



CAFB 94
DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 27th FIGHTER WING (ACC)
CANNON AIR FORCE BASE, NEW MEXICO

13 DEC 1996

Colonel W. P. Ard
Commander, 27th Support Group
110 E. Sextant Avenue Suite 1098
Cannon AFB NM 88103-5323



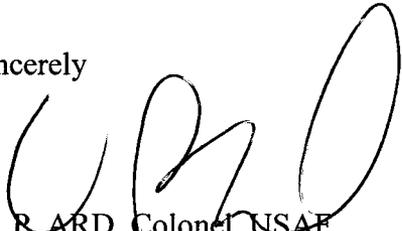
Mr. Benito J. Garcia
Chief, Hazardous and Radioactive Materials Bureau
New Mexico Environment Department
2044 Galisteo Street
P. O. Box 26110
Santa Fe NM 87502

Dear Mr. Garcia

Enclosed for your review and records is the third quarter 1996 Groundwater Monitoring Report for the Sewage Lagoons (SWMUs 101 and 102) and the downgradient wells at Landfill 5 (SWMU 113). Nitrate in well G at the Sewage Lagoons again exceeded the maximum contaminant levels for drinking water.

If you have any questions, please contact Mr. John Constantine at (505) 784-4348 or Mr. Sanford Hutsell at (505) 784-6478.

Sincerely


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

Attachment:
Groundwater Monitoring Report

cc:
NMED (B. Hoditschek)
NMED GW Bureau (J. Jacobs)
EPA Region VI (D. Neleigh)
HQ ACC CES/CEVC w/o Atch (R. Shannon)

LIBRARY COPY

Cannon Air Force Base, New Mexico

RCRA Ground-Water Sampling at Sewage Lagoons
and at Landfill 5

Data Report for August 20-22, 1996 Sampling

Prepared for

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

October 31, 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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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 the sewage lagoons and at Landfill 5 on the east and southeast corner 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 water-quality data for samples collected from four wells around the sewage lagoons (figure 3) and three wells around Landfill 5 (figure 4), CAFB on August 20-22, 1996. The monitoring wells sampled at the sewage lagoons are well E (upgradient), and downgradient wells F, G, and H as shown on figure 3. These wells were sampled for Appendix IX parameters: volatile organic compounds by method SW8240, pesticides by method SW8080A, total metals for twenty-three metals (aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, molybdenum, nickel, potassium, selenium, silver, sodium, thallium, vanadium, and zinc by method SW6010; also antimony by SW7041, silver by SW7761, cadmium by SW7131, arsenic by SW7060, chromium by SW7191, lead by SW7421, selenium by SW7740, and thallium by SW7841), and general inorganics (sulfate by method E300.0, nitrite as N by method E354.1, nitrate plus nitrite as N by method E353.2, nitrate as N by method E353.2/354, and total dissolved solids by method E160.1. The monitoring wells sampled at the landfill 5 are downgradient wells I, L, and M as shown on figure 4. These wells were sampled for the following Appendix-IX parameters: volatile organic compounds by method SW8240, semivolatile organic compounds by method SW8270, dioxins and furans by method SW8280, polynuclear aromatic hydrocarbons by method SW8310, pesticides and PCB's by method SW8080A, herbicides by method SW8150, total metals for twenty-three metals (aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, iron, lead, magnesium, manganese, molybdenum, nickel, potassium, selenium, silver, sodium, thallium, vanadium, and zinc by SW6010, also antimony by SW7041, silver by SW7761, cadmium by SW7131, arsenic by SW7060, chromium by SW7191, lead by SW7421, mercury by SW7470, selenium by SW7740, and thallium by SW7841), and general inorganics (cyanide by SW9012, sulfide by E376.2, total organic carbon by SW9060, and total

organic halogen by SW9020).

Water quality data results from wells around the Sewage Lagoons are shown in table 1. The largest concentration (12.1 mg/L) of nitrate was detected in water from well G. Wells E, F, and H had concentrations less than 10 mg/L of nitrate, which is the maximum contaminant level (MCL) for EPA National Primary Drinking Water Regulation. Lead (total) was not detected in water from any wells for this sampling round. The EPA MCL for lead is 0.015 mg/L. 2-Hexanone was detected in water from well G at a concentration of 12.0 ug/L which is slightly above the reporting limit of 10.0 ug/L. Methylene chloride was detected in water from well H at a concentration of 5.0 ug/L, which is also the reporting limit. Use methylene chloride data result with caution and note that a low concentration of methylene chloride was also detected in the laboratory method blank.

Water quality data results from wells around Landfill 5 are shown in table 2. Chromium (method SW6010) was detected in water from well L and M at concentrations of 0.28 mg/L and 0.031 mg/L respectively. The EPA MCL for chromium is 0.1 mg/L. Iron was detected in water from well M at a concentration of 0.53 mg/L. The EPA Secondary MCL for iron is 0.3 mg/L. Wells I and L had iron concentrations less than 0.3 mg/L. Manganese was detected in water from well L and well M at concentrations less than 0.05 mg/L which is the EPA Secondary MCL for manganese. Nickel was detected in water from well L and well M at concentrations of 0.19 mg/L and 0.23 mg/L respectively. The EPA MCL for nickel is 0.1 mg/L. Zinc was detected in all wells (I, L, and M) at concentration slightly above reporting limit but less than the EPA Secondary MCL of 5.0 mg/L. Use data results of zinc with caution and note that a low level of zinc was also detected in the laboratory method blank. Total organic carbon was detected in water from well L at 1.4 mg/L which is slightly above the reporting limit of 1.0 mg/L.

As part of the quality assurance and quality control (QA/QC) procedures for the sewage lagoons and the Landfill 5 sites, trip blank, equipment blank, duplicate, matrix spike, and matrix spike duplicate samples were collected. 0.012 mg/L of zinc (total) was detected in the equipment blank. The data results of associated samples that are similar to the equipment blank should be used with caution and note that similar results were detected in the laboratory method blank and also in the equipment blank. No other target parameters other than the parameters associated with the duplicate analysis were detected in the QA/QC samples mentioned above.

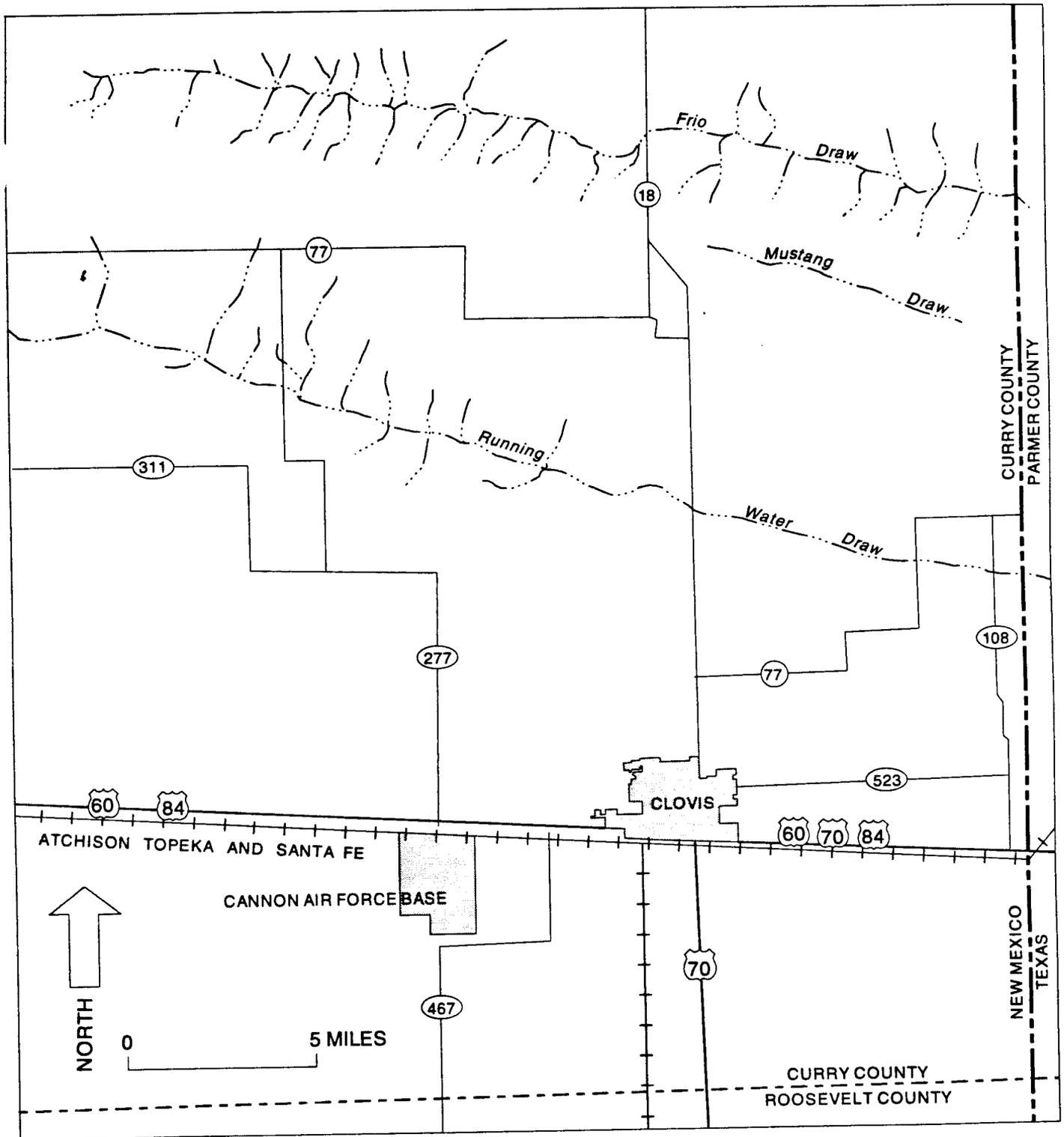


Figure 1.--Location of Cannon Air Force Base, New Mexico.

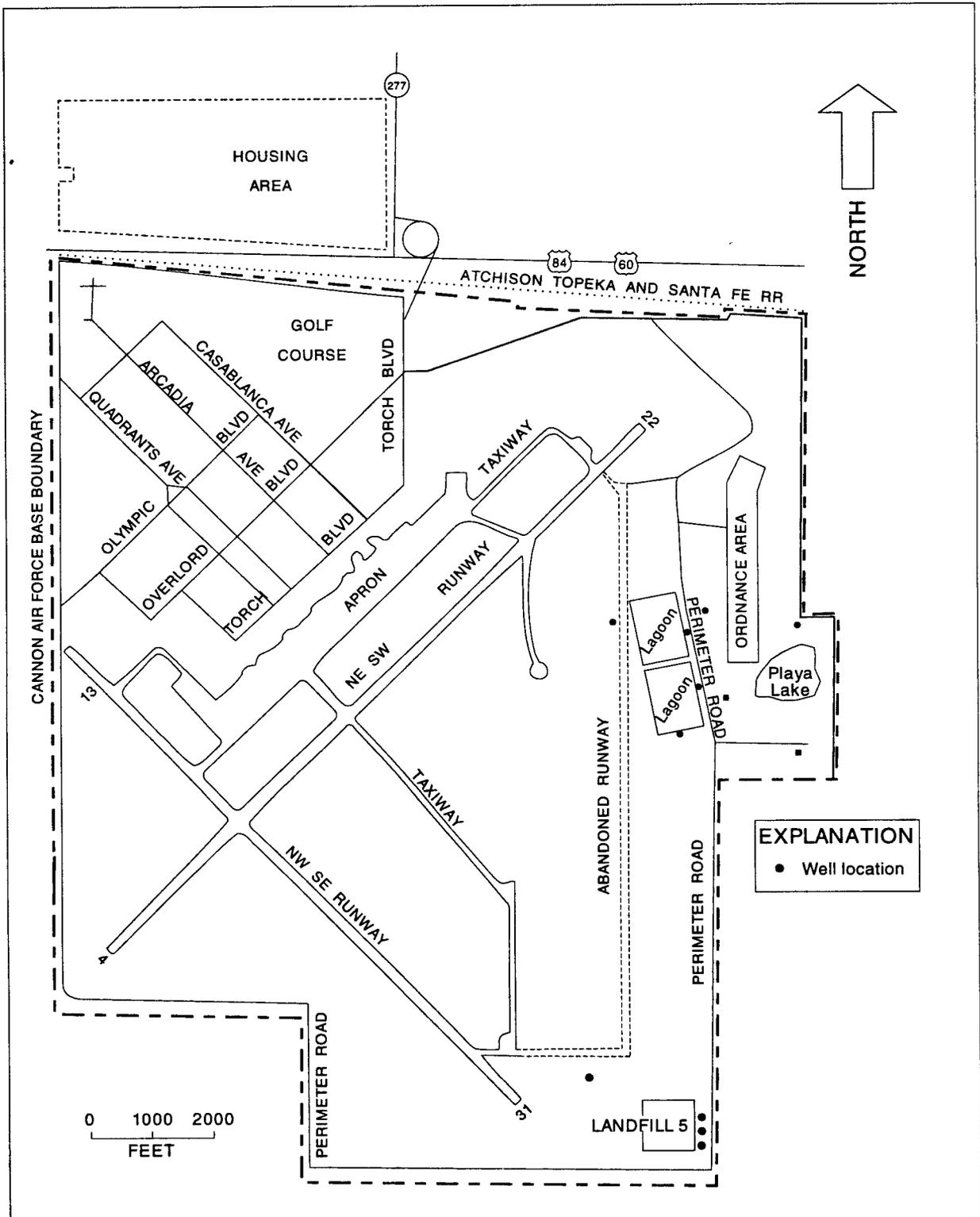


Figure 2.--Cannon Air Force Base and location of sewage lagoons and Landfill 5.

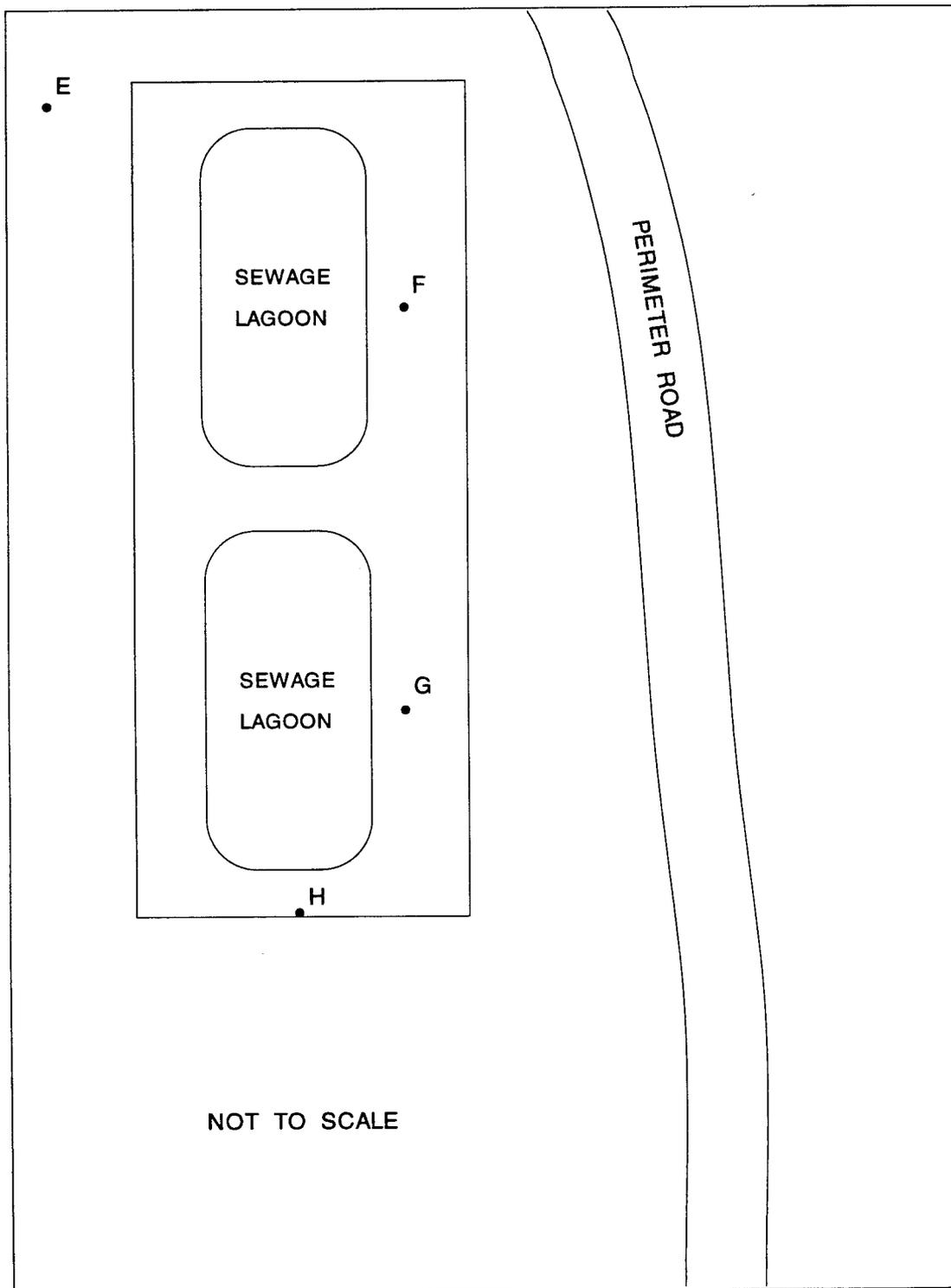


Figure 3.--Location of monitoring wells around the sewage lagoons.

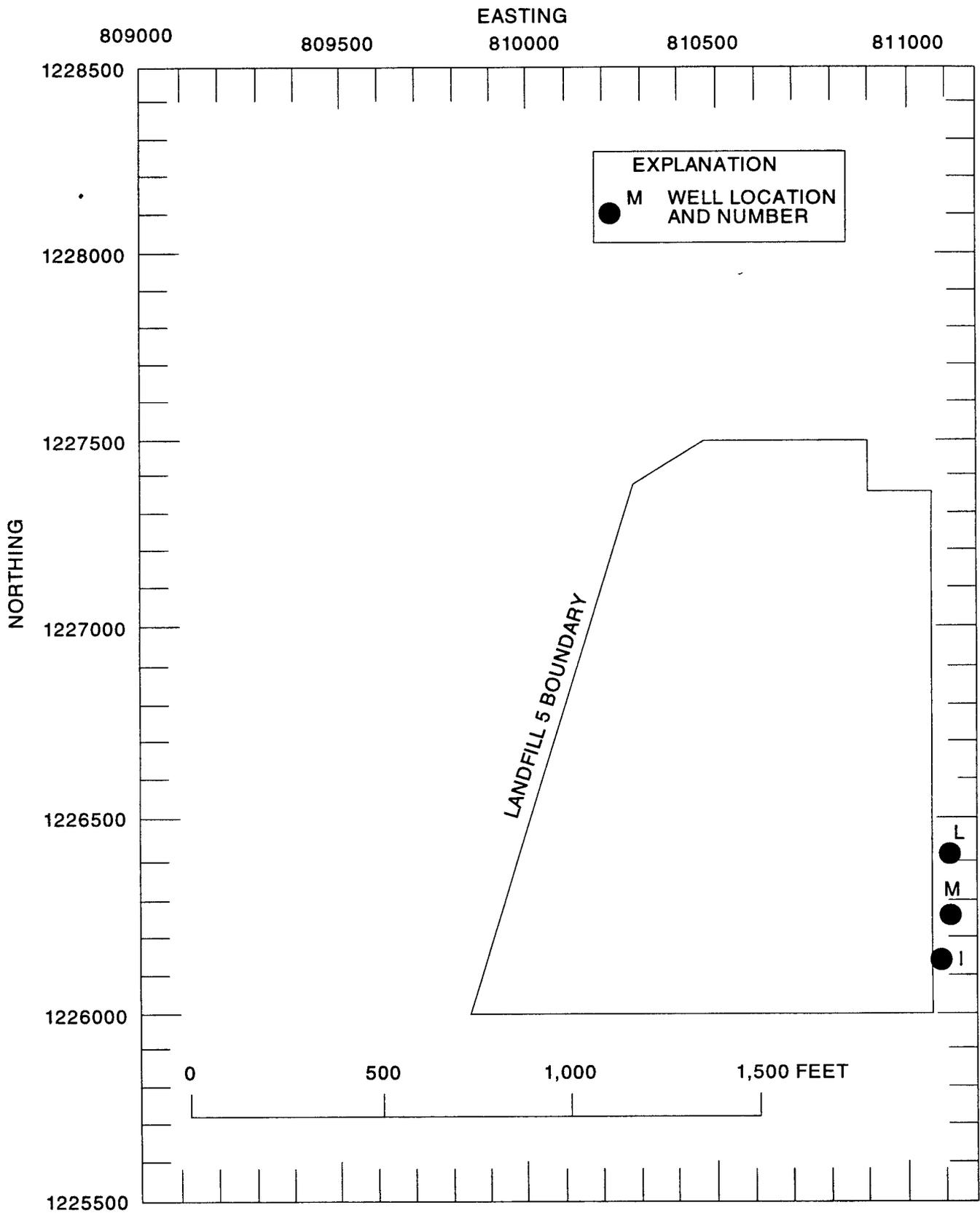


Figure 4.--Location of monitoring wells around Landfill 5.

Table 1. Summary of concentrations of analytes in ground-water from wells E, F, G, and H around the Sewage Lagoons for samples collected on August 20 and 22, 1996, Cannon Air Force Base, New Mexico. [B, Compound is also detected in the method blank; ND, Not Detected; RL, Reporting Limit; t, Sample diluted due to the concentration of target compounds.]

Well/sample ID: Date sampled: :	E/CAFB-E-0896-1 8-22-96		F/CAFB-F-0896-1 8-20-96		G/CAFB-G-0896-1 8-20-96		H/CAFB-H-0896-1 8-20-96	
Analytes and Method	Result	RL	Result	RL	Result	RL	Result	RL
Appendix IX, Volatile Organic Compounds, SW8240, (ug/L)								
2-Hexanone	ND	10.0	ND	10.0	12.0	10.0	ND	10.0
Methylene chloride	ND	5.0	ND	5.0	ND	5.0	5.0 B	5.0
Metals, Total (mg/L)								
Calcium SW6010	42.2	5.0	75.8	5.0	98.5	5.0	47.7	5.0
Chromium SW7191	0.019	0.005	ND	0.005	ND	0.005	0.017	0.005
Iron SW6010	0.097	0.04	0.055	0.04	0.23	0.04	0.52	0.04
Magnesium SW6010	37.4	5.0	70.8	5.0	93.3	5.0	43.1	5.0
Nickel SW6010	ND	0.04	ND	0.04	ND	0.04	0.054	0.04
Potassium SW6010	6.6	5.0	8.9	5.0	10.5	5.0	6.8	5.0
Sodium SW6010	56.4	5.0	48.6	5.0	73.8	5.0	56.2	5.0
Zinc SW6010	ND	0.01	ND	0.01	0.037	0.01	0.053 B	0.01
General Inorganics (mg/L)								
Nitrate + Nitrite E353.2	2.4	0.1	5.7 t	0.5	12.1 t	1.0	1.2	0.1
Nitrate E353.2/354	2.4	0.1	5.7	0.5	12.1	1.0	1.2	0.1
Sulfate E300.0	106 tB	1.0	106 t	1.0	242 t	2.5	158 t	1.0
Total Dissolved Solids E160.1	448	10.0	719	10.0	913	10.0	507	10.0

Table 2. Summary of concentrations of analytes in ground-water from wells I, L, and M around Landfill 5 for samples collected on August 21, 1996, Cannon Air Force Base, New Mexico. [B, Compound is also detected in the method blank; 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.]

Well/sample ID: Date sampled:	I/CAFB-I-0896-1 8-21-96		I/CAFB-X-0896-1 8-21-96 Duplicate of I		L/CAFB-L-0896-1 8-21-96		M/CAFB-M-0896-1 8-21-96	
Analytes and Method	Result	RL	Result	RL	Result	RL	Result	RL
Appendix-IX, Metals, Total (mg/L)								
Aluminum SW6010	ND	0.2	ND	0.2	0.2	0.2	ND	0.2
Calcium SW6010	54.8	5.0	54.3	5.0	51.7	5.0	62.3	5.0
Chromium SW6010	ND	0.03	ND	0.03	0.28	0.03	0.031	0.03
Chromium SW7191	0.0087	0.005	0.0095	0.005	0.25 t	0.025	0.045 G	0.01
Iron SW6010	0.055	0.04	0.08	0.04	1.7	0.04	0.53	0.04
Magnesium SW6010	48.3	5.0	48.1	5.0	46.3	5.0	51.1	5.0
Manganese SW6010	ND	0.01	ND	0.01	0.015	0.01	0.024	0.01
Nickel SW6010	ND	0.04	ND	0.04	0.19	0.04	0.23	0.04
Potassium SW6010	6.4	5.0	6.4	5.0	5.9	5.0	6.6	5.0
Sodium SW6010	43.0	5.0	41.9	5.0	47.5	5.0	45.4	5.0
Zinc SW6010	0.011 B	0.01	ND	0.01	0.029 B	0.01	0.027 B	0.01
General Inorganics (mg/L)								
Total Organic Carbon SW9060	ND	1.0	ND	1.0	1.4	1.0	ND	1.0

MONITORING WELL IDENTIFICATION REPORT

NEW MEXICO ENVIRONMENT DEPARTMENT
HAZARDOUS & RADIOACTIVE MATERIALS BUREAU
525 CAMINO de LOS MARQUEZ, SUITE #4
SANTA FE, NEW MEXICO 87502

FACILITY NAME Cannon Air Force Base

EPA I.D. NUMBER NM 7572124454

COUNTY Curry

WELL NUMBER E

WELL LOCATION (LONGITUDE) 103 ° 18 ' 24.5 ''

WELL LOCATION (LATITUDE) 34 ° 23 ' 28.8 ''

AQUIFER NAME Ogallala

AQUIFER CONFINED UNCONFINED X

WELL INSTALLATION DATE 111785

DRILLING METHOD HYDRT

INNER CASING DIAMETER 4"

BOREHOLE DIAMETER 8"

CASING MATERIAL PVC

METHOD OF DEVELOPMENT AIRFT

ELEV BOTTOM OF BOREHOLE 3908.12

ELEV BOTTOM OF WELL CASING 3911.12

ELEV BOTTOM OF SCREENED INT 3911.12

ELEV OF TOP OF SCREENED INT 3926.12

SURVEYED ELEV OF CASING TOP 4281.12

DATE OF REPORT 14 Feb 89 SIGNATURE _____

MONITORING WELL IDENTIFICATION REPORT

NEW MEXICO ENVIRONMENT DEPARTMENT
 HAZARDOUS & RADIOACTIVE MATERIALS BUREAU
 .525 CAMINO de LOS MARQUEZ, SUITE #4
 SANTA FE, NEW MEXICO 87502

FACILITY NAME Cannon Air Force Base

EPA I.D. NUMBER NM 7572124454

COUNTY Curry

WELL NUMBER F

WELL LOCATION (LONGITUDE) 103 ° 18 ' 10.5 ''

WELL LOCATION (LATITUDE) 34 ° 23 ' 21.4 ''

AQUIFER NAME Ogallala

AQUIFER CONFINED UNCONFINED X

WELL INSTALLATION DATE 111985

DRILLING METHOD HYDRT

INNER CASING DIAMETER 4"

BOREHOLE DIAMETER 8"

CASING MATERIAL PVC

METHOD OF DEVELOPMENT AIRFT

ELEV BOTTOM OF BOREHOLE 3902.32

ELEV BOTTOM OF WELL CASING 3907.32

ELEV BOTTOM OF SCREENED INT 3907.32

ELEV OF TOP OF SCREENED INT 3922.32

SURVEYED ELEV OF CASING TOP 4277.32

DATE OF REPORT 24 Feb 89 SIGNATURE _____

MONITORING WELL IDENTIFICATION REPORT

NEW MEXICO ENVIRONMENT DEPARTMENT
HAZARDOUS & RADIOACTIVE MATERIALS BUREAU
525 CAMINO de LOS MARQUEZ, SUITE #4
SANTA FE, NEW MEXICO 87502

FACILITY NAME Cannon Air Force Base

EPA I.D. NUMBER Nm 7572124454

COUNTY Curry

WELL NUMBER G

WELL LOCATION (LONGITUDE) 103 ° 18 ' 08 ''

WELL LOCATION (LATITUDE) 34 ° 23 ' 13.4 ''

AQUIFER NAME Ogallala

AQUIFER CONFINED UNCONFINED X

WELL INSTALLATION DATE 111085

DRILLING METHOD HYDRT

INNER CASING DIAMETER 4"

BOREHOLE DIAMETER 8"

CASING MATERIAL PVC

METHOD OF DEVELOPMENT AIRFT

ELEV BOTTOM OF BOREHOLE 3907.99

ELEV BOTTOM OF WELL CASING 3907.90

ELEV BOTTOM OF SCREENED INT 3907.99

ELEV OF TOP OF SCREENED INT 3922.99

SURVEYED ELEV OF CASING TOP 4279.99

DATE OF REPORT 24 Feb 89 SIGNATURE _____

MONITORING WELL IDENTIFICATION REPORT

NEW MEXICO ENVIRONMENT DEPARTMENT
 HAZARDOUS & RADIOACTIVE MATERIALS BUREAU
 525 CAMINO de LOS MARQUEZ, SUITE #4
 SANTA FE, NEW MEXICO 87502

FACILITY NAME Cannon Air Force Base

EPA I.D. NUMBER NM 7572124454

COUNTY Curry

WELL NUMBER H

WELL LOCATION (LONGITUDE) 103 ° 18 ' 16.8 ''

WELL LOCATION (LATITUDE) 34 ° 23 ' 07 ''

AQUIFER NAME Ogallala

AQUIFER CONFINED UNCONFINED X

WELL INSTALLATION DATE 111885

DRILLING METHOD HYDRT

INNER CASING DIAMETER 4"

BOREHOLE DIAMETER 8"

CASING MATERIAL PVC

METHOD OF DEVELOPMENT AIRFT

ELEV BOTTOM OF BOREHOLE 3901.15

ELEV BOTTOM OF WELL CASING 3901.15

ELEV BOTTOM OF SCREENED INT 3901.15

ELEV OF TOP OF SCREENED INT 3921.15

SURVEYED ELEV OF CASING TOP 4276.15

DATE OF REPORT 24 Feb 89 SIGNATURE _____

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

**SECOND SAMPLING EVENT
SEMI-ANNUAL REPORT**

SAMPLE COLLECTED BY Jerry Larson
 LABORATORY NAME Quanterra Environmental Services WELL NUMBER CAFB-I-0896-1
 WELL DEPTH 293.00 WELL CASING VOLUME 15.44
 DATE SAMPLED 08-21-96 LABORATORY SAMPLE I.D.# 051069-0003-SA
 TIME SAMPLED 1230 DATE RECEIVED BY LAB 08-22-96

PARAMETERS	STORET CODE	UNITS	VALUE	DATE ANALYZED
Elevation of G. Water	71993	ft.	<u>3979.88</u>	<u>08-19-96</u>
Pump Rate	-----	gal/min	<u>0.75</u>	<u>08-21-96</u>
Pump Period	72004	min.	<u>53.0</u>	<u>08-21-96</u>
Volume Evacuated	73675	gal	<u>40.0</u>	<u>08-21-96</u>
Well Sampling Method	84077	---	<u>PSPMP</u>	<u>08-21-96</u>

Sampler Material: TEFLN Well Sampling Method: PSPMP

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

PARAMETERS	STORET CODE	UNITS	VALUE	DETECTION LIMIT	DATE ANALYZED	METHOD USED
pH	00400	S.U.	<u>7.62</u>	<u>N/A</u>	<u>08-21-96</u>	
	00400	S.U.	_____	_____	_____	<u>(f)</u>
	00400	S.U.	_____	_____	_____	
	00400	S.U.	_____	_____	_____	
Specific Conductivity	00095	umhos/cm	<u>806</u>	<u>N/A</u>	<u>08-21-96</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>09-04-96</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>08-23-96</u>	
	00680	mg/l	_____	_____	_____	<u>SW9060</u>
	00680	mg/l	_____	_____	_____	
	00680	mg/l	_____	_____	_____	

SIGNATURE: 
NAME (PRINTED): F. Eileen Roybal

**SECOND SAMPLING EVENT
SEMI-ANNUAL REPORT**

SAMPLE COLLECTED BY Jerry Larson
 LABORATORY NAME Quanterra Environmental Services WELL NUMBER CAFB-L-0896-1
 WELL DEPTH 287.00 WELL CASING VOLUME 2.82
 DATE SAMPLED 08-21-96 LABORATORY SAMPLE I.D.# 051069-0001-SA
 TIME SAMPLED 1015 DATE RECEIVED BY LAB 08-22-96

PARAMETERS	STORET CODE	UNITS	VALUE	DATE ANALYZED
Elevation of G. Water	71993	ft.	<u>3982.04</u>	<u>08-19-96</u>
Pump Rate	----	gal/min	<u>0.18</u>	<u>08-21-96</u>
Pump Period	72004	min.	<u>60.0</u>	<u>08-21-96</u>
Volume Evacuated	73675	gal	<u>11.0</u>	<u>08-21-96</u>
Well Sampling Method	84077	---	<u>PSPMP</u>	<u>08-21-96</u>

Sampler Material: TEFLN Well Sampling Method: PSPMP

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

PARAMETERS	STORET CODE	UNITS	VALUE	DETECTION LIMIT	DATE ANALYZED	METHOD USED
pH	00400	S.U.	<u>7.25</u>	<u>N/A</u>	<u>08-21-96</u>	
	00400	S.U.	_____	_____	_____	<u>(f)</u>
	00400	S.U.	_____	_____	_____	
	00400	S.U.	_____	_____	_____	
Specific Conductivity	00095	umhos/cm	<u>850</u>	<u>N/A</u>	<u>08-21-96</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>09-04-96</u>	
	70354	ug/l	_____	_____	_____	<u>SW9020</u>
	70354	ug/l	_____	_____	_____	
	70354	ug/l	_____	_____	_____	
T.O.C.	00680	mg/l	<u>1.4</u>	<u>1.0</u>	<u>08-23-96</u>	
	00680	mg/l	_____	_____	_____	<u>SW9060</u>
	00680	mg/l	_____	_____	_____	
	00680	mg/l	_____	_____	_____	

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

**SECOND SAMPLING EVENT
SEMI-ANNUAL REPORT**

SAMPLE COLLECTED BY Jerry Larson
 LABORATORY NAME Quanterra Environmental Services WELL NUMBER CAFB-M-0896-1
 WELL DEPTH 289.00 WELL CASING VOLUME 9.33
 DATE SAMPLED 08-21-96 LABORATORY SAMPLE I.D.# 051069-0002-SA
 TIME SAMPLED 1115 DATE RECEIVED BY LAB 08-22-96

PARAMETERS	STORET CODE	UNITS	VALUE	DATE ANALYZED
Elevation of G. Water	71993	ft.	<u>3982.09</u>	<u>08-19-96</u>
Pump Rate	-----	gal/min	<u>0.23</u>	<u>08-21-96</u>
Pump Period	72004	min.	<u>43.0</u>	<u>08-21-96</u>
Volume Evacuated	73675	gal	<u>10.0</u>	<u>08-21-96</u>
Well Sampling Method	84077	---	<u>PSPMP</u>	<u>08-21-96</u>

Sampler Material: TEFLN Well Sampling Method: PSPMP

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

PARAMETERS	STORET CODE	UNITS	VALUE	DETECTION LIMIT	DATE ANALYZED	METHOD USED
pH	00400	S.U.	<u>7.06</u>	<u>N/A</u>	<u>08-21-96</u>	
	00400	S.U.	_____	_____	_____	<u>(f)</u>
	00400	S.U.	_____	_____	_____	
	00400	S.U.	_____	_____	_____	
Specific Conductivity	00095	umhos/cm	<u>912</u>	<u>N/A</u>	<u>08-21-96</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>09-04-96</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>08-23-96</u>	
	00680	mg/l	_____	_____	_____	<u>SW9060</u>
	00680	mg/l	_____	_____	_____	
	00680	mg/l	_____	_____	_____	

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

APPENDIX I

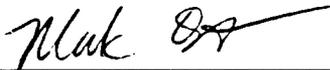
Analytical Results from Quanterra Environmental Services Laboratory
for Ground-Water Samples Collected on August 20-22, 1996

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 431-7171 Fax

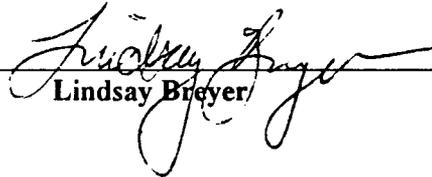
ANALYTICAL RESULTS
FOR
U.S. GEOLOGICAL SURVEY
QUANTERRA NO. 051095
SEPTEMBER 23, 1996

Prepared by:



Mark D. Stella

Reviewed by:



Lindsay Breyer

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NARRATIVE

On August 23, 1996, Quanterra Environmental Services, Denver received two 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.

With the exceptions noted below 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.

GC/MS Volatile Organics

The relative percent difference for benzene and toluene are reported outside control limits in the matrix spike/spike duplicate (MS/SD). A matrix effect is suspected. Since the duplicate control samples (DCS) have been recovered within control limits, the data have been accepted.

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. 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.

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:

- 3 Confirmed Identification; the identification is based on the analysis of an authentic standard.
- 2 Confident Identification; good agreement was observed between the unknown compound and a specific library spectrum.
- 1 Tentative Identification; the unknown compound is only indicative of a specific library spectrum.

If 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.), a class identification is made without assigning a level of confidence.

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.

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. hydrocarbon products, 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 pattern of peaks observed in the samples to the patterns observed for standards containing known concentrations of the analytes 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

The relative percent difference for boron is reported outside control limits in the DCS. Since boron is not an analyte of interest for this project, the data have been accepted.

The MS/SD for chromium, silver and thallium are reported below the lower control limit for the GFAA analysis. In addition the relative percent difference for arsenic is reported outside control limits for the MS/SD. Matrix effects are indicated. Since the respective DCS associated with the analyses have been recovered within control limits, the data have been accepted.

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.

General Inorganics

Due to an analyst error, a single laboratory control sample was analyzed for nitrate instead of duplicate control samples.

Sulfate is reported at a concentration above the reporting limit in the method blank. Since the sulfate concentration detected in the method is within the contract-specified limits and the concentration detected in the sample is greater than twenty times the level detected in the method blank, the data have been accepted.

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 may 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.

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

Most commonly, a "J" value indicates that the reported result for the analyte is below the stated reporting limit and is an estimated value. "J" values are generally reported to 1/5 of the reporting limit for GC/MS Volatiles, 1/10 of the reporting limit for GC/MS Semivolatiles, 1/2 the reporting limit for GC and HPLC, or to the Instrument Detection Limit for metals and general inorganics. Analytes which are not detected at or below the reporting limit are reported as "ND" and do not have "J" flags. Because "J" values may represent false positive concentrations, care should be used when interpreting these data. If there is uncertainty about the quantitation of an analyte, this footnote may also indicate that a reported result is an estimated concentration, even if it is above the reporting limit.

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.

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 result 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.

LIMs Report Key

Section	Description
Cover Letter	Signature page, report narrative as applicable.
Sample Description Information	Tabulated cross-reference between the Lab ID and Client ID, including matrix, date and time sampled, and the date received for all samples in the project.
Sample Analysis Results Sheets	Lists sample results, test components, reporting limits, dates prepared and analyzed, and any data qualifiers. Pages are organized by test.
QC LOT Assignment Report	Cross-reference between lab IDs and applicable QC batches (DCS, LCS, Blank, MS/SD, DU)
Duplicate Control Sample Report	Percent recovery and RPD results, with acceptance limits, for the laboratory duplicate control samples for each test are tabulated in this report. These are measures of accuracy and precision for each test. Acceptance limits are based upon laboratory historical data.
Laboratory Control Sample Report	Percent recovery results for a single Laboratory Control Sample (if applicable) are tabulated in this report, with the applicable acceptance limits for each test.
Matrix Spike/Matrix Spike Duplicate Report	Percent recovery and RPD results for matrix-specific QC samples and acceptance limits, where applicable. This report can be used to assess matrix effects on an analysis.
Single Control Sample Report	A tabulation of the surrogate recoveries for the blank for organic analyses.
Method Blank Report	A summary of the results of the analysis of the method blank for each test.

List of Abbreviations and Terms

Abbreviation	Term	Abbreviation	Term
DCS	Duplicate Control Sample	MSD	Matrix Spike Duplicate
DU	Sample Duplicate	QC Run	Preparation Batch
EB	Equipment Blank	QC Category	LIMs QC Category
FB	Field Blank	QC Lot	DCS Batch
FD	Field Duplicate	ND	Not Detected at or above the reporting limit expressed
IDL	Instrument Detection Limit (Metals)	QC Matrix	Matrix of the laboratory control sample(s)
LCS	Laboratory Control Sample	RL	Reporting Limit
MB	Method Blank	QC	Quality Control
MDL	Method Detection Limit	SA	Sample
MS	Matrix Spike	SD	Spike Duplicate
RPD	Relative Percent Difference	TB	Trip Blank
ppm (part-per-million)	mg/L or mg/kg (usually)	ppb (part-per-billion)	ug/L or ug/kg (usually)
QUAL	Qualifier flag	DIL	Dilution Factor

SAMPLE DESCRIPTION INFORMATION
for
U.S. Geological Survey

Lab ID	Client ID	Matrix	Sampled Date	Time	Received Date
051095-0001-SA	CAFB-E-0896-1	AQUEOUS	22 AUG 96	09:00	23 AUG 96
051095-0001-MS	CAFB-E-0896-MS	AQUEOUS	22 AUG 96	09:00	23 AUG 96
051095-0001-SD	CAFB-E-0896-MSD	AQUEOUS	22 AUG 96	09:00	23 AUG 96
051095-0002-TB	CAFB-E-0896-TB	AQUEOUS	22 AUG 96	09:00	23 AUG 96

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.

ANALYTICAL TEST REQUESTS
for
U.S. Geological Survey

Lab ID: 051095	Group Code	Analysis Description	Custom Test?
0001	A	Nitrate Plus Nitrite	N
		Nitrite, as Nitrogen	N
		Nitrate, as Nitrogen by Calculation	N
		Volatile Organics	N
		Appendix IX List	N
		Screen - Volatile Organics	N
		Volatiles Library Search (20 Compound TID)	N
		Chlorinated Pesticides and PCB's	N
		Appendix IX List	N
		Prep - Organochlorine Pesticides/PCBs by GC (Appendix IX)	N
		Chlorinated Pesticides and PCB's	N
		Appendix IX List	N
		Sulfate, Ion Chromatography	N
		Total Dissolved Solids (TDS)	N
		Antimony, Furnace AA (Total)	N
		Arsenic, Furnace AA (Total)	N
		Prep - Arsenic, Selenium - Total, Furnace AA	N
		Cadmium, Furnace AA	N
		Prep - Total Metals, Furnace AA	N
		Chromium, Furnace AA (Total)	N
		Lead, Furnace AA (Total)	N
		Selenium, Furnace AA (Total)	N
		Silver, Furnace AA	N
		Thallium, Furnace AA (Total)	N
		ICP Suite: Air Force	Y
		Prep - Total Metals, ICP	N
		0002	B
Appendix IX List	N		
Screen - Volatile Organics	N		
Volatiles Library Search (20 Compound TID)	N		

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.

Volatile Organics
Appendix IX List
Method 8240

 Client Name: U.S. Geological Survey
 Client ID: CAFB-E-0896-1
 Lab ID: 051095-0001-SA
 Matrix: AQUEOUS
 Authorized: 23 AUG 96

 Sampled: 22 AUG 96
 Received: 23 AUG 96

 Prepared: 26 AUG 96
 Analyzed: 04 SEP 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: Audrey Cornell



Environmental Services

(cont.)

Volatile Organics
Appendix IX List
Method 8240

Client Name: U.S. Geological Survey
Client ID: CAFB-E-0896-1
Lab ID: 051095-0001-SA
Matrix: AQUEOUS
Authorized: 23 AUG 96

Sampled: 22 AUG 96
Received: 23 AUG 96

Prepared: 26 AUG 96
Analyzed: 04 SEP 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	102	%	86-115
1,2-Dichloroethane-d4	94	%	76-114

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

ND = Not Detected

Reported By: Sandra Jones

Approved By: Audrey Cornell

Volatiles Library Search (20 Compound TID)
Method 8240

Client Name: U.S. Geological Survey
Client ID: CAFB-E-0896-1
Lab ID: 051095-0001-SA
Matrix: AQUEOUS
Authorized: 23 AUG 96

Sampled: 22 AUG 96
Received: 23 AUG 96

Prepared: NA
Analyzed: 04 SEP 96

Parameter	Result	Units	Reporting Limit
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: Audrey Cornell



Environmental Services

Volatile Organics
Appendix IX List
Method 8240

Client Name: U.S. Geological Survey
Client ID: CAFB-E-0896-TB
Lab ID: 051095-0002-TB
Matrix: AQUEOUS
Authorized: 23 AUG 96

Sampled: 22 AUG 96
Received: 23 AUG 96

Prepared: 26 AUG 96
Analyzed: 04 SEP 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: Audrey Cornell

Volatile Organics
Appendix IX List
Method 8240

Client Name: U.S. Geological Survey
 Client ID: CAFB-E-0896-TB
 Lab ID: 051095-0002-TB
 Matrix: AQUEOUS
 Authorized: 23 AUG 96

Sampled: 22 AUG 96
 Received: 23 AUG 96

Prepared: 26 AUG 96
 Analyzed: 04 SEP 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	102	%	86-115
1,2-Dichloroethane-d4	94	%	76-114

Dilution factor is 1.0.

All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones

Approved By: Audrey Cornell

Volatiles Library Search (20 Compound TID)
Method 8240

Client Name: U.S. Geological Survey
Client ID: CAFB-E-0896-TB
Lab ID: 051095-0002-TB
Matrix: AQUEOUS
Authorized: 23 AUG 96

Sampled: 22 AUG 96
Received: 23 AUG 96

Prepared: NA
Analyzed: 04 SEP 96

Parameter	Result	Units	Reporting Limit
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: Audrey Cornell

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

Client Name: U.S. Geological Survey
Client ID: CAFB-E-0896-1
Lab ID: 051095-0001-SA
Matrix: AQUEOUS
Authorized: 23 AUG 96

Sampled: 22 AUG 96
Received: 23 AUG 96

Prepared: 28 AUG 96
Analyzed: 06 SEP 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	2.5	
Methoxychlor	ND	ug/L	0.50	
Toxaphene	ND	ug/L	5.0	
Surrogate	Recovery		Limits	
Tetrachloro-m-xylene	77	%	54-106	
Dibutyl chlorendate	90	%	56-138	
Decachlorobiphenyl	106	%	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: Karen Kuiken

**Metals
Total Metals**

Client Name: U.S. Geological Survey
 Client ID: CAFB-E-0896-1
 Lab ID: 051095-0001-SA
 Matrix: AQUEOUS
 Authorized: 23 AUG 96

Sampled: 22 AUG 96
 Prepared: See Below

Received: 23 AUG 96
 Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Aluminum	ND		1.0	0.20	mg/L	6010	10 SEP 96	12 SEP 96
Antimony	ND		1.0	0.20	mg/L	6010	10 SEP 96	12 SEP 96
Arsenic	ND		1.0	0.30	mg/L	6010	10 SEP 96	12 SEP 96
Barium	ND		1.0	0.10	mg/L	6010	10 SEP 96	12 SEP 96
Beryllium	ND		1.0	0.0020	mg/L	6010	10 SEP 96	12 SEP 96
Cadmium	ND		1.0	0.0050	mg/L	6010	10 SEP 96	12 SEP 96
Calcium	42.2		1.0	5.0	mg/L	6010	10 SEP 96	12 SEP 96
Chromium	ND		1.0	0.030	mg/L	6010	10 SEP 96	12 SEP 96
Cobalt	ND		1.0	0.040	mg/L	6010	10 SEP 96	12 SEP 96
Copper	ND		1.0	0.030	mg/L	6010	10 SEP 96	12 SEP 96
Iron	0.097		1.0	0.040	mg/L	6010	10 SEP 96	12 SEP 96
Lead	ND		1.0	0.20	mg/L	6010	10 SEP 96	12 SEP 96
Magnesium	37.4		1.0	5.0	mg/L	6010	10 SEP 96	12 SEP 96
Manganese	ND		1.0	0.010	mg/L	6010	10 SEP 96	12 SEP 96
Molybdenum	ND		1.0	0.040	mg/L	6010	10 SEP 96	12 SEP 96
Nickel	ND		1.0	0.040	mg/L	6010	10 SEP 96	12 SEP 96
Potassium	6.6		1.0	5.0	mg/L	6010	10 SEP 96	12 SEP 96
Selenium	ND		1.0	0.40	mg/L	6010	10 SEP 96	12 SEP 96
Mercury	ND		1.0	0.030	mg/L	6010	10 SEP 96	12 SEP 96
Thallium	56.4		1.0	5.0	mg/L	6010	10 SEP 96	12 SEP 96
Inallium	ND		1.0	5.0	mg/L	6010	10 SEP 96	12 SEP 96
Vanadium	ND		1.0	0.040	mg/L	6010	10 SEP 96	12 SEP 96
Zinc	ND		1.0	0.010	mg/L	6010	10 SEP 96	12 SEP 96
Antimony	ND		1.0	0.010	mg/L	7041	10 SEP 96	12 SEP 96
Silver	ND	G	1.0	0.0010	mg/L	7761	10 SEP 96	13 SEP 96
Cadmium	ND		1.0	0.00050	mg/L	7131	10 SEP 96	12 SEP 96
Arsenic	ND		1.0	0.0050	mg/L	7060	06 SEP 96	09 SEP 96
Chromium	0.019		1.0	0.0050	mg/L	7191	10 SEP 96	12 SEP 96
Lead	ND		1.0	0.0050	mg/L	7421	10 SEP 96	11 SEP 96
Selenium	ND	G	1.0	0.010	mg/L	7740	06 SEP 96	10 SEP 96
Thallium	ND		1.0	0.0050	mg/L	7841	10 SEP 96	11 SEP 96

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

Reported By: Robin Tipton

Approved By: Richard Persichitte

General Inorganics

Client Name: U.S. Geological Survey
 Client ID: CAFB-E-0896-1
 Lab ID: 051095-0001-SA
 Matrix: AQUEOUS
 Authorized: 23 AUG 96

Sampled: 22 AUG 96
 Prepared: See Below

Received: 23 AUG 96
 Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Sulfate	106	tB	2.0	1.0	mg/L	300.0	NA	23 AUG 96
Nitrite as N	ND		1.0	0.010	mg/L	354.1	NA	23 AUG 96
Nitrate plus Nitrite as N	2.4		1.0	0.10	mg/L	353.2	NA	30 AUG 96
Nitrate as N	2.4		1.0	0.10	mg/L	353.2/354	NA	13 SEP 96
Total Dissolved Solids	448		1.0	10.0	mg/L	160.1	NA	26 AUG 96

B = Compound is also detected in the blank.
 t = Sample diluted due to the concentration of target compounds.
 ND = Not Detected

Reported By: John Land

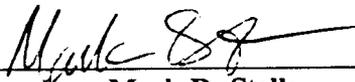
Approved By: Jody Tolle

Quanterra Incorporated
4955 Yarrow Street
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303 421-6611 Telephone
303 431-7171 Fax

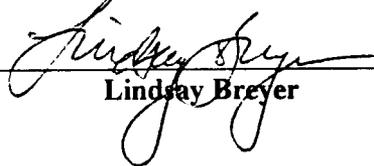
ANALYTICAL RESULTS
FOR
U.S. GEOLOGICAL SURVEY
QUANTERRA NO. 051038
SEPTEMBER 20, 1996

Prepared by:



Mark D. Stella

Reviewed by:



Lindsay Breyer

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NARRATIVE

On August 21, 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.

With the exceptions noted below 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.

General Comments

Dilution factors listed on the data sheets for the aqueous semivolatile organic parameters are based on the volume of sample actually extracted relative to the nominal volume of 1.0 liter. Any additional dilutions performed on the samples after extraction are also included in the dilution factor and will be indicated by G or t footnotes on the data sheets. All results and reporting limits are adjusted relative to the sample volume extracted and any subsequent dilutions performed. Dilution factors are rounded to two significant figures for reporting; all calculations are performed before rounding.

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. 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.

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:

- 3 Confirmed Identification; the identification is based on the analysis of an authentic standard.
- 2 Confident Identification; good agreement was observed between the unknown compound and a specific library spectrum.
- 1 Tentative Identification; the unknown compound is only indicative of a specific library spectrum.

If 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.), a class identification is made without assigning a level of confidence.

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.

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. hydrocarbon products, 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 pattern of peaks observed in the samples to the patterns observed for standards containing known concentrations of the analytes 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

The relative percent difference for boron is reported outside control limits in the duplicate control samples associated with QC lot 10-SEP-96-T1. Since boron is not an analyte of interest for this project, the data have been reported.

Zinc is reported at a concentration above the reporting limit in the method blank associated with QC lot 03-SEP-96-1A. Since the zinc contamination detected in the method blank is within acceptable limits, the data have been reported. Zinc concentrations in samples associated with this method blank have "B" flags.

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.

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 may 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.

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

Most commonly, a “J” value indicates that the reported result for the analyte is below the stated reporting limit and is an estimated value. “J” values are generally reported to 1/5 of the reporting limit for GC/MS Volatiles, 1/10 of the reporting limit for GC/MS Semivolatiles, 1/2 the reporting limit for GC and HPLC, or to the Instrument Detection Limit for metals and general inorganics. Analytes which are not detected at or below the reporting limit are reported as “ND” and do not have “J” flags. Because “J” values may represent false positive concentrations, care should be used when interpreting these data. If there is uncertainty about the quantitation of an analyte, this footnote may also indicate that a reported result is an estimated concentration, even if it is above the reporting limit.

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.

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 result 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.

LIMs Report Key

Section	Description
Cover Letter	Signature page, report narrative as applicable.
Sample Description Information	Tabulated cross-reference between the Lab ID and Client ID, including matrix, date and time sampled, and the date received for all samples in the project.
Sample Analysis Results Sheets	Lists sample results, test components, reporting limits, dates prepared and analyzed, and any data qualifiers. Pages are organized by test.
QC LOT Assignment Report	Cross-reference between lab IDs and applicable QC batches (DCS, LCS, Blank, MS/SD, DU)
Duplicate Control Sample Report	Percent recovery and RPD results, with acceptance limits, for the laboratory duplicate control samples for each test are tabulated in this report. These are measures of accuracy and precision for each test. Acceptance limits are based upon laboratory historical data.
Laboratory Control Sample Report	Percent recovery results for a single Laboratory Control Sample (if applicable) are tabulated in this report, with the applicable acceptance limits for each test.
Matrix Spike/Matrix Spike Duplicate Report	Percent recovery and RPD results for matrix-specific QC samples and acceptance limits, where applicable. This report can be used to assess matrix effects on an analysis.
Single Control Sample Report	A tabulation of the surrogate recoveries for the blank for organic analyses.
Method Blank Report	A summary of the results of the analysis of the method blank for each test.

List of Abbreviations and Terms

Abbreviation	Term	Abbreviation	Term
DCS	Duplicate Control Sample	MSD	Matrix Spike Duplicate
DU	Sample Duplicate	QC Run	Preparation Batch
EB	Equipment Blank	QC Category	LIMs QC Category
FB	Field Blank	QC Lot	DCS Batch
FD	Field Duplicate	ND	Not Detected at or above the reporting limit expressed
IDL	Instrument Detection Limit (Metals)	QC Matrix	Matrix of the laboratory control sample(s)
LCS	Laboratory Control Sample	RL	Reporting Limit
MB	Method Blank	QC	Quality Control
MDL	Method Detection Limit	SA	Sample
MS	Matrix Spike	SD	Spike Duplicate
RPD	Relative Percent Difference	TB	Trip Blank
ppm (part-per-million)	mg/L or mg/kg (usually)	ppb (part-per-billion)	ug/L or ug/kg (usually)
QUAL	Qualifier flag	DIL	Dilution Factor

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
051038-0001-SA	CAFB-G-0896-1	AQUEOUS	20 AUG 96	15:00	21 AUG 96
051038-0002-TB	CAFB-F-0896TB	AQUEOUS	20 AUG 96	08:00	21 AUG 96
051038-0003-EB	CAFB-F-0896-EB	AQUEOUS	20 AUG 96	08:00	21 AUG 96
051038-0004-SA	CAFB-F-0896-1	AQUEOUS	20 AUG 96	08:00	21 AUG 96
051038-0005-SA	CAFB-H-0896-1	AQUEOUS	20 AUG 96	12:15	21 AUG 96

ANALYTICAL TEST REQUESTS
for
U.S. Geological Survey

Page 1 of 1

Lab ID: 051038	Group Code	Analysis Description	Custom Test?
0001 , 0003, 0004 - 0005	A	Nitrate Plus Nitrite	N
		Nitrite, as Nitrogen	N
		Nitrate, as Nitrogen by Calculation	N
		Volatile Organics	N
		Appendix IX List	N
		Screen - Volatile Organics	N
		Volatiles Library Search (20 Compound TID)	N
		Chlorinated Pesticides and PCB's	N
		Appendix IX List	N
		Prep - Organochlorine Pesticides/PCBs by GC (Appendix IX)	N
		Chlorinated Pesticides and PCB's	N
		Appendix IX List	N
		Sulfate, Ion Chromatography	N
		Total Dissolved Solids (TDS)	N
		Antimony, Furnace AA (Total)	N
		Arsenic, Furnace AA (Total)	N
		Prep - Arsenic, Selenium - Total, Furnace AA	N
		Cadmium, Furnace AA	N
		Prep - Total Metals, Furnace AA	N
		Chromium, Furnace AA (Total)	N
		Lead, Furnace AA (Total)	N
		Selenium, Furnace AA (Total)	N
		Silver, Furnace AA	N
		Thallium, Furnace AA (Total)	N
		ICP Suite: Air Force	Y
		Prep - Total Metals, ICP	N
0002	B	Volatile Organics	N
		Appendix IX List	N
		Screen - Volatile Organics	N
		Volatiles Library Search (20 Compound TID)	N

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.

Volatile Organics
Appendix IX List
Method 8240



Client Name: U.S. Geological Survey
Client ID: CAFB-G-0896-1
Lab ID: 051038-0001-SA
Matrix: AQUEOUS
Authorized: 21 AUG 96

Sampled: 20 AUG 96
Received: 21 AUG 96

Prepared: 22 AUG 96
Analyzed: 29 AUG 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	12	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: Audrey Cornell

Volatile Organics
Appendix IX List
Method 8240



Client Name: U.S. Geological Survey
Client ID: CAFB-G-0896-1
Lab ID: 051038-0001-SA
Matrix: AQUEOUS
Authorized: 21 AUG 96

Sampled: 20 AUG 96
Received: 21 AUG 96

Prepared: 22 AUG 96
Analyzed: 29 AUG 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	97	%	88-110
4-Bromofluorobenzene	99	%	86-115
1,2-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: Audrey Cornell

· Volatiles Library Search (20 Compound TID)
Method 8240



Client Name: U.S. Geological Survey
Client ID: CAFB-G-0896-1
Lab ID: 051038-0001-SA
Matrix: AQUEOUS
Authorized: 21 AUG 96

Sampled: 20 AUG 96
Received: 21 AUG 96

Prepared: NA
Analyzed: 29 AUG 96

Parameter	Result	Units	Reporting Limit
Siloxane	5.4	ug/L	

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

Reported By: Sandra Jones

Approved By: Audrey Cornell

Volatile Organics
Appendix IX List
Method 8240



Client Name: U.S. Geological Survey
Client ID: CAFB-F-0896TB
Lab ID: 051038-0002-TB
Matrix: AQUEOUS
Authorized: 21 AUG 96

Sampled: 20 AUG 96
Received: 21 AUG 96

Prepared: 22 AUG 96
Analyzed: 29 AUG 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: Audrey Cornell

Volatile Organics
Appendix IX List
Method 8240



Client Name: U.S. Geological Survey
Client ID: CAFB-F-0896TB
Lab ID: 051038-0002-TB
Matrix: AQUEOUS
Authorized: 21 AUG 96

Sampled: 20 AUG 96
Received: 21 AUG 96

Prepared: 22 AUG 96
Analyzed: 29 AUG 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	96	%	88-110
4-Bromofluorobenzene	98	%	86-115
1,2-Dichloroethane-d4	94	%	76-114

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

ND = Not Detected

Reported By: Sandra Jones

Approved By: Audrey Cornell

Volatiles Library Search (20 Compound TID)
Method 8240



Client Name: U.S. Geological Survey
Client ID: CAFB-F-0896TB
Lab ID: 051038-0002-TB
Matrix: AQUEOUS
Authorized: 21 AUG 96

Sampled: 20 AUG 96
Received: 21 AUG 96

Prepared: NA
Analyzed: 29 AUG 96

Parameter	Result	Units	Reporting Limit
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: Audrey Cornell

Volatile Organics
Appendix IX List
Method 8240



Client Name: U.S. Geological Survey
Client ID: CAFB-F-0896-EB
Lab ID: 051038-0003-EB
Matrix: AQUEOUS
Authorized: 21 AUG 96

Sampled: 20 AUG 96
Received: 21 AUG 96

Prepared: 22 AUG 96
Analyzed: 29 AUG 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: Audrey Cornell

Volatile Organics
Appendix IX List
Method 8240



Client Name: U.S. Geological Survey
Client ID: CAFB-F-0896-EB
Lab ID: 051038-0003-EB
Matrix: AQUEOUS
Authorized: 21 AUG 96

Sampled: 20 AUG 96
Received: 21 AUG 96

Prepared: 22 AUG 96
Analyzed: 29 AUG 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	10
Vinyl acetate	ND	ug/L	10
Vinyl chloride	ND	ug/L	5.0
Xylenes (total)	ND	ug/L	5.0
Surrogate	Recovery		Limits
Toluene-d8	96	%	88-110
4-Bromofluorobenzene	99	%	86-115
1,2-Dichloroethane-d4	95	%	76-114

Dilution factor is 1.0.

All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones

Approved By: Audrey Cornell

Volatiles Library Search (20 Compound TID)
Method 8240



Client Name: U.S. Geological Survey
Client ID: CAFB-F-0896-EB
Lab ID: 051038-0003-EB
Matrix: AQUEOUS
Authorized: 21 AUG 96

Sampled: 20 AUG 96
Received: 21 AUG 96

Prepared: NA
Analyzed: 29 AUG 96

Parameter	Result	Units	Reporting Limit
Siloxane	6.0	ug/L	

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

Reported By: Sandra Jones

Approved By: Audrey Cornell

Volatile Organics
Appendix IX List
Method 8240



Client Name: U.S. Geological Survey
Client ID: CAFB-F-0896-1
Lab ID: 051038-0004-SA
Matrix: AQUEOUS
Authorized: 21 AUG 96

Sampled: 20 AUG 96
Received: 21 AUG 96

Prepared: 22 AUG 96
Analyzed: 29 AUG 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: Audrey Cornell

Volatile Organics
Appendix IX List
Method 8240



Client Name: U.S. Geological Survey
Client ID: CAFB-F-0896-1
Lab ID: 051038-0004-SA
Matrix: AQUEOUS
Authorized: 21 AUG 96

Sampled: 20 AUG 96
Received: 21 AUG 96

Prepared: 22 AUG 96
Analyzed: 29 AUG 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	96	%	88-110
4-Bromofluorobenzene	99	%	86-115
1,2-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: Audrey Cornell

Volatiles Library Search (20 Compound TID)
Method 8240



Client Name: U.S. Geological Survey
Client ID: CAFB-F-0896-1
Lab ID: 051038-0004-SA
Matrix: AQUEOUS
Authorized: 21 AUG 96

Sampled: 20 AUG 96
Received: 21 AUG 96

Prepared: NA
Analyzed: 29 AUG 96

Parameter	Result	Units	Reporting Limit
Siloxane	13	ug/L	

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

Reported By: Sandra Jones

Approved By: Audrey Cornell

Volatile Organics
Appendix IX List
Method 8240



Client Name: U.S. Geological Survey
Client ID: CAFB-H-0896-1
Lab ID: 051038-0005-SA
Matrix: AQUEOUS
Authorized: 21 AUG 96

Sampled: 20 AUG 96
Received: 21 AUG 96

Prepared: 22 AUG 96
Analyzed: 29 AUG 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	5.0	ug/L	5.0
Methyl methacrylate	ND	ug/L	20

B

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

B = Compound is also detected in the blank.
ND = Not Detected

Reported By: Sandra Jones

Approved By: Audrey Cornell

Volatile Organics
Appendix IX List
Method 8240



Client Name: U.S. Geological Survey
Client ID: CAFB-H-0896-1
Lab ID: 051038-0005-SA
Matrix: AQUEOUS
Authorized: 21 AUG 96

Sampled: 20 AUG 96
Received: 21 AUG 96

Prepared: 22 AUG 96
Analyzed: 29 AUG 96

Parameter	Result	Units	Reporting Limit
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
Surrogate	Recovery		Limits
Toluene-d8	97	%	88-110
4-Bromofluorobenzene	98	%	86-115
1,2-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: Audrey Cornell

Volatiles Library Search (20 Compound TID)
Method 8240



Client Name: U.S. Geological Survey
Client ID: CAFB-H-0896-1
Lab ID: 051038-0005-SA
Matrix: AQUEOUS
Authorized: 21 AUG 96

Sampled: 20 AUG 96
Received: 21 AUG 96

Prepared: NA
Analyzed: 29 AUG 96

Parameter	Result	Units	Reporting Limit
Siloxane	6.3	ug/L	

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

Reported By: Sandra Jones

Approved By: Audrey Cornell

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



Client Name: U.S. Geological Survey
Client ID: CAFB-G-0896-1
Lab ID: 051038-0001-SA
Matrix: AQUEOUS
Authorized: 21 AUG 96

Sampled: 20 AUG 96
Received: 21 AUG 96

Prepared: 27 AUG 96
Analyzed: 10 SEP 96

Parameter	Result	Units	Reporting Limit	
Aldrin	ND	ug/L	0.050	T
Aroclor 1016	ND	ug/L	0.99	
Aroclor 1221	ND	ug/L	0.99	
Aroclor 1232	ND	ug/L	0.99	
Aroclor 1242	ND	ug/L	0.99	
Aroclor 1248	ND	ug/L	0.99	
Aroclor 1254	ND	ug/L	0.99	
Aroclor 1260	ND	ug/L	0.99	
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	0.99	
4,4'-DDD	ND	ug/L	0.099	
4,4'-DDE	ND	ug/L	0.099	
4,4'-DDT	ND	ug/L	0.099	
Diallate	ND	ug/L	0.99	
Dieldrin	ND	ug/L	0.099	
Endosulfan I	ND	ug/L	0.050	
Endosulfan II	ND	ug/L	0.099	
Endosulfan sulfate	ND	ug/L	0.099	
Endrin	ND	ug/L	0.099	
Endrin aldehyde	ND	ug/L	0.099	
Heptachlor	ND	ug/L	0.050	
Heptachlor epoxide	ND	ug/L	0.050	
Isodrin	ND	ug/L	0.099	
Kepone	ND	ug/L	2.5	
Methoxychlor	ND	ug/L	0.50	
Toxaphene	ND	ug/L	5.0	
Surrogate	Recovery		Limits	
Tetrachloro-m-xylene	74	%	54-106	
Dibutyl chlorendate	88	%	56-138	
Decachlorobiphenyl	100	%	65-145	

Dilution factor is 0.99. All results and limits are corrected for dilution.

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

Reported By: Dianna Link

Approved By: Karen Kuiken

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



Client Name: U.S. Geological Survey
Client ID: CAFB-F-0896-EB
Lab ID: 051038-0003-EB
Matrix: AQUEOUS
Authorized: 21 AUG 96

Sampled: 20 AUG 96
Received: 21 AUG 96

Prepared: 27 AUG 96
Analyzed: 10 SEP 96

Parameter	Result	Units	Reporting Limit	
Aldrin	ND	ug/L	0.048	T
Aroclor 1016	ND	ug/L	0.95	
Aroclor 1221	ND	ug/L	0.95	
Aroclor 1232	ND	ug/L	0.95	
Aroclor 1242	ND	ug/L	0.95	
Aroclor 1248	ND	ug/L	0.95	
Aroclor 1254	ND	ug/L	0.95	
Aroclor 1260	ND	ug/L	0.95	
alpha-BHC	ND	ug/L	0.048	
beta-BHC	ND	ug/L	0.048	
delta-BHC	ND	ug/L	0.048	
gamma-BHC (Lindane)	ND	ug/L	0.048	
alpha-Chlordane	ND	ug/L	0.048	
gamma-Chlordane	ND	ug/L	0.048	
Chlorobenzilate	ND	ug/L	0.95	
4,4'-DDD	ND	ug/L	0.095	
4,4'-DDE	ND	ug/L	0.095	
4,4'-DDT	ND	ug/L	0.095	
Diallate	ND	ug/L	0.95	
Dieldrin	ND	ug/L	0.095	
Endosulfan I	ND	ug/L	0.048	
Endosulfan II	ND	ug/L	0.095	
Endosulfan sulfate	ND	ug/L	0.095	
Endrin	ND	ug/L	0.095	
Endrin aldehyde	ND	ug/L	0.095	
Heptachlor	ND	ug/L	0.048	
Heptachlor epoxide	ND	ug/L	0.048	
Isodrin	ND	ug/L	0.095	
Kepone	ND	ug/L	2.4	
Methoxychlor	ND	ug/L	0.48	
Toxaphene	ND	ug/L	4.8	
Surrogate	Recovery		Limits	
Tetrachloro-m-xylene	70	%	54-106	
Dibutyl chlorendate	84	%	56-138	
Decachlorobiphenyl	96	%	65-145	

Dilution factor is 0.95. All results and limits are corrected for dilution.

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

Reported By: Dianna Link

Approved By: Karen Kuiken

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



Client Name: U.S. Geological Survey
Client ID: CAFB-F-0896-1
Lab ID: 051038-0004-SA
Matrix: AQUEOUS
Authorized: 21 AUG 96

Sampled: 20 AUG 96
Received: 21 AUG 96

Prepared: 27 AUG 96
Analyzed: 10 SEP 96

Parameter	Result	Units	Reporting Limit	
Aldrin	ND	ug/L	0.047	T
Aroclor 1016	ND	ug/L	0.94	
Aroclor 1221	ND	ug/L	0.94	
Aroclor 1232	ND	ug/L	0.94	
Aroclor 1242	ND	ug/L	0.94	
Aroclor 1248	ND	ug/L	0.94	
Aroclor 1254	ND	ug/L	0.94	
Aroclor 1260	ND	ug/L	0.94	
alpha-BHC	ND	ug/L	0.047	
beta-BHC	ND	ug/L	0.047	
delta-BHC	ND	ug/L	0.047	
gamma-BHC (Lindane)	ND	ug/L	0.047	
alpha-Chlordane	ND	ug/L	0.047	
gamma-Chlordane	ND	ug/L	0.047	
Chlorobenzilate	ND	ug/L	0.94	
4,4'-DDD	ND	ug/L	0.094	
4,4'-DDE	ND	ug/L	0.094	
4,4'-DDT	ND	ug/L	0.094	
Diallate	ND	ug/L	0.94	
Dieldrin	ND	ug/L	0.094	
Endosulfan I	ND	ug/L	0.047	
Endosulfan II	ND	ug/L	0.094	
Endosulfan sulfate	ND	ug/L	0.094	
Endrin	ND	ug/L	0.094	
Endrin aldehyde	ND	ug/L	0.094	
Heptachlor	ND	ug/L	0.047	
Heptachlor epoxide	ND	ug/L	0.047	
Isodrin	ND	ug/L	0.094	
Kepone	ND	ug/L	2.4	
Methoxychlor	ND	ug/L	0.47	
Toxaphene	ND	ug/L	4.7	
Surrogate	Recovery		Limits	
Tetrachloro-m-xylene	83	%	54-106	
Dibutyl chlorendate	94	%	56-138	
Decachlorobiphenyl	110	%	65-145	

Dilution factor is 0.94. All results and limits are corrected for dilution.

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

Reported By: Dianna Link

Approved By: Karen Kuiken

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



Client Name: U.S. Geological Survey
Client ID: CAFB-H-0896-1
Lab ID: 051038-0005-SA
Matrix: AQUEOUS
Authorized: 21 AUG 96

Sampled: 20 AUG 96
Received: 21 AUG 96

Prepared: 27 AUG 96
Analyzed: 10 SEP 96

Parameter	Result	Units	Reporting Limit	
Aldrin	ND	ug/L	0.048	T
Aroclor 1016	ND	ug/L	0.95	
Aroclor 1221	ND	ug/L	0.95	
Aroclor 1232	ND	ug/L	0.95	
Aroclor 1242	ND	ug/L	0.95	
Aroclor 1248	ND	ug/L	0.95	
Aroclor 1254	ND	ug/L	0.95	
Aroclor 1260	ND	ug/L	0.95	
alpha-BHC	ND	ug/L	0.048	
beta-BHC	ND	ug/L	0.048	
delta-BHC	ND	ug/L	0.048	
gamma-BHC (Lindane)	ND	ug/L	0.048	
alpha-Chlordane	ND	ug/L	0.048	
gamma-Chlordane	ND	ug/L	0.048	
Chlorobenzilate	ND	ug/L	0.95	
4,4'-DDD	ND	ug/L	0.095	
4,4'-DDE	ND	ug/L	0.095	
4,4'-DDT	ND	ug/L	0.095	
Diallate	ND	ug/L	0.95	
Dieldrin	ND	ug/L	0.095	
Endosulfan I	ND	ug/L	0.048	
Endosulfan II	ND	ug/L	0.095	
Endosulfan sulfate	ND	ug/L	0.095	
Endrin	ND	ug/L	0.095	
Endrin aldehyde	ND	ug/L	0.095	
Heptachlor	ND	ug/L	0.048	
Heptachlor epoxide	ND	ug/L	0.048	
Isodrin	ND	ug/L	0.095	
Kepone	ND	ug/L	2.4	
Methoxychlor	ND	ug/L	0.48	
Toxaphene	ND	ug/L	4.8	
Surrogate	Recovery		Limits	
Tetrachloro-m-xylene	73	%	54-106	
Dibutyl chlorendate	85	%	56-138	
Decachlorobiphenyl	96	%	65-145	

Dilution factor is 0.95. All results and limits are corrected for dilution.

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

Reported By: Dianna Link

Approved By: Karen Kuiken

**Metals
Total Metals**

Client Name: U.S. Geological Survey
 Ident ID: CAFB-G-0896-1
 ID: 051038-0001-SA
 Matrix: AQUEOUS
 Authorized: 21 AUG 96

Sampled: 20 AUG 96
 Prepared: See Below

Received: 21 AUG 96
 Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Aluminum	ND		1.0	0.20	mg/L	6010	10 SEP 96	12 SEP 96
Antimony	ND		1.0	0.20	mg/L	6010	10 SEP 96	12 SEP 96
Arsenic	ND		1.0	0.30	mg/L	6010	10 SEP 96	12 SEP 96
Barium	ND		1.0	0.10	mg/L	6010	10 SEP 96	12 SEP 96
Beryllium	ND		1.0	0.0020	mg/L	6010	10 SEP 96	12 SEP 96
Cadmium	ND		1.0	0.0050	mg/L	6010	10 SEP 96	12 SEP 96
Calcium	98.5		1.0	5.0	mg/L	6010	10 SEP 96	12 SEP 96
Chromium	ND		1.0	0.030	mg/L	6010	10 SEP 96	12 SEP 96
Cobalt	ND		1.0	0.040	mg/L	6010	10 SEP 96	12 SEP 96
Copper	ND		1.0	0.030	mg/L	6010	10 SEP 96	12 SEP 96
Iron	0.23		1.0	0.040	mg/L	6010	10 SEP 96	12 SEP 96
Lead	ND		1.0	0.20	mg/L	6010	10 SEP 96	12 SEP 96
Magnesium	93.3		1.0	5.0	mg/L	6010	10 SEP 96	12 SEP 96
Manganese	ND		1.0	0.010	mg/L	6010	10 SEP 96	12 SEP 96
Molybdenum	ND		1.0	0.040	mg/L	6010	10 SEP 96	12 SEP 96
Nickel	ND		1.0	0.040	mg/L	6010	10 SEP 96	12 SEP 96
Potassium	10.5		1.0	5.0	mg/L	6010	10 SEP 96	12 SEP 96
Selenium	ND		1.0	0.40	mg/L	6010	10 SEP 96	12 SEP 96
Silver	ND		1.0	0.030	mg/L	6010	10 SEP 96	12 SEP 96
Sodium	73.8		1.0	5.0	mg/L	6010	10 SEP 96	12 SEP 96
Thallium	ND		1.0	5.0	mg/L	6010	10 SEP 96	12 SEP 96
Thallium	ND		1.0	0.040	mg/L	6010	10 SEP 96	12 SEP 96
Thallium	0.037		1.0	0.010	mg/L	6010	10 SEP 96	12 SEP 96
Antimony	ND		1.0	0.010	mg/L	7041	10 SEP 96	12 SEP 96
Silver	ND	G	1.0	0.0010	mg/L	7761	10 SEP 96	13 SEP 96
Cadmium	ND		1.0	0.00050	mg/L	7131	10 SEP 96	12 SEP 96
Arsenic	ND		1.0	0.0050	mg/L	7060	06 SEP 96	09 SEP 96
Chromium	ND		1.0	0.0050	mg/L	7191	10 SEP 96	12 SEP 96
Lead	ND		1.0	0.0050	mg/L	7421	10 SEP 96	11 SEP 96
Selenium	ND	G	2.0	0.010	mg/L	7740	06 SEP 96	10 SEP 96
Thallium	ND	G	2.0	0.010	mg/L	7841	10 SEP 96	11 SEP 96

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

Reported By: Robin Tipton

Approved By: Richard Persichitte



Environmental Services

Metals
Total Metals

Client Name: U.S. Geological Survey
Contract ID: CAFB-F-0896-EB
ID: 051038-0003-EB
Matrix: AQUEOUS
Authorized: 21 AUG 96

Sampled: 20 AUG 96
Prepared: See Below

Received: 21 AUG 96
Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Aluminum	ND		1.0	0.20	mg/L	6010	03 SEP 96	04 SEP 96
Antimony	ND		1.0	0.20	mg/L	6010	03 SEP 96	04 SEP 96
Arsenic	ND		1.0	0.30	mg/L	6010	03 SEP 96	04 SEP 96
Barium	ND		1.0	0.10	mg/L	6010	03 SEP 96	04 SEP 96
Beryllium	ND		1.0	0.0020	mg/L	6010	03 SEP 96	04 SEP 96
Cadmium	ND		1.0	0.0050	mg/L	6010	03 SEP 96	04 SEP 96
Calcium	ND		1.0	5.0	mg/L	6010	03 SEP 96	04 SEP 96
Chromium	ND		1.0	0.030	mg/L	6010	03 SEP 96	04 SEP 96
Cobalt	ND		1.0	0.040	mg/L	6010	03 SEP 96	04 SEP 96
Copper	ND		1.0	0.030	mg/L	6010	03 SEP 96	04 SEP 96
Iron	ND		1.0	0.040	mg/L	6010	03 SEP 96	04 SEP 96
Lead	ND		1.0	0.20	mg/L	6010	03 SEP 96	04 SEP 96
Magnesium	ND		1.0	5.0	mg/L	6010	03 SEP 96	04 SEP 96
Manganese	ND		1.0	0.010	mg/L	6010	03 SEP 96	04 SEP 96
Molybdenum	ND		1.0	0.040	mg/L	6010	03 SEP 96	04 SEP 96
Nickel	ND		1.0	0.040	mg/L	6010	03 SEP 96	04 SEP 96
Potassium	ND		1.0	5.0	mg/L	6010	03 SEP 96	04 SEP 96
Selenium	ND		1.0	0.40	mg/L	6010	03 SEP 96	04 SEP 96
Silver	ND		1.0	0.030	mg/L	6010	03 SEP 96	04 SEP 96
Sodium	ND		1.0	5.0	mg/L	6010	03 SEP 96	04 SEP 96
Thallium	ND		1.0	5.0	mg/L	6010	03 SEP 96	04 SEP 96
Cadmium	ND		1.0	0.040	mg/L	6010	03 SEP 96	04 SEP 96
Cadmium	0.012	B	1.0	0.010	mg/L	6010	03 SEP 96	04 SEP 96
Antimony	ND		1.0	0.010	mg/L	7041	03 SEP 96	12 SEP 96
Silver	ND	G	1.0	0.0010	mg/L	7761	10 SEP 96	13 SEP 96
Cadmium	ND		1.0	0.00050	mg/L	7131	10 SEP 96	12 SEP 96
Arsenic	ND		1.0	0.0050	mg/L	7060	06 SEP 96	09 SEP 96
Chromium	ND		1.0	0.0050	mg/L	7191	10 SEP 96	12 SEP 96
Lead	ND		1.0	0.0050	mg/L	7421	10 SEP 96	11 SEP 96
Selenium	ND		1.0	0.0050	mg/L	7740	06 SEP 96	10 SEP 96
Thallium	ND		1.0	0.0050	mg/L	7841	10 SEP 96	11 SEP 96

B = Compound is also detected in the blank.
G = Reporting limit raised due to the matrix of the sample.
ND = Not Detected

Reported By: Robin Tipton

Approved By: Richard Persichitte

**Metals
Total Metals**

Client Name: U.S. Geological Survey
 Client ID: CAFB-F-0896-1
 Job ID: 051038-0004-SA
 Matrix: AQUEOUS
 Authorized: 21 AUG 96

Sampled: 20 AUG 96
 Prepared: See Below

Received: 21 AUG 96
 Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Aluminum	ND		1.0	0.20	mg/L	6010	03 SEP 96	04 SEP 96
Antimony	ND		1.0	0.20	mg/L	6010	03 SEP 96	04 SEP 96
Arsenic	ND		1.0	0.30	mg/L	6010	03 SEP 96	04 SEP 96
Barium	ND		1.0	0.10	mg/L	6010	03 SEP 96	04 SEP 96
Beryllium	ND		1.0	0.0020	mg/L	6010	03 SEP 96	04 SEP 96
Cadmium	ND		1.0	0.0050	mg/L	6010	03 SEP 96	04 SEP 96
Calcium	75.8		1.0	5.0	mg/L	6010	03 SEP 96	04 SEP 96
Chromium	ND		1.0	0.030	mg/L	6010	03 SEP 96	04 SEP 96
Cobalt	ND		1.0	0.040	mg/L	6010	03 SEP 96	04 SEP 96
Copper	ND		1.0	0.030	mg/L	6010	03 SEP 96	04 SEP 96
Iron	0.055		1.0	0.040	mg/L	6010	03 SEP 96	04 SEP 96
Lead	ND		1.0	0.20	mg/L	6010	03 SEP 96	04 SEP 96
Magnesium	70.8		1.0	5.0	mg/L	6010	03 SEP 96	04 SEP 96
Manganese	ND		1.0	0.010	mg/L	6010	03 SEP 96	04 SEP 96
Molybdenum	ND		1.0	0.040	mg/L	6010	03 SEP 96	04 SEP 96
Nickel	ND		1.0	0.040	mg/L	6010	03 SEP 96	04 SEP 96
Potassium	8.9		1.0	5.0	mg/L	6010	03 SEP 96	04 SEP 96
Selenium	ND		1.0	0.40	mg/L	6010	03 SEP 96	04 SEP 96
Silver	ND		1.0	0.030	mg/L	6010	03 SEP 96	04 SEP 96
Sodium	48.6		1.0	5.0	mg/L	6010	03 SEP 96	04 SEP 96
Thallium	ND		1.0	5.0	mg/L	6010	03 SEP 96	04 SEP 96
Uranium	ND		1.0	0.040	mg/L	6010	03 SEP 96	04 SEP 96
Zinc	ND		1.0	0.010	mg/L	6010	03 SEP 96	04 SEP 96
Antimony	ND		1.0	0.010	mg/L	7041	03 SEP 96	12 SEP 96
Silver	ND	G	1.0	0.0010	mg/L	7761	10 SEP 96	13 SEP 96
Cadmium	ND		1.0	0.00050	mg/L	7131	10 SEP 96	12 SEP 96
Arsenic	ND		1.0	0.0050	mg/L	7060	06 SEP 96	09 SEP 96
Chromium	ND		1.0	0.0050	mg/L	7191	10 SEP 96	12 SEP 96
Lead	ND		1.0	0.0050	mg/L	7421	10 SEP 96	11 SEP 96
Selenium	ND	G	2.0	0.010	mg/L	7740	06 SEP 96	10 SEP 96
Thallium	ND	G	1.0	0.010	mg/L	7841	10 SEP 96	11 SEP 96

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

Reported By: Robin Tipton

Approved By: Richard Persichitte



Environmental Services

Metals
Total Metals

Client Name: U.S. Geological Survey
Contract ID: CAFB-H-0896-1
ID: 051038-0005-SA
Matrix: AQUEOUS
Authorized: 21 AUG 96

Sampled: 20 AUG 96
Prepared: See Below

Received: 21 AUG 96
Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Aluminum	ND		1.0	0.20	mg/L	6010	03 SEP 96	04 SEP 96
Antimony	ND		1.0	0.20	mg/L	6010	03 SEP 96	04 SEP 96
Arsenic	ND		1.0	0.30	mg/L	6010	03 SEP 96	04 SEP 96
Barium	ND		1.0	0.10	mg/L	6010	03 SEP 96	04 SEP 96
Beryllium	ND		1.0	0.0020	mg/L	6010	03 SEP 96	04 SEP 96
Cadmium	ND		1.0	0.0050	mg/L	6010	03 SEP 96	04 SEP 96
Calcium	47.7		1.0	5.0	mg/L	6010	03 SEP 96	04 SEP 96
Chromium	ND		1.0	0.030	mg/L	6010	03 SEP 96	04 SEP 96
Cobalt	ND		1.0	0.040	mg/L	6010	03 SEP 96	04 SEP 96
Copper	ND		1.0	0.030	mg/L	6010	03 SEP 96	04 SEP 96
Iron	0.52		1.0	0.040	mg/L	6010	03 SEP 96	04 SEP 96
Lead	ND		1.0	0.20	mg/L	6010	03 SEP 96	04 SEP 96
Magnesium	43.1		1.0	5.0	mg/L	6010	03 SEP 96	04 SEP 96
Manganese	ND		1.0	0.010	mg/L	6010	03 SEP 96	04 SEP 96
Molybdenum	ND		1.0	0.040	mg/L	6010	03 SEP 96	04 SEP 96
Nickel	0.054		1.0	0.040	mg/L	6010	03 SEP 96	04 SEP 96
Potassium	6.8		1.0	5.0	mg/L	6010	03 SEP 96	04 SEP 96
Selenium	ND		1.0	0.40	mg/L	6010	03 SEP 96	04 SEP 96
Silver	ND		1.0	0.030	mg/L	6010	03 SEP 96	04 SEP 96
Sodium	56.2		1.0	5.0	mg/L	6010	03 SEP 96	04 SEP 96
Thallium	ND		1.0	5.0	mg/L	6010	03 SEP 96	04 SEP 96
Thallium	ND		1.0	0.040	mg/L	6010	03 SEP 96	04 SEP 96
Thallium	0.053	B	1.0	0.010	mg/L	6010	03 SEP 96	04 SEP 96
Antimony	ND		1.0	0.010	mg/L	7041	03 SEP 96	12 SEP 96
Silver	ND	G	1.0	0.0010	mg/L	7761	10 SEP 96	13 SEP 96
Cadmium	ND		1.0	0.00050	mg/L	7131	10 SEP 96	12 SEP 96
Arsenic	ND		1.0	0.0050	mg/L	7060	06 SEP 96	09 SEP 96
Chromium	0.017		1.0	0.0050	mg/L	7191	10 SEP 96	12 SEP 96
Lead	ND		1.0	0.0050	mg/L	7421	10 SEP 96	11 SEP 96
Selenium	ND	G	2.0	0.010	mg/L	7740	06 SEP 96	10 SEP 96
Thallium	ND	G	1.0	0.010	mg/L	7841	10 SEP 96	11 SEP 96

B = Compound is also detected in the blank.
G = Reporting limit raised due to the matrix of the sample.
ND = Not Detected

Reported By: Robin Tipton

Approved By: Richard Persichitte

General Inorganics

Client Name: U.S. Geological Survey
 Client ID: CAFB-G-0896-1
 Lab ID: 051038-0001-SA
 Matrix: AQUEOUS
 Authorized: 21 AUG 96

Sampled: 20 AUG 96
 Prepared: See Below

Received: 21 AUG 96
 Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Sulfate	242	t	5.0	2.5	mg/L	300.0	NA	23 AUG 96
Nitrite as N	ND		1.0	0.010	mg/L	354.1	NA	21 AUG 96
Nitrate plus Nitrite as N	12.1	t	10	1.0	mg/L	353.2	NA	23 AUG 96
Nitrate as N	12.1		10	1.0	mg/L	353.2/354	NA	23 AUG 96
Total Dissolved Solids	913		1.0	10.0	mg/L	160.1	NA	21 AUG 96

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

Reported By: Patty Jungk

Approved By: Linda Sullivan

General Inorganics

Client Name: U.S. Geological Survey
 Well ID: CAFB-F-0896-EB
 ID: 051038-0003-EB
 Matrix: AQUEOUS
 Authorized: 21 AUG 96

Sampled: 20 AUG 96
 Prepared: See Below

Received: 21 AUG 96
 Analyzed: See Below

Parameter	Result Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Sulfate	ND	1.0	0.50	mg/L	300.0	NA	23 AUG 96
Nitrite as N	ND	1.0	0.010	mg/L	354.1	NA	21 AUG 96
Nitrate plus Nitrite as N	ND	1.0	0.10	mg/L	353.2	NA	23 AUG 96
Nitrate as N	ND	1.0	0.10	mg/L	353.2/354	NA	23 AUG 96
Total Dissolved Solids	ND	1.0	10.0	mg/L	160.1	NA	21 AUG 96

ND = Not Detected

Reported By: Patty Jungk

Approved By: Linda Sullivan

General Inorganics

Client Name: U.S. Geological Survey
 Client ID: CAFB-F-0896-1
 Lab ID: 051038-0004-SA
 Matrix: AQUEOUS
 Authorized: 21 AUG 96

Sampled: 20 AUG 96
 Prepared: See Below

Received: 21 AUG 96
 Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Sulfate	196	t	2.0	1.0	mg/L	300.0	NA	23 AUG 96
Nitrite as N	ND		1.0	0.010	mg/L	354.1	NA	21 AUG 96
Nitrate plus Nitrite as N	5.7	t	5.0	0.50	mg/L	353.2	NA	23 AUG 96
Nitrate as N	5.7		5.0	0.50	mg/L	353.2/354	NA	23 AUG 96
Total Dissolved Solids	719		1.0	10.0	mg/L	160.1	NA	21 AUG 96

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

Reported By: Patty Jungk

Approved By: Linda Sullivan



Environmental Services

General Inorganics

Client Name: U.S. Geological Survey
Client ID: CAFB-H-0896-1
Lab ID: 051038-0005-SA
Matrix: AQUEOUS
Authorized: 21 AUG 96

Sampled: 20 AUG 96
Prepared: See Below

Received: 21 AUG 96
Analyzed: See Below

Table with 8 columns: Parameter, Result, Qual, Dil, RL, Units, Test Method, Prepared Date, Analyzed Date. Rows include Sulfate, Nitrite as N, Nitrate plus Nitrite as N, Nitrate as N, and Total Dissolved Solids.

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

Reported By: Patty Jungk

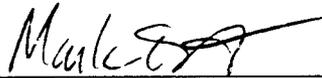
Approved By: Linda Sullivan

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303 421-6611 Telephone
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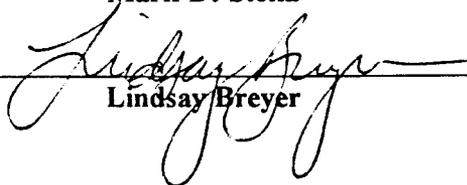
ANALYTICAL RESULTS
FOR
U.S. GEOLOGICAL SURVEY
QUANTERRA NO. 051069
SEPTEMBER 20, 1996

Prepared by:



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NARRATIVE

On August 20, 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.

With the exceptions noted below 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.

General Comments

Dilution factors listed on the data sheets for the aqueous semivolatile organic parameters are based on the volume of sample actually extracted relative to the nominal volume of 1.0 liter. Any additional dilutions performed on the samples after extraction are also included in the dilution factor and will be indicated by G or t footnotes on the data sheets. All results and reporting limits are adjusted relative to the sample volume extracted and any subsequent dilutions performed. Dilution factors are rounded to two significant figures for reporting; all calculations are performed before rounding.

GC/MS Semivolatile Organics

Several compounds are not consistently recovered using Method 8270, and reporting limits cannot be established. These compounds include hexachlorophene and benzenethiol. Two compounds, pyridine and quinoline, are not recovered after alumina column cleanup.

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 and reported 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 their retention times are identical. Results are reported as a combined value for 3/4-methyl phenol (or m&p-cresols).

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. 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.

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:

- 3 Confirmed Identification; the identification is based on the analysis of an authentic standard.
- 2 Confident Identification; good agreement was observed between the unknown compound and a specific library spectrum.

1 Tentative Identification; the unknown compound is only indicative of a specific library spectrum.

If 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.), a class identification is made without assigning a level of confidence.

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.

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.

Dioxins and Furans

The samples have also been sent to Quanterra's West Sacramento, California laboratory for dioxin and furan analysis. The Method 8280 results will be reported separately on project 051074.

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. hydrocarbon products, 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 pattern of peaks observed in the samples to the patterns observed for standards containing known concentrations of the analytes 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

Zinc is reported at a concentration above the reporting limit in the method blank associated with samples 051069-0001-SA through -0004-SA. Since the zinc contamination detected in the method blank is within acceptable limits, the data have been reported. Samples which have zinc concentrations reported have "B" flags.

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.

General Inorganics

The low and high distilled cyanide standards were recovered outside control limits. Since cyanide was not detected in the samples and the duplicate control samples recovered within control limits, the data were reported.

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 may 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.

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

Most commonly, a "J" value indicates that the reported result for the analyte is below the stated reporting limit and is an estimated value. "J" values are generally reported to 1/5 of the reporting limit

for GC/MS Volatiles, 1/10 of the reporting limit for GC/MS Semivolatiles, 1/2 the reporting limit for GC and HPLC, or to the Instrument Detection Limit for metals and general inorganics. Analytes which are not detected at or below the reporting limit are reported as "ND" and do not have "J" flags. Because "J" values may represent false positive concentrations, care should be used when interpreting these data. If there is uncertainty about the quantitation of an analyte, this footnote may also indicate that a reported result is an estimated concentration, even if it is above the reporting limit.

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.

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 result 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.

LIMs Report Key

Section	Description
Cover Letter	Signature page, report narrative as applicable.
Sample Description Information	Tabulated cross-reference between the Lab ID and Client ID, including matrix, date and time sampled, and the date received for all samples in the project.
Sample Analysis Results Sheets	Lists sample results, test components, reporting limits, dates prepared and analyzed, and any data qualifiers. Pages are organized by test.
QC LOT Assignment Report	Cross-reference between lab IDs and applicable QC batches (DCS, LCS, Blank, MS/SD, DU)
Duplicate Control Sample Report	Percent recovery and RPD results, with acceptance limits, for the laboratory duplicate control samples for each test are tabulated in this report. These are measures of accuracy and precision for each test. Acceptance limits are based upon laboratory historical data.
Laboratory Control Sample Report	Percent recovery results for a single Laboratory Control Sample (if applicable) are tabulated in this report, with the applicable acceptance limits for each test.
Matrix Spike/Matrix Spike Duplicate Report	Percent recovery and RPD results for matrix-specific QC samples and acceptance limits, where applicable. This report can be used to assess matrix effects on an analysis.
Single Control Sample Report	A tabulation of the surrogate recoveries for the blank for organic analyses.
Method Blank Report	A summary of the results of the analysis of the method blank for each test.

List of Abbreviations and Terms

Abbreviation	Term	Abbreviation	Term
DCS	Duplicate Control Sample	MSD	Matrix Spike Duplicate
DU	Sample Duplicate	QC Run	Preparation Batch
EB	Equipment Blank	QC Category	LIMs QC Category
FB	Field Blank	QC Lot	DCS Batch
FD	Field Duplicate	ND	Not Detected at or above the reporting limit expressed
IDL	Instrument Detection Limit (Metals)	QC Matrix	Matrix of the laboratory control sample(s)
LCS	Laboratory Control Sample	RL	Reporting Limit
MB	Method Blank	QC	Quality Control
MDL	Method Detection Limit	SA	Sample
MS	Matrix Spike	SD	Spike Duplicate
RPD	Relative Percent Difference	TB	Trip Blank
ppm (part-per-million)	mg/L or mg/kg (usually)	ppb (part-per-billion)	ug/L or ug/kg (usually)
QUAL	Qualifier flag	DIL	Dilution Factor

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
051069-0001-SA	CAFB-L-0896-1	AQUEOUS	21 AUG 96	10:15	22 AUG 96
051069-0002-SA	CAFB-M-0896-1	AQUEOUS	21 AUG 96	11:15	22 AUG 96
051069-0003-SA	CAFB-I-0896-1	AQUEOUS	21 AUG 96	12:30	22 AUG 96
051069-0004-SA	CAFB-X-0896-1	AQUEOUS	21 AUG 96	13:00	22 AUG 96
051069-0005-TB	CAFB-L-0896-TB	AQUEOUS	21 AUG 96	10:15	22 AUG 96

ANALYTICAL TEST REQUESTS
for
U.S. Geological Survey

Lab ID: 051069	Group Code	Analysis Description	Custom Test?
0001 - 0004	A	Volatile Organics	N
		Appendix IX List	N
		Screen - Volatile Organics	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
		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
		Semivolatile Organics	N
		Appendix IX List	
		Prep - Semivolatile Organics by GC/MS	N
		Mercury, Cold Vapor AA (Total)	N
		Prep - Mercury, Cold Vapor AA (Total)	N
		Cadmium, Furnace AA	N
		Chromium, Furnace AA (Total)	N
		Antimony, Furnace AA (Total)	N
		Silver, Furnace AA	N
		Polynuclear Aromatic Hydrocarbons, HPLC	N
		Prep - Polynuclear Aromatic Hydrocarbons by HPLC	N
		Chlorinated Pesticides and PCB's	N
		Appendix IX List	
		Prep - Organochlorine Pesticides/PCBs by GC (Appendix IX)	N
		Chlorinated Pesticides and PCB's	N
		Appendix IX List	
		Volatiles Library Search (20 Compound TID)	N
Semivolatiles Library Search (30 Compound TID)	N		
ICP Suite: Air Force	N		
Prep - Total Metals, ICP	N		
Total Organic Carbon (TOC)	N		
0005	B	Volatile Organics	N
		Appendix IX List	N
		Screen - Volatile Organics	N

ANALYTICAL TEST REQUESTS
for
U.S. Geological Survey

Page 2 of 2

Lab ID: 051069	Group Code	Analysis Description	Custom Test?
		Volatiles Library Search (20 Compound TID)	N

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.

Volatile Organics
Appendix IX List
Method 8240



Client Name: U.S. Geological Survey
Client ID: CAFB-L-0896-1
Lab ID: 051069-0001-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: 23 AUG 96
Analyzed: 30 AUG 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: Audrey Cornell

Volatile Organics
Appendix IX List
Method 8240



Client Name: U.S. Geological Survey
Client ID: CAFB-L-0896-1
Lab ID: 051069-0001-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: 23 AUG 96
Analyzed: 30 AUG 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	95	%	76-114

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

ND = Not Detected

Reported By: Sandra Jones

Approved By: Audrey Cornell

Volatiles Library Search (20 Compound TID)
Method 8240



Client Name: U.S. Geological Survey
Client ID: CAFB-L-0896-1
Lab ID: 051069-0001-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: NA
Analyzed: 30 AUG 96

Parameter	Result	Units	Reporting Limit
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: Audrey Cornell

Volatile Organics
Appendix IX List
Method 8240



Client Name: U.S. Geological Survey
Client ID: CAFB-M-0896-1
Lab ID: 051069-0002-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: 23 AUG 96
Analyzed: 30 AUG 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: Audrey Cornell

Volatile Organics
Appendix IX List
Method 8240



Client Name: U.S. Geological Survey
Client ID: CAFB-M-0896-1
Lab ID: 051069-0002-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: 23 AUG 96
Analyzed: 30 AUG 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
4-Bromofluorobenzene	100	%	86-115
1,2-Dichloroethane-d4	95	%	76-114

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

ND = Not Detected

Reported By: Sandra Jones

Approved By: Audrey Cornell

Volatiles Library Search (20 Compound TID)
Method 8240



Client Name: U.S. Geological Survey
Client ID: CAFB-M-0896-1
Lab ID: 051069-0002-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: NA
Analyzed: 30 AUG 96

Parameter	Result	Units	Reporting Limit
Siloxane	7.7	ug/L	

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

Reported By: Sandra Jones

Approved By: Audrey Cornell

Volatile Organics
Appendix IX List
Method 8240



Client Name: U.S. Geological Survey
Client ID: CAFB-I-0896-1
Lab ID: 051069-0003-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: 23 AUG 96
Analyzed: 30 AUG 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: Audrey Cornell

Volatile Organics
Appendix IX List
Method 8240



Client Name: U.S. Geological Survey
Client ID: CAFB-I-0896-1
Lab ID: 051069-0003-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: 23 AUG 96
Analyzed: 30 AUG 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
4-Bromofluorobenzene	101	%	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: Sandra Jones

Approved By: Audrey Cornell

Volatiles Library Search (20 Compound TID)
Method 8240



Client Name: U.S. Geological Survey
Client ID: CAFB-I-0896-1
Lab ID: 051069-0003-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: NA
Analyzed: 30 AUG 96

Parameter	Result	Units	Reporting Limit
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: Audrey Cornell

Volatile Organics
Appendix IX List
Method 8240



Client Name: U.S. Geological Survey
Client ID: CAFB-X-0896-1
Lab ID: 051069-0004-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: 23 AUG 96
Analyzed: 30 AUG 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: Audrey Cornell

Volatile Organics
Appendix IX List
Method 8240



Client Name: U.S. Geological Survey
Client ID: CAFB-X-0896-1
Lab ID: 051069-0004-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: 23 AUG 96
Analyzed: 30 AUG 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	102	%	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: Audrey Cornell

. Volatiles Library Search (20 Compound TID)
Method 8240



Client Name: U.S. Geological Survey
Client ID: CAFB-X-0896-1
Lab ID: 051069-0004-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: NA
Analyzed: 30 AUG 96

Parameter	Result	Units	Reporting Limit
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: Audrey Cornell

Volatile Organics
Appendix IX List
Method 8240



Client Name: U.S. Geological Survey
Client ID: CAFB-L-0896-TB
Lab ID: 051069-0005-TB
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: 23 AUG 96
Analyzed: 30 AUG 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: Audrey Cornell

Volatile Organics
Appendix IX List
Method 8240



Client Name: U.S. Geological Survey
Client ID: CAFB-L-0896-TB
Lab ID: 051069-0005-TB
Matrix: AQUEOUS
Authorized: 22 AUG. 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: 23 AUG 96
Analyzed: 30 AUG 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	101	%	86-115
1,2-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: Audrey Cornell

Volatiles Library Search (20 Compound TID)
Method 8240



Client Name: U.S. Geological Survey
Client ID: CAFB-L-0896-TB
Lab ID: 051069-0005-TB
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: NA
Analyzed: 30 AUG 96

Parameter	Result	Units	Reporting Limit
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: Audrey Cornell

Semivolatile Organics
Appendix IX List
Method 8270



Client Name: U.S. Geological Survey
Client ID: CAFB-L-0896-1
Lab ID: 051069-0001-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: 25 AUG 96
Analyzed: 04 SEP 96

Parameter	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	9.5
Acenaphthylene	ND	ug/L	9.5
Acetophenone	ND	ug/L	9.5
2-Acetylaminofluorene	ND	ug/L	95
4-Aminobiphenyl	ND	ug/L	9.5
Aniline	ND	ug/L	9.5
Anthracene	ND	ug/L	9.5
Aramite	ND	ug/L	9.5
Benzo(a)anthracene	ND	ug/L	9.5
Benzo(b)fluoranthene	ND	ug/L	9.5
Benzo(k)fluoranthene	ND	ug/L	9.5
Benzo(g,h,i)perylene	ND	ug/L	9.5
Benzo(a)pyrene	ND	ug/L	9.5
Benzyl alcohol	ND	ug/L	9.5
4-Bromophenyl phenyl ether	ND	ug/L	9.5
Butyl benzyl phthalate	ND	ug/L	9.5
2-sec-Butyl-4,6-dinitro-phenol	ND	ug/L	9.5
4-Chloroaniline	ND	ug/L	9.5
bis(2-Chloroethoxy)methane	ND	ug/L	9.5
bis(2-Chloroethyl) ether	ND	ug/L	9.5
bis(2-Chloroisopropyl)ether	ND	ug/L	9.5
4-Chloro-3-methylphenol	ND	ug/L	9.5
2-Chloronaphthalene	ND	ug/L	9.5
2-Chlorophenol	ND	ug/L	9.5
4-Chlorophenyl phenyl ether	ND	ug/L	9.5
Chrysene	ND	ug/L	9.5
Dibenz(a,h)anthracene	ND	ug/L	9.5
Dibenzofuran	ND	ug/L	9.5
Di-n-butyl phthalate	ND	ug/L	9.5
1,2-Dichlorobenzene	ND	ug/L	9.5
1,3-Dichlorobenzene	ND	ug/L	9.5
1,4-Dichlorobenzene	ND	ug/L	9.5
3,3'-Dichlorobenzidine	ND	ug/L	19
2,4-Dichlorophenol	ND	ug/L	9.5
2,6-Dichlorophenol	ND	ug/L	9.5
Diethyl phthalate	ND	ug/L	9.5
Dimethoate	ND	ug/L	48
p-Dimethylaminoazobenzene	ND	ug/L	9.5
7,12-Dimethylbenz(a)-anthracene	ND	ug/L	9.5
3,3'-Dimethylbenzidine	ND	ug/L	9.5
a,a-Dimethylphenethyl-amine	ND	ug/L	9.5

Dilution factor is 0.95. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Tom Claeys

Approved By: Audrey Cornell

Semivolatile Organics
Appendix IX List
Method 8270



Client Name: U.S. Geological Survey
Client ID: CAFB-L-0896-1
Lab ID: 051069-0001-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: 25 AUG 96
Analyzed: 04 SEP 96

Parameter	Result	Units	Reporting Limit
2,4-Dimethylphenol	ND	ug/L	9.5
Dimethyl phthalate	ND	ug/L	9.5
1,3-Dinitrobenzene	ND	ug/L	9.5
4,6-Dinitro-2-methylphenol	ND	ug/L	48
2,4-Dinitrophenol	ND	ug/L	48
2,4-Dinitrotoluene	ND	ug/L	9.5
2,6-Dinitrotoluene	ND	ug/L	9.5
Di-n-octyl phthalate	ND	ug/L	9.5
Diphenylamine	ND	ug/L	9.5
Disulfoton	ND	ug/L	48
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.5
Ethyl methanesulfonate	ND	ug/L	9.5
Famphur	ND	ug/L	48
Fluoranthene	ND	ug/L	9.5
Fluorene	ND	ug/L	9.5
Hexachlorobenzene	ND	ug/L	9.5
Hexachlorobutadiene	ND	ug/L	9.5
Hexachlorocyclopentadiene	ND	ug/L	9.5
Hexachloroethane	ND	ug/L	9.5
Hexachlorophene	ND	ug/L	--
Hexachloropropene	ND	ug/L	9.5
Indeno(1,2,3-cd)pyrene	ND	ug/L	9.5
Isophorone	ND	ug/L	9.5
Isosafrole	ND	ug/L	19
Methapyrilene	ND	ug/L	9.5
3-Methylcholanthrene	ND	ug/L	9.5
Methyl methanesulfonate	ND	ug/L	9.5
2-Methylnaphthalene	ND	ug/L	9.5
Methyl parathion	ND	ug/L	48
2-Methylphenol	ND	ug/L	9.5
3/4-Methylphenol	ND	ug/L	9.5
Naphthalene	ND	ug/L	9.5
1,4-Naphthoquinone	ND	ug/L	9.5
1-Naphthylamine	ND	ug/L	9.5
2-Naphthylamine	ND	ug/L	9.5
2-Nitroaniline	ND	ug/L	48
3-Nitroaniline	ND	ug/L	48
4-Nitroaniline	ND	ug/L	48
Nitrobenzene	ND	ug/L	9.5
2-Nitrophenol	ND	ug/L	9.5
4-Nitrophenol	ND	ug/L	48

Dilution factor is 0.95. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Tom Claeys

Approved By: Audrey Cornell

Semivolatile Organics
Appendix IX List
Method 8270



Client Name: U.S. Geological Survey
Client ID: CAFB-L-0896-1
Lab ID: 051069-0001-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: 25 AUG 96
Analyzed: 04 SEP 96

Parameter	Result	Units	Reporting Limit
4-Nitroquinoline-1-oxide	ND	ug/L	95
N-Nitroso-di-n-butylamine	ND	ug/L	9.5
N-Nitrosodiethylamine	ND	ug/L	9.5
N-Nitrosodimethylamine	ND	ug/L	9.5
N-Nitrosodiphenylamine	ND	ug/L	9.5
N-Nitroso-di-n-propylamine	ND	ug/L	9.5
N-Nitrosomethylethylamine	ND	ug/L	9.5
N-Nitrosomorpholine	ND	ug/L	9.5
N-Nitrosopiperidine	ND	ug/L	9.5
N-Nitrosopyrrolidine	ND	ug/L	9.5
5-Nitro-o-toluidine	ND	ug/L	9.5
Parathion	ND	ug/L	48
Pentachlorobenzene	ND	ug/L	9.5
Pentachloroethane	ND	ug/L	9.5
Pentachloronitrobenzene	ND	ug/L	48
Pentachlorophenol	ND	ug/L	48
Phenacetin	ND	ug/L	9.5
Phenanthrene	ND	ug/L	9.5
Phenol	ND	ug/L	9.5
4-Phenylenediamine	ND	ug/L	95
Phorate	ND	ug/L	95
2-Picoline	ND	ug/L	9.5
Pronamide	ND	ug/L	9.5
Pyrene	ND	ug/L	9.5
Pyridine	ND	ug/L	19
Safrole	ND	ug/L	9.5
Sulfotepp	ND	ug/L	48
1,2,4,5-Tetrachloro-benzene	ND	ug/L	9.5
2,3,4,6-Tetrachlorophenol	ND	ug/L	48
Thionazin	ND	ug/L	48
2-Toluidine	ND	ug/L	9.5
1,2,4-Trichlorobenzene	ND	ug/L	9.5
2,4,5-Trichlorophenol	ND	ug/L	48
2,4,6-Trichlorophenol	ND	ug/L	9.5
0,0,0-Triethylphosphoro-thioate	ND	ug/L	9.5
1,3,5-Trinitrobenzene	ND	ug/L	9.5

Dilution factor is 0.95. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Tom Claeys

Approved By: Audrey Cornell

Semivolatile Organics
Appendix IX List
Method 8270



Client Name: U.S. Geological Survey
Client ID: CAFB-L-0896-1
Lab ID: 051069-0001-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: 25 AUG 96
Analyzed: 04 SEP 96

Parameter	Result	Units	Reporting Limit
Surrogate	Recovery		Limits
Nitrobenzene-d5	77	%	35-114
2-Fluorobiphenyl	63	%	43-116
Terphenyl-d14	69	%	33-141
Phenol-d5	84	%	54-105
2-Fluorophenol	70	%	21-100
2,4,6-Tribromophenol	62	%	10-123

Dilution factor is 0.95. All results and limits are corrected for dilution.

Reported By: Tom Claeys

Approved By: Audrey Cornell

Semivolatiles Library Search (30 Compound TID)
Method 8270



Client Name: U.S. Geological Survey
Client ID: CAFB-L-0896-1
Lab ID: 051069-0001-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: NA
Analyzed: 04 SEP 96

Parameter	Result	Units	Reporting Limit
None Detected	ND	ug/L	

Dilution factor is 0.95. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Tom Claeys

Approved By: Audrey Cornell

Semivolatile Organics
Appendix IX List
Method 8270



Client Name: U.S. Geological Survey
Client ID: CAFB-M-0896-1
Lab ID: 051069-0002-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: 25 AUG 96
Analyzed: 04 SEP 96

Parameter	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	9.5
Acenaphthylene	ND	ug/L	9.5
Acetophenone	ND	ug/L	9.5
2-Acetylaminofluorene	ND	ug/L	95
4-Aminobiphenyl	ND	ug/L	9.5
Aniline	ND	ug/L	9.5
Anthracene	ND	ug/L	9.5
Aramite	ND	ug/L	9.5
Benzo(a)anthracene	ND	ug/L	9.5
Benzo(b)fluoranthene	ND	ug/L	9.5
Benzo(k)fluoranthene	ND	ug/L	9.5
Benzo(g,h,i)perylene	ND	ug/L	9.5
Benzo(a)pyrene	ND	ug/L	9.5
Benzyl alcohol	ND	ug/L	9.5
4-Bromophenyl phenyl ether	ND	ug/L	9.5
Butyl benzyl phthalate	ND	ug/L	9.5
2-sec-Butyl-4,6-dinitro-phenol	ND	ug/L	9.5
4-Chloroaniline	ND	ug/L	9.5
bis(2-Chloroethoxy)methane	ND	ug/L	9.5
bis(2-Chloroethyl) ether	ND	ug/L	9.5
bis(2-Chloroisopropyl) ether	ND	ug/L	9.5
4-Chloro-3-methylphenol	ND	ug/L	9.5
2-Chloronaphthalene	ND	ug/L	9.5
2-Chlorophenol	ND	ug/L	9.5
4-Chlorophenyl phenyl ether	ND	ug/L	9.5
Chrysene	ND	ug/L	9.5
Dibenz(a,h)anthracene	ND	ug/L	9.5
Dibenzofuran	ND	ug/L	9.5
Di-n-butyl phthalate	ND	ug/L	9.5
1,2-Dichlorobenzene	ND	ug/L	9.5
1,3-Dichlorobenzene	ND	ug/L	9.5
1,4-Dichlorobenzene	ND	ug/L	9.5
3,3'-Dichlorobenzidine	ND	ug/L	19
2,4-Dichlorophenol	ND	ug/L	9.5
2,6-Dichlorophenol	ND	ug/L	9.5
Diethyl phthalate	ND	ug/L	9.5
Dimethoate	ND	ug/L	48
p-Dimethylaminoazobenzene	ND	ug/L	9.5
7,12-Dimethylbenz(a)-anthracene	ND	ug/L	9.5
3,3'-Dimethylbenzidine	ND	ug/L	9.5
a,a-Dimethylphenethyl-amine	ND	ug/L	9.5

Dilution factor is 0.95. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Tom Claeys

Approved By: Audrey Cornell

Semivolatile Organics
Appendix IX List
Method 8270



Client Name: U.S. Geological Survey
Client ID: CAFB-M-0896-1
Lab ID: 051069-0002-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: 25 AUG 96
Analyzed: 04 SEP 96

Parameter	Result	Units	Reporting Limit
2,4-Dimethylphenol	ND	ug/L	9.5
Dimethyl phthalate	ND	ug/L	9.5
1,3-Dinitrobenzene	ND	ug/L	9.5
4,6-Dinitro-2-methylphenol	ND	ug/L	48
2,4-Dinitrophenol	ND	ug/L	48
2,4-Dinitrotoluene	ND	ug/L	9.5
2,6-Dinitrotoluene	ND	ug/L	9.5
Di-n-octyl phthalate	ND	ug/L	9.5
Diphenylamine	ND	ug/L	9.5
Disulfoton	ND	ug/L	48
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.5
Ethyl methanesulfonate	ND	ug/L	9.5
Famphur	ND	ug/L	48
Fluoranthene	ND	ug/L	9.5
Fluorene	ND	ug/L	9.5
Hexachlorobenzene	ND	ug/L	9.5
Hexachlorobutadiene	ND	ug/L	9.5
Hexachlorocyclopentadiene	ND	ug/L	9.5
Hexachloroethane	ND	ug/L	9.5
Hexachlorophene	ND	ug/L	--
Hexachloropropene	ND	ug/L	9.5
Indeno(1,2,3-cd)pyrene	ND	ug/L	9.5
Isophorone	ND	ug/L	9.5
Isosafrole	ND	ug/L	19
Methapyrilene	ND	ug/L	9.5
3-Methylcholanthrene	ND	ug/L	9.5
Methyl methanesulfonate	ND	ug/L	9.5
2-Methylnaphthalene	ND	ug/L	9.5
Methyl parathion	ND	ug/L	48
2-Methylphenol	ND	ug/L	9.5
3/4-Methylphenol	ND	ug/L	9.5
Naphthalene	ND	ug/L	9.5
1,4-Naphthoquinone	ND	ug/L	9.5
1-Naphthylamine	ND	ug/L	9.5
2-Naphthylamine	ND	ug/L	9.5
2-Nitroaniline	ND	ug/L	48
3-Nitroaniline	ND	ug/L	48
4-Nitroaniline	ND	ug/L	48
Nitrobenzene	ND	ug/L	9.5
2-Nitrophenol	ND	ug/L	9.5
4-Nitrophenol	ND	ug/L	48

Dilution factor is 0.95. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Tom Claeys

Approved By: Audrey Cornell

Semivolatile Organics
Appendix IX List
Method 8270



Client Name: U.S. Geological Survey
Client ID: CAFB-M-0896-1
Lab ID: 051069-0002-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: 25 AUG 96
Analyzed: 04 SEP 96

Parameter	Result	Units	Reporting Limit
4-Nitroquinoline-1-oxide	ND	ug/L	95
N-Nitroso-di-n-butylamine	ND	ug/L	9.5
N-Nitrosodiethylamine	ND	ug/L	9.5
N-Nitrosodimethylamine	ND	ug/L	9.5
N-Nitrosodiphenylamine	ND	ug/L	9.5
N-Nitroso-di-n-propylamine	ND	ug/L	9.5
N-Nitrosomethylethylamine	ND	ug/L	9.5
N-Nitrosomorpholine	ND	ug/L	9.5
N-Nitrosopiperidine	ND	ug/L	9.5
N-Nitrosopyrrolidine	ND	ug/L	9.5
5-Nitro-o-toluidine	ND	ug/L	9.5
Parathion	ND	ug/L	48
Pentachlorobenzene	ND	ug/L	9.5
Pentachloroethane	ND	ug/L	9.5
Pentachloronitrobenzene	ND	ug/L	48
Pentachlorophenol	ND	ug/L	48
Phenacetin	ND	ug/L	9.5
Phenanthrene	ND	ug/L	9.5
Phenol	ND	ug/L	9.5
4-Phenylenediamine	ND	ug/L	95
Phorate	ND	ug/L	95
2-Picoline	ND	ug/L	9.5
Pronamide	ND	ug/L	9.5
Pyrene	ND	ug/L	9.5
Pyridine	ND	ug/L	19
Safrole	ND	ug/L	9.5
Sulfotepp	ND	ug/L	48
1,2,4,5-Tetrachloro-benzene	ND	ug/L	9.5
2,3,4,6-Tetrachlorophenol	ND	ug/L	48
Thionazin	ND	ug/L	48
2-Toluidine	ND	ug/L	9.5
1,2,4-Trichlorobenzene	ND	ug/L	9.5
2,4,5-Trichlorophenol	ND	ug/L	48
2,4,6-Trichlorophenol	ND	ug/L	9.5
0,0,0-Triethylphosphoro-thioate	ND	ug/L	9.5
1,3,5-Trinitrobenzene	ND	ug/L	9.5

Dilution factor is 0.95. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Tom Claeys

Approved By: Audrey Cornell

Semivolatile Organics
Appendix IX List
Method 8270

Client Name: U.S. Geological Survey
Client ID: CAFB-M-0896-1
Lab ID: 051069-0002-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: 25 AUG 96
Analyzed: 04 SEP 96

Parameter	Result	Units	Reporting Limit
Surrogate	Recovery		Limits
Nitrobenzene-d5	61	%	35-114
2-Fluorobiphenyl	55	%	43-116
Terphenyl-d14	63	%	33-141
Phenol-d5	68	%	54-105
2-Fluorophenol	58	%	21-100
2,4,6-Tribromophenol	55	%	10-123

Dilution factor is 0.95. All results and limits are corrected for dilution.

Reported By: Tom Claeys

Approved By: Audrey Cornell

Semivolatiles Library Search (30 Compound TID)
Method 8270



Client Name: U.S. Geological Survey
Client ID: CAFB-M-0896-1
Lab ID: 051069-0002-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: NA
Analyzed: 04 SEP 96

Parameter	Result	Units	Reporting Limit
None Detected	ND	ug/L	

Dilution factor is 0.95. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Tom Claeys

Approved By: Audrey Cornell

Semivolatile Organics
Appendix IX List
Method 8270



Client Name: U.S. Geological Survey
Client ID: CAFB-I-0896-1
Lab ID: 051069-0003-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: 25 AUG 96
Analyzed: 04 SEP 96

Parameter	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	9.5
Acenaphthylene	ND	ug/L	9.5
Acetophenone	ND	ug/L	9.5
2-Acetylaminofluorene	ND	ug/L	95
4-Aminobiphenyl	ND	ug/L	9.5
Aniline	ND	ug/L	9.5
Anthracene	ND	ug/L	9.5
Aramite	ND	ug/L	9.5
Benzo(a)anthracene	ND	ug/L	9.5
Benzo(b)fluoranthene	ND	ug/L	9.5
Benzo(k)fluoranthene	ND	ug/L	9.5
Benzo(g,h,i)perylene	ND	ug/L	9.5
Benzo(a)pyrene	ND	ug/L	9.5
Benzyl alcohol	ND	ug/L	9.5
4-Bromophenyl phenyl ether	ND	ug/L	9.5
Butyl benzyl phthalate	ND	ug/L	9.5
2-sec-Butyl-4,6-dinitro-phenol	ND	ug/L	9.5
4-Chloroaniline	ND	ug/L	9.5
bis(2-Chloroethoxy)methane	ND	ug/L	9.5
bis(2-Chloroethyl) ether	ND	ug/L	9.5
bis(2-Chloroisopropyl)ether	ND	ug/L	9.5
4-Chloro-3-methylphenol	ND	ug/L	9.5
2-Chloronaphthalene	ND	ug/L	9.5
2-Chlorophenol	ND	ug/L	9.5
4-Chlorophenyl phenyl ether	ND	ug/L	9.5
Chrysene	ND	ug/L	9.5
Dibenz(a,h)anthracene	ND	ug/L	9.5
Dibenzofuran	ND	ug/L	9.5
Di-n-butyl phthalate	ND	ug/L	9.5
1,2-Dichlorobenzene	ND	ug/L	9.5
1,3-Dichlorobenzene	ND	ug/L	9.5
1,4-Dichlorobenzene	ND	ug/L	9.5
3,3'-Dichlorobenzidine	ND	ug/L	19
2,4-Dichlorophenol	ND	ug/L	9.5
2,6-Dichlorophenol	ND	ug/L	9.5
Diethyl phthalate	ND	ug/L	9.5
Dimethoate	ND	ug/L	48
p-Dimethylaminoazobenzene	ND	ug/L	9.5
7,12-Dimethylbenz(a)-anthracene	ND	ug/L	9.5
3,3'-Dimethylbenzidine	ND	ug/L	9.5
a,a-Dimethylphenethyl-amine	ND	ug/L	9.5

Dilution factor is 0.95. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Tom Claeys

Approved By: Audrey Cornell

Semivolatile Organics
Appendix IX List
Method 8270



Client Name: U.S. Geological Survey
Client ID: CAFB-I-0896-1
Lab ID: 051069-0003-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: 25 AUG 96
Analyzed: 04 SEP 96

Parameter	Result	Units	Reporting Limit
2,4-Dimethylphenol	ND	ug/L	9.5
Dimethyl phthalate	ND	ug/L	9.5
1,3-Dinitrobenzene	ND	ug/L	9.5
4,6-Dinitro-2-methylphenol	ND	ug/L	48
2,4-Dinitrophenol	ND	ug/L	48
2,4-Dinitrotoluene	ND	ug/L	9.5
2,6-Dinitrotoluene	ND	ug/L	9.5
Di-n-octyl phthalate	ND	ug/L	9.5
Diphenylamine	ND	ug/L	9.5
Disulfoton	ND	ug/L	48
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.5
Ethyl methanesulfonate	ND	ug/L	9.5
Famphur	ND	ug/L	48
Fluoranthene	ND	ug/L	9.5
Fluorene	ND	ug/L	9.5
Hexachlorobenzene	ND	ug/L	9.5
Hexachlorobutadiene	ND	ug/L	9.5
Hexachlorocyclopentadiene	ND	ug/L	9.5
Hexachloroethane	ND	ug/L	9.5
Hexachlorophene	ND	ug/L	--
Hexachloropropene	ND	ug/L	9.5
Indeno(1,2,3-cd)pyrene	ND	ug/L	9.5
Isophorone	ND	ug/L	9.5
Isosafrole	ND	ug/L	19
Methapyrilene	ND	ug/L	9.5
3-Methylcholanthrene	ND	ug/L	9.5
Methyl methanesulfonate	ND	ug/L	9.5
2-Methylnaphthalene	ND	ug/L	9.5
Methyl parathion	ND	ug/L	48
2-Methylphenol	ND	ug/L	9.5
3/4-Methylphenol	ND	ug/L	9.5
Naphthalene	ND	ug/L	9.5
1,4-Naphthoquinone	ND	ug/L	9.5
1-Naphthylamine	ND	ug/L	9.5
2-Naphthylamine	ND	ug/L	9.5
2-Nitroaniline	ND	ug/L	48
3-Nitroaniline	ND	ug/L	48
4-Nitroaniline	ND	ug/L	48
Nitrobenzene	ND	ug/L	9.5
2-Nitrophenol	ND	ug/L	9.5
4-Nitrophenol	ND	ug/L	48

Dilution factor is 0.95. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Tom Claeys

Approved By: Audrey Cornell

Semivolatile Organics
Appendix IX List
Method 8270



Client Name: U.S. Geological Survey
Client ID: CAFB-I-0896-1
Lab ID: 051069-0003-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: 25 AUG 96
Analyzed: 04 SEP 96

Parameter	Result	Units	Reporting Limit
4-Nitroquinoline-1-oxide	ND	ug/L	95
N-Nitroso-di-n-butylamine	ND	ug/L	9.5
N-Nitrosodiethylamine	ND	ug/L	9.5
N-Nitrosodimethylamine	ND	ug/L	9.5
N-Nitrosodiphenylamine	ND	ug/L	9.5
N-Nitroso-di-n-propylamine	ND	ug/L	9.5
N-Nitrosomethylethylamine	ND	ug/L	9.5
N-Nitrosomorpholine	ND	ug/L	9.5
N-Nitrosopiperidine	ND	ug/L	9.5
N-Nitrosopyrrolidine	ND	ug/L	9.5
5-Nitro-o-toluidine	ND	ug/L	9.5
Parathion	ND	ug/L	48
Pentachlorobenzene	ND	ug/L	9.5
Pentachloroethane	ND	ug/L	9.5
Pentachloronitrobenzene	ND	ug/L	48
Pentachlorophenol	ND	ug/L	48
Phenacetin	ND	ug/L	9.5
Phenanthrene	ND	ug/L	9.5
Phenol	ND	ug/L	9.5
1-Phenylenediamine	ND	ug/L	95
Phorate	ND	ug/L	95
2-Picoline	ND	ug/L	9.5
Pronamide	ND	ug/L	9.5
Pyrene	ND	ug/L	9.5
Pyridine	ND	ug/L	19
Safrole	ND	ug/L	9.5
Sulfotepp	ND	ug/L	48
1,2,4,5-Tetrachloro-benzene	ND	ug/L	9.5
2,3,4,6-Tetrachlorophenol	ND	ug/L	48
Thionazin	ND	ug/L	48
2-Toluidine	ND	ug/L	9.5
1,2,4-Trichlorobenzene	ND	ug/L	9.5
2,4,5-Trichlorophenol	ND	ug/L	48
2,4,6-Trichlorophenol	ND	ug/L	9.5
0,0,0-Triethylphosphoro-thioate	ND	ug/L	9.5
1,3,5-Trinitrobenzene	ND	ug/L	9.5

Dilution factor is 0.95. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Tom Claeys

Approved By: Audrey Cornell

Semivolatile Organics
Appendix IX List
Method 8270

Client Name: U.S. Geological Survey
Client ID: CAFB-I-0896-1
Lab ID: 051069-0003-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: 25 AUG 96
Analyzed: 04 SEP 96

Parameter	Result	Units	Reporting Limit
Surrogate	Recovery		Limits
Nitrobenzene-d5	76	%	35-114
2-Fluorobiphenyl	75	%	43-116
Terphenyl-d14	71	%	33-141
Phenol-d5	91	%	54-105
2-Fluorophenol	77	%	21-100
2,4,6-Tribromophenol	75	%	10-123

Dilution factor is 0.95. All results and limits are corrected for dilution.

Reported By: Tom Claeys

Approved By: Audrey Cornell

Semivolatiles Library Search (30 Compound TID)
Method 8270



Client Name: U.S. Geological Survey
Client ID: CAFB-I-0896-1
Lab ID: 051069-0003-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: NA
Analyzed: 04 SEP 96

Parameter	Result	Units	Reporting Limit
Propanoic acid, 2-hydroxy-, methyl ester	3.9	ug/L	2

Dilution factor is 0.95. All results and limits are corrected for dilution.

2 = Confident Identification

Reported By: Tom Claeys

Approved By: Audrey Cornell

Semivolatile Organics
Appendix IX List
Method 8270



Client Name: U.S. Geological Survey
Client ID: CAFB-X-0896-1
Lab ID: 051069-0004-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: 25 AUG 96
Analyzed: 05 SEP 96

Parameter	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	9.4
Acenaphthylene	ND	ug/L	9.4
Acetophenone	ND	ug/L	9.4
2-Acetylaminofluorene	ND	ug/L	94
4-Aminobiphenyl	ND	ug/L	9.4
Aniline	ND	ug/L	9.4
Anthracene	ND	ug/L	9.4
Aramite	ND	ug/L	9.4
Benzo(a)anthracene	ND	ug/L	9.4
Benzo(b)fluoranthene	ND	ug/L	9.4
Benzo(k)fluoranthene	ND	ug/L	9.4
Benzo(g,h,i)perylene	ND	ug/L	9.4
Benzo(a)pyrene	ND	ug/L	9.4
Benzyl alcohol	ND	ug/L	9.4
4-Bromophenyl phenyl ether	ND	ug/L	9.4
Butyl benzyl phthalate	ND	ug/L	9.4
2-sec-Butyl-4,6-dinitro-phenol	ND	ug/L	9.4
4-Chloroaniline	ND	ug/L	9.4
bis(2-Chloroethoxy)methane	ND	ug/L	9.4
bis(2-Chloroethyl) ether	ND	ug/L	9.4
bis(2-Chloroisopropyl)ether	ND	ug/L	9.4
4-Chloro-3-methylphenol	ND	ug/L	9.4
2-Chloronaphthalene	ND	ug/L	9.4
2-Chlorophenol	ND	ug/L	9.4
4-Chlorophenyl phenyl ether	ND	ug/L	9.4
Chrysene	ND	ug/L	9.4
Dibenz(a,h)anthracene	ND	ug/L	9.4
Dibenzofuran	ND	ug/L	9.4
Di-n-butyl phthalate	ND	ug/L	9.4
1,2-Dichlorobenzene	ND	ug/L	9.4
1,3-Dichlorobenzene	ND	ug/L	9.4
1,4-Dichlorobenzene	ND	ug/L	9.4
3,3'-Dichlorobenzidine	ND	ug/L	19
2,4-Dichlorophenol	ND	ug/L	9.4
2,6-Dichlorophenol	ND	ug/L	9.4
Diethyl phthalate	ND	ug/L	9.4
Dimethoate	ND	ug/L	47
p-Dimethylaminoazobenzene	ND	ug/L	9.4
7,12-Dimethylbenz(a)-anthracene	ND	ug/L	9.4
3,3'-Dimethylbenzidine	ND	ug/L	9.4
a,a-Dimethylphenethyl-amine	ND	ug/L	9.4

Dilution factor is 0.94. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Tom Claeys

Approved By: Audrey Cornell

Semivolatile Organics
Appendix IX List
Method 8270

Client Name: U.S. Geological Survey
Client ID: CAFB-X-0896-1
Lab ID: 051069-0004-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: 25 AUG 96
Analyzed: 05 SEP 96

Parameter	Result	Units	Reporting Limit
2,4-Dimethylphenol	ND	ug/L	9.4
Dimethyl phthalate	ND	ug/L	9.4
1,3-Dinitrobenzene	ND	ug/L	9.4
4,6-Dinitro-2-methylphenol	ND	ug/L	47
2,4-Dinitrophenol	ND	ug/L	47
2,4-Dinitrotoluene	ND	ug/L	9.4
2,6-Dinitrotoluene	ND	ug/L	9.4
Di-n-octyl phthalate	ND	ug/L	9.4
Diphenylamine	ND	ug/L	9.4
Disulfoton	ND	ug/L	47
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.4
Ethyl methanesulfonate	ND	ug/L	9.4
Famphur	ND	ug/L	47
Fluoranthene	ND	ug/L	9.4
Fluorene	ND	ug/L	9.4
Hexachlorobenzene	ND	ug/L	9.4
Hexachlorobutadiene	ND	ug/L	9.4
Hexachlorocyclopentadiene	ND	ug/L	9.4
Hexachloroethane	ND	ug/L	9.4
Hexachlorophene	ND	ug/L	--
Hexachloropropene	ND	ug/L	9.4
Indeno(1,2,3-cd)pyrene	ND	ug/L	9.4
Isophorone	ND	ug/L	9.4
Isosafrole	ND	ug/L	19
Methapyrilene	ND	ug/L	9.4
3-Methylcholanthrene	ND	ug/L	9.4
Methyl methanesulfonate	ND	ug/L	9.4
2-Methylnaphthalene	ND	ug/L	9.4
Methyl parathion	ND	ug/L	47
2-Methylphenol	ND	ug/L	9.4
3/4-Methylphenol	ND	ug/L	9.4
Naphthalene	ND	ug/L	9.4
1,4-Naphthoquinone	ND	ug/L	9.4
1-Naphthylamine	ND	ug/L	9.4
2-Naphthylamine	ND	ug/L	9.4
2-Nitroaniline	ND	ug/L	47
3-Nitroaniline	ND	ug/L	47
4-Nitroaniline	ND	ug/L	47
Nitrobenzene	ND	ug/L	9.4
2-Nitrophenol	ND	ug/L	9.4
4-Nitrophenol	ND	ug/L	47

Dilution factor is 0.94. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Tom Claeys

Approved By: Audrey Cornell

Semivolatile Organics
Appendix IX List
Method 8270



Client Name: U.S. Geological Survey
Client ID: CAFB-X-0896-1
Lab ID: 051069-0004-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: 25 AUG 96
Analyzed: 05 SEP 96

Parameter	Result	Units	Reporting Limit
4-Nitroquinoline-1-oxide	ND	ug/L	94
N-Nitroso-di-n-butylamine	ND	ug/L	9.4
N-Nitrosodiethylamine	ND	ug/L	9.4
N-Nitrosodimethylamine	ND	ug/L	9.4
N-Nitrosodiphenylamine	ND	ug/L	9.4
N-Nitroso-di-n-propylamine	ND	ug/L	9.4
N-Nitrosomethylethylamine	ND	ug/L	9.4
N-Nitrosomorpholine	ND	ug/L	9.4
N-Nitrosopiperidine	ND	ug/L	9.4
N-Nitrosopyrrolidine	ND	ug/L	9.4
5-Nitro-o-toluidine	ND	ug/L	9.4
Parathion	ND	ug/L	47
Pentachlorobenzene	ND	ug/L	9.4
Pentachloroethane	ND	ug/L	9.4
Pentachloronitrobenzene	ND	ug/L	47
Pentachlorophenol	ND	ug/L	47
Phenacetin	ND	ug/L	9.4
Phenanthrene	ND	ug/L	9.4
Phenol	ND	ug/L	9.4
4-Phenylenediamine	ND	ug/L	94
Phorate	ND	ug/L	94
2-Picoline	ND	ug/L	9.4
Pronamide	ND	ug/L	9.4
Pyrene	ND	ug/L	9.4
Pyridine	ND	ug/L	19
Safrole	ND	ug/L	9.4
Sulfotepp	ND	ug/L	47
1,2,4,5-Tetrachloro-benzene	ND	ug/L	9.4
2,3,4,6-Tetrachlorophenol	ND	ug/L	47
Thionazin	ND	ug/L	47
2-Toluidine	ND	ug/L	9.4
1,2,4-Trichlorobenzene	ND	ug/L	9.4
2,4,5-Trichlorophenol	ND	ug/L	47
2,4,6-Trichlorophenol	ND	ug/L	9.4
0,0,0-Triethylphosphoro-thioate	ND	ug/L	9.4
1,3,5-Trinitrobenzene	ND	ug/L	9.4

Dilution factor is 0.94. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Tom Claeys

Approved By: Audrey Cornell

Semivolatile Organics
Appendix IX List
Method 8270

Client Name: U.S. Geological Survey
Client ID: CAFB-X-0896-1
Lab ID: 051069-0004-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: 25 AUG 96
Analyzed: 05 SEP 96

Parameter	Result	Units	Reporting Limit
Surrogate	Recovery		Limits
Nitrobenzene-d5	74	%	35-114
2-Fluorobiphenyl	64	%	43-116
Terphenyl-d14	62	%	33-141
Phenol-d5	75	%	54-105
2-Fluorophenol	74	%	21-100
2,4,6-Tribromophenol	64	%	10-123

Dilution factor is 0.94. All results and limits are corrected for dilution.

Reported By: Tom Claeys

Approved By: Audrey Cornell

Semivolatiles Library Search (30 Compound TID)
Method 8270



Client Name: U.S. Geological Survey
Client ID: CAFB-X-0896-1
Lab ID: 051069-0004-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: NA
Analyzed: 05 SEP 96

Parameter	Result	Units	Reporting Limit
Siloxane	22	ug/L	
Siloxane	16	ug/L	
Siloxane	5.8	ug/L	

Dilution factor is 0.94. All results and limits are corrected for dilution.

Reported By: Tom Claeys

Approved By: Audrey Cornell

Polynuclear Aromatic Hydrocarbons, HPLC
Method 8310



Client Name: U.S. Geological Survey
Client ID: CAFB-L-0896-1
Lab ID: 051069-0001-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: 28 AUG 96
Analyzed: 17 SEP 96

Parameter	Result	Units	Reporting Limit
Naphthalene	ND	ug/L	0.95
Acenaphthylene	ND	ug/L	0.95
Acenaphthene	ND	ug/L	0.95
Fluorene	ND	ug/L	0.19
Phenanthrene	ND	ug/L	0.19
Anthracene	ND	ug/L	0.095
Fluoranthene	ND	ug/L	0.19
Pyrene	ND	ug/L	0.19
Benzo(a)anthracene	ND	ug/L	0.095
Chrysene	ND	ug/L	0.19
Benzo(b)fluoranthene	ND	ug/L	0.095
Benzo(k)fluoranthene	ND	ug/L	0.095
Benzo(a)pyrene	ND	ug/L	0.095
Dibenz(a,h)anthracene	ND	ug/L	0.19
Benzo(g,h,i)perylene	ND	ug/L	0.19
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.19
Surrogate	Recovery		Limits
Terphenyl-d14	87	%	31-157

Dilution factor is 0.95. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Matthew Graves

Approved By: Audrey Cornell

Polynuclear Aromatic Hydrocarbons, HPLC
Method 8310



Client Name: U.S. Geological Survey
Client ID: CAFB-M-0896-1
Lab ID: 051069-0002-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: 28 AUG 96
Analyzed: 17 SEP 96

Parameter	Result	Units	Reporting Limit
Naphthalene	ND	ug/L	0.96
Acenaphthylene	ND	ug/L	0.96
Acenaphthene	ND	ug/L	0.96
Fluorene	ND	ug/L	0.19
Phenanthrene	ND	ug/L	0.19
Anthracene	ND	ug/L	0.096
Fluoranthene	ND	ug/L	0.19
Pyrene	ND	ug/L	0.19
Benzo(a)anthracene	ND	ug/L	0.096
Chrysene	ND	ug/L	0.19
Benzo(b)fluoranthene	ND	ug/L	0.096
Benzo(k)fluoranthene	ND	ug/L	0.096
Benzo(a)pyrene	ND	ug/L	0.096
Dibenz(a,h)anthracene	ND	ug/L	0.19
Benzo(g,h,i)perylene	ND	ug/L	0.19
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.19
Surrogate	Recovery		Limits
Terphenyl-d14	92	%	31-157

Dilution factor is 0.96. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Matthew Graves

Approved By: Audrey Cornell

Polynuclear Aromatic Hydrocarbons, HPLC
Method 8310



Client Name: U.S. Geological Survey
Client ID: CAFB-I-0896-1
Lab ID: 051069-0003-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: 28 AUG 96
Analyzed: 17 SEP 96

Parameter	Result	Units	Reporting Limit
Naphthalene	ND	ug/L	0.95
Acenaphthylene	ND	ug/L	0.95
Acenaphthene	ND	ug/L	0.95
Fluorene	ND	ug/L	0.19
Phenanthrene	ND	ug/L	0.19
Anthracene	ND	ug/L	0.095
Fluoranthene	ND	ug/L	0.19
Pyrene	ND	ug/L	0.19
Benzo(a)anthracene	ND	ug/L	0.095
Chrysene	ND	ug/L	0.19
Benzo(b)fluoranthene	ND	ug/L	0.095
Benzo(k)fluoranthene	ND	ug/L	0.095
Benzo(a)pyrene	ND	ug/L	0.095
Dibenz(a,h)anthracene	ND	ug/L	0.19
Benzo(g,h,i)perylene	ND	ug/L	0.19
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.19
Surrogate	Recovery		Limits
Terphenyl-d14	96	%	31-157

Dilution factor is 0.95. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Matthew Graves

Approved By: Audrey Cornell

Polynuclear Aromatic Hydrocarbons, HPLC
Method 8310



Client Name: U.S. Geological Survey
Client ID: CAFB-X-0896-1
Lab ID: 051069-0004-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: 28 AUG 96
Analyzed: 17 SEP 96

Parameter	Result	Units	Reporting Limit
Naphthalene	ND	ug/L	0.95
Acenaphthylene	ND	ug/L	0.95
Acenaphthene	ND	ug/L	0.95
Fluorene	ND	ug/L	0.19
Phenanthrene	ND	ug/L	0.19
Anthracene	ND	ug/L	0.095
Fluoranthene	ND	ug/L	0.19
Pyrene	ND	ug/L	0.19
Benzo(a)anthracene	ND	ug/L	0.095
Chrysene	ND	ug/L	0.19
Benzo(b)fluoranthene	ND	ug/L	0.095
Benzo(k)fluoranthene	ND	ug/L	0.095
Benzo(a)pyrene	ND	ug/L	0.095
Dibenz(a,h)anthracene	ND	ug/L	0.19
Benzo(g,h,i)perylene	ND	ug/L	0.19
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.19
Surrogate	Recovery		Limits
Terphenyl-d14	90	%	31-157

Dilution factor is 0.95. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Matthew Graves

Approved By: Audrey Cornell

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



Client Name: U.S. Geological Survey
 Client ID: CAFB-L-0896-1
 Lab ID: 051069-0001-SA
 Matrix: AQUEOUS
 Authorized: 22 AUG 96

Sampled: 21 AUG 96
 Received: 22 AUG 96

Prepared: 27 AUG 96
 Analyzed: 10 SEP 96

Parameter	Result	Units	Reporting Limit	
Aldrin	ND	ug/L	0.048	T
Aroclor 1016	ND	ug/L	0.96	
Aroclor 1221	ND	ug/L	0.96	
Aroclor 1232	ND	ug/L	0.96	
Aroclor 1242	ND	ug/L	0.96	
Aroclor 1248	ND	ug/L	0.96	
Aroclor 1254	ND	ug/L	0.96	
Aroclor 1260	ND	ug/L	0.96	
alpha-BHC	ND	ug/L	0.048	
beta-BHC	ND	ug/L	0.048	
delta-BHC	ND	ug/L	0.048	
gamma-BHC (Lindane)	ND	ug/L	0.048	
alpha-Chlordane	ND	ug/L	0.048	
gamma-Chlordane	ND	ug/L	0.048	
Chlorobenzilate	ND	ug/L	0.96	
4,4'-DDD	ND	ug/L	0.096	
4,4'-DDE	ND	ug/L	0.096	
4,4'-DDT	ND	ug/L	0.096	
Diallate	ND	ug/L	0.96	
Dieldrin	ND	ug/L	0.096	
Endosulfan I	ND	ug/L	0.048	
Endosulfan II	ND	ug/L	0.096	
Endosulfan sulfate	ND	ug/L	0.096	
Endrin	ND	ug/L	0.096	
Endrin aldehyde	ND	ug/L	0.096	
Heptachlor	ND	ug/L	0.048	
Heptachlor epoxide	ND	ug/L	0.048	
Isodrin	ND	ug/L	0.096	
Kepone	ND	ug/L	2.4	
Methoxychlor	ND	ug/L	0.48	
Toxaphene	ND	ug/L	4.8	
Surrogate	Recovery		Limits	
Tetrachloro-m-xylene	75	%	54-106	
Dibutyl chlorendate	90	%	56-138	
Decachlorobiphenyl	90	%	65-145	

Dilution factor is 0.96. 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



Client Name: U.S. Geological Survey
Client ID: CAFB-M-0896-1
Lab ID: 051069-0002-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: 27 AUG 96
Analyzed: 10 SEP 96

Parameter	Result	Units	Reporting Limit	
Aldrin	ND	ug/L	0.048	T
Aroclor 1016	ND	ug/L	0.96	
Aroclor 1221	ND	ug/L	0.96	
Aroclor 1232	ND	ug/L	0.96	
Aroclor 1242	ND	ug/L	0.96	
Aroclor 1248	ND	ug/L	0.96	
Aroclor 1254	ND	ug/L	0.96	
Aroclor 1260	ND	ug/L	0.96	
alpha-BHC	ND	ug/L	0.048	
beta-BHC	ND	ug/L	0.048	
delta-BHC	ND	ug/L	0.048	
gamma-BHC (Lindane)	ND	ug/L	0.048	
alpha-Chlordane	ND	ug/L	0.048	
gamma-Chlordane	ND	ug/L	0.048	
Chlorobenzilate	ND	ug/L	0.96	
4,4'-DDD	ND	ug/L	0.096	
4,4'-DDE	ND	ug/L	0.096	
4,4'-DDT	ND	ug/L	0.096	
Diallate	ND	ug/L	0.96	
Dieldrin	ND	ug/L	0.096	
Endosulfan I	ND	ug/L	0.048	
Endosulfan II	ND	ug/L	0.096	
Endosulfan sulfate	ND	ug/L	0.096	
Endrin	ND	ug/L	0.096	
Endrin aldehyde	ND	ug/L	0.096	
Heptachlor	ND	ug/L	0.048	
Heptachlor epoxide	ND	ug/L	0.048	
Isodrin	ND	ug/L	0.096	
Kepone	ND	ug/L	2.4	
Methoxychlor	ND	ug/L	0.48	
Toxaphene	ND	ug/L	4.8	
Surrogate	Recovery		Limits	
Tetrachloro-m-xylene	77	%	54-106	
Dibutyl chlorendate	89	%	56-138	
Decachlorobiphenyl	103	%	65-145	

Dilution factor is 0.96. 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



Client Name: U.S. Geological Survey
Client ID: CAFB-I-0896-1
Lab ID: 051069-0003-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: 27 AUG 96
Analyzed: 10 SEP 96

Parameter	Result	Units	Reporting Limit	
Aldrin	ND	ug/L	0.048	T
Aroclor 1016	ND	ug/L	0.96	
Aroclor 1221	ND	ug/L	0.96	
Aroclor 1232	ND	ug/L	0.96	
Aroclor 1242	ND	ug/L	0.96	
Aroclor 1248	ND	ug/L	0.96	
Aroclor 1254	ND	ug/L	0.96	
Aroclor 1260	ND	ug/L	0.96	
alpha-BHC	ND	ug/L	0.048	
beta-BHC	ND	ug/L	0.048	
delta-BHC	ND	ug/L	0.048	
gamma-BHC (Lindane)	ND	ug/L	0.048	
alpha-Chlordane	ND	ug/L	0.048	
gamma-Chlordane	ND	ug/L	0.048	
Chlorobenzilate	ND	ug/L	0.96	
4,4'-DDD	ND	ug/L	0.096	
4,4'-DDE	ND	ug/L	0.096	
4,4'-DDT	ND	ug/L	0.096	
Diallate	ND	ug/L	0.96	
Dieldrin	ND	ug/L	0.096	
Endosulfan I	ND	ug/L	0.048	
Endosulfan II	ND	ug/L	0.096	
Endosulfan sulfate	ND	ug/L	0.096	
Endrin	ND	ug/L	0.096	
Endrin aldehyde	ND	ug/L	0.096	
Heptachlor	ND	ug/L	0.048	
Heptachlor epoxide	ND	ug/L	0.048	
Isodrin	ND	ug/L	0.096	
Kepone	ND	ug/L	2.4	
Methoxychlor	ND	ug/L	0.48	
Toxaphene	ND	ug/L	4.8	
Surrogate	Recovery		Limits	
Tetrachloro-m-xylene	72	%	54-106	
Dibutyl chlorendate	84	%	56-138	
Decachlorobiphenyl	95	%	65-145	

Dilution factor is 0.96. 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



Client Name: U.S. Geological Survey
Client ID: CAFB-X-0896-1
Lab ID: 051069-0004-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Received: 22 AUG 96

Prepared: 27 AUG 96
Analyzed: 10 SEP 96

Parameter	Result	Units	Reporting Limit	
Aldrin	ND	ug/L	0.047	T
Aroclor 1016	ND	ug/L	0.94	
Aroclor 1221	ND	ug/L	0.94	
Aroclor 1232	ND	ug/L	0.94	
Aroclor 1242	ND	ug/L	0.94	
Aroclor 1248	ND	ug/L	0.94	
Aroclor 1254	ND	ug/L	0.94	
Aroclor 1260	ND	ug/L	0.94	
alpha-BHC	ND	ug/L	0.047	
beta-BHC	ND	ug/L	0.047	
delta-BHC	ND	ug/L	0.047	
gamma-BHC (Lindane)	ND	ug/L	0.047	
alpha-Chlordane	ND	ug/L	0.047	
gamma-Chlordane	ND	ug/L	0.047	
Chlorobenzilate	ND	ug/L	0.94	
4,4'-DDD	ND	ug/L	0.094	
4,4'-DDE	ND	ug/L	0.094	
4,4'-DDT	ND	ug/L	0.094	
Diallate	ND	ug/L	0.94	
Dieldrin	ND	ug/L	0.094	
Endosulfan I	ND	ug/L	0.047	
Endosulfan II	ND	ug/L	0.094	
Endosulfan sulfate	ND	ug/L	0.094	
Endrin	ND	ug/L	0.094	
Endrin aldehyde	ND	ug/L	0.094	
Heptachlor	ND	ug/L	0.047	
Heptachlor epoxide	ND	ug/L	0.047	
Isodrin	ND	ug/L	0.094	
Kepone	ND	ug/L	2.4	
Methoxychlor	ND	ug/L	0.47	
Toxaphene	ND	ug/L	4.7	
Surrogate	Recovery		Limits	
Tetrachloro-m-xylene	73	%	54-106	
Dibutyl chlorendate	86	%	56-138	
Decachlorobiphenyl	98	%	65-145	

Dilution factor is 0.94. 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

Appendix IX Herbicides
Method 8150



Client Name: U.S. Geological Survey
 Client ID: CAFB-L-0896-1
 Lab ID: 051069-0001-SA
 Matrix: AQUEOUS
 Authorized: 22 AUG 96

Sampled: 21 AUG 96
 Received: 22 AUG 96

Prepared: 28 AUG 96
 Analyzed: 12 SEP 96

Parameter	Result	Units	Reporting Limit	
2,4-D	ND	ug/L	1.3	T
2,4,5-TP (Silvex)	ND	ug/L	0.19	
2,4,5-T	ND	ug/L	0.22	
Surrogate	Recovery		Limits	
DCAA	71	%	45-123	

Dilution factor is 1.1. All results and limits are corrected for dilution.

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

Reported By: Timothy Schreter

Approved By: Audrey Cornell

Appendix IX Herbicides
Method 8150



Client Name: U.S. Geological Survey
 Client ID: CAFB-M-0896-1
 Lab ID: 051069-0002-SA
 Matrix: AQUEOUS
 Authorized: 22 AUG 96

Sampled: 21 AUG 96
 Received: 22 AUG 96

Prepared: 28 AUG 96
 Analyzed: 12 SEP 96

Parameter	Result	Units	Reporting Limit	
2,4-D	ND	ug/L	1.3	T
2,4,5-TP (Silvex)	ND	ug/L	0.19	
2,4,5-T	ND	ug/L	0.22	
Surrogate	Recovery		Limits	
DCAA	84	%	45-123	

Dilution factor is 1.1. All results and limits are corrected for dilution.

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

Reported By: Timothy Schreter

Approved By: Audrey Cornell

Appendix IX Herbicides
Method 8150



Client Name: U.S. Geological Survey
 Client ID: CAFB-I-0896-1
 Lab ID: 051069-0003-SA
 Matrix: AQUEOUS
 Authorized: 22 AUG 96

Sampled: 21 AUG 96
 Received: 22 AUG 96

Prepared: 28 AUG 96
 Analyzed: 12 SEP 96

Parameter	Result	Units	Reporting Limit	
2,4-D	ND	ug/L	1.3	T
2,4,5-TP (Silvex)	ND	ug/L	0.18	
2,4,5-T	ND	ug/L	0.21	
Surrogate	Recovery		Limits	
DCAA	81	%	45-123	

Dilution factor is 1.1. All results and limits are corrected for dilution.

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

Reported By: Timothy Schreter

Approved By: Audrey Cornell

Appendix IX Herbicides
Method 8150



Client Name: U.S. Geological Survey
 Client ID: CAFB-X-0896-1
 Lab ID: 051069-0004-SA
 Matrix: AQUEOUS
 Authorized: 22 AUG 96

Sampled: 21 AUG 96
 Received: 22 AUG 96

Prepared: 28 AUG 96
 Analyzed: 12 SEP 96

Parameter	Result	Units	Reporting Limit	
2,4-D	ND	ug/L	1.3	T
2,4,5-TP (Silvex)	ND	ug/L	0.18	
2,4,5-T	ND	ug/L	0.21	
Surrogate	Recovery		Limits	
DCAA	82	%	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: Timothy Schreter

Approved By: Audrey Cornell



Environmental Services

Metals
Total Metals

Client Name: U.S. Geological Survey
Client ID: CAFB-L-0896-1
Lab ID: 051069-0001-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Prepared: See Below

Received: 22 AUG 96
Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Aluminum	0.20		1.0	0.20	mg/L	6010	03 SEP 96	04 SEP 96
Antimony	ND		1.0	0.20	mg/L	6010	03 SEP 96	04 SEP 96
Arsenic	ND		1.0	0.30	mg/L	6010	03 SEP 96	04 SEP 96
Barium	ND		1.0	0.10	mg/L	6010	03 SEP 96	04 SEP 96
Beryllium	ND		1.0	0.0020	mg/L	6010	03 SEP 96	04 SEP 96
Cadmium	ND		1.0	0.0050	mg/L	6010	03 SEP 96	04 SEP 96
Calcium	51.7		1.0	5.0	mg/L	6010	03 SEP 96	04 SEP 96
Chromium	0.28		1.0	0.030	mg/L	6010	03 SEP 96	04 SEP 96
Cobalt	ND		1.0	0.040	mg/L	6010	03 SEP 96	04 SEP 96
Copper	ND		1.0	0.030	mg/L	6010	03 SEP 96	04 SEP 96
Iron	1.7		1.0	0.040	mg/L	6010	03 SEP 96	04 SEP 96
Lead	ND		1.0	0.20	mg/L	6010	03 SEP 96	04 SEP 96
Magnesium	46.3		1.0	5.0	mg/L	6010	03 SEP 96	04 SEP 96
Manganese	0.015		1.0	0.010	mg/L	6010	03 SEP 96	04 SEP 96
Molybdenum	ND		1.0	0.040	mg/L	6010	03 SEP 96	04 SEP 96
Nickel	0.19		1.0	0.040	mg/L	6010	03 SEP 96	04 SEP 96
Potassium	5.9		1.0	5.0	mg/L	6010	03 SEP 96	04 SEP 96
Selenium	ND		1.0	0.40	mg/L	6010	03 SEP 96	04 SEP 96
Silver	ND		1.0	0.030	mg/L	6010	03 SEP 96	04 SEP 96
Sodium	47.5		1.0	5.0	mg/L	6010	03 SEP 96	04 SEP 96
Thallium	ND		1.0	5.0	mg/L	6010	03 SEP 96	04 SEP 96
Cadmium	ND		1.0	0.040	mg/L	6010	03 SEP 96	04 SEP 96
Zinc	0.029	B	1.0	0.010	mg/L	6010	03 SEP 96	04 SEP 96
Antimony	ND	G	1.0	0.020	mg/L	7041	03 SEP 96	12 SEP 96
Silver	ND	G	1.0	0.0010	mg/L	7761	10 SEP 96	13 SEP 96
Cadmium	ND		1.0	0.00050	mg/L	7131	10 SEP 96	12 SEP 96
Arsenic	ND		1.0	0.0050	mg/L	7060	06 SEP 96	09 SEP 96
Chromium	0.25	t	5.0	0.025	mg/L	7191	10 SEP 96	12 SEP 96
Lead	ND		1.0	0.0050	mg/L	7421	10 SEP 96	11 SEP 96
Mercury	ND		1.0	0.00020	mg/L	7470	26 AUG 96	26 AUG 96
Selenium	ND		1.0	0.0050	mg/L	7740	06 SEP 96	10 SEP 96
Thallium	ND	G	1.0	0.010	mg/L	7841	10 SEP 96	11 SEP 96

B = Compound is also detected in the blank.
G = Reporting limit raised due to the matrix of the sample.
t = Sample diluted due to the concentration of target compounds.
ND = Not Detected

Reported By: Robin Tipton

Approved By: Dave Roberts



Environmental Services

Metals
Total Metals

Client Name: U.S. Geological Survey
Contract ID: CAFB-M-0896-1
ID: 051069-0002-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Prepared: See Below

Received: 22 AUG 96
Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Aluminum	ND		1.0	0.20	mg/L	6010	03 SEP 96	04 SEP 96
Antimony	ND		1.0	0.20	mg/L	6010	03 SEP 96	04 SEP 96
Arsenic	ND		1.0	0.30	mg/L	6010	03 SEP 96	04 SEP 96
Barium	ND		1.0	0.10	mg/L	6010	03 SEP 96	04 SEP 96
Beryllium	ND		1.0	0.0020	mg/L	6010	03 SEP 96	04 SEP 96
Cadmium	ND		1.0	0.0050	mg/L	6010	03 SEP 96	04 SEP 96
Calcium	62.3		1.0	5.0	mg/L	6010	03 SEP 96	04 SEP 96
Chromium	0.031		1.0	0.030	mg/L	6010	03 SEP 96	04 SEP 96
Cobalt	ND		1.0	0.040	mg/L	6010	03 SEP 96	04 SEP 96
Copper	ND		1.0	0.030	mg/L	6010	03 SEP 96	04 SEP 96
Iron	0.53		1.0	0.040	mg/L	6010	03 SEP 96	04 SEP 96
Lead	ND		1.0	0.20	mg/L	6010	03 SEP 96	04 SEP 96
Magnesium	51.1		1.0	5.0	mg/L	6010	03 SEP 96	04 SEP 96
Manganese	0.024		1.0	0.010	mg/L	6010	03 SEP 96	04 SEP 96
Molybdenum	ND		1.0	0.040	mg/L	6010	03 SEP 96	04 SEP 96
Nickel	0.23		1.0	0.040	mg/L	6010	03 SEP 96	04 SEP 96
Potassium	6.6		1.0	5.0	mg/L	6010	03 SEP 96	04 SEP 96
Selenium	ND		1.0	0.40	mg/L	6010	03 SEP 96	04 SEP 96
Silver	ND		1.0	0.030	mg/L	6010	03 SEP 96	04 SEP 96
Sodium	45.4		1.0	5.0	mg/L	6010	03 SEP 96	04 SEP 96
Thallium	ND		1.0	5.0	mg/L	6010	03 SEP 96	04 SEP 96
Uranium	ND		1.0	0.040	mg/L	6010	03 SEP 96	04 SEP 96
Zinc	0.027	B	1.0	0.010	mg/L	6010	03 SEP 96	04 SEP 96
Antimony	ND		1.0	0.010	mg/L	7041	03 SEP 96	12 SEP 96
Silver	ND	G	1.0	0.0010	mg/L	7761	10 SEP 96	13 SEP 96
Cadmium	ND		1.0	0.00050	mg/L	7131	10 SEP 96	12 SEP 96
Arsenic	ND	G	1.0	0.010	mg/L	7060	06 SEP 96	09 SEP 96
Chromium	0.045	G	2.0	0.010	mg/L	7191	10 SEP 96	12 SEP 96
Lead	ND		1.0	0.0050	mg/L	7421	10 SEP 96	11 SEP 96
Mercury	ND		1.0	0.00020	mg/L	7470	26 AUG 96	26 AUG 96
Selenium	ND	G	2.0	0.010	mg/L	7740	06 SEP 96	10 SEP 96
Thallium	ND	G	1.0	0.010	mg/L	7841	10 SEP 96	11 SEP 96

B = Compound is also detected in the blank.
G = Reporting limit raised due to the matrix of the sample.
ND = Not Detected

Reported By: Robin Tipton

Approved By: Dave Roberts

**Metals
Total Metals**

Client Name: U.S. Geological Survey
 Client ID: CAFB-I-0896-1
 Lab ID: 051069-0003-SA
 Matrix: AQUEOUS
 Authorized: 22 AUG 96

Sampled: 21 AUG 96
 Prepared: See Below

Received: 22 AUG 96
 Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Aluminum	ND		1.0	0.20	mg/L	6010	03 SEP 96	04 SEP 96
Antimony	ND		1.0	0.20	mg/L	6010	03 SEP 96	04 SEP 96
Arsenic	ND		1.0	0.30	mg/L	6010	03 SEP 96	04 SEP 96
Barium	ND		1.0	0.10	mg/L	6010	03 SEP 96	04 SEP 96
Beryllium	ND		1.0	0.0020	mg/L	6010	03 SEP 96	04 SEP 96
Cadmium	ND		1.0	0.0050	mg/L	6010	03 SEP 96	04 SEP 96
Calcium	54.8		1.0	5.0	mg/L	6010	03 SEP 96	04 SEP 96
Chromium	ND		1.0	0.030	mg/L	6010	03 SEP 96	04 SEP 96
Cobalt	ND		1.0	0.040	mg/L	6010	03 SEP 96	04 SEP 96
Copper	ND		1.0	0.030	mg/L	6010	03 SEP 96	04 SEP 96
Iron	0.055		1.0	0.040	mg/L	6010	03 SEP 96	04 SEP 96
Lead	ND		1.0	0.20	mg/L	6010	03 SEP 96	04 SEP 96
Magnesium	48.3		1.0	5.0	mg/L	6010	03 SEP 96	04 SEP 96
Manganese	ND		1.0	0.010	mg/L	6010	03 SEP 96	04 SEP 96
Molybdenum	ND		1.0	0.040	mg/L	6010	03 SEP 96	04 SEP 96
Nickel	ND		1.0	0.040	mg/L	6010	03 SEP 96	04 SEP 96
Potassium	6.4		1.0	5.0	mg/L	6010	03 SEP 96	04 SEP 96
Selenium	ND		1.0	0.40	mg/L	6010	03 SEP 96	04 SEP 96
Silver	ND		1.0	0.030	mg/L	6010	03 SEP 96	04 SEP 96
Sodium	43.0		1.0	5.0	mg/L	6010	03 SEP 96	04 SEP 96
Strontium	ND		1.0	5.0	mg/L	6010	03 SEP 96	04 SEP 96
Thallium	ND		1.0	0.040	mg/L	6010	03 SEP 96	04 SEP 96
Zinc	0.011	B	1.0	0.010	mg/L	6010	03 SEP 96	04 SEP 96
Antimony	ND		1.0	0.010	mg/L	7041	03 SEP 96	12 SEP 96
Silver	ND	G	1.0	0.0010	mg/L	7761	10 SEP 96	13 SEP 96
Cadmium	ND		1.0	0.00050	mg/L	7131	10 SEP 96	12 SEP 96
Arsenic	ND	G	1.0	0.010	mg/L	7060	06 SEP 96	09 SEP 96
Chromium	0.0087		1.0	0.0050	mg/L	7191	10 SEP 96	12 SEP 96
Lead	ND		1.0	0.0050	mg/L	7421	10 SEP 96	11 SEP 96
Mercury	ND		1.0	0.00020	mg/L	7470	26 AUG 96	26 AUG 96
Selenium	ND	G	2.0	0.010	mg/L	7740	06 SEP 96	10 SEP 96
Thallium	ND		1.0	0.0050	mg/L	7841	10 SEP 96	11 SEP 96

B = Compound is also detected in the blank.
 G = Reporting limit raised due to the matrix of the sample.
 ND = Not Detected

Reported By: Robin Tipton

Approved By: Dave Roberts

Metals
Total Metals

Client Name: U.S. Geological Survey
 Sample ID: CAFB-X-0896-1
 ID: 051069-0004-SA
 Matrix: AQUEOUS
 Authorized: 22 AUG 96

Sampled: 21 AUG 96
 Prepared: See Below

Received: 22 AUG 96
 Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Aluminum	ND		1.0	0.20	mg/L	6010	03 SEP 96	04 SEP 96
Antimony	ND		1.0	0.20	mg/L	6010	03 SEP 96	04 SEP 96
Arsenic	ND		1.0	0.30	mg/L	6010	03 SEP 96	04 SEP 96
Barium	ND		1.0	0.10	mg/L	6010	03 SEP 96	04 SEP 96
Beryllium	ND		1.0	0.0020	mg/L	6010	03 SEP 96	04 SEP 96
Cadmium	ND		1.0	0.0050	mg/L	6010	03 SEP 96	04 SEP 96
Calcium	54.3		1.0	5.0	mg/L	6010	03 SEP 96	04 SEP 96
Chromium	ND		1.0	0.030	mg/L	6010	03 SEP 96	04 SEP 96
Cobalt	ND		1.0	0.040	mg/L	6010	03 SEP 96	04 SEP 96
Copper	ND		1.0	0.030	mg/L	6010	03 SEP 96	04 SEP 96
Iron	0.080		1.0	0.040	mg/L	6010	03 SEP 96	04 SEP 96
Lead	ND		1.0	0.20	mg/L	6010	03 SEP 96	04 SEP 96
Magnesium	48.1		1.0	5.0	mg/L	6010	03 SEP 96	04 SEP 96
Manganese	ND		1.0	0.010	mg/L	6010	03 SEP 96	04 SEP 96
Molybdenum	ND		1.0	0.040	mg/L	6010	03 SEP 96	04 SEP 96
Nickel	ND		1.0	0.040	mg/L	6010	03 SEP 96	04 SEP 96
Potassium	6.4		1.0	5.0	mg/L	6010	03 SEP 96	04 SEP 96
Selenium	ND		1.0	0.40	mg/L	6010	03 SEP 96	04 SEP 96
Silver	ND		1.0	0.030	mg/L	6010	03 SEP 96	04 SEP 96
Sodium	41.9		1.0	5.0	mg/L	6010	03 SEP 96	04 SEP 96
Thallium	ND		1.0	5.0	mg/L	6010	03 SEP 96	04 SEP 96
Uranium	ND		1.0	0.040	mg/L	6010	03 SEP 96	04 SEP 96
Zinc	ND		1.0	0.010	mg/L	6010	03 SEP 96	12 SEP 96
Antimony	ND		1.0	0.010	mg/L	7041	03 SEP 96	12 SEP 96
Silver	ND	G	1.0	0.0010	mg/L	7761	10 SEP 96	13 SEP 96
Cadmium	ND		1.0	0.00050	mg/L	7131	10 SEP 96	12 SEP 96
Arsenic	ND	G	1.0	0.010	mg/L	7060	06 SEP 96	09 SEP 96
Chromium	0.0095		1.0	0.0050	mg/L	7191	10 SEP 96	12 SEP 96
Lead	ND		1.0	0.0050	mg/L	7421	10 SEP 96	11 SEP 96
Mercury	ND		1.0	0.00020	mg/L	7470	26 AUG 96	26 AUG 96
Selenium	ND	G	2.0	0.010	mg/L	7740	06 SEP 96	10 SEP 96
Thallium	ND		1.0	0.0050	mg/L	7841	10 SEP 96	11 SEP 96

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

Reported By: Robin Tipton

Approved By: Dave Roberts

General Inorganics

Client Name: U.S. Geological Survey
 Client ID: CAFB-L-0896-1
 Lab ID: 051069-0001-SA
 Matrix: AQUEOUS
 Authorized: 22 AUG 96

Sampled: 21 AUG 96
 Prepared: See Below

Received: 22 AUG 96
 Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Cyanide	ND		1.0	0.010	mg/L	9012	23 AUG 96	26 AUG 96
Sulfide, Total	ND		1.0	0.050	mg/L	376.2	NA	23 AUG 96
Total Organic Carbon	1.4		1.0	1.0	mg/L	9060	NA	23 AUG 96
Total Organic Halogen as Cl	ND		1.0	30.0	ug/L	9020	NA	04 SEP 96

ND = Not Detected

Reported By: Judy Lange

Approved By: Linda Sullivan

General Inorganics

Client Name: U.S. Geological Survey
 Client ID: CAFB-M-0896-1
 Lab ID: 051069-0002-SA
 Matrix: AQUEOUS
 Authorized: 22 AUG 96

Sampled: 21 AUG 96
 Prepared: See Below

Received: 22 AUG 96
 Analyzed: See Below

Parameter	Result Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Cyanide	ND	1.0	0.010	mg/L	9012	23 AUG 96	26 AUG 96
Sulfide, Total	ND	1.0	0.050	mg/L	376.2	NA	23 AUG 96
Total Organic Carbon	ND	1.0	1.0	mg/L	9060	NA	23 AUG 96
Total Organic Halogen as Cl	ND	1.0	30.0	ug/L	9020	NA	04 SEP 96

ND = Not Detected

Reported By: Judy Lange

Approved By: Linda Sullivan

General Inorganics

Client Name: U.S. Geological Survey
 Client ID: CAFB-I-0896-1
 Lab ID: 051069-0003-SA
 Matrix: AQUEOUS
 Authorized: 22 AUG 96

Sampled: 21 AUG 96
 Prepared: See Below

Received: 22 AUG 96
 Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Cyanide	ND		1.0	0.010	mg/L	9012	23 AUG 96	26 AUG 96
Sulfide, Total	ND		1.0	0.050	mg/L	376.2	NA	23 AUG 96
Total Organic Carbon	ND		1.0	1.0	mg/L	9060	NA	23 AUG 96
Total Organic Halogen as Cl	ND		1.0	30.0	ug/L	9020	NA	04 SEP 96

ND = Not Detected

Reported By: Judy Lange

Approved By: Linda Sullivan

General Inorganics

Client Name: U.S. Geological Survey
 Client ID: CAFB-X-0896-1
 Lab ID: 051069-0004-SA
 Matrix: AQUEOUS
 Authorized: 22 AUG 96

Sampled: 21 AUG 96
 Prepared: See Below

Received: 22 AUG 96
 Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Cyanide	ND		1.0	0.010	mg/L	9012	23 AUG 96	26 AUG 96
Sulfide, Total	ND		1.0	0.050	mg/L	376.2	NA	23 AUG 96
Total Organic Carbon	ND		1.0	1.0	mg/L	9060	NA	23 AUG 96
Total Organic Halogen as Cl	ND		1.0	30.0	ug/L	9020	NA	04 SEP 96

ND = Not Detected

Reported By: Judy Lange

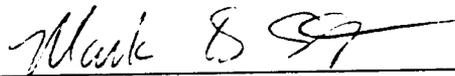
Approved By: Linda Sullivan

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ANALYTICAL RESULTS
FOR
U.S. GEOLOGICAL SURVEY
QUANTERRA NO. 051074
SEPTEMBER 26, 1996

Prepared by:



Mark D. Stella

Reviewed by:



Lindsay Breyer

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Standard Deliverables With Supporting Documentation

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Supporting Documentation		
<i>[Please Note: A one-page "Description of Supporting Documentation" is provided in the Supporting Documentation section(s).]</i>		
Volatile GC/MS	B	NA
Semivolatile GC/MS	C	NA
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NARRATIVE

On August 22, 1996, Quanterra Environmental Services, Denver received four 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.

With the exceptions noted below 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.

Dioxins and Furans

The samples have been analyzed for Appendix IX Dioxins and Furans at Quanterra's West Sacramento, California laboratory. Other parameters requested for the samples will be reported separately on project 051069.

Detection limits for dioxins and furans are reported on a sample-specific basis and all results are recovery corrected per the isotope dilution technique. For an analyte reported as "Not Detected" (ND), the associated detection limit represents its maximum possible concentration.

LIMs Report Key

Section	Description
Cover Letter	Signature page, report narrative as applicable.
Sample Description Information	Tabulated cross-reference between the Lab ID and Client ID, including matrix, date and time sampled, and the date received for all samples in the project.
Sample Analysis Results Sheets	Lists sample results, test components, reporting limits, dates prepared and analyzed, and any data qualifiers. Pages are organized by test.
QC LOT Assignment Report	Cross-reference between lab IDs and applicable QC batches (DCS, LCS, Blank, MS/SD, DU)
Duplicate Control Sample Report	Percent recovery and RPD results, with acceptance limits, for the laboratory duplicate control samples for each test are tabulated in this report. These are measures of accuracy and precision for each test. Acceptance limits are based upon laboratory historical data.
Laboratory Control Sample Report	Percent recovery results for a single Laboratory Control Sample (if applicable) are tabulated in this report, with the applicable acceptance limits for each test.
Matrix Spike/Matrix Spike Duplicate Report	Percent recovery and RPD results for matrix-specific QC samples and acceptance limits, where applicable. This report can be used to assess matrix effects on an analysis.
Single Control Sample Report	A tabulation of the surrogate recoveries for the blank for organic analyses.
Method Blank Report	A summary of the results of the analysis of the method blank for each test.

List of Abbreviations and Terms

Abbreviation	Term	Abbreviation	Term
DCS	Duplicate Control Sample	MSD	Matrix Spike Duplicate
DU	Sample Duplicate	QC Run	Preparation Batch
EB	Equipment Blank	QC Category	LIMs QC Category
FB	Field Blank	QC Lot	DCS Batch
FD	Field Duplicate	ND	Not Detected at or above the reporting limit expressed
IDL	Instrument Detection Limit (Metals)	QC Matrix	Matrix of the laboratory control sample(s)
LCS	Laboratory Control Sample	RL	Reporting Limit
MB	Method Blank	QC	Quality Control
MDL	Method Detection Limit	SA	Sample
MS	Matrix Spike	SD	Spike Duplicate
RPD	Relative Percent Difference	TB	Trip Blank
ppm (part-per-million)	mg/L or mg/kg (usually)	ppb (part-per-billion)	ug/L or ug/kg (usually)
QUAL	Qualifier flag	DIL	Dilution Factor

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	
051074-0001-SA	CAFB-L-0896-1	AQUEOUS	21 AUG 96	10:15	22 AUG 96
051074-0001-MB	Method Blank	AQUEOUS	21 AUG 96	00:00	22 AUG 96
051074-0002-SA	CAFB-M-0896-1	AQUEOUS	21 AUG 96	11:15	22 AUG 96
051074-0003-SA	CAFB-I-0896-1	AQUEOUS	21 AUG 96	12:30	22 AUG 96
051074-0004-SA	CAFB-X-0896-1	AQUEOUS	21 AUG 96	13:00	22 AUG 96

ANALYTICAL TEST REQUESTS
for
U.S. Geological Survey

Page 1 of 1

Lab ID: 051074	Group Code	Analysis Description	Custom Test?
0001 - 0004	A	Appendix IX C14-C16 Dioxins and Furans Prep - Low Res. Method 613 L-L Extraction for Dioxins/Furans	N N

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.



Environmental Services

Appendix IX Dioxins/Furans

Low Resolution

Client Name: U.S. Geological Survey
Client ID: CAFB-L-0896-1
Lab ID: 051074-0001-SA
Matrix: AQUEOUS
Authorized: 22 AUG 96

Sampled: 21 AUG 96
Prepared: 03 SEP 96

Received: 22 AUG 96
Analyzed: 05 SEP 96

Sample Amount 1.02 L
Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/L	0.60	
PeCDFs (total)	ND	ng/L	0.46	
HxCDFs (total)	ND	ng/L	0.38	
Dioxins				
TCDDs (total)	ND	ng/L	0.38	
2,3,7,8-TCDD	ND	ng/L	0.38	
PeCDDs (total)	ND	ng/L	0.82	
HxCDDs (total)	ND	ng/L	0.50	
% Recovery				
13C-2,3,7,8-TCDF	82			
13C-2,3,7,8-TCDD	77			
13C-1,2,3,6,7,8-HxCDD	81			
13C-1,2,3,4,6,7,8-HpCDF	80			

ND = Not detected
NA = Not applicable

Reported By: MBAQUERFO

Approved By: RHRABAK

Appendix IX Dioxins/Furans

Low Resolution

Client Name: U.S. Geological Survey
 Client ID: CAFB-M-0896-1
 Lab ID: 051074-0002-SA
 Matrix: AQUEOUS
 Authorized: 22 AUG 96

Sampled: 21 AUG 96
 Prepared: 03 SEP 96

Received: 22 AUG 96
 Analyzed: 05 SEP 96

Sample Amount 1.05 L
 Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/L	0.62	
PeCDFs (total)	ND	ng/L	0.40	
HxCDFs (total)	ND	ng/L	0.47	
Dioxins				
TCDDs (total)	ND	ng/L	0.43	
2,3,7,8-TCDD	ND	ng/L	0.43	
PeCDDs (total)	ND	ng/L	0.47	
HxCDDs (total)	ND	ng/L	0.33	
% Recovery				
13C-2,3,7,8-TCDF	80			
13C-2,3,7,8-TCDD	75			
13C-1,2,3,6,7,8-HxCDD	75			
13C-1,2,3,4,6,7,8-HpCDF	76			

ND = Not detected
 NA = Not applicable

Reported By: MBAQUERFO

Approved By: RHRABAK

Appendix IX Dioxins/Furans

Low Resolution

Client Name: U.S. Geological Survey
 Client ID: CAFB-I-0896-1
 Lab ID: 051074-0003-SA
 Matrix: AQUEOUS
 Authorized: 22 AUG 96

Sampled: 21 AUG 96
 Prepared: 03 SEP 96

Received: 22 AUG 96
 Analyzed: 05 SEP 96

Sample Amount 1.05 L
 Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/L	0.62	
PeCDFs (total)	ND	ng/L	0.37	
HxCDFs (total)	ND	ng/L	0.24	
Dioxins				
TCDDs (total)	ND	ng/L	0.50	
2,3,7,8-TCDD	ND	ng/L	0.50	
PeCDDs (total)	ND	ng/L	0.56	
HxCDDs (total)	ND	ng/L	0.38	
% Recovery				
13C-2,3,7,8-TCDF	81			
13C-2,3,7,8-TCDD	79			
13C-1,2,3,6,7,8-HxCDD	83			
13C-1,2,3,4,6,7,8-HpCDF	82			

ND = Not detected
 NA = Not applicable

Reported By: MBAQUERFO

Approved By: RHRABAK

Appendix IX Dioxins/Furans

Low Resolution

Client Name: U.S. Geological Survey
 Client ID: CAFB-X-0896-1
 Lab ID: 051074-0004-SA
 Matrix: AQUEOUS
 Authorized: 22 AUG 96

Sampled: 21 AUG 96
 Prepared: 03 SEP 96

Received: 22 AUG 96
 Analyzed: 05 SEP 96

Sample Amount 1.05 L
 Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/L	0.61	
PeCDFs (total)	ND	ng/L	0.57	
HxCDFs (total)	ND	ng/L	0.37	
Dioxins				
TCDDs (total)	ND	ng/L	0.57	
2,3,7,8-TCDD	ND	ng/L	0.57	
PeCDDs (total)	ND	ng/L	0.82	
HxCDDs (total)	ND	ng/L	0.47	
% Recovery				
13C-2,3,7,8-TCDF	77			
13C-2,3,7,8-TCDD	73			
13C-1,2,3,6,7,8-HxCDD	83			
13C-1,2,3,4,6,7,8-HpCDF	83			

ND = Not detected
 NA = Not applicable

Reported By: MBAQUERFO

Approved By: RHRABAK

APPENDIX II

Laboratory Quality Assurance / Quality Control Results

DODEC LABORATORY DATA REVIEW WORKSHEET

1.0 GENERAL INFORMATION

Data reviewer: Bruce Darnel
Date of review: 10/10/96
Sample project number: 051095
Project name: NM - Cannon
Sample collection date: 8/22/96
Sample matrix and number: Aqueous 4

Type and number of samples in project:

Type	Number
Environmental	<u>1</u>
Trip blank	<u>1</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: 9/23/96
Number of volumes in Raw Data Report: 1
Raw Data Report reviewed? Yes No ✓

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

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

Were the samples properly preserved upon receipt by the laboratory?
Yes ✓ 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) *Sulfate*
- 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 : 7131 *Cadmium*
- 7761 *Silver*

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:

Metals

Inorganic analyses: Yes No

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:

Did SCS meet QC acceptance criteria? Yes No

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

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:

Sulfate was measured at a concentration above the reporting limit. The concentration measured in the sample was > twenty times greater than the level detected in the blank, and the concentration in the blank was within the specified limits.

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 :

GC/MS Volatiles: Benzene and Toluene precision was outside of control limits. The Duplicate Control Samples were within control limits.
Metals: The recoveries for chromium, silver, and thallium were less than the lower control limit for the graphite furnace analyses. The precision for arsenic was outside of the control limits. The corresponding Duplicate Control Samples were within control limits.

Additional comments:

QC SUMMARY

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)
051095-0001-SA	AQUEOUS	624-A	04 SEP 96-J	04 SEP 96-J
051095-0001-MS	AQUEOUS	624-A	04 SEP 96-J	04 SEP 96-J
051095-0001-SD	AQUEOUS	624-A	04 SEP 96-J	04 SEP 96-J
051095-0002-TB	AQUEOUS	624-A	04 SEP 96-J	04 SEP 96-J

DUPLICATE CONTROL SAMPLE REPORT
Volatile Organics by GC/MS

Analyte.	Concentration		Measured	AVG	Accuracy		Precision	
	Spiked	DCS1			DCS2	DCS	Limits	(RPD)
Category: 624-A								
Matrix: AQUEOUS								
QC Lot: 04 SEP 96-J								
Concentration Units: ug/L								
1,1-Dichloroethene	50.0	43.2	44.7	44.0	88	74-124	3.2	17
Trichloroethene	50.0	43.0	44.8	43.9	88	77-119	4.1	13
Benzene	50.0	47.9	50.2	49.1	98	80-117	4.5	12
Toluene	50.0	49.9	51.7	50.8	102	80-119	3.5	11
Chlorobenzene	50.0	49.0	51.2	50.1	100	81-120	4.5	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: 04 SEP 96-J		QC Run: 04 SEP 96-J		
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	50.4	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: 04 SEP 96-J	QC Run: 04 SEP 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
1,1-Dibromochloromethane	ND	ug/L	5.0
1,1,2-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: 04 SEP 96-J QC Run: 04 SEP 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: 04 SEP 96-J QC Run: 04 SEP 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: 04 SEP 96-J	QC Run: 04 SEP 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
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: 04 SEP 96-J	QC Run: 04 SEP 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: 04 SEP 96-J	QC Run: 04 SEP 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

MATRIX SPECIFIC QC
ASSIGNMENT REPORT
Volatile Organics by GC/MS

QC SAMPLE TYPE	TEST	LABORATORY SAMPLE NUMBER	QC LOT
MATRIX SPIKE DUPLICATE	8240CP-AP9-AP	051095-0001-SD	04 SEP 96-J
MATRIX SPIKE	8240CP-AP9-AP	051095-0001-MS	04 SEP 96-J

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Volatile Organics by GC/MS
Project: 051095

Category: 624-A Volatile Organics
Matrix: AQUEOUS
Sample: 051095-0001
MS Run: 04 SEP 96-J
Units: ug/L

Analyte	Sample Result	Concentration		Amount Spiked		-% Recovery		Recov.	RPD	
		MS Result	MSD Result	MS	MSD	MS	MSD	Accept. Limits	MS-MSD	Accept Limits
1,1-Dichloroethene	ND	43	49	50	50	86	98	1-234	13	17
Trichloroethene	ND	38	43	50	50	75	85	71-157	13	13
Benzene	ND	42	48	50	50	84	95	37-151	13	12
Toluene	ND	41	48	50	50	83	95	47-150	14	11
Chlorobenzene	ND	42	48	50	50	84	95	37-160	13	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

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
051095-0001-SA	AQUEOUS	8080-A	28 AUG 96-01	28 AUG 96-01
051095-0001-MS	AQUEOUS	8080-A	28 AUG 96-01	28 AUG 96-01
051095-0001-SD	AQUEOUS	8080-A	28 AUG 96-01	28 AUG 96-01

DUPLICATE CONTROL SAMPLE REPORT
Semivolatile Organics by GC

Analyte	Concentration Spiked	Concentration		AVG	Accuracy Average(%)		Precision (RPD)		
		DCS1	Measured DCS2		DCS	Limits	DCS	Limit	
Category: 8080-A									
Matrix: AQUEOUS									
QC Lot: 28 AUG 96-01									
Concentration Units: ug/L									
gamma-BHC (Lindane)	0.200	0.178	0.173	0.176	88	81-117	2.8	13	
Heptachlor	0.200	0.187	0.184	0.186	93	72-125	1.6	11	
Aldrin	0.200	0.177	0.172	0.174	87	69-112	2.9	16	
Dieldrin	0.500	0.413	0.400	0.406	81	77-111	3.2	13	
Endrin	0.500	0.469	0.454	0.462	92	83-122	3.3	14	
4,4'-DDT	0.500	0.430	0.417	0.424	85	76-125	3.1	14	

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

INGLE CONTROL SAMPLE REPORT
Semivolatile Organics by GC

Analyte	Concentration		Accuracy(%)	
	Spiked	Measured	SCS	Limits
Category: 8080-A Matrix: AQUEOUS QC Lot: 28 AUG 96-01 QC Run: 28 AUG 96-01 Concentration Units: ug/L				
Tetrachloro-m-xylene	1.00	0.713	71	54-106
Dibutyl chlorendate	1.00	0.846	85	56-138
Decachlorobiphenyl	0.200	0.144	72	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: 8080-AP9-A			
Matrix: AQUEOUS			
QC Lot: 28 AUG 96-01 QC Run: 28 AUG 96-01			
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	2.5
Methoxychlor	ND	ug/L	0.50
Toxaphene	ND	ug/L	5.0

Test: 8080-AP9-A
Matrix: AQUEOUS
QC Lot: 28 AUG 96-01 QC Run: 28 AUG 96-01

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

ETHOD BLANK REPORT
Semivolatile Organics by GC (cont.)

Analyte	Result	Units	Reporting Limit
Test: 8080-AP9-A			
Matrix: AQUEOUS			
QC Lot: 28 AUG 96-01	QC Run: 28 AUG 96-01		
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	1.0
Chlorobenzilate	ND	ug/L	0.10
4,4'-DDD	ND	ug/L	0.10
4,4'-DDE	ND	ug/L	0.10
4,4'-DDT	ND	ug/L	1.0
Diallate	ND	ug/L	0.10
Dieldrin	ND	ug/L	0.050
Endosulfan I	ND	ug/L	0.10
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	0.10
Isodrin	ND	ug/L	2.5
Kepone	ND	ug/L	0.50
Methoxychlor	ND	ug/L	5.0
Toxaphene	ND	ug/L	

MATRIX SPECIFIC QC
ASSIGNMENT REPORT
Semivolatile Organics by GC

QC SAMPLE TYPE	TEST	LABORATORY SAMPLE NUMBER	QC LOT
MATRIX SPIKE DUPLICATE	8080-AP9-A	051095-0001-SD	28 AUG 96-01
MATRIX SPIKE	8080-AP9-A	051095-0001-MS	28 AUG 96-01

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
 Volatile Organics by GC
 Project: 051095

Category: 8080-A Organochlorine Pesticides
 Matrix: AQUEOUS
 Sample: 051072-0015
 MS Run: 28 AUG 96-01
 Units: ug/L

Analyte	Sample Result	Concentration		Amount Spiked		-% Recovery		Recov.	RPD	RPD
		MS Result	MSD Result	MS	MSD	MS	MSD	Accept. Limits	MS-MSD	Accept Limits
gamma-BHC (Lindane)	ND	0.17	0.20	0.20	0.20	87	100	32-127	16	20
Heptachlor	ND	0.19	0.17	0.20	0.20	94	84	34-111	11	20
Aldrin	ND	0.15	0.16	0.20	0.20	78	82	42-122	5.7	20
Dieldrin	ND	0.39	0.42	0.50	0.50	79	84	36-146	7.4	20
Endrin	ND	0.48	0.51	0.50	0.50	97	102	30-147	6.1	20
4,4'-DDT	ND	0.43	0.46	0.50	0.50	88	92	25-160	6.2	20

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)
051095-0001-SA	AQUEOUS	SB-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051095-0001-SA	AQUEOUS	AS-FAA-AT	06 SEP 96-4A	06 SEP 96-4A
051095-0001-SA	AQUEOUS	CD-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051095-0001-SA	AQUEOUS	CR-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051095-0001-SA	AQUEOUS	PB-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051095-0001-SA	AQUEOUS	SE-FAA-AT	06 SEP 96-4A	06 SEP 96-4A
051095-0001-SA	AQUEOUS	AG-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051095-0001-SA	AQUEOUS	TL-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051095-0001-SA	AQUEOUS	ICP-AT	10 SEP 96-T1	10 SEP 96-T1
051095-0001-MS	AQUEOUS	SB-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051095-0001-MS	AQUEOUS	AS-FAA-AT	06 SEP 96-4A	06 SEP 96-4A
051095-0001-MS	AQUEOUS	CD-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051095-0001-MS	AQUEOUS	CR-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051095-0001-MS	AQUEOUS	PB-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051095-0001-MS	AQUEOUS	SE-FAA-AT	06 SEP 96-4A	06 SEP 96-4A
051095-0001-MS	AQUEOUS	AG-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051095-0001-MS	AQUEOUS	TL-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051095-0001-MS	AQUEOUS	ICP-AT	10 SEP 96-T1	10 SEP 96-T1
051095-0001-SD	AQUEOUS	SB-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051095-0001-SD	AQUEOUS	AS-FAA-AT	06 SEP 96-4A	06 SEP 96-4A
051095-0001-SD	AQUEOUS	CD-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051095-0001-SD	AQUEOUS	CR-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051095-0001-SD	AQUEOUS	PB-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051095-0001-SD	AQUEOUS	SE-FAA-AT	06 SEP 96-4A	06 SEP 96-4A
051095-0001-SD	AQUEOUS	AG-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051095-0001-SD	AQUEOUS	TL-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051095-0001-SD	AQUEOUS	ICP-AT	10 SEP 96-T1	10 SEP 96-T1

JPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation

Analyte	Spiked	Concentration		AVG	Accuracy		Precision		
		DCS1	Measured DCS2		DCS	Average(%) Limits	(RPD) DCS Limit	DCS Limit	
Category: SB-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 Concentration Units: mg/L									
Antimony	0.5000	0.565	0.561	0.563	113	75-125	0.71	20	
Category: AS-FAA-AT Matrix: AQUEOUS QC Lot: 06 SEP 96-4A Concentration Units: mg/L									
Arsenic	0.040	0.0376	0.0383	0.0380	95	81-116	1.8	13	
Category: CD-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 Concentration Units: mg/L									
Cadmium	0.00400	0.00433	0.00449	0.00441	110	75-125	3.6	20	
Category: CR-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 Concentration Units: mg/L									
Chromium	0.0100	0.0105	0.0102	0.0104	104	75-125	2.9	20	
Category: PB-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 Concentration Units: mg/L									
Lead	0.040	0.0419	0.0434	0.0426	107	71-136	3.5	17	

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 DCS2	AVG	Accuracy Average(%)		Precision (RPD)	
	Spiked	DCS1			DCS	Limits	DCS Limit	
Category: SE-FAA-AT Matrix: AQUEOUS QC Lot: 06 SEP 96-4A Concentration Units: mg/L								
Selenium	0.040	0.0402	0.0403	0.0402	101	73-125	0.25	15
Category: AG-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 Concentration Units: mg/L								
Silver	0.00500	0.00464	0.00479	0.00472	94	75-125	3.2	20
Category: TL-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 Concentration Units: mg/L								
Thallium	0.0400	0.0388	0.0396	0.0392	98	75-125	2.0	20
Category: ICP-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 Concentration Units: mg/L								
Aluminum	2.00	2.16	2.18	2.17	109	80-116	0.58	10
Antimony	0.500	0.537	0.526	0.532	106	80-115	2.1	14
Arsenic	2.00	1.95	1.92	1.94	97	80-115	1.3	17
Barium	2.00	2.07	2.01	2.04	102	80-114	2.9	10
Beryllium	0.0500	0.0496	0.0480	0.0488	98	80-120	3.2	10
Boron	1.00	1.03	1.18	1.11	111	80-120	13*	10
Cadmium	0.0500	0.0430	0.0427	0.0429	86	80-119	0.77	16
Calcium	50.0	53.0	51.4	52.2	104	80-114	3.1	10
Chromium	0.200	0.200	0.193	0.197	98	80-116	3.6	11
Cobalt	0.500	0.487	0.473	0.480	96	80-114	2.8	10
Copper	0.250	0.255	0.247	0.251	100	80-120	3.2	10
Iron	1.00	1.09	1.03	1.06	106	80-120	5.4	11
Lead	0.500	0.501	0.497	0.499	100	80-119	0.87	10
Lithium	1.00	0.889	0.854	0.872	87	80-120	3.9	20
Magnesium	50.0	52.3	50.5	51.4	103	81-120	3.5	10
Manganese	0.500	0.518	0.505	0.512	102	80-116	2.5	10

* = RPD outside QC Limits

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 DCS2	AVG	Accuracy Average(%)		Precision (RPD)		
	Spiked	DCS1			DCS	Limits	DCS	Limit	
Category: ICP-AT									
Matrix: AQUEOUS									
QC Lot: 10 SEP 96-T1									
Concentration Units: mg/L									
Molybdenum	1.0	1.01	0.973	0.990	99	80-120	3.4	20	
Nickel	0.500	0.495	0.487	0.491	98	80-114	1.7	10	
Potassium	50.0	51.4	49.5	50.5	101	80-120	3.9	13	
Selenium	2.0	2.08	1.95	2.01	101	80-120	6.3	20	
Silver	0.050	0.0504	0.0487	0.0496	99	80-119	3.4	15	
Sodium	50.0	53.0	51.6	52.3	105	80-120	2.8	10	
Tin	2.00	2.03	1.95	1.99	100	80-120	3.8	20	
Titanium	1.00	1.04	1.01	1.02	102	80-120	3.3	20	
Vanadium	0.500	0.526	0.510	0.518	104	80-116	3.1	10	
Zinc	0.500	0.496	0.481	0.489	98	80-120	3.1	13	

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

ETHOD BLANK REPORT
Metals Analysis and Preparation

Analyte,	Result	Units	Reporting Limit
Test: SB-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 QC Run: 10 SEP 96-T1			
Antimony	ND	mg/L	0.010
Test: AS-FAA-AT Matrix: AQUEOUS QC Lot: 06 SEP 96-4A QC Run: 06 SEP 96-4A			
Arsenic	ND	mg/L	0.0050
Test: CD-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 QC Run: 10 SEP 96-T1			
Cadmium	ND	mg/L	0.00050
Test: CR-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 QC Run: 10 SEP 96-T1			
Chromium	ND	mg/L	0.0050
Test: PB-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 QC Run: 10 SEP 96-T1			
Lead	ND	mg/L	0.0050
Test: SE-FAA-AT Matrix: AQUEOUS QC Lot: 06 SEP 96-4A QC Run: 06 SEP 96-4A			
Selenium	ND	mg/L	0.0050

METHOD BLANK REPORT
Metals Analysis and Preparation (cont.)

Analyte	Result	Units	Reporting Limit
Test: AG-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 QC Run: 10 SEP 96-T1			
Silver	ND	mg/L	0.00050
Test: TL-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 QC Run: 10 SEP 96-T1			
Thallium	ND	mg/L	0.0050
Test: ICP-AFIR-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 QC Run: 10 SEP 96-T1			
Aluminum	ND	mg/L	0.20
Antimony	ND	mg/L	0.20
Arsenic	ND	mg/L	0.30
Barium	ND	mg/L	0.10
Beryllium	ND	mg/L	0.0020
Cadmium	ND	mg/L	0.0050
Calcium	ND	mg/L	5.0
Chromium	ND	mg/L	0.030
Cobalt	ND	mg/L	0.040
Copper	ND	mg/L	0.030
Iron	ND	mg/L	0.040
Lead	ND	mg/L	0.20
Magnesium	ND	mg/L	5.0
Manganese	ND	mg/L	0.010
Molybdenum	ND	mg/L	0.040
Nickel	ND	mg/L	0.040
Potassium	ND	mg/L	5.0
Selenium	ND	mg/L	0.40
Silver	ND	mg/L	0.030
Sodium	ND	mg/L	5.0
Thallium	ND	mg/L	5.0
Vanadium	ND	mg/L	0.040
Zinc	ND	mg/L	0.010

METHOD BLANK REPORT
Metals Analysis and Preparation (cont.)

Analyte.	Result	Units	Reporting Limit
Test: SB-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 QC Run: 10 SEP 96-T1			
Antimony	ND	mg/L	0.010
Test: AS-FAA-AT Matrix: AQUEOUS QC Lot: 06 SEP 96-4A QC Run: 06 SEP 96-4A			
Arsenic	ND	mg/L	0.0050
Test: CD-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 QC Run: 10 SEP 96-T1			
Cadmium	ND	mg/L	0.00050
Test: CR-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 QC Run: 10 SEP 96-T1			
Chromium	ND	mg/L	0.0050
Test: PB-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 QC Run: 10 SEP 96-T1			
Lead	ND	mg/L	0.0050
Test: SE-FAA-AT Matrix: AQUEOUS QC Lot: 06 SEP 96-4A QC Run: 06 SEP 96-4A			
Selenium	ND	mg/L	0.0050

METHOD BLANK REPORT
Metals Analysis and Preparation (cont.)

Analyte	Result	Units	Reporting Limit
Test: AG-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 QC Run: 10 SEP 96-T1			
Silver	ND	mg/L	0.00050
Test: TL-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 QC Run: 10 SEP 96-T1			
Thallium	ND	mg/L	0.0050
Test: ICP-AFIR-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 QC Run: 10 SEP 96-T1			
Aluminum	ND	mg/L	0.20
Antimony	ND	mg/L	0.20
Arsenic	ND	mg/L	0.30
Barium	ND	mg/L	0.10
Beryllium	ND	mg/L	0.0020
Cadmium	ND	mg/L	0.0050
Calcium	ND	mg/L	5.0
Chromium	ND	mg/L	0.030
Cobalt	ND	mg/L	0.040
Copper	ND	mg/L	0.030
Iron	ND	mg/L	0.040
Lead	ND	mg/L	0.20
Magnesium	ND	mg/L	5.0
Manganese	ND	mg/L	0.010
Molybdenum	ND	mg/L	0.040
Nickel	ND	mg/L	0.040
Potassium	ND	mg/L	5.0
Selenium	ND	mg/L	0.40
Silver	ND	mg/L	0.030
Sodium	ND	mg/L	5.0
Thallium	ND	mg/L	5.0
Vanadium	ND	mg/L	0.040
Zinc	ND	mg/L	0.010

.....IX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
 Metals Analysis and Preparation
 Project: 051095

Category: SB-FAA-AT Antimony by Furnace
 Matrix: AQUEOUS
 Sample: 051095-0001
 MS Run: 10 SEP 96-T1
 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			
Antimony	ND	0.42	0.49	0.50	0.50	84	98	75-125	15	20

Category: AS-FAA-AT Arsenic, Furnace AA / Total Metals
 Matrix: AQUEOUS
 Sample: 051095-0001
 MS Run: 06 SEP 96-4A
 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			
enic	ND	0.040	0.034	0.040	0.040	99	85	81-116	15	13

Category: CD-FAA-AT Cadmium, Furnace AA/ Total Metals
 Matrix: AQUEOUS
 Sample: 051095-0001
 MS Run: 10 SEP 96-T1
 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			
Cadmium	ND	0.0043	0.0044	0.0040	0.0040	108	111	75-125	2.5	20

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
Project: 051095 (cont.)

Category: CR-FAA-AT Chromium, Furnace AA, Total
Matrix: AQUEOUS
Sample: 051095-0001
MS Run: 10 SEP 96-T1
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			
Chromium	0.019	0.026	0.028	0.010	0.010	69	94	75-125	9.2	20

Category: PB-FAA-AT Lead, Furnace AA / Total Metals
Matrix: AQUEOUS
Sample: 051095-0001
MS Run: 10 SEP 96-T1
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			
J	ND	0.039	0.040	0.040	0.040	98	101	71-136	3.0	17

Category: SE-FAA-AT Selenium, Furnace AA / Total Metals
Matrix: AQUEOUS
Sample: 051095-0001
MS Run: 06 SEP 96-4A
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	0.032	0.031	0.040	0.040	79	77	73-125	2.9	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.

IX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Metals Analysis and Preparation
Project: 051095 (cont.)

Category: AG-FAA-AT Silver, Furnace AA/Total Metals
Matrix: AQUEOUS
Sample: 051095-0001
MS Run: 10 SEP 96-T1
Units: mg/L

Analyte	Sample Result	G	Concentration		Amount Spiked		% Recovery		Recov. Accep. Limits	RPD MS-MSD	RPD Accept Limits
			MS Result	MSD Result	MS	MSD	MS	MSD			
Silver	ND	G	0.0034	0.0034	0.00500	0.0050	68	68	75-125	0.2	20

Category: TL-FAA-AT Thallium, Furnace AA / Total Metals
Matrix: AQUEOUS
Sample: 051095-0001
MS Run: 10 SEP 96-T1
Units: mg/L

Analyte	Sample Result	G	Concentration		Amount Spiked		% Recovery		Recov. Accep. Limits	RPD MS-MSD	RPD Accept Limits
			MS Result	MSD Result	MS	MSD	MS	MSD			
Thallium	ND	G	0.030	0.029	0.040	0.040	74	73	75-125	0.6	20

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.

IX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Metals Analysis and Preparation
Project: 051095 (cont.)

Category: ICP-AT ICP Metals / Total
Matrix: AQUEOUS
Sample: 051095-0001
MS Run: 10 SEP 96-T1
Units: mg/L

Analyte	Sample Result	Concentration		Amount Spiked		% Recovery		Recov.	RPD	RPD
		MS Result	MSD Result	MS	MSD	MS	MSD	MSD Limits	MS-MSD	Accept Limits
Aluminum	ND	2.3	2.3	2.0	2.0	115	113	80-120	1.6	20
Antimony	ND	0.52	0.54	0.50	0.50	104	108	80-120	4.4	20
Arsenic	ND	2.0	2.0	2.0	2.0	100	102	80-120	2.1	20
Barium	ND	2.1	2.1	2.0	2.0	103	106	80-120	2.7	20
Beryllium	ND	0.051	0.049	0.050	0.050	102	99	80-120	3.3	20
Boron	NA	NA	NA	1.0	1.0	NC	NC	80-120	0.0	20
Cadmium	ND	0.041	0.041	0.050	0.050	81	82	80-120	1.1	20
Calcium	42	95	97	50	50	106	109	80-120	1.7	20
Chromium	ND	0.21	0.22	0.20	0.20	106	108	80-120	1.6	20
Cobalt	ND	0.48	0.49	0.50	0.50	96	98	80-120	1.9	20
Copper	ND	0.26	0.26	0.25	0.25	103	103	80-120	0.4	20
Iron	0.097	1.1	1.1	1.0	1.0	101	103	80-120	1.1	20
Lead	ND	0.50	0.54	0.50	0.50	100	107	80-120	7.4	20
Lithium	NA	NA	NA	1.0	1.0	NC	NC	80-120	0.0	20
Magnesium	37	91	91	50	50	107	108	80-120	0.5	20
Manganese	ND	0.52	0.52	0.50	0.50	103	104	80-120	1.1	20
Molybdenum	ND	NA	NA	0.50	0.50	NC	NC	80-120	0.0	20
Nickel	ND	0.50	0.51	0.50	0.50	99	101	80-120	2.2	20
Potassium	6.6	59	60	50	50	105	106	80-120	0.3	20
Selenium	ND	2.1	2.1	2.0	2.0	104	107	80-120	3.0	20
Silver	ND	0.050	0.050	0.050	0.050	101	99	80-120	1.4	20
Sodium	56	110	110	50	50	109	111	80-120	1.1	20
Thallium	ND	2.1	2.2	2.0	2.0	104	109	80-120	5.5	20
Tin	NA	NA	NA	2.0	2.0	NC	NC	80-120	0.0	20
Titanium	NA	NA	NA	1.0	1.0	NC	NC	80-120	0.0	20
Vanadium	ND	0.55	0.55	0.50	0.50	109	110	80-120	0.8	20
Zinc	ND	0.49	0.50	0.50	0.50	98	101	80-120	2.8	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.

QC LOT ASSIGNMENT REPORT
Wet Chemistry Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
051095-0001-SA	AQUEOUS	NO3+NO2-A	30 AUG 96-S1	30 AUG 96-S1
051095-0001-SA	AQUEOUS	NO2-A	23 AUG 96-S1	23 AUG 96-S1
051095-0001-SA	AQUEOUS	SO4-AFIR-A	23 AUG 96-N1	23 AUG 96-N1
051095-0001-SA	AQUEOUS	TDS-A	26 AUG 96-S1	26 AUG 96-S1
051095-0001-MS	AQUEOUS	NO3+NO2-A	30 AUG 96-S1	30 AUG 96-S1
051095-0001-MS	AQUEOUS	NO2-A	23 AUG 96-S1	23 AUG 96-S1
051095-0001-MS	AQUEOUS	SO4-AFIR-A	23 AUG 96-N1	23 AUG 96-N1
051095-0001-SD	AQUEOUS	NO3+NO2-A	30 AUG 96-S1	30 AUG 96-S1
051095-0001-SD	AQUEOUS	NO2-A	23 AUG 96-S1	23 AUG 96-S1
051095-0001-SD	AQUEOUS	SO4-AFIR-A	23 AUG 96-N1	23 AUG 96-N1

DUPLICATE CONTROL SAMPLE REPORT
Met Chemistry Analysis and Preparation

Analyte,	Concentration		Measured DCS2	AVG	Accuracy Average(%)		Precision (RPD)		
	Spiked	DCS1			DCS	Limits	DCS Limit		
Category: NO3+NO2-A Matrix: AQUEOUS QC Lot: 30 AUG 96-S1 Concentration Units: mg/L									
Nitrate plus Nitrite as N	15.2	16.3	16.2	16.2	107	90-116	0.62	10	
Category: SO4-AFIR-A Matrix: AQUEOUS QC Lot: 23 AUG 96-N1 Concentration Units: mg/L									
Sulfate	50.0	51.9	51.9	51.9	104	92-112	0.0	10	
Category: TDS-A Matrix: AQUEOUS QC Lot: 26 AUG 96-S1 Concentration Units: mg/L									
Total Dissolved Solids	905	862	868	865	96	88-108	0.69	10	

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

LABORATORY CONTROL SAMPLE REPORT
Wet Chemistry Analysis and Preparation

Analyte	Concentration		Accuracy(%)	
	Spiked	Measured	LCS	Limits
Category: NO2-A				
Matrix: AQUEOUS				
QC Lot: 23 AUG 96-S1				
QC Run: 23 AUG 96-S1				
Concentration Units: mg/L				
Nitrite as N	0.100	0.0966	97	91-113

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

METHOD BLANK REPORT
Wet Chemistry Analysis and Preparation

Analyte	Result	Units	Reporting Limit
Test: NO3+NO2-TEC-A Matrix: AQUEOUS QC Lot: 30 AUG 96-S1 QC Run: 30 AUG 96-S1			
Nitrate plus Nitrite as N	ND	mg/L	0.10
Test: NO2-SPEC-A Matrix: AQUEOUS QC Lot: 23 AUG 96-S1 QC Run: 23 AUG 96-S1			
Nitrite as N	ND	mg/L	0.010
Test: SO4-IC-AFIR-A Matrix: AQUEOUS QC Lot: 23 AUG 96-N1 QC Run: 23 AUG 96-N1			
Sulfate	0.70	mg/L	0.50
Test: TDS-BAL-A Matrix: AQUEOUS QC Lot: 26 AUG 96-S1 QC Run: 26 AUG 96-S1			
Total Dissolved Solids	ND	mg/L	10.0
Test: NO3+NO2-TEC-A Matrix: AQUEOUS QC Lot: 30 AUG 96-S1 QC Run: 30 AUG 96-S1			
Nitrate plus Nitrite as N	ND	mg/L	0.10
Test: NO2-SPEC-A Matrix: AQUEOUS QC Lot: 23 AUG 96-S1 QC Run: 23 AUG 96-S1			
Nitrite as N	ND	mg/L	0.010

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

Analyte	Result	Units	Reporting Limit
Test: SO4-IC-AFIR-A			
Matrix: AQUEOUS			
QC Lot: 23 AUG 96-N1	QC Run: 23 AUG 96-N1		
Sulfate	0.70	mg/L	0.50

QC 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)
051095-0001-MS	AQUEOUS	NO3+NO2-A	30 AUG 96-S1	30 AUG 96-S1	30 AUG 96-S1
051095-0001-MS	AQUEOUS	NO2-A	23 AUG 96-S1	23 AUG 96-S1	23 AUG 96-S1
051095-0001-MS	AQUEOUS	SO4-AFIR-A	23 AUG 96-N1	23 AUG 96-N1	23 AUG 96-N1
051095-0001-SA	AQUEOUS	NO3+NO2-A	30 AUG 96-S1	30 AUG 96-S1	30 AUG 96-S1
051095-0001-SA	AQUEOUS	NO2-A	23 AUG 96-S1	23 AUG 96-S1	23 AUG 96-S1
051095-0001-SA	AQUEOUS	SO4-AFIR-A	23 AUG 96-N1	23 AUG 96-N1	23 AUG 96-N1
051095-0001-SA	AQUEOUS	TDS-A	26 AUG 96-S1	26 AUG 96-S1	26 AUG 96-S1
051095-0001-SD	AQUEOUS	NO3+NO2-A	30 AUG 96-S1	30 AUG 96-S1	30 AUG 96-S1
051095-0001-SD	AQUEOUS	NO2-A	23 AUG 96-S1	23 AUG 96-S1	23 AUG 96-S1
051095-0001-SD	AQUEOUS	SO4-AFIR-A	23 AUG 96-N1	23 AUG 96-N1	23 AUG 96-N1

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Chemistry Analysis and Preparation
ect: 051095

Category: NO3+NO2-A Nitrate + Nitrite (Aqueous)
Matrix: AQUEOUS
Sample: 051095-0001
MS Run: 30 AUG 96-S1
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
Nitrate plus Nitrite as N	2.4	4.5	4.5	2.0	2.0	106	106	89-109	0.2	16

Category: NO2-A Nitrite
Matrix: AQUEOUS
Sample: 051095-0001
MS Run: 23 AUG 96-S1
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
Nitrite as N	ND	0.094	0.092	0.10	0.10	94	92	90-110	1.4	14

Category: SO4-AFIR-A Sulfate by Ion Chromatography for AFIR
Matrix: AQUEOUS
Sample: 051095-0001
MS Run: 23 AUG 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
Sulfate	110 tB	220	220	120	120	94	93	89-109	0.4	10

B = Compound is also detected in the blank.
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
Wet Chemistry Analysis and Preparation
Project: 051095 (cont.)

Category: TDS-A Total Dissolved Solids
Matrix: AQUEOUS
Sample: 051072-0015
MS Run: 26 AUG 96-S1
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 Dissolved Solids	460	1300	1300	900	900	96	95	75-115	0.7	18

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 Fred Gebhardt Seal Number 081508	
Sampling Location Sewage Lagoons, Cannon Air Force Base, New Mexico					Delivered to Shipper by Jerry Larson Airbill Number 8166230984	
Team Leader Jerry Larson					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
22 AUG 96	0900	CAFB-E-0896-1	GROUND-WATER	8	All Apx-IX: SW8240, SW8080, SW6010 -Total (Al,Sb,As,Ba,Bc,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Tl,V,Zn), plus SW7041,SW7060,SW7131,SW7191,SW7421,SW7740, SW7761,SW7841; NITRATE-E353.2/E354.1; SULFATE-E300; TDS-E160.1	ENVIRONMENTAL SAMPLE
11	11	CAFB-E-0896-115	"	11	11	matrix spike
11	11	CAFB-E-0896-115D	"	21	21	Matrix Duplicate
11	11	CAFB-E-0896-TB DI	"	1	SW8240	Trip Blank

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
Jerry D Larson		8/22/96	1400	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer	Condition of Contents GOOD
	Bonnie Maeger	8/23/96	0900		Contents Temperature 4.7
					Laboratory Project Number 51095

01
0111
0111
02

11-44

A-61

Sample Checklist



Project #: 51095 Date/Time Received: 8/23/96 0900

Company Name & Sampling Site: Cannon AFB

*Cooler #(s): _____

Temperatures: 4.7 _____

*Place copy of airbill inside all non-QUANTERRA coolers. Describe here.

Unpacking & Labeling Check Points:

- | | | |
|---|-------------------------------------|---|
| <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | 1. Radiation checked, record if reading > 0.5 mR/hr. (_____ mR/hr) |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 2. Cooler seals intact. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. Chain of custody present. |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | 4. Bottles broken and/or are leaking, comment if yes. |

Initials
SM

PHOTOGRAPH BROKEN BOTTLES

- | | | |
|-------------------------------------|--------------------------|---|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 5. Containers labeled, comment if no. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 6. pH of all samples checked and meet requirements, note exceptions. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 7. Chain of custody includes "received by" and "relinquished" by signatures, dates, and times |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 8. Chain of custody agrees with bottle count, comment if no. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 9. Chain of custody agrees with labels, comment if no. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 10. VOA samples filled completely, comment if no. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 11. Are VOA bottles preserved, check for labels. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 12. Sediment present in "D," dissolved, bottles. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 13. Are analyses with short holding times requested. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 14. Is extra sample volume provided for MS, MSD or matrix duplicates. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 15. Multiphase samples present, comment is yes. |

PHOTOGRAPH MULTIPHASE SAMPLES

- | | | |
|-------------------------------------|--------------------------|--|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 16. Clear picture taken, labeled, and stapled to project folder. |
|-------------------------------------|--------------------------|--|

Comments: Include action taken to resolve discrepancies/problems. Include a hard copy of e-mail or use extra paper if more space is needed. _____

Initials: _____

DODEC LABORATORY DATA REVIEW WORKSHEET

1.0 GENERAL INFORMATION

Data reviewer: Bruce Darnel
Date of review: 10/9/96
Sample project number: 051038
Project name: NM-Cannon
Sample collection date: August 20, 1996
Sample matrix and number: Aqueous 5

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: 9/20/96
Number of volumes in Raw Data Report: 1
Raw Data Report reviewed? Yes No ✓

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

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

Were the samples properly preserved upon receipt by the laboratory?
Yes 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) (Sulfate)
- 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 : 7131 Cadmium
- 7761 Silver

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:

Metals

Inorganic analyses: Yes _____ No

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:

Did SCS meet QC acceptance criteria? Yes No

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

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:

Zinc was detected in the method blank, and the equipment blank (method 6010). The concentrations were in the

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:

QC SUMMARY

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)
051038-0001-SA	AQUEOUS	624-A	29 AUG 96-J	29 AUG 96-J
051038-0002-TB	AQUEOUS	624-A	29 AUG 96-J	29 AUG 96-J
051038-0003-EB	AQUEOUS	624-A	29 AUG 96-J	29 AUG 96-J
051038-0004-SA	AQUEOUS	624-A	29 AUG 96-J	29 AUG 96-J
051038-0005-SA	AQUEOUS	624-A	29 AUG 96-J	29 AUG 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: 29 AUG 96-J								
Concentration Units: ug/L								
1,1-Dichloroethene	50.0	43.4	45.9	44.7	89	74-124	5.6	17
Trichloroethene	50.0	42.8	44.0	43.4	87	77-119	2.9	13
Benzene	50.0	48.1	49.6	48.8	98	80-117	3.1	12
Toluene	50.0	49.4	50.9	50.1	100	80-119	3.0	11
Chlorobenzene	50.0	48.0	49.4	48.7	97	81-120	3.0	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: 29 AUG 96-J QC Run: 29 AUG 96-J				
Concentration Units: ug/L				
1,2-Dichloroethane-d4	50.0	46.8	94	85-111
4-Bromofluorobenzene	50.0	48.1	96	86-110
Toluene-d8	50.0	48.1	96	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: 29 AUG 96-J QC Run: 29 AUG 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	2.6	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: 29 AUG 96-J QC Run: 29 AUG 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: 29 AUG 96-J QC Run: 29 AUG 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	10
Bromomethane	ND	ug/L	10
2-Butanone (MEK)	ND	ug/L	5.0
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: 29 AUG 96-J QC Run: 29 AUG 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
2-Hexanone	ND	ug/L	10
Methacrylonitrile	ND	ug/L	5.0
Methylene chloride	2.6	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.

**QC LOT ASSIGNMENT REPORT
Semivolatile Organics by GC**

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
051038-0001-SA	AQUEOUS	8080-A	27 AUG 96-01	27 AUG 96-01
051038-0003-EB	AQUEOUS	8080-A	27 AUG 96-01	27 AUG 96-01
051038-0004-SA	AQUEOUS	8080-A	27 AUG 96-01	27 AUG 96-01
051038-0005-SA	AQUEOUS	8080-A	27 AUG 96-01	27 AUG 96-01

DUPLICATE CONTROL SAMPLE REPORT
Semivolatile Organics by GC

Analyte	Spiked	Concentration		AVG	Accuracy		Precision		
		DCS1	Measured DCS2		DCS	Average (%) Limits	(RPD) DCS Limit	DCS Limit	
Category: 8080-A									
Matrix: AQUEOUS									
QC Lot: 27 AUG 96-01									
Concentration Units: ug/L									
gamma-BHC (Lindane)	0.200	0.176	0.186	0.181	91	81-117	5.5	13	
Heptachlor	0.200	0.179	0.188	0.184	92	72-125	4.9	11	
Aldrin	0.200	0.163	0.168	0.166	83	69-112	3.0	16	
Dieldrin	0.500	0.413	0.432	0.422	85	77-111	4.5	13	
Endrin	0.500	0.477	0.502	0.490	98	83-122	5.1	14	
4,4'-DDT	0.500	0.430	0.466	0.448	90	76-125	8.0	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: 8080-A				
Matrix: AQUEOUS				
QC Lot: 27 AUG 96-01 QC Run: 27 AUG 96-01				
Concentration Units: ug/L				
Tetrachloro-m-xylene	1.00	0.751	75	54-106
Dibutyl chlorendate	1.00	0.901	90	56-138
Decachlorobiphenyl	0.200	0.182	91	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: 8080-AP9-A			
Matrix: AQUEOUS			
QC Lot: 27 AUG 96-01	QC Run: 27 AUG 96-01		
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	2.5
Methoxychlor	ND	ug/L	0.50
Toxaphene	ND	ug/L	5.0



Environmental
Services

QC LOT ASSIGNMENT REPORT
Metals Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
051038-0001-SA	AQUEOUS	SB-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051038-0001-SA	AQUEOUS	AS-FAA-AT	06 SEP 96-4A	06 SEP 96-4A
051038-0001-SA	AQUEOUS	CD-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051038-0001-SA	AQUEOUS	CR-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051038-0001-SA	AQUEOUS	PB-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051038-0001-SA	AQUEOUS	SE-FAA-AT	06 SEP 96-4A	06 SEP 96-4A
051038-0001-SA	AQUEOUS	AG-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051038-0001-SA	AQUEOUS	TL-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051038-0001-SA	AQUEOUS	ICP-AT	10 SEP 96-T1	10 SEP 96-T1
051038-0003-EB	AQUEOUS	SB-FAA-AT	03 SEP 96-1A	03 SEP 96-1A
051038-0003-EB	AQUEOUS	AS-FAA-AT	06 SEP 96-4A	06 SEP 96-4A
051038-0003-EB	AQUEOUS	CD-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051038-0003-EB	AQUEOUS	CR-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051038-0003-EB	AQUEOUS	PB-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051038-0003-EB	AQUEOUS	SE-FAA-AT	06 SEP 96-4A	06 SEP 96-4A
051038-0003-EB	AQUEOUS	AG-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051038-0003-EB	AQUEOUS	TL-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051038-0003-EB	AQUEOUS	ICP-AT	03 SEP 96-1A	03 SEP 96-1A
051038-0004-SA	AQUEOUS	SB-FAA-AT	03 SEP 96-1A	03 SEP 96-1A
051038-0004-SA	AQUEOUS	AS-FAA-AT	06 SEP 96-4A	06 SEP 96-4A
051038-0004-SA	AQUEOUS	CD-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051038-0004-SA	AQUEOUS	CR-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051038-0004-SA	AQUEOUS	PB-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051038-0004-SA	AQUEOUS	SE-FAA-AT	06 SEP 96-4A	06 SEP 96-4A
051038-0004-SA	AQUEOUS	AG-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051038-0004-SA	AQUEOUS	TL-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051038-0004-SA	AQUEOUS	ICP-AT	03 SEP 96-1A	03 SEP 96-1A
051038-0005-SA	AQUEOUS	SB-FAA-AT	03 SEP 96-1A	03 SEP 96-1A
051038-0005-SA	AQUEOUS	AS-FAA-AT	06 SEP 96-4A	06 SEP 96-4A
051038-0005-SA	AQUEOUS	CD-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051038-0005-SA	AQUEOUS	CR-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051038-0005-SA	AQUEOUS	PB-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051038-0005-SA	AQUEOUS	SE-FAA-AT	06 SEP 96-4A	06 SEP 96-4A
051038-0005-SA	AQUEOUS	AG-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051038-0005-SA	AQUEOUS	TL-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051038-0005-SA	AQUEOUS	ICP-AT	03 SEP 96-1A	03 SEP 96-1A



Environmental Services

DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation

Analyte	Concentration			AVG	Accuracy Average (%)		Precision (RPD)	
	Spiked	DCS1	Measured DCS2		DCS	Limits	DCS	Limit
Category: SB-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 Concentration Units: mg/L								
Antimony	0.5000	0.565	0.561	0.563	113	75-125	0.71	20
Category: AS-FAA-AT Matrix: AQUEOUS QC Lot: 06 SEP 96-4A Concentration Units: mg/L								
Arsenic	0.040	0.0376	0.0383	0.0380	95	81-116	1.8	13
Category: CD-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 Concentration Units: mg/L								
Cadmium	0.00400	0.00433	0.00449	0.00441	110	75-125	3.6	20
Category: CR-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 Concentration Units: mg/L								
Chromium	0.0100	0.0105	0.0102	0.0104	104	75-125	2.9	20
Category: PB-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 Concentration Units: mg/L								
Lead	0.040	0.0419	0.0434	0.0426	107	71-136	3.5	17

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 DCS2	AVG	Accuracy Average(%)		Precision (RPD)		
	Spiked	DCS1			DCS	Limits	DCS	Limit	
Category: SE-FAA-AT Matrix: AQUEOUS QC Lot: 06 SEP 96-4A Concentration Units: mg/L									
Selenium	0.040	0.0402	0.0403	0.0402	101	73-125	0.25	15	
Category: AG-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 Concentration Units: mg/L									
Silver	0.00500	0.00464	0.00479	0.00472	94	75-125	3.2	20	
Category: TL-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 Concentration Units: mg/L									
Thallium	0.0400	0.0388	0.0396	0.0392	98	75-125	2.0	20	
Category: ICP-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 Concentration Units: mg/L									
Aluminum	2.00	2.16	2.18	2.17	109	80-116	0.58	10	
Antimony	0.500	0.537	0.526	0.532	106	80-115	2.1	14	
Arsenic	2.00	1.95	1.92	1.94	97	80-115	1.3	17	
Barium	2.00	2.07	2.01	2.04	102	80-114	2.9	10	
Beryllium	0.0500	0.0496	0.0480	0.0488	98	80-120	3.2	10	
Boron	1.00	1.03	1.18	1.11	111	80-120	13*	10	
Cadmium	0.0500	0.0430	0.0427	0.0429	86	80-119	0.77	16	
Calcium	50.0	53.0	51.4	52.2	104	80-114	3.1	10	
Chromium	0.200	0.200	0.193	0.197	98	80-116	3.6	11	
Cobalt	0.500	0.487	0.473	0.480	96	80-114	2.8	10	
Copper	0.250	0.255	0.247	0.251	100	80-120	3.2	10	
Iron	1.00	1.09	1.03	1.06	106	80-120	5.4	11	
Lead	0.500	0.501	0.497	0.499	100	80-119	0.87	10	
Lithium	1.00	0.889	0.854	0.872	87	80-120	3.9	20	
Magnesium	50.0	52.3	50.5	51.4	103	81-120	3.5	10	
Manganese	0.500	0.518	0.505	0.512	102	80-116	2.5	10	

* = RPD outside QC Limits

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 DCS2	AVG	Accuracy Average (%)		Precision (RPD)		
	Spiked	DCS1			DCS	Limits	DCS Limit		
Category: ICP-AT									
Matrix: AQUEOUS									
QC Lot: 10 SEP 96-T1									
Concentration Units: mg/L									
Molybdenum	1.0	1.01	0.973	0.990	99	80-120	3.4	20	
Nickel	0.500	0.495	0.487	0.491	98	80-114	1.7	10	
Potassium	50.0	51.4	49.5	50.5	101	80-120	3.9	13	
Selenium	2.0	2.08	1.95	2.01	101	80-120	6.3	20	
Silver	0.050	0.0504	0.0487	0.0496	99	80-119	3.4	15	
Sodium	50.0	53.0	51.6	52.3	105	80-120	2.8	10	
Tin	2.00	2.03	1.95	1.99	100	80-120	3.8	20	
Titanium	1.00	1.04	1.01	1.02	102	80-120	3.3	20	
Vanadium	0.500	0.526	0.510	0.518	104	80-116	3.1	10	
Zinc	0.500	0.496	0.481	0.489	98	80-120	3.1	13	

Category: SB-FAA-AT
Matrix: AQUEOUS
QC Lot: 03 SEP 96-1A
Concentration Units: mg/L

Antimony	0.5000	0.458	0.491	0.474	95	75-125	7.0	20
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Category: ICP-AT
Matrix: AQUEOUS
QC Lot: 03 SEP 96-1A
Concentration Units: mg/L

Aluminum	2.00	2.04	2.14	2.09	104	80-116	5.0	10
Antimony	0.500	0.487	0.522	0.505	101	80-115	7.1	14
Arsenic	2.00	2.02	2.08	2.05	102	80-115	3.0	17
Barium	2.00	1.96	2.07	2.02	101	80-114	5.1	10
Beryllium	0.0500	0.0505	0.0504	0.0504	101	80-120	0.24	10
Boron	1.00	1.15	1.07	1.11	111	80-120	6.7	10
Cadmium	0.0500	0.0529	0.0495	0.0512	102	80-119	6.5	16
Calcium	50.0	48.3	50.9	49.6	99	80-114	5.4	10
Chromium	0.200	0.193	0.209	0.201	100	80-116	7.8	11
Cobalt	0.500	0.466	0.492	0.479	96	80-114	5.5	10
Copper	0.250	0.242	0.260	0.251	100	80-120	7.2	10
Iron	1.00	1.01	1.05	1.03	103	80-120	4.2	11
Lead	0.500	0.538	0.542	0.540	108	80-119	0.67	10
Lithium	1.00	0.805	0.847	0.826	83	80-120	5.1	20
Magnesium	50.0	46.6	49.6	48.1	96	81-120	6.2	10

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	Limit
Category: ICP-AT								
Matrix: AQUEOUS								
QC Lot: 03 SEP 96-1A								
Concentration Units: mg/L								
Manganese	0.500	0.494	0.523	0.509	102	80-116	5.7	10
Molybdenum	1.0	0.945	1.01	0.978	98	80-120	6.6	20
Nickel	0.500	0.496	0.520	0.508	102	80-114	4.8	10
Potassium	50.0	45.8	48.4	47.1	94	80-120	5.5	13
Selenium	2.0	1.95	2.01	1.98	99	80-120	3.4	20
Silver	0.050	0.0500	0.0510	0.0505	101	80-119	2.1	15
Sodium	50.0	49.1	51.4	50.3	101	80-120	4.7	10
Tin	2.00	1.96	2.08	2.02	101	80-120	6.3	20
Titanium	1.00	0.967	1.02	0.991	99	80-120	4.9	20
Vanadium	0.500	0.497	0.523	0.510	102	80-116	5.2	10
Zinc	0.500	0.484	0.511	0.498	100	80-120	5.3	13

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: SB-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 QC Run: 10 SEP 96-T1			
Antimony	ND	mg/L	0.010
Test: AS-FAA-AT Matrix: AQUEOUS QC Lot: 06 SEP 96-4A QC Run: 06 SEP 96-4A			
Arsenic	ND	mg/L	0.0050
Test: CD-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 QC Run: 10 SEP 96-T1			
Cadmium	ND	mg/L	0.00050
Test: CR-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 QC Run: 10 SEP 96-T1			
Chromium	ND	mg/L	0.0050
Test: PB-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 QC Run: 10 SEP 96-T1			
Lead	ND	mg/L	0.0050
Test: SE-FAA-AT Matrix: AQUEOUS QC Lot: 06 SEP 96-4A QC Run: 06 SEP 96-4A			
Selenium	ND	mg/L	0.0050

METHOD BLANK REPORT
Metals Analysis and Preparation (cont.)

Analyte	Result	Units	Reporting Limit
Test: AG-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 QC Run: 10 SEP 96-T1			
Silver	ND	mg/L	0.00050
Test: TL-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 QC Run: 10 SEP 96-T1			
Thallium	ND	mg/L	0.0050
Test: ICP-AFIR-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 QC Run: 10 SEP 96-T1			
Aluminum	ND	mg/L	0.20
Antimony	ND	mg/L	0.20
Arsenic	ND	mg/L	0.30
Barium	ND	mg/L	0.10
Beryllium	ND	mg/L	0.0020
Cadmium	ND	mg/L	0.0050
Calcium	ND	mg/L	5.0
Chromium	ND	mg/L	0.030
Cobalt	ND	mg/L	0.040
Copper	ND	mg/L	0.030
Iron	ND	mg/L	0.040
Lead	ND	mg/L	0.20
Magnesium	ND	mg/L	5.0
Manganese	ND	mg/L	0.010
Molybdenum	ND	mg/L	0.040
Nickel	ND	mg/L	0.040
Potassium	ND	mg/L	5.0
Selenium	ND	mg/L	0.40
Silver	ND	mg/L	0.030
Sodium	ND	mg/L	5.0
Thallium	ND	mg/L	5.0
Vanadium	ND	mg/L	0.040
Zinc	ND	mg/L	0.010

METHOD BLANK REPORT
Metals Analysis and Preparation (cont.)

Analyte	Result	Units	Reporting Limit
Test: SB-FAA-AT			
Matrix: AQUEOUS			
QC Lot: 03 SEP 96-1A QC Run: 03 SEP 96-1A			
Antimony	ND	mg/L	0.010
Test: ICP-AFIR-AT			
Matrix: AQUEOUS			
QC Lot: 03 SEP 96-1A QC Run: 03 SEP 96-1A			
Aluminum	ND	mg/L	0.20
Antimony	ND	mg/L	0.20
Arsenic	ND	mg/L	0.30
Barium	ND	mg/L	0.10
Beryllium	ND	mg/L	0.0020
Cadmium	ND	mg/L	0.0050
Calcium	ND	mg/L	5.0
Chromium	ND	mg/L	0.030
Cobalt	ND	mg/L	0.040
Copper	ND	mg/L	0.030
Iron	ND	mg/L	0.040
Lead	ND	mg/L	0.20
Magnesium	ND	mg/L	5.0
Manganese	ND	mg/L	0.010
Molybdenum	ND	mg/L	0.040
Nickel	ND	mg/L	0.040
Potassium	ND	mg/L	5.0
Selenium	ND	mg/L	0.40
Silver	ND	mg/L	0.030
Sodium	ND	mg/L	5.0
Thallium	ND	mg/L	5.0
Vanadium	ND	mg/L	0.040
Zinc	0.017	mg/L	0.010

QC LOT ASSIGNMENT REPORT
et Chemistry Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
051038-0001-SA	AQUEOUS	NO3+NO2-A	23 AUG 96-N1	23 AUG 96-N1
051038-0001-SA	AQUEOUS	NO2-A	21 AUG 96-N1	21 AUG 96-N1
051038-0001-SA	AQUEOUS	SO4-AFIR-A	22 AUG 96-N1	22 AUG 96-N1
051038-0001-SA	AQUEOUS	TDS-A	21 AUG 96-N1	21 AUG 96-N1
051038-0003-EB	AQUEOUS	NO3+NO2-A	23 AUG 96-N1	23 AUG 96-N1
051038-0003-EB	AQUEOUS	NO2-A	21 AUG 96-N1	21 AUG 96-N1
051038-0003-EB	AQUEOUS	SO4-AFIR-A	22 AUG 96-N1	22 AUG 96-N1
051038-0003-EB	AQUEOUS	TDS-A	21 AUG 96-N1	21 AUG 96-N1
051038-0004-SA	AQUEOUS	NO3+NO2-A	23 AUG 96-N1	23 AUG 96-N1
051038-0004-SA	AQUEOUS	NO2-A	21 AUG 96-N1	21 AUG 96-N1
051038-0004-SA	AQUEOUS	SO4-AFIR-A	22 AUG 96-N1	22 AUG 96-N1
051038-0004-SA	AQUEOUS	TDS-A	21 AUG 96-N1	21 AUG 96-N1
051038-0005-SA	AQUEOUS	NO3+NO2-A	23 AUG 96-N1	23 AUG 96-N1
051038-0005-SA	AQUEOUS	NO2-A	21 AUG 96-N1	21 AUG 96-N1
051038-0005-SA	AQUEOUS	SO4-AFIR-A	22 AUG 96-N1	22 AUG 96-N1
051038-0005-SA	AQUEOUS	TDS-A	21 AUG 96-N1	21 AUG 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: NO3+NO2-A Matrix: AQUEOUS QC Lot: 23 AUG 96-N1 Concentration Units: mg/L									
Nitrate plus Nitrite as N	15.2	15.5	15.4	15.4	102	90-116	0.65	10	
Category: NO2-A Matrix: AQUEOUS QC Lot: 21 AUG 96-N1 Concentration Units: mg/L									
Nitrite as N	0.100	0.0970	0.0961	0.0966	97	91-113	0.93	10	
Category: SO4-AFIR-A Matrix: AQUEOUS QC Lot: 22 AUG 96-N1 Concentration Units: mg/L									
Sulfate	50.0	51.8	51.8	51.8	104	92-112	0.0	10	
Category: TDS-A Matrix: AQUEOUS QC Lot: 21 AUG 96-N1 Concentration Units: mg/L									
Total Dissolved Solids	815	774	748	761	93	88-108	3.4	10	

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

METHOD BLANK REPORT
Wet Chemistry Analysis and Preparation

Analyte	Result	Units	Reporting Limit
Test: N03+N02-TEC-A Matrix: AQUEOUS QC Lot: 23 AUG 96-N1 QC Run: 23 AUG 96-N1			
Nitrate plus Nitrite as N	ND	mg/L	0.10
Test: N02-SPEC-A Matrix: AQUEOUS QC Lot: 21 AUG 96-N1 QC Run: 21 AUG 96-N1			
Nitrite as N	ND	mg/L	0.010
Test: S04-IC-AFIR-A Matrix: AQUEOUS QC Lot: 22 AUG 96-N1 QC Run: 22 AUG 96-N1			
Sulfate	ND	mg/L	0.50
Test: TDS-BAL-A Matrix: AQUEOUS QC Lot: 21 AUG 96-N1 QC Run: 21 AUG 96-N1			
Total Dissolved Solids	ND	mg/L	10.0

U.S. GEOLOGICAL SURVEY, WATER RESOURCES DIVISION, NEW MEXICO DISTRICT
ANALYTICAL REQUIREMENTS 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>Fred Cobhardt</i> Seal Number 155484	
Sampling Location Sewage Lagoons, Cannon Air Force Base, New Mexico					Delivered to Shipper by <i>Jerry Larson</i> Airbill Number 8164231010	
Team Leader Jerry Larson					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
20 AUG 96	1500	CAFB-G-0896-1	GROUND-WATER	8	All Apx-IX: SW8240, SW8080, SW6010 - Total (Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Ti, V, Zn), plus SW7041, SW7060, SW7131, SW7191, SW7421, SW7740, SW7761, SW7841; NITRATE-E353.2/E354.1; SULFATE-E300; TDS-E160.1	ENVIRONMENTAL SAMPLE -01
20 Aug 96	0800	CAFB-F-0896TB	DI	1	SW 8240 VOC	Trip Blank -02
11	0800	CAFB-F-0896-FB	11	3	11 11 11	Equipment Blank -03
11	0800	CAFB-F-0896-1	Ground Water	3	11 11 11	Environmental Sample
11	1215	CAFB-H-0896-1	11	3	11 11 11	11 -04 -05

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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>Jerry D. Larson</i>	<i>J. DeCh...</i>	8-20/96	1600	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer	Condition of Contents <i>good</i>	
		8/21/96	915		Contents Temperature <i>2.6</i>	
					Laboratory Project Number <i>51038</i>	

**U.S. GEOLOGICAL SURVEY, WATER RESOURCES DIVISION, NEW MEXICO DISTRICT
ANALYTICAL REQUIREMENTS/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>Fred Gohhardt</i>		
Sampling Location Sewage Lagoons, Cannon Air Force Base, New Mexico				Delivered to Shipper by <i>Jerry Larson</i>		
Team Leader Jerry Larson				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
<i>20 AUG 96</i>	<i>0800</i>	<i>CAFB-F-0896-EB</i>	GROUND-WATER <i>EB</i>	<i>8</i>	All Apx-IX: SW8240, SW8080, SW6010 -Total (Al,Sb,As,Ba,Bc,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Tl,V,Zn), plus SW7041,SW7060,SW7131,SW7191,SW7421,SW7740,SW7761,SW7841; NITRATE-E353.2/E354.1; SULFATE-E300; TDS-E160.1	<i>Equipment Blank</i> ENVIRONMENTAL SAMPLE <i>-03</i>
<i>20 Aug 96</i>	<i>0930</i>	<i>CAFB-F-0896-1</i>	<i>Ground Water</i>	<i>8</i>	<i>'' ''</i>	<i>Environmental sample</i> <i>-04</i>
<i>20 Aug 96</i>	<i>0800</i>	<i>CAFB-F-0896-TB</i>	<i>DI</i>	<i>1</i>	<i>SW 8240 VOC</i>	<i>Trip Blank</i>
<i>20 Aug 96</i>	<i>1215</i>	<i>CAFB-F-0896</i> <i>H</i>	<i>Ground Water</i>	<i>8</i>	<i>'' ''</i>	<i>Environmental sample</i> <i>-05</i>
				<i>All VOC's in cooler w Airbill # 8166231010 Seal # 155484</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
<i>Jerry D Larson</i>		<i>8-29-96</i>	<i>1600</i>		Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer
	<i>J Decks</i>	<i>8/29/96</i>	<i>915</i>		

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Sample Checklist



Project #: 51038 Date/Time Received: 8/24/96 9:15

Company Name & Sampling Site: USGS Cannon

*Cooler #(s): _____

Temperatures: 2.6 3.1 _____

*Place copy of airbill inside all non-QUANTERRA coolers. Describe here.

Unpacking & Labeling Check Points:

- | Yes/ | No | | Initials |
|--------------------------------------|-------------------------------------|---|----------|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 1. Radiation checked, record if reading > 0.5 mR/hr. (_____ mR/hr) | Y |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 2. Cooler seals intact. | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. Chain of custody present. | |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | 4. Bottles broken and/or are leaking, comment if yes. | |
| PHOTOGRAPH BROKEN BOTTLES | | | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 5. Containers labeled, comment if no. | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 6. pH of all samples checked and meet requirements, note exceptions. | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 7. Chain of custody includes "received by" and "relinquished" by signatures, dates, and times | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 8. Chain of custody agrees with bottle count, comment if no. | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 9. Chain of custody agrees with labels, comment if no. | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 10. VOA samples filled completely, comment if no. | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 11. Are VOA bottles preserved, check for labels. | |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | 12. Sediment present in "D," dissolved, bottles. | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 13. Are analyses with short holding times requested. | |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | 14. Is extra sample volume provided for MS, MSD or matrix duplicates. | |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | 15. Multiphase samples present, comment is yes. | |
| PHOTOGRAPH MULTIPHASE SAMPLES | | | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 16. Clear picture taken, labeled, and stapled to project folder. | Y |

Comments: Include action taken to resolve discrepancies/problems. Include a hard copy of e-mail or use extra paper if more space is needed. _____

Initials: _____

DODEC LABORATORY DATA REVIEW WORKSHEET

1.0 GENERAL INFORMATION

Data reviewer: Bruce Darnel
Date of review: 10/8/96
Sample project number: 051069
Project name: NM-Cannon 004
Sample collection date: 8/21/96
Sample matrix and number: Aqueous 5

Type and number of samples in project:

Type	Number
Environmental	<u>4</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: 9/20/96
Number of volumes in Raw Data Report: 2
Raw Data Report reviewed? Yes No ✓

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

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

Dioxins and furans will be reported under project 051074

Were the samples properly preserved upon receipt by the laboratory?
Yes ✓ 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 : Silver 7761
- Cadmium 7131
-
-

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:

Metals

Inorganic analyses: Yes No

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:

Did SCS meet QC acceptance criteria? Yes No

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

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:

Zinc was measured in the method blank at 0.017 mg/L, within the acceptable range.

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:

QC SUMMARY

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)
051069-0001-SA	AQUEOUS	624-A	30 AUG 96-J	30 AUG 96-J
051069-0002-SA	AQUEOUS	624-A	30 AUG 96-J	30 AUG 96-J
051069-0003-SA	AQUEOUS	624-A	30 AUG 96-J	30 AUG 96-J
051069-0004-SA	AQUEOUS	624-A	30 AUG 96-J	30 AUG 96-J
051069-0005-TB	AQUEOUS	624-A	30 AUG 96-J	30 AUG 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: 30 AUG 96-J									
Concentration Units: ug/L									
1,1-Dichloroethene	50.0	44.0	45.4	44.7	89	74-124	3.3	17	
Trichloroethene	50.0	44.1	45.2	44.7	89	77-119	2.7	13	
Benzene	50.0	49.6	50.7	50.1	100	80-117	2.2	12	
Toluene	50.0	50.1	51.5	50.8	102	80-119	2.6	11	
Chlorobenzene	50.0	49.1	50.6	49.9	100	81-120	3.0	14	

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



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SINGLE CONTROL SAMPLE REPORT
Volatile Organics by GC/MS

Analyte	Concentration		Accuracy(%)	
	Spiked	Measured	SCS	Limits
Category: 624-A				
Matrix: AQUEOUS				
QC Lot: 30 AUG 96-J QC Run: 30 AUG 96-J				
Concentration Units: ug/L				
1,2-Dichloroethane-d4	50.0	47.7	95	85-111
4-Bromofluorobenzene	50.0	50.3	101	86-110
Toluene-d8	50.0	49.8	100	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: 30 AUG 96-J	QC Run: 30 AUG 96-J			
Acetone	ND	ug/L	10	
Acetonitrile	12	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	1.6	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: 30 AUG 96-J QC Run: 30 AUG 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: 30 AUG 96-J QC Run: 30 AUG 96-J

Acetone	ND	ug/L	10
Acetonitrile	12	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

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: 30 AUG 96-J QC Run: 30 AUG 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
2-Hexanone	ND	ug/L	10
Methacrylonitrile	ND	ug/L	5.0
Methylene chloride	1.6	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.



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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)
051069-0001-SA	AQUEOUS	625-A	25 AUG 96-01	25 AUG 96-01
051069-0002-SA	AQUEOUS	625-A	25 AUG 96-01	25 AUG 96-01
051069-0003-SA	AQUEOUS	625-A	25 AUG 96-01	25 AUG 96-01
051069-0004-SA	AQUEOUS	625-A	25 AUG 96-01	25 AUG 96-01

DUPLICATE CONTROL SAMPLE REPORT
Semivolatile Organics by GC/MS

Analyte	Concentration Spiked	Concentration		AVG	Accuracy		Precision		
		DCS1	Measured DCS2		DCS	Average (%) Limits	(RPD) DCS Limit	DCS Limit	
Category: 625-A									
Matrix: AQUEOUS									
QC Lot: 25 AUG 96-01									
Concentration Units: ug/L									
Phenol	100	85.7	73.8	79.8	80	45-109	15	29	
2-Chlorophenol	100	89.8	81.7	85.8	86	47-111	9.4	29	
1,4-Dichlorobenzene	50	37.0	34.0	35.5	71	32-103	8.5	28	
N-Nitroso-di- n-propylamine	50	44.8	39.8	42.3	85	49-107	12	24	
1,2,4-Trichlorobenzene	50	31.5	32.7	32.1	64	44-102	3.7	27	
4-Chloro-3-methylphenol	100	83.1	78.8	81.0	81	50-115	5.3	27	
Acenaphthene	50	36.3	35.2	35.8	72	47-109	3.1	24	
4-Nitrophenol	100	68.8	71.3	70.0	70	40-127	3.6	51	
2,4-Dinitrotoluene	50	39.0	37.1	38.0	76	46-118	5.0	22	
Pentachlorophenol	100	80.1	82.2	81.2	81	30-136	2.6	34	
Pyrene	50	40.7	37.4	39.0	78	52-115	8.5	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: 25 AUG 96-01 QC Run: 25 AUG 96-01				
Concentration Units: ug/L				
Nitrobenzene-d5	100	75.8	76	49-113
2-Fluorobiphenyl	100	67.9	68	43-104
Terphenyl-d14	100	72.2	72	33-139
2-Fluorophenol	200	137	68	21- 91
Phenol-d5	200	162	81	54-105
2,4,6-Tribromophenol	200	120	60	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: 25 AUG 96-01 QC Run: 25 AUG 96-01			
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
Semivolatiles Organics by GC/MS (cont.)

Analyte	Result	Units	Reporting Limit	
Test: 8270CP-AP9-A				
Matrix: AQUEOUS				
QC Lot: 25 AUG 96-01	QC Run: 25 AUG 96-01			
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	1.0	ug/L	10	J
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	1.4	ug/L	10	J
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	

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

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

Analyte	Result	Units	Reporting Limit
Test: 8270CP-AP9-A			
Matrix: AQUEOUS			
QC Lot: 25 AUG 96-01 QC Run: 25 AUG 96-01			
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



Environmental
Services

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

Analyte	Result	Units	Reporting Limit
Test: 8270CP-AP9-A			
Matrix: AQUEOUS			
QC Lot: 25 AUG 96-01 QC Run: 25 AUG 96-01			
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
Organics by Chromatography

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
051069-0001-SA	AQUEOUS	8310-A	28 AUG 96-01	28 AUG 96-01
051069-0002-SA	AQUEOUS	8310-A	28 AUG 96-01	28 AUG 96-01
051069-0003-SA	AQUEOUS	8310-A	28 AUG 96-01	28 AUG 96-01
051069-0004-SA	AQUEOUS	8310-A	28 AUG 96-01	28 AUG 96-01



Environmental
Services

DUPLICATE CONTROL SAMPLE REPORT
Organics by Chromatography

Analyte	Spiked	Concentration		AVG	Accuracy		Precision	
		DCS1	Measured DCS2		DCS	Average(%) Limits	(RPD) DCS Limit	DCS Limit
Category:								
Matrix:								
QC Lot:								
Concentration Units:								
Naphthalene	10.0	8.98	9.09	9.04	90	30-117	1.2	37
Fluorene	2.00	1.80	1.78	1.79	90	33-123	1.1	37
Pyrene	2.00	1.71	1.76	1.74	87	54-117	2.9	35
Benzo(a)pyrene	1.00	0.864	0.859	0.862	86	55-109	0.58	39
Indeno(1,2,3-cd)pyrene	1.00	0.880	0.889	0.884	88	62-126	1.0	39

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

SINGLE CONTROL SAMPLE REPORT
Organics by Chromatography

Analyte	Concentration		Accuracy(%)	
	Spiked	Measured	SCS	Limits
Category: 8310-A				
Matrix: AQUEOUS				
QC Lot: 28 AUG 96-01				
QC Run: 28 AUG 96-01				
Concentration Units: ug/L				
Terphenyl-d14	20.0	17.4	87	31-157

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

METHOD BLANK REPORT
Organics by Chromatography

Analyte	Result	Units	Reporting Limit
Test: 8310-HPLC-A			
Matrix: AQUEOUS			
QC Lot: 28 AUG 96-01 QC Run: 28 AUG 96-01			
Naphthalene	ND	ug/L	1.0
Acenaphthylene	ND	ug/L	1.0
Acenaphthene	ND	ug/L	1.0
Fluorene	ND	ug/L	0.20
Phenanthrene	ND	ug/L	0.20
Anthracene	ND	ug/L	0.10
Fluoranthene	ND	ug/L	0.20
Pyrene	ND	ug/L	0.20
Benzo(a)anthracene	ND	ug/L	0.10
Chrysene	ND	ug/L	0.20
Benzo(b)fluoranthene	ND	ug/L	0.10
Benzo(k)fluoranthene	ND	ug/L	0.10
Benzo(a)pyrene	ND	ug/L	0.10
Dibenz(a,h)anthracene	ND	ug/L	0.20
Benzo(g,h,i)perylene	ND	ug/L	0.20
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.20

QC LOT ASSIGNMENT REPORT
Semivolatile Organics by GC

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
051069-0001-SA	AQUEOUS	615-A	28 AUG 96-01	28 AUG 96-01
051069-0001-SA	AQUEOUS	8080-A	27 AUG 96-01	27 AUG 96-01
051069-0002-SA	AQUEOUS	615-A	28 AUG 96-01	28 AUG 96-01
051069-0002-SA	AQUEOUS	8080-A	27 AUG 96-01	27 AUG 96-01
051069-0003-SA	AQUEOUS	615-A	28 AUG 96-01	28 AUG 96-01
051069-0003-SA	AQUEOUS	8080-A	27 AUG 96-01	27 AUG 96-01
051069-0004-SA	AQUEOUS	615-A	28 AUG 96-01	28 AUG 96-01
051069-0004-SA	AQUEOUS	8080-A	27 AUG 96-01	27 AUG 96-01

DUPLICATE CONTROL SAMPLE REPORT
Semivolatile Organics by GC

Analyte	Concentration			AVG	Accuracy Average (%)		Precision (RPD)	
	Spiked	DCS1	Measured DCS2		DCS	Limits	DCS	Limit
Category: 615-A								
Matrix: AQUEOUS								
QC Lot: 28 AUG 96-01								
Concentration Units: ug/L								
2,4-D	5.00	3.69	3.64	3.66	73	44- 97	1.4	34
2,4,5-TP (Silvex)	1.00	0.768	0.761	0.764	76	49-102	0.92	32
2,4,5-T	1.00	0.837	0.821	0.829	83	47-110	1.9	32
Category: 8080-A								
Matrix: AQUEOUS								
QC Lot: 27 AUG 96-01								
Concentration Units: ug/L								
gamma-BHC (Lindane)	0.200	0.176	0.186	0.181	91	81-117	5.5	13
Heptachlor	0.200	0.179	0.188	0.184	92	72-125	4.9	11
Aldrin	0.200	0.163	0.168	0.166	83	69-112	3.0	16
Dieldrin	0.500	0.413	0.432	0.422	85	77-111	4.5	13
Endrin	0.500	0.477	0.502	0.490	98	83-122	5.1	14
4,4'-DDT	0.500	0.430	0.466	0.448	90	76-125	8.0	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: 28 AUG 96-01 QC Run: 28 AUG 96-01 Concentration Units: ug/L				
DCAA	5.00	3.79	76	45-123
Category: 8080-A Matrix: AQUEOUS QC Lot: 27 AUG 96-01 QC Run: 27 AUG 96-01 Concentration Units: ug/L				
Tetrachloro-m-xylene	1.00	0.751	75	54-106
Dibutyl chlorendate	1.00	0.901	90	56-138
Decachlorobiphenyl	0.200	0.182	91	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: 28 AUG 96-01 QC Run: 28 AUG 96-01			
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: 27 AUG 96-01 QC Run: 27 AUG 96-01			
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	2.5
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)
051069-0001-SA	AQUEOUS	PB-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051069-0001-SA	AQUEOUS	AS-FAA-AT	06 SEP 96-4A	06 SEP 96-4A
051069-0001-SA	AQUEOUS	SE-FAA-AT	06 SEP 96-4A	06 SEP 96-4A
051069-0001-SA	AQUEOUS	TL-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051069-0001-SA	AQUEOUS	HG-CVAA-AT	26 AUG 96-SB	26 AUG 96-SB
051069-0001-SA	AQUEOUS	CD-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051069-0001-SA	AQUEOUS	CR-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051069-0001-SA	AQUEOUS	SB-FAA-AT	03 SEP 96-1A	03 SEP 96-1A
051069-0001-SA	AQUEOUS	AG-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051069-0001-SA	AQUEOUS	ICP-AT	03 SEP 96-1A	03 SEP 96-1A
051069-0001-SA	AQUEOUS	PB-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051069-0002-SA	AQUEOUS	AS-FAA-AT	06 SEP 96-4A	06 SEP 96-4A
051069-0002-SA	AQUEOUS	SE-FAA-AT	06 SEP 96-4A	06 SEP 96-4A
051069-0002-SA	AQUEOUS	TL-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051069-0002-SA	AQUEOUS	HG-CVAA-AT	26 AUG 96-SB	26 AUG 96-SB
051069-0002-SA	AQUEOUS	CD-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051069-0002-SA	AQUEOUS	CR-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051069-0002-SA	AQUEOUS	SB-FAA-AT	03 SEP 96-1A	03 SEP 96-1A
051069-0002-SA	AQUEOUS	AG-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051069-0002-SA	AQUEOUS	ICP-AT	03 SEP 96-1A	03 SEP 96-1A
051069-0003-SA	AQUEOUS	PB-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051069-0003-SA	AQUEOUS	AS-FAA-AT	06 SEP 96-4A	06 SEP 96-4A
051069-0003-SA	AQUEOUS	SE-FAA-AT	06 SEP 96-4A	06 SEP 96-4A
051069-0003-SA	AQUEOUS	TL-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051069-0003-SA	AQUEOUS	HG-CVAA-AT	26 AUG 96-SB	26 AUG 96-SB
051069-0003-SA	AQUEOUS	CD-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051069-0003-SA	AQUEOUS	CR-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051069-0003-SA	AQUEOUS	SB-FAA-AT	03 SEP 96-1A	03 SEP 96-1A
051069-0003-SA	AQUEOUS	AG-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051069-0003-SA	AQUEOUS	ICP-AT	03 SEP 96-1A	03 SEP 96-1A
051069-0004-SA	AQUEOUS	PB-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051069-0004-SA	AQUEOUS	AS-FAA-AT	06 SEP 96-4A	06 SEP 96-4A
051069-0004-SA	AQUEOUS	SE-FAA-AT	06 SEP 96-4A	06 SEP 96-4A
051069-0004-SA	AQUEOUS	TL-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051069-0004-SA	AQUEOUS	HG-CVAA-AT	26 AUG 96-SB	26 AUG 96-SB
051069-0004-SA	AQUEOUS	CD-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051069-0004-SA	AQUEOUS	CR-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051069-0004-SA	AQUEOUS	SB-FAA-AT	03 SEP 96-1A	03 SEP 96-1A
051069-0004-SA	AQUEOUS	AG-FAA-AT	10 SEP 96-T1	10 SEP 96-T1
051069-0004-SA	AQUEOUS	ICP-AT	03 SEP 96-1A	03 SEP 96-1A

DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation

Analyte	Concentration Spiked	Concentration Measured		AVG	Accuracy Average(%)		Precision (RPD)		
		DCS1	DCS2		DCS	Limits	DCS	Limit	
Category: PB-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 Concentration Units: mg/L									
Lead	0.040	0.0419	0.0434	0.0426	107	71-136	3.5	17	
Category: AS-FAA-AT Matrix: AQUEOUS QC Lot: 06 SEP 96-4A Concentration Units: mg/L									
Arsenic	0.040	0.0376	0.0383	0.0380	95	81-116	1.8	13	
Category: SE-FAA-AT Matrix: AQUEOUS QC Lot: 06 SEP 96-4A Concentration Units: mg/L									
Selenium	0.040	0.0402	0.0403	0.0402	101	73-125	0.25	15	
Category: TL-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 Concentration Units: mg/L									
Thallium	0.0400	0.0388	0.0396	0.0392	98	75-125	2.0	20	
Category: HG-CVAA-AT Matrix: AQUEOUS QC Lot: 26 AUG 96-SB Concentration Units: mg/L									
Mercury	0.00100	0.000924	0.000965	0.000944	94	80-114	4.3	10	

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 DCS2	AVG	Accuracy Average(%)		Precision (RPD)		
	Spiked	DCS1			DCS	Limits	DCS	Limit	
Category: CD-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 Concentration Units: mg/L									
Cadmium	0.00400	0.00433	0.00449	0.00441	110	75-125	3.6	20	
Category: CR-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 Concentration Units: mg/L									
Chromium	0.0100	0.0105	0.0102	0.0104	104	75-125	2.9	20	
Category: SB-FAA-AT Matrix: AQUEOUS QC Lot: 03 SEP 96-1A Concentration Units: mg/L									
Antimony	0.5000	0.458	0.491	0.474	95	75-125	7.0	20	
Category: AG-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 Concentration Units: mg/L									
Silver	0.00500	0.00464	0.00479	0.00472	94	75-125	3.2	20	
Category: ICP-AT Matrix: AQUEOUS QC Lot: 03 SEP 96-1A Concentration Units: mg/L									
Aluminum	2.00	2.04	2.14	2.09	104	80-116	5.0	10	
Antimony	0.500	0.487	0.522	0.505	101	80-115	7.1	14	
Arsenic	2.00	2.02	2.08	2.05	102	80-115	3.0	17	
Barium	2.00	1.96	2.07	2.02	101	80-114	5.1	10	
Beryllium	0.0500	0.0505	0.0504	0.0504	101	80-120	0.24	10	
Boron	1.00	1.15	1.07	1.11	111	80-120	6.7	10	
Cadmium	0.0500	0.0529	0.0495	0.0512	102	80-119	6.5	16	
Calcium	50.0	48.3	50.9	49.6	99	80-114	5.4	10	

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 DCS2	AVG	Accuracy Average(%)		Precision (RPD)	
	Spiked	DCS1			DCS	Limits	DCS Limit	
Category: ICP-AT								
Matrix: AQUEOUS								
QC Lot: 03 SEP 96-1A								
Concentration Units: mg/L								
Chromium	0.200	0.193	0.209	0.201	100	80-116	7.8	11
Cobalt	0.500	0.466	0.492	0.479	96	80-114	5.5	10
Copper	0.250	0.242	0.260	0.251	100	80-120	7.2	10
Iron	1.00	1.01	1.05	1.03	103	80-120	4.2	11
Lead	0.500	0.538	0.542	0.540	108	80-119	0.67	10
Lithium	1.00	0.805	0.847	0.826	83	80-120	5.1	20
Magnesium	50.0	46.6	49.6	48.1	96	81-120	6.2	10
Manganese	0.500	0.494	0.523	0.509	102	80-116	5.7	10
Molybdenum	1.0	0.945	1.01	0.978	98	80-120	6.6	20
Nickel	0.500	0.496	0.520	0.508	102	80-114	4.8	10
Potassium	50.0	45.8	48.4	47.1	94	80-120	5.5	13
Selenium	2.0	1.95	2.01	1.98	99	80-120	3.4	20
Silver	0.050	0.0500	0.0510	0.0505	101	80-119	2.1	15
Sodium	50.0	49.1	51.4	50.3	101	80-120	4.7	10
Tin	2.00	1.96	2.08	2.02	101	80-120	6.3	20
Titanium	1.00	0.967	1.02	0.991	99	80-120	4.9	20
Vanadium	0.500	0.497	0.523	0.510	102	80-116	5.2	10
Zinc	0.500	0.484	0.511	0.498	100	80-120	5.3	13

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: PB-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 QC Run: 10 SEP 96-T1			
Lead	ND	mg/L	0.0050
Test: AS-FAA-AT Matrix: AQUEOUS QC Lot: 06 SEP 96-4A QC Run: 06 SEP 96-4A			
Arsenic	ND	mg/L	0.0050
Test: SE-FAA-AT Matrix: AQUEOUS QC Lot: 06 SEP 96-4A QC Run: 06 SEP 96-4A			
Selenium	ND	mg/L	0.0050
Test: TL-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 QC Run: 10 SEP 96-T1			
Thallium	ND	mg/L	0.0050
Test: HG-CVAA-7470-AT Matrix: AQUEOUS QC Lot: 26 AUG 96-SB QC Run: 26 AUG 96-SB			
Mercury	ND	mg/L	0.00020
Test: CD-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 QC Run: 10 SEP 96-T1			
Cadmium	ND	mg/L	0.00050

METHOD BLANK REPORT
Metals Analysis and Preparation (cont.)

Analyte	Result	Units	Reporting Limit
Test: CR-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 QC Run: 10 SEP 96-T1			
Chromium	ND	mg/L	0.0050
Test: SB-FAA-AT Matrix: AQUEOUS QC Lot: 03 SEP 96-1A QC Run: 03 SEP 96-1A			
Antimony	ND	mg/L	0.010
Test: AG-FAA-AT Matrix: AQUEOUS QC Lot: 10 SEP 96-T1 QC Run: 10 SEP 96-T1			
Silver	ND	mg/L	0.00050
Test: ICP-AFIR-AT Matrix: AQUEOUS QC Lot: 03 SEP 96-1A QC Run: 03 SEP 96-1A			
Aluminum	ND	mg/L	0.20
Antimony	ND	mg/L	0.20
Arsenic	ND	mg/L	0.30
Barium	ND	mg/L	0.10
Beryllium	ND	mg/L	0.0020
Cadmium	ND	mg/L	0.0050
Calcium	ND	mg/L	5.0
Chromium	ND	mg/L	0.030
Cobalt	ND	mg/L	0.040
Copper	ND	mg/L	0.030
Iron	ND	mg/L	0.040
Lead	ND	mg/L	0.20
Magnesium	ND	mg/L	5.0
Manganese	ND	mg/L	0.010
Molybdenum	ND	mg/L	0.040
Nickel	ND	mg/L	0.040
Potassium	ND	mg/L	5.0
Selenium	ND	mg/L	0.40
Silver	ND	mg/L	0.030
Sodium	ND	mg/L	5.0

METHOD BLANK REPORT
Metals Analysis and Preparation (cont.)

Analyte	Result	Units	Reporting Limit
Test: ICP-AFIR-AT			
Matrix: AQUEOUS			
QC Lot: 03 SEP 96-1A	QC Run: 03 SEP 96-1A		
Thallium	ND	mg/L	5.0
Vanadium	ND	mg/L	0.040
Zinc	0.017	mg/L	0.010

QC LOT ASSIGNMENT REPORT
Wet Chemistry Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
051069-0001-SA	AQUEOUS	TOX-A	04 SEP 96-N1	04 SEP 96-N1
051069-0001-SA	AQUEOUS	CN-A	23 AUG 96-S1	23 AUG 96-S1
051069-0001-SA	AQUEOUS	S-A	23 AUG 96-S1	23 AUG 96-S1
051069-0001-SA	AQUEOUS	TOC-9060-A	23 AUG 96-N1	23 AUG 96-N1
051069-0002-SA	AQUEOUS	TOX-A	04 SEP 96-N1	04 SEP 96-N1
051069-0002-SA	AQUEOUS	CN-A	23 AUG 96-S1	23 AUG 96-S1
051069-0002-SA	AQUEOUS	S-A	23 AUG 96-S1	23 AUG 96-S1
051069-0002-SA	AQUEOUS	TOC-9060-A	23 AUG 96-N1	23 AUG 96-N1
051069-0003-SA	AQUEOUS	TOX-A	04 SEP 96-N1	04 SEP 96-N1
051069-0003-SA	AQUEOUS	CN-A	23 AUG 96-S1	23 AUG 96-S1
051069-0003-SA	AQUEOUS	S-A	23 AUG 96-S1	23 AUG 96-S1
051069-0003-SA	AQUEOUS	TOC-9060-A	23 AUG 96-N1	23 AUG 96-N1
051069-0004-SA	AQUEOUS	TOX-A	04 SEP 96-N1	04 SEP 96-N1
051069-0004-SA	AQUEOUS	CN-A	23 AUG 96-S1	23 AUG 96-S1
051069-0004-SA	AQUEOUS	S-A	23 AUG 96-S1	23 AUG 96-S1
051069-0004-SA	AQUEOUS	TOC-9060-A	23 AUG 96-N1	23 AUG 96-N1

DUPLICATE CONTROL SAMPLE REPORT
Wet Chemistry Analysis and Preparation

Analyte	Concentration Spiked	Concentration Measured		AVG	Accuracy Average(%)		Precision (RPD)		
		DCS1	DCS2		DCS	Limits	DCS	Limit	
Category: TOX-A Matrix: AQUEOUS QC Lot: 04 SEP 96-N1 Concentration Units: ug/L									
Total Organic Halogen as Cl	100	90.4	85.5	87.9	88	79-114	5.5	20	
Category: CN-A Matrix: AQUEOUS QC Lot: 23 AUG 96-S1 Concentration Units: mg/L									
Cyanide	0.186	0.184	0.178	0.181	97	74-112	3.3	21	
Category: S-A Matrix: AQUEOUS QC Lot: 23 AUG 96-S1 Concentration Units: mg/L									
Sulfide, Total	0.464	0.489	0.506	0.498	107	70-128	3.4	13	
Category: TOC-9060-A Matrix: AQUEOUS QC Lot: 23 AUG 96-N1 Concentration Units: mg/L									
Total Organic Carbon	30.0	29.3	29.2	29.2	97	90-113	0.17	10	

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

METHOD BLANK REPORT
Met Chemistry Analysis and Preparation

Analyte	Result	Units	Reporting Limit
Test: TOX-TOX-A Matrix: AQUEOUS QC Lot: 04 SEP 96-N1 QC Run: 04 SEP 96-N1			
Total Organic Halogen as Cl	ND	ug/L	30.0
Test: CNTOT-TEC-A Matrix: AQUEOUS QC Lot: 23 AUG 96-S1 QC Run: 23 AUG 96-S1			
Cyanide	ND	mg/L	0.010
Test: S-SPEC-AT Matrix: AQUEOUS QC Lot: 23 AUG 96-S1 QC Run: 23 AUG 96-S1			
Sulfide, Total	ND	mg/L	0.050
Test: TOC-TOC-A Matrix: AQUEOUS QC Lot: 23 AUG 96-N1 QC Run: 23 AUG 96-N1			
Total Organic Carbon	ND	mg/L	1.0

**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 ..		
				Packed and Sealed for Shipping by <i>Fred Gebhardt</i>		Seal Number <i>154322</i>
Sampling Location Landfill-5, Cannon Air Force Base, NM				Delivered to Shipper by <i>Jerry Larson</i>		Airbill Number <i>8166230773</i>
				Team Leader Jerry Larson		
				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
<i>21 AUG 96</i>	<i>1015</i>	<i>CAFB-L-0896-1</i>	<i>Ground-water</i>	<i>18</i>	<small>All Apr-IX: SW8240, SW8270, SW8280, SW8310, SW8080, SW8150, Total-METALS: SW6010 (Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Hg, Ni, Ag, Se, Na, Tl, Sn, V, Zn), plus SW7041, SW7060, SW7131, SW7191, SW7421, SW7740, SW7761, SW7841; SW9012, SW9030, SW9060, SW9020</small>	<i>Environmental Sample -01</i>
<i>21 Aug 96</i>	<i>1115</i>	<i>CAFB-M-0896-1</i>	<i>Ground water</i>	<i>3</i>	<i>SW 8240</i>	<i>Enviro Sample -02</i>
<i>21 Aug</i>	<i>1230</i>	<i>CAFB-I-0896-1</i>	<i>"</i>	<i>"</i>	<i>"</i>	<i>" " -03</i>
<i>"</i>	<i>1300</i>	<i>CAFB-X-0896</i>	<i>"</i>	<i>"</i>	<i>"</i>	<i>" " -04</i>
<i>21 AUG.</i>	<i>1015</i>	<i>CAFB L-0896-TB</i>	<i>BLANK WATER</i>	<i>1</i>	<i>SW 8240</i>	<i>TRIP BLANK -05</i>

Additional Comments

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>[Signature]</i>	<i>8/22/96</i>	<i>900</i>		Condition of Contents <i>9200</i>	
					Contents Temperature <i>2.6</i>	
					Laboratory Project Number <i>51064</i>	

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**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, 081507		
				Packed and Sealed for Shipping by <i>Fred Gabhardt</i>		Seal Number 154321
Sampling Location Landfill-5, Cannon Air Force Base, NM				Delivered to Shipper by <i>Jerry Larson</i>		Airbill Number 2 of 4
				Team Leader Jerry Larson		
Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
21 AUG 96	1115	CAFB-M-0896-1	Ground-water	18 15	All App-IX: SW8240, SW8270, SW8280, SW8310, SW8080, SW8150, Total-METALS: SW6010 (Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Hg, Ni, Ag, Se, Na, Ti, Sn, V, Zn), plus SW7041, SW7060, SW7131, SW7191, SW7421, SW7740, SW7761, SW7841; SW9012, SW9030, SW9060, SW9020	Environmental Sample -02
		VOC's	sent with	cooler	1 of 4	Airbill 9166 230973
						Seal 154322
Additional Comments						

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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>Jerry Larson</i>		8-21-96	1600		Condition of Contents 9001	
	<i>RLH</i>	8/22/96	900		Contents Temperature 51.06°	
					Laboratory Project Number 31	

**U.S. GEOLOGICAL SURVEY, WATER RESOURCES DIVISION, NEW MEXICO DISTRICT
ANALYTICAL REQUIREMENTS/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>Fred Gebhardt</i>			Seal Number <i>081505</i>
Sampling Location Landfill-5, Cannon Air Force Base, NM				Delivered to Shipper by <i>Jerry Larson</i>			Airbill Number <i>384</i>
Team Leader Jerry Larson				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	
<i>21 AUG 96</i>	<i>1230</i>	<i>CAFB-I-0896-1</i>	<i>Ground-water</i>	<i>185</i>	All Apx-IX: SW8240, SW8270, SW8280, SW8310, SW8080, SW8150, Total-METALS: SW6010 (Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Hg, Ni, Ag, Se, Na, Tl, Sn, V, Zn), plus SW7041, SW7060, SW7131, SW7191, SW7421, SW7740, SW7761, SW7841; SW9012, SW9030, SW9060, SW9020	<i>Environmental Sample -03</i>	
		<i>Voc's sent with cooler</i>		<i>1 of 4</i>	<i>Seal 15 4322</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>8/21/96</i>	<i>900</i>	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer	Condition of Contents <i>9/25/96</i>
					Contents Temperature <i>5.069</i>
					Laboratory Project Number <i>4.0</i>

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**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		
				Packed and Sealed for Shipping by <i>Fred Gebhardt</i>		Seal Number <i>081906</i>
Sampling Location Landfill-5, Cannon Air Force Base, NM				Delivered to Shipper by <i>Jerry Larson</i>		Airbill Number <i>4 of 4</i>
				Team Leader Jerry Larson		
Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
<i>21 AUG 96</i>	<i>1300</i>	<i>CAFB-X-0896-1</i>	<i>Ground-water</i>	<i>5</i>	All Apx-IX: SW8240, SW8270, SW8280, SW8310, SW8080, SW8150, Total-METALS: SW6010 (Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Hg, Ni, Ag, Se, Na, Tl, Sn, V, Zn), plus SW7041, SW7060, SW7131, SW7191, SW7421, SW7740, SW7761, SW7841; SW9012, SW9030, SW9060, SW9020	<i>Environmental Sample</i>
					<i>All VOC's sent in cooler 1 of 4</i>	

Additional Comments

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>Jerry D. Larson</i>		<i>8/21/96</i>	<i>1600</i>		Condition of Contents <i>Good</i>
	<i>Weth</i>	<i>8/22/96</i>	<i>900</i>		Contents Temperature <i>9.6</i>
					Laboratory Project Number <i>2.6</i>

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Sample Checklist



Project #: 51069 Date/Time Received: 3/22/96 9:00

Company Name & Sampling Site: Cannon USGS

*Cooler #(s): _____

Temperatures: 2.6 3.1 4.0 2.6 _____

*Place copy of airbill inside all non-QUANTERRA coolers. Describe here.

Unpacking & Labeling Check Points:

- | Yes | No | | Initials |
|--------------------------------------|-------------------------------------|---|----------|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 1. Radiation checked, record if reading > 0.5 mR/hr. (_____ mR/hr) | JP |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 2. Cooler seals intact. | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. Chain of custody present. | |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | 4. Bottles broken and/or are leaking, comment if yes. | |
| PHOTOGRAPH BROKEN BOTTLES | | | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 5. Containers labeled, comment if no. | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 6. pH of all samples checked and meet requirements, note exceptions. | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 7. Chain of custody includes "received by" and "relinquished" by signatures, dates, and times | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 8. Chain of custody agrees with bottle count, comment if no. | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 9. Chain of custody agrees with labels, comment if no. | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 10. VOA samples filled completely, comment if no. | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 11. Are VOA bottles preserved, check for labels. | |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | 12. Sediment present in "D," dissolved, bottles. | |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | 13. Are analyses with short holding times requested. | |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | 14. Is extra sample volume provided for MS, MSD or matrix duplicates. | |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | 15. Multiphase samples present, comment is yes. | |
| PHOTOGRAPH MULTIPHASE SAMPLES | | | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 16. Clear picture taken, labeled, and stapled to project folder. | |

Comments: Include action taken to resolve discrepancies/problems. Include a hard copy of e-mail or use extra paper if more space is needed. _____

Initials: _____

DODEC LABORATORY DATA REVIEW WORKSHEET

1.0 GENERAL INFORMATION

Data reviewer: Bruce Darnel
Date of review: 10/9/96
Sample project number: 051074
Project name: NM-Canaan
Sample collection date: 8-21-96
Sample matrix and number: Aqueous 5

Type and number of samples in project:

Type	Number
Environmental	<u>4</u>
Trip blank	<u> </u>
Equipment blank	<u> </u>
Ambient blank	<u> </u>
MS/MSD	<u> </u>
Other	<u>1</u> Method Blank

2.0 DATA REPORT

Date of Analytical Results Report: 9/26/96
Number of volumes in Raw Data Report: 1
Raw Data Report reviewed? Yes No ✓

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

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

Compounds other than dioxins and furans were reported
under another project number.

Were the samples properly preserved upon receipt by the laboratory?
Yes ✓ 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 : _____
- _____
- _____
- _____

Were analytical holding times met? Yes No

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

Did ^{internal standard} 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 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:

Did SCS meet QC acceptance criteria? Yes _____ No _____ *NA*

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

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:

QC SUMMARY

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.



Environmental
Services

QC LOT ASSIGNMENT REPORT
Subcontracted to Quanterra Lab

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
051074-0001-SA	AQUEOUS	DXNFUR-A	03 SEP 96-A	-
051074-0001-MB	AQUEOUS	DXNFUR-A	03 SEP 96-A	-
051074-0002-SA	AQUEOUS	DXNFUR-A	03 SEP 96-A	-
051074-0003-SA	AQUEOUS	DXNFUR-A	03 SEP 96-A	-
051074-0004-SA	AQUEOUS	DXNFUR-A	03 SEP 96-A	-



Environmental Services

DUPLICATE CONTROL SAMPLE REPORT
Subcontracted to Quanterra Lab

Analyte	Concentration		Measured	AVG	Accuracy		Precision	
	Spiked	DCS1			DCS2	DCS	Limits	DCS Limit
Category: DXNFUR1-A								
Matrix: AQUEOUS								
QC Lot: 03 SEP 96-A								
Concentration Units: ng/sample								
2,3,7,8-TCDF	25	25.6	27.7	26.6	107	62-129	7.9	18
1,2,3,7,8-PeCDF	62.5	65.7	70.7	68.2	109	60-140	7.3	50
1,2,3,6,7,8-HxCDF	62.5	68.5	75.9	72.2	116	60-140	10	50
1,2,3,4,6,7,8-HpCDF	62.5	66.5	71.6	69.0	110	50-150	7.4	50
OCDF	125	139	152	146	116	50-150	9.0	28
2,3,7,8-TCDD	25	24.7	28.3	26.5	106	57-128	14	20
1,2,3,7,8-PeCDD	62.5	65.1	76.4	70.8	113	80-125	16	25
1,2,3,6,7,8-HxCDD	62.5	61.1	65.4	63.2	101	60-140	6.8	50
1,2,3,4,6,7,8-HpCDD	62.5	65.8	71.4	68.6	110	60-131	8.2	23
OCDD	125	125	134	129	103	50-147	7.0	20

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

Appendix IX Dioxins/Furans

Low Resolution

Client Name: U.S. Geological Survey
 Client ID: Method Blank
 Lab ID: 051074-0001-MB
 Matrix: AQUEOUS
 Authorized: 22 AUG 96

Sampled: NA
 Prepared: 03 SEP 96

Received: NA
 Analyzed: 05 SEP 96

Sample Amount 1.0 L
 Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/L	0.62	
PeCDFs (total)	ND	ng/L	0.27	
HxCDFs (total)	ND	ng/L	0.19	
Dioxins				
TCDDs (total)	ND	ng/L	0.45	
2,3,7,8-TCDD	ND	ng/L	0.45	
PeCDDs (total)	ND	ng/L	0.55	
HxCDDs (total)	ND	ng/L	0.35	
% Recovery				
13C-2,3,7,8-TCDF	87			
13C-2,3,7,8-TCDD	84			
13C-1,2,3,6,7,8-HxCDD	85			
13C-1,2,3,4,6,7,8-HpCDF	87			

ND = Not detected
 NA = Not applicable

Reported By: MBAQUERFO

Approved By: RHRABAK

**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>Fred Gebhardt</i>	
Sampling Location			Landfill-5, Cannon Air Force Base, NM		Delivered to Shipper by <i>Jerry Larson</i>	
Team Leader			Jerry Larson		Seal Number <i>154322</i>	
					Airbill Number <i>8166230973</i>	
					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
21 AUG 96	1015	CAFB-L-0896-1	Ground-water	18	All Apx-DX: SW8240, SW8270, SW8280, SW8310, SW8080, SW8150, Total-METALS: SW6010 (Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Hg, Ni, Ag, Se, Na, Ti, Sn, V, Zn), plus SW7041, SW7060, SW7131, SW7191, SW7421, SW7740, SW7761, SW7841; SW9012, SW9030, SW9060, SW9020	Environmental Sample <i>-01</i>
21 Aug	1115	CAFB-M-0896-1	Ground water	3	SW 8240	Enviro Sample <i>-02</i>
21 Aug	1230	CAFB-I-0896-1	"	"	"	" <i>-03</i>
"	1300	CAFB-X-0896	"	"	"	" <i>-04</i>
21 AUG	1015	CAFB L-0896-TB	BLANK WATER	1	SW 8240	TRIP BLANK <i>-05</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>8/22/96</i>	<i>9:00</i>	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611	Condition of Contents <i>Good</i>
				Attention: Lindsay Breyer	Contents Temperature <i>2.6</i>
					Laboratory Project Number <i>51069</i>

11-127

**U.S. GEOLOGICAL SURVEY, WATER RESOURCES DIVISION, NEW MEXICO DISTRICT
ANALYTICAL REQUIREMENTS/CHAIN OF CUSTODY**

Project Name & Number Cannon Air Force Base, Ground Water Sampling 463536004				PACKING AND SHIPPING DETAILS .. 081507		
				Packed and Sealed for Shipping by <i>Fred Gabhardt</i>		Seal Number 154321
Sampling Location Landfill-5, Cannon Air Force Base, NM				Delivered to Shipper by <i>Jerry Larson</i>		Airbill Number 2 of 4
				Team Leader Jerry Larson		
Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
21 AUG 96	1115	CAFB-M-0896-1	Ground-water	15	All Apr-IX: SW4240, SW8270, SW8280, SW8310, SW8080, SW8150, Total-METALS: SW6010 (Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Hg, Ni, Ag, Se, Na, Ti, Sn, V, Zn), plus SW7041, SW7060, SW7131, SW7191, SW7421, SW7740, SW7761, SW7841; SW9012, SW9030, SW9060, SW9020	Environmental Sample -02
		VOC's	sent	with	cooler 1 of 4	Airbill 8166 230973
						Seal 154322
Additional Comments						

11-128

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>Jerry Larson</i>		8-21-96	1600		Condition of Contents 9001	
	<i>RLH</i>	8/21/96	900		Contents Temperature 91065	
					Laboratory Project Number 31	

**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>Fred Gebhardt</i>	
Sampling Location			Landfill-5, Cannon Air Force Base, NM		Delivered to Shipper by <i>Jerry Larson</i>	
Team Leader			Jerry Larson		Seal Number <i>281505</i>	
					Airbill Number <i>344</i>	
					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
<i>21 AUG 96</i>	<i>1230</i>	<i>CAFB-I-0896-1</i>	<i>Ground-water</i>	<i>185</i>	All Apx-IX: SW8240, SW8270, SW8280, SW8310, SW8080, SW8150, Total-METALS: SW6010 (Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Hg, Ni, Ag, Se, Na, Ti, Sn, V, Zn), plus SW7041, SW7060, SW7131, SW7191, SW7421, SW7740, SW7761, SW7841; SW9012, SW9030, SW9060, SW9020	<i>Environmental Sample -03</i>
						<i>VOC's sent with cooler 1 of 4 seal 15 4322</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>8/27/96</i>	<i>900</i>	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611		Condition of Contents <i>900</i>
				Attention: Lindsay Breyer		Contents Temperature <i>51.69</i>
						Laboratory Project Number <i>4.0</i>

IT-129

**U.S. GEOLOGICAL SURVEY, WATER RESOURCES DIVISION, NEW MEXICO DISTRICT
ANALYTICAL REQUIREMENTS / 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>Fred Gebhardt</i>	Seal Number <i>081906</i>
Sampling Location Landfill-5, Cannon Air Force Base, NM					Delivered to Shipper by <i>Jerry Larson</i>	
					Airbill Number <i>4 of 4</i>	
Team Leader Jerry Larson					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
<i>21 AUG 96</i>	<i>1300</i>	<i>CAFB-X-0896-1</i>	<i>Ground-water</i>	<i>5</i>	All App-IX: SW8240, SW8270, SW8280, SW8310, SW8080, SW8150, Total-METALS: SW6010 (Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Hg, Ni, Ag, Se, Na, Tl, Sn, V, Zn), plus SW7041, SW7060, SW7131, SW7191, SW7421, SW7740, SW7761, SW7841; SW9012, SW9030, SW9060, SW9020	Environmental Sample <i>..04</i>
		<i>All VOC's sent in cooler 1 of 4</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>Jerry D Larson</i>	<i>Weth</i>	<i>8/21/96</i>	<i>1600</i>	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer	Condition of Contents <i>Good</i>	
		<i>8/22/96</i>	<i>900</i>		Contents Temperature <i>9.6</i>	
					Laboratory Project Number <i>2.6</i>	

II-130

Chain of Custody Record



QUA-4124-1
 Client: **USGS** Project Manager: **Mark Stella** Date: _____ Chain Of Custody Number: **65881**
 Address: **Camon AFB** Telephone Number (Area Code)/Fax Number: _____ Lab Number: _____ Page _____ of _____

City: _____ State: _____ Zip Code: _____ Site Contact: _____ Lab Contact: _____
 Project Name: _____ Carrier/Waybill Number: _____
 Analysis (Attach list if more space is needed)

Sample I.D. No. and Description <small>(Containers for each sample may be combined on one line)</small>	Date	Time	Matrix			Containers & Preservatives						Special Instructions/ Conditions of Receipt
			Aqueous	Sed.	Soil	Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	
51074-01	8/21		↓									AP9 Drax (w)
↓ -02	↓		↓									
↓ -13												
↓ -04												

Samples rec'd in good condition. MCD

Possible Hazard Identification: Non-Hazard Flammable Skin Irritant Poison B Unknown
 Sample Disposal: Return To Client Disposal By Lab Archive For _____ Months longer than 3 months
 Turn Around Time Required: 24 Hours 48 Hours 7 Days 14 Days 21 Days Other **28 day**
 QC Requirements (Specify)

1. Relinquished By: [Signature]	Date: 8/22/16	Time: 1600	1. Received By: [Signature]	Date: 0823/16	Time: 1245
2. Relinquished By:	Date:	Time:	2. Received By:	Date:	Time:
3. Relinquished By:	Date:	Time:	3. Received By:	Date:	Time:

Comments: _____

II-131

Sample Checklist



Project #: 74 510690 Date/Time Received: 8/22/96 900

Company Name & Sampling Site: Cannon USGS

*Cooler #(s): _____

Temperatures: 2.6 3.1 4.0 2.6 _____

*Place copy of airbill inside all non-QUANTERRA coolers. Describe here.

Unpacking & Labeling Check Points:

- | Yes | No | | Initials |
|--------------------------------------|-------------------------------------|---|-----------|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 1. Radiation checked, record if reading > 0.5 mR/hr. (_____ mR/hr) | <u>jm</u> |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 2. Cooler seals intact. | _____ |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. Chain of custody present. | _____ |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | 4. Bottles broken and/or are leaking, comment if yes. | _____ |
| PHOTOGRAPH BROKEN BOTTLES | | | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 5. Containers labeled, comment if no. | _____ |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 6. pH of all samples checked and meet requirements, note exceptions. | _____ |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 7. Chain of custody includes "received by" and "relinquished" by signatures, dates, and times | _____ |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 8. Chain of custody agrees with bottle count, comment if no. | _____ |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 9. Chain of custody agrees with labels, comment if no. | _____ |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 10. VOA samples filled completely, comment if no. | _____ |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 11. Are VOA bottles preserved, check for labels. | _____ |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | 12. Sediment present in "D," dissolved, bottles. | _____ |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | 13. Are analyses with short holding times requested. | _____ |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | 14. Is extra sample volume provided for MS, MSD or matrix duplicates. | _____ |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | 15. Multiphase samples present, comment is yes. | _____ |
| PHOTOGRAPH MULTIPHASE SAMPLES | | | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 16. Clear picture taken, labeled, and stapled to project folder. | _____ |

Comments: Include action taken to resolve discrepancies/problems. Include a hard copy of e-mail or use extra paper if more space is needed. _____

Initials: _____

APPENDIX III

Field Data

Sample container and preservation requirements

Parameters and methods	Bottle Size and Type	Preservatives
Appendix-IX, Volatile Organic Compounds SW8240	Three 40 ml glass vials	200 uL 50 % Hydrochloric Acid, Chilled
Appendix-IX, Semivolatile Organic Compounds SW8270	Two 32 oz. glass (amber)	None, Chilled
Appendix-IX, Pesticides and PCB's SW8080A	Two 32 oz. glass	None, Chilled
Appendix-IX, Dioxins and Furans SW8280	Two 32 oz. glass (amber)	None, Chilled
Polynuclear Aromatic Hydrocarbons SW8310	Two 32 oz. glass (amber)	None, Chilled
Appendix-IX, Herbicides SW8150	32 oz. glass	None, Chilled
Appendix-IX, 23 Metals, total by SW6010, also SW7041, SW7060, SW7131, SW7191, SW7421, SW7470, SW7740, SW7761, SW7841	16 oz. polyethylene	10 mL 20% Nitric Acid, pH<2
Cyanide, SW9012	8 oz. polyethylene	2 mL 50% Sodium Hydroxide, Chilled, pH>12
Sulfide, E376.2	8 oz. polyethylene	1 mL 1N Zinc Acetate, plus 1 mL 50% Sodium Hydroxide, Chilled, pH>9
Sulfate E300.0, Nitrite E354.1, TDS E160.1	32 oz. polyethylene	None, Chilled
Nitrate + Nitrite E353.2	16 oz. glass	2 mL 50% Sulfuric Acid, Chilled, pH<2
Total Organic Carbon (TOC) SW9060	16 oz. glass	2 mL 50% Sulfuric Acid, Chilled, pH<2
Total Organic Halogen, (TOX), SW9020	8 oz. glass (amber)	1 mL 50% Sulfuric Acid, Chilled, pH<2

19 AUG '96

1400 FRED GEBHARDT & JIM BARTOLINO
COLLECTING W.L. MEASUREMENTS & PID READINGS.

WELL	"M"	"I"	L	E	F	G	H	
W.L.	282.2	282.48	282.68	282.59	285.96	287.05	286.38	W.L. MEASURED TOP OF PVC CASING
PID	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

20 Aug 96 Larson Gebhardt Bartolino
Arrive at well F @ 0715
collected equipment blank CAFB-F-0896-EJ
at 0800

0830 start pumping well F
Larson calibrating pH & co

Time	Vol	Temp	pH	Cond
0830	0	20.0	7.32	1004
0842	10	18.1	7.41	1069
0854	20	18.1	7.45	1072
0907	30	18.3	7.45	1074
0919	40	18.6	7.45	1087
0925	45	18.6	7.45	1099
0930	collected sample			CAFB-F-0896-1

moved to CAFB-H

20 Aug 96 continued

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1008 set up on well H

H

Time	Vol	Temp	pH	Cond
1102	0	22.4	7.50	760
1120	10	22.4	7.59	789
1138	20	21.9	7.60	793
1156	30	21.7	7.60	849
1207	35	21.7	7.60	791
1214	40	21.7	7.59	790
1215	collected sample CAFB-H-0886-1			

1230 move to well G

1300 begin pumping

Time	Vol	Temp	pH	Cond
1308	0	24.8	7.30	1453
1323	10	22.1	7.45	1476
1338	20	21.9	7.41	1481
1359	30	22.3	7.50	1415
1416	40	21.9	7.51	1423
1422	50	21.1	7.45	1434
1436	60	21.4	7.50	1448
1447	70	21.1	7.51	1471
1500	collected sample CAFB-G-0896-1			

Moved Equipment to Well M
Quit for day

21 Aug 96 Larson Gebhardt + Bartolino
arrive at Well M @ 0730

Begin pumping - Larson calibrates instruments

Time	Vol	temp	pH	cond	
0800	0	20.5	7.10	455	
0805	2 Pump	brake suction			- will wait
		will move to L			and pump
0850	5	21.3	7.04	974	
0857	7	23.0	7.04	976	
0855	8	22.5	7.06	972	went dry
0928	10	23.1	7.06	912	went dry
		collect sample			CAFB-M-0896-1
		at 1005			

Well L had to have pressure of 120psi to start pump

Time	Vol	Temp	pH	cond	
0838	0	19.9	7.15	814	
0845	5	18.9	7.18	892	889
0847	7	went dry			
0912	9	19.9	7.24	878	
0915	10	18.8	7.61	856	went dry
0938	11	20.8	7.25	850	
		collect sample @ 1019			CAFB-L-0896-1

move to Well I

21 Aug 96

Gebhardt & Larson

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1135 Begin pumping I

<u>Time</u>	<u>Vol</u>	<u>Temp</u>	<u>pH</u>	<u>cond.</u>
1135	0	21.6	7.79	897
1141	5	20.3	7.55	823
1147	10	20.0	7.58	822
1152	15			
1159	20	19.2	7.63	812
1203	25	19.2	7.63	810
1207	30	19.8	7.63	809
1215	35	19.8	7.62	807
1228	40	19.7	7.62	806

1230 collected CAFB-I-0896-1

1300 collected duplicate CAFB-X-0896-1

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22 Aug 96 Gebhardt of Larson arrive at
well E at 0715 Larson calibrate
instruments

<u>Time</u>	<u>Vol</u>	<u>Temp</u>	<u>pH</u>	<u>Cond</u>
0732	0	18.2	8.05	730
0745	10	18.5	7.68	733
0756	20	19.2	7.66	734
0807	30	19.6	7.67	727
0816	40	19.0	7.67	722
0827	50	19.5	7.66	719
0838	60	19.5	7.68	719
0849	70	19.5	7.69	720
0900	collected sample		CAFB-E-0896-1	
			CAFB-E-0896-MS	
			CAFB-E-0896-MSD	

End Sampling