tentative Identification  
2 = Confident Identification

Reported By: Sandra Jones

Approved By: Dawn M. Basko

Volatile Organics  
Appendix IX List  
Method 8240



Client Name: U.S. Geological Survey  
Client ID: CAFB-P-0296-1  
Job ID: 047558-0003-TB  
Matrix: AQUEOUS  
Authorized: 28 FEB 96

Sampled: 27 FEB 96  
Received: 28 FEB 96

Prepared: 29 FEB 96  
Analyzed: 09 MAR 96

Parameter	Result	Units	Reporting Limit
Acetone	ND	ug/L	10
Acetonitrile	ND	ug/L	200
Acrolein	ND	ug/L	100
Acrylonitrile	ND	ug/L	100
Allyl chloride	ND	ug/L	10
Benzene	ND	ug/L	5.0
Bromodichloromethane	ND	ug/L	5.0
Bromoform	ND	ug/L	5.0
Bromomethane	ND	ug/L	10
2-Butanone (MEK)	ND	ug/L	10
Carbon disulfide	ND	ug/L	5.0
Carbon tetrachloride	ND	ug/L	5.0
Chlorobenzene	ND	ug/L	5.0
Chloroethane	ND	ug/L	10
Chloroform	ND	ug/L	5.0
Chloromethane	ND	ug/L	10
Chloroprene	ND	ug/L	5.0
Dibromochloromethane	ND	ug/L	5.0
1,2-Dibromo-3-chloro- propane (DBCP)	ND	ug/L	10
1,2-Dibromoethane (EDB)	ND	ug/L	10
1,1-Dibromomethane	ND	ug/L	5.0
trans-1,4-Dichloro-2-butene	ND	ug/L	5.0
Dichlorodifluoromethane	ND	ug/L	20
1,1-Dichloroethane	ND	ug/L	5.0
1,2-Dichloroethane	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	5.0
1,2-Dichloroethene (total)	ND	ug/L	5.0
1,2-Dichloropropane	ND	ug/L	5.0
cis-1,3-Dichloropropene	ND	ug/L	5.0
trans-1,3-Dichloropropene	ND	ug/L	5.0
1,4-Dioxane	ND	ug/L	500
Ethylbenzene	ND	ug/L	5.0
Ethyl methacrylate	ND	ug/L	20
Iodomethane	ND	ug/L	5.0
Isobutanol (2-Methyl-1-propanol)	ND	ug/L	200
2-Hexanone	ND	ug/L	10
Methacrylonitrile	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
Methyl methacrylate	ND	ug/L	20
4-Methyl-2-pentanone (MIBK)	ND	ug/L	10

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones

Approved By: Dawn M. Basko

Volatile Organics  
 Appendix IX List  
 Method 8240

Client Name: U.S. Geological Survey  
 Client ID: CAFB-P-0296-1  
 Job ID: 047558-0003-TB  
 Matrix: AQUEOUS  
 Authorized: 28 FEB 96

Sampled: 27 FEB 96  
 Received: 28 FEB 96

Prepared: 29 FEB 96  
 Analyzed: 09 MAR 96

Parameter	Result	Units	Reporting Limit
Propionitrile	ND	ug/L	5.0
Styrene	ND	ug/L	5.0
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0
Tetrachloroethene	ND	ug/L	5.0
Toluene	ND	ug/L	5.0
1,1,1-Trichloroethane	ND	ug/L	5.0
1,1,2-Trichloroethane	ND	ug/L	5.0
Trichloroethene	ND	ug/L	5.0
Trichlorofluoromethane	ND	ug/L	5.0
1,2,3-Trichloropropane	ND	ug/L	5.0
Vinyl acetate	ND	ug/L	10
Vinyl chloride	ND	ug/L	10
Xylenes (total)	12	ug/L	5.0
<b>Surrogate</b>	<b>Recovery</b>		<b>Limits</b>
Toluene-d8	102	%	88-110
4-Bromofluorobenzene	103	%	86-115
1,2-Dichloroethane-d4	98	%	76-114

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones

Approved By: Dawn M. Basko

Volatiles Library Search (10 Compound TID)  
Method 8240



Client Name: U.S. Geological Survey  
Client ID: CAFB-P-0296-1  
Lab ID: 047558-0003-TB  
Matrix: AQUEOUS  
Authorized: 28 FEB 96

Sampled: 27 FEB 96  
Received: 28 FEB 96

Prepared: NA  
Analyzed: 09 MAR 96

Parameter	Result	Units	Reporting Limit
Benzene, 1,2,3-trimethyl-	6.5	ug/L	2
1-Methylethylbenzene (Cumene)	11	ug/L	2
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
Siloxane	8.9	ug/L	

Dilution factor is 1.0. All results and limits are corrected for dilution.

2 = Confident Identification  
ND = Not Detected

Reported By: Sandra Jones

Approved By: Dawn M. Basko

Volatile Organics  
Appendix IX List  
Method 8240

Client Name: U.S. Geological Survey  
Client ID: CAFB-P-0296-2  
ID: 047558-0004-EB  
Matrix: AQUEOUS  
Authorized: 28 FEB 96

Sampled: 26 FEB 96  
Received: 28 FEB 96

Prepared: 29 FEB 96  
Analyzed: 06 MAR 96

Parameter	Result	Units	Reporting Limit
Acetone	ND	ug/L	10
Acetonitrile	ND	ug/L	200
Acrolein	ND	ug/L	100
Acrylonitrile	ND	ug/L	100
Allyl chloride	ND	ug/L	10
Benzene	ND	ug/L	5.0
Bromodichloromethane	ND	ug/L	5.0
Bromoform	ND	ug/L	5.0
Bromomethane	ND	ug/L	10
2-Butanone (MEK)	ND	ug/L	10
Carbon disulfide	ND	ug/L	5.0
Carbon tetrachloride	ND	ug/L	5.0
Chlorobenzene	ND	ug/L	5.0
Chloroethane	ND	ug/L	10
Chloroform	ND	ug/L	5.0
Chloromethane	ND	ug/L	10
Chloroprene	ND	ug/L	5.0
Dibromochloromethane	ND	ug/L	5.0
1,2-Dibromo-3-chloro- propane (DBCP)	ND	ug/L	10
2-Dibromoethane (EDB)	ND	ug/L	10
bromomethane	ND	ug/L	5.0
trans-1,4-Dichloro-2-butene	ND	ug/L	5.0
Dichlorodifluoromethane	ND	ug/L	20
1,1-Dichloroethane	ND	ug/L	5.0
1,2-Dichloroethane	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	5.0
1,2-Dichloroethene (total)	ND	ug/L	5.0
1,2-Dichloropropane	ND	ug/L	5.0
cis-1,3-Dichloropropene	ND	ug/L	5.0
trans-1,3-Dichloropropene	ND	ug/L	5.0
1,4-Dioxane	ND	ug/L	500
Ethylbenzene	ND	ug/L	5.0
Ethyl methacrylate	ND	ug/L	20
Iodomethane	ND	ug/L	5.0
Isobutanol (2-Methyl-1-propanol)	ND	ug/L	200
2-Hexanone	ND	ug/L	10
Methacrylonitrile	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
Methyl methacrylate	ND	ug/L	20
4-Methyl-2-pentanone (MIBK)	ND	ug/L	10

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones

Approved By: Dawn M. Basko

Volatile Organics  
Appendix IX List  
Method 8240



Client Name: U.S. Geological Survey  
Client ID: CAFB-P-0296-2  
Lab ID: 047558-0004-EB  
Matrix: AQUEOUS  
Authorized: 28 FEB 96

Sampled: 26 FEB 96  
Received: 28 FEB 96

Prepared: 29 FEB 96  
Analyzed: 06 MAR 96

Parameter	Result	Units	Reporting Limit
Propionitrile	ND	ug/L	5.0
Styrene	ND	ug/L	5.0
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0
Tetrachloroethene	ND	ug/L	5.0
Toluene	ND	ug/L	5.0
1,1,1-Trichloroethane	ND	ug/L	5.0
1,1,2-Trichloroethane	ND	ug/L	5.0
Trichloroethene	ND	ug/L	5.0
Trichlorofluoromethane	ND	ug/L	5.0
1,2,3-Trichloropropane	ND	ug/L	5.0
Vinyl acetate	ND	ug/L	10
Vinyl chloride	ND	ug/L	10
Xylenes (total)	ND	ug/L	5.0
Surrogate	Recovery		Limits
Toluene-d8	100	%	88-110
4-Bromofluorobenzene	99	%	86-115
1,2-Dichloroethane-d4	94	%	76-114

Dilution factor is 1.0. All results and limits are corrected for dilution.

D = Not Detected

Reported By: Sandra Jones

Approved By: Dawn M. Basko

Volatiles Library Search (10 Compound TID)  
Method 8240



Client Name: U.S. Geological Survey  
Client ID: CAFB-P-0296-2  
Job ID: 047558-0004-EB  
Matrix: AQUEOUS  
Authorized: 28 FEB 96

Sampled: 26 FEB 96  
Received: 28 FEB 96

Prepared: NA  
Analyzed: 06 MAR 96

Parameter	Result	Units	Reporting Limit
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones

Approved By: Dawn M. Basko

Volatile Organics  
Appendix IX List  
Method 8240



Client Name: U.S. Geological Survey  
Client ID: CAFB-P-0296-3  
Job ID: 047558-0005-SA  
Matrix: AQUEOUS  
Authorized: 28 FEB 96

Sampled: 27 FEB 96  
Received: 28 FEB 96

Prepared: 29 FEB 96  
Analyzed: 09 MAR 96

Parameter	Result	Units	Reporting Limit
Acetone	ND	ug/L	10
Acetonitrile	ND	ug/L	200
Acrolein	ND	ug/L	100
Acrylonitrile	ND	ug/L	100
Allyl chloride	ND	ug/L	10
Benzene	ND	ug/L	5.0
Bromodichloromethane	ND	ug/L	5.0
Bromoform	ND	ug/L	5.0
Bromomethane	ND	ug/L	10
2-Butanone (MEK)	ND	ug/L	10
Carbon disulfide	ND	ug/L	5.0
Carbon tetrachloride	ND	ug/L	5.0
Chlorobenzene	ND	ug/L	5.0
Chloroethane	ND	ug/L	10
Chloroform	ND	ug/L	5.0
Chloromethane	ND	ug/L	10
Chloroprene	ND	ug/L	5.0
Dibromochloromethane	ND	ug/L	5.0
1,2-Dibromo-3-chloro- propane (DBCP)	ND	ug/L	10
1,2-Dibromoethane (EDB)	ND	ug/L	10
Dibromomethane	ND	ug/L	5.0
trans-1,4-Dichloro-2-butene	ND	ug/L	5.0
Dichlorodifluoromethane	ND	ug/L	20
1,1-Dichloroethane	ND	ug/L	5.0
1,2-Dichloroethane	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	5.0
1,2-Dichloroethene (total)	ND	ug/L	5.0
1,2-Dichloropropane	ND	ug/L	5.0
cis-1,3-Dichloropropene	ND	ug/L	5.0
trans-1,3-Dichloropropene	ND	ug/L	5.0
1,4-Dioxane	ND	ug/L	500
Ethylbenzene	ND	ug/L	5.0
Ethyl methacrylate	ND	ug/L	20
Iodomethane	ND	ug/L	5.0
Isobutanol (2-Methyl-1-propanol)	ND	ug/L	200
2-Hexanone	ND	ug/L	10
Methacrylonitrile	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
Methyl methacrylate	ND	ug/L	20
4-Methyl-2-pentanone (MIBK)	ND	ug/L	10

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones

Approved By: Dawn M. Basko

Volatile Organics  
Appendix IX List  
Method 8240



Client Name: U.S. Geological Survey  
Client ID: CAFB-P-0296-3  
Lab ID: 047558-0005-SA  
Matrix: AQUEOUS  
Authorized: 28 FEB 96

Sampled: 27 FEB 96  
Received: 28 FEB 96

Prepared: 29 FEB 96  
Analyzed: 09 MAR 96

Parameter	Result	Units	Reporting Limit
Propionitrile	ND	ug/L	5.0
Styrene	ND	ug/L	5.0
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0
Tetrachloroethene	ND	ug/L	5.0
Toluene	ND	ug/L	5.0
1,1,1-Trichloroethane	ND	ug/L	5.0
1,1,2-Trichloroethane	ND	ug/L	5.0
Trichloroethene	ND	ug/L	5.0
Trichlorofluoromethane	ND	ug/L	5.0
1,2,3-Trichloropropane	ND	ug/L	5.0
Vinyl acetate	ND	ug/L	10
Vinyl chloride	ND	ug/L	10
Xylenes (total)	13	ug/L	5.0
Surrogate	Recovery		Limits
Toluene-d8	100	%	88-110
Bromofluorobenzene	106	%	86-115
1,2-Dichloroethane-d4	101	%	76-114

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones

Approved By: Dawn M. Basko

Volatiles Library Search (10 Compound TID)  
Method 8240



Client Name: U.S. Geological Survey  
 Client ID: CAFB-P-0296-3  
 Lab ID: 047558-0005-SA  
 Matrix: AQUEOUS  
 Authorized: 28 FEB 96

Sampled: 27 FEB 96  
 Received: 28 FEB 96

Prepared: NA  
 Analyzed: 09 MAR 96

Parameter	Result	Units	Reporting Limit
Benzene, 1,2,3-trimethyl-	5.8	ug/L	2
Benzene, 1-ethyl-3-methyl-	5.7	ug/L	2
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
Saturated Hydrocarbon: C10-C20	13	ug/L	
Saturated Hydrocarbon: C10-C20	5.6	ug/L	

Dilution factor is 1.0. All results and limits are corrected for dilution.

? = Confident Identification  
 D = Not Detected

Reported By: Sandra Jones

Approved By: Dawn M. Basko



Semivolatile Organics  
Appendix IX List  
Method 8270

Client Name: U.S. Geological Survey  
Client ID: CAFB-N-0296-1  
Lab ID: 047558-0001-SA  
Matrix: AQUEOUS  
Authorized: 28 FEB 96

Sampled: 27 FEB 96  
Received: 28 FEB 96

Prepared: 04 MAR 96  
Analyzed: 12 MAR 96

Parameter	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	10
Acenaphthylene	ND	ug/L	10
Acetophenone	ND	ug/L	10
2-Acetylaminofluorene	ND	ug/L	100
4-Aminobiphenyl	ND	ug/L	10
Aniline	ND	ug/L	10
Anthracene	ND	ug/L	10
Aramite	ND	ug/L	10
Benzo(a)anthracene	ND	ug/L	10
Benzo(b)fluoranthene	ND	ug/L	10
Benzo(k)fluoranthene	ND	ug/L	10
Benzo(g,h,i)perylene	ND	ug/L	10
Benzo(a)pyrene	ND	ug/L	10
Benzyl alcohol	ND	ug/L	10
4-Bromophenyl phenyl ether	ND	ug/L	10
Butyl benzyl phthalate	ND	ug/L	10
n-sec-Butyl-4,6-dinitro-phenol	ND	ug/L	10
2-Chloroaniline	ND	ug/L	10
1,2-bis(2-Chloroethoxy)methane	ND	ug/L	10
1,2-bis(2-Chlorophenyl) ether	ND	ug/L	10
1,2-bis(2-Chloroisopropyl) ether	ND	ug/L	10
4-Chloro-3-methylphenol	ND	ug/L	10
2-Chloronaphthalene	ND	ug/L	10
2-Chlorophenol	ND	ug/L	10
4-Chlorophenyl phenyl ether	ND	ug/L	10
Chrysene	ND	ug/L	10
Dibenz(a,h)anthracene	ND	ug/L	10
Dibenzofuran	ND	ug/L	10
Di-n-butyl phthalate	ND	ug/L	10
1,2-Dichlorobenzene	ND	ug/L	10
1,3-Dichlorobenzene	ND	ug/L	10
1,4-Dichlorobenzene	ND	ug/L	10
3,3'-Dichlorobenzidine	ND	ug/L	20
2,4-Dichlorophenol	ND	ug/L	10
2,6-Dichlorophenol	ND	ug/L	10
Diethyl phthalate	ND	ug/L	10
Dimethoate	ND	ug/L	50
p-Dimethylaminoazobenzene	ND	ug/L	10
7,12-Dimethylbenz(a)-anthracene	ND	ug/L	10
3,3'-Dimethylbenzidine	ND	ug/L	10
N,N'-Dimethylphenethyl-amine	ND	ug/L	10

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Ann Biegelsen

Approved By: Audrey Cornell

Semivolatile Organics  
Appendix IX List  
Method 8270

Client Name: U.S. Geological Survey  
Client ID: CAFB-N-0296-1  
Lab ID: 047558-0001-SA  
Matrix: AQUEOUS  
Authorized: 28 FEB 96

Sampled: 27 FEB 96  
Received: 28 FEB 96

Prepared: 04 MAR 96  
Analyzed: 12 MAR 96

Parameter	Result	Units	Reporting Limit
2,4-Dimethylphenol	ND	ug/L	10
Dimethyl phthalate	ND	ug/L	10
1,3-Dinitrobenzene	ND	ug/L	10
4,6-Dinitro-2-methylphenol	ND	ug/L	50
2,4-Dinitrophenol	ND	ug/L	50
2,4-Dinitrotoluene	ND	ug/L	10
2,6-Dinitrotoluene	ND	ug/L	10
Di-n-octyl phthalate	ND	ug/L	10
Diphenylamine	ND	ug/L	10
Disulfoton	ND	ug/L	50
bis(2-Ethylhexyl)phthalate	ND	ug/L	10
Ethyl methanesulfonate	ND	ug/L	10
Famphur	ND	ug/L	50
Fluoranthene	ND	ug/L	10
Fluorene	ND	ug/L	10
Hexachlorobenzene	ND	ug/L	10
Hexachlorobutadiene	ND	ug/L	10
Hexachlorocyclopentadiene	ND	ug/L	10
Hexachloroethane	ND	ug/L	10
Hexachlorophene	ND	ug/L	--
Hexachloropropene	ND	ug/L	10
Indeno(1,2,3-cd)pyrene	ND	ug/L	10
Isophorone	ND	ug/L	10
Isosafrole	ND	ug/L	20
Methapyrilene	ND	ug/L	10
3-Methylcholanthrene	ND	ug/L	10
Methyl methanesulfonate	ND	ug/L	10
2-Methylnaphthalene	ND	ug/L	10
Methyl parathion	ND	ug/L	50
2-Methylphenol	ND	ug/L	10
3/4-Methylphenol	ND	ug/L	10
Naphthalene	ND	ug/L	10
1,4-Naphthoquinone	ND	ug/L	10
1-Naphthylamine	ND	ug/L	10
2-Naphthylamine	ND	ug/L	10
2-Nitroaniline	ND	ug/L	50
3-Nitroaniline	ND	ug/L	50
4-Nitroaniline	ND	ug/L	50
Nitrobenzene	ND	ug/L	10
2-Nitrophenol	ND	ug/L	10
4-Nitrophenol	ND	ug/L	50

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Ann Biegelsen

Approved By: Audrey Cornell

Semivolatile Organics  
Appendix IX List  
Method 8270



Client Name: U.S. Geological Survey  
Client ID: CAFB-N-0296-1  
Lab ID: 047558-0001-SA  
Matrix: AQUEOUS  
Authorized: 28 FEB 96

Sampled: 27 FEB 96  
Received: 28 FEB 96

Prepared: 04 MAR 96  
Analyzed: 12 MAR 96

Parameter	Result	Units	Reporting Limit
4-Nitroquinoline-1-oxide	ND	ug/L	100
N-Nitroso-di-n-butylamine	ND	ug/L	10
N-Nitrosodiethylamine	ND	ug/L	10
N-Nitrosodimethylamine	ND	ug/L	10
N-Nitrosodiphenylamine	ND	ug/L	10
N-Nitroso-di-n-propylamine	ND	ug/L	10
N-Nitrosomethylethylamine	ND	ug/L	10
N-Nitrosomorpholine	ND	ug/L	10
N-Nitrosopiperidine	ND	ug/L	10
N-Nitrosopyrrolidine	ND	ug/L	10
5-Nitro-o-toluidine	ND	ug/L	10
Parathion	ND	ug/L	50
Pentachlorobenzene	ND	ug/L	10
Pentachloroethane	ND	ug/L	10
Pentachloronitrobenzene	ND	ug/L	50
Pentachlorophenol	ND	ug/L	50
Phenacetin	ND	ug/L	10
Phenanthrene	ND	ug/L	10
Phenol	ND	ug/L	10
4-Phenylenediamine	ND	ug/L	100
Phorate	ND	ug/L	100
2-Picoline	ND	ug/L	10
Pronamide	ND	ug/L	10
Pyrene	ND	ug/L	10
Pyridine	ND	ug/L	20
Safrole	ND	ug/L	10
Sulfotepp	ND	ug/L	50
1,2,4,5-Tetrachloro-benzene	ND	ug/L	10
2,3,4,6-Tetrachlorophenol	ND	ug/L	50
Thionazin	ND	ug/L	50
2-Toluidine	ND	ug/L	10
1,2,4-Trichlorobenzene	ND	ug/L	10
2,4,5-Trichlorophenol	ND	ug/L	50
2,4,6-Trichlorophenol	ND	ug/L	10
0,0,0-Triethylphosphoro-thioate	ND	ug/L	10
1,3,5-Trinitrobenzene	ND	ug/L	10

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Ann Biegelsen

Approved By: Audrey Cornell

Semivolatile Organics  
Appendix IX List  
Method 8270

Client Name: U.S. Geological Survey  
Client ID: CAFB-N-0296-1  
Job ID: 047558-0001-SA  
Matrix: AQUEOUS  
Authorized: 28 FEB 96

Sampled: 27 FEB 96  
Received: 28 FEB 96

Prepared: 04 MAR 96  
Analyzed: 12 MAR 96

Parameter	Result	Units	Reporting Limit
Surrogate	Recovery		Limits
Nitrobenzene-d5	76	%	35-114
2-Fluorobiphenyl	59	%	43-116
Terphenyl-d14	85	%	33-141
Phenol-d5	76	%	54-105
2-Fluorophenol	73	%	21-100
2,4,6-Tribromophenol	71	%	10-123

Dilution factor is 1.0. All results and limits are corrected for dilution.

Reported By: Ann Biegelsen

Approved By: Audrey Cornell

Client Name: U.S. Geological Survey  
Client ID: CAFB-N-0296-1  
Lab ID: 047558-0001-SA  
Matrix: AQUEOUS  
Authorized: 28 FEB 96

Sampled: 27 FEB 96  
Received: 28 FEB 96

Prepared: NA  
Analyzed: 12 MAR 96

Parameter	Result	Units	Reporting Limit
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Ann Biegelsen

Approved By: Audrey Cornell

Semivolatile Organics  
Appendix IX List  
Method 8270



Client Name: U.S. Geological Survey  
Client ID: CAFB-0-0296-1  
Job ID: 047558-0002-SA  
Matrix: AQUEOUS  
Authorized: 28 FEB 96

Sampled: 27 FEB 96  
Received: 28 FEB 96

Prepared: 04 MAR 96  
Analyzed: 12 MAR 96

Parameter	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	10
Acenaphthylene	ND	ug/L	10
Acetophenone	ND	ug/L	10
2-Acetylaminofluorene	ND	ug/L	100
4-Aminobiphenyl	ND	ug/L	10
Aniline	ND	ug/L	10
Anthracene	ND	ug/L	10
Aramite	ND	ug/L	10
Benzo(a)anthracene	ND	ug/L	10
Benzo(b)fluoranthene	ND	ug/L	10
Benzo(k)fluoranthene	ND	ug/L	10
Benzo(g,h,i)perylene	ND	ug/L	10
Benzo(a)pyrene	ND	ug/L	10
Benzyl alcohol	ND	ug/L	10
4-Bromophenyl phenyl ether	ND	ug/L	10
Butyl benzyl phthalate	ND	ug/L	10
2-sec-Butyl-4,6-dinitro-phenol	ND	ug/L	10
4-Chloroaniline	ND	ug/L	10
bis(2-Chloroethoxy)methane	ND	ug/L	10
bis(2-Chloroethyl) ether	ND	ug/L	10
bis(2-Chloroisopropyl) ether	ND	ug/L	10
2-Chloro-3-methylphenol	ND	ug/L	10
2-Chloronaphthalene	ND	ug/L	10
2-Chlorophenol	ND	ug/L	10
4-Chlorophenyl phenyl ether	ND	ug/L	10
Chrysene	ND	ug/L	10
Dibenz(a,h)anthracene	ND	ug/L	10
Dibenzofuran	ND	ug/L	10
Di-n-butyl phthalate	ND	ug/L	10
1,2-Dichlorobenzene	ND	ug/L	10
1,3-Dichlorobenzene	ND	ug/L	10
1,4-Dichlorobenzene	ND	ug/L	10
3,3'-Dichlorobenzidine	ND	ug/L	20
2,4-Dichlorophenol	ND	ug/L	10
2,6-Dichlorophenol	ND	ug/L	10
Diethyl phthalate	ND	ug/L	10
Dimethoate	ND	ug/L	50
p-Dimethylaminoazobenzene	ND	ug/L	10
7,12-Dimethylbenz(a)-anthracene	ND	ug/L	10
3,3'-Dimethylbenzidine	ND	ug/L	10
a,a-Dimethylphenethyl-amine	ND	ug/L	10

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Ann Biegelsen

Approved By: Audrey Cornell

Semivolatile Organics  
Appendix IX List  
Method 8270

Client Name: U.S. Geological Survey  
Client ID: CAFB-0-0296-1  
Lab ID: 047558-0002-SA  
Matrix: AQUEOUS  
Authorized: 28 FEB 96

Sampled: 27 FEB 96  
Received: 28 FEB 96

Prepared: 04 MAR 96  
Analyzed: 12 MAR 96

Parameter	Result	Units	Reporting Limit
2,4-Dimethylphenol	ND	ug/L	10
Dimethyl phthalate	ND	ug/L	10
1,3-Dinitrobenzene	ND	ug/L	10
4,6-Dinitro-2-methylphenol	ND	ug/L	50
2,4-Dinitrophenol	ND	ug/L	50
2,4-Dinitrotoluene	ND	ug/L	10
2,6-Dinitrotoluene	ND	ug/L	10
Di-n-octyl phthalate	ND	ug/L	10
Diphenylamine	ND	ug/L	10
Disulfoton	ND	ug/L	50
bis(2-Ethylhexyl)phthalate	ND	ug/L	10
Ethyl methanesulfonate	ND	ug/L	10
Famphur	ND	ug/L	50
Fluoranthene	ND	ug/L	10
Fluorene	ND	ug/L	10
Hexachlorobenzene	ND	ug/L	10
Hexachlorobutadiene	ND	ug/L	10
Hexachlorocyclopentadiene	ND	ug/L	10
Hexachloroethane	ND	ug/L	10
Hexachlorophene	ND	ug/L	--
Hexachloropropene	ND	ug/L	10
Indeno(1,2,3-cd)pyrene	ND	ug/L	10
Isophorone	ND	ug/L	10
Isosafrole	ND	ug/L	20
Methapyrilene	ND	ug/L	10
3-Methylcholanthrene	ND	ug/L	10
Methyl methanesulfonate	ND	ug/L	10
2-Methylnaphthalene	ND	ug/L	10
Methyl parathion	ND	ug/L	50
2-Methylphenol	ND	ug/L	10
3/4-Methylphenol	ND	ug/L	10
Naphthalene	ND	ug/L	10
1,4-Naphthoquinone	ND	ug/L	10
1-Naphthylamine	ND	ug/L	10
2-Naphthylamine	ND	ug/L	10
2-Nitroaniline	ND	ug/L	50
3-Nitroaniline	ND	ug/L	50
4-Nitroaniline	ND	ug/L	50
Nitrobenzene	ND	ug/L	10
2-Nitrophenol	ND	ug/L	10
4-Nitrophenol	ND	ug/L	50

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Ann Biegelsen

Approved By: Audrey Cornell

Semivolatile Organics  
Appendix IX List  
Method 8270

Client Name: U.S. Geological Survey  
Client ID: CAFB-0-0296-1  
ID: 047558-0002-SA  
Matrix: AQUEOUS  
Authorized: 28 FEB 96

Sampled: 27 FEB 96  
Received: 28 FEB 96

Prepared: 04 MAR 96  
Analyzed: 12 MAR 96

Parameter	Result	Units	Reporting Limit
4-Nitroquinoline-1-oxide	ND	ug/L	100
N-Nitroso-di-n-butylamine	ND	ug/L	10
N-Nitrosodiethylamine	ND	ug/L	10
N-Nitrosodimethylamine	ND	ug/L	10
N-Nitrosodiphenylamine	ND	ug/L	10
N-Nitroso-di-n-propylamine	ND	ug/L	10
N-Nitrosomethylethylamine	ND	ug/L	10
N-Nitrosomorpholine	ND	ug/L	10
N-Nitrosopiperidine	ND	ug/L	10
N-Nitrosopyrrolidine	ND	ug/L	10
5-Nitro-o-toluidine	ND	ug/L	10
Parathion	ND	ug/L	50
Pentachlorobenzene	ND	ug/L	10
Pentachloroethane	ND	ug/L	10
Pentachloronitrobenzene	ND	ug/L	50
Pentachlorophenol	ND	ug/L	50
Phenacetin	ND	ug/L	10
Phenanthrene	ND	ug/L	10
Phenol	ND	ug/L	10
4-Phenylenediamine	ND	ug/L	100
orate	ND	ug/L	100
Picoline	ND	ug/L	10
Pronamide	ND	ug/L	10
Pyrene	ND	ug/L	10
Pyridine	ND	ug/L	20
Safrole	ND	ug/L	10
Sulfotepp	ND	ug/L	50
1,2,4,5-Tetrachloro-benzene	ND	ug/L	10
2,3,4,6-Tetrachlorophenol	ND	ug/L	50
Thionazin	ND	ug/L	50
2-Toluidine	ND	ug/L	10
1,2,4-Trichlorobenzene	ND	ug/L	10
2,4,5-Trichlorophenol	ND	ug/L	50
2,4,6-Trichlorophenol	ND	ug/L	10
0,0,0-Triethylphosphoro-thioate	ND	ug/L	10
1,3,5-Trinitrobenzene	ND	ug/L	10

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Ann Biegelsen

Approved By: Audrey Cornell

Semivolatile Organics  
Appendix IX List  
Method 8270

Environmental (cont.)  
Services

Client Name: U.S. Geological Survey  
Client ID: CAFB-O-0296-1  
Job ID: 047558-0002-SA  
Matrix: AQUEOUS  
Authorized: 28 FEB 96

Sampled: 27 FEB 96  
Received: 28 FEB 96

Prepared: 04 MAR 96  
Analyzed: 12 MAR 96

Parameter	Result	Units	Reporting Limit
Surrogate	Recovery		Limits
Nitrobenzene-d5	87	%	35-114
2-Fluorobiphenyl	66	%	43-116
Terphenyl-d14	91	%	33-141
Phenol-d5	87	%	54-105
2-Fluorophenol	84	%	21-100
2,4,6-Tribromophenol	89	%	10-123

Dilution factor is 1.0. All results and limits are corrected for dilution.

Reported By: Ann Biegelsen

Approved By: Audrey Cornell

Semivolatiles Library Search (20 Compound TID)  
Method 8270



Client Name: U.S. Geological Survey  
Client ID: CAFB-0-0296-1  
Lab ID: 047558-0002-SA  
Matrix: AQUEOUS  
Authorized: 28 FEB 96

Sampled: 27 FEB 96  
Received: 28 FEB 96

Prepared: NA  
Analyzed: 12 MAR 96

Parameter	Result	Units	Reporting Limit
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Ann Biegelsen

Approved By: Audrey Cornell

Semivolatile Organics  
Appendix IX List  
Method 8270



Client Name: U.S. Geological Survey  
Client ID: CAFB-P-0296-2  
Job ID: 047558-0004-EB  
Matrix: AQUEOUS  
Authorized: 28 FEB 96

Sampled: 26 FEB 96  
Received: 28 FEB 96

Prepared: 04 MAR 96  
Analyzed: 12 MAR 96

Parameter	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	10
Acenaphthylene	ND	ug/L	10
Acetophenone	ND	ug/L	10
2-Acetylaminofluorene	ND	ug/L	100
4-Aminobiphenyl	ND	ug/L	10
Aniline	ND	ug/L	10
Anthracene	ND	ug/L	10
Aramite	ND	ug/L	10
Benzo(a)anthracene	ND	ug/L	10
Benzo(b)fluoranthene	ND	ug/L	10
Benzo(k)fluoranthene	ND	ug/L	10
Benzo(g,h,i)perylene	ND	ug/L	10
Benzo(a)pyrene	ND	ug/L	10
Benzyl alcohol	ND	ug/L	10
4-Bromophenyl phenyl ether	ND	ug/L	10
Butyl benzyl phthalate	ND	ug/L	10
2-sec-Butyl-4,6-dinitro-phenol	ND	ug/L	10
4-Chloroaniline	ND	ug/L	10
bis(2-Chloroethoxy)methane	ND	ug/L	10
bis(2-Chloroethyl) ether	ND	ug/L	10
bis(2-Chloroisopropyl)ether	ND	ug/L	10
4-Chloro-3-methylphenol	ND	ug/L	10
2-Chloronaphthalene	ND	ug/L	10
2-Chlorophenol	ND	ug/L	10
4-Chlorophenyl phenyl ether	ND	ug/L	10
Chrysene	ND	ug/L	10
Dibenz(a,h)anthracene	ND	ug/L	10
Dibenzofuran	ND	ug/L	10
Di-n-butyl phthalate	ND	ug/L	10
1,2-Dichlorobenzene	ND	ug/L	10
1,3-Dichlorobenzene	ND	ug/L	10
1,4-Dichlorobenzene	ND	ug/L	10
3,3'-Dichlorobenzidine	ND	ug/L	20
2,4-Dichlorophenol	ND	ug/L	10
2,6-Dichlorophenol	ND	ug/L	10
Diethyl phthalate	ND	ug/L	10
Dimethoate	ND	ug/L	50
p-Dimethylaminoazobenzene	ND	ug/L	10
7,12-Dimethylbenz(a)-anthracene	ND	ug/L	10
3,3'-Dimethylbenzidine	ND	ug/L	10
N,N-Dimethylphenethyl-amine	ND	ug/L	10

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Ann Biegelsen

Approved By: Audrey Cornell

Semivolatile Organics  
Appendix IX List  
Method 8270



Client Name: U.S. Geological Survey  
Client ID: CAFB-P-0296-2  
Lab ID: 047558-0004-EB  
Matrix: AQUEOUS  
Authorized: 28 FEB 96

Sampled: 26 FEB 96  
Received: 28 FEB 96

Prepared: 04 MAR 96  
Analyzed: 12 MAR 96

Parameter	Result	Units	Reporting Limit
2,4-Dimethylphenol	ND	ug/L	10
Dimethyl phthalate	ND	ug/L	10
1,3-Dinitrobenzene	ND	ug/L	10
4,6-Dinitro-2-methylphenol	ND	ug/L	50
2,4-Dinitrophenol	ND	ug/L	50
2,4-Dinitrotoluene	ND	ug/L	10
2,6-Dinitrotoluene	ND	ug/L	10
Di-n-octyl phthalate	ND	ug/L	10
Diphenylamine	ND	ug/L	10
Disulfoton	ND	ug/L	50
bis(2-Ethylhexyl)phthalate	ND	ug/L	10
Ethyl methanesulfonate	ND	ug/L	10
Famphur	ND	ug/L	50
Fluoranthene	ND	ug/L	10
Fluorene	ND	ug/L	10
Hexachlorobenzene	ND	ug/L	10
Hexachlorobutadiene	ND	ug/L	10
Hexachlorocyclopentadiene	ND	ug/L	10
Hexachloroethane	ND	ug/L	10
Hexachlorophene	ND	ug/L	--
Hexachloropropene	ND	ug/L	10
Indeno(1,2,3-cd)pyrene	ND	ug/L	10
Isophorone	ND	ug/L	10
Isosafrole	ND	ug/L	20
Methapyrilene	ND	ug/L	10
3-Methylcholanthrene	ND	ug/L	10
Methyl methanesulfonate	ND	ug/L	10
2-Methylnaphthalene	ND	ug/L	10
Methyl parathion	ND	ug/L	50
2-Methylphenol	ND	ug/L	10
3/4-Methylphenol	ND	ug/L	10
Naphthalene	ND	ug/L	10
1,4-Naphthoquinone	ND	ug/L	10
1-Naphthylamine	ND	ug/L	10
2-Naphthylamine	ND	ug/L	10
2-Nitroaniline	ND	ug/L	50
3-Nitroaniline	ND	ug/L	50
4-Nitroaniline	ND	ug/L	50
Nitrobenzene	ND	ug/L	10
2-Nitrophenol	ND	ug/L	10
4-Nitrophenol	ND	ug/L	50

Dilution factor is 1.0. All results and limits are corrected for dilution.

) = Not Detected

Reported By: Ann Biegelsen

Approved By: Audrey Cornell

Semivolatile Organics  
Appendix IX List  
Method 8270

Client Name: U.S. Geological Survey  
Client ID: CAFB-P-0296-2  
Lab ID: 047558-0004-EB  
Matrix: AQUEOUS  
Authorized: 28 FEB 96

Sampled: 26 FEB 96  
Received: 28 FEB 96

Prepared: 04 MAR 96  
Analyzed: 12 MAR 96

Parameter	Result	Units	Reporting Limit
4-Nitroquinoline-1-oxide	ND	ug/L	100
N-Nitroso-di-n-butylamine	ND	ug/L	10
N-Nitrosodiethylamine	ND	ug/L	10
N-Nitrosodimethylamine	ND	ug/L	10
N-Nitrosodiphenylamine	ND	ug/L	10
N-Nitroso-di-n-propylamine	ND	ug/L	10
N-Nitrosomethylethylamine	ND	ug/L	10
N-Nitrosomorpholine	ND	ug/L	10
N-Nitrosopiperidine	ND	ug/L	10
N-Nitrosopyrrolidine	ND	ug/L	10
5-Nitro-o-toluidine	ND	ug/L	10
Parathion	ND	ug/L	50
Pentachlorobenzene	ND	ug/L	10
Pentachloroethane	ND	ug/L	10
Pentachloronitrobenzene	ND	ug/L	50
Pentachlorophenol	ND	ug/L	50
Phenacetin	ND	ug/L	10
Phenanthrene	ND	ug/L	10
Phenol	ND	ug/L	10
Phenylenediamine	ND	ug/L	100
Phosphate	ND	ug/L	100
2-Picoline	ND	ug/L	10
Pronamide	ND	ug/L	10
Pyrene	ND	ug/L	10
Pyridine	ND	ug/L	20
Safrole	ND	ug/L	10
Sulfotepp	ND	ug/L	50
1,2,4,5-Tetrachloro-benzene	ND	ug/L	10
2,3,4,6-Tetrachlorophenol	ND	ug/L	50
Thionazin	ND	ug/L	50
2-Toluidine	ND	ug/L	10
1,2,4-Trichlorobenzene	ND	ug/L	10
2,4,5-Trichlorophenol	ND	ug/L	50
2,4,6-Trichlorophenol	ND	ug/L	10
0,0,0-Triethylphosphoro-thioate	ND	ug/L	10
1,3,5-Trinitrobenzene	ND	ug/L	10

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Ann Biegelsen

Approved By: Audrey Cornell

Semivolatile Organics  
Appendix IX List  
Method 8270



Client Name: U.S. Geological Survey  
Client ID: CAFB-P-0296-2  
Lab ID: 047558-0004-EB  
Matrix: AQUEOUS  
Authorized: 28 FEB 96

Sampled: 26 FEB 96  
Received: 28 FEB 96

Prepared: 04 MAR 96  
Analyzed: 12 MAR 96

Parameter	Result	Units	Reporting Limit
Surrogate	Recovery		Limits
Nitrobenzene-d5	72	%	35-114
2-Fluorobiphenyl	54	%	43-116
Terphenyl-d14	74	%	33-141
Phenol-d5	70	%	54-105
2-Fluorophenol	68	%	21-100
2,4,6-Tribromophenol	69	%	10-123

Dilution factor is 1.0. All results and limits are corrected for dilution.

Reported By: Ann Biegelsen

Approved By: Audrey Cornell

Semivolatiles Library Search (20 Compound TID)  
Method 8270



Client Name: U.S. Geological Survey  
Client ID: CAFB-P-0296-2  
Lab ID: 047558-0004-EB  
Matrix: AQUEOUS  
Authorized: 28 FEB 96

Sampled: 26 FEB 96  
Received: 28 FEB 96

Prepared: NA  
Analyzed: 12 MAR 96

Parameter	Result	Units	Reporting Limit
Ethane, 1-ethoxy-1-methoxy-	6.1	ug/L	1
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
2-Propanol, 1-(2-ethoxypropoxy)-	4.4	ug/L	2

Dilution factor is 1.0. All results and limits are corrected for dilution.

1 = Tentative Identification  
2 = Confident Identification  
ND = Not Detected

Reported By: Ann Biegelsen

Approved By: Audrey Cornell

Semivolatile Organics  
Appendix IX List  
Method 8270



Client Name: U.S. Geological Survey  
Client ID: CAFB-P-0296-3  
Lab ID: 047558-0005-SA  
Matrix: AQUEOUS  
Authorized: 28 FEB 96

Sampled: 27 FEB 96  
Received: 28 FEB 96

Prepared: 04 MAR 96  
Analyzed: 12 MAR 96

Parameter	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	10
Acenaphthylene	ND	ug/L	10
Acetophenone	ND	ug/L	10
2-Acetylaminofluorene	ND	ug/L	100
4-Aminobiphenyl	ND	ug/L	10
Aniline	ND	ug/L	10
Anthracene	ND	ug/L	10
Aramite	ND	ug/L	10
Benzo(a)anthracene	ND	ug/L	10
Benzo(b)fluoranthene	ND	ug/L	10
Benzo(k)fluoranthene	ND	ug/L	10
Benzo(g,h,i)perylene	ND	ug/L	10
Benzo(a)pyrene	ND	ug/L	10
Benzyl alcohol	ND	ug/L	10
4-Bromophenyl phenyl ether	ND	ug/L	10
Butyl benzyl phthalate	ND	ug/L	10
sec-Butyl-4,6-dinitro-phenol	ND	ug/L	10
Chloroaniline	ND	ug/L	10
bis(2-Chloroethoxy)methane	ND	ug/L	10
bis(2-Chloroethyl) ether	ND	ug/L	10
bis(2-Chloroisopropyl)ether	ND	ug/L	10
4-Chloro-3-methylphenol	ND	ug/L	10
2-Chloronaphthalene	ND	ug/L	10
2-Chlorophenol	ND	ug/L	10
4-Chlorophenyl phenyl ether	ND	ug/L	10
Chrysene	ND	ug/L	10
Dibenz(a,h)anthracene	ND	ug/L	10
Dibenzofuran	ND	ug/L	10
Di-n-butyl phthalate	ND	ug/L	10
1,2-Dichlorobenzene	ND	ug/L	10
1,3-Dichlorobenzene	ND	ug/L	10
1,4-Dichlorobenzene	ND	ug/L	10
3,3'-Dichlorobenzidine	ND	ug/L	20
2,4-Dichlorophenol	ND	ug/L	10
2,6-Dichlorophenol	ND	ug/L	10
Diethyl phthalate	ND	ug/L	10
Dimethoate	ND	ug/L	50
p-Dimethylaminoazobenzene	ND	ug/L	10
7,12-Dimethylbenz(a)-anthracene	ND	ug/L	10
3,3'-Dimethylbenzidine	ND	ug/L	10
a,a-Dimethylphenethyl-amine	ND	ug/L	10

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Ann Biegelsen

Approved By: Audrey Cornell

Semivolatile Organics  
Appendix IX List  
Method 8270

Client Name: U.S. Geological Survey  
Client ID: CAFB-P-0296-3  
Job ID: 047558-0005-SA  
Matrix: AQUEOUS  
Authorized: 28 FEB 96

Sampled: 27 FEB 96  
Received: 28 FEB 96

Prepared: 04 MAR 96  
Analyzed: 12 MAR 96

Parameter	Result	Units	Reporting Limit
2,4-Dimethylphenol	ND	ug/L	10
Dimethyl phthalate	ND	ug/L	10
1,3-Dinitrobenzene	ND	ug/L	10
4,6-Dinitro-2-methylphenol	ND	ug/L	50
2,4-Dinitrophenol	ND	ug/L	50
2,4-Dinitrotoluene	ND	ug/L	10
2,6-Dinitrotoluene	ND	ug/L	10
Di-n-octyl phthalate	ND	ug/L	10
Diphenylamine	ND	ug/L	10
Disulfoton	ND	ug/L	50
bis(2-Ethylhexyl)phthalate	ND	ug/L	10
Ethyl methanesulfonate	ND	ug/L	10
Famphur	ND	ug/L	50
Fluoranthene	ND	ug/L	10
Fluorene	ND	ug/L	10
Hexachlorobenzene	ND	ug/L	10
Hexachlorobutadiene	ND	ug/L	10
Hexachlorocyclopentadiene	ND	ug/L	10
Hexachloroethane	ND	ug/L	10
Hexachlorophene	ND	ug/L	--
Hexachloropropene	ND	ug/L	10
Indeno(1,2,3-cd)pyrene	ND	ug/L	10
Isophorone	ND	ug/L	10
Isosafrole	ND	ug/L	20
Methapyrilene	ND	ug/L	10
3-Methylcholanthrene	ND	ug/L	10
Methyl methanesulfonate	ND	ug/L	10
2-Methylnaphthalene	ND	ug/L	10
Methyl parathion	ND	ug/L	50
2-Methylphenol	ND	ug/L	10
3/4-Methylphenol	ND	ug/L	10
Naphthalene	ND	ug/L	10
1,4-Naphthoquinone	ND	ug/L	10
1-Naphthylamine	ND	ug/L	10
2-Naphthylamine	ND	ug/L	10
2-Nitroaniline	ND	ug/L	50
3-Nitroaniline	ND	ug/L	50
4-Nitroaniline	ND	ug/L	50
Nitrobenzene	ND	ug/L	10
2-Nitrophenol	ND	ug/L	10
4-Nitrophenol	ND	ug/L	50

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Ann Biegelsen

Approved By: Audrey Cornell

Semivolatile Organics  
Appendix IX List  
Method 8270

Client Name: U.S. Geological Survey  
Client ID: CAFB-P-0296-3  
Lab ID: 047558-0005-SA  
Matrix: AQUEOUS  
Authorized: 28 FEB 96

Sampled: 27 FEB 96  
Received: 28 FEB 96

Prepared: 04 MAR 96  
Analyzed: 12 MAR 96

Parameter	Result	Units	Reporting Limit
4-Nitroquinoline-1-oxide	ND	ug/L	100
N-Nitroso-di-n-butylamine	ND	ug/L	10
N-Nitrosodiethylamine	ND	ug/L	10
N-Nitrosodimethylamine	ND	ug/L	10
N-Nitrosodiphenylamine	ND	ug/L	10
N-Nitroso-di-n-propylamine	ND	ug/L	10
N-Nitrosomethylethylamine	ND	ug/L	10
N-Nitrosomorpholine	ND	ug/L	10
N-Nitrosopiperidine	ND	ug/L	10
N-Nitrosopyrrolidine	ND	ug/L	10
5-Nitro-o-toluidine	ND	ug/L	10
Parathion	ND	ug/L	50
Pentachlorobenzene	ND	ug/L	10
Pentachloroethane	ND	ug/L	10
Pentachloronitrobenzene	ND	ug/L	50
Pentachlorophenol	ND	ug/L	50
Phenacetin	ND	ug/L	10
Phenanthrene	ND	ug/L	10
Phenol	ND	ug/L	10
4-Phenylenediamine	ND	ug/L	100
Thioate	ND	ug/L	100
2-Picoline	ND	ug/L	10
Pronamide	ND	ug/L	10
Pyrene	ND	ug/L	10
Pyridine	ND	ug/L	20
Safrole	ND	ug/L	10
Sulfotepp	ND	ug/L	50
1,2,4,5-Tetrachloro-benzene	ND	ug/L	10
2,3,4,6-Tetrachlorophenol	ND	ug/L	50
Thionazin	ND	ug/L	50
2-Toluidine	ND	ug/L	10
1,2,4-Trichlorobenzene	ND	ug/L	10
2,4,5-Trichlorophenol	ND	ug/L	50
2,4,6-Trichlorophenol	ND	ug/L	10
0,0,0-Triethylphosphoro-thioate	ND	ug/L	10
1,3,5-Trinitrobenzene	ND	ug/L	10

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Ann Biegelsen

Approved By: Audrey Cornell

Semivolatile Organics  
Appendix IX List  
Method 8270

Client Name: U.S. Geological Survey  
Client ID: CAFB-P-0296-3  
Job ID: 047558-0005-SA  
Matrix: AQUEOUS  
Authorized: 28 FEB 96

Sampled: 27 FEB 96  
Received: 28 FEB 96

Prepared: 04 MAR 96  
Analyzed: 12 MAR 96

Parameter	Result	Units	Reporting Limit
Surrogate	Recovery		Limits
Nitrobenzene-d5	72	%	35-114
2-Fluorobiphenyl	53	%	43-116
Terphenyl-d14	80	%	33-141
Phenol-d5	65	%	54-105
2-Fluorophenol	62	%	21-100
2,4,6-Tribromophenol	72	%	10-123

Dilution factor is 1.0. All results and limits are corrected for dilution.

Reported By: Ann Biegelsen

Approved By: Audrey Cornell

Semivolatiles Library Search (20 Compound TID)  
Method 8270



Client Name: U.S. Geological Survey  
Client ID: CAFB-P-0296-3  
Lab ID: 047558-0005-SA  
Matrix: AQUEOUS  
Authorized: 28 FEB 96

Sampled: 27 FEB 96  
Received: 28 FEB 96

Prepared: NA  
Analyzed: 12 MAR 96

Parameter	Result	Units	Reporting Limit
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	
None Detected	ND	ug/L	

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Ann Biegelsen

Approved By: Audrey Cornell

# DODEC LABORATORY DATA REVIEW WORKSHEET

## 1.0 GENERAL INFORMATION

Data reviewer: BOB BRUCE  
Date of review: 4/10/96  
Sample project number: 47577  
Project name: NM- CANNON AFB GW  
Sample collection date: 2/25/96  
Sample matrix and number: 4 Aerosols

Type and number of samples in project:

<u>Type</u>	<u>Number</u>
Environmental	<u>2</u>
Trip blank	<u>      </u>
Equipment blank	<u>      </u>
Ambient blank	<u>      </u>
MS/MSD	<u>2</u>
Other	<u>      </u>

## 2.0 DATA REPORT

Date of Analytical Results Report: 3/22/96  
Number of volumes in Raw Data Report: 2  
Raw Data Report reviewed? Yes        No X

Were all analyses requested on the COC form performed by the laboratory?  
Yes        No X

If no, list canceled analyses and reason for non-performance:

9240 SAMPLE - CO2 WAS CANCELLED DUE TO LABORATORY ERROR

Were the samples properly preserved upon receipt by the laboratory?  
Yes X No       

If no, list laboratory ID for samples that were not properly preserved.

### 3.0 ANALYTICAL METHODS

Analytical methods used in this project

- VOC by GC/MS (SW 8240, SW 8260, E524, E624 )
- Halogenated VOC by GC (SW 8010)
- Aromatic VOC by GC (SW 8020)
- SVOC by GC/MS (SW 8270)
- PAH by HPLC (SW 8310)
- Organochlorine pesticides and PCB (SW 8080)
- Organophosphorous pesticides (SW 8140)
- Chlorinated herbicides (SW 8150)
- Dioxins and Furans (SW 8280)
- Explosives (8330)
- TOC (E415.1 or SW 9060)
- TPH (E418.1)
- Oil and Grease (E413.2)
- TOX (SW9020)
  
- ICP screen for metals (SW 6010)
- ICP/MS screen for metals (SW 6020)
- Trace ICP screen for metals (SW 6010 modified)
- Antimony by GFAA (SW 7041)
- Arsenic by GFAA (SW 7060)
- Chromium (SW 7191 or 7196)
- Lead by GFAA (SW 7421)
- Mercury by CVAA (SW 7470 or 7471)
- Selenium by GFAA (SW 7740)
- Thallium by GFAA (SW 7841)
- Inorganic anions (E300.0)
- Alkalinity (310.1)
- Cyanide, total and amenable (SW 9010/9012)
- Nitrogen, ammonia (E350.1)
- Nitrogen, TKN (E351.2)
- Nitrogen, nitrate (E353.2)
- Nitrogen, nitrate plus nitrite (E353.2)
- Nitrogen, nitrite (E354.1)
- Phosphorous, total or ortho (E365.3)
- Sulfate (E375.4)
- Sulfide (E376.2)
- TDS (E160.1)
- pH (SW 9040 or 9045)
- Percent moisture (D2216)
  
- Gross alpha and gross beta radioactivity (SW 9310)
- Alpha-emitting radium isotopes (SW 9315)
- Radium-228 (SW 9320)
- Uranium (908.1)
  
- Other analyses : PHENOLICS 9065

Were analytical holding times met? Yes  No

If no, list analytical method and laboratory ID for samples that exceeded holding time:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Did surrogate recoveries meet QC acceptance criteria? Yes  No

If no, list analytical method, laboratory ID, and surrogates that did not meet acceptance criteria:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Did actual reporting limits meet project detection limits? Organic analyses: Yes  No

If no, list analytical method, laboratory ID, and reason for non-conformance:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Inorganic analyses: Yes  No  Se 71: -6001, -0003  
SO4: -0001, -0003

Reporting limits for <sup>①</sup>GFAA metals and inorganic anions <sup>②</sup>may be raised when: (1) sample concentrations exceed the instrument <sup>①</sup>linear range and (2) target analytes are subject to matrix <sup>①</sup>interferences. Reporting limits for ICP metals and mercury by CVAA are typically only raised when the sample concentration exceeds the instrument linear range.

Did DCS meet QC acceptance criteria? Yes  No

If no, list analytical method, laboratory ID, and reason for non-conformance:

8050 DCS 1 MAR 96-01 DID NOT MEET RSD LIMITS FOR HEPTACHLOR (WICH BY 1%). ALL OTHER DCS PARAMETERS WERE WITHIN QC LIMITS

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\_\_\_\_\_  
\_\_\_\_\_

Did SCS meet QC acceptance criteria? Yes  No

If no, list analytical method, laboratory ID, and reason for non-conformance:

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Were any target compounds found in the method, trip, equipment, or ambient blanks above the RL? Yes  No

If yes, list the analytical method, laboratory ID, type of blank and compound:

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Did the MS/MSD meet QC acceptance criteria? Yes  No

MS/MSD data are used to evaluate the effect of the sample matrix on the analytical process and should only be used in conjunction with other available laboratory QC information to evaluate precision and accuracy.

If no, list the analytical method, laboratory ID, and reason for non-conformance :

SELENA DID NOT MEET FOR LIMITS IN THE MS/MSD (LOW)

TEX MS/MSD DID NOT MEET FOR LIMITS IN THE MS/MSD (HIGH)

MERCURY MS/MSD DID NOT MEET FOR LIMITS (HIGH BY 3%)

Additional comments:

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#### IV. QUALITY CONTROL REPORT

The Quanterra laboratories operate under a vigorous QA/QC program designed to ensure the generation of scientifically valid, legally defensible data by monitoring every aspect of laboratory operations. Routine QA/QC procedures include the use of approved methodologies, independent verification of analytical standards, use of duplicate Laboratory Control Samples to assess the precision and accuracy of the methodology on a routine basis, and a rigorous system of data review.

The standard laboratory QC package is designed to:

- 1) establish a strong, cost-effective QC program that ensures the generation of scientifically valid, legally defensible data
- 2) assess the laboratory's performance of the analytical method using control limits generated with a well-defined matrix
- 3) establish clear-cut guidelines for acceptability of analytical data so that QC decisions can be made immediately at the bench, and
- 4) provide a standard set of reportables which assures the client of the quality of his data.

The Quanterra QC program is based upon monitoring the precision and accuracy of an analytical method by analyzing a set of Duplicate Control Samples (DCS) at frequent, well-defined intervals. Each DCS is a well-characterized matrix which is spiked with target compounds at 5-100 times the reporting limit, depending upon the methodology being monitored. The purpose of the DCS is not to duplicate the sample matrix, but rather to provide an interference-free, homogeneous matrix from which to gather data to establish control limits. These limits are used to determine whether data generated by the laboratory on any given day is in control.

Control limits for accuracy (percent recovery) are based on the average, historical percent recovery +/- 3 standard deviation units. Control limits for precision (relative percent difference) range from 0 (identical duplicate DCS results) to the average, historical relative percent difference + 3 standard deviation units. These control limits are fairly narrow based on the consistency of the matrix being monitored and are updated on a quarterly basis.

For each batch of samples analyzed, an additional control measure is taken in the form of a Single Control Sample (SCS). The SCS consists of a control matrix that is spiked with surrogate compounds appropriate to the method being used. In cases where no surrogate is available, (e.g., metals or conventional analyses) a single DCS serves as the control sample. An SCS is prepared for each sample lot for which the DCS pair are not analyzed. The recovery of the SCS is charted in exactly the same manner as described for the DCS, and provides a daily check on the performance of the method.

Accuracy for DCS and SCS is measured by Percent Recovery.

$$\% \text{ Recovery} = \frac{\text{Measured Concentration}}{\text{Actual Concentration}} \times 100$$

Precision for DCS is measured by Relative Percent Difference (RPD).

$$\text{RPD} = \frac{|\text{Measured Concentration DCS1} - \text{Measured Concentration DCS2}|}{(\text{Measured Concentration DCS1} + \text{Measured Concentration DCS2})/2} \times 100$$

All samples analyzed concurrently by the same test are assigned the same QC lot number. Projects which contain numerous samples, analyzed over several days, may have multiple QC lot numbers associated with each test. The QC information which follows includes a listing of the QC lot numbers associated with each of the samples reported, DCS and SCS (where applicable) recoveries from the QC lots associated with the samples, and control limits for these lots. The QC data is reported by test code, in the order that the tests are reported in the analytical results section of this report.

LOT ASSIGNMENT REPORT  
Volatile Organics by GC/MS

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
047577-0001-SA	AQUEOUS	624-A	09 MAR 96-J	09 MAR 96-J
047577-0003-SA	AQUEOUS	624-A	12 MAR 96-H	12 MAR 96-H
047577-0003-MS	AQUEOUS	624-A	12 MAR 96-H	12 MAR 96-H
047577-0003-SD	AQUEOUS	624-A	12 MAR 96-H	12 MAR 96-H

**DUPLICATE CONTROL SAMPLE REPORT**  
Volatile Organics by GC/MS

Analyte	Spiked	Concentration		AVG	Accuracy		Precision		
		DCS1	Measured DCS2		DCS	Average(%) Limits	(RPD) DCS	Limits	
Category: 624-A									
Matrix: AQUEOUS									
QC Lot: 09 MAR 96-J									
Concentration Units: ug/L									
1,1-Dichloroethene	50.0	47.4	50.8	49.1	98	74-124	6.9	17	
Trichloroethene	50.0	47.9	50.7	49.3	99	77-119	5.7	13	
Benzene	50.0	45.2	47.8	46.5	93	80-117	5.6	12	
Toluene	50.0	45.3	47.4	46.4	93	80-119	4.5	11	
Chlorobenzene	50.0	48.1	50.4	49.2	99	81-120	4.7	14	

Category: 624-A  
Matrix: AQUEOUS  
QC Lot: 12 MAR 96-H  
Concentration Units: ug/L

1,1-Dichloroethene	50.0	57.0	55.6	56.3	113	74-124	2.5	17
Trichloroethene	50.0	52.8	51.4	52.1	104	77-119	2.7	13
Benzene	50.0	50.0	49.0	49.5	99	80-117	2.0	12
Toluene	50.0	49.2	47.8	48.5	97	80-119	2.9	11
Chlorobenzene	50.0	53.0	51.9	52.4	105	81-120	2.1	14

Calculations are performed before rounding to avoid round-off errors in calculated results.

SINGLE CONTROL SAMPLE REPORT  
Volatile Organics by GC/MS

Analyte	Concentration		Accuracy(%)	
	Spiked	Measured	SCS	Limits
Category: 624-A				
Matrix: AQUEOUS				
QC Lot: 09 MAR 96-J    QC Run: 09 MAR 96-J				
Concentration Units: ug/L				
1,2-Dichloroethane-d4	50.0	47.6	95	85-111
4-Bromofluorobenzene	50.0	50.5	101	86-110
Toluene-d8	50.0	50.2	100	91-110

Category: 624-A				
Matrix: AQUEOUS				
QC Lot: 12 MAR 96-H    QC Run: 12 MAR 96-H				
Concentration Units: ug/L				
1,2-Dichloroethane-d4	50.0	47.5	95	85-111
4-Bromofluorobenzene	50.0	51.5	103	86-110
Toluene-d8	50.0	50.7	101	91-110

Calculations are performed before rounding to avoid round-off errors in calculated results.

**METHOD BLANK REPORT**  
**Volatile Organics by GC/MS**

Analyte	Result	Units	Reporting Limit
Test: 8240CP-AP9-AP			
Matrix: AQUEOUS			
QC Lot: 09 MAR 96-J	QC Run: 09 MAR 96-J		
Acetone	ND	ug/L	10
Acetonitrile	ND	ug/L	200
Acrolein	ND	ug/L	100
Acrylonitrile	ND	ug/L	100
Allyl chloride	ND	ug/L	10
Benzene	ND	ug/L	5.0
Bromodichloromethane	ND	ug/L	5.0
Bromoform	ND	ug/L	5.0
Bromomethane	ND	ug/L	10
2-Butanone (MEK)	ND	ug/L	10
Carbon disulfide	ND	ug/L	5.0
Carbon tetrachloride	ND	ug/L	5.0
Chlorobenzene	ND	ug/L	5.0
Chloroethane	ND	ug/L	10
Chloroform	ND	ug/L	5.0
Chloromethane	ND	ug/L	10
Chloroprene	ND	ug/L	5.0
bromochloromethane	ND	ug/L	5.0
2-Dibromo-3-chloro- propane (DBCP)	ND	ug/L	10
1,2-Dibromoethane (EDB)	ND	ug/L	10
Dibromomethane	ND	ug/L	5.0
trans-1,4-Dichloro-2-butene	ND	ug/L	5.0
Dichlorodifluoromethane	ND	ug/L	20
1,1-Dichloroethane	ND	ug/L	5.0
1,2-Dichloroethane	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	5.0
1,2-Dichloroethene (total)	ND	ug/L	5.0
1,2-Dichloropropane	ND	ug/L	5.0
cis-1,3-Dichloropropene	ND	ug/L	5.0
trans-1,3-Dichloropropene	ND	ug/L	5.0
1,4-Dioxane	ND	ug/L	500
Ethylbenzene	ND	ug/L	5.0
Ethyl methacrylate	ND	ug/L	20
Iodomethane	ND	ug/L	5.0
Isobutanol			
(2-Methyl-1-propanol)	ND	ug/L	200
2-Hexanone	ND	ug/L	10
Methacrylonitrile	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0

**METHOD BLANK REPORT**  
Volatile Organics by GC/MS (cont.)

Analyte	Result	Units	Reporting Limit
Test: 8240CP-AP9-AP			
Matrix: AQUEOUS			
QC Lot: 09 MAR 96-J    QC Run: 09 MAR 96-J			
Methyl methacrylate	ND	ug/L	20
4-Methyl-2-pentanone (MIBK)	ND	ug/L	10
Propionitrile	ND	ug/L	5.0
Styrene	ND	ug/L	5.0
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0
Tetrachloroethene	ND	ug/L	5.0
Toluene	ND	ug/L	5.0
1,1,1-Trichloroethane	ND	ug/L	5.0
1,1,2-Trichloroethane	ND	ug/L	5.0
Trichloroethene	ND	ug/L	5.0
Trichlorofluoromethane	ND	ug/L	5.0
1,2,3-Trichloropropane	ND	ug/L	5.0
Vinyl acetate	ND	ug/L	10
Vinyl chloride	ND	ug/L	10
Xylenes (total)	ND	ug/L	5.0

Test: 8240CP-AP9-AP  
Matrix: AQUEOUS  
QC Lot: 12 MAR 96-H    QC Run: 12 MAR 96-H

Acetone	ND	ug/L	10
Acetonitrile	ND	ug/L	200
Acrolein	ND	ug/L	100
Acrylonitrile	ND	ug/L	100
Allyl chloride	ND	ug/L	10
Benzene	ND	ug/L	5.0
Bromodichloromethane	ND	ug/L	5.0
Bromoform	ND	ug/L	5.0
Bromomethane	ND	ug/L	10
2-Butanone (MEK)	ND	ug/L	10
Carbon disulfide	ND	ug/L	5.0
Carbon tetrachloride	ND	ug/L	5.0
Chlorobenzene	ND	ug/L	5.0
Chloroethane	ND	ug/L	10
Chloroform	ND	ug/L	5.0
Chloromethane	ND	ug/L	10
Chloroprene	ND	ug/L	5.0
Dibromochloromethane	ND	ug/L	5.0

METHOD BLANK REPORT  
Volatile Organics by GC/MS (cont.)

Analyte	Result	Units	Reporting Limit
Test: 8240CP-AP9-AP			
Matrix: AQUEOUS			
QC Lot: 12 MAR 96-H QC Run: 12 MAR 96-H			
1,2-Dibromo-3-chloro- propane (DBCP)	ND	ug/L	10
1,2-Dibromoethane (EDB)	ND	ug/L	10
Dibromomethane	ND	ug/L	5.0
trans-1,4-Dichloro-2-butene	ND	ug/L	5.0
Dichlorodifluoromethane	ND	ug/L	20
1,1-Dichloroethane	ND	ug/L	5.0
1,2-Dichloroethane	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	5.0
1,2-Dichloroethene (total)	ND	ug/L	5.0
1,2-Dichloropropane	ND	ug/L	5.0
cis-1,3-Dichloropropene	ND	ug/L	5.0
trans-1,3-Dichloropropene	ND	ug/L	5.0
1,4-Dioxane	ND	ug/L	500
Ethylbenzene	ND	ug/L	5.0
Ethyl methacrylate	ND	ug/L	20
tert-Butylmethane	ND	ug/L	5.0
tert-Butanol (2-Methyl-1-propanol)	ND	ug/L	200
2-Hexanone	ND	ug/L	10
Methacrylonitrile	ND	ug/L	5.0
Methylene chloride	1.0	ug/L	5.0
Methyl methacrylate	ND	ug/L	20
4-Methyl-2-pentanone (MIBK)	ND	ug/L	10
Propionitrile	ND	ug/L	5.0
Styrene	ND	ug/L	5.0
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0
Tetrachloroethene	ND	ug/L	5.0
Toluene	ND	ug/L	5.0
1,1,1-Trichloroethane	ND	ug/L	5.0
1,1,2-Trichloroethane	ND	ug/L	5.0
Trichloroethene	ND	ug/L	5.0
Trichlorofluoromethane	ND	ug/L	5.0
1,2,3-Trichloropropane	ND	ug/L	5.0
Vinyl acetate	ND	ug/L	10
Vinyl chloride	ND	ug/L	10
Xylenes (total)	ND	ug/L	5.0

J

J = Result is detected below the reporting limit or is an estimated concentration.

METHOD BLANK REPORT  
Volatile Organics by GC/MS (cont.)

Analyte	Result	Units	Reporting Limit	
Test: 8240CP-AP9-AP				
Matrix: AQUEOUS				
QC Lot: 12 MAR 96-H	QC Run: 12 MAR 96-H			
Acetone	ND	ug/L	10	
Acetonitrile	ND	ug/L	200	
Acrolein	ND	ug/L	100	
Acrylonitrile	ND	ug/L	100	
Allyl chloride	ND	ug/L	10	
Benzene	ND	ug/L	5.0	
Bromodichloromethane	ND	ug/L	5.0	
Bromoform	ND	ug/L	5.0	
Bromomethane	ND	ug/L	10	
2-Butanone (MEK)	ND	ug/L	10	
Carbon disulfide	ND	ug/L	5.0	
Carbon tetrachloride	ND	ug/L	5.0	
Chlorobenzene	ND	ug/L	5.0	
Chloroethane	ND	ug/L	10	
Chloroform	ND	ug/L	5.0	
Chloromethane	ND	ug/L	10	
Chloroprene	ND	ug/L	5.0	
Dibromochloromethane	ND	ug/L	5.0	
2-Dibromo-3-chloro- propane (DBCP)	ND	ug/L	10	
1,2-Dibromoethane (EDB)	ND	ug/L	10	
Dibromomethane	ND	ug/L	5.0	
trans-1,4-Dichloro-2-butene	ND	ug/L	5.0	
Dichlorodifluoromethane	ND	ug/L	20	
1,1-Dichloroethane	ND	ug/L	5.0	
1,2-Dichloroethane	ND	ug/L	5.0	
1,1-Dichloroethene	ND	ug/L	5.0	
1,2-Dichloroethene				
(total)	ND	ug/L	5.0	
1,2-Dichloropropane	ND	ug/L	5.0	
cis-1,3-Dichloropropene	ND	ug/L	5.0	
trans-1,3-Dichloropropene	ND	ug/L	5.0	
1,4-Dioxane	ND	ug/L	500	
Ethylbenzene	ND	ug/L	5.0	
Ethyl methacrylate	ND	ug/L	20	
Iodomethane	ND	ug/L	5.0	
Isobutanol				
(2-Methyl-1-propanol)	ND	ug/L	200	
2-Hexanone	ND	ug/L	10	
Methacrylonitrile	ND	ug/L	5.0	
Methylene chloride	1.0	ug/L	5.0	J

J = Result is detected below the reporting limit or is an estimated concentration.

**METHOD BLANK REPORT**  
**Volatile Organics by GC/MS (cont.)**

Analyte	Result	Units	Reporting Limit
Test: 8240CP-AP9-AP			
Matrix: AQUEOUS			
QC Lot: 12 MAR 96-H    QC Run: 12 MAR 96-H			
Methyl methacrylate	ND	ug/L	20
4-Methyl-2-pentanone (MIBK)	ND	ug/L	10
Propionitrile	ND	ug/L	5.0
Styrene	ND	ug/L	5.0
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0
Tetrachloroethene	ND	ug/L	5.0
Toluene	ND	ug/L	5.0
1,1,1-Trichloroethane	ND	ug/L	5.0
1,1,2-Trichloroethane	ND	ug/L	5.0
Trichloroethene	ND	ug/L	5.0
Trichlorofluoromethane	ND	ug/L	5.0
1,2,3-Trichloropropane	ND	ug/L	5.0
Vinyl acetate	ND	ug/L	10
Vinyl chloride	ND	ug/L	10
Xylenes (total)	ND	ug/L	5.0

**QC LOT ASSIGNMENT REPORT - MS QC**  
**Volatile Organics by GC/MS**

<b>Laboratory Sample Number</b>	<b>QC Matrix</b>	<b>QC Category</b>	<b>QC Lot Number (DCS)</b>	<b>QC Run Number (SCS/BLANK)</b>	<b>MS QC Run Number (SA,MS,SD,DU)</b>
047577-0001-SA	AQUEOUS	624-A	09 MAR 96-J	09 MAR 96-J	09 MAR 96-J
047577-0003-MS	AQUEOUS	624-A	12 MAR 96-H	12 MAR 96-H	12 MAR 96-H
047577-0003-SA	AQUEOUS	624-A	12 MAR 96-H	12 MAR 96-H	12 MAR 96-H
047577-0003-SD	AQUEOUS	624-A	12 MAR 96-H	12 MAR 96-H	12 MAR 96-H

**MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT**  
Volatile Organics by GC/MS  
Project: 047577

Category: 624-A Volatile Organics  
Matrix: AQUEOUS  
Sample: 047565-0001  
MS Run: 09 MAR 96-J  
Units: ug/L

Analyte	Sample Result	Concentration		Amount Spiked		% Recovery		Recov. Accep. Limits	RPD MS-MSD	RPD Accept Limits
		MS Result	MSD Result	MS	MSD	MS	MSD			
1,1-Dichloroethene	ND	48	44	50	50	96	89	1-234	7.6	17
Trichloroethene	ND	48	45	50	50	97	90	71-157	6.9	13
Benzene	ND	46	43	50	50	91	86	37-151	5.6	12
Toluene	ND	45	43	50	50	90	85	47-150	5.3	11
Chlorobenzene	ND	49	46	50	50	98	93	37-160	5.7	14

Category: 624-A Volatile Organics  
Matrix: AQUEOUS  
Sample: 047577-0003  
MS Run: 12 MAR 96-H  
Units: ug/L

Analyte	Sample Result	Concentration		Amount Spiked		% Recovery		Recov. Accep. Limits	RPD MS-MSD	RPD Accept Limits
		MS Result	MSD Result	MS	MSD	MS	MSD			
1,1-Dichloroethene	ND	58	56	50	50	115	112	1-234	2.5	17
Trichloroethene	ND	52	53	50	50	104	106	71-157	1.1	13
Benzene	ND	51	51	50	50	101	102	37-151	0.7	12
Toluene	ND	49	49	50	50	98	98	47-150	0.6	11
Chlorobenzene	ND	53	53	50	50	107	106	37-160	0.3	14

ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

QC LOT ASSIGNMENT REPORT  
Semivolatile Organics by GC/MS

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
047577-0001-SA	AQUEOUS	625-A	06 MAR 96-N1	06 MAR 96-N1
047577-0003-SA	AQUEOUS	625-A	06 MAR 96-N1	06 MAR 96-N1
047577-0003-MS	AQUEOUS	625-A	06 MAR 96-N1	06 MAR 96-N1
047577-0003-SD	AQUEOUS	625-A	06 MAR 96-N1	06 MAR 96-N1

DUPLICATE CONTROL SAMPLE REPORT  
Semivolatile Organics by GC/MS

Analyte	Concentration Spiked	Concentration Measured		AVG	Accuracy Average (%)		Precision (RPD)		
		DCS1	DCS2		DCS	Limits	DCS	Limit	
Category: 625-A									
Matrix: AQUEOUS									
QC Lot: 06 MAR 96-N1									
Concentration Units: ug/L									
Phenol	100	77.6	81.9	79.8	80	45-109	5.4	29	
2-Chlorophenol	100	76.2	82.0	79.1	79	47-111	7.3	29	
1,4-Dichlorobenzene	50	22.1	27.8	25.0	50	32-103	23	28	
N-Nitroso-di-n-propylamine	50	32.5	35.5	34.0	68	49-107	8.8	24	
1,2,4-Trichlorobenzene	50	20.9	26.6	23.8	48	44-102	24	27	
4-Chloro-3-methylphenol	100	69.8	75.2	72.5	73	50-115	7.4	27	
Acenaphthene	50	29.2	35.3	32.2	65	47-109	19	24	
4-Nitrophenol	100	60.9	68.4	64.6	65	40-127	12	51	
2,4-Dinitrotoluene	50	32.9	35.7	34.3	69	46-118	8.2	22	
Pentachlorophenol	100	68.0	76.7	72.4	72	30-136	12	34	
Pyrene	50	27.4	29.8	28.6	57	52-115	8.4	23	

Calculations are performed before rounding to avoid round-off errors in calculated results.

SINGLE CONTROL SAMPLE REPORT  
Semivolatile Organics by GC/MS

Analyte	Concentration		Accuracy(%)	
	Spiked	Measured	SCS	Limits
Category: 625-A				
Matrix: AQUEOUS				
QC Lot: 06 MAR 96-N1		QC Run: 06 MAR 96-N1		
Concentration Units: ug/L				
Nitrobenzene-d5	100	68.5	68	49-113
2-Fluorobiphenyl	100	55.7	56	43-104
Terphenyl-d14	100	75.2	75	33-139
2-Fluorophenol	200	138	69	42-100
Phenol-d5	200	141	70	54-105
2,4,6-Tribromophenol	200	146	73	33-123

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT  
Semivolatile Organics by GC/MS

Analyte	Result	Units	Reporting Limit
Test: 8270CP-AP9-A			
Matrix: AQUEOUS			
QC Lot: 06 MAR 96-N1	QC Run: 06 MAR 96-N1		
Acenaphthene	ND	ug/L	10
Acenaphthylene	ND	ug/L	10
Acetophenone	ND	ug/L	10
2-Acetylaminofluorene	ND	ug/L	100
4-Aminobiphenyl	ND	ug/L	10
Aniline	ND	ug/L	10
Anthracene	ND	ug/L	10
Aramite	ND	ug/L	10
Benzo(a)anthracene	ND	ug/L	10
Benzo(b)fluoranthene	ND	ug/L	10
Benzo(k)fluoranthene	ND	ug/L	10
Benzo(g,h,i)perylene	ND	ug/L	10
Benzo(a)pyrene	ND	ug/L	10
Benzyl alcohol	ND	ug/L	10
4-Bromophenyl phenyl ether	ND	ug/L	10
Butyl benzyl phthalate	ND	ug/L	10
2-sec-Butyl-4,6-dinitro- phenol	ND	ug/L	10
-Chloroaniline	ND	ug/L	10
is(2-Chloroethoxy) methane	ND	ug/L	10
bis(2-Chloroethyl) ether	ND	ug/L	10
bis(2-Chloroisopropyl) ether	ND	ug/L	10
4-Chloro-3-methylphenol	ND	ug/L	10
2-Chloronaphthalene	ND	ug/L	10
2-Chlorophenol	ND	ug/L	10
4-Chlorophenyl phenyl ether	ND	ug/L	10
Chrysene	ND	ug/L	10
Dibenz(a,h)anthracene	ND	ug/L	10
Dibenzofuran	ND	ug/L	10
Di-n-butyl phthalate	ND	ug/L	10
1,2-Dichlorobenzene	ND	ug/L	10
1,3-Dichlorobenzene	ND	ug/L	10
1,4-Dichlorobenzene	ND	ug/L	10
3,3'-Dichlorobenzidine	ND	ug/L	20
2,4-Dichlorophenol	ND	ug/L	10
2,6-Dichlorophenol	ND	ug/L	10
Diethyl phthalate	ND	ug/L	10

METHOD BLANK REPORT  
Semivolatile Organics by GC/MS (cont.)

Analyte	Result	Units	Reporting Limit
Test: 8270CP-AP9-A			
Matrix: AQUEOUS			
QC Lot: 06 MAR 96-N1 QC Run: 06 MAR 96-N1			
Dimethoate	ND	ug/L	50
p-Dimethylaminoazobenzene	ND	ug/L	10
7,12-Dimethylbenz(a)-anthracene	ND	ug/L	10
3,3'-Dimethylbenzidine	ND	ug/L	10
a,a-Dimethylphenethylamine	ND	ug/L	10
2,4-Dimethylphenol	ND	ug/L	10
Dimethyl phthalate	ND	ug/L	10
1,3-Dinitrobenzene	ND	ug/L	10
4,6-Dinitro-2-methylphenol	ND	ug/L	50
2,4-Dinitrophenol	ND	ug/L	50
2,4-Dinitrotoluene	ND	ug/L	10
2,6-Dinitrotoluene	ND	ug/L	10
Di-n-octyl phthalate	ND	ug/L	10
Diphenylamine	ND	ug/L	10
Disulfoton	ND	ug/L	50
bis(2-Ethylhexyl) phthalate	ND	ug/L	10
ethyl methanesulfonate	ND	ug/L	10
ramphur	ND	ug/L	50
Fluoranthene	ND	ug/L	10
Fluorene	ND	ug/L	10
Hexachlorobenzene	ND	ug/L	10
Hexachlorobutadiene	ND	ug/L	10
Hexachlorocyclopentadiene	ND	ug/L	10
Hexachloroethane	ND	ug/L	10
Hexachlorophene	ND	ug/L	--
Hexachloropropene	ND	ug/L	10
Indeno(1,2,3-cd)pyrene	ND	ug/L	10
Isophorone	ND	ug/L	10
Isosafrole	ND	ug/L	20
Methapyrilene	ND	ug/L	10
3-Methylcholanthrene	ND	ug/L	10
Methyl methanesulfonate	ND	ug/L	10
2-Methylnaphthalene	ND	ug/L	10
Methyl parathion	ND	ug/L	50
2-Methylphenol	ND	ug/L	10
3/4-Methylphenol	ND	ug/L	10
Naphthalene	ND	ug/L	10

METHOD BLANK REPORT  
Semivolatile Organics by GC/MS (cont.)

Analyte	Result	Units	Reporting Limit
Test: 8270CP-AP9-A			
Matrix: AQUEOUS			
QC Lot: 06 MAR 96-N1 QC Run: 06 MAR 96-N1			
1,4-Naphthoquinone	ND	ug/L	10
1-Naphthylamine	ND	ug/L	10
2-Naphthylamine	ND	ug/L	10
2-Nitroaniline	ND	ug/L	50
3-Nitroaniline	ND	ug/L	50
4-Nitroaniline	ND	ug/L	50
Nitrobenzene	ND	ug/L	10
2-Nitrophenol	ND	ug/L	10
4-Nitrophenol	ND	ug/L	50
4-Nitroquinoline-1-oxide	ND	ug/L	100
N-Nitroso-di-n-butylamine	ND	ug/L	10
N-Nitrosodiethylamine	ND	ug/L	10
N-Nitrosodimethylamine	ND	ug/L	10
N-Nitrosodiphenylamine	ND	ug/L	10
N-Nitroso-di-n-propylamine	ND	ug/L	10
N-Nitrosomethylethylamine	ND	ug/L	10
N-Nitrosomorpholine	ND	ug/L	10
N-Nitrosopiperidine	ND	ug/L	10
Nitrosopyrrolidine	ND	ug/L	10
Nitro-o-toluidine	ND	ug/L	10
parathion	ND	ug/L	50
Pentachlorobenzene	ND	ug/L	10
Pentachloroethane	ND	ug/L	10
Pentachloronitrobenzene	ND	ug/L	50
Pentachlorophenol	ND	ug/L	50
Phenacetin	ND	ug/L	10
Phenanthrene	ND	ug/L	10
Phenol	ND	ug/L	10
4-Phenylenediamine	ND	ug/L	100
Phorate	ND	ug/L	100
2-Picoline	ND	ug/L	10
Pronamide	ND	ug/L	10
Pyrene	ND	ug/L	10
Pyridine	ND	ug/L	20
Safrole	ND	ug/L	10
Sulfotepp	ND	ug/L	50
1,2,4,5-Tetrachlorobenzene	ND	ug/L	10
2,3,4,6-Tetrachlorophenol	ND	ug/L	50
Thionazin	ND	ug/L	50

METHOD BLANK REPORT  
Semivolatile Organics by GC/MS (cont.)

Analyte	Result	Units	Reporting Limit
Test: 8270CP-AP9-A			
Matrix: AQUEOUS			
QC Lot: 06 MAR 96-N1 QC Run: 06 MAR 96-N1			
2-Toluidine	ND	ug/L	10
1,2,4-Trichlorobenzene	ND	ug/L	10
2,4,5-Trichlorophenol	ND	ug/L	50
2,4,6-Trichlorophenol	ND	ug/L	10
0,0,0-Triethylphosphorothioate	ND	ug/L	10
1,3,5-Trinitrobenzene	ND	ug/L	10

Test: 8270CP-AP9-A  
Matrix: AQUEOUS  
QC Lot: 06 MAR 96-N1 QC Run: 06 MAR 96-N1

Acenaphthene	ND	ug/L	10
Acenaphthylene	ND	ug/L	10
Acetophenone	ND	ug/L	10
2-Acetylaminofluorene	ND	ug/L	100
4-Aminobiphenyl	ND	ug/L	10
Aniline	ND	ug/L	10
Anthracene	ND	ug/L	10
Carbazole	ND	ug/L	10
Benzo(a)anthracene	ND	ug/L	10
Benzo(b)fluoranthene	ND	ug/L	10
Benzo(k)fluoranthene	ND	ug/L	10
Benzo(g,h,i)perylene	ND	ug/L	10
Benzo(a)pyrene	ND	ug/L	10
Benzyl alcohol	ND	ug/L	10
4-Bromophenyl phenyl ether	ND	ug/L	10
Butyl benzyl phthalate	ND	ug/L	10
2-sec-Butyl-4,6-dinitrophenol	ND	ug/L	10
4-Chloroaniline	ND	ug/L	10
bis(2-Chloroethoxy) methane	ND	ug/L	10
bis(2-Chloroethyl) ether	ND	ug/L	10
bis(2-Chloroisopropyl) ether	ND	ug/L	10
4-Chloro-3-methylphenol	ND	ug/L	10
2-Chloronaphthalene	ND	ug/L	10
2-Chlorophenol	ND	ug/L	10

METHOD BLANK REPORT  
Semivolatile Organics by GC/MS (cont.)

Analyte	Result	Units	Reporting Limit
Test: 8270CP-AP9-A			
Matrix: AQUEOUS			
QC Lot: 06 MAR 96-N1	QC Run: 06 MAR 96-N1		
4-Chlorophenyl phenyl ether	ND	ug/L	10
Chrysene	ND	ug/L	10
Dibenz(a,h)anthracene	ND	ug/L	10
Dibenzofuran	ND	ug/L	10
Di-n-butyl phthalate	ND	ug/L	10
1,2-Dichlorobenzene	ND	ug/L	10
1,3-Dichlorobenzene	ND	ug/L	10
1,4-Dichlorobenzene	ND	ug/L	10
3,3'-Dichlorobenzidine	ND	ug/L	20
2,4-Dichlorophenol	ND	ug/L	10
2,6-Dichlorophenol	ND	ug/L	10
Diethyl phthalate	ND	ug/L	10
Dimethoate	ND	ug/L	50
p-Dimethylaminoazobenzene	ND	ug/L	10
7,12-Dimethylbenz(a)- anthracene	ND	ug/L	10
3,3'-Dimethylbenzidine	ND	ug/L	10
a,a-Dimethylphenethyl- amine	ND	ug/L	10
4-Dimethylphenol	ND	ug/L	10
Dimethyl phthalate	ND	ug/L	10
1,3-Dinitrobenzene	ND	ug/L	10
4,6-Dinitro- 2-methylphenol	ND	ug/L	50
2,4-Dinitrophenol	ND	ug/L	50
2,4-Dinitrotoluene	ND	ug/L	10
2,6-Dinitrotoluene	ND	ug/L	10
Di-n-octyl phthalate	ND	ug/L	10
Diphenylamine	ND	ug/L	10
Disulfoton	ND	ug/L	50
bis(2-Ethylhexyl) phthalate	ND	ug/L	10
Ethyl methanesulfonate	ND	ug/L	10
Famphur	ND	ug/L	50
Fluoranthene	ND	ug/L	10
Fluorene	ND	ug/L	10
Hexachlorobenzene	ND	ug/L	10
Hexachlorobutadiene	ND	ug/L	10
Hexachlorocyclopentadiene	ND	ug/L	10
Hexachloroethane	ND	ug/L	10

METHOD BLANK REPORT  
Semivolatile Organics by GC/MS (cont.)

Analyte	Result	Units	Reporting Limit
Test: 8270CP-AP9-A			
Matrix: AQUEOUS			
QC Lot: 06 MAR 96-N1 QC Run: 06 MAR 96-N1			
Hexachlorophene	ND	ug/L	--
Hexachloropropene	ND	ug/L	10
Indeno(1,2,3-cd)pyrene	ND	ug/L	10
Isophorone	ND	ug/L	10
Isosafrole	ND	ug/L	20
Methapyrilene	ND	ug/L	10
3-Methylcholanthrene	ND	ug/L	10
Methyl methanesulfonate	ND	ug/L	10
2-Methylnaphthalene	ND	ug/L	10
Methyl parathion	ND	ug/L	50
2-Methylphenol	ND	ug/L	10
3/4-Methylphenol	ND	ug/L	10
Naphthalene	ND	ug/L	10
1,4-Naphthoquinone	ND	ug/L	10
1-Naphthylamine	ND	ug/L	10
2-Naphthylamine	ND	ug/L	10
2-Nitroaniline	ND	ug/L	50
3-Nitroaniline	ND	ug/L	50
4-Nitroaniline	ND	ug/L	50
o-Nitrobenzene	ND	ug/L	10
o-Nitrophenol	ND	ug/L	10
4-Nitrophenol	ND	ug/L	50
4-Nitroquinoline-1-oxide	ND	ug/L	100
N-Nitroso-di-n-butylamine	ND	ug/L	10
N-Nitrosodiethylamine	ND	ug/L	10
N-Nitrosodimethylamine	ND	ug/L	10
N-Nitrosodiphenylamine	ND	ug/L	10
N-Nitroso-di-n-propylamine	ND	ug/L	10
N-Nitrosomethylethylamine	ND	ug/L	10
N-Nitrosomorpholine	ND	ug/L	10
N-Nitrosopiperidine	ND	ug/L	10
N-Nitrosopyrrolidine	ND	ug/L	10
5-Nitro-o-toluidine	ND	ug/L	10
Parathion	ND	ug/L	50
Pentachlorobenzene	ND	ug/L	10
Pentachloroethane	ND	ug/L	10
Pentachloronitrobenzene	ND	ug/L	50
Pentachlorophenol	ND	ug/L	50
Phenacetin	ND	ug/L	10
Phenanthrene	ND	ug/L	10

METHOD BLANK REPORT  
Semivolatile Organics by GC/MS (cont.)

Analyte	Result	Units	Reporting Limit
Test: 8270CP-AP9-A			
Matrix: AQUEOUS			
QC Lot: 06 MAR 96-N1 QC Run: 06 MAR 96-N1			
Phenol	ND	ug/L	10
4-Phenylenediamine	ND	ug/L	100
Phorate	ND	ug/L	100
2-Picoline	ND	ug/L	10
Pronamide	ND	ug/L	10
Pyrene	ND	ug/L	10
Pyridine	ND	ug/L	20
Safrole	ND	ug/L	10
Sulfotepp	ND	ug/L	50
1,2,4,5-Tetrachloro- benzene	ND	ug/L	10
2,3,4,6-Tetrachlorophenol	ND	ug/L	50
Thionazin	ND	ug/L	50
2-Toluidine	ND	ug/L	10
1,2,4-Trichlorobenzene	ND	ug/L	10
2,4,5-Trichlorophenol	ND	ug/L	50
2,4,6-Trichlorophenol	ND	ug/L	10
0,0,0-Triethylphosphoro- thioate	ND	ug/L	10
3,5-Trinitrobenzene	ND	ug/L	10

LOT ASSIGNMENT REPORT - MS QC  
Semivolatile Organics by GC/MS

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)	MS QC Run Number (SA,MS,SD,DU)
047577-0001-SA	AQUEOUS	625-A	06 MAR 96-N1	06 MAR 96-N1	06 MAR 96-N1
047577-0003-MS	AQUEOUS	625-A	06 MAR 96-N1	06 MAR 96-N1	06 MAR 96-N1
047577-0003-SA	AQUEOUS	625-A	06 MAR 96-N1	06 MAR 96-N1	06 MAR 96-N1
047577-0003-SD	AQUEOUS	625-A	06 MAR 96-N1	06 MAR 96-N1	06 MAR 96-N1

**MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT**  
Semivolatile Organics by GC/MS  
Project: 047577

Category: 625-A Acid, Base and Neutrals by GC/MS.  
Matrix: AQUEOUS  
Sample: 047577-0003  
MS Run: 06 MAR 96-N1  
Units: ug/L

Analyte	Sample Result	Concentration		Amount Spiked		% Recovery		Recov. Accep.	RPD	RPD Accept
		MS Result	MSD Result	MS	MSD	MS	MSD	Limits	MS-MSD	Limits
Phenol	ND	76	65	96	95	79	68	5-112	15	29
2-Chlorophenol	ND	75	65	96	95	78	68	23-134	14	29
1,4-Dichlorobenzene	ND	24	22	48	48	50	45	20-124	9.1	28
4-Nitroso-di-n-propylamine	ND	32	29	48	48	67	61	1-230	9.0	24
1,2,4-Trichlorobenzene	ND	22	20	48	48	46	42	44-142	8.5	27
4-Chloro-3-methylphenol	ND	65	59	96	95	68	62	22-147	9.4	27
Acenaphthene	ND	28	24	48	48	57	51	47-145	11	24
4-Nitrophenol	ND	51	47	96	95	53	49	1-132	7.3	51
2,4-Dinitrotoluene	ND	30	28	48	48	62	60	39-139	4.4	22
Pentachlorophenol	ND	61	54	96	95	63	57	14-176	11	34
Pyrene	ND	32	29	48	48	66	62	52-115	7.5	23

ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

LOT ASSIGNMENT REPORT  
Volatile Organics by GC

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
047577-0001-SA	AQUEOUS	615-A	05 MAR 96-N1	05 MAR 96-N1
047577-0001-SA	AQUEOUS	8080-A	01 MAR 96-N1	01 MAR 96-N1
047577-0003-SA	AQUEOUS	615-A	05 MAR 96-N1	05 MAR 96-N1
047577-0003-SA	AQUEOUS	8080-A	01 MAR 96-N1	01 MAR 96-N1
047577-0003-MS	AQUEOUS	615-A	05 MAR 96-N1	05 MAR 96-N1
047577-0003-MS	AQUEOUS	8080-A	01 MAR 96-N1	01 MAR 96-N1
047577-0003-SD	AQUEOUS	615-A	05 MAR 96-N1	05 MAR 96-N1
047577-0003-SD	AQUEOUS	8080-A	01 MAR 96-N1	01 MAR 96-N1

DUPLICATE CONTROL SAMPLE REPORT  
Volatile Organics by GC

Analyte	Concentration		Measured	AVG	Accuracy		Precision	
	Spiked	DCS1			DCS2	DCS	Average(%) Limits	DCS
Category: 615-A								
Matrix: AQUEOUS								
QC Lot: 05 MAR 96-N1								
Concentration Units: ug/L								
2,4-D	5.00	2.59	2.89	2.74	55	44- 97	11	34
2,4,5-TP (Silvex)	1.00	0.609	0.663	0.636	64	49-102	8.5	32
2,4,5-T	1.00	0.647	0.686	0.666	67	47-110	5.9	32

Category: 8080-A  
Matrix: AQUEOUS  
QC Lot: 01 MAR 96-N1  
Concentration Units: ug/L

gamma-BHC (Lindane)	0.200	0.198	0.214	0.206	103	81-117	7.8	13
Heptachlor	0.200	0.191	0.215	0.203	102	72-125	12*	11
Aldrin	0.200	0.176	0.193	0.184	92	69-112	9.2	16
Dieldrin	0.500	0.429	0.455	0.442	88	77-111	5.9	13
Endrin	0.500	0.450	0.484	0.467	93	83-122	7.3	14
p,p'-DDT	0.500	0.485	0.522	0.504	101	76-125	7.3	14

\* = RPD outside QC Limits

Calculations are performed before rounding to avoid round-off errors in calculated results.

SINGLE CONTROL SAMPLE REPORT  
Volatile Organics by GC

Analyte	Concentration		Accuracy(%)	
	Spiked	Measured	SCS	Limits
Category: 615-A Matrix: AQUEOUS QC Lot: 05 MAR 96-N1    QC Run: 05 MAR 96-N1 Concentration Units: ug/L				
DCAA	5.00	4.05	81	45-123
Category: 8080-A Matrix: AQUEOUS QC Lot: 01 MAR 96-N1    QC Run: 01 MAR 96-N1 Concentration Units: ug/L				
Tetrachloro-m-xylene	1.00	0.818	82	54-106
Dibutyl chlorendate	1.00	0.878	88	56-138
Decachlorobiphenyl	0.200	0.201	100	65-145

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT  
Volatile Organics by GC

Analyte	Result	Units	Reporting Limit
Test: 8150-AP9-A			
Matrix: AQUEOUS			
QC Lot: 05 MAR 96-N1 QC Run: 05 MAR 96-N1			
2,4-D	ND	ug/L	1.2
2,4,5-TP (Silvex)	ND	ug/L	0.17
2,4,5-T	ND	ug/L	0.20

Test: 8080-AP9-A  
Matrix: AQUEOUS  
QC Lot: 01 MAR 96-N1 QC Run: 01 MAR 96-N1

Aldrin	ND	ug/L	0.050
Aroclor 1016	ND	ug/L	1.0
Aroclor 1221	ND	ug/L	1.0
Aroclor 1232	ND	ug/L	1.0
Aroclor 1242	ND	ug/L	1.0
Aroclor 1248	ND	ug/L	1.0
Aroclor 1254	ND	ug/L	1.0
Aroclor 1260	ND	ug/L	1.0
gamma-BHC	ND	ug/L	0.050
delta-BHC	ND	ug/L	0.050
alpha-BHC	ND	ug/L	0.050
gamma-BHC (Lindane)	ND	ug/L	0.050
alpha-Chlordane	ND	ug/L	0.050
gamma-Chlordane	ND	ug/L	0.050
Chlorobenzilate	ND	ug/L	1.0
4,4'-DDD	ND	ug/L	0.10
4,4'-DDE	ND	ug/L	0.10
4,4'-DDT	ND	ug/L	0.10
Diallate	ND	ug/L	1.0
Dieldrin	ND	ug/L	0.10
Endosulfan I	ND	ug/L	0.050
Endosulfan II	ND	ug/L	0.10
Endosulfan sulfate	ND	ug/L	0.10
Endrin	ND	ug/L	0.10
Endrin aldehyde	ND	ug/L	0.10
Heptachlor	ND	ug/L	0.050
Heptachlor epoxide	ND	ug/L	0.050
Isodrin	ND	ug/L	0.10
Kepone	ND	ug/L	1.0
Methoxychlor	ND	ug/L	0.50
Toxaphene	ND	ug/L	5.0

THOD BLANK REPORT  
Volatile Organics by GC (cont.)

Analyte	Result	Units	Reporting Limit
Test: 8150-AP9-A			
Matrix: AQUEOUS			
QC Lot: 05 MAR 96-N1	QC Run: 05 MAR 96-N1		
2,4-D	ND	ug/L	1.2
2,4,5-TP (Silvex)	ND	ug/L	0.17
2,4,5-T	ND	ug/L	0.20

Test: 8080-AP9-A  
Matrix: AQUEOUS  
QC Lot: 01 MAR 96-N1 QC Run: 01 MAR 96-N1

Aldrin	ND	ug/L	0.050
Aroclor 1016	ND	ug/L	1.0
Aroclor 1221	ND	ug/L	1.0
Aroclor 1232	ND	ug/L	1.0
Aroclor 1242	ND	ug/L	1.0
Aroclor 1248	ND	ug/L	1.0
Aroclor 1254	ND	ug/L	1.0
Aroclor 1260	ND	ug/L	1.0
alpha-BHC	ND	ug/L	0.050
beta-BHC	ND	ug/L	0.050
delta-BHC	ND	ug/L	0.050
gamma-BHC (Lindane)	ND	ug/L	0.050
alpha-Chlordane	ND	ug/L	0.050
gamma-Chlordane	ND	ug/L	0.050
Chlorobenzilate	ND	ug/L	1.0
4,4'-DDD	ND	ug/L	0.10
4,4'-DDE	ND	ug/L	0.10
4,4'-DDT	ND	ug/L	0.10
Diallate	ND	ug/L	1.0
Dieldrin	ND	ug/L	0.10
Endosulfan I	ND	ug/L	0.050
Endosulfan II	ND	ug/L	0.10
Endosulfan sulfate	ND	ug/L	0.10
Endrin	ND	ug/L	0.10
Endrin aldehyde	ND	ug/L	0.10
Heptachlor	ND	ug/L	0.050
Heptachlor epoxide	ND	ug/L	0.050
Isodrin	ND	ug/L	0.10
Kepone	ND	ug/L	1.0
Methoxychlor	ND	ug/L	0.50
Toxaphene	ND	ug/L	5.0

QC LOT ASSIGNMENT REPORT - MS QC  
Semivolatile Organics by GC

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)	MS QC Run Number (SA,MS,SD,DU)
047577-0001-SA	AQUEOUS	615-A	05 MAR 96-N1	05 MAR 96-N1	05 MAR 96-N1
047577-0001-SA	AQUEOUS	8080-A	01 MAR 96-N1	01 MAR 96-N1	01 MAR 96-N1
047577-0003-MS	AQUEOUS	615-A	05 MAR 96-N1	05 MAR 96-N1	05 MAR 96-N1
047577-0003-MS	AQUEOUS	8080-A	01 MAR 96-N1	01 MAR 96-N1	01 MAR 96-N1
047577-0003-SA	AQUEOUS	615-A	05 MAR 96-N1	05 MAR 96-N1	05 MAR 96-N1
047577-0003-SA	AQUEOUS	8080-A	01 MAR 96-N1	01 MAR 96-N1	01 MAR 96-N1
047577-0003-SD	AQUEOUS	615-A	05 MAR 96-N1	05 MAR 96-N1	05 MAR 96-N1
047577-0003-SD	AQUEOUS	8080-A	01 MAR 96-N1	01 MAR 96-N1	01 MAR 96-N1

**MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT**  
Semivolatile Organics by GC  
Project: 047577

Category: 615-A      Herbicides  
Matrix: AQUEOUS  
Sample: 047577-0003  
MS Run: 05 MAR 96-N1  
Units: ug/L

Analyte	Sample Result	Concentration		Amount Spiked		% Recovery		Recov. Accep.	RPD	RPD
		MS Result	MSD Result	MS	MSD	MS	MSD	Limits	MS-MSD	Accept Limits
2,4-D	ND	2.7	3.6	5.4	5.6	49	64	44-97	26	34
2,4,5-TP (Silvex)	ND	0.62	0.78	1.1	1.1	57	70	49-102	21	32
2,4,5-T	ND	0.62	0.82	1.1	1.1	57	74	47-110	25	32

Category: 8080-A      Organochlorine Pesticides  
Matrix: AQUEOUS  
Sample: 047577-0003  
MS Run: 01 MAR 96-N1  
Units: ug/L

Analyte	Sample Result	Concentration		Amount Spiked		% Recovery		Recov. Accep.	RPD	RPD
		MS Result	MSD Result	MS	MSD	MS	MSD	Limits	MS-MSD	Accept Limits
gamma-BHC (Lindane)	ND	0.21	0.20	0.19	0.19	109	103	32-127	5.4	20
heptachlor	ND	0.21	0.20	0.19	0.19	111	104	34-111	5.9	20
Aldrin	ND T	0.19	0.18	0.19	0.19	99	94	42-122	5.5	20
Dieldrin	ND	0.44	0.41	0.48	0.47	92	87	36-146	5.5	20
Endrin	ND	0.47	0.44	0.48	0.47	98	93	30-147	6.0	20
4,4'-DDT	ND	0.51	0.46	0.48	0.47	106	99	25-160	7.6	20

T = Preferred values unless footnoted on secondary column test.  
ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

QC LOT ASSIGNMENT REPORT  
Metals Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
047577-0001-SA	AQUEOUS	ICP-AT	11 MAR 96-N1	11 MAR 96-N1
047577-0001-SA	AQUEOUS	PB-FAA-AT	13 MAR 96-SA	13 MAR 96-SA
047577-0001-SA	AQUEOUS	AS-FAA-AT	11 MAR 96-SB	11 MAR 96-SB
047577-0001-SA	AQUEOUS	SE-FAA-AT	11 MAR 96-SB	11 MAR 96-SB
047577-0001-SA	AQUEOUS	TL-FAA-AT	13 MAR 96-SA	13 MAR 96-SA
047577-0001-SA	AQUEOUS	HG-CVAA-AT	13 MAR 96-N1	13 MAR 96-N1
047577-0003-SA	AQUEOUS	ICP-AT	11 MAR 96-N1	11 MAR 96-N1
047577-0003-SA	AQUEOUS	PB-FAA-AT	13 MAR 96-SA	13 MAR 96-SA
047577-0003-SA	AQUEOUS	AS-FAA-AT	11 MAR 96-SB	11 MAR 96-SB
047577-0003-SA	AQUEOUS	SE-FAA-AT	11 MAR 96-SB	11 MAR 96-SB
047577-0003-SA	AQUEOUS	TL-FAA-AT	13 MAR 96-SA	13 MAR 96-SA
047577-0003-SA	AQUEOUS	HG-CVAA-AT	13 MAR 96-N1	13 MAR 96-N1
047577-0003-MS	AQUEOUS	ICP-AT	11 MAR 96-N1	11 MAR 96-N1
047577-0003-MS	AQUEOUS	PB-FAA-AT	13 MAR 96-SA	13 MAR 96-SA
047577-0003-MS	AQUEOUS	AS-FAA-AT	11 MAR 96-SB	11 MAR 96-SB
047577-0003-MS	AQUEOUS	SE-FAA-AT	11 MAR 96-SB	11 MAR 96-SB
047577-0003-MS	AQUEOUS	TL-FAA-AT	13 MAR 96-SA	13 MAR 96-SA
047577-0003-MS	AQUEOUS	HG-CVAA-AT	13 MAR 96-N1	13 MAR 96-N1
047577-0003-SD	AQUEOUS	ICP-AT	11 MAR 96-N1	11 MAR 96-N1
047577-0003-SD	AQUEOUS	PB-FAA-AT	13 MAR 96-SA	13 MAR 96-SA
047577-0003-SD	AQUEOUS	AS-FAA-AT	11 MAR 96-SB	11 MAR 96-SB
047577-0003-SD	AQUEOUS	SE-FAA-AT	11 MAR 96-SB	11 MAR 96-SB
047577-0003-SD	AQUEOUS	TL-FAA-AT	13 MAR 96-SA	13 MAR 96-SA
047577-0003-SD	AQUEOUS	HG-CVAA-AT	13 MAR 96-N1	13 MAR 96-N1

DUPLICATE CONTROL SAMPLE REPORT  
Metals Analysis and Preparation

Analyte	Concentration			AVG	Accuracy		Precision	
	Spiked	DCS1	Measured DCS2		Average (%) DCS	Limits	(RPD) DCS	Limits
Category: ICP-AT								
Matrix: AQUEOUS								
QC Lot: 11 MAR 96-N1								
Concentration Units: mg/L								
Aluminum	2.00	2.04	2.08	2.06	103	80-116	2.3	10
Antimony	0.500	0.474	0.490	0.482	96	80-115	3.3	14
Arsenic	0.500	0.514	0.517	0.515	103	80-115	0.64	17
Barium	2.00	1.97	2.01	1.99	99	80-114	1.9	10
Beryllium	0.0500	0.0497	0.0506	0.0502	100	80-120	1.9	10
Boron	10	9.74	9.85	9.80	98	80-120	1.0	10
Cadmium	0.0500	0.0489	0.0494	0.0492	98	80-119	1.0	16
Calcium	100	101	102	102	102	80-114	1.2	10
Chromium	0.200	0.195	0.199	0.197	99	80-116	1.7	11
Cobalt	0.500	0.499	0.506	0.503	101	80-114	1.4	10
Copper	0.250	0.250	0.256	0.253	101	80-120	2.3	10
Iron	1.00	1.01	1.04	1.02	102	80-120	2.5	11
Lead	0.500	0.506	0.505	0.505	101	80-119	0.22	10
Lithium	10.0	10.3	10.4	10.4	104	80-120	1.0	20
Magnesium	50.0	51.3	52.0	51.6	103	81-120	1.3	10
Manganese	0.500	0.509	0.515	0.512	102	80-116	1.2	10
Molybdenum	0.50	0.510	0.517	0.513	103	80-120	1.4	20
Nickel	0.500	0.503	0.514	0.508	102	80-114	2.1	10
Potassium	50.0	50.8	51.3	51.0	102	80-120	0.95	13
Selenium	0.500	0.592	0.556	0.574	115	80-120	6.3	20
Silver	0.050	0.0509	0.0527	0.0518	104	80-119	3.6	15
Sodium	100	103	104	103	103	80-120	1.2	10
Tin	0.50	0.475	0.477	0.476	95	80-120	0.29	20
Titanium	0.500	0.501	0.506	0.503	101	80-120	0.95	20
Vanadium	0.500	0.499	0.511	0.505	101	80-116	2.4	10
Zinc	0.500	0.499	0.505	0.502	100	80-120	1.2	13

Category: PB-FAA-AT  
Matrix: AQUEOUS  
QC Lot: 13 MAR 96-SA  
Concentration Units: mg/L

Lead	0.030	0.0320	0.0326	0.0323	108	71-136	1.9	17
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Calculations are performed before rounding to avoid round-off errors in calculated results.

DUPLICATE CONTROL SAMPLE REPORT  
Metals Analysis and Preparation (cont.)

Analyte	Concentration		Measured	AVG	Accuracy		Precision	
	Spiked	DCS1			DCS2	Average (%)	Limits	(RPD)
Category: AS-FAA-AT Matrix: AQUEOUS QC Lot: 11 MAR 96-SB Concentration Units: mg/L								
Arsenic	0.030	0.0257	0.0256	0.0256	86	81-116	0.39	13
Category: SE-FAA-AT Matrix: AQUEOUS QC Lot: 11 MAR 96-SB Concentration Units: mg/L								
Selenium	0.030	0.0329	0.0316	0.0322	108	73-125	4.0	15
Category: TL-FAA-AT Matrix: AQUEOUS QC Lot: 13 MAR 96-SA Concentration Units: mg/L								
Thallium	0.0300	0.0328	0.0323	0.0326	109	75-125	1.5	20
Category: HG-CVAA-AT Matrix: AQUEOUS QC Lot: 13 MAR 96-N1 Concentration Units: mg/L								
Mercury	0.001	0.00110	0.00114	0.00112	112	83-112	3.7	12

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT  
Metals Analysis and Preparation

Analyte	Result	Units	Reporting Limit
Test: ICP-AP9-AT			
Matrix: AQUEOUS			
QC Lot: 11 MAR 96-N1 QC Run: 11 MAR 96-N1			
Antimony	ND	mg/L	0.060
Barium	ND	mg/L	0.010
Beryllium	ND	mg/L	0.0020
Cadmium	ND	mg/L	0.0050
Chromium	ND	mg/L	0.010
Cobalt	ND	mg/L	0.010
Copper	ND	mg/L	0.020
Iron	ND	mg/L	0.10
Manganese	ND	mg/L	0.010
Nickel	ND	mg/L	0.040
Silver	ND	mg/L	0.010
Sodium	ND	mg/L	5.0
Tin	ND	mg/L	0.10
Vanadium	ND	mg/L	0.010
Zinc	ND	mg/L	0.020

Test: PB-FAA-AT  
Matrix: AQUEOUS  
QC Lot: 13 MAR 96-SA QC Run: 13 MAR 96-SA

Lead	ND	mg/L	0.0050
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Test: AS-FAA-AT  
Matrix: AQUEOUS  
QC Lot: 11 MAR 96-SB QC Run: 11 MAR 96-SB

Arsenic	ND	mg/L	0.0050
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Test: SE-FAA-AT  
Matrix: AQUEOUS  
QC Lot: 11 MAR 96-SB QC Run: 11 MAR 96-SB

Selenium	ND	mg/L	0.0050
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METHOD BLANK REPORT  
Metals Analysis and Preparation (cont.)

Analyte	Result	Units	Reporting Limit
Test: TL-FAA-AT Matrix: AQUEOUS QC Lot: 13 MAR 96-SA QC Run: 13 MAR 96-SA			
Thallium	ND	mg/L	0.0050
Test: HG-CVAA-7470-AT Matrix: AQUEOUS QC Lot: 13 MAR 96-N1 QC Run: 13 MAR 96-N1			
Mercury	ND	mg/L	0.00020
Test: ICP-AP9-AT Matrix: AQUEOUS QC Lot: 11 MAR 96-N1 QC Run: 11 MAR 96-N1			
Antimony	ND	mg/L	0.060
Barium	ND	mg/L	0.010
Beryllium	ND	mg/L	0.0020
Cadmium	ND	mg/L	0.0050
Chromium	ND	mg/L	0.010
balt	ND	mg/L	0.010
pper	ND	mg/L	0.020
Iron	ND	mg/L	0.10
Manganese	ND	mg/L	0.010
Nickel	ND	mg/L	0.040
Silver	ND	mg/L	0.010
Sodium	ND	mg/L	5.0
Tin	ND	mg/L	0.10
Vanadium	ND	mg/L	0.010
Zinc	ND	mg/L	0.020
Test: PB-FAA-AT Matrix: AQUEOUS QC Lot: 13 MAR 96-SA QC Run: 13 MAR 96-SA			
Lead	ND	mg/L	0.0050

METHOD BLANK REPORT  
Metals Analysis and Preparation (cont.)

Analyte	Result	Units	Reporting Limit
Test: AS-FAA-AT Matrix: AQUEOUS QC Lot: 11 MAR 96-SB QC Run: 11 MAR 96-SB			
Arsenic	ND	mg/L	0.0050
Test: SE-FAA-AT Matrix: AQUEOUS QC Lot: 11 MAR 96-SB QC Run: 11 MAR 96-SB			
Selenium	ND	mg/L	0.0050
Test: TL-FAA-AT Matrix: AQUEOUS QC Lot: 13 MAR 96-SA QC Run: 13 MAR 96-SA			
Thallium	ND	mg/L	0.0050
Test: HG-CVAA-7470-AT Matrix: AQUEOUS QC Lot: 13 MAR 96-N1 QC Run: 13 MAR 96-N1			
Mercury	ND	mg/L	0.00020

LOT ASSIGNMENT REPORT - MS QC  
metals Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)	MS QC Run Number (SA,MS,SD,DU)
047577-0001-SA	AQUEOUS	ICP-AT	11 MAR 96-N1	11 MAR 96-N1	11 MAR 96-N1
047577-0001-SA	AQUEOUS	PB-FAA-AT	13 MAR 96-SA	13 MAR 96-SA	13 MAR 96-SA
047577-0001-SA	AQUEOUS	AS-FAA-AT	11 MAR 96-SB	11 MAR 96-SB	11 MAR 96-SB
047577-0001-SA	AQUEOUS	SE-FAA-AT	11 MAR 96-SB	11 MAR 96-SB	11 MAR 96-SB
047577-0001-SA	AQUEOUS	TL-FAA-AT	13 MAR 96-SA	13 MAR 96-SA	13 MAR 96-SA
047577-0001-SA	AQUEOUS	HG-CVAA-AT	13 MAR 96-N1	13 MAR 96-N1	13 MAR 96-N1
047577-0003-MS	AQUEOUS	ICP-AT	11 MAR 96-N1	11 MAR 96-N1	11 MAR 96-N1
047577-0003-MS	AQUEOUS	PB-FAA-AT	13 MAR 96-SA	13 MAR 96-SA	13 MAR 96-SA
047577-0003-MS	AQUEOUS	AS-FAA-AT	11 MAR 96-SB	11 MAR 96-SB	11 MAR 96-SB
047577-0003-MS	AQUEOUS	SE-FAA-AT	11 MAR 96-SB	11 MAR 96-SB	11 MAR 96-SB
047577-0003-MS	AQUEOUS	TL-FAA-AT	13 MAR 96-SA	13 MAR 96-SA	13 MAR 96-SA
047577-0003-MS	AQUEOUS	HG-CVAA-AT	13 MAR 96-N1	13 MAR 96-N1	13 MAR 96-N1
047577-0003-SA	AQUEOUS	ICP-AT	11 MAR 96-N1	11 MAR 96-N1	11 MAR 96-N1
047577-0003-SA	AQUEOUS	PB-FAA-AT	13 MAR 96-SA	13 MAR 96-SA	13 MAR 96-SA
047577-0003-SA	AQUEOUS	AS-FAA-AT	11 MAR 96-SB	11 MAR 96-SB	11 MAR 96-SB
047577-0003-SA	AQUEOUS	SE-FAA-AT	11 MAR 96-SB	11 MAR 96-SB	11 MAR 96-SB
047577-0003-SA	AQUEOUS	TL-FAA-AT	13 MAR 96-SA	13 MAR 96-SA	13 MAR 96-SA
047577-0003-SA	AQUEOUS	HG-CVAA-AT	13 MAR 96-N1	13 MAR 96-N1	13 MAR 96-N1
047577-0003-SD	AQUEOUS	ICP-AT	11 MAR 96-N1	11 MAR 96-N1	11 MAR 96-N1
047577-0003-SD	AQUEOUS	PB-FAA-AT	13 MAR 96-SA	13 MAR 96-SA	13 MAR 96-SA
047577-0003-SD	AQUEOUS	AS-FAA-AT	11 MAR 96-SB	11 MAR 96-SB	11 MAR 96-SB
047577-0003-SD	AQUEOUS	SE-FAA-AT	11 MAR 96-SB	11 MAR 96-SB	11 MAR 96-SB
047577-0003-SD	AQUEOUS	TL-FAA-AT	13 MAR 96-SA	13 MAR 96-SA	13 MAR 96-SA
047577-0003-SD	AQUEOUS	HG-CVAA-AT	13 MAR 96-N1	13 MAR 96-N1	13 MAR 96-N1

**MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT**  
Metals Analysis and Preparation  
Project: 047577

Category: ICP-AT ICP Metals / Total  
Matrix: AQUEOUS  
Sample: 047577-0003  
MS Run: . 11 MAR 96-N1  
Units: mg/L

Analyte	Sample Result	Concentration		Amount Spiked		% Recovery		Recov. Accep.	RPD	RPD Accept
		MS Result	MSD Result	MS	MSD	MS	MSD	Limits	MS-MSD	Limits
Aluminum	NA	NA	NA	2.0	2.0	NC	NC	80-120	NC	20
Antimony	ND	0.48	0.49	0.50	0.50	96	98	80-120	1.3	20
Arsenic	ND	0.52	0.52	0.50	0.50	104	103	80-120	0.7	20
Barium	0.041	2.0	2.0	2.0	2.0	96	97	80-120	1.1	20
Beryllium	ND	0.049	0.050	0.050	0.050	98	100	80-120	1.9	20
Boron	NA	NA	NA	10	10	NC	NC	80-120	NC	20
Cadmium	ND	0.048	0.049	0.050	0.050	96	98	80-120	2.6	20
Calcium	49	150	150	100	100	97	100	80-120	2.7	20
Chromium	ND	0.20	0.20	0.20	0.20	101	101	80-120	0.1	20
Cobalt	ND	0.48	0.49	0.50	0.50	96	98	80-120	1.5	20
Copper	ND	0.25	0.25	0.25	0.25	99	102	80-120	3.4	20
Iron	0.28	1.3	1.3	1.0	1.0	99	100	80-120	1.3	20
Lead	ND	0.47	0.51	0.50	0.50	94	101	80-120	6.8	20
Lithium	NA	NA	NA	5.0	5.0	NC	NC	80-120	NC	20
Magnesium	45	95	96	50	50	100	102	80-120	2.5	20
Manganese	0.011	0.50	0.51	0.50	0.50	97	99	80-120	2.4	20
Molybdenum	NA	NA	NA	0.50	0.50	NC	NC	80-120	NC	20
Nickel	0.092	0.57	0.59	0.50	0.50	96	99	80-120	3.2	20
Potassium	NA	NA	NA	50	50	NC	NC	80-120	NC	20
Selenium	ND	0.56	0.58	0.50	0.50	113	116	80-120	3.3	20
Silver	ND	0.049	0.051	0.050	0.050	99	101	80-120	2.8	20
Sodium	46	140	150	100	100	99	102	80-120	2.8	20
Thallium	NA	NA	NA	5.0	5.0	NC	NC	80-120	NC	20
Tin	ND	0.50	0.49	0.50	0.50	100	99	80-120	1.4	20
Titanium	NA	NA	NA	0.50	0.50	NC	NC	80-120	NC	20
Vanadium	0.018	0.51	0.52	0.50	0.50	98	100	80-120	2.2	20
Zinc	ND	0.49	0.50	0.50	0.50	98	99	80-120	1.8	20

NA = Not Applicable  
NC = Not Calculated, calculation not applicable.  
ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT  
Metals Analysis and Preparation

Category: PB-FAA-AT Lead, Furnace AA / Total Metals  
 Matrix: AQUEOUS  
 Sample: 047577-0003  
 MS Run: 13 MAR 96-SA  
 Units: mg/L

Analyte	Sample Result	Concentration		Amount Spiked		% Recovery		Recov. Accep. Limits	RPD MS-MSD	RPD Accept Limits
		MS Result	MSD Result	MS	MSD	MS	MSD			
Lead	ND	0.028	0.029	0.030	0.030	93	96	71-136	3.5	17

Category: AS-FAA-AT Arsenic, Furnace AA / Total Metals  
 Matrix: AQUEOUS  
 Sample: 047577-0003  
 MS Run: 11 MAR 96-SB  
 Units: mg/L

Analyte	Sample Result	Concentration		Amount Spiked		% Recovery		Recov. Accep. Limits	RPD MS-MSD	RPD Accept Limits
		MS Result	MSD Result	MS	MSD	MS	MSD			
Arsenic	ND	0.028	0.029	0.030	0.030	93	95	81-116	2.5	13

Category: SE-FAA-AT Selenium, Furnace AA / Total Metals  
 Matrix: AQUEOUS  
 Sample: 047577-0003  
 MS Run: 11 MAR 96-SB  
 Units: mg/L

Analyte	Sample Result	Concentration		Amount Spiked		% Recovery		Recov. Accep. Limits	RPD MS-MSD	RPD Accept Limits
		MS Result	MSD Result	MS	MSD	MS	MSD			
Selenium	ND G	0.016	0.015	0.030	0.030	53	51	73-125	5.1	15

G = Reporting limit raised due to the matrix of the sample.  
 ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT  
Metals Analysis and Preparation  
Object: 047577 (cont.)

Category: TL-FAA-AT Thallium, Furnace AA / Total Metals  
Matrix: AQUEOUS  
Sample: 047577-0003  
MS Run: 13 MAR 96-SA  
Units: mg/L

Analyte	Sample Result	Concentration		Amount Spiked		% Recovery		Recov. Accep.	RPD	RPD Accept
		MS Result	MSD Result	MS	MSD	MS	MSD	Limits	MS-MSD	Limits
Thallium	ND G	0.026	0.028	0.030	0.030	85	95	75-125	11	20

Category: HG-CVAA-AT Mercury by CVAA / Total Mercury  
Matrix: AQUEOUS  
Sample: 047577-0003  
MS Run: 13 MAR 96-N1  
Units: mg/L

Analyte	Sample Result	Concentration		Amount Spiked		% Recovery		Recov. Accep.	RPD	RPD Accept
		MS Result	MSD Result	MS	MSD	MS	MSD	Limits	MS-MSD	Limits
Mercury	ND	0.0011	0.0012	0.00100	0.0010	114	115	83-112	1.2	12

G = Reporting limit raised due to the matrix of the sample.  
ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

LOT ASSIGNMENT REPORT  
 at Chemistry Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
047577-0001-SA	AQUEOUS	TOX-A	12 MAR 96-N1	12 MAR 96-N1
047577-0001-SA	AQUEOUS	CN-A	05 MAR 96-N1	05 MAR 96-N1
047577-0001-SA	AQUEOUS	S-A	04 MAR 96-N1	04 MAR 96-N1
047577-0001-SA	AQUEOUS	CL-IC-A	06 MAR 96-N1	06 MAR 96-N1
047577-0001-SA	AQUEOUS	SO4-IC-A	06 MAR 96-N1	06 MAR 96-N1
047577-0001-SA	AQUEOUS	TOC-A	05 MAR 96-N1	05 MAR 96-N1
047577-0001-SA	AQUEOUS	PHEN	11 MAR 96-N1	11 MAR 96-N1
047577-0003-SA	AQUEOUS	TOX-A	12 MAR 96-N1	12 MAR 96-N1
047577-0003-SA	AQUEOUS	CN-A	05 MAR 96-N1	05 MAR 96-N1
047577-0003-SA	AQUEOUS	S-A	04 MAR 96-N1	04 MAR 96-N1
047577-0003-SA	AQUEOUS	CL-IC-A	06 MAR 96-N1	06 MAR 96-N1
047577-0003-SA	AQUEOUS	SO4-IC-A	06 MAR 96-N1	06 MAR 96-N1
047577-0003-SA	AQUEOUS	TOC-A	05 MAR 96-N1	05 MAR 96-N1
047577-0003-SA	AQUEOUS	PHEN	11 MAR 96-N1	11 MAR 96-N1
047577-0003-MS	AQUEOUS	TOX-A	12 MAR 96-N1	12 MAR 96-N1
047577-0003-MS	AQUEOUS	CN-A	05 MAR 96-N1	05 MAR 96-N1
047577-0003-MS	AQUEOUS	S-A	04 MAR 96-N1	04 MAR 96-N1
047577-0003-MS	AQUEOUS	CL-IC-A	06 MAR 96-N1	06 MAR 96-N1
047577-0003-MS	AQUEOUS	SO4-IC-A	06 MAR 96-N1	06 MAR 96-N1
047577-0003-MS	AQUEOUS	TOC-A	05 MAR 96-N1	05 MAR 96-N1
047577-0003-MS	AQUEOUS	PHEN	11 MAR 96-N1	11 MAR 96-N1
047577-0003-SD	AQUEOUS	TOX-A	12 MAR 96-N1	12 MAR 96-N1
047577-0003-SD	AQUEOUS	CN-A	05 MAR 96-N1	05 MAR 96-N1
047577-0003-SD	AQUEOUS	S-A	04 MAR 96-N1	04 MAR 96-N1
047577-0003-SD	AQUEOUS	CL-IC-A	06 MAR 96-N1	06 MAR 96-N1
047577-0003-SD	AQUEOUS	SO4-IC-A	06 MAR 96-N1	06 MAR 96-N1
047577-0003-SD	AQUEOUS	TOC-A	05 MAR 96-N1	05 MAR 96-N1
047577-0003-SD	AQUEOUS	PHEN	11 MAR 96-N1	11 MAR 96-N1

DUPLICATE CONTROL SAMPLE REPORT  
t Chemistry Analysis and Preparation

Analyte	Spiked	Concentration		AVG	Accuracy		Precision		
		DCS1	Measured DCS2		DCS	Average(%) Limits	(RPD) DCS	Limits	
Category: TOX-A Matrix: AQUEOUS QC Lot: 12 MAR 96-N1 Concentration Units: ug/L									
Total Organic Halogen as Cl	100	100	103	102	102	79-114	3.3	20	
Category: CN-A Matrix: AQUEOUS QC Lot: 05 MAR 96-N1 Concentration Units: mg/L									
Cyanide	0.172	0.165	0.161	0.163	95	74-112	2.5	21	
Category: S-A Matrix: AQUEOUS QC Lot: 04 MAR 96-N1 Concentration Units: mg/L									
Sulfide, Total	0.481	0.519	0.509	0.514	107	70-128	1.9	13	
Category: CL-IC-A Matrix: AQUEOUS QC Lot: 06 MAR 96-N1 Concentration Units: mg/L									
Chloride	50.0	49.1	48.8	49.0	98	91-111	0.60	10	
Category: SO4-IC-A Matrix: AQUEOUS QC Lot: 06 MAR 96-N1 Concentration Units: mg/L									
Sulfate	50.0	50.0	49.7	49.8	100	92-112	0.48	10	

Calculations are performed before rounding to avoid round-off errors in calculated results.

TRIPPLICATE CONTROL SAMPLE REPORT  
 t Chemistry Analysis and Preparation (cont.)

Analyte	Spiked	Concentration		AVG	Accuracy		Precision		
		DCS1	Measured DCS2		DCS	Average(%) Limits	(RPD)	DCS Limits	
Category: TOC-A Matrix: AQUEOUS QC Lot: 05 MAR 96-N1 Concentration Units: mg/L									
Total Organic Carbon	25.0	24.6	24.8	24.7	99	90-113	0.85	10	
Category: PHEN Matrix: AQUEOUS QC Lot: 11 MAR 96-N1 Concentration Units: mg/L									
Phenolics	0.050	0.0442	0.0397	0.0420	84	76-115	11	20	

Calculations are performed before rounding to avoid round-off errors in calculated results.

**METHOD BLANK REPORT**  
**Water Chemistry Analysis and Preparation**

Analyte	Result	Units	Reporting Limit
Test: TOX-TOX-A Matrix: AQUEOUS QC Lot: 12 MAR 96-N1 QC Run: 12 MAR 96-N1			
Total Organic Halogen as Cl	ND	ug/L	30.0
Test: CNTOT-TEC-A Matrix: AQUEOUS QC Lot: 05 MAR 96-N1 QC Run: 05 MAR 96-N1			
Cyanide	ND	mg/L	0.010
Test: S-SPEC-AT Matrix: AQUEOUS QC Lot: 04 MAR 96-N1 QC Run: 04 MAR 96-N1			
Sulfide, Total	ND	mg/L	0.050
Test: CL-IC-A Matrix: AQUEOUS QC Lot: 06 MAR 96-N1 QC Run: 06 MAR 96-N1			
Chloride	ND	mg/L	3.0
Test: SO4-IC-A Matrix: AQUEOUS QC Lot: 06 MAR 96-N1 QC Run: 06 MAR 96-N1			
Sulfate	ND	mg/L	5.0
Test: TOC-A Matrix: AQUEOUS QC Lot: 05 MAR 96-N1 QC Run: 05 MAR 96-N1			
Total Organic Carbon	ND	mg/L	1.0

METHOD BLANK REPORT  
Water Chemistry Analysis and Preparation (cont.)

Analyte	Result	Units	Reporting Limit
Test: PHEN-MAN-9065-A Matrix: AQUEOUS QC Lot: 11 MAR 96-N1 QC Run: 11 MAR 96-N1			
Phenolics	ND	mg/L	0.0050
Test: TOX-TOX-A Matrix: AQUEOUS QC Lot: 12 MAR 96-N1 QC Run: 12 MAR 96-N1			
Total Organic Halogen as Cl	ND	ug/L	30.0
Test: CNTOT-TEC-A Matrix: AQUEOUS QC Lot: 05 MAR 96-N1 QC Run: 05 MAR 96-N1			
Cyanide	ND	mg/L	0.010
Test: S-SPEC-AT Matrix: AQUEOUS QC Lot: 04 MAR 96-N1 QC Run: 04 MAR 96-N1			
Sulfide, Total	ND	mg/L	0.050
Test: CL-IC-A Matrix: AQUEOUS QC Lot: 06 MAR 96-N1 QC Run: 06 MAR 96-N1			
Chloride	ND	mg/L	3.0
Test: SO4-IC-A Matrix: AQUEOUS QC Lot: 06 MAR 96-N1 QC Run: 06 MAR 96-N1			
Sulfate	ND	mg/L	5.0

METHOD BLANK REPORT  
t Chemistry Analysis and Preparation (cont.)

Analyte	Result	Units	Reporting Limit
Test: TOC-A Matrix: AQUEOUS QC Lot: 05 MAR 96-N1 QC Run: 05 MAR 96-N1			
Total Organic Carbon	ND	mg/L	1.0
Test: PHEN-MAN-9065-A Matrix: AQUEOUS QC Lot: 11 MAR 96-N1 QC Run: 11 MAR 96-N1			
Phenolics	ND	mg/L	0.0050

LOT ASSIGNMENT REPORT - MS QC  
Wet Chemistry Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)	MS QC Run Number (SA,MS,SD,DU)
047577-0001-SA	AQUEOUS	TOX-A	12 MAR 96-N1	12 MAR 96-N1	12 MAR 96-N1
047577-0001-SA	AQUEOUS	CN-A	05 MAR 96-N1	05 MAR 96-N1	05 MAR 96-N1
047577-0001-SA	AQUEOUS	S-A	04 MAR 96-N1	04 MAR 96-N1	04 MAR 96-N1
047577-0001-SA	AQUEOUS	CL-IC-A	06 MAR 96-N1	06 MAR 96-N1	06 MAR 96-N1
047577-0001-SA	AQUEOUS	SO4-IC-A	06 MAR 96-N1	06 MAR 96-N1	06 MAR 96-N1
047577-0001-SA	AQUEOUS	TOC-A	05 MAR 96-N1	05 MAR 96-N1	05 MAR 96-N1
047577-0001-SA	AQUEOUS	PHEN	11 MAR 96-N1	11 MAR 96-N1	11 MAR 96-N1
047577-0003-MS	AQUEOUS	TOX-A	12 MAR 96-N1	12 MAR 96-N1	12 MAR 96-N1
047577-0003-MS	AQUEOUS	CN-A	05 MAR 96-N1	05 MAR 96-N1	05 MAR 96-N1
047577-0003-MS	AQUEOUS	S-A	04 MAR 96-N1	04 MAR 96-N1	04 MAR 96-N1
047577-0003-MS	AQUEOUS	CL-IC-A	06 MAR 96-N1	06 MAR 96-N1	06 MAR 96-N1
047577-0003-MS	AQUEOUS	SO4-IC-A	06 MAR 96-N1	06 MAR 96-N1	06 MAR 96-N1
047577-0003-MS	AQUEOUS	TOC-A	05 MAR 96-N1	05 MAR 96-N1	05 MAR 96-N1
047577-0003-MS	AQUEOUS	PHEN	11 MAR 96-N1	11 MAR 96-N1	11 MAR 96-N1
047577-0003-SA	AQUEOUS	TOX-A	12 MAR 96-N1	12 MAR 96-N1	12 MAR 96-N1
047577-0003-SA	AQUEOUS	CN-A	05 MAR 96-N1	05 MAR 96-N1	05 MAR 96-N1
047577-0003-SA	AQUEOUS	S-A	04 MAR 96-N1	04 MAR 96-N1	04 MAR 96-N1
047577-0003-SA	AQUEOUS	CL-IC-A	06 MAR 96-N1	06 MAR 96-N1	06 MAR 96-N1
047577-0003-SA	AQUEOUS	SO4-IC-A	06 MAR 96-N1	06 MAR 96-N1	06 MAR 96-N1
047577-0003-SA	AQUEOUS	TOC-A	05 MAR 96-N1	05 MAR 96-N1	05 MAR 96-N1
047577-0003-SA	AQUEOUS	PHEN	11 MAR 96-N1	11 MAR 96-N1	11 MAR 96-N1
047577-0003-SD	AQUEOUS	TOX-A	12 MAR 96-N1	12 MAR 96-N1	12 MAR 96-N1
047577-0003-SD	AQUEOUS	CN-A	05 MAR 96-N1	05 MAR 96-N1	05 MAR 96-N1
047577-0003-SD	AQUEOUS	S-A	04 MAR 96-N1	04 MAR 96-N1	04 MAR 96-N1
047577-0003-SD	AQUEOUS	CL-IC-A	06 MAR 96-N1	06 MAR 96-N1	06 MAR 96-N1
047577-0003-SD	AQUEOUS	SO4-IC-A	06 MAR 96-N1	06 MAR 96-N1	06 MAR 96-N1
047577-0003-SD	AQUEOUS	TOC-A	05 MAR 96-N1	05 MAR 96-N1	05 MAR 96-N1
047577-0003-SD	AQUEOUS	PHEN	11 MAR 96-N1	11 MAR 96-N1	11 MAR 96-N1

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT  
Wet Chemistry Analysis and Preparation  
Project: 047577

Category: TOX-A Total Organic Halogen  
Matrix: AQUEOUS  
Sample: 047577-0003  
MS Run: 12 MAR 96-N1  
Units: ug/L

Analyte	Sample Result	Concentration		Amount Spiked		% Recovery		Recov. Accep.	RPD	RPD
		MS Result	MSD Result	MS	MSD	MS	MSD	Limits	MS-MSD	Accept Limits
Total Organic Halogen as Cl	ND	110	120	100	100	112	118	89-109	5.2	20

Category: CN-A Cyanide  
Matrix: AQUEOUS  
Sample: 047577-0003  
MS Run: 05 MAR 96-N1  
Units: mg/L

Analyte	Sample Result	Concentration		Amount Spiked		% Recovery		Recov. Accep.	RPD	RPD
		MS Result	MSD Result	MS	MSD	MS	MSD	Limits	MS-MSD	Accept Limits
Cyanide	ND	0.18	0.18	0.19	0.19	93	93	75-119	0.0	17

Category: S-A Sulfide  
Matrix: AQUEOUS  
Sample: 047577-0003  
MS Run: 04 MAR 96-N1  
Units: mg/L

Analyte	Sample Result	Concentration		Amount Spiked		% Recovery		Recov. Accep.	RPD	RPD
		MS Result	MSD Result	MS	MSD	MS	MSD	Limits	MS-MSD	Accept Limits
Sulfide, Total	ND	0.38	0.42	0.42	0.42	90	100	89-109	10	13

ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

**MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT**  
**Water Chemistry Analysis and Preparation**

Category: CL-IC-A Chloride by Ion Chromatography  
 Matrix: AQUEOUS  
 Sample: 047577-0003  
 MS Run: 06 MAR 96-N1  
 Units: mg/L

Analyte	Sample Result	Concentration		Amount Spiked		% Recovery		Recov. Accep. Limits	RPD MS-MSD	RPD Accept Limits
		MS Result	MSD Result	MS	MSD	MS	MSD			
Chloride	89	140	140	50	50	95	100	85-105	5.3	10

Category: SO4-IC-A Sulfate by Ion Chromatography  
 Matrix: AQUEOUS  
 Sample: 047577-0003  
 MS Run: 06 MAR 96-N1  
 Units: mg/L

Analyte	Sample Result	Concentration		Amount Spiked		% Recovery		Recov. Accep. Limits	RPD MS-MSD	RPD Accept Limits
		MS Result	MSD Result	MS	MSD	MS	MSD			
Sulfate	130 t	180	180	50	50	94	94	89-109	0.0	10

Category: TOC-A Total Organic Carbon  
 Matrix: AQUEOUS  
 Sample: 047577-0003  
 MS Run: 05 MAR 96-N1  
 Units: mg/L

Analyte	Sample Result	Concentration		Amount Spiked		% Recovery		Recov. Accep. Limits	RPD MS-MSD	RPD Accept Limits
		MS Result	MSD Result	MS	MSD	MS	MSD			
Total Organic Carbon	ND	26	26	25	25	104	103	87-107	0.3	10

t = Sample diluted due to the concentration of target compounds.  
 ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT  
 t Chemistry Analysis and Preparation  
 Subject: 047577 (cont.)

Category: PHEN            Phenolics  
 Matrix:    AQUEOUS  
 Sample:    047577-0003  
 MS Run:    11 MAR 96-N1  
 Units:     mg/L

Analyte	Sample Result	Concentration		Amount Spiked		% Recovery		Recov. Accep.	RPD	RPD
		MS Result	MSD Result	MS	MSD	MS	MSD	Limits	MS-MSD	Accept Limits
Phenolics	ND	0.048	0.042	0.050	0.050	96	84	76-115	13	20

ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

**U.S. GEOLOGICAL SURVEY, WATER RESOURCES DIVISION, NEW MEXICO DISTRICT  
ANALYTICAL REQUEST/CHAIN OF CUSTODY**

Project Name & Number					PACKING AND SHIPPING DETAILS	
Cannon Air Force Base, Ground Water Sampling			463536004		Packed and Sealed for Shipping by <i>Mike Ryghel</i>	
Sampling Location			Landfill-5, Cannon Air Force Base, NM		Delivered to Shipper by <i>Mike Ryghel</i>	
Team Leader			Jerry Larson		Seal Number 1	
					Airbill Number 02559/6264	
					Sampling Status <input type="checkbox"/> Done <input type="checkbox"/> Continuing	
Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
28 FEB 96	1045	CAFB-A-0296-1	Ground water	15	All Appx-IX-SW8240, E415.1, SW9065, W9020, SW8270, SW8080, SW8150, SW9010, SW9030, E300 (Cl, So4), ICP-Total-Metals--SW6010 (Sb, Ba, Be, Cd, Cr, Co, Cu, Fe, Mn, Ni, Ag, Na, Sn, V, Zn), SW7060, SW7421, SW7470, SW7740, SW7841	Environmental Sample -01
28 FEB 96	1040	CAFB-A-0296-2	ASTM-TYPE II-WATER	1	APPX-IX-SW8240	TRIP BLANK -02

Additional Comments

*ALL VOC IN THIS COOLER : VOC from well A + L (Env. MS, SD)*

CHAIN OF CUSTODY RECORD				LABORATORY LOG-IN OF SAMPLE SHIPPING CONTAINER		
Relinquished by (signed)	Received by (signed)	Date	Time	Analytical Laboratory	Seal Intact upon Receipt	
	<i>Recher</i>	2/29/96	930	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611  Attention: Lindsay Breyer	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
					Condition of Contents <i>good</i>	
					Contents Temperature <i>1.2</i>	
					Laboratory Project Number <i>47577</i>	

**U.S. GEOLOGICAL SURVEY, WATER RESOURCES DIVISION, NEW MEXICO DISTRICT  
ANALYTICAL REQUEST/CHAIN OF CUSTODY**

Project Name & Number Cannon Air Force Base, Ground Water Sampling 463536004				PACKING AND SHIPPING DETAILS		
Sampling Location Landfill-5, Cannon Air Force Base, NM				Packed and Sealed for Shipping by <i>Metro Royal</i>		Seal Number 2
Team Leader Jerry Larson				Delivered to Shipper by <i>Metro Royal</i>		Airbill Number 0255916275
				Sampling Status <input type="checkbox"/> Done <input checked="" type="checkbox"/> Continuing		
Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
28 FEB96	1400	CAFB-L-0296-1	Ground water	15	All Appx-IX-SW8240, E415.1, SW9065, W9020, SW8270, SW8080, SW8150, SW9010, SW9030, E300 (Cl, So4), ICP-Total-Metals--SW6010 (Sb, Ba, Be, Cd, Cr, Co, Cu, Fe, Mn, Ni, Ag, Na, Sn, V, Zn), SW7060, SW7421, SW7470, SW7740, SW7841	Environmental Sample -03
FEB96		CAFB-L-0296-2	Ground water	15	All Appx-IX-SW8240, E415.1, SW9065, W9020, SW8270, SW8080, SW8150, SW9010, SW9030, E300 (Cl, So4), ICP-Total-Metals--SW6010 (Sb, Ba, Be, Cd, Cr, Co, Cu, Fe, Mn, Ni, Ag, Na, Sn, V, Zn), SW7060, SW7421, SW7470, SW7740, SW7841	Matrix Spike
FEB96		CAFB-L-0296-3	Ground water	15	All Appx-IX-SW8240, E415.1, SW9065, W9020, SW8270, SW8080, SW8150, SW9010, SW9030, E300 (Cl, So4), ICP-Total-Metals--SW6010 (Sb, Ba, Be, Cd, Cr, Co, Cu, Fe, Mn, Ni, Ag, Na, Sn, V, Zn), SW7060, SW7421, SW7470, SW7740, SW7841	Matrix Spike Duplicate

Additional Comments

~~(ENV 213, SD)~~  
~~ADD VOC ANALYSIS THIS WATER~~ VOC is in cooler with Airbill #1 0255916264

CHAIN OF CUSTODY RECORD				LABORATORY LOG-IN OF SAMPLE SHIPPING CONTAINER		
Relinquished by (signed)	Received by (signed)	Date	Time	Analytical Laboratory Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer	Seal Intact upon Receipt <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
	<i>Dechant</i>	2/29/96	930		Condition of Contents good	
					Contents Temperature 2.0	
					Laboratory Project Number 47577	

**U.S. GEOLOGICAL SURVEY, WATER RESOURCES DIVISION, NEW MEXICO DISTRICT  
ANALYTICAL REQUEST/CHAIN OF CUSTODY**

125

Project Name & Number Cannon Air Force Base, Ground Water Sampling 463536004				PACKING AND SHIPPING DETAILS*		
Sampling Location Landfill-5, Cannon Air Force Base, NM				Packed and Sealed for Shipping by <i>Mike Rozhal</i>		Seal Number 3
Team Leader Jerry Larson				Delivered to Shipper by <i>Mike Rozhal</i>		Airbill Number 0255916286
				Sampling Status <input type="checkbox"/> Done <input checked="" type="checkbox"/> Continuing		
Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
<del>FEB96</del>		<del>CAFB-L-0296-1</del>	<del>Ground water</del>	<del>15</del>	<del>All Appx-IX-SW8240, E415.1, SW9065, W9020, SW8270, SW8080, SW8150, SW9010, SW9030, E300 (Cl, So4), ICP-Total Metals--SW6010 (Sb, Ba, Be, Cd, Cr, Co, Cu, Fe, Mn, Ni, Ag, Na, Sn, V, Zn), SW7060, SW7421, SW7470, SW7740, SW7841</del>	<del>Environmental Sample</del>
28 FEB96	1400	CAFB-L-0296-2	Ground water	15	All Appx-IX-SW8240, E415.1, SW9065, W9020, SW8270, SW8080, SW8150, SW9010, SW9030, E300 (Cl, So4), ICP-Total Metals--SW6010 (Sb, Ba, Be, Cd, Cr, Co, Cu, Fe, Mn, Ni, Ag, Na, Sn, V, Zn), SW7060, SW7421, SW7470, SW7740, SW7841	Matrix Spike - 0.3ms
<del>FEB96</del>		<del>CAFB-L-0296-3</del>	<del>Ground water</del>	<del>15</del>	<del>All Appx-IX-SW8240, E415.1, SW9065, W9020, SW8270, SW8080, SW8150, SW9010, SW9030, E300 (Cl, So4), ICP-Total Metals--SW6010 (Sb, Ba, Be, Cd, Cr, Co, Cu, Fe, Mn, Ni, Ag, Na, Sn, V, Zn), SW7060, SW7421, SW7470, SW7740, SW7841</del>	<del>Matrix Spike Duplicate</del>

Additional Comments

VOC is in cooler with Air Bill # 0255916264

CHAIN OF CUSTODY RECORD				LABORATORY LOG-IN OF SAMPLE SHIPPING CONTAINER		
Relinquished by (signed)	Received by (signed)	Date	Time	Analytical Laboratory	Seal Intact upon Receipt <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
	<i>J DeCh...</i>	2/24/06	930	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611  Attention: Lindsay Breyer	Condition of Contents <i>Good</i>	
					Contents Temperature <i>1.7</i>	
					Laboratory Project Number <i>47577</i>	

**U.S. GEOLOGICAL SURVEY, WATER RESOURCES DIVISION, NEW MEXICO DISTRICT  
ANALYTICAL REQUEST/CHAIN OF CUSTODY**

>1?

Project Name & Number Cannon Air Force Base, Ground Water Sampling 463536004					PACKING AND SHIPPING DETAILS	
Sampling Location Landfill-5, Cannon Air Force Base, NM					Packed and Sealed for Shipping by <i>Amber Rye</i>	
Team Leader Jerry Larson					Delivered to Shipper by <i>Amber Rye</i>	
					Seal Number 4	
					Airbill Number 0255916290	
					Sampling Status <input type="checkbox"/> Done <input checked="" type="checkbox"/> Continuing	
Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
<del>FEB96</del>		<del>CAFB-L-0296-1</del>	<del>Ground water</del>	<del>15</del>	<del>All Appx-IX-SW8240, E415.1, SW9065, W9020, SW8270, SW8080, SW8150, SW9010, SW9030, E300 (Cl, So4), ICP-Total-Metals--SW6010 (Sb, Ba, Be, Cd, Cr, Co, Cu, Fe, Mn, Ni, Ag, Na, Sn, V, Zn), SW7060, SW7421, SW7470, SW7740, SW7841</del>	<del>Environmental Sample</del>
<del>FEB96</del>		<del>CAFB-L-0296-2</del>	<del>Ground water</del>	<del>15</del>	<del>All Appx-IX-SW8240, E415.1, SW9065, W9020, SW8270, SW8080, SW8150, SW9010, SW9030, E300 (Cl, So4), ICP-Total-Metals--SW6010 (Sb, Ba, Be, Cd, Cr, Co, Cu, Fe, Mn, Ni, Ag, Na, Sn, V, Zn), SW7060, SW7421, SW7470, SW7740, SW7841</del>	<del>Matrix Spike</del>
28 FEB96	1400	CAFB-L-0296-3	Ground water	15	All Appx-IX-SW8240, E415.1, SW9065, W9020, SW8270, SW8080, SW8150, SW9010, SW9030, E300 (Cl, So4), ICP-Total-Metals--SW6010 (Sb, Ba, Be, Cd, Cr, Co, Cu, Fe, Mn, Ni, Ag, Na, Sn, V, Zn), SW7060, SW7421, SW7470, SW7740, SW7841	Matrix Spike Duplicate -03SP

Additional Comments *VOC is in cooler with Air Bill # 0255916264*

CHAIN OF CUSTODY RECORD				LABORATORY LOG-IN OF SAMPLE SHIPPING CONTAINER		
Relinquished by (signed)	Received by (signed)	Date	Time	Analytical Laboratory	Seal Intact upon Receipt <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
	<i>[Signature]</i>	2/24/96	930	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611  Attention: Lindsay Breyer	Condition of Contents <i>good</i>	
					Contents Temperature <i>2.2</i>	
					Laboratory Project Number <i>47577</i>	

# DODEC LABORATORY DATA REVIEW WORKSHEET

## 1.0 GENERAL INFORMATION

Data reviewer: BOB BRADIC  
Date of review: 4/4/96  
Sample project number: 47596  
Project name: NM-CANNON AFB GW  
Sample collection date: 2/29/96  
Sample matrix and number: 3 AQUEOUS

Type and number of samples in project:

<u>Type</u>	<u>Number</u>
Environmental	<u>2</u>
Trip blank	<u>1</u>
Equipment blank	<u>      </u>
Ambient blank	<u>      </u>
MS/MSD	<u>      </u>
Other	<u>      </u>

## 2.0 DATA REPORT

Date of Analytical Results Report: 3/26/96  
Number of volumes in Raw Data Report: 2  
Raw Data Report reviewed? Yes        No X

Were all analyses requested on the COC form performed by the laboratory?  
Yes X No       

If no, list canceled analyses and reason for non-performance:

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Were the samples properly preserved upon receipt by the laboratory?  
Yes X No       

If no, list laboratory ID for samples that were not properly preserved.

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were analytical holding times met? Yes NO

If no, list analytical method and laboratory ID for samples that exceeded holding time:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Did surrogate recoveries meet QC acceptance criteria?  
Yes X No \_\_\_\_\_

If no, list analytical method, laboratory ID, and surrogates that did not meet acceptance criteria:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Did actual reporting limits meet project detection limits?  
Organic analyses : Yes X No \_\_\_\_\_

If no, list analytical method, laboratory ID, and reason for non-conformance:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Inorganic analyses: Yes \_\_\_\_\_ No X TI: -0001, -0002  
SCQ: -0001, -0002

Reporting limits for <sup>Ⓞ</sup>GFAA metals and inorganic <sup>Ⓞ</sup>anions may be raised when:  
(1) sample concentrations exceed the instrument <sup>Ⓞ</sup>linear range and (2) target analytes are subject to matrix interferences. Reporting limits for ICP metals and mercury by CVAA are typically only raised when the sample concentration exceeds the instrument linear range.

Did DCS meet QC acceptance criteria? Yes X No \_\_\_\_\_

If no, list analytical method, laboratory ID, and reason for non-conformance:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Did SCS meet QC acceptance criteria? Yes X No     

If no, list analytical method, laboratory ID, and reason for non-conformance:

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Were any target compounds found in the method, trip, equipment, or ambient blanks above the RL? Yes      No X

If yes, list the analytical method, laboratory ID, type of blank and compound:

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Did the MS/MSD meet QC acceptance criteria? Yes      No      *NA*

MS/MSD data are used to evaluate the effect of the sample matrix on the analytical process and should only be used in conjunction with other available laboratory QC information to evaluate precision and accuracy.

If no, list the analytical method, laboratory ID, and reason for non-conformance :

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Additional comments:

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#### IV. QUALITY CONTROL REPORT

The Quanterra laboratories operate under a vigorous QA/QC program designed to ensure the generation of scientifically valid, legally defensible data by monitoring every aspect of laboratory operations. Routine QA/QC procedures include the use of approved methodologies, independent verification of analytical standards, use of duplicate Laboratory Control Samples to assess the precision and accuracy of the methodology on a routine basis, and a rigorous system of data review.

The standard laboratory QC package is designed to:

- 1) establish a strong, cost-effective QC program that ensures the generation of scientifically valid, legally defensible data
- 2) assess the laboratory's performance of the analytical method using control limits generated with a well-defined matrix
- 3) establish clear-cut guidelines for acceptability of analytical data so that QC decisions can be made immediately at the bench, and
- 4) provide a standard set of reportables which assures the client of the quality of his data.

The Quanterra QC program is based upon monitoring the precision and accuracy of an analytical method by analyzing a set of Duplicate Control Samples (DCS) at frequent, well-defined intervals. Each DCS is a well-characterized matrix which is spiked with target compounds at 5-100 times the reporting limit, depending upon the methodology being monitored. The purpose of the DCS is not to duplicate the sample matrix, but rather to provide an interference-free, homogeneous matrix from which to gather data to establish control limits. These limits are used to determine whether data generated by the laboratory on any given day is in control.

Control limits for accuracy (percent recovery) are based on the average, historical percent recovery +/- 3 standard deviation units. Control limits for precision (relative percent difference) range from 0 (identical duplicate DCS results) to the average, historical relative percent difference + 3 standard deviation units. These control limits are fairly narrow based on the consistency of the matrix being monitored and are updated on a quarterly basis.

For each batch of samples analyzed, an additional control measure is taken in the form of a Single Control Sample (SCS). The SCS consists of a control matrix that is spiked with surrogate compounds appropriate to the method being used. In cases where no surrogate is available, (e.g., metals or conventional analyses) a single DCS serves as the control sample. An SCS is prepared for each sample lot for which the DCS pair are not analyzed. The recovery of the SCS is charted in exactly the same manner as described for the DCS, and provides a daily check on the performance of the method.

Accuracy for DCS and SCS is measured by Percent Recovery.

$$\% \text{ Recovery} = \frac{\text{Measured Concentration}}{\text{Actual Concentration}} \times 100$$

Precision for DCS is measured by Relative Percent Difference (RPD).

$$\text{RPD} = \frac{|\text{Measured Concentration DCS1} - \text{Measured Concentration DCS2}|}{(\text{Measured Concentration DCS1} + \text{Measured Concentration DCS2})/2} \times 100$$

All samples analyzed concurrently by the same test are assigned the same QC lot number. Projects which contain numerous samples, analyzed over several days, may have multiple QC lot numbers associated with each test. The QC information which follows includes a listing of the QC lot numbers associated with each of the samples reported, DCS and SCS (where applicable) recoveries from the QC lots associated with the samples, and control limits for these lots. The QC data is reported by test code, in the order that the tests are reported in the analytical results section of this report.

QC LOT ASSIGNMENT REPORT  
Volatile Organics by GC/MS

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
047596-0001-SA	AQUEOUS	624-A	11 MAR 96-J	11 MAR 96-J
047596-0002-SA	AQUEOUS	624-A	11 MAR 96-J	11 MAR 96-J
047596-0003-TB	AQUEOUS	624-A	11 MAR 96-J	11 MAR 96-J

DUPLICATE CONTROL SAMPLE REPORT  
Volatile Organics by GC/MS

Analyte	Concentration		Measured DCS2	AVG	Accuracy Average(%)		Precision (RPD)	
	Spiked	DCS1			DCS	Limits	DCS	Limit
Category: 624-A								
Matrix: AQUEOUS								
QC Lot: 11 MAR 96-J								
Concentration Units: ug/L								
1,1-Dichloroethene	50.0	50.2	53.5	51.8	104	74-124	6.4	17
Trichloroethene	50.0	48.0	50.8	49.4	99	77-119	5.7	13
Benzene	50.0	46.4	49.2	47.8	96	80-117	5.9	12
Toluene	50.0	45.8	48.8	47.3	95	80-119	6.3	11
Chlorobenzene	50.0	49.4	52.2	50.8	102	81-120	5.5	14

Calculations are performed before rounding to avoid round-off errors in calculated results.

SINGLE CONTROL SAMPLE REPORT  
Volatile Organics by GC/MS

Analyte	Concentration		Accuracy(%)	
	Spiked	Measured	SCS	Limits
Category: 624-A				
Matrix: AQUEOUS				
QC Lot: 11 MAR 96-J				
QC Run: 11 MAR 96-J				
Concentration Units: ug/L				
1,2-Dichloroethane-d4	50.0	47.0	94	85-111
4-Bromofluorobenzene	50.0	48.8	98	86-110
Toluene-d8	50.0	50.4	101	91-110

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT  
Volatile Organics by GC/MS

Analyte	Result	Units	Reporting Limit
Test: 8240CP-AP9-AP			
Matrix: AQUEOUS			
QC Lot: 11 MAR 96-J	QC Run: 11 MAR 96-J		
Acetone	ND	ug/L	10
Acetonitrile	ND	ug/L	200
Acrolein	ND	ug/L	100
Acrylonitrile	ND	ug/L	100
Allyl chloride	ND	ug/L	10
Benzene	ND	ug/L	5.0
Bromodichloromethane	ND	ug/L	5.0
Bromoform	ND	ug/L	5.0
Bromomethane	ND	ug/L	10
2-Butanone (MEK)	ND	ug/L	10
Carbon disulfide	ND	ug/L	5.0
Carbon tetrachloride	ND	ug/L	5.0
Chlorobenzene	ND	ug/L	5.0
Chloroethane	ND	ug/L	10
Chloroform	ND	ug/L	5.0
Chloromethane	ND	ug/L	10
Chloroprene	ND	ug/L	5.0
Dibromochloromethane	ND	ug/L	5.0
1,2-Dibromo-3-chloro- propane (DBCP)	ND	ug/L	10
2-Dibromoethane (EDB)	ND	ug/L	10
Dibromomethane	ND	ug/L	5.0
trans-1,4-Dichloro-2-butene	ND	ug/L	5.0
Dichlorodifluoromethane	ND	ug/L	20
1,1-Dichloroethane	ND	ug/L	5.0
1,2-Dichloroethane	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	5.0
1,2-Dichloroethene (total)	ND	ug/L	5.0
1,2-Dichloropropane	ND	ug/L	5.0
cis-1,3-Dichloropropene	ND	ug/L	5.0
trans-1,3-Dichloropropene	ND	ug/L	5.0
1,4-Dioxane	ND	ug/L	500
Ethylbenzene	ND	ug/L	5.0
Ethyl methacrylate	ND	ug/L	20
Iodomethane	ND	ug/L	5.0
Isobutanol (2-Methyl-1-propanol)	ND	ug/L	200
2-Hexanone	ND	ug/L	10
Methacrylonitrile	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0

METHOD BLANK REPORT  
Volatile Organics by GC/MS (cont.)

Analyte	Result	Units	Reporting Limit
Test: 8240CP-AP9-AP			
Matrix: AQUEOUS			
QC Lot: 11 MAR 96-J      QC Run: 11 MAR 96-J			
Methyl methacrylate	ND	ug/L	20
4-Methyl-2-pentanone (MIBK)	ND	ug/L	10
Propionitrile	ND	ug/L	5.0
Styrene	ND	ug/L	5.0
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0
Tetrachloroethene	ND	ug/L	5.0
Toluene	ND	ug/L	5.0
1,1,1-Trichloroethane	ND	ug/L	5.0
1,1,2-Trichloroethane	ND	ug/L	5.0
Trichloroethene	ND	ug/L	5.0
Trichlorofluoromethane	ND	ug/L	5.0
1,2,3-Trichloropropane	ND	ug/L	5.0
Vinyl acetate	ND	ug/L	10
Vinyl chloride	ND	ug/L	10
Xylenes (total)	ND	ug/L	5.0

Test: 8240CP-AP9-AP  
Matrix: AQUEOUS  
QC Lot: 11 MAR 96-J      QC Run: 11 MAR 96-J

Acetone	ND	ug/L	10
Acetonitrile	ND	ug/L	200
Acrolein	ND	ug/L	100
Acrylonitrile	ND	ug/L	100
Allyl chloride	ND	ug/L	10
Benzene	ND	ug/L	5.0
Bromodichloromethane	ND	ug/L	5.0
Bromoform	ND	ug/L	5.0
Bromomethane	ND	ug/L	10
2-Butanone (MEK)	ND	ug/L	10
Carbon disulfide	ND	ug/L	5.0
Carbon tetrachloride	ND	ug/L	5.0
Chlorobenzene	ND	ug/L	5.0
Chloroethane	ND	ug/L	10
Chloroform	ND	ug/L	5.0
Chloromethane	ND	ug/L	10
Chloroprene	ND	ug/L	5.0
Dibromochloromethane	ND	ug/L	5.0

METHOD BLANK REPORT  
Volatile Organics by GC/MS (cont.)

analyte	Result	Units	Reporting Limit
Test: 8240CP-AP9-AP			
Matrix: AQUEOUS			
QC Lot: 11 MAR 96-J QC Run: 11 MAR 96-J			
1,2-Dibromo-3-chloro- propane (DBCP)	ND	ug/L	10
1,2-Dibromoethane (EDB)	ND	ug/L	10
Dibromomethane	ND	ug/L	5.0
trans-1,4-Dichloro-2-butene	ND	ug/L	5.0
Dichlorodifluoromethane	ND	ug/L	20
1,1-Dichloroethane	ND	ug/L	5.0
1,2-Dichloroethane	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	5.0
1,2-Dichloroethene (total)	ND	ug/L	5.0
1,2-Dichloropropane	ND	ug/L	5.0
cis-1,3-Dichloropropene	ND	ug/L	5.0
trans-1,3-Dichloropropene	ND	ug/L	5.0
1,4-Dioxane	ND	ug/L	500
Ethylbenzene	ND	ug/L	5.0
Ethyl methacrylate	ND	ug/L	20
Iodomethane	ND	ug/L	5.0
Isobutanol (2-Methyl-1-propanol)	ND	ug/L	200
Hexanone	ND	ug/L	10
Acrylonitrile	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
Methyl methacrylate	ND	ug/L	20
4-Methyl-2-pentanone (MIBK)	ND	ug/L	10
Propionitrile	ND	ug/L	5.0
Styrene	ND	ug/L	5.0
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0
Tetrachloroethene	ND	ug/L	5.0
Toluene	ND	ug/L	5.0
1,1,1-Trichloroethane	ND	ug/L	5.0
1,1,2-Trichloroethane	ND	ug/L	5.0
Trichloroethene	ND	ug/L	5.0
Trichlorofluoromethane	ND	ug/L	5.0
1,2,3-Trichloropropane	ND	ug/L	5.0
Vinyl acetate	ND	ug/L	10
Vinyl chloride	ND	ug/L	10
Xylenes (total)	ND	ug/L	5.0

QC LOT ASSIGNMENT REPORT  
Semivolatile Organics by GC/MS

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
047596-0001-SA	AQUEOUS	625-A	06 MAR 96-N1	06 MAR 96-N1
047596-0002-SA	AQUEOUS	625-A	06 MAR 96-N1	06 MAR 96-N1

DUPLICATE CONTROL SAMPLE REPORT  
Semivolatile Organics by GC/MS

Analyte	Concentration Spiked	Concentration Measured		AVG	Accuracy Average(%)		Precision (RPD)	
		DCS1	DCS2		DCS	Limits	DCS	Limit
Category: 625-A								
Matrix: AQUEOUS								
QC Lot: 06 MAR 96-N1								
Concentration Units: ug/L								
Phenol	100	77.6	81.9	79.8	80	45-109	5.4	29
2-Chlorophenol	100	76.2	82.0	79.1	79	47-111	7.3	29
1,4-Dichlorobenzene	50	22.1	27.8	25.0	50	32-103	23	28
N-Nitroso-di- n-propylamine	50	32.5	35.5	34.0	68	49-107	8.8	24
1,2,4-Trichlorobenzene	50	20.9	26.6	23.8	48	44-102	24	27
4-Chloro-3-methylphenol	100	69.8	75.2	72.5	73	50-115	7.4	27
Acenaphthene	50	29.2	35.3	32.2	65	47-109	19	24
4-Nitrophenol	100	60.9	68.4	64.6	65	40-127	12	51
2,4-Dinitrotoluene	50	32.9	35.7	34.3	69	46-118	8.2	22
Pentachlorophenol	100	68.0	76.7	72.4	72	30-136	12	34
Pyrene	50	27.4	29.8	28.6	57	52-115	8.4	23

Calculations are performed before rounding to avoid round-off errors in calculated results.

SINGLE CONTROL SAMPLE REPORT  
Semivolatile Organics by GC/MS

Analyte	Concentration		Accuracy(%)	
	Spiked	Measured	SCS	Limits

Category: 625-A  
Matrix: AQUEOUS  
QC Lot: 06 MAR 96-N1 QC Run: 06 MAR 96-N1  
Concentration Units: ug/L

Nitrobenzene-d5	100	68.5	68	49-113
2-Fluorobiphenyl	100	55.7	56	43-104
Terphenyl-d14	100	75.2	75	33-139
2-Fluorophenol	200	138	69	42-100
Phenol-d5	200	141	70	54-105
2,4,6-Tribromophenol	200	146	73	33-123

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT  
Semivolatile Organics by GC/MS

Analyte	Result	Units	Reporting Limit
Test: 8270CP-AP9-A			
Matrix: AQUEOUS			
QC Lot: 06 MAR 96-N1	QC Run: 06 MAR 96-N1		
Acenaphthene	ND	ug/L	10
Acenaphthylene	ND	ug/L	10
Acetophenone	ND	ug/L	10
2-Acetylaminofluorene	ND	ug/L	100
4-Aminobiphenyl	ND	ug/L	10
Aniline	ND	ug/L	10
Anthracene	ND	ug/L	10
Aramite	ND	ug/L	10
Benzo(a)anthracene	ND	ug/L	10
Benzo(b)fluoranthene	ND	ug/L	10
Benzo(k)fluoranthene	ND	ug/L	10
Benzo(g,h,i)perylene	ND	ug/L	10
Benzo(a)pyrene	ND	ug/L	10
Benzyl alcohol	ND	ug/L	10
4-Bromophenyl phenyl ether	ND	ug/L	10
Butyl benzyl phthalate	ND	ug/L	10
2-sec-Butyl-4,6-dinitro- phenol	ND	ug/L	10
4-Chloroaniline	ND	ug/L	10
bis(2-Chloroethoxy) methane	ND	ug/L	10
bis(2-Chloroethyl) ether	ND	ug/L	10
bis(2-Chloroisopropyl) ether	ND	ug/L	10
4-Chloro-3-methylphenol	ND	ug/L	10
2-Chloronaphthalene	ND	ug/L	10
2-Chlorophenol	ND	ug/L	10
4-Chlorophenyl phenyl ether	ND	ug/L	10
Chrysene	ND	ug/L	10
Dibenz(a,h)anthracene	ND	ug/L	10
Dibenzofuran	ND	ug/L	10
Di-n-butyl phthalate	ND	ug/L	10
1,2-Dichlorobenzene	ND	ug/L	10
1,3-Dichlorobenzene	ND	ug/L	10
1,4-Dichlorobenzene	ND	ug/L	10
3,3'-Dichlorobenzidine	ND	ug/L	20
2,4-Dichlorophenol	ND	ug/L	10
2,6-Dichlorophenol	ND	ug/L	10
Diethyl phthalate	ND	ug/L	10

METHOD BLANK REPORT  
Semivolatile Organics by GC/MS (cont.)

Analyte	Result	Units	Reporting Limit
Test: 8270CP-AP9-A			
Matrix: AQUEOUS			
QC Lot: 06 MAR 96-N1 QC Run: 06 MAR 96-N1			
Dimethoate	ND	ug/L	50
p-Dimethylaminoazobenzene	ND	ug/L	10
7,12-Dimethylbenz(a)-anthracene	ND	ug/L	10
3,3'-Dimethylbenzidine	ND	ug/L	10
a,a-Dimethylphenethylamine	ND	ug/L	10
2,4-Dimethylphenol	ND	ug/L	10
Dimethyl phthalate	ND	ug/L	10
1,3-Dinitrobenzene	ND	ug/L	10
4,6-Dinitro-2-methylphenol	ND	ug/L	50
2,4-Dinitrophenol	ND	ug/L	50
2,4-Dinitrotoluene	ND	ug/L	10
2,6-Dinitrotoluene	ND	ug/L	10
Di-n-octyl phthalate	ND	ug/L	10
Diphenylamine	ND	ug/L	10
Disulfoton	ND	ug/L	50
bis(2-Ethylhexyl)phthalate	ND	ug/L	10
chyl methanesulfonate	ND	ug/L	10
famphur	ND	ug/L	50
Fluoranthene	ND	ug/L	10
Fluorene	ND	ug/L	10
Hexachlorobenzene	ND	ug/L	10
Hexachlorobutadiene	ND	ug/L	10
Hexachlorocyclopentadiene	ND	ug/L	10
Hexachloroethane	ND	ug/L	10
Hexachlorophene	ND	ug/L	--
Hexachloropropene	ND	ug/L	10
Indeno(1,2,3-cd)pyrene	ND	ug/L	10
Isophorone	ND	ug/L	10
Isosafrole	ND	ug/L	20
Methapyrilene	ND	ug/L	10
3-Methylcholanthrene	ND	ug/L	10
Methyl methanesulfonate	ND	ug/L	10
2-Methylnaphthalene	ND	ug/L	10
Methyl parathion	ND	ug/L	50
2-Methylphenol	ND	ug/L	10
3/4-Methylphenol	ND	ug/L	10
Naphthalene	ND	ug/L	10

METHOD BLANK REPORT  
Semivolatile Organics by GC/MS (cont.)

Analyte	Result	Units	Reporting Limit
Test: 8270CP-AP9-A			
Matrix: AQUEOUS			
QC Lot: 06 MAR 96-N1 QC Run: 06 MAR 96-N1			
1,4-Naphthoquinone	ND	ug/L	10
1-Naphthylamine	ND	ug/L	10
2-Naphthylamine	ND	ug/L	10
2-Nitroaniline	ND	ug/L	50
3-Nitroaniline	ND	ug/L	50
4-Nitroaniline	ND	ug/L	50
Nitrobenzene	ND	ug/L	10
2-Nitrophenol	ND	ug/L	10
4-Nitrophenol	ND	ug/L	50
4-Nitroquinoline-1-oxide	ND	ug/L	100
N-Nitroso-di-n-butylamine	ND	ug/L	10
N-Nitrosodiethylamine	ND	ug/L	10
N-Nitrosodimethylamine	ND	ug/L	10
N-Nitrosodiphenylamine	ND	ug/L	10
N-Nitroso-di-n-propylamine	ND	ug/L	10
N-Nitrosomethylethylamine	ND	ug/L	10
N-Nitrosomorpholine	ND	ug/L	10
N-Nitrosopiperidine	ND	ug/L	10
Nitrosopyrrolidine	ND	ug/L	10
Nitro-o-toluidine	ND	ug/L	10
Parathion	ND	ug/L	50
Pentachlorobenzene	ND	ug/L	10
Pentachloroethane	ND	ug/L	10
Pentachloronitrobenzene	ND	ug/L	50
Pentachlorophenol	ND	ug/L	50
Phenacetin	ND	ug/L	10
Phenanthrene	ND	ug/L	10
Phenol	ND	ug/L	10
4-Phenylenediamine	ND	ug/L	100
Phorate	ND	ug/L	100
2-Picoline	ND	ug/L	10
Pronamide	ND	ug/L	10
Pyrene	ND	ug/L	10
Pyridine	ND	ug/L	20
Safrole	ND	ug/L	10
Sulfotepp	ND	ug/L	50
1,2,4,5-Tetrachlorobenzene	ND	ug/L	10
2,3,4,6-Tetrachlorophenol	ND	ug/L	50
Thionazin	ND	ug/L	50

METHOD BLANK REPORT  
Semivolatile Organics by GC/MS (cont.)

Analyte	Result	Units	Reporting Limit
Test: 8270CP-AP9-A			
Matrix: AQUEOUS			
QC Lot: 06 MAR 96-N1 QC Run: 06 MAR 96-N1			
2-Toluidine	ND	ug/L	10
1,2,4-Trichlorobenzene	ND	ug/L	10
2,4,5-Trichlorophenol	ND	ug/L	50
2,4,6-Trichlorophenol	ND	ug/L	10
0,0,0-Triethylphosphoro- thioate	ND	ug/L	10
1,3,5-Trinitrobenzene	ND	ug/L	10

QC LOT ASSIGNMENT REPORT  
Semi-volatile Organics by GC

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
047596-0001-SA	AQUEOUS	615-A	05 MAR 96-N1	05 MAR 96-N1
047596-0001-SA	AQUEOUS	8080-A	05 MAR 96-N1	05 MAR 96-N1
047596-0001-SA	AQUEOUS	8080-A	05 MAR 96-N1	05 MAR 96-N1
047596-0002-SA	AQUEOUS	615-A	05 MAR 96-N1	05 MAR 96-N1
047596-0002-SA	AQUEOUS	8080-A	05 MAR 96-N1	05 MAR 96-N1

DUPLICATE CONTROL SAMPLE REPORT  
Semivolatile Organics by GC

Analyte	Spiked	Concentration		AVG	Accuracy		Precision		
		DCS1	Measured DCS2		Average(%) DCS	Limits	(RPD) DCS	Limit	
Category: 615-A									
Matrix: AQUEOUS									
QC Lot: 05 MAR 96-N1									
Concentration Units: ug/L									
2,4-D	5.00	2.59	2.89	2.74	55	44- 97	11	34	
2,4,5-TP (Silvex)	1.00	0.609	0.663	0.636	64	49-102	8.5	32	
2,4,5-T	1.00	0.647	0.686	0.666	67	47-110	5.9	32	

Category: 8080-A  
Matrix: AQUEOUS  
QC Lot: 05 MAR 96-N1  
Concentration Units: ug/L

gamma-BHC (Lindane)	0.200	0.207	0.213	0.210	105	81-117	2.9	13
Heptachlor	0.200	0.197	0.204	0.200	100	72-125	3.5	11
Aldrin	0.200	0.177	0.183	0.180	90	69-112	3.3	16
Dieldrin	0.500	0.470	0.471	0.470	94	77-111	0.21	13
Endrin	0.500	0.471	0.474	0.472	95	83-122	0.63	14
4,4'-DDT	0.500	0.494	0.494	0.494	99	76-125	0.0	14

Calculations are performed before rounding to avoid round-off errors in calculated results.

SINGLE CONTROL SAMPLE REPORT  
Semivolatile Organics by GC

Analyte	Concentration		Accuracy(%)	
	Spiked	Measured	SCS	Limits
Category: 615-A Matrix: AQUEOUS QC Lot: 05 MAR 96-N1    QC Run: 05 MAR 96-N1 Concentration Units: ug/L				
DCAA	5.00	4.05	81	45-123
Category: 8080-A Matrix: AQUEOUS QC Lot: 05 MAR 96-N1    QC Run: 05 MAR 96-N1 Concentration Units: ug/L				
Tetrachloro-m-xylene	1.00	0.729	73	54-106
Dibutyl chlorendate	1.00	0.981	98	56-138
Decachlorobiphenyl	0.200	0.215	108	65-145

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT  
Semivolatile Organics by GC

Analyte	Result	Units	Reporting Limit
Test: 8150-AP9-A			
Matrix: AQUEOUS			
QC Lot: 05 MAR 96-N1 QC Run: 05 MAR 96-N1			
2,4-D	ND	ug/L	1.2
2,4,5-TP (Silvex)	ND	ug/L	0.17
2,4,5-T	ND	ug/L	0.20
Test: 8080-AP9-A			
Matrix: AQUEOUS			
QC Lot: 05 MAR 96-N1 QC Run: 05 MAR 96-N1			
Aldrin	ND	ug/L	0.050
Aroclor 1016	ND	ug/L	1.0
Aroclor 1221	ND	ug/L	1.0
Aroclor 1232	ND	ug/L	1.0
Aroclor 1242	ND	ug/L	1.0
Aroclor 1248	ND	ug/L	1.0
Aroclor 1254	ND	ug/L	1.0
Aroclor 1260	ND	ug/L	1.0
alpha-BHC	ND	ug/L	0.050
beta-BHC	ND	ug/L	0.050
delta-BHC	ND	ug/L	0.050
gamma-BHC (Lindane)	ND	ug/L	0.050
alpha-Chlordane	ND	ug/L	0.050
gamma-Chlordane	ND	ug/L	0.050
Chlorobenzilate	ND	ug/L	1.0
4,4'-DDD	ND	ug/L	0.10
4,4'-DDE	ND	ug/L	0.10
4,4'-DDT	ND	ug/L	0.10
Diallate	ND	ug/L	1.0
Dieldrin	ND	ug/L	0.10
Endosulfan I	ND	ug/L	0.050
Endosulfan II	ND	ug/L	0.10
Endosulfan sulfate	ND	ug/L	0.10
Endrin	ND	ug/L	0.10
Endrin aldehyde	ND	ug/L	0.10
Heptachlor	ND	ug/L	0.050
Heptachlor epoxide	ND	ug/L	0.050
Isodrin	ND	ug/L	0.10
Kepone	ND	ug/L	1.0
Methoxychlor	ND	ug/L	0.50
Toxaphene	ND	ug/L	5.0

METHOD BLANK REPORT  
 Semivolatile Organics by GC (cont.)

Analyte	Result	Units	Reporting Limit
Test: 8080-AP9-2-A			
Matrix: AQUEOUS			
QC Lot: 05 MAR 96-N1 QC Run: 05 MAR 96-N1			
Aldrin	ND	ug/L	0.050
Aroclor 1016	ND	ug/L	1.0
Aroclor 1221	ND	ug/L	1.0
Aroclor 1232	ND	ug/L	1.0
Aroclor 1242	ND	ug/L	1.0
Aroclor 1248	ND	ug/L	1.0
Aroclor 1254	ND	ug/L	1.0
Aroclor 1260	ND	ug/L	1.0
alpha-BHC	ND	ug/L	0.050
beta-BHC	ND	ug/L	0.050
delta-BHC	ND	ug/L	0.050
gamma-BHC (Lindane)	ND	ug/L	0.050
alpha-Chlordane	ND	ug/L	0.050
gamma-Chlordane	ND	ug/L	0.050
Chlorobenzilate	ND	ug/L	1.0
4,4'-DDD	ND	ug/L	0.10
4,4'-DDE	ND	ug/L	0.10
4,4'-DDT	ND	ug/L	0.10
Dallate	ND	ug/L	1.0
Dieldrin	ND	ug/L	0.10
Endosulfan I	ND	ug/L	0.050
Endosulfan II	ND	ug/L	0.10
Endosulfan sulfate	ND	ug/L	0.10
Endrin	ND	ug/L	0.10
Endrin aldehyde	ND	ug/L	0.10
Heptachlor	ND	ug/L	0.050
Heptachlor epoxide	ND	ug/L	0.050
Isodrin	ND	ug/L	0.10
Kepone	ND	ug/L	1.0
Methoxychlor	ND	ug/L	0.50
Toxaphene	ND	ug/L	5.0

QC LOT ASSIGNMENT REPORT  
Metals Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
047596-0001-SA	AQUEOUS	ICP-AT	11 MAR 96-N1	11 MAR 96-N1
047596-0001-SA	AQUEOUS	PB-FAA-AT	12 MAR 96-SB	12 MAR 96-SB
047596-0001-SA	AQUEOUS	AS-FAA-AT	04 MAR 96-N1	04 MAR 96-N1
047596-0001-SA	AQUEOUS	SE-FAA-AT	04 MAR 96-N1	04 MAR 96-N1
047596-0001-SA	AQUEOUS	TL-FAA-AT	12 MAR 96-SB	12 MAR 96-SB
047596-0001-SA	AQUEOUS	HG-CVAA-AT	07 MAR 96-SB	07 MAR 96-SB
047596-0002-SA	AQUEOUS	ICP-AT	11 MAR 96-N1	11 MAR 96-N1
047596-0002-SA	AQUEOUS	PB-FAA-AT	12 MAR 96-SB	12 MAR 96-SB
047596-0002-SA	AQUEOUS	AS-FAA-AT	04 MAR 96-N1	04 MAR 96-N1
047596-0002-SA	AQUEOUS	SE-FAA-AT	04 MAR 96-N1	04 MAR 96-N1
047596-0002-SA	AQUEOUS	TL-FAA-AT	12 MAR 96-SB	12 MAR 96-SB
047596-0002-SA	AQUEOUS	HG-CVAA-AT	07 MAR 96-SB	07 MAR 96-SB

DUPLICATE CONTROL SAMPLE REPORT  
Metals Analysis and Preparation

Analyte	Concentration			AVG	Accuracy Average(%)		Precision (RPD)	
	Spiked	DCS1	Measured DCS2		DCS	Limits	DCS	Limits
Aluminum	2.00	2.04	2.08	2.06	103	80-116	2.3	10
Antimony	0.500	0.474	0.490	0.482	96	80-115	3.3	14
Arsenic	0.500	0.514	0.517	0.515	103	80-115	0.64	17
Barium	2.00	1.97	2.01	1.99	99	80-114	1.9	10
Beryllium	0.0500	0.0497	0.0506	0.0502	100	80-120	1.9	10
Boron	10	9.74	9.85	9.80	98	80-120	1.0	10
Cadmium	0.0500	0.0489	0.0494	0.0492	98	80-119	1.0	16
Calcium	100	101	102	102	102	80-114	1.2	10
Chromium	0.200	0.195	0.199	0.197	99	80-116	1.7	11
Cobalt	0.500	0.499	0.506	0.503	101	80-114	1.4	10
Copper	0.250	0.250	0.256	0.253	101	80-120	2.3	10
Iron	1.00	1.01	1.04	1.02	102	80-120	2.5	11
Lead	0.500	0.506	0.505	0.505	101	80-119	0.22	10
Lithium	10.0	10.3	10.4	10.4	104	80-120	1.0	20
Magnesium	50.0	51.3	52.0	51.6	103	81-120	1.3	10
Manganese	0.500	0.509	0.515	0.512	102	80-116	1.2	10
Molybdenum	0.50	0.510	0.517	0.513	103	80-120	1.4	20
Nickel	0.500	0.503	0.514	0.508	102	80-114	2.1	10
Potassium	50.0	50.8	51.3	51.0	102	80-120	0.95	13
Selenium	0.500	0.592	0.556	0.574	115	80-120	6.3	20
Silver	0.050	0.0509	0.0527	0.0518	104	80-119	3.6	15
Sodium	100	103	104	103	103	80-120	1.2	10
Tin	0.50	0.475	0.477	0.476	95	80-120	0.29	20
Titanium	0.500	0.501	0.506	0.503	101	80-120	0.95	20
Vanadium	0.500	0.499	0.511	0.505	101	80-116	2.4	10
Zinc	0.500	0.499	0.505	0.502	100	80-120	1.2	13

Category: PB-FAA-AT  
Matrix: AQUEOUS  
QC Lot: 12 MAR 96-SB  
Concentration Units: mg/L

Lead	0.030	0.0302	0.0311	0.0306	102	71-136	2.9	17
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Calculations are performed before rounding to avoid round-off errors in calculated results.

DUPLICATE CONTROL SAMPLE REPORT  
Metals Analysis and Preparation (cont.)

Analyte	Concentration			AVG	Accuracy Average(%)		Precision (RPD)	
	Spiked	DCS1	Measured DCS2		DCS	Limits	DCS	Limits
Category: AS-FAA-AT Matrix: AQUEOUS QC Lot: 04 MAR 96-N1 Concentration Units: mg/L								
Arsenic	0.030	0.0284	0.0273	0.0278	93	81-116	3.9	13
Category: SE-FAA-AT Matrix: AQUEOUS QC Lot: 04 MAR 96-N1 Concentration Units: mg/L								
Selenium	0.030	0.0309	0.0294	0.0302	101	73-125	5.0	15
Category: TL-FAA-AT Matrix: AQUEOUS QC Lot: 12 MAR 96-SB Concentration Units: mg/L								
Thallium	0.0300	0.0319	0.0322	0.0320	107	75-125	0.94	20
Category: HG-CVAA-AT Matrix: AQUEOUS QC Lot: 07 MAR 96-SB Concentration Units: mg/L								
Mercury	0.0010	0.000864	0.000914	0.000889	89	83-112	5.6	12

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT  
Metals Analysis and Preparation

Analyte	Result	Units	Reporting Limit
Test: ICP-AP9-AT			
Matrix: AQUEOUS			
QC Lot: 11 MAR 96-N1 QC Run: 11 MAR 96-N1			
Antimony	ND	mg/L	0.060
Barium	ND	mg/L	0.010
Beryllium	ND	mg/L	0.0020
Cadmium	ND	mg/L	0.0050
Chromium	ND	mg/L	0.010
Cobalt	ND	mg/L	0.010
Copper	ND	mg/L	0.020
Iron	ND	mg/L	0.10
Manganese	ND	mg/L	0.010
Nickel	ND	mg/L	0.040
Silver	ND	mg/L	0.010
Sodium	ND	mg/L	5.0
Tin	ND	mg/L	0.10
Vanadium	ND	mg/L	0.010
Zinc	ND	mg/L	0.020

Test: PB-FAA-AT  
Matrix: AQUEOUS  
QC Lot: 12 MAR 96-SB QC Run: 12 MAR 96-SB

Lead	ND	mg/L	0.0050
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Test: AS-FAA-AT  
Matrix: AQUEOUS  
QC Lot: 04 MAR 96-N1 QC Run: 04 MAR 96-N1

Arsenic	ND	mg/L	0.0050
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Test: SE-FAA-AT  
Matrix: AQUEOUS  
QC Lot: 04 MAR 96-N1 QC Run: 04 MAR 96-N1

Selenium	ND	mg/L	0.0050
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METHOD BLANK REPORT  
Metals Analysis and Preparation (cont.)

Analyte	Result	Units	Reporting Limit
Test: TL-FAA-AT Matrix: AQUEOUS QC Lot: 12 MAR 96-SB QC Run: 12 MAR 96-SB			
Thallium	ND	mg/L	0.0050
Test: HG-CVAA-7470-AT Matrix: AQUEOUS QC Lot: 07 MAR 96-SB QC Run: 07 MAR 96-SB			
Mercury	ND	mg/L	0.00020

QC LOT ASSIGNMENT REPORT  
t Chemistry Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
047596-0001-SA	AQUEOUS	TOX-A	12 MAR 96-N1	12 MAR 96-N1
047596-0001-SA	AQUEOUS	CN-A	05 MAR 96-N1	05 MAR 96-N1
047596-0001-SA	AQUEOUS	S-A	04 MAR 96-N1	04 MAR 96-N1
047596-0001-SA	AQUEOUS	CL-IC-A	06 MAR 96-N1	06 MAR 96-N1
047596-0001-SA	AQUEOUS	SO4-IC-A	06 MAR 96-N1	06 MAR 96-N1
047596-0001-SA	AQUEOUS	TOC-A	05 MAR 96-N1	05 MAR 96-N1
047596-0001-SA	AQUEOUS	PHEN	11 MAR 96-N1	11 MAR 96-N1
047596-0002-SA	AQUEOUS	TOX-A	12 MAR 96-N1	12 MAR 96-N1
047596-0002-SA	AQUEOUS	CN-A	05 MAR 96-N1	05 MAR 96-N1
047596-0002-SA	AQUEOUS	S-A	04 MAR 96-N1	04 MAR 96-N1
047596-0002-SA	AQUEOUS	CL-IC-A	06 MAR 96-N1	06 MAR 96-N1
047596-0002-SA	AQUEOUS	SO4-IC-A	06 MAR 96-N1	06 MAR 96-N1
047596-0002-SA	AQUEOUS	TOC-A	05 MAR 96-N1	05 MAR 96-N1
047596-0002-SA	AQUEOUS	PHEN	11 MAR 96-N1	11 MAR 96-N1

DUPLICATE CONTROL SAMPLE REPORT  
Wet Chemistry Analysis and Preparation

Analyte	Concentration		Measured DCS2	AVG	Accuracy Average(%)		Precision (RPD)		
	Spiked	DCS1			DCS	Limits	DCS	Limits	
Category: TOX-A Matrix: AQUEOUS QC Lot: 12 MAR 96-N1 Concentration Units: ug/L									
Total Organic Halogen as Cl	100	100	103	102	102	79-114	3.3	20	
Category: CN-A Matrix: AQUEOUS QC Lot: 05 MAR 96-N1 Concentration Units: mg/L									
Cyanide	0.172	0.165	0.161	0.163	95	74-112	2.5	21	
Category: S-A Matrix: AQUEOUS QC Lot: 04 MAR 96-N1 Concentration Units: mg/L									
Sulfide, Total	0.481	0.519	0.509	0.514	107	70-128	1.9	13	
Category: CL-IC-A Matrix: AQUEOUS QC Lot: 06 MAR 96-N1 Concentration Units: mg/L									
Chloride	50.0	49.1	48.8	49.0	98	91-111	0.60	10	
Category: SO4-IC-A Matrix: AQUEOUS QC Lot: 06 MAR 96-N1 Concentration Units: mg/L									
Sulfate	50.0	50.0	49.7	49.8	100	92-112	0.48	10	

Calculations are performed before rounding to avoid round-off errors in calculated results.

DUPLICATE CONTROL SAMPLE REPORT  
t Chemistry Analysis and Preparation (cont.)

Analyte	Concentration			AVG	Accuracy		Precision	
	Spiked	DCS1	Measured DCS2		Average(%) DCS	Limits	(RPD) DCS	Limits
Category: TOC-A Matrix: AQUEOUS QC Lot: 05 MAR 96-N1 Concentration Units: mg/L								
Total Organic Carbon	25.0	24.6	24.8	24.7	99	90-113	0.85	10
Category: PHEN Matrix: AQUEOUS QC Lot: 11 MAR 96-N1 Concentration Units: mg/L								
Phenolics	0.050	0.0442	0.0397	0.0420	84	76-115	11	20

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT  
Water Chemistry Analysis and Preparation

Analyte	Result	Units	Reporting Limit
Test: TOX-TOX-A Matrix: AQUEOUS QC Lot: 12 MAR 96-N1 QC Run: 12 MAR 96-N1			
Total Organic Halogen as Cl	ND	ug/L	30.0
Test: CNTOT-TEC-A Matrix: AQUEOUS QC Lot: 05 MAR 96-N1 QC Run: 05 MAR 96-N1			
Cyanide	ND	mg/L	0.010
Test: S-SPEC-AT Matrix: AQUEOUS QC Lot: 04 MAR 96-N1 QC Run: 04 MAR 96-N1			
Sulfide, Total	ND	mg/L	0.050
Test: CL-IC-A Matrix: AQUEOUS QC Lot: 06 MAR 96-N1 QC Run: 06 MAR 96-N1			
Chloride	ND	mg/L	3.0
Test: SO4-IC-A Matrix: AQUEOUS QC Lot: 06 MAR 96-N1 QC Run: 06 MAR 96-N1			
Sulfate	ND	mg/L	5.0
Test: TOC-A Matrix: AQUEOUS QC Lot: 05 MAR 96-N1 QC Run: 05 MAR 96-N1			
Total Organic Carbon	ND	mg/L	1.0

METHOD BLANK REPORT  
Chemistry Analysis and Preparation (cont.)

Analyte	Result	Units	Reporting Limit
Test: PHEN-MAN-9065-A Matrix: AQUEOUS QC Lot: 11 MAR 96-N1 QC Run: 11 MAR 96-N1			
Phenolics	ND	mg/L	0.0050

**U.S. GEOLOGICAL SURVEY, WATER RESOURCES DIVISION, NEW MEXICO DISTRICT  
ANALYTICAL RECORD SHEET/CHAIN OF CUSTODY**

Project Name & Number Cannon Air Force Base, Ground Water Sampling 463536004					PACKING AND SHIPPING DETAILS-	
					Packed and Sealed for Shipping by <i>M. Ryzal</i>	
Sampling Location Landfill-5, Cannon Air Force Base, NM					Delivered to Shipper by <i>M. Ryzal</i>	
					Sampling Status <input checked="" type="checkbox"/> Done <input type="checkbox"/> Continuing	
Team Leader Jerry Larson						
Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
<i>29 FEB 96</i>	<i>1020</i>	CAFB-I-0296-1	Ground water	15	All Appx-IX-SW8240, E415.1, SW9065, W9020, SW8270, SW8080, SW8150, SW9010, SW9030, E300 (Cl, So4), ICP-Total Metals--SW6010 (Sb, Ba, Be, Cd, Cr, Co, Cu, Fe, Mn, Ni, Ag, Na, Sn, V, Zn), SW7060, SW7421, SW7470, SW7740, SW7841	Environmental Sample <i>-01</i>
<i>29 FEB 96</i>	<i>1020</i>	CAFB-I-0296-2	Ground water	15	All Appx-IX-SW8240, E415.1, SW9065, W9020, SW8270, SW8080, SW8150, SW9010, SW9030, E300 (Cl, So4), ICP-Total Metals--SW6010 (Sb, Ba, Be, Cd, Cr, Co, Cu, Fe, Mn, Ni, Ag, Na, Sn, V, Zn), SW7060, SW7421, SW7470, SW7740, SW7841	Environmental Sample <i>-02</i>
<i>29 FEB 96</i>	<i>0900</i>	<i>CAFB-I-0296-3</i>	<i>1 STM TYPE-II WATER</i>	<i>1</i>	<i>APX-IX SW8240</i>	<i>TRIP BLANK -03</i>
Additional Comments						

CHAIN OF CUSTODY RECORD				LABORATORY LOG-IN OF SAMPLE SHIPPING CONTAINER		
Relinquished by (signed)	Received by (signed)	Date	Time	Analytical Laboratory	Seal Intact upon Receipt <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
	<i>[Signature]</i>	<i>3/1/96</i>	<i>915</i>	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611  Attention: Lindsay Breyer	Condition of Contents <i>[Signature]</i>	
					Contents Temperature <i>3.6</i>	
					Laboratory Project Number <i>47596</i>	

# DODEC LABORATORY DATA REVIEW WORKSHEET

## 1.0 GENERAL INFORMATION

Data reviewer: BOB BRECK  
Date of review: 4/4/96  
Sample project number: 47724  
Project name: MM-CANNON AEG GW  
Sample collection date: 3/7/96  
Sample matrix and number: 1 Aqueous

Type and number of samples in project:

<u>Type</u>	<u>Number</u>
Environmental	<u>1</u>
Trip blank	<u>      </u>
Equipment blank	<u>      </u>
Ambient blank	<u>      </u>
MS/MSD	<u>      </u>
Other	<u>      </u>

## 2.0 DATA REPORT

Date of Analytical Results Report: 3/30/96  
Number of volumes in Raw Data Report: 1  
Raw Data Report reviewed? Yes        No X

Were all analyses requested on the COC form performed by the laboratory?  
Yes X No       

If no, list canceled analyses and reason for non-performance:

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Were the samples properly preserved upon receipt by the laboratory?  
Yes X No       

If no, list laboratory ID for samples that were not properly preserved.

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Were analytical holding times met? Yes  No \_\_\_\_\_

If no, list analytical method and laboratory ID for samples that exceeded holding time:

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Did surrogate recoveries meet QC acceptance criteria? Yes  No \_\_\_\_\_

If no, list analytical method, laboratory ID, and surrogates that did not meet acceptance criteria:

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Did actual reporting limits meet project detection limits? Organic analyses: Yes  No \_\_\_\_\_

If no, list analytical method, laboratory ID, and reason for non-conformance:

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Inorganic analyses: Yes \_\_\_\_\_ No  Se & Tl: -0001  
Cl & Sg: -0001

Reporting limits for <sup>①</sup>GFAA metals and <sup>②</sup>inorganic anions may be raised when: (1) sample concentrations exceed the instrument <sup>②</sup>linear range and (2) target analytes are subject to matrix interferences. Reporting limits for ICP metals and mercury by CVAA are typically only raised when the sample concentration exceeds the instrument linear range.

Did DCS meet QC acceptance criteria? Yes  No \_\_\_\_\_

If no, list analytical method, laboratory ID, and reason for non-conformance:

§270 DCS 11 MAR 96-21 DID NOT MEET GR LIMITS FOR 1,2,4-TRICHLOROBENZENE  
(LOW BY 2%) - ALL OTHER DCS COMPOUNDS MET QC LIMITS

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Did SCS meet QC acceptance criteria? Yes  No

If no, list analytical method, laboratory ID, and reason for non-conformance:

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Were any target compounds found in the method, trip, equipment, or ambient blanks above the RL? Yes  No

If yes, list the analytical method, laboratory ID, type of blank and compound:

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Did the MS/MSD meet QC acceptance criteria? Yes  No  NA

MS/MSD data are used to evaluate the effect of the sample matrix on the analytical process and should only be used in conjunction with other available laboratory QC information to evaluate precision and accuracy.

If no, list the analytical method, laboratory ID, and reason for non-conformance :

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Additional comments:

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#### IV. QUALITY CONTROL REPORT

The Quanterra laboratories operate under a vigorous QA/QC program designed to ensure the generation of scientifically valid, legally defensible data by monitoring every aspect of laboratory operations. Routine QA/QC procedures include the use of approved methodologies, independent verification of analytical standards, use of duplicate Laboratory Control Samples to assess the precision and accuracy of the methodology on a routine basis, and a rigorous system of data review.

The standard laboratory QC package is designed to:

- 1) establish a strong, cost-effective QC program that ensures the generation of scientifically valid, legally defensible data
- 2) assess the laboratory's performance of the analytical method using control limits generated with a well-defined matrix
- 3) establish clear-cut guidelines for acceptability of analytical data so that QC decisions can be made immediately at the bench, and
- 4) provide a standard set of reportables which assures the client of the quality of his data.

The Quanterra QC program is based upon monitoring the precision and accuracy of an analytical method by analyzing a set of Duplicate Control Samples (DCS) at frequent, well-defined intervals. Each DCS is a well-characterized matrix which is spiked with target compounds at 5-100 times the reporting limit, depending upon the methodology being monitored. The purpose of the DCS is not to duplicate the sample matrix, but rather to provide an interference-free, homogeneous matrix from which to gather data to establish control limits. These limits are used to determine whether data generated by the laboratory on any given day is in control.

Control limits for accuracy (percent recovery) are based on the average, historical percent recovery +/- 3 standard deviation units. Control limits for precision (relative percent difference) range from 0 (identical duplicate DCS results) to the average, historical relative percent difference + 3 standard deviation units. These control limits are fairly narrow based on the consistency of the matrix being monitored and are updated on a quarterly basis.

For each batch of samples analyzed, an additional control measure is taken in the form of a Single Control Sample (SCS). The SCS consists of a control matrix that is spiked with surrogate compounds appropriate to the method being used. In cases where no surrogate is available, (e.g., metals or conventional analyses) a single DCS serves as the control sample. An SCS is prepared for each sample lot for which the DCS pair are not analyzed. The recovery of the SCS is charted in exactly the same manner as described for the DCS, and provides a daily check on the performance of the method.

Accuracy for DCS and SCS is measured by Percent Recovery.

$$\% \text{ Recovery} = \frac{\text{Measured Concentration}}{\text{Actual Concentration}} \times 100$$

Precision for DCS is measured by Relative Percent Difference (RPD).

$$\text{RPD} = \frac{|\text{Measured Concentration DCS1} - \text{Measured Concentration DCS2}|}{(\text{Measured Concentration DCS1} + \text{Measured Concentration DCS2})/2} \times 100$$

All samples analyzed concurrently by the same test are assigned the same QC lot number. Projects which contain numerous samples, analyzed over several days, may have multiple QC lot numbers associated with each test. The QC information which follows includes a listing of the QC lot numbers associated with each of the samples reported, DCS and SCS (where applicable) recoveries from the QC lots associated with the samples, and control limits for these lots. The QC data is reported by test code, in the order that the tests are reported in the analytical results section of this report.

LOT ASSIGNMENT REPORT  
Volatile Organics by GC/MS

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
047724-0001-SA	AQUEOUS	624-A	12 MAR 96-H	12 MAR 96-H

DUPLICATE CONTROL SAMPLE REPORT  
Volatile Organics by GC/MS

Analyte	Spiked	Concentration		AVG	Accuracy		Precision		
		DCS1	Measured DCS2		DCS	Average (%) Limits	(RPD) DCS Limit	DCS Limit	
Category: 624-A									
Matrix: AQUEOUS									
QC Lot: 12 MAR 96-H									
Concentration Units: ug/L									
1,1-Dichloroethene	50.0	57.0	55.6	56.3	113	74-124	2.5	17	
Trichloroethene	50.0	52.8	51.4	52.1	104	77-119	2.7	13	
Benzene	50.0	50.0	49.0	49.5	99	80-117	2.0	12	
Toluene	50.0	49.2	47.8	48.5	97	80-119	2.9	11	
Chlorobenzene	50.0	53.0	51.9	52.4	105	81-120	2.1	14	

Calculations are performed before rounding to avoid round-off errors in calculated results.

SINGLE CONTROL SAMPLE REPORT  
Volatile Organics by GC/MS

Analyte	Concentration		Accuracy(%)	
	Spiked	Measured	SCS	Limits
Category: 624-A Matrix: AQUEOUS QC Lot: 12 MAR 96-H    QC Run: 12 MAR 96-H Concentration Units: ug/L				
1,2-Dichloroethane-d4	50.0	47.5	95	85-111
4-Bromofluorobenzene	50.0	51.5	103	86-110
Toluene-d8	50.0	50.7	101	91-110

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT  
Volatile Organics by GC/MS

Analyte	Result	Units	Reporting Limit	
Test: 8240CP-AP9-AP				
Matrix: AQUEOUS				
QC Lot: 12 MAR 96-H	QC Run: 12 MAR 96-H			
Acetone	ND	ug/L	10	
Acetonitrile	ND	ug/L	200	
Acrolein	ND	ug/L	100	
Acrylonitrile	ND	ug/L	100	
Allyl chloride	ND	ug/L	10	
Benzene	ND	ug/L	5.0	
Bromodichloromethane	ND	ug/L	5.0	
Bromoform	ND	ug/L	5.0	
Bromomethane	ND	ug/L	10	
2-Butanone (MEK)	ND	ug/L	10	
Carbon disulfide	ND	ug/L	5.0	
Carbon tetrachloride	ND	ug/L	5.0	
Chlorobenzene	ND	ug/L	5.0	
Chloroethane	ND	ug/L	10	
Chloroform	ND	ug/L	5.0	
Chloromethane	ND	ug/L	10	
Chloroprene	ND	ug/L	5.0	
Dibromochloromethane	ND	ug/L	5.0	
1,2-Dibromo-3-chloro- propane (DBCP)	ND	ug/L	10	
1,2-Dibromoethane (EDB)	ND	ug/L	10	
Dibromomethane	ND	ug/L	5.0	
trans-1,4-Dichloro-2-butene	ND	ug/L	5.0	
Dichlorodifluoromethane	ND	ug/L	20	
1,1-Dichloroethane	ND	ug/L	5.0	
1,2-Dichloroethane	ND	ug/L	5.0	
1,1-Dichloroethene	ND	ug/L	5.0	
1,2-Dichloroethene				
(total)	ND	ug/L	5.0	
1,2-Dichloropropane	ND	ug/L	5.0	
cis-1,3-Dichloropropene	ND	ug/L	5.0	
trans-1,3-Dichloropropene	ND	ug/L	5.0	
1,4-Dioxane	ND	ug/L	500	
Ethylbenzene	ND	ug/L	5.0	
Ethyl methacrylate	ND	ug/L	20	
Iodomethane	ND	ug/L	5.0	
Isobutanol				
(2-Methyl-1-propanol)	ND	ug/L	200	
2-Hexanone	ND	ug/L	10	
Methacrylonitrile	ND	ug/L	5.0	
Methylene chloride	1.0	ug/L	5.0	J

J = Result is detected below the reporting limit or is an estimated concentration.

METHOD BLANK REPORT  
Volatile Organics by GC/MS (cont.)

Analyte	Result	Units	Reporting Limit
Test: 8240CP-AP9-AP			
Matrix: AQUEOUS			
QC Lot: 12 MAR 96-H	QC Run: 12 MAR 96-H		
Methyl methacrylate	ND	ug/L	20
4-Methyl-2-pentanone (MIBK)	ND	ug/L	10
Propionitrile	ND	ug/L	5.0
Styrene	ND	ug/L	5.0
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0
Tetrachloroethene	ND	ug/L	5.0
Toluene	ND	ug/L	5.0
1,1,1-Trichloroethane	ND	ug/L	5.0
1,1,2-Trichloroethane	ND	ug/L	5.0
Trichloroethene	ND	ug/L	5.0
Trichlorofluoromethane	ND	ug/L	5.0
1,2,3-Trichloropropane	ND	ug/L	5.0
Vinyl acetate	ND	ug/L	10
Vinyl chloride	ND	ug/L	10
Xylenes (total)	ND	ug/L	5.0

QC LOT ASSIGNMENT REPORT  
Semivolatile Organics by GC/MS

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
047724-0001-SA	AQUEOUS	625-A	11 MAR 96-N1	11 MAR 96-N1

DUPLICATE CONTROL SAMPLE REPORT  
Semivolatile Organics by GC/MS

Analyte	Concentration Spiked	Concentration Measured		AVG	Accuracy Average (%)		Precision (RPD)	
		DCS1	DCS2		DCS	Limits	DCS	Limit
Category: 625-A								
Matrix: AQUEOUS								
QC Lot: 11 MAR 96-N1								
Concentration Units: ug/L								
Phenol	100	71.2	69.1	70.2	70	45-109	3.0	29
2-Chlorophenol	100	83.9	79.1	81.5	82	47-111	5.9	29
1,4-Dichlorobenzene	50	21.3	21.3	21.3	43	32-103	0.0	28
N-Nitroso-di-n-propylamine	50	36.6	34.5	35.6	71	49-107	5.9	24
1,2,4-Trichlorobenzene	50	20.4	21.2	20.8	42#	44-102	3.8	27
4-Chloro-3-methylphenol	100	72.2	66.6	69.4	69	50-115	8.1	27
Acenaphthene	50	35.2	32.5	33.8	68	47-109	8.0	24
4-Nitrophenol	100	69.0	60.3	64.6	65	40-127	13	51
2,4-Dinitrotoluene	50	38.0	36.9	37.4	75	46-118	2.9	22
Pentachlorophenol	100	64.9	59.9	62.4	62	30-136	8.0	34
Pyrene	50	38.6	36.2	37.4	75	52-115	6.4	23

# = Recovery outside QC Limits

Calculations are performed before rounding to avoid round-off errors in calculated results.

SINGLE CONTROL SAMPLE REPORT  
Semivolatile Organics by GC/MS

Analyte	Concentration		Accuracy(%)	
	Spiked	Measured	SCS	Limits

Category: 625-A  
 Matrix: AQUEOUS  
 QC Lot: 11 MAR 96-N1 QC Run: 11 MAR 96-N1  
 Concentration Units: ug/L

Nitrobenzene-d5	100	74.0	74	49-113
2-Fluorobiphenyl	100	58.2	58	43-104
Terphenyl-d14	100	76.9	77	33-139
2-Fluorophenol	200	148	74	42-100
Phenol-d5	200	139	70	54-105
2,4,6-Tribromophenol	200	158	79	33-123

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT  
Semivolatile Organics by GC/MS

Analyte	Result	Units	Reporting Limit
Test: 8270CP-AP9-A			
Matrix: AQUEOUS			
QC Lot: 11 MAR 96-N1	QC Run: 11 MAR 96-N1		
Acenaphthene	ND	ug/L	10
Acenaphthylene	ND	ug/L	10
Acetophenone	ND	ug/L	10
2-Acetylaminofluorene	ND	ug/L	100
4-Aminobiphenyl	ND	ug/L	10
Aniline	ND	ug/L	10
Anthracene	ND	ug/L	10
Aramite	ND	ug/L	10
Benzo(a)anthracene	ND	ug/L	10
Benzo(b)fluoranthene	ND	ug/L	10
Benzo(k)fluoranthene	ND	ug/L	10
Benzo(g,h,i)perylene	ND	ug/L	10
Benzo(a)pyrene	ND	ug/L	10
Benzyl alcohol	ND	ug/L	10
4-Bromophenyl phenyl ether	ND	ug/L	10
Butyl benzyl phthalate	ND	ug/L	10
2-sec-Butyl-4,6-dinitro- phenol	ND	ug/L	10
Chloroaniline s(2-Chloroethoxy) methane	ND	ug/L	10
bis(2-Chloroethyl) ether	ND	ug/L	10
bis(2-Chloroisopropyl) ether	ND	ug/L	10
4-Chloro-3-methylphenol	ND	ug/L	10
2-Chloronaphthalene	ND	ug/L	10
2-Chlorophenol	ND	ug/L	10
4-Chlorophenyl phenyl ether	ND	ug/L	10
Chrysene	ND	ug/L	10
Dibenz(a,h)anthracene	ND	ug/L	10
Dibenzofuran	ND	ug/L	10
Di-n-butyl phthalate	ND	ug/L	10
1,2-Dichlorobenzene	ND	ug/L	10
1,3-Dichlorobenzene	ND	ug/L	10
1,4-Dichlorobenzene	ND	ug/L	10
3,3'-Dichlorobenzidine	ND	ug/L	20
2,4-Dichlorophenol	ND	ug/L	10
2,6-Dichlorophenol	ND	ug/L	10
Diethyl phthalate	ND	ug/L	10

METHOD BLANK REPORT  
Semivolatile Organics by GC/MS (cont.)

Analyte	Result	Units	Reporting Limit
Test: 8270CP-AP9-A			
Matrix: AQUEOUS			
QC Lot: 11 MAR 96-N1 QC Run: 11 MAR 96-N1			
Dimethoate	ND	ug/L	50
p-Dimethylaminoazobenzene	ND	ug/L	10
7,12-Dimethylbenz(a)-anthracene	ND	ug/L	10
3,3'-Dimethylbenzidine	ND	ug/L	10
a,a-Dimethylphenethylamine	ND	ug/L	10
2,4-Dimethylphenol	ND	ug/L	10
Dimethyl phthalate	ND	ug/L	10
1,3-Dinitrobenzene	ND	ug/L	10
4,6-Dinitro-2-methylphenol	ND	ug/L	50
2,4-Dinitrophenol	ND	ug/L	50
2,4-Dinitrotoluene	ND	ug/L	10
2,6-Dinitrotoluene	ND	ug/L	10
Di-n-octyl phthalate	ND	ug/L	10
Diphenylamine	ND	ug/L	10
Disulfoton	ND	ug/L	50
bis(2-Ethylhexyl) phthalate	ND	ug/L	10
ethyl methanesulfonate	ND	ug/L	10
amphur	ND	ug/L	50
Fluoranthene	ND	ug/L	10
Fluorene	ND	ug/L	10
Hexachlorobenzene	ND	ug/L	10
Hexachlorobutadiene	ND	ug/L	10
Hexachlorocyclopentadiene	ND	ug/L	10
Hexachloroethane	ND	ug/L	10
Hexachlorophene	ND	ug/L	--
Hexachloropropene	ND	ug/L	10
Indeno(1,2,3-cd)pyrene	ND	ug/L	10
Isophorone	ND	ug/L	10
Isosafrole	ND	ug/L	20
Methapyrilene	ND	ug/L	10
3-Methylcholanthrene	ND	ug/L	10
Methyl methanesulfonate	ND	ug/L	10
2-Methylnaphthalene	ND	ug/L	10
Methyl parathion	ND	ug/L	50
2-Methylphenol	ND	ug/L	10
3/4-Methylphenol	ND	ug/L	10
Naphthalene	ND	ug/L	10

METHOD BLANK REPORT  
Semivolatile Organics by GC/MS (cont.)

Analyte	Result	Units	Reporting Limit
Test: 8270CP-AP9-A			
Matrix: AQUEOUS			
QC Lot: 11 MAR 96-N1 QC Run: 11 MAR 96-N1			
1,4-Naphthoquinone	ND	ug/L	10
1-Naphthylamine	ND	ug/L	10
2-Naphthylamine	ND	ug/L	10
2-Nitroaniline	ND	ug/L	50
3-Nitroaniline	ND	ug/L	50
4-Nitroaniline	ND	ug/L	50
Nitrobenzene	ND	ug/L	10
2-Nitrophenol	ND	ug/L	10
4-Nitrophenol	ND	ug/L	50
4-Nitroquinoline-1-oxide	ND	ug/L	100
N-Nitroso-di-n-butylamine	ND	ug/L	10
N-Nitrosodiethylamine	ND	ug/L	10
N-Nitrosodimethylamine	ND	ug/L	10
N-Nitrosodiphenylamine	ND	ug/L	10
N-Nitroso-di-n-propylamine	ND	ug/L	10
N-Nitrosomethylethylamine	ND	ug/L	10
N-Nitrosomorpholine	ND	ug/L	10
N-Nitrosopiperidine	ND	ug/L	10
Nitrosopyrrolidine	ND	ug/L	10
Nitro-o-toluidine	ND	ug/L	10
parathion	ND	ug/L	50
Pentachlorobenzene	ND	ug/L	10
Pentachloroethane	ND	ug/L	10
Pentachloronitrobenzene	ND	ug/L	50
Pentachlorophenol	ND	ug/L	50
Phenacetin	ND	ug/L	10
Phenanthrene	ND	ug/L	10
Phenol	ND	ug/L	10
4-Phenylenediamine	ND	ug/L	100
Phorate	ND	ug/L	100
2-Picoline	ND	ug/L	10
Pronamide	ND	ug/L	10
Pyrene	ND	ug/L	10
Pyridine	ND	ug/L	20
Safrole	ND	ug/L	10
Sulfotepp	ND	ug/L	50
1,2,4,5-Tetrachlorobenzene	ND	ug/L	10
2,3,4,6-Tetrachlorophenol	ND	ug/L	50
Thionazin	ND	ug/L	50

METHOD BLANK REPORT  
Semivolatile Organics by GC/MS (cont.)

Analyte	Result	Units	Reporting Limit
Test: 8270CP-AP9-A			
Matrix: AQUEOUS			
QC Lot: 11 MAR 96-N1 QC Run: 11 MAR 96-N1			
2-Toluidine	ND	ug/L	10
1,2,4-Trichlorobenzene	ND	ug/L	10
2,4,5-Trichlorophenol	ND	ug/L	50
2,4,6-Trichlorophenol	ND	ug/L	10
0,0,0-Triethylphosphoro- thioate	ND	ug/L	10
1,3,5-Trinitrobenzene	ND	ug/L	10

QC LOT ASSIGNMENT REPORT - MS QC  
Semivolatile Organics by GC/MS

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)	MS QC Run Number (SA,MS,SD,DU)
047724-0001-SA	AQUEOUS	625-A	11 MAR 96-N1	11 MAR 96-N1	11 MAR 96-N1

**X SPIKE/MATRIX SPIKE DUPLICATE QC REPORT**  
**Volatiles Organics by GC/MS**  
**Project: 047724**

Category: 625-A Acid, Base and Neutrals by GC/MS.  
 Matrix: AQUEOUS  
 Sample: 047663-0005  
 MS Run: 11 MAR 96-N1  
 Units: ug/L

Analyte	Sample Result	Concentration		Amount Spiked		% Recovery		Recov. Accep. Limits	RPD MS-MSD	RPD Accept Limits
		MS Result	MSD Result	MS	MSD	MS	MSD			
Phenol	ND	70	88	100	110	69	81	5-112	17	29
2-Chlorophenol	ND	72	90	100	110	71	83	23-134	16	29
1,4-Dichlorobenzene	ND	25	28	51	54	49	52	20-124	7.1	28
N-Nitroso-di-n-propylamine	ND	36	44	51	54	71	81	1-230	13	24
1,2,4-Trichlorobenzene	ND	23	25	51	54	45	47	44-142	4.6	27
4-Chloro-3-methylphenol	ND	68	81	100	110	67	75	22-147	12	27
Acenaphthene	ND	26	31	51	54	50	58	47-145	14	24
4-Nitrophenol	ND	68	87	100	110	67	81	1-132	19	51
2,4-Dinitrotoluene	ND	39	47	51	54	77	88	39-139	12	22
Pentachlorophenol	ND	56	76	100	110	55	71	14-176	25	34
Hexachlorocyclopentadiene	ND	36	42	51	54	70	77	52-115	11	23

ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

QC LOT ASSIGNMENT REPORT  
Semi-volatile Organics by GC

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
047724-0001-SA	AQUEOUS	615-A	12 MAR 96-N1	12 MAR 96-N1
047724-0001-SA	AQUEOUS	8080-A	14 MAR 96-N1	14 MAR 96-N1

DUPLICATE CONTROL SAMPLE REPORT  
Semivolatile Organics by GC

Analyte	Concentration		Measured	AVG	Accuracy		Precision	
	Spiked	DCS1			DCS2	DCS	Limits	(RPD)
Category: 615-A								
Matrix: AQUEOUS								
QC Lot: 12 MAR 96-N1								
Concentration Units: ug/L								
2,4-D	5.00	3.15	2.82	2.98	60	44- 97	11	34
2,4,5-TP (Silvex)	1.00	0.756	0.657	0.706	71	49-102	14	32
2,4,5-T	1.00	0.791	0.699	0.745	75	47-110	12	32

Category: 8080-A  
Matrix: AQUEOUS  
QC Lot: 14 MAR 96-N1  
Concentration Units: ug/L

gamma-BHC (Lindane)	0.200	0.205	0.201	0.203	102	81-117	2.0	13
Heptachlor	0.200	0.175	0.163	0.169	85	72-125	7.1	11
Aldrin	0.200	0.151	0.137	0.144	72	69-112	9.7	16
Dieldrin	0.500	0.450	0.441	0.446	89	77-111	2.0	13
Endrin	0.500	0.481	0.472	0.476	95	83-122	1.9	14
4,4'-DDT	0.500	0.461	0.455	0.458	92	76-125	1.3	14

Calculations are performed before rounding to avoid round-off errors in calculated results.

SINGLE CONTROL SAMPLE REPORT  
Semivolatile Organics by GC

Analyte	Concentration		Accuracy(%)	
	Spiked	Measured	SCS	Limits

Category: 615-A  
Matrix: AQUEOUS  
QC Lot: 12 MAR 96-N1 QC Run: 12 MAR 96-N1  
Concentration Units: ug/L

DCAA	5.00	4.29	86	45-123
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Category: 8080-A  
Matrix: AQUEOUS  
QC Lot: 14 MAR 96-N1 QC Run: 14 MAR 96-N1  
Concentration Units: ug/L

Tetrachloro-m-xylene	1.00	0.740	74	54-106
Dibutyl chlorendate	1.00	0.941	94	56-138
Decachlorobiphenyl	0.200	0.164	82	65-145

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT  
Semivolatile Organics by GC

Analyte	Result	Units	Reporting Limit
Test: 8150-AP9-A			
Matrix: AQUEOUS			
QC Lot: 12 MAR 96-N1 QC Run: 12 MAR 96-N1			
2,4-D	ND	ug/L	1.2
2,4,5-TP (Silvex)	ND	ug/L	0.17
2,4,5-T	ND	ug/L	0.20
Test: 8080-AP9-A			
Matrix: AQUEOUS			
QC Lot: 14 MAR 96-N1 QC Run: 14 MAR 96-N1			
Aldrin	ND	ug/L	0.050
Aroclor 1016	ND	ug/L	1.0
Aroclor 1221	ND	ug/L	1.0
Aroclor 1232	ND	ug/L	1.0
Aroclor 1242	ND	ug/L	1.0
Aroclor 1248	ND	ug/L	1.0
Aroclor 1254	ND	ug/L	1.0
Aroclor 1260	ND	ug/L	1.0
alpha-BHC	ND	ug/L	0.050
beta-BHC	ND	ug/L	0.050
gamma-BHC	ND	ug/L	0.050
gamma-BHC (Lindane)	ND	ug/L	0.050
alpha-Chlordane	ND	ug/L	0.050
gamma-Chlordane	ND	ug/L	0.050
Chlorobenzilate	ND	ug/L	1.0
4,4'-DDD	ND	ug/L	0.10
4,4'-DDE	ND	ug/L	0.10
4,4'-DDT	ND	ug/L	0.10
Diallate	ND	ug/L	1.0
Dieldrin	ND	ug/L	0.10
Endosulfan I	ND	ug/L	0.050
Endosulfan II	ND	ug/L	0.10
Endosulfan sulfate	ND	ug/L	0.10
Endrin	ND	ug/L	0.10
Endrin aldehyde	ND	ug/L	0.10
Heptachlor	ND	ug/L	0.050
Heptachlor epoxide	ND	ug/L	0.050
Isodrin	ND	ug/L	0.10
Kepone	ND	ug/L	1.0
Methoxychlor	ND	ug/L	0.50
Toxaphene	ND	ug/L	5.0

QC LOT ASSIGNMENT REPORT  
Metals Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
047724-0001-SA	AQUEOUS	ICP-AT	11 MAR 96-N1	11 MAR 96-N1
047724-0001-SA	AQUEOUS	PB-FAA-AT	12 MAR 96-N2	12 MAR 96-N2
047724-0001-SA	AQUEOUS	AS-FAA-AT	11 MAR 96-SA	11 MAR 96-SA
047724-0001-SA	AQUEOUS	SE-FAA-AT	11 MAR 96-SA	11 MAR 96-SA
047724-0001-SA	AQUEOUS	TL-FAA-AT	12 MAR 96-N2	12 MAR 96-N2
047724-0001-SA	AQUEOUS	HG-CVAA-AT	13 MAR 96-N1	13 MAR 96-N1

DUPLICATE CONTROL SAMPLE REPORT  
Metals Analysis and Preparation

Analyte	Concentration			AVG	Accuracy Average(%)		Precision (RPD)	
	Spiked	DCS1	Measured DCS2		DCS	Limits	DCS	Limits
Category: ICP-AT								
Matrix: AQUEOUS								
QC Lot: 11 MAR 96-N1								
Concentration Units: mg/L								
Aluminum	2.00	2.04	2.08	2.06	103	80-116	2.3	10
Antimony	0.500	0.474	0.490	0.482	96	80-115	3.3	14
Arsenic	0.500	0.514	0.517	0.515	103	80-115	0.64	17
Barium	2.00	1.97	2.01	1.99	99	80-114	1.9	10
Beryllium	0.0500	0.0497	0.0506	0.0502	100	80-120	1.9	10
Boron	10	9.74	9.85	9.80	98	80-120	1.0	10
Cadmium	0.0500	0.0489	0.0494	0.0492	98	80-119	1.0	16
Calcium	100	101	102	102	102	80-114	1.2	10
Chromium	0.200	0.195	0.199	0.197	99	80-116	1.7	11
Cobalt	0.500	0.499	0.506	0.503	101	80-114	1.4	10
Copper	0.250	0.250	0.256	0.253	101	80-120	2.3	10
Iron	1.00	1.01	1.04	1.02	102	80-120	2.5	11
Lead	0.500	0.506	0.505	0.505	101	80-119	0.22	10
Lithium	10.0	10.3	10.4	10.4	104	80-120	1.0	20
Magnesium	50.0	51.3	52.0	51.6	103	81-120	1.3	10
Manganese	0.500	0.509	0.515	0.512	102	80-116	1.2	10
Molybdenum	0.50	0.510	0.517	0.513	103	80-120	1.4	20
Nickel	0.500	0.503	0.514	0.508	102	80-114	2.1	10
Potassium	50.0	50.8	51.3	51.0	102	80-120	0.95	13
Selenium	0.500	0.592	0.556	0.574	115	80-120	6.3	20
Silver	0.050	0.0509	0.0527	0.0518	104	80-119	3.6	15
Sodium	100	103	104	103	103	80-120	1.2	10
Tin	0.50	0.475	0.477	0.476	95	80-120	0.29	20
Titanium	0.500	0.501	0.506	0.503	101	80-120	0.95	20
Vanadium	0.500	0.499	0.511	0.505	101	80-116	2.4	10
Zinc	0.500	0.499	0.505	0.502	100	80-120	1.2	13

Category: PB-FAA-AT  
Matrix: AQUEOUS  
QC Lot: 12 MAR 96-N2  
Concentration Units: mg/L

Lead	0.030	0.0316	0.0319	0.0318	106	71-136	0.94	17
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Calculations are performed before rounding to avoid round-off errors in calculated results.

DUPLICATE CONTROL SAMPLE REPORT  
Metals Analysis and Preparation (cont.)

Analyte	Concentration			AVG	Accuracy		Precision	
	Spiked	DCS1	Measured DCS2		Average (%) DCS	Limits	(RPD) DCS	Limits
Category: AS-FAA-AT Matrix: AQUEOUS QC Lot: 11 MAR 96-SA Concentration Units: mg/L								
Arsenic	0.030	0.0330	0.0330	0.0330	110	81-116	0.0	13
Category: SE-FAA-AT Matrix: AQUEOUS QC Lot: 11 MAR 96-SA Concentration Units: mg/L								
Selenium	0.030	0.0291	0.0283	0.0287	96	73-125	2.8	15
Category: TL-FAA-AT Matrix: AQUEOUS QC Lot: 12 MAR 96-N2 Concentration Units: mg/L								
Thallium	0.0300	0.0289	0.0297	0.0293	98	75-125	2.7	20
Category: HG-CVAA-AT Matrix: AQUEOUS QC Lot: 13 MAR 96-N1 Concentration Units: mg/L								
Mercury	0.001	0.00110	0.00114	0.00112	112	83-112	3.7	12

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT  
Metals Analysis and Preparation

Analyte	Result	Units	Reporting Limit
Test: ICP-AP9-AT			
Matrix: AQUEOUS			
QC Lot: 11 MAR 96-N1 QC Run: 11 MAR 96-N1			
Antimony	ND	mg/L	0.060
Barium	ND	mg/L	0.010
Beryllium	ND	mg/L	0.0020
Cadmium	ND	mg/L	0.0050
Chromium	ND	mg/L	0.010
Cobalt	ND	mg/L	0.010
Copper	ND	mg/L	0.020
Iron	ND	mg/L	0.10
Manganese	ND	mg/L	0.010
Nickel	ND	mg/L	0.040
Silver	ND	mg/L	0.010
Sodium	ND	mg/L	5.0
Tin	ND	mg/L	0.10
Vanadium	ND	mg/L	0.010
Zinc	ND	mg/L	0.020

Test: PB-FAA-AT  
Matrix: AQUEOUS  
QC Lot: 12 MAR 96-N2 QC Run: 12 MAR 96-N2

Lead	ND	mg/L	0.0050
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Test: AS-FAA-AT  
Matrix: AQUEOUS  
QC Lot: 11 MAR 96-SA QC Run: 11 MAR 96-SA

Arsenic	ND	mg/L	0.0050
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Test: SE-FAA-AT  
Matrix: AQUEOUS  
QC Lot: 11 MAR 96-SA QC Run: 11 MAR 96-SA

Selenium	ND	mg/L	0.0050
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METHOD BLANK REPORT  
Metals Analysis and Preparation (cont.)

Analyte	Result	Units	Reporting Limit
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Test: TL-FAA-AT  
Matrix: AQUEOUS  
QC Lot: 12 MAR 96-N2 QC Run: 12 MAR 96-N2

Thallium	ND	mg/L	0.0050
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Test: HG-CVAA-7470-AT  
Matrix: AQUEOUS  
QC Lot: 13 MAR 96-N1 QC Run: 13 MAR 96-N1

Mercury	ND	mg/L	0.00020
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**LOT ASSIGNMENT REPORT**  
**Water Chemistry Analysis and Preparation**

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
047724-0001-SA	AQUEOUS	TOX-A	12 MAR 96-N1	12 MAR 96-N1
047724-0001-SA	AQUEOUS	CN-A	12 MAR 96-N1	12 MAR 96-N1
047724-0001-SA	AQUEOUS	S-A	13 MAR 96-N1	13 MAR 96-N1
047724-0001-SA	AQUEOUS	CL-IC-A	12 MAR 96-N1	12 MAR 96-N1
047724-0001-SA	AQUEOUS	SO4-IC-A	12 MAR 96-N1	12 MAR 96-N1
047724-0001-SA	AQUEOUS	TOC-A	12 MAR 96-N1	12 MAR 96-N1
047724-0001-SA	AQUEOUS	PHEN	11 MAR 96-N1	11 MAR 96-N1

DUPLICATE CONTROL SAMPLE REPORT  
t Chemistry Analysis and Preparation

Analyte	Concentration		Measured DCS2	AVG	Accuracy Average(%) DCS Limits		Precision (RPD) DCS Limits	
	Spiked	DCS1			DCS	Limits	DCS	Limits
Category: TOX-A Matrix: AQUEOUS QC Lot: 12 MAR 96-N1 Concentration Units: ug/L								
Total Organic Halogen as Cl	100	100	103	102	102	79-114	3.3	20
Category: CN-A Matrix: AQUEOUS QC Lot: 12 MAR 96-N1 Concentration Units: mg/L								
Cyanide	0.172	0.154	0.156	0.155	90	74-112	1.3	21
Category: S-A Matrix: AQUEOUS QC Lot: 13 MAR 96-N1 Concentration Units: mg/L								
Sulfide, Total	0.482	0.520	0.516	0.518	107	70-128	0.77	13
Category: CL-IC-A Matrix: AQUEOUS QC Lot: 12 MAR 96-N1 Concentration Units: mg/L								
Chloride	50.0	51.9	52.1	52.0	104	91-111	0.38	10
Category: SO4-IC-A Matrix: AQUEOUS QC Lot: 12 MAR 96-N1 Concentration Units: mg/L								
Sulfate	50.0	51.7	51.6	51.6	103	92-112	0.19	10

Calculations are performed before rounding to avoid round-off errors in calculated results.

DUPLICATE CONTROL SAMPLE REPORT  
Chemistry Analysis and Preparation (cont.)

Analyte	Concentration		Measured DCS2	AVG	Accuracy Average(%)		Precision (RPD)		
	Spiked	DCS1			DCS	Limits	DCS	Limits	
Category: TOC-A Matrix: AQUEOUS QC Lot: 12 MAR 96-N1 Concentration Units: mg/L									
Total Organic Carbon	25.0	24.2	24.3	24.2	97	90-113	0.41	10	
Category: PHEN Matrix: AQUEOUS QC Lot: 11 MAR 96-N1 Concentration Units: mg/L									
Phenolics	0.050	0.0442	0.0397	0.0420	84	76-115	11	20	

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT  
t Chemistry Analysis and Preparation

Analyte	Result	Units	Reporting Limit
Test: TOX-TOX-A Matrix: AQUEOUS QC Lot: 12 MAR 96-N1 QC Run: 12 MAR 96-N1			
Total Organic Halogen as Cl	ND	ug/L	30.0
Test: CNTOT-TEC-A Matrix: AQUEOUS QC Lot: 12 MAR 96-N1 QC Run: 12 MAR 96-N1			
Cyanide	ND	mg/L	0.010
Test: S-SPEC-AT Matrix: AQUEOUS QC Lot: 13 MAR 96-N1 QC Run: 13 MAR 96-N1			
Sulfide, Total	ND	mg/L	0.050
Test: CL-IC-A Matrix: AQUEOUS QC Lot: 12 MAR 96-N1 QC Run: 12 MAR 96-N1			
Chloride	ND	mg/L	3.0
Test: SO4-IC-A Matrix: AQUEOUS QC Lot: 12 MAR 96-N1 QC Run: 12 MAR 96-N1			
Sulfate	ND	mg/L	5.0
Test: TOC-A Matrix: AQUEOUS QC Lot: 12 MAR 96-N1 QC Run: 12 MAR 96-N1			
Total Organic Carbon	ND	mg/L	1.0

**METHOD BLANK REPORT**  
Chemistry Analysis and Preparation (cont.)

Analyte	Result	Units	Reporting Limit
Test: PHEN-MAN-9065-A			
Matrix: AQUEOUS			
QC Lot: 11 MAR 96-N1 QC Run: 11 MAR 96-N1			
Phenolics	ND	mg/L	0.0050

**U.S. GEOLOGICAL SURVEY, WATER RESOURCES DIVISION, NEW MEXICO DISTRICT  
ANALYTICAL RECORD/TEST/CHAIN OF CUSTODY**

Project Name & Number Cannon Air Force Base, Ground Water Sampling 463536004					PACKING AND SHIPPING DETAILS	
Sampling Location Landfill-5, Cannon Air Force Base, NM					Packed and Sealed for Shipping by <i>Fred Gebhardt</i>	
Team Leader Jerry Larson					Delivered to Shipper by <i>Jerry Larson</i>	
					Seal Number <i>067544</i>	
					Airbill Number <i>0295916533</i>	
					Sampling Status <input checked="" type="checkbox"/> Done <input type="checkbox"/> Continuing	
Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
07 MAR96	9:00	CAFB-M-0396-1	Ground water	15	All Appx-IX-SW8240, E415.1, SW9065, W9020, SW8270, SW8080, SW8150, SW9010, SW9030, E300 (Cl, So4), ICP-Total Metals--SW6010 (Sb, Ba, Be, Cd, Cr, Co, Cu, Fe, Mn, Ni, Ag, Na, Sn, V, Zn), SW7060, SW7421, SW7470, SW7740, SW7841	Environmental Sample -01
<del>MAR96</del>		<del>CAFB-M-0396-2</del>	<del>ASTM TYPE II WATER</del>	<del>1</del>	<del>Appx-IX-SW8240</del>	<del>Trip Blank</del>
Additional Comments						
CHAIN OF CUSTODY RECORD				LABORATORY LOG-IN OF SAMPLE SHIPPING CONTAINER		
Relinquished by (signed)	Received by (signed)	Date	Time	Analytical Laboratory		Seal Intact upon Receipt
<i>Jerry Larson</i>	<i>Fed Ex</i>	<i>3-7-96</i>	<i>2:00 PM</i>	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<i>Fred Gebhardt</i>	<i>3-8-96</i>	<i>9:00</i>			Condition of Contents <i>Good</i>
				Attention: Lindsay Breyer		Contents Temperature <i>3.9</i>
						Laboratory Project Number

# DODEC LABORATORY DATA REVIEW WORKSHEET

## 1.0 GENERAL INFORMATION

Data reviewer: BOB BROCK  
Date of review: 4/1/96  
Sample project number: 47558  
Project name: MM-CANNON GW  
Sample collection date: 2/26-2/27/96  
Sample matrix and number: 5 Aquifers

Type and number of samples in project:

Type	Number
Environmental	<u>3</u>
Trip blank	<u>1</u>
Equipment blank	<u>1</u>
Ambient blank	<u>    </u>
MS/MSD	<u>    </u>
Other	<u>    </u>

## 2.0 DATA REPORT

Date of Analytical Results Report: 3/15/96  
Number of volumes in Raw Data Report: 1  
Raw Data Report reviewed? Yes      No X

Were all analyses requested on the COC form performed by the laboratory?  
Yes      No     

If no, list canceled analyses and reason for non-performance:

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Were the samples properly preserved upon receipt by the laboratory?  
Yes      No     

If no, list laboratory ID for samples that were not properly preserved.

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### 3.0 ANALYTICAL METHODS

Analytical methods used in this project

- VOC by GC/MS (SW 8240, SW 8260, E524, E624)
- Halogenated VOC by GC (SW 8010)
- Aromatic VOC by GC (SW 8020)
- SVOC by GC/MS (SW 8270)
- PAH by HPLC (SW 8310)
- Organochlorine pesticides and PCB (SW 8080)
- Organophosphorous pesticides (SW 8140)
- Chlorinated herbicides (SW 8150)
- Dioxins and Furans (SW 8280)
- Explosives (8330)
- TOC (E415.1 or SW 9060)
- TPH (E418.1)
- Oil and Grease (E413.2)
- TOX (SW9020)
  
- ICP screen for metals (SW 6010)
- ICP/MS screen for metals (SW 6020)
- Trace ICP screen for metals (SW 6010 modified)
- Antimony by GFAA (SW 7041)
- Arsenic by GFAA (SW 7060)
- Chromium (SW 7191 or 7196)
- Lead by GFAA (SW 7421)
- Mercury by CVAA (SW 7470 or 7471)
- Selenium by GFAA (SW 7740)
- Thallium by GFAA (SW 7841)
- Inorganic anions (E300.0)
- Alkalinity (310.1)
- Cyanide, total and amenable (SW 9010/9012)
- Nitrogen, ammonia (E350.1)
- Nitrogen, TKN (E351.2)
- Nitrogen, nitrate (E353.2)
- Nitrogen, nitrate plus nitrite (E353.2)
- Nitrogen, nitrite (E354.1)
- Phosphorous, total or ortho (E365.3)
- Sulfate (E375.4)
- Sulfide (E376.2)
- TDS (E160.1)
- pH (SW 9040 or 9045)
- Percent moisture (D2216)
  
- Gross alpha and gross beta radioactivity (SW 9310)
- Alpha-emitting radium isotopes (SW 9315)
- Radium-228 (SW 9320)
- Uranium (908.1)

Other analyses :

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Were analytical holding times met? Yes  No \_\_\_\_\_

If no, list analytical method and laboratory ID for samples that exceeded holding time:

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Did surrogate recoveries meet QC acceptance criteria? Yes  No \_\_\_\_\_

If no, list analytical method, laboratory ID, and surrogates that did not meet acceptance criteria:

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Did actual reporting limits meet project detection limits? Organic analyses : Yes  No \_\_\_\_\_

If no, list analytical method, laboratory ID, and reason for non-conformance:

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Inorganic analyses: Yes \_\_\_\_\_ No \_\_\_\_\_ *NA*

Reporting limits for GFAA metals and inorganic anions may be raised when: (1) sample concentrations exceed the instrument linear range and (2) target analytes are subject to matrix interferences. Reporting limits for ICP metals and mercury by CVAA are typically only raised when the sample concentration exceeds the instrument linear range.

Did DCS meet QC acceptance criteria? Yes  No \_\_\_\_\_

If no, list analytical method, laboratory ID, and reason for non-conformance:

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Did SCS meet QC acceptance criteria? Yes  No

If no, list analytical method, laboratory ID, and reason for non-conformance:

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\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Were any target compounds found in the method, trip, equipment, or ambient blanks above the RL? Yes  No

If yes, list the analytical method, laboratory ID, type of blank and compound:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Did the MS/MSD meet QC acceptance criteria? Yes  No  *NA*

MS/MSD data are used to evaluate the effect of the sample matrix on the analytical process and should only be used in conjunction with other available laboratory QC information to evaluate precision and accuracy.

If no, list the analytical method, laboratory ID, and reason for non-conformance :

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Additional comments:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

#### IV. QUALITY CONTROL REPORT

The Quanterra laboratories operate under a vigorous QA/QC program designed to ensure the generation of scientifically valid, legally defensible data by monitoring every aspect of laboratory operations. Routine QA/QC procedures include the use of approved methodologies, independent verification of analytical standards, use of duplicate Laboratory Control Samples to assess the precision and accuracy of the methodology on a routine basis, and a rigorous system of data review.

The standard laboratory QC package is designed to:

- 1) establish a strong, cost-effective QC program that ensures the generation of scientifically valid, legally defensible data
- 2) assess the laboratory's performance of the analytical method using control limits generated with a well-defined matrix
- 3) establish clear-cut guidelines for acceptability of analytical data so that QC decisions can be made immediately at the bench, and
- 4) provide a standard set of reportables which assures the client of the quality of his data.

The Quanterra QC program is based upon monitoring the precision and accuracy of an analytical method by analyzing a set of Duplicate Control Samples (DCS) at frequent, well-defined intervals. Each DCS is a well-characterized matrix which is spiked with target compounds at 5-100 times the reporting limit, depending upon the methodology being monitored. The purpose of the DCS is not to duplicate the sample matrix, but rather to provide an interference-free, homogeneous matrix from which to gather data to establish control limits. These limits are used to determine whether data generated by the laboratory on any given day is in control.

Control limits for accuracy (percent recovery) are based on the average, historical percent recovery +/- 3 standard deviation units. Control limits for precision (relative percent difference) range from 0 (identical duplicate DCS results) to the average, historical relative percent difference + 3 standard deviation units. These control limits are fairly narrow based on the consistency of the matrix being monitored and are updated on a quarterly basis.

For each batch of samples analyzed, an additional control measure is taken in the form of a Single Control Sample (SCS). The SCS consists of a control matrix that is spiked with surrogate compounds appropriate to the method being used. In cases where no surrogate is available, (e.g., metals or conventional analyses) a single DCS serves as the control sample. An SCS is prepared for each sample lot for which the DCS pair are not analyzed. The recovery of the SCS is charted in exactly the same manner as described for the DCS, and provides a daily check on the performance of the method.

Accuracy for DCS and SCS is measured by Percent Recovery.

$$\% \text{ Recovery} = \frac{\text{Measured Concentration}}{\text{Actual Concentration}} \times 100$$

Precision for DCS is measured by Relative Percent Difference (RPD).

$$\text{RPD} = \frac{|\text{Measured Concentration DCS1} - \text{Measured Concentration DCS2}|}{(\text{Measured Concentration DCS1} + \text{Measured Concentration DCS2})/2} \times 100$$

All samples analyzed concurrently by the same test are assigned the same QC lot number. Projects which contain numerous samples, analyzed over several days, may have multiple QC lot numbers associated with each test. The QC information which follows includes a listing of the QC lot numbers associated with each of the samples reported, DCS and SCS (where applicable) recoveries from the QC lots associated with the samples, and control limits for these lots. The QC data is reported by test code, in the order that the tests are reported in the analytical results section of this report.

QC LOT ASSIGNMENT REPORT  
Volatile Organics by GC/MS

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
047558-0001-SA	AQUEOUS	624-A	09 MAR 96-J	09 MAR 96-J
047558-0002-SA	AQUEOUS	624-A	09 MAR 96-J	09 MAR 96-J
047558-0003-TB	AQUEOUS	624-A	09 MAR 96-J	09 MAR 96-J
047558-0004-EB	AQUEOUS	624-A	06 MAR 96-J	06 MAR 96-J
047558-0005-SA	AQUEOUS	624-A	09 MAR 96-J	09 MAR 96-J

DUPLICATE CONTROL SAMPLE REPORT  
Volatile Organics by GC/MS

Analyte	Concentration Spiked	Concentration Measured		AVG	Accuracy Average(%)		Precision (RPD)		
		DCS1	DCS2		DCS	Limits	DCS	Limit	
Category: 624-A									
Matrix: AQUEOUS									
QC Lot: 09 MAR 96-J									
Concentration Units: ug/L									
1,1-Dichloroethene	50.0	47.4	50.8	49.1	98	74-124	6.9	17	
Trichloroethene	50.0	47.9	50.7	49.3	99	77-119	5.7	13	
Benzene	50.0	45.2	47.8	46.5	93	80-117	5.6	12	
Toluene	50.0	45.3	47.4	46.4	93	80-119	4.5	11	
Chlorobenzene	50.0	48.1	50.4	49.2	99	81-120	4.7	14	

Category: 624-A  
Matrix: AQUEOUS  
QC Lot: 06 MAR 96-J  
Concentration Units: ug/L

1,1-Dichloroethene	50.0	49.0	50.4	49.7	99	74-124	2.8	17
Trichloroethene	50.0	49.9	51.1	50.5	101	77-119	2.4	13
Benzene	50.0	47.8	49.1	48.4	97	80-117	2.7	12
Toluene	50.0	47.5	49.2	48.4	97	80-119	3.5	11
Chlorobenzene	50.0	50.8	52.1	51.4	103	81-120	2.5	14

Calculations are performed before rounding to avoid round-off errors in calculated results.

SINGLE CONTROL SAMPLE REPORT  
Volatile Organics by GC/MS

Analyte	Concentration		Accuracy(%)	
	Spiked	Measured	SCS	Limits

Category: 624-A  
Matrix: AQUEOUS  
QC Lot: 09 MAR 96-J    QC Run: 09 MAR 96-J  
Concentration Units: ug/L

1,2-Dichloroethane-d4	50.0	47.6	95	85-111
4-Bromofluorobenzene	50.0	50.5	101	86-110
Toluene-d8	50.0	50.2	100	91-110

Category: 624-A  
Matrix: AQUEOUS  
QC Lot: 06 MAR 96-J    QC Run: 06 MAR 96-J  
Concentration Units: ug/L

1,2-Dichloroethane-d4	50.0	46.7	93	85-111
4-Bromofluorobenzene	50.0	49.3	99	86-110
Toluene-d8	50.0	51.5	103	91-110

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT  
Volatile Organics by GC/MS

alyte	Result	Units	Reporting Limit
Test: 8240CP-AP9-AP			
Matrix: AQUEOUS			
QC Lot: .09 MAR 96-J	QC Run: 09 MAR 96-J		
Acetone	ND	ug/L	10
Acetonitrile	ND	ug/L	200
Acrolein	ND	ug/L	100
Acrylonitrile	ND	ug/L	100
Allyl chloride	ND	ug/L	10
Benzene	ND	ug/L	5.0
Bromodichloromethane	ND	ug/L	5.0
Bromoform	ND	ug/L	5.0
Bromomethane	ND	ug/L	10
2-Butanone (MEK)	ND	ug/L	10
Carbon disulfide	ND	ug/L	5.0
Carbon tetrachloride	ND	ug/L	5.0
Chlorobenzene	ND	ug/L	5.0
Chloroethane	ND	ug/L	10
Chloroform	ND	ug/L	5.0
Chloromethane	ND	ug/L	10
Chloroprene	ND	ug/L	5.0
Dibromochloromethane	ND	ug/L	5.0
1,2-Dibromo-3-chloro- propane (DBCP)	ND	ug/L	10
1,2-Dibromoethane (EDB)	ND	ug/L	10
Dibromomethane	ND	ug/L	5.0
trans-1,4-Dichloro-2-butene	ND	ug/L	5.0
Dichlorodifluoromethane	ND	ug/L	20
1,1-Dichloroethane	ND	ug/L	5.0
1,2-Dichloroethane	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	5.0
1,2-Dichloroethene (total)	ND	ug/L	5.0
1,2-Dichloropropane	ND	ug/L	5.0
cis-1,3-Dichloropropene	ND	ug/L	5.0
trans-1,3-Dichloropropene	ND	ug/L	5.0
1,4-Dioxane	ND	ug/L	500
Ethylbenzene	ND	ug/L	5.0
Ethyl methacrylate	ND	ug/L	20
Iodomethane	ND	ug/L	5.0
Isobutanol (2-Methyl-1-propanol)	ND	ug/L	200
2-Hexanone	ND	ug/L	10
Methacrylonitrile	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0

METHOD BLANK REPORT  
 Volatile Organics by GC/MS (cont.)

Analyte	Result	Units	Reporting Limit
Test: 8240CP-AP9-AP			
Matrix: AQUEOUS			
QC Lot: 09 MAR 96-J      QC Run: 09 MAR 96-J			
Methyl methacrylate	ND	ug/L	20
4-Methyl-2-pentanone (MIBK)	ND	ug/L	10
Propionitrile	ND	ug/L	5.0
Styrene	ND	ug/L	5.0
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0
Tetrachloroethene	ND	ug/L	5.0
Toluene	ND	ug/L	5.0
1,1,1-Trichloroethane	ND	ug/L	5.0
1,1,2-Trichloroethane	ND	ug/L	5.0
Trichloroethene	ND	ug/L	5.0
Trichlorofluoromethane	ND	ug/L	5.0
1,2,3-Trichloropropane	ND	ug/L	5.0
Vinyl acetate	ND	ug/L	10
Vinyl chloride	ND	ug/L	10
Xylenes (total)	ND	ug/L	5.0

Test: 8240CP-AP9-AP  
 Matrix: AQUEOUS  
 QC Lot: 09 MAR 96-J      QC Run: 09 MAR 96-J

Acetone	ND	ug/L	10
Acetonitrile	ND	ug/L	200
Acrolein	ND	ug/L	100
Acrylonitrile	ND	ug/L	100
Allyl chloride	ND	ug/L	10
Benzene	ND	ug/L	5.0
Bromodichloromethane	ND	ug/L	5.0
Bromoform	ND	ug/L	5.0
Bromomethane	ND	ug/L	10
2-Butanone (MEK)	ND	ug/L	10
Carbon disulfide	ND	ug/L	5.0
Carbon tetrachloride	ND	ug/L	5.0
Chlorobenzene	ND	ug/L	5.0
Chloroethane	ND	ug/L	10
Chloroform	ND	ug/L	5.0
Chloromethane	ND	ug/L	10
Chloroprene	ND	ug/L	5.0
Dibromochloromethane	ND	ug/L	5.0

METHOD BLANK REPORT  
Volatile Organics by GC/MS (cont.)

Analyte	Result	Units	Reporting Limit
Test: 8240CP-AP9-AP			
Matrix: AQUEOUS			
QC Lot: 09 MAR 96-J    QC Run: 09 MAR 96-J			
1,2-Dibromo-3-chloro- propane (DBCP)	ND	ug/L	10
1,2-Dibromoethane (EDB)	ND	ug/L	10
Dibromomethane	ND	ug/L	5.0
trans-1,4-Dichloro-2-butene	ND	ug/L	5.0
Dichlorodifluoromethane	ND	ug/L	20
1,1-Dichloroethane	ND	ug/L	5.0
1,2-Dichloroethane	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	5.0
1,2-Dichloroethene	ND	ug/L	5.0
(total)	ND	ug/L	5.0
1,2-Dichloropropane	ND	ug/L	5.0
cis-1,3-Dichloropropene	ND	ug/L	5.0
trans-1,3-Dichloropropene	ND	ug/L	5.0
1,4-Dioxane	ND	ug/L	500
Ethylbenzene	ND	ug/L	5.0
Ethyl methacrylate	ND	ug/L	20
Isodomethane	ND	ug/L	5.0
Isobutanol (2-Methyl-1-propanol)	ND	ug/L	200
2-Hexanone	ND	ug/L	10
Methacrylonitrile	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
Methyl methacrylate	ND	ug/L	20
4-Methyl-2-pentanone (MIBK)	ND	ug/L	10
Propionitrile	ND	ug/L	5.0
Styrene	ND	ug/L	5.0
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0
Tetrachloroethene	ND	ug/L	5.0
Toluene	ND	ug/L	5.0
1,1,1-Trichloroethane	ND	ug/L	5.0
1,1,2-Trichloroethane	ND	ug/L	5.0
Trichloroethene	ND	ug/L	5.0
Trichlorofluoromethane	ND	ug/L	5.0
1,2,3-Trichloropropane	ND	ug/L	5.0
Vinyl acetate	ND	ug/L	10
Vinyl chloride	ND	ug/L	10
Xylenes (total)	ND	ug/L	5.0

METHOD BLANK REPORT  
Volatile Organics by GC/MS (cont.)

Analyte	Result	Units	Reporting Limit	
Test: 8240CP-AP9-AP				
Matrix: AQUEOUS				
QC Lot: 06 MAR 96-J	QC Run: 06 MAR 96-J			
Acetone	ND	ug/L	10	
Acetonitrile	11	ug/L	200	J
Acrolein	ND	ug/L	100	
Acrylonitrile	ND	ug/L	100	
Allyl chloride	ND	ug/L	10	
Benzene	ND	ug/L	5.0	
Bromodichloromethane	ND	ug/L	5.0	
Bromoform	ND	ug/L	5.0	
Bromomethane	ND	ug/L	10	
2-Butanone (MEK)	ND	ug/L	10	
Carbon disulfide	ND	ug/L	5.0	
Carbon tetrachloride	ND	ug/L	5.0	
Chlorobenzene	ND	ug/L	5.0	
Chloroethane	ND	ug/L	10	
Chloroform	ND	ug/L	5.0	
Chloromethane	ND	ug/L	10	
Chloroprene	ND	ug/L	5.0	
Dibromochloromethane	ND	ug/L	5.0	
1,2-Dibromo-3-chloro- propane (DBCP)	ND	ug/L	10	
1,2-Dibromoethane (EDB)	ND	ug/L	10	
Dibromomethane	ND	ug/L	5.0	
trans-1,4-Dichloro-2-butene	ND	ug/L	5.0	
Dichlorodifluoromethane	ND	ug/L	20	
1,1-Dichloroethane	ND	ug/L	5.0	
1,2-Dichloroethane	ND	ug/L	5.0	
1,1-Dichloroethene	ND	ug/L	5.0	
1,2-Dichloroethene (total)	ND	ug/L	5.0	
1,2-Dichloropropane	ND	ug/L	5.0	
cis-1,3-Dichloropropene	ND	ug/L	5.0	
trans-1,3-Dichloropropene	ND	ug/L	5.0	
1,4-Dioxane	ND	ug/L	500	
Ethylbenzene	ND	ug/L	5.0	
Ethyl methacrylate	ND	ug/L	20	
Iodomethane	ND	ug/L	5.0	
Isobutanol (2-Methyl-1-propanol)	ND	ug/L	200	
2-Hexanone	ND	ug/L	10	
Methacrylonitrile	ND	ug/L	5.0	
Methylene chloride	ND	ug/L	5.0	

J = Result is detected below the reporting limit or is an estimated concentration.

METHOD BLANK REPORT  
Volatile Organics by GC/MS (cont.)

alyte	Result	Units	Reporting Limit
Test: 8240CP-AP9-AP			
Matrix: AQUEOUS			
QC Lot: 06 MAR 96-J	QC Run: 06 MAR 96-J		
Methyl methacrylate	ND	ug/L	20
4-Methyl-2-pentanone (MIBK)	ND	ug/L	10
Propionitrile	ND	ug/L	5.0
Styrene	ND	ug/L	5.0
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0
Tetrachloroethene	ND	ug/L	5.0
Toluene	ND	ug/L	5.0
1,1,1-Trichloroethane	ND	ug/L	5.0
1,1,2-Trichloroethane	ND	ug/L	5.0
Trichloroethene	ND	ug/L	5.0
Trichlorofluoromethane	ND	ug/L	5.0
1,2,3-Trichloropropane	ND	ug/L	5.0
Vinyl acetate	ND	ug/L	10
Vinyl chloride	ND	ug/L	10
Xylenes (total)	ND	ug/L	5.0

QC LOT ASSIGNMENT REPORT  
Semivolatile Organics by GC/MS

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
047558-0001-SA	AQUEOUS	625-A	04 MAR 96-N1	04 MAR 96-N1
047558-0002-SA	AQUEOUS	625-A	04 MAR 96-N1	04 MAR 96-N1
047558-0004-EB	AQUEOUS	625-A	04 MAR 96-N1	04 MAR 96-N1
047558-0005-SA	AQUEOUS	625-A	04 MAR 96-N1	04 MAR 96-N1

DUPLICATE CONTROL SAMPLE REPORT  
Semivolatile Organics by GC/MS

Analyte	Concentration Spiked	Concentration Measured		AVG	Accuracy Average(%)		Precision (RPD)		
		DCS1	DCS2		DCS	Limits	DCS	Limit	
Category: 625-A									
Matrix: AQUEOUS									
QC Lot: 04 MAR 96-N1									
Concentration Units: ug/L									
Phenol	100	75.9	76.2	76.0	76	45-109	0.39	29	
2-Chlorophenol	100	82.8	80.9	81.8	82	47-111	2.3	29	
1,4-Dichlorobenzene	50	27.6	30.7	29.2	58	32-103	11	28	
N-Nitroso-di-									
n-propylamine	50	36.1	33.8	35.0	70	49-107	6.6	24	
1,2,4-Trichlorobenzene	50	27.0	30.9	29.0	58	44-102	13	27	
4-Chloro-3-methylphenol	100	89.0	80.1	84.6	85	50-115	11	27	
Acenaphthene	50	38.0	37.3	37.6	75	47-109	1.9	24	
4-Nitrophenol	100	76.1	65.2	70.6	71	40-127	15	51	
2,4-Dinitrotoluene	50	46.2	44.8	45.5	91	46-118	3.1	22	
Pentachlorophenol	100	69.4	63.4	66.4	66	30-136	9.0	34	
Pyrene	50	41.3	38.9	40.1	80	52-115	6.0	23	

Calculations are performed before rounding to avoid round-off errors in calculated results.

SINGLE CONTROL SAMPLE REPORT  
Semivolatile Organics by GC/MS

Analyte	Concentration		Accuracy(%)	
	Spiked	Measured	SCS	Limits
Category: 625-A				
Matrix: AQUEOUS				
QC Lot: 04 MAR 96-N1				
QC Run: 04 MAR 96-N1				
Concentration Units: ug/L				
Nitrobenzene-d5	100	83.5	84	49-113
2-Fluorobiphenyl	100	57.0	57	43-104
Terphenyl-d14	100	79.2	79	33-139
2-Fluorophenol	200	146	73	42-100
Phenol-d5	200	129	64	54-105
2,4,6-Tribromophenol	200	160	80	33-123

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT  
Volatile Organics by GC/MS

Analyte	Result	Units	Reporting Limit
Test: 8270CP-AP9-A			
Matrix: AQUEOUS			
QC Lot: 04 MAR 96-N1	QC Run: 04 MAR 96-N1		
Acenaphthene	ND	ug/L	10
Acenaphthylene	ND	ug/L	10
Acetophenone	ND	ug/L	10
2-Acetylaminofluorene	ND	ug/L	100
4-Aminobiphenyl	ND	ug/L	10
Aniline	ND	ug/L	10
Anthracene	ND	ug/L	10
Aramite	ND	ug/L	10
Benzo(a)anthracene	ND	ug/L	10
Benzo(b)fluoranthene	ND	ug/L	10
Benzo(k)fluoranthene	ND	ug/L	10
Benzo(g,h,i)perylene	ND	ug/L	10
Benzo(a)pyrene	ND	ug/L	10
Benzyl alcohol	ND	ug/L	10
4-Bromophenyl			
phenyl ether	ND	ug/L	10
Rutyl benzyl phthalate	ND	ug/L	10
-sec-Butyl-4,6-dinitro-			
phenol	ND	ug/L	10
4-Chloroaniline	ND	ug/L	10
bis(2-Chloroethoxy)			
methane	ND	ug/L	10
bis(2-Chloroethyl) ether	ND	ug/L	10
bis(2-Chloroisopropyl)			
ether	ND	ug/L	10
4-Chloro-3-methylphenol	ND	ug/L	10
2-Chloronaphthalene	ND	ug/L	10
2-Chlorophenol	ND	ug/L	10
4-Chlorophenyl			
phenyl ether	ND	ug/L	10
Chrysene	ND	ug/L	10
Dibenz(a,h)anthracene	ND	ug/L	10
Dibenzofuran	ND	ug/L	10
Di-n-butyl phthalate	ND	ug/L	10
1,2-Dichlorobenzene	ND	ug/L	10
1,3-Dichlorobenzene	ND	ug/L	10
1,4-Dichlorobenzene	ND	ug/L	10
3,3'-Dichlorobenzidine	ND	ug/L	20
2,4-Dichlorophenol	ND	ug/L	10
2,6-Dichlorophenol	ND	ug/L	10
Diethyl phthalate	ND	ug/L	10

METHOD BLANK REPORT  
Semivolatiles Organics by GC/MS (cont.)

Analyte	Result	Units	Reporting Limit
Test: 8270CP-AP9-A			
Matrix: AQUEOUS			
QC Lot: 04 MAR 96-N1 QC Run: 04 MAR 96-N1			
Dimethoate	ND	ug/L	50
p-Dimethylaminoazobenzene	ND	ug/L	10
7,12-Dimethylbenz(a)-anthracene	ND	ug/L	10
3,3'-Dimethylbenzidine	ND	ug/L	10
a,a-Dimethylphenethylamine	ND	ug/L	10
2,4-Dimethylphenol	ND	ug/L	10
Dimethyl phthalate	ND	ug/L	10
1,3-Dinitrobenzene	ND	ug/L	10
4,6-Dinitro-2-methylphenol	ND	ug/L	50
2,4-Dinitrophenol	ND	ug/L	50
2,4-Dinitrotoluene	ND	ug/L	10
2,6-Dinitrotoluene	ND	ug/L	10
Di-n-octyl phthalate	ND	ug/L	10
Diphenylamine	ND	ug/L	10
Disulfoton	ND	ug/L	50
bis(2-Ethylhexyl) phthalate	ND	ug/L	10
ethyl methanesulfonate	ND	ug/L	10
amphur	ND	ug/L	50
Fluoranthene	ND	ug/L	10
Fluorene	ND	ug/L	10
Hexachlorobenzene	ND	ug/L	10
Hexachlorobutadiene	ND	ug/L	10
Hexachlorocyclopentadiene	ND	ug/L	10
Hexachloroethane	ND	ug/L	10
Hexachlorophene	ND	ug/L	--
Hexachloropropene	ND	ug/L	10
Indeno(1,2,3-cd)pyrene	ND	ug/L	10
Isophorone	ND	ug/L	10
Isosafrole	ND	ug/L	20
Methapyrilene	ND	ug/L	10
3-Methylcholanthrene	ND	ug/L	10
Methyl methanesulfonate	ND	ug/L	10
2-Methylnaphthalene	ND	ug/L	10
Methyl parathion	ND	ug/L	50
2-Methylphenol	ND	ug/L	10
3/4-Methylphenol	ND	ug/L	10
Naphthalene	ND	ug/L	10

METHOD BLANK REPORT  
 Semivolatile Organics by GC/MS (cont.)

analyte	Result	Units	Reporting Limit
Test: 8270CP-AP9-A			
Matrix: AQUEOUS			
QC Lot: 04 MAR 96-N1 QC Run: 04 MAR 96-N1			
1,4-Naphthoquinone	ND	ug/L	10
1-Naphthylamine	ND	ug/L	10
2-Naphthylamine	ND	ug/L	10
2-Nitroaniline	ND	ug/L	50
3-Nitroaniline	ND	ug/L	50
4-Nitroaniline	ND	ug/L	50
Nitrobenzene	ND	ug/L	10
2-Nitrophenol	ND	ug/L	10
4-Nitrophenol	ND	ug/L	50
4-Nitroquinoline-1-oxide	ND	ug/L	100
N-Nitroso-di-n-butylamine	ND	ug/L	10
N-Nitrosodiethylamine	ND	ug/L	10
N-Nitrosodimethylamine	ND	ug/L	10
N-Nitrosodiphenylamine	ND	ug/L	10
N-Nitroso-di-n-propylamine	ND	ug/L	10
N-Nitrosomethylethylamine	ND	ug/L	10
N-Nitrosomorpholine	ND	ug/L	10
N-Nitrosopiperidine	ND	ug/L	10
N-Nitrosopyrrolidine	ND	ug/L	10
5-Nitro-o-toluidine	ND	ug/L	10
Parathion	ND	ug/L	50
Pentachlorobenzene	ND	ug/L	10
Pentachloroethane	ND	ug/L	10
Pentachloronitrobenzene	ND	ug/L	50
Pentachlorophenol	ND	ug/L	50
Phenacetin	ND	ug/L	10
Phenanthrene	ND	ug/L	10
Phenol	ND	ug/L	10
4-Phenylenediamine	ND	ug/L	100
Phorate	ND	ug/L	100
2-Picoline	ND	ug/L	10
Pronamide	ND	ug/L	10
Pyrene	ND	ug/L	10
Pyridine	ND	ug/L	20
Safrole	ND	ug/L	10
Sulfotepp	ND	ug/L	50
1,2,4,5-Tetrachlorobenzene	ND	ug/L	10
2,3,4,6-Tetrachlorophenol	ND	ug/L	50
Thionazin	ND	ug/L	50

METHOD BLANK REPORT  
Semivolatile Organics by GC/MS (cont.)

Analyte	Result	Units	Reporting Limit
Test: 8270CP-AP9-A			
Matrix: AQUEOUS			
QC Lot: 04 MAR 96-N1	QC Run: 04 MAR 96-N1		
2-Toluidine	ND	ug/L	10
1,2,4-Trichlorobenzene	ND	ug/L	10
2,4,5-Trichlorophenol	ND	ug/L	50
2,4,6-Trichlorophenol	ND	ug/L	10
0,0,0-Triethylphosphoro- thioate	ND	ug/L	10
1,3,5-Trinitrobenzene	ND	ug/L	10

**U.S. GEOLOGICAL SURVEY, WATER RESOURCES DIVISION, NEW MEXICO DISTRICT  
ANALYTICAL QUEST/CHAIN OF CUSTODY**

Project Name & Number					PACKING AND SHIPPING DETAILS	
Sampling Location					Packed and Sealed for Shipping by	Seal Number
Team Leader					Delivered to Shipper by	Airbill Number
Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
Cannon Air Force Base, Ground Water Sampling      463536004					<i>Mike Rozbal</i>	
Landfill-4, Cannon Air Force Base, New Mexico					<i>Mike Rozbal</i>	0255916312
JERRY LARSON					<input type="checkbox"/> Done	<input checked="" type="checkbox"/> Continuing
27 FEB 96	1030	CAFB-N-0296-1	Groundwater	5	SW8240, SW8270	ENVIRONMENTAL SAMPLE - C
Additional Comments						
CHAIN OF CUSTODY RECORD				LABORATORY LOG-IN OF SAMPLE SHIPPING CONTAINER		
Relinquished by (signed)	Received by (signed)	Date	Time	Analytical Laboratory		Seal Intact upon Receipt
	<i>[Signature]</i>	2/28	930	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
				Attention: Lindsay Breyer		Condition of Contents <i>good</i>
						Contents Temperature 2.6
						Laboratory Project Number <i>7558</i>

**U.S. GEOLOGICAL SURVEY, WATER RESOURCES DIVISION, NEW MEXICO DISTRICT  
ANALYTICAL RECORD / CHAIN OF CUSTODY**

Project Name & Number Cannon Air Force Base, Ground Water Sampling 463536004				PACKING AND SHIPPING DETAILS		
				Packed and Sealed for Shipping by <i>Mike Roybal</i>		
Sampling Location Landfill-4, Cannon Air Force Base, New Mexico				Delivered to Shipper by <i>Mike Roybal</i>		
Team Leader <b>J. LARSON</b>				Sampling Status <input type="checkbox"/> Done <input checked="" type="checkbox"/> Continuing		
Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
24 FEB 96	1235	CAFB-O-0296-1	Groundwater	5	SW8240, SW8270	ENVIRONMENTAL SAMPLE - 02

Additional Comments

CHAIN OF CUSTODY RECORD				LABORATORY LOG-IN OF SAMPLE SHIPPING CONTAINER		
Relinquished by (signed)	Received by (signed)	Date	Time	Analytical Laboratory		Seal Intact upon Receipt <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<i>Michael</i>	2/28	930	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611  Attention: Lindsay Breyer		Condition of Contents <i>good</i>
						Contents Temperature <i>2.6</i>
						Laboratory Project Number <i>47558</i>

**U.S. GEOLOGICAL SURVEY, WATER RESOURCES DIVISION, NEW MEXICO DISTRICT  
ANALYTICAL REQUEST/CHAIN OF CUSTODY**

Project Name & Number Cannon Air Force Base, Ground Water Sampling 463536004					PACKING AND SHIPPING DETAILS	
Sampling Location Landfill-4, Cannon Air Force Base, New Mexico					Packed and Sealed for Shipping by <i>Timothy Royal</i>	
Team Leader <b>J. CARSON</b>					Delivered to Shipper by <i>Timothy Royal</i>	
					Seal Number	
					Airbill Number 0255716312	
					Sampling Status <input type="checkbox"/> Done <input checked="" type="checkbox"/> Continuing	
Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
27 FEB 96	0750	CAFB-P-0296-1	ASTM-TYPE II-WATER	1	SW8240	TRIP BLANK -03
28 FEB 96	1515	CAFB-P-0296-2	ASTM-TYPE II-WATER	5	SW8240, SW8270	EQUIPMENT BLANK -04
27 FEB 96	0840	CAFB-P-0296-3	Groundwater	5	SW8240, SW8270	ENVIRONMENTAL SAMPLE

Additional Comments

CHAIN OF CUSTODY RECORD				LABORATORY LOG-IN OF SAMPLE SHIPPING CONTAINER		
Relinquished by (signed)	Received by (signed)	Date	Time	Analytical Laboratory	Seal Intact upon Receipt <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
	<i>[Signature]</i>	2/28	9:30	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611  Attention: Lindsay Breyer	Condition of Contents <i>Good</i>	
					Contents Temperature <i>2.6</i>	
					Laboratory Project Number <i>47558</i>	

# CANNON AFB RECORD

C  
N  
N  
O  
N

A  
F  
B

7530-00-222-3525  
FEDERAL SUPPLY SERVICE  
(AFS)

<b>Parameters</b>	<b>Bottle Size and Type</b>	<b>Preservatives</b>
Appendix-IX, Volatile Organic Compounds SW8240	Three 40 ml glass vials	200 uL 50 % Hydrochloric Acid
Appendix-IX, Semivolatile Organic Compounds SW8270	Two 32 oz. glass (amber)	None
Appendix-IX, Pesticides, PCB's SW8080	Two 32 oz. glass	None
Appendix-IX, Herbicides SW8150	32 oz. glass	None
Appendix-IX, Metals, total SW6010, SW7060, SW7421, SW7470, SW7740, SW7841	16 oz. poly	10 mL 20% Nitric Acid
Cyanide, SW9012	8 oz. poly	2 mL 50% Sodium Hydroxide
Sulfide, E376.2	8 oz. poly	1 mL 1N Zinc Acetate, plus 1 mL 50% Sodium Hydroxide
Chloride, Sulfate E300.0	32 oz. poly	None
Phenolics, SW9065	16 oz. glass	2 mL 50% Sulfuric Acid
Total Organic Carbon (TOC) E415.1	16 oz. glass	2 mL 50% Sulfuric Acid
Total Organic Halogen, (TOX), SW9020	8 oz. glass (amber)	1 mL 50% Sulfuric Acid

26 FEB 96

J. LARSON, M. ROYBAL, F. GEBHARDT

ARRIVE AT ENVIRON, OFFICE ~ 1330 -

OBTAIN NIPPER FROM MR. CONSTANTINE.

DECON PUMP - 230 pm - 310 pm

COLLECT EQUIPMENT BLANK FOR WELL P

CAFB-P-0296-2 @ 1515

VERY WINDY (~40MPH) AND DUSTY

PACK-UP AND LEAVE SITE P @ 1540

M. Roybal

27 FEB 96

( WELL - P )

0700 - JERRY LARSON, FRED GERHARDT, M. ROYBAL  
ON SITE P. (WELL - P)

CLEAR SUNNY MORNING, SLIGHT COOL BREEZE.

0730 - M. ROYBAL CALIBRATE ORION COND. METER (SN 57449005)  
WITH STANDARD 753. model 112L

PH METER ORION MODEL 250A (W 493926) CALIBRATED  
W/TE BUFFERS 7 & 10; PH 7 = 7.08, PH 10 = 10.25  
SLOPE = 100.0 TEMP = 4.9 °C

0738 - WL = 277.94 BLW TOP OF MP (PVC) MEASURED/  
IN 457118 SOLINST

0800 - BEGIN PUMPING (WELL - P)

TIME	VOL (L)	TEMP	PH	COND <small>µS/cm</small>
0804	2.0	7.5	7.03	1898
0810	6.0	13.5	7.12	1878
0815	10.0	15.5	7.17	1868
0820	15.0	16.5	7.25	1873
0826	20.0	16.5	7.26	1885
0833	25.0	17.0	7.28	1881
0839	30.0	17.0	7.29	1880

0840 COLLECT SAMPLE CAFB-P-0296-3 BY F. GERHARDT +  
J. LARSON

0900 - MOVE TO WELL - N

27 FEB 96 (WELL - N1)

0920 - J. LARSON, F. GEBHARDT, M. ROYBAL ARRIVE

ON SITE.

0925 - PID = 0.0

0927 - M. ROYBAL CALIBRATE COND. METER WITH 1830  
STANDARD.

PH METER CALIBRATED WITH BUFFERS 7 & 10.

PH 7 = 7.07 PH 10 = 10.22 SLOPE = 100.5

TEMP = 6.8 °C

0930 - WL = 275.44 Blw Top of PVC casing

0945 - BEGIN PUMPING WELL - N

<u>TIME</u>	<u>VOL (gal)</u>	<u>TEMP</u>	<u>PH</u>	<u>COND</u> µS/cm
0952	0.1	15.5	7.50	788
0959	5.0	16.5	7.53	775
1004	10.0	16.5	7.61	779
1009	15.0	17.0	7.66	790
1015	20.0	17.0	7.68	791
1020	25.0	17.0	7.69	789
1025	30.0	17.0	7.68	785
1030	SAMPLE	CAFB - N - 0296 - 1		

1045 - MOVE TO WELL - O

27 FEB 96 (WELL-0)

1105 - J. LARSON, F. GEBHARDT, M. ROYBAL ARRIVE  
AT WELL-0 JERRY'S TRUCK STUCK IN MUD.  
CLEAR, SUNNY, COLD, WESTERLY WIND (~15MPH)

1129 - PID = 0.0

1130 - M. ROYBAL CALIBRATE COND. METER WITH 1830 STANDARD.  
PH METER CALIBRATED WITH BUFFERS 7 & 10.  
PH 7 = 7.03 PH 10 = 10.00 SLOPE = 102.0  
TEMP = 14.4

1130 - WL = 282.66 blow top of PVC casing  
CONSTRICTION 6 FT BLW WL.

1154 - BEGIN PUMPING WELL-0

<u>TIME</u>	<u>VOL (gal)</u>	<u>TEMP</u>	<u>PH</u>	<u>COND (us/cm)</u>
1204	0.0	15.5	6.83	1961
1209	5.0	16.0	6.74	1981
1214	10.0	16.0	6.73	1985
1220	15.0	16.0	6.73	1986
1224	20.0	16.0	6.79	1988
1231	25.0	16.0	6.82	1988
1235	SAMPLE CAFB-0-0296-1			

1300 - M. ROYBAL LEAVE SITE TO K-HART FOR ZIPLOCK BAGS  
AND PACK SAMPLE - CALL FED EX.

J. LARSON + F. GEBHARDT STAY AND PURGE PUMP

28 FEB 96 (WELL-A)

0730 - J. LARSON, F. GEBHARDT, M. RUYDAL ARRIVE ON SITE. VERY COLD, SUNNY, CLEAR, WINDY (~15 MPH).

0800 - M. RUYDAL CALIBRATE COND. METER WITH 753 STANDARD; PH METER CALIBRATED WITH BUFFERS 7+10; PH 7 = 7.11 PH 10 = 10.31  
SLOPE = 100.5 TEMP = 0.5  
FRED G. LEFT SITE TO OBTAIN CONNECTORS.

0909 - WL = 275.14 ft below Top of PVC

0920 - BEGIN PURGING WELL-A

TIME	WL (gal)	TEMP	PH	COND (µS/cm)	
0923	0.1	13.5	8.06	648	
0928	5.0	16.5	8.00	638	
0938	10.0	17.0	8.07	633	compressor problem
0943	15.0	17.0	8.08	633	
0948	20.0	17.0	8.08	633	
0955	25.0	17.0	8.09	634	
1001	30.0	17.0	8.08	635	
1006	35.0	17.0	8.07	637	
1013	40.0	17.0	8.08	636	
1022	45.0	17.0	8.10	636	
1029	50.0	17.0	8.09	637	
1033	55.0	17.0	8.10	637	
1040	60.0	17.0	8.12	636	collect trip,
1045					Collect Sample CAFB-A-0296-1
1115					Leave site - go to well-L

28 FEB 96 (WELL-L)

1120 - J.L., F.G., M.R. ARRIVE ON SITE

1128 - M.R. CALIBRATE COND. METER WITH 7.53 STANDARD;  
PH METER CALIBRATED WITH BUFFERS 7 & 10;  
PH 7 = 7.00 PH 10 = 10.10 SLOPE = 105.1  
TEMP = 4.70

1137 - WL = 285 FT - 4.55 FT BELOW TOP PVC

1140 - BEGIN PURGING WELL-L

TIME	VOL (gal)	TEMP	PH	COND (µS/cm)	
1140	0.1	14.5	6.60	788	
1144	5.0	16.5	6.70	818	
1153	10.0	17.0	6.75	816	
1200	<del>15.0</del>	17.0	7.16	797	well dry let it recover
1220	18.0	16.5	7.34	791	let it recover -
1235	Fred Leue site to obtain more nitrogen gas				
1247	21.0	16.5	7.12	787	Let it recover -
1304	26.0	16.5	7.12	780	Let it recover -
1317	31.0	16.5	7.29	776	
1400	COLLECT ENV SAMPLE CAFB-L-0296-1				
1400	COLLECT MATRIX SPIKE CAFB-L-0296-2				
1400	COLLECT MATRIX SPIKE DUPLICATE CAFB-L-0296-3				

1500 - LEAVE SITE TO SEND 4 COOLERS TO FED EX

29 FEB 96 (WELL - M)

0725 - J.L., F.G., M.R. ARRIVE ON SITE, PARTLY CLEAR, SUNNY, NO WIND.

0732 - WL - 279.68 FT BELOW TOC

0740 - M.R. CALIBRATE COND. METER WITH 749 STANDARD, PH METER CALIBRATED WITH PH 7 & 10 BUFFERS,  
PH 7 = 7.11 PH 10 = 10.33 SLOPE = ~~78.3~~ 98.3  
TEMP = ~~10.2~~ -0.3 °C

0745 - BEGIN PURGING WELL - M

Nitrogen coming from well surface - leak in line

TIME	VOL (gal)	TEMP	PH	(COND) US/cm
0750	0.5	15.0	7.12	934
0756	4.0	16.0	8.24	922
0810	8.0	16.0	8.58	905
0817	13.0	15.5	8.74	887
0819	16.0	Well dry, let it recover		

~~0900 COLLECT ENV. SAMPLE, TRIP~~  
NO SAMPLE      ~~CAFB M-0296-1~~      ~~CAFB M-0296-2~~  
PUMP NOT WORKING - ~~JUST TRIP BLANK~~  
~~CAFB M-0296-2~~

WE MAY TRY TO SAMPLE AFTER COLLECTING AT WELL - I  
NO SAMPLE

29 FEB 96

(WELL - I)

TRIP CAFB-I-0296-3 @ 0900

0915 - J.L., F.G., M.R. ARRIVE ON SITE

0918 - WL = 280.07 FT BLW TOC

0920 - M.R. CALIBRATE COND. METER WITH 749 <sup>µS/cm</sup> STANDARD

PH METER CALIBRATED WITH BUFFERS 7 & 10;

PH 7 = 7.10 ; PH 10 = 10.31 ; SLOPE = 100.6 ; TEMP = 1.0 °C

0920 - BEGAN PURGING WELL - I

<u>TIME</u>	<u>VOL (gal)</u>	<u>TEMP</u>	<u>PH</u>	<u>COND (µS/cm)</u>
0924	0.1	14.0	7.66	804
0927	5.0	17.0	7.16	887
0934	10.0	17.0	7.17	880
0940	15.0	17.0	7.22	879
0946	20.0	17.0	7.25	873
0951	25.0	17.0	7.27	856
0956	30.0	17.0	7.28	845
1003	35.0	17.0	7.30	838
1008	40.0	17.0	7.31	834
1013	45.0	17.0	7.31	834
1018	50.0	17.0	7.31	832

1020 COLLECT SAMPLES CAFB-I-0296-1  
CAFB-I-0296-2 - DUP

1100 - LEAVE SITE

Fill 20 seconds  
discharge on time

3-7-96 Gobhardt and Larson arrive  
at well M at 0730 - Got set  
up to sample.

Calibrated pH & cond meters

	pH	cond	Temp
2 gal	7.38	747	13.7
2.5 gal	7.15	851	15.8
3.0 gal	7.46	862	16.2
4.0 gal	7.49	862	16.0
5 gal	7.50	861	16.1

Sample 0900