CAF897

DEPARTMENT OF THE AIR FORCE

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

1 OCT 1997

Lt Col Charles A. Hale
Deputy Commander, 27th Support Group
110 E Sextant Ave Suite 1098
Cannon AFB NM 88103-5323

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

ENTERED

Dear Mr. Garcia

As Deputy Commander for the 27th Support Group, I am forwarding this letter on behalf of Lt Col James A. Thomas III, the Support Group Commander.

Enclosed please find the Groundwater Sampling Report for sampling which took place on 27-28 May 1997 at LF-5, SWMU-113, on Cannon AFB. This was the last quarterly sampling required to complete a statistical report and we will now revert to sampling this location twice per year.

If you have any questions, please contact Mr. Sanford Hutsell at (505) 784-6378.

Sincerely

CHARLES A. HALE, Lt Col, USAF
Deputy Commander, 27th Support Group

Attachment:
Ground Sampling Report

cc:
NMED (C. Will)
NMED Ground Water Bureau (J. Jacobs)
EPA Region VI (D. Neleigh)

LIBRARY COPY

Cannon Air Force Base, New Mexico

RCRA Ground-Water Sampling at Landfill 5

Data Report for May 27-28, 1997 Sampling

Prepared for

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

August 1997

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

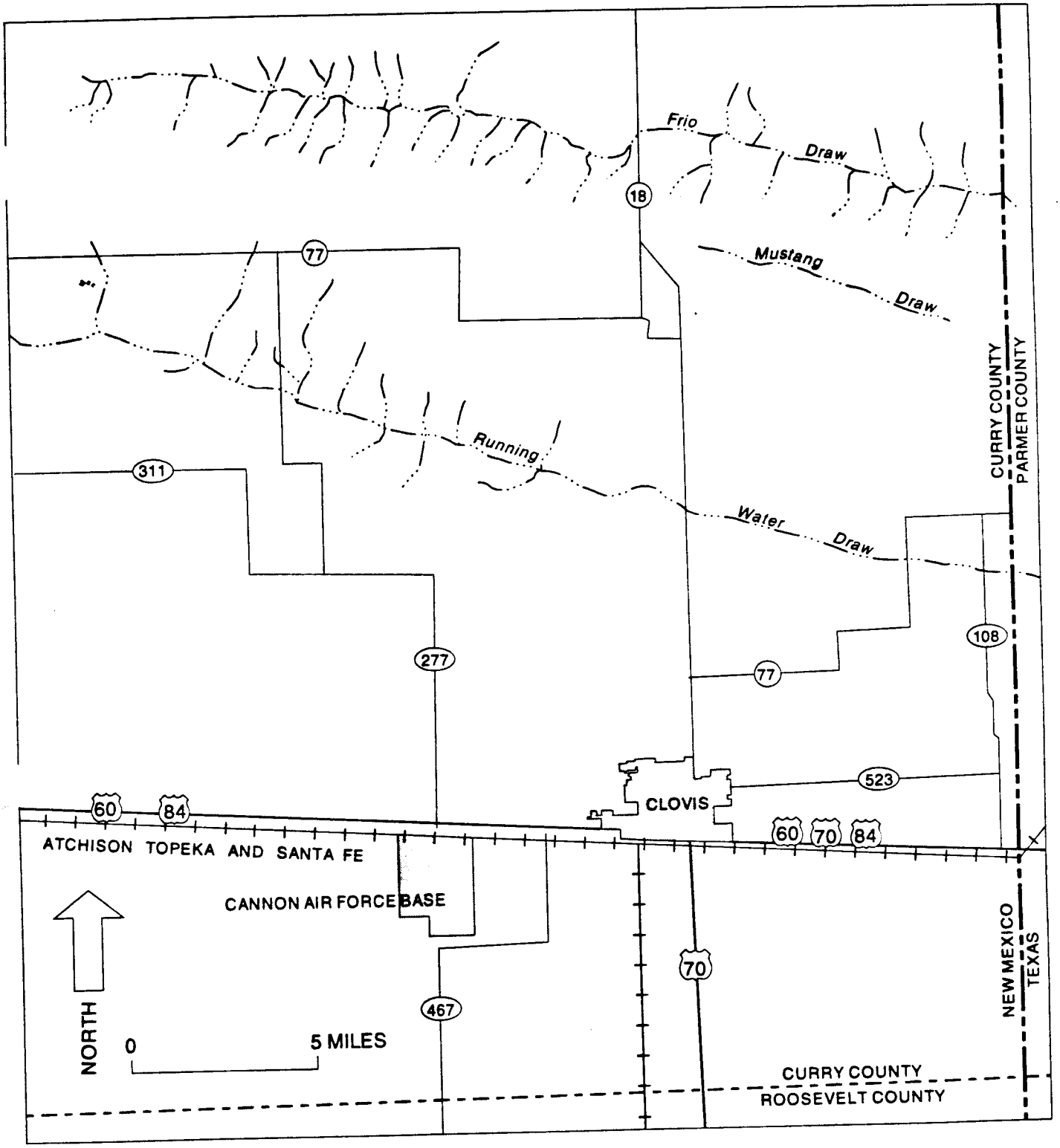
The U.S. Geological Survey (USGS), Water Resources Division and the U.S. Air Force Air Combat Command (ACC) have a memorandum of understanding that addresses the USGS assisting any ACC base in their hydrology or environmental programs. The USGS has agreed to assist Cannon Air Force Base (CAFB), an ACC base, in their Resource Conservation and Recovery Act (RCRA) ground-water sampling program. Cannon AFB is located in east-central New Mexico about 7 miles west of Clovis as shown on Figure 1. The ground-water sampling is at Landfill 5 on the 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 Landfill 5 (figure 3), CAFB on May 27-28, 1997. The monitoring wells sampled at the Landfill 5 are downgradient wells I, L, M, and an upgradient well Q as shown on figure 3. These wells were sampled for the following Appendix-IX parameters: volatile organic compounds by method SW8260; 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: (barium, beryllium, calcium, cobalt, copper, iron, magnesium, manganese, molybdenum, nickel, sodium, tin, vanadium, and zinc by SW6010); 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 as chloride (TOX) by SW9020).

Water quality data results from wells around Landfill 5 are presented in table 1. Dichlorodifluromethane was detected in water from well M at 13.0 µg/L. The U.S. Environmental Protection Agency (USEPA) drinking water equivalent level (DWEL) for dichlorodifluromethane is 5,000 µg/L. A tentatively identified compound (TIC) of dichloroflurometh ane at the confirmed level was detected in water from well M at 5.1 µg/L. Another TIC, 1,1,2-trichloro-1,2,2-trifluroroethane, was detected at confirmed level in water from a duplicate sample for well L at 30.0 µg/L. A common lab contaminant bis(2-ethylhexyl)phthalate was detected in water from duplicate sample for well L at 24.0 µg/L. This value was less than five times the reporting limit. Arsenic was detected in water from well Q at 0.0063

mg/L which is lower than the USEPA maximum contaminant level (MCL) for drinking water standard (DWS) of 0.05 mg/L. Barium was detected in water from all the wells ranging in concentrations from 0.028 to 0.051 mg/L. These values are lower than the USEPA MCL for DWS of 2.0 mg/L barium. Chromium was detected in water from wells L, duplicate sample of well L, and M at 0.025, 0.028, and 0.0053 mg/L respectively. These values are lower than the USEPA MCL for DWS of 0.1 mg/L chromium. Iron was detected in water from well L, and duplicate sample of well L at concentrations 0.39, and 0.37 mg/L respectively. The USEPA secondary maximum contaminant level (SMCL) for DWS for iron is 0.3 mg/L. Nickel was detected in water from well M at 0.077 mg/L which is lower than the USEPA MCL for DWS of 0.1 mg/L. Selenium was detected in water from wells I, L, and Q at concentrations less than 0.0075 mg/L. These values are lower than the USEPA MCL for DWS of 0.05 mg/L selenium. Vanadium was detected in all four wells ranging in concentration from 0.014 mg/L (well M) to 0.026 mg/L (well Q). Zinc was detected in water from well M at 0.034 mg/L which is lower than the USEPA SMCL for DWS of 5.0 mg/L.

As part of the quality assurance and quality control (QA/QC) procedures for the Landfill 5 site, two trip blanks, one duplicate, one pair of matrix spike, and matrix spike duplicate samples were collected. No target parameters were detected in the trip blanks.



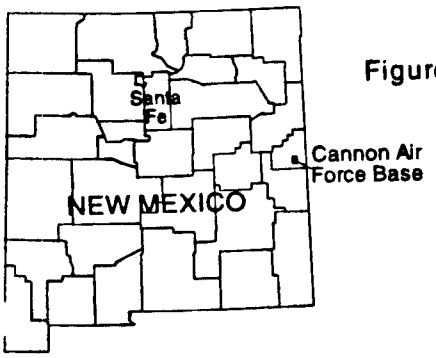


Figure 1.--Location of Cannon Air Force Base, New Mexico.

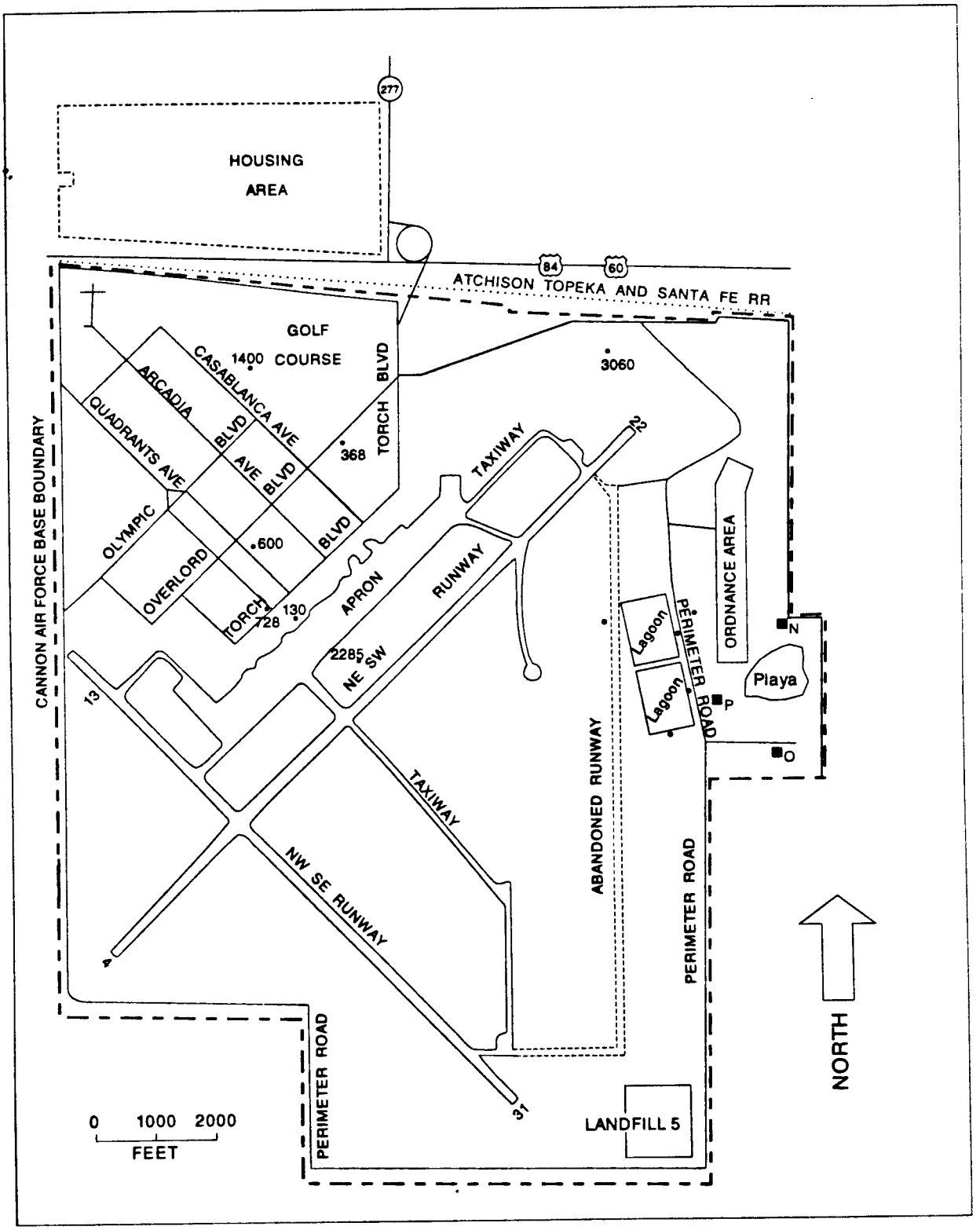


Figure 2.--Cannon Air Force Base and location of Landfill 5.

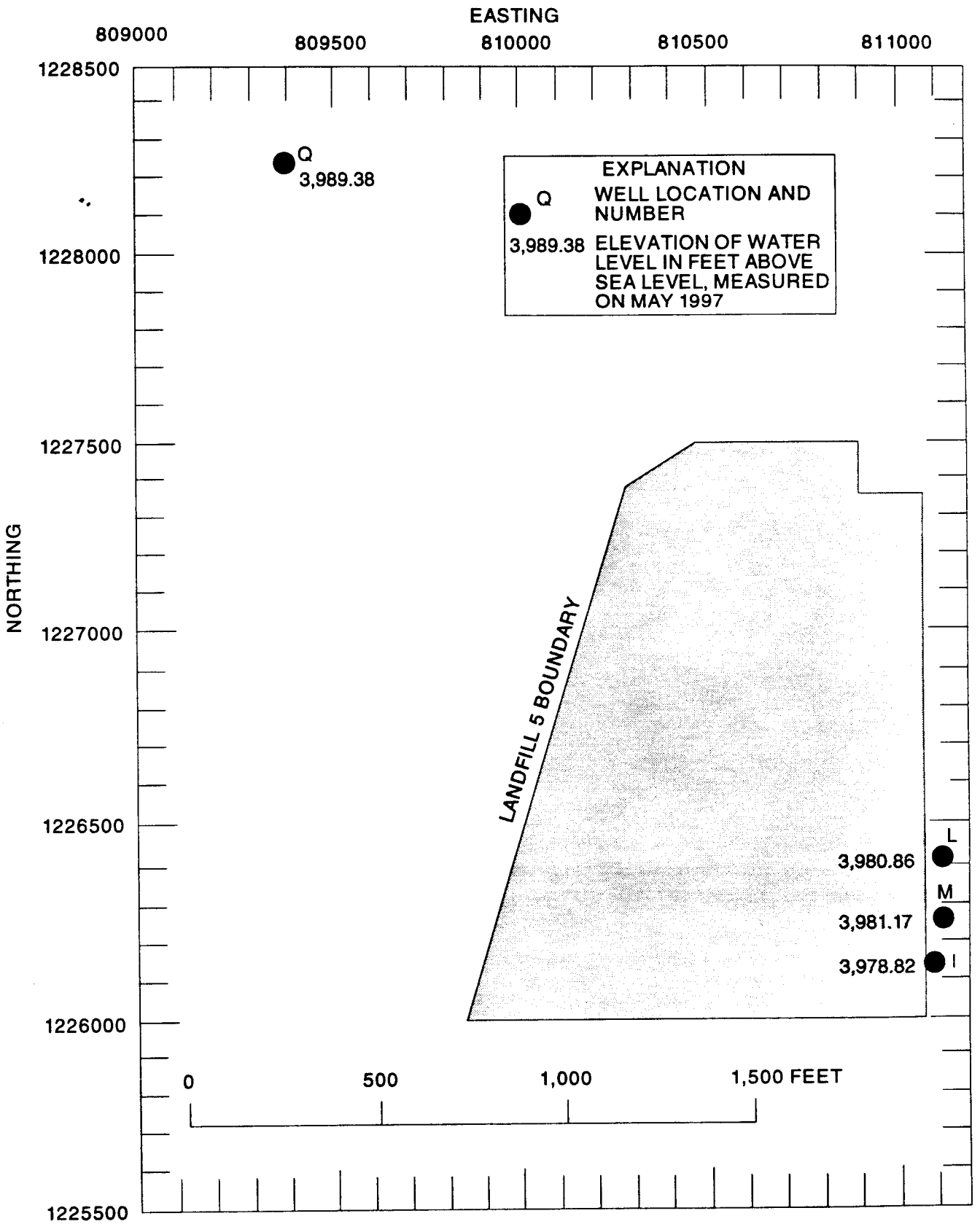


Figure 3.--Location of monitoring wells around Landfill 5.

Table 1.-- Summary of concentrations of analytes in ground-water from wells I, L, M, and Q around Landfill 5 for samples collected on May 27-28, 1997, Cannon Air Force Base, New Mexico

[RL, reporting limit; µg/L, micrograms per liter; ND, not detected; TIC, tentatively identified compound reported at the confirmed identification level; --, no data; mg/L, milligrams per liter; G, reporting limit raised due to the matrix of the sample; M, associated matrix spike or matrix spike duplicate sample results did not meet quality-control acceptance criteria]

Well/sample ID: Date sampled:		I/CAFB-I-0597-1 5-28-97		L/CAFB-L-0597-1 5-28-97		L/CAFB-X-0597-1 5-28-97 Duplicate		M/CAFB-M-0597-1 5-27-97		Q/CAFB-Q-0597-1 5-27-97	
Appendix-IX Analyte and Method		Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
Volatile organic compounds, SW8260A, (µg/L)											
Dichlorodifluromethane		ND	10.0	ND	10.0	ND	10.0	13.0	10.0	ND	10.0
Dichloroflurometh ane (TIC)		--	--	--	--	--	--	5.1	--	--	--
1.1.2-Trichloro-1,2,2-trifluroethane (TIC)		--	--	--	--	30.0	--	--	--	--	--
Semivolatile organic compounds, SW8270B, (µg/L)											
bis(2-Ethylhexyl)phthalate		ND	9.6	ND	10.0	24.0	9.9	ND	9.5	ND	9.5
Metals, Total (mg/L)											
Arsenic	SW7060	ND G	0.010	ND G	0.010	ND G	0.010	ND	0.0050	0.0063	0.0050
Barium	SW6010	0.029	0.010	0.049	0.010	0.048	0.010	0.051	0.010	0.028	0.010
Calcium	SW6010	51.5	0.20	58.1	0.20	58.2	0.20	74.8	0.20	44.1	0.20
Chromium	SW7191	ND	0.0050	0.025	0.0050	0.028	0.0050	0.0053	0.0050	ND	0.0050
Iron	SW6010	ND	0.10	0.39	0.10	0.37	0.10	ND	0.10	ND	0.10
Magnesium	SW6010	44.1	0.20	52.3	0.20	52.1	0.20	52.2	0.20	38.3	0.20
Nickel	SW6010	ND	0.040	ND	0.040	ND	0.040	0.077	0.040	ND	0.040
Selenium	SW7740	0.0067M	0.0050	0.0068M	0.0050	0.0075M	0.0050	ND GM	0.010	0.0053M	0.0050
Sodium	SW6010	38.5	5.0	46.4	5.0	46.5	5.0	40.9	5.0	47.5	5.0
Vanadium	SW6010	0.025	0.010	0.018	0.010	0.017	0.010	0.014	0.010	0.026	0.010
Zinc	SW6010	ND	0.020	ND	0.020	ND	0.020	0.034	0.020	ND	0.020

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 1

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 BAILD

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 BAILD

ELEV BOTTOM OF BOREHOLE 3975.29

ELEV BOTTOM OF WELL CASING 3975.29

ELEV BOTTOM OF SCREENED INT 3980.29

ELEV OF TOP OF SCREENED INT 4000.29

SURVEYED ELEV OF CASING TOP 4264.29

DATE OF REPORT 10-21-92 SIGNATURE _____

NAME (TYPED) Sanford Hutsell

MONITORING WELL IDENTIFICATION REPORT

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

FACILITY NAME Cannon Air Force Base

EPA I.D. NUMBER NM 7572124454

COUNTY Curry

WELL NUMBER Q

WELL LOCATION (LONGITUDE) 103° 18' 31"

WELL LOCATION (LATITUDE) 34° 22' 19"

AQUIFER NAME Ogalalla

AQUIFER CONFINED _____ UNCONFINED X

WELL INSTALLATION DATE 02-24-96

DRILLING METHOD _____

INNER CASING DIAMETER 4"

BOREHOLE DIAMETER 8"

CASING MATERIAL PVC

METHOD OF DEVELOPMENT BAILD

ELEV BOTTOM OF BOREHOLE 3969.30

ELEV BOTTOM OF WELL CASING 3970.30

ELEV BOTTOM OF SCREENED INT 3970.30

ELEV OF TOP OF SCREENED INT 4000.30

SURVEYED ELEV OF CASING TOP 4266.89

DATE OF REPORT 11-27-96 SIGNATURE _____

NAME (TYPED) Sanford Hutsell

FIFTH SAMPLING EVENT
SEMI-ANNUAL REPORT

SAMPLE COLLECTED BY F. Eileen Roybal

LABORATORY NAME Quanterra Environmental Services WELL NUMBER CAFB-I-0597-1

WELL DEPTH 293.00 WELL CASING VOLUME 13.89

DATE SAMPLED 05-28-97 LABORATORY SAMPLE I.D.# 055362-0004-SA

TIME SAMPLED 0920 DATE RECEIVED BY LAB 05-29-97

PARAMETERS	STORET CODE	UNITS	VALUE	DATE ANALYZED
Elevation of G. Water	71993	ft.	3978.82	05-28-97
Pump Rate	-----	gal/min	0.9	05-28-97
Pump Period	72004	min.	50.0	05-28-97
Volume Evacuated	73675	gal	45.0	05-28-97
Well Sampling Method	84077	---	PSPMP	05-28-97

Sampler Material: TEFLN Well Sampling Method: PSPMP

FIFTH SAMPLING EVENT
SEMI-ANNUAL REPORT
(continued)

PARAMETERS	STORET CODE	UNITS	VALUE	DETECTION LIMIT	DATE ANALYZED	METHOD USED
pH	00400	S.U.	7.59	N/A	05-28-97	
	00400	S.U.				(f)
	00400	S.U.				
	00400	S.U.				
Specific Conductivity	00095	umhos/cm	780	N/A	05-28-97	
	00095	umhos/cm				(f)
	00095	umhos/cm				
	00095	umhos/cm				
T.O.X.	70354	ug/l	ND	30.0	06-10-97	
	70354	ug/l				SW9020
	70354	ug/l				
	70354	ug/l				
T.O.C.	00680	mg/l	ND	1.0	06-13-97	
	00680	mg/l				SW9060
	00680	mg/l				
	00680	mg/l				

SIGNATURE: F. Eileen Roybal

NAME (PRINTED): F. Eileen Roybal

FIFTH SAMPLING EVENT
SEMI-ANNUAL REPORT

SAMPLE COLLECTED BY F. Eileen Roybal

LABORATORY NAME Quanterra Environmental Services WELL NUMBER CAFB-L-0597-1

WELL DEPTH 287.00 WELL CASING VOLUME 2.05

DATE SAMPLED 05-28-97 LABORATORY SAMPLE I.D.# 055362-0005-SA

TIME SAMPLED 1000 DATE RECEIVED BY LAB 05-29-97

PARAMETERS	STORET CODE	UNITS	VALUE	DATE ANALYZED
Elevation of G. Water	71993	ft.	3980.86	05-28-97
Pump Rate	-----	gal/min	0.4	05-28-97
Pump Period	72004	min.	15.0	05-28-97
Volume Evacuated	73675	gal	6.0	05-28-97
Well Sampling Method	84077	---	PSPMP	05-28-97

Sampler Material: TEFLN Well Sampling Method: PSPMP

FIFTH SAMPLING EVENT
SEMI-ANNUAL REPORT
(continued)

PARAMETERS	STORET CODE	UNITS	VALUE	DETECTION LIMIT	DATE ANALYZED	METHOD USED
pH	00400	S.U.	8.09	N/A	05-28-97	
	00400	S.U.				(f)
	00400	S.U.				
	00400	S.U.				
Specific Conductivity	00095	umhos/cm	894	N/A	05-28-97	
	00095	umhos/cm				(f)
	00095	umhos/cm				
	00095	umhos/cm				
T.O.X.	70354	ug/l	ND	30.0	06-19-97	
	70354	ug/l				SW9020
	70354	ug/l				
	70354	ug/l				
T.O.C.	00680	mg/l	ND	1.0	06-13-97	
	00680	mg/l				SW9060
	00680	mg/l				
	00680	mg/l				

SIGNATURE: F. Eileen Roybal

NAME (PRINTED): F.Eileen Roybal

FIFTH SAMPLING EVENT
SEMI-ANNUAL REPORT

SAMPLE COLLECTED BY F. Eileen Roybal

LABORATORY NAME Quanterra Environmental Services WELL NUMBER CAFB-M-0597-1

WELL DEPTH 289.00 WELL CASING VOLUME 8.07

DATE SAMPLED 05-27-97 LABORATORY SAMPLE I.D.# 055362-0001-SA

TIME SAMPLED 1300 DATE RECEIVED BY LAB 05-28-97

PARAMETERS	STORET CODE	UNITS	VALUE	DATE ANALYZED
Elevation of G. Water	71993	ft.	3981.17	05-27-97
Pump Rate	-----	gal/min	0.94	05-27-97
Pump Period	72004	min.	9.0	05-27-97
Volume Evacuated	73675	gal	8.5	05-27-97
Well Sampling Method	84077	---	PSPMP	05-27-97

Sampler Material: TEFLN Well Sampling Method: PSPMP

FIFTH SAMPLING EVENT
SEMI-ANNUAL REPORT
(continued)

PARAMETERS	STORET CODE	UNITS	VALUE	DETECTION LIMIT	DATE ANALYZED	METHOD USED
pH	00400	S.U.	6.79	N/A	05-27-97	
	00400	S.U.				(f)
	00400	S.U.				
	00400	S.U.				
Specific Conductivity	00095	umhos/cm	985	N/A	05-27-97	
	00095	umhos/cm				(f)
	00095	umhos/cm				
	00095	umhos/cm				
T.O.X.	70354	ug/l	ND	30.0	06-10-97	
	70354	ug/l				SW9020
	70354	ug/l				
	70354	ug/l				
T.O.C.	00680	mg/l	ND	1.0	06-13-97	
	00680	mg/l				SW9060
	00680	mg/l				
	00680	mg/l				

SIGNATURE: F. Eileen Roybal

NAME (PRINTED): F. Eileen Roybal

FIFTH SAMPLING EVENT
SEMI-ANNUAL REPORT

SAMPLE COLLECTED BY F. Eileen Roybal

LABORATORY NAME Quanterra Environmental Services WELL NUMBER CAFB-Q-0597-1

WELL DEPTH 296.59 WELL CASING VOLUME 12.45

DATE SAMPLED 05-27-97 LABORATORY SAMPLE I.D.# 055362-0002-SA

TIME SAMPLED 1152 DATE RECEIVED BY LAB 05-28-97

PARAMETERS	STORET CODE	UNITS	VALUE	DATE ANALYZED
Elevation of G. Water	71993	ft.	3989.38	05-27-97
Pump Rate	-----	gal/min	1.03	05-27-97
Pump Period	72004	min.	34.0	05-27-97
Volume Evacuated	73675	gal	35.0	05-27-97
Well Sampling Method	84077	---	PSPMP	05-27-97

Sampler Material: TEFLN Well Sampling Method: PSPMP

FIFTH SAMPLING EVENT
SEMI-ANNUAL REPORT
(continued)

PARAMETERS	STORET CODE	UNITS	VALUE	DETECTION LIMIT	DATE ANALYZED	METHOD USED
pH	00400	S.U.	7.69	N/A	05-27-97	
	00400	S.U.				(f)
	00400	S.U.				
	00400	S.U.				
Specific Conductivity	00095	umhos/cm	739	N/A	05-27-97	
	00095	umhos/cm				(f)
	00095	umhos/cm				
	00095	umhos/cm				
T.O.X.	70354	ug/l	ND	30.0	06-10-97	
	70354	ug/l				SW9020
	70354	ug/l				
	70354	ug/l				
T.O.C.	00680	mg/l	ND	1.0	06-13-97	
	00680	mg/l				SW9060
	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 May 27-28, 1997

Quanterra
Environmental Services

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. 055362

JUNE 24, 1997

Prepared by: _____
Mark D. Stella

Reviewed by: _____
Lindsay Breyer

Quanterra
Environmental Services

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• Analytical Results		
• QC Summary		
• Chain-of-Custody		
• Miscellaneous		
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NARRATIVE

On May 28 & 29, 1997, Quanterra Environmental Services, Denver received seven 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.

Sample Receipt/Chain-of-Custody

The sample have also been sent to Quanterra's West Sacramento, California laboratory to be analyzed for the dioxin and furan Appendix IX list. These results will be reported separately on project 055364.

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.

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.

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.

Chlorinated Pesticides/PCBs

The relative percent difference (RPD) for gamma-BHC, heptachlor, aldrin and dieldrin is reported outside control limits in the duplicate control samples (DCS). The recoveries for all compounds were within control limits, and no target analytes were detected on the samples. The affected analytes were recovered within precision and accuracy control limits in a matrix spike/spike duplicate (MS/SD) analyzed in conjunction with the samples, so the data were accepted.

Metals

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. An elevated reporting limit or dilution due to matrix interference will be noted by a G flag on the data sheet.

Lead, selenium, thallium and silver were recovered below control limits in the MS/SD for the GFAA analyses. Matrix effects are suspected. Since the affected analytes were recovered within control limits in their respective DCS, the data were accepted.

General Inorganics

The total organic halogen (TOX) bottles were unpreserved for all samples in this project. Ms. Miko Roybal was contacted and instructed the laboratory to preserve the TOX containers accordingly and to proceed with the analysis.

The matrix spike for TOX was recovered above control limits. A matrix effect is suspected. Since the DCS for TOX were recovered within control limits, the data were 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 quantiation 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.

Quanterra
Environmental Services

SAMPLE DESCRIPTION INFORMATION
for
U.S. Geological Survey

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
055362-0001-SA	CAFB-M-0597-1	AQUEOUS	27 MAY 97	13:00	28 MAY 97
055362-0002-SA	CAFB-Q-0597-1	AQUEOUS	27 MAY 97	11:52	28 MAY 97
055362-0003-TB	CAFB-Q-0597-TB	AQUEOUS	27 MAY 97	11:10	28 MAY 97
055362-0004-SA	CAFB-I-0597-1	AQUEOUS	28 MAY 97	09:20	29 MAY 97
055362-0004-MS	CAFB-I-0597-MS	AQUEOUS	28 MAY 97	09:20	29 MAY 97
055362-0004-SD	CAFB-I-0597-SD	AQUEOUS	28 MAY 97	09:20	29 MAY 97
055362-0005-SA	CAFB-L-0597-1	AQUEOUS	28 MAY 97	10:00	29 MAY 97
055362-0006-SA	CAFB-X-0597-1	AQUEOUS	28 MAY 97	10:00	29 MAY 97
055362-0007-TB	CAFB-I-0597-TB	AQUEOUS	28 MAY 97	08:50	29 MAY 97

Quanterra
Environmental Services

ANALYTICAL TEST REQUESTS
for
U.S. Geological Survey

Lab ID: 055362	Group Code	Analysis Description	Custom Test?
0003 , 0007	A	Screen - Volatile Organics	N
		Volatile Organics	Y
		Appendix IX List	Y
		Volatiles Library Search (20 Compound TID)	N
0001 - 0002, 0004 - 0006	C	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
		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 Appendix IX List	N
		Prep - Organochlorine Pesticides/PCBs by GC (Appendix IX)	N
		Chlorinated Pesticides and PCB's Appendix IX List	N
		Total Organic Carbon (TOC)	N
		Screen - Volatile Organics	N
		Semivolatile Organics Appendix IX List	N
		Prep - Semivolatile Organics by GC/MS	N
		Semivolatiles Library Search (30 Compound TID)	N
		Volatile Organics	Y
		Appendix IX List	Y
		Volatiles Library Search (20 Compound TID)	N
		ICP Metals (Total)	Y

Quanterra
Environmental Services

ANALYTICAL TEST REQUESTS
for
U.S. Geological Survey

Lab ID: 055362	Group Code	Analysis Description	Custom Test?
		Prep - Total Metals, ICP	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.

Quanterra
Environmental Services

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-M-0597-1
Lab ID: 055362-0001-SA
Matrix: AQUEOUS Sampled: 27 MAY 97 Prepared: 29 MAY 97
Authorized: 28 MAY 97 Received: 28 MAY 97 Analyzed: 04 JUN 97

Parameter	Result	Units	Reporting Limit
Acetone	ND	ug/L	20
Acetonitrile	ND	ug/L	100
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	20
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	5.0
Dibromomethane	ND	ug/L	5.0
trans-1,4-Dichloro-2-butene	ND	ug/L	5.0
Dichlorodifluoromethane	13	ug/L	10
1,1-Dichloroethane	ND	ug/L	5.0
1,2-Dichloroethane	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	5.0
cis-1,2-Dichloroethene	ND	ug/L	2.5
trans-1,2-Dichloroethene	ND	ug/L	2.5
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	5.0
2-Hexanone	ND	ug/L	20
Iodomethane	ND	ug/L	5.0
Isobutyl alcohol	ND	ug/L	200
Methacrylonitrile	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
Methyl methacrylate	ND	ug/L	5.0

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

ND = Not Detected

Reported By: Mike Hoffman Approved By: Sandra Jones

Quanterra Environmental Services (cont.)

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-M-0597-1
Lab ID: 055362-0001-SA
Matrix: AQUEOUS Sampled: 27 MAY 97 Prepared: 29 MAY 97
Authorized: 28 MAY 97 Received: 28 MAY 97 Analyzed: 04 JUN 97

Parameter	Result	Units	Reporting Limit
4-Methyl-2-pentanone (MIBK)	ND	ug/L	20
Propionitrile	ND	ug/L	20
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	10
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
1,2-Dichloroethane-d4	96	%	77-115
4-Bromofluorobenzene	101	%	87-113
Toluene-d8	96	%	90-112

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

ND = Not Detected

Reported By: Mike Hoffman Approved By: Sandra Jones

Quanterra
Environmental Services

Volatiles Library Search (20 Compound TID)
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-M-0597-1
Lab ID: 055362-0001-SA
Matrix AQUEOUS Sampled: 27 MAY 97 Prepared: NA
Authorized: 28 MAY 97 Received: 28 MAY 97 Analyzed: 04 JUN 97

Parameter	Result	Units	Reporting Limit	
Dichlorofluoromethane	5.1	ug/L		3

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

3 = Confirmed Identification

Reported By: Mike Hoffman Approved By: Sandra Jones

Quanterra
Environmental Services

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-Q-0597-1
Lab ID: 055362-0002-SA
Matrix: AQUEOUS Sampled: 27 MAY 97 Prepared: 29 MAY 97
Authorized: 28 MAY 97 Received: 28 MAY 97 Analyzed: 04 JUN 97

Parameter	Result	Units	Reporting Limit
Acetone	ND	ug/L	20
Acetonitrile	ND	ug/L	100
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	20
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	5.0
Dibromomethane	ND	ug/L	5.0
trans-1,4-Dichloro-2-butene	ND	ug/L	5.0
Dichlorodifluoromethane	ND	ug/L	10
1,1-Dichloroethane	ND	ug/L	5.0
1,2-Dichloroethane	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	5.0
cis-1,2-Dichloroethene	ND	ug/L	2.5
trans-1,2-Dichloroethene	ND	ug/L	2.5
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	5.0
2-Hexanone	ND	ug/L	20
Iodomethane	ND	ug/L	5.0
Isobutyl alcohol	ND	ug/L	200
Methacrylonitrile	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
Methyl methacrylate	ND	ug/L	5.0

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

ND = Not Detected

Reported By: Mike Hoffman Approved By: Sandra Jones

Quanterra Environmental Services

(cont.)

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-Q-0597-1
Lab ID: 055362-0002-SA
Matrix: AQUEOUS
Authorized: 28 MAY 97

Sampled: 27 MAY 97
Received: 28 MAY 97

Prepared: 29 MAY 97
Analyzed: 04 JUN 97

Parameter	Result	Units	Reporting Limit
4-Methyl-2-pentanone (MIBK)	ND	ug/L	20
Propionitrile	ND	ug/L	20
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	10
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
1,2-Dichloroethane-d4	95	%	77-115
4-Bromofluorobenzene	101	%	87-113
Toluene-d8	96	%	90-112

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

ND = Not Detected

Reported By: Mike Hoffman

Approved By: Sandra Jones

Quanterra Environmental Services

Volatiles Library Search (20 Compound TID)
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-Q-0597-1
Lab ID: 055362-0002-SA
Matrix AQUEOUS Sampled: 27 MAY 97 Prepared: NA
Authorized: 28 MAY 97 Received: 28 MAY 97 Analyzed: 04 JUN 97

Parameter	Result	Units	Reporting Limit	
2-Methylnaphthalene	6.7	ug/L		2

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

2 = Confident Identification

Reported By: Mike Hoffman Approved By: Sandra Jones

Quanterra
Environmental Services

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-Q-0597-TB
Lab ID: 055362-0003-TB
Matrix: AQUEOUS Sampled: 27 MAY 97 Prepared: 29 MAY 97
Authorized: 28 MAY 97 Received: 28 MAY 97 Analyzed: 04 JUN 97

Parameter	Result	Units	Reporting Limit
Acetone	ND	ug/L	20
Acetonitrile	ND	ug/L	100
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	20
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	5.0
Dibromomethane	ND	ug/L	5.0
trans-1,4-Dichloro-2-butene	ND	ug/L	5.0
Dichlorodifluoromethane	ND	ug/L	10
1,1-Dichloroethane	ND	ug/L	5.0
1,2-Dichloroethane	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	5.0
cis-1,2-Dichloroethene	ND	ug/L	2.5
trans-1,2-Dichloroethene	ND	ug/L	2.5
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	5.0
2-Hexanone	ND	ug/L	20
Iodomethane	ND	ug/L	5.0
Isobutyl alcohol	ND	ug/L	200
Methacrylonitrile	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
Methyl methacrylate	ND	ug/L	5.0

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

ND = Not Detected

Reported By: Mike Hoffman Approved By: Sandra Jones

Quanterra Environmental Services (cont.)

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-Q-0597-TB
Lab ID: 055362-0003-TB
Matrix: AQUEOUS Sampled: 27 MAY 97 Prepared: 29 MAY 97
Authorized: 28 MAY 97 Received: 28 MAY 97 Analyzed: 04 JUN 97

Parameter	Result	Units	Reporting Limit
4-Methyl-2-pentanone (MIBK)	ND	ug/L	20
Propionitrile	ND	ug/L	20
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	10
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
1,2-Dichloroethane-d4	96	%	77-115
4-Bromofluorobenzene	101	%	87-113
Toluene-d8	96	%	90-112

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

ND = Not Detected

Reported By: Mike Hoffman Approved By: Sandra Jones

Quanterra Environmental Services

Volatiles Library Search (20 Compound TID)
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-Q-0597-TB
Lab ID: 055362-0003-TB
Matrix AQUEOUS Sampled: 27 MAY 97 Prepared: NA
Authorized: 28 MAY 97 Received: 28 MAY 97 Analyzed: 04 JUN 97

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: Mike Hoffman Approved By: Sandra Jones

Quanterra
Environmental Services

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-I-0597-1
Lab ID: 055362-0004-SA
Matrix: AQUEOUS Sampled: 28 MAY 97 Prepared: 30 MAY 97
Authorized: 28 MAY 97 Received: 29 MAY 97 Analyzed: 04 JUN 97

Parameter	Result	Units	Reporting Limit
Acetone	ND	ug/L	20
Acetonitrile	ND	ug/L	100
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	20
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	5.0
Dibromomethane	ND	ug/L	5.0
trans-1,4-Dichloro-2-butene	ND	ug/L	5.0
Dichlorodifluoromethane	ND	ug/L	10
1,1-Dichloroethane	ND	ug/L	5.0
1,2-Dichloroethane	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	5.0
cis-1,2-Dichloroethene	ND	ug/L	2.5
trans-1,2-Dichloroethene	ND	ug/L	2.5
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	5.0
2-Hexanone	ND	ug/L	20
Iodomethane	ND	ug/L	5.0
Isobutyl alcohol	ND	ug/L	200
Methacrylonitrile	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
Methyl methacrylate	ND	ug/L	5.0

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

ND = Not Detected

Reported By: Mike Hoffman Approved By: Sandra Jones

Quanterra Environmental Services (cont.)

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-I-0597-1
Lab ID: 055362-0004-SA
Matrix: AQUEOUS Sampled: 28 MAY 97 Prepared: 30 MAY 97
Authorized: 28 MAY 97 Received: 29 MAY 97 Analyzed: 04 JUN 97

Parameter	Result	Units	Reporting Limit
4-Methyl-2-pentanone (MIBK)	ND	ug/L	20
Propionitrile	ND	ug/L	20
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	10
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
1,2-Dichloroethane-d4	96	%	77-115
4-Bromofluorobenzene	101	%	87-113
Toluene-d8	96	%	90-112

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

ND = Not Detected

Reported By: Mike Hoffman Approved By: Sandra Jones

Quanterra Environmental Services

Volatiles Library Search (20 Compound TID)
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-I-0597-1
Lab ID: 055362-0004-SA
Matrix AQUEOUS Sampled: 28 MAY 97 Prepared: NA
Authorized: 28 MAY 97 Received: 29 MAY 97 Analyzed: 04 JUN 97

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: Mike Hoffman Approved By: Sandra Jones

Quanterra
Environmental Services

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-L-0597-1
Lab ID: 055362-0005-SA
Matrix: AQUEOUS Sampled: 28 MAY 97 Prepared: 30 MAY 97
Authorized: 28 MAY 97 Received: 29 MAY 97 Analyzed: 04 JUN 97

Parameter	Result	Units	Reporting Limit
Acetone	ND	ug/L	20
Acetonitrile	ND	ug/L	100
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	20
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	5.0
Dibromomethane	ND	ug/L	5.0
trans-1,4-Dichloro-2-butene	ND	ug/L	5.0
Dichlorodifluoromethane	ND	ug/L	10
1,1-Dichloroethane	ND	ug/L	5.0
1,2-Dichloroethane	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	5.0
cis-1,2-Dichloroethene	ND	ug/L	2.5
trans-1,2-Dichloroethene	ND	ug/L	2.5
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	5.0
2-Hexanone	ND	ug/L	20
Iodomethane	ND	ug/L	5.0
Isobutyl alcohol	ND	ug/L	200
Methacrylonitrile	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
Methyl methacrylate	ND	ug/L	5.0

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

ND = Not Detected

Reported By: Steven Francis Approved By: Sandra Jones

Quanterra Environmental Services (cont.)

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-L-0597-1
Lab ID: 055362-0005-SA
Matrix: AQUEOUS Sampled: 28 MAY 97 Prepared: 30 MAY 97
Authorized: 28 MAY 97 Received: 29 MAY 97 Analyzed: 04 JUN 97

Parameter	Result	Units	Reporting Limit
4-Methyl-2-pentanone (MIBK)	ND	ug/L	20
Propionitrile	ND	ug/L	20
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	10
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
1,2-Dichloroethane-d4	100	%	77-115
4-Bromofluorobenzene	107	%	87-113
Toluene-d8	102	%	90-112

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

ND = Not Detected

Reported By: Steven Francis Approved By: Sandra Jones

Quanterra Environmental Services

Volatiles Library Search (20 Compound TID)
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-L-0597-1
Lab ID: 055362-0005-SA
Matrix AQUEOUS Sampled: 28 MAY 97 Prepared: NA
Authorized: 28 MAY 97 Received: 29 MAY 97 Analyzed: 04 JUN 97

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: Steven Francis Approved By: Sandra Jones

Quanterra Environmental Services

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-X-0597-1
Lab ID: 055362-0006-SA
Matrix: AQUEOUS Sampled: 28 MAY 97 Prepared: 30 MAY 97
Authorized: 28 MAY 97 Received: 29 MAY 97 Analyzed: 05 JUN 97

Parameter	Result	Units	Reporting Limit
Acetone	ND	ug/L	20
Acetonitrile	ND	ug/L	100
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	20
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	5.0
Dibromomethane	ND	ug/L	5.0
trans-1,4-Dichloro-2-butene	ND	ug/L	5.0
Dichlorodifluoromethane	ND	ug/L	10
1,1-Dichloroethane	ND	ug/L	5.0
1,2-Dichloroethane	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	5.0
cis-1,2-Dichloroethene	ND	ug/L	2.5
trans-1,2-Dichloroethene	ND	ug/L	2.5
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	5.0
2-Hexanone	ND	ug/L	20
Iodomethane	ND	ug/L	5.0
Isobutyl alcohol	ND	ug/L	200
Methacrylonitrile	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
Methyl methacrylate	ND	ug/L	5.0

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

ND = Not Detected

Reported By: Steven Francis Approved By: Sandra Jones

Quanterra Environmental Services

(cont.)

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-X-0597-1
Lab ID: 055362-0006-SA
Matrix: AQUEOUS
Authorized: 28 MAY 97

Sampled: 28 MAY 97
Received: 29 MAY 97

Prepared: 30 MAY 97
Analyzed: 05 JUN 97

Parameter	Result	Units	Reporting Limit
4-Methyl-2-pentanone (MIBK)	ND	ug/L	20
Propionitrile	ND	ug/L	20
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	10
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
1,2-Dichloroethane-d4	110	%	77-115
4-Bromofluorobenzene	107	%	87-113
Toluene-d8	104	%	90-112

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

ND = Not Detected

Reported By: Steven Francis

Approved By: Sandra Jones

Quanterra Environmental Services

Volatiles Library Search (20 Compound TID)
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-X-0597-1
Lab ID: 055362-0006-SA
Matrix AQUEOUS Sampled: 28 MAY 97 Prepared: NA
Authorized: 28 MAY 97 Received: 29 MAY 97 Analyzed: 05 JUN 97

Parameter	Result	Units	Reporting Limit	
1,1,2-Trichloro-1,2,2-trifluoroethane	30	ug/L		3

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

3 = Confirmed Identification

Reported By: Steven Francis Approved By: Sandra Jones

Quanterra
Environmental Services

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-I-0597-TB
Lab ID: 055362-0007-TB
Matrix: AQUEOUS Sampled: 28 MAY 97 Prepared: 30 MAY 97
Authorized: 28 MAY 97 Received: 29 MAY 97 Analyzed: 05 JUN 97

Parameter	Result	Units	Reporting Limit
Acetone	ND	ug/L	20
Acetonitrile	ND	ug/L	100
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	20
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	5.0
Dibromomethane	ND	ug/L	5.0
trans-1,4-Dichloro-2-butene	ND	ug/L	5.0
Dichlorodifluoromethane	ND	ug/L	10
1,1-Dichloroethane	ND	ug/L	5.0
1,2-Dichloroethane	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	5.0
cis-1,2-Dichloroethene	ND	ug/L	2.5
trans-1,2-Dichloroethene	ND	ug/L	2.5
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	5.0
2-Hexanone	ND	ug/L	20
Iodomethane	ND	ug/L	5.0
Isobutyl alcohol	ND	ug/L	200
Methacrylonitrile	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
Methyl methacrylate	ND	ug/L	5.0

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

ND = Not Detected

Reported By: Steven Francis Approved By: Sandra Jones

Quanterra Environmental Services

(cont.)

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-I-0597-TB
Lab ID: 055362-0007-TB
Matrix: AQUEOUS
Authorized: 28 MAY 97

Sampled: 28 MAY 97
Received: 29 MAY 97

Prepared: 30 MAY 97
Analyzed: 05 JUN 97

Parameter	Result	Units	Reporting Limit
4-Methyl-2-pentanone (MIBK)	ND	ug/L	20
Propionitrile	ND	ug/L	20
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	10
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
1,2-Dichloroethane-d4	112	%	77-115
4-Bromofluorobenzene	106	%	87-113
Toluene-d8	103	%	90-112

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

ND = Not Detected

Reported By: Steven Francis

Approved By: Sandra Jones

Quanterra
Environmental Services

Volatiles Library Search (20 Compound TID)
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-I-0597-TB
Lab ID: 055362-0007-TB
Matrix: AQUEOUS
Authorized: 28 MAY 97

Sampled: 28 MAY 97
Received: 29 MAY 97

Prepared: NA
Analyzed: 05 JUN 97

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: Steven Francis

Approved By: Sandra Jones

Quanterra
Environmental Services

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-M-0597-1
Lab ID: 055362-0001-SA
Matrix: AQUEOUS Sampled: 27 MAY 97 Prepared: 02 JUN 97
Authorized: 28 MAY 97 Received: 28 MAY 97 Analyzed: 17 JUN 97

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	47
Aniline	ND	ug/L	9.5
Anthracene	ND	ug/L	9.5
Aramite	ND	ug/L	19
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	19
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
2,2'-oxybis(1-chloropropane)	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	47
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	19
p-Dimethylaminoazobenzene	ND	ug/L	19
7,12-Dimethylbenz(a)-anthracene	ND	ug/L	19
3,3'-Dimethylbenzidine	ND	ug/L	47
a,a-Dimethylphenethyl-amine	ND	ug/L	47

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

ND = Not Detected

Reported By: Tom Claeys Approved By: Audrey Cornell

Quanterra Environmental Services

Semivolatile Organics
Appendix IX List
Method 8270B

(cont.)

Client Name: U.S. Geological Survey
Client ID: CAFB-M-0597-1
Lab ID: 055362-0001-SA
Matrix: AQUEOUS Sampled: 27 MAY 97 Prepared: 02 JUN 97
Authorized: 28 MAY 97 Received: 28 MAY 97 Analyzed: 17 JUN 97

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	47
2,4-Dinitrophenol	ND	ug/L	47
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	47
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.5
Ethyl methanesulfonate	ND	ug/L	9.5
Famphur	ND	ug/L	95
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	47
Hexachloroethane	ND	ug/L	9.5
Hexachlorophene	ND	ug/L	--
Hexachloropropene	ND	ug/L	95
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	47
3-Methylcholanthrene	ND	ug/L	19
Methyl methanesulfonate	ND	ug/L	9.5
2-Methylnaphthalene	ND	ug/L	9.5
Methyl parathion	ND	ug/L	47
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	47
1-Naphthylamine	ND	ug/L	9.5
2-Naphthylamine	ND	ug/L	9.5
2-Nitroaniline	ND	ug/L	47
3-Nitroaniline	ND	ug/L	47
4-Nitroaniline	ND	ug/L	47
Nitrobenzene	ND	ug/L	9.5
2-Nitrophenol	ND	ug/L	9.5
4-Nitrophenol	ND	ug/L	47

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

ND = Not Detected

Reported By: Tom Claeys Approved By: Audrey Cornell

Quanterra Environmental Services

Semivolatile Organics (Cont.)
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-M-0597-1
Lab ID: 055362-0001-SA
Matrix: AQUEOUS Sampled: 27 MAY 97 Prepared: 02 JUN 97
Authorized: 28 MAY 97 Received: 28 MAY 97 Analyzed: 17 JUN 97

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	19
Parathion	ND	ug/L	47
Pentachlorobenzene	ND	ug/L	9.5
Pentachloroethane	ND	ug/L	47
Pentachloronitrobenzene	ND	ug/L	47
Pentachlorophenol	ND	ug/L	47
Phenacetin	ND	ug/L	19
Phenanthrene	ND	ug/L	9.5
Phenol	ND	ug/L	9.5
p-Phenylenediamine	ND	ug/L	95
Phorate	ND	ug/L	47
2-Picoline	ND	ug/L	19
Pronamide	ND	ug/L	19
Pyrene	ND	ug/L	9.5
Pyridine	ND	ug/L	19
Safrole	ND	ug/L	19
Sulfotepp	ND	ug/L	47
1,2,4,5-Tetrachloro-benzene	ND	ug/L	9.5
2,3,4,6-Tetrachlorophenol	ND	ug/L	47
Thionazin	ND	ug/L	47
o-Toluidine	ND	ug/L	9.5
1,2,4-Trichlorobenzene	ND	ug/L	9.5
2,4,5-Trichlorophenol	ND	ug/L	9.5
2,4,6-Trichlorophenol	ND	ug/L	9.5
O,O,O-Triethylphosphoro-thioate	ND	ug/L	47
1,3,5-Trinitrobenzene	ND	ug/L	47

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

ND = Not Detected

Reported By: Tom Claeys Approved By: Audrey Cornell

Quanterra Environmental Services

(cont.)

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-M-0597-1
Lab ID: 055362-0001-SA
Matrix: AQUEOUS Sampled: 27 MAY 97 Prepared: 02 JUN 97
Authorized: 28 MAY 97 Received: 28 MAY 97 Analyzed: 17 JUN 97

Parameter	Result	Units	Reporting Limit
Surrogate	Recovery		Limits
Nitrobenzene-d5	58	%	51-104
2-Fluorobiphenyl	54	%	43-116
Terphenyl-d14	71	%	33-141
Phenol-d5	75	%	47-106
2-Fluorophenol	64	%	36-108
2,4,6-Tribromophenol	82	%	49-106

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

Reported By: Tom Claeys Approved By: Audrey Cornell

Quanterra
Environmental Services

Semivolatiles Library Search (30 Compound TID)
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-M-0597-1
Lab ID: 055362-0001-SA
Matrix AQUEOUS Sampled: 27 MAY 97 Prepared: NA
Authorized: 28 MAY 97 Received: 28 MAY 97 Analyzed: 17 JUN 97

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

Quanterra
Environmental Services

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-Q-0597-1
Lab ID: 055362-0002-SA
Matrix: AQUEOUS Sampled: 27 MAY 97 Prepared: 02 JUN 97
Authorized: 28 MAY 97 Received: 28 MAY 97 Analyzed: 20 JUN 97

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	48
Aniline	ND	ug/L	9.5
Anthracene	ND	ug/L	9.5
Aramite	ND	ug/L	19
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	19
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
2,2'-oxybis(1-chloropropane)	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	48
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	19
p-Dimethylaminoazobenzene	ND	ug/L	19
7,12-Dimethylbenz(a)-anthracene	ND	ug/L	19
3,3'-Dimethylbenzidine	ND	ug/L	48
a,a-Dimethylphenethyl-amine	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

Quanterra Environmental Services

Semivolatile Organics (cont.)
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-Q-0597-1
Lab ID: 055362-0002-SA
Matrix: AQUEOUS
Authorized: 28 MAY 97

Sampled: 27 MAY 97
Received: 28 MAY 97

Prepared: 02 JUN 97
Analyzed: 20 JUN 97

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	95
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	48
Hexachloroethane	ND	ug/L	9.5
Hexachlorophene	ND	ug/L	--
Hexachloropropene	ND	ug/L	95
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	48
3-Methylcholanthrene	ND	ug/L	19
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	48
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

Quanterra Environmental Services

Semivolatile Organics
Appendix IX List
Method 8270B (Cont.)

Client Name: U.S. Geological Survey
Client ID: CAFB-Q-0597-1
Lab ID: 055362-0002-SA
Matrix: AQUEOUS Sampled: 27 MAY 97 Prepared: 02 JUN 97
Authorized: 28 MAY 97 Received: 28 MAY 97 Analyzed: 20 JUN 97

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	19
Parathion	ND	ug/L	48
Pentachlorobenzene	ND	ug/L	9.5
Pentachloroethane	ND	ug/L	48
Pentachloronitrobenzene	ND	ug/L	48
Pentachlorophenol	ND	ug/L	48
Phenacetin	ND	ug/L	19
Phenanthrene	ND	ug/L	9.5
Phenol	ND	ug/L	9.5
p-Phenylenediamine	ND	ug/L	95
Phorate	ND	ug/L	48
2-Picoline	ND	ug/L	19
Pronamide	ND	ug/L	19
Pyrene	ND	ug/L	9.5
Pyridine	ND	ug/L	19
Safrole	ND	ug/L	19
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
o-Toluidine	ND	ug/L	9.5
1,2,4-Trichlorobenzene	ND	ug/L	9.5
2,4,5-Trichlorophenol	ND	ug/L	9.5
2,4,6-Trichlorophenol	ND	ug/L	9.5
0,0,0-Triethylphosphoro-thioate	ND	ug/L	48
1,3,5-Trinitrobenzene	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

Quanterra Environmental Services

Semivolatile Organics (cont.)
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-Q-0597-1
Lab ID: 055362-0002-SA
Matrix: AQUEOUS Sampled: 27 MAY 97 Prepared: 02 JUN 97
Authorized: 28 MAY 97 Received: 28 MAY 97 Analyzed: 20 JUN 97

Parameter	Result	Units	Reporting Limit
Surrogate	Recovery		Limits
Nitrobenzene-d5	84	%	51-104
2-Fluorobiphenyl	74	%	43-116
Terphenyl-d14	79	%	33-141
Phenol-d5	87	%	47-106
2-Fluorophenol	81	%	36-108
2,4,6-Tribromophenol	70	%	49-106

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

Reported By: Tom Claeys Approved By: Audrey Cornell

Quanterra
Environmental Services

Semivolatiles Library Search (30 Compound TID)
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-Q-0597-1
Lab ID: 055362-0002-SA
Matrix AQUEOUS Sampled: 27 MAY 97 Prepared: NA
Authorized: 28 MAY 97 Received: 28 MAY 97 Analyzed: 20 JUN 97

Parameter	Result	Units	Reporting Limit	
Ethanol, 2-(2-methoxyethoxy)-	41	ug/L		1
Ethanol, 2-(2-ethoxyethoxy)-	4.9	ug/L		1

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

1 = Tentative Identification

Reported By: Tom Claeys Approved By: Audrey Cornell

Quanterra
Environmental Services

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-I-0597-1
Lab ID: 055362-0004-SA
Matrix: AQUEOUS
Authorized: 28 MAY 97

Sampled: 28 MAY 97
Received: 29 MAY 97

Prepared: 02 JUN 97
Analyzed: 19 JUN 97

Parameter	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	9.6
Acenaphthylene	ND	ug/L	9.6
Acetophenone	ND	ug/L	9.6
2-Acetylaminofluorene	ND	ug/L	96
4-Aminobiphenyl	ND	ug/L	48
Aniline	ND	ug/L	9.6
Anthracene	ND	ug/L	9.6
Aramite	ND	ug/L	19
Benzo(a)anthracene	ND	ug/L	9.6
Benzo(b)fluoranthene	ND	ug/L	9.6
Benzo(k)fluoranthene	ND	ug/L	9.6
Benzo(g,h,i)perylene	ND	ug/L	9.6
Benzo(a)pyrene	ND	ug/L	9.6
Benzyl alcohol	ND	ug/L	9.6
4-Bromophenyl phenyl ether	ND	ug/L	9.6
Butyl benzyl phthalate	ND	ug/L	9.6
2-sec-Butyl-4,6-dinitro-phenol	ND	ug/L	19
4-Chloroaniline	ND	ug/L	9.6
bis(2-Chloroethoxy)methane	ND	ug/L	9.6
bis(2-Chloroethyl) ether	ND	ug/L	9.6
2,2'-oxybis(1-chloropropane)	ND	ug/L	9.6
4-Chloro-3-methylphenol	ND	ug/L	9.6
2-Chloronaphthalene	ND	ug/L	9.6
2-Chlorophenol	ND	ug/L	9.6
4-Chlorophenyl phenyl ether	ND	ug/L	9.6
Chrysene	ND	ug/L	9.6
Dibenz(a,h)anthracene	ND	ug/L	9.6
Dibenzofuran	ND	ug/L	9.6
Di-n-butyl phthalate	ND	ug/L	9.6
1,2-Dichlorobenzene	ND	ug/L	9.6
1,3-Dichlorobenzene	ND	ug/L	9.6
1,4-Dichlorobenzene	ND	ug/L	9.6
3,3'-Dichlorobenzidine	ND	ug/L	48
2,4-Dichlorophenol	ND	ug/L	9.6
2,6-Dichlorophenol	ND	ug/L	9.6
Diethyl phthalate	ND	ug/L	9.6
Dimethoate	ND	ug/L	19
p-Dimethylaminoazobenzene	ND	ug/L	19
7,12-Dimethylbenz(a)-anthracene	ND	ug/L	19
3,3'-Dimethylbenzidine	ND	ug/L	48
a,a-Dimethylphenethyl-amine	ND	ug/L	48

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

ND = Not Detected

Reported By: Lisa Burgesser

Approved By: Audrey Cornell

Quanterra Environmental Services

Semivolatile Organics
Appendix IX List
Method 8270B (cont.)

Client Name: U.S. Geological Survey
Client ID: CAFB-I-0597-1
Lab ID: 055362-0004-SA
Matrix: AQUEOUS Sampled: 28 MAY 97 Prepared: 02 JUN 97
Authorized: 28 MAY 97 Received: 29 MAY 97 Analyzed: 19 JUN 97

Parameter	Result	Units	Reporting Limit
2,4-Dimethylphenol	ND	ug/L	9.6
Dimethyl phthalate	ND	ug/L	9.6
1,3-Dinitrobenzene	ND	ug/L	9.6
4,6-Dinitro-2-methylphenol	ND	ug/L	48
2,4-Dinitrophenol	ND	ug/L	48
2,4-Dinitrotoluene	ND	ug/L	9.6
2,6-Dinitrotoluene	ND	ug/L	9.6
Di-n-octyl phthalate	ND	ug/L	9.6
Diphenylamine	ND	ug/L	9.6
Disulfoton	ND	ug/L	48
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.6
Ethyl methanesulfonate	ND	ug/L	9.6
Famphur	ND	ug/L	96
Fluoranthene	ND	ug/L	9.6
Fluorene	ND	ug/L	9.6
Hexachlorobenzene	ND	ug/L	9.6
Hexachlorobutadiene	ND	ug/L	9.6
Hexachlorocyclopentadiene	ND	ug/L	48
Hexachloroethane	ND	ug/L	9.6
Hexachlorophene	ND	ug/L	--
Hexachloropropene	ND	ug/L	96
Indeno(1,2,3-cd)pyrene	ND	ug/L	9.6
Isophorone	ND	ug/L	9.6
Isosafrole	ND	ug/L	19
Methapyrilene	ND	ug/L	48
3-Methylcholanthrene	ND	ug/L	19
Methyl methanesulfonate	ND	ug/L	9.6
2-Methylnaphthalene	ND	ug/L	9.6
Methyl parathion	ND	ug/L	48
2-Methylphenol	ND	ug/L	9.6
3/4-Methylphenol	ND	ug/L	9.6
Naphthalene	ND	ug/L	9.6
1,4-Naphthoquinone	ND	ug/L	48
1-Naphthylamine	ND	ug/L	9.6
2-Naphthylamine	ND	ug/L	9.6
2-Nitroaniline	ND	ug/L	48
3-Nitroaniline	ND	ug/L	48
4-Nitroaniline	ND	ug/L	48
Nitrobenzene	ND	ug/L	9.6
2-Nitrophenol	ND	ug/L	9.6
4-Nitrophenol	ND	ug/L	48

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

ND = Not Detected

Reported By: Lisa Burgesser Approved By: Audrey Cornell

Quanterra Environmental Services

(cont.)

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-I-0597-1
Lab ID: 055362-0004-SA
Matrix: AQUEOUS Sampled: 28 MAY 97 Prepared: 02 JUN 97
Authorized: 28 MAY 97 Received: 29 MAY 97 Analyzed: 19 JUN 97

Parameter	Result	Units	Reporting Limit
4-Nitroquinoline-1-oxide	ND	ug/L	96
N-Nitroso-di-n-butylamine	ND	ug/L	9.6
N-Nitrosodiethylamine	ND	ug/L	9.6
N-Nitrosodimethylamine	ND	ug/L	9.6
N-Nitrosodiphenylamine	ND	ug/L	9.6
N-Nitroso-di-n-propylamine	ND	ug/L	9.6
N-Nitrosomethylethylamine	ND	ug/L	9.6
N-Nitrosomorpholine	ND	ug/L	9.6
N-Nitrosopiperidine	ND	ug/L	9.6
N-Nitrosopyrrolidine	ND	ug/L	9.6
5-Nitro-o-toluidine	ND	ug/L	19
Parathion	ND	ug/L	48
Pentachlorobenzene	ND	ug/L	9.6
Pentachloroethane	ND	ug/L	48
Pentachloronitrobenzene	ND	ug/L	48
Pentachlorophenol	ND	ug/L	48
Phenacetin	ND	ug/L	19
Phenanthrene	ND	ug/L	9.6
Phenol	ND	ug/L	9.6
p-Phenylenediamine	ND	ug/L	96
Phorate	ND	ug/L	48
2-Picoline	ND	ug/L	19
Pronamide	ND	ug/L	19
Pyrene	ND	ug/L	9.6
Pyridine	ND	ug/L	19
Safrole	ND	ug/L	19
Sulfotepp	ND	ug/L	48
1,2,4,5-Tetrachloro-benzene	ND	ug/L	9.6
2,3,4,6-Tetrachlorophenol	ND	ug/L	48
Thionazin	ND	ug/L	48
o-Toluidine	ND	ug/L	9.6
1,2,4-Trichlorobenzene	ND	ug/L	9.6
2,4,5-Trichlorophenol	ND	ug/L	9.6
2,4,6-Trichlorophenol	ND	ug/L	9.6
0,0,0-Triethylphosphoro-thioate	ND	ug/L	48
1,3,5-Trinitrobenzene	ND	ug/L	48

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

ND = Not Detected

Reported By: Lisa Burgesser Approved By: Audrey Cornell

Quanterra Environmental Services

(Cont.)

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-I-0597-1
Lab ID: 055362-0004-SA
Matrix: AQUEOUS Sampled: 28 MAY 97 Prepared: 02 JUN 97
Authorized: 28 MAY 97 Received: 29 MAY 97 Analyzed: 19 JUN 97

Parameter	Result	Units	Reporting Limit
Surrogate	Recovery		Limits
Nitrobenzene-d5	71	%	51-104
2-Fluorobiphenyl	64	%	43-116
Terphenyl-d14	74	%	33-141
Phenol-d5	81	%	47-106
2-Fluorophenol	71	%	36-108
2,4,6-Tribromophenol	77	%	49-106

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

Reported By: Lisa Burgesser Approved By: Audrey Cornell

Quanterra
Environmental Services

Semivolatiles Library Search (30 Compound TID)
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-I-0597-1
Lab ID: 055362-0004-SA
Matrix AQUEOUS Sampled: 28 MAY 97 Prepared: NA
Authorized: 28 MAY 97 Received: 29 MAY 97 Analyzed: 19 JUN 97

Parameter	Result	Units	Reporting Limit
None Detected	ND	ug/L	

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

ND = Not Detected

Reported By: Lisa Burgesser Approved By: Audrey Cornell

Quanterra
Environmental Services

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-L-0597-1
Lab ID: 055362-0005-SA
Matrix: AQUEOUS Sampled: 28 MAY 97 Prepared: 02 JUN 97
Authorized: 28 MAY 97 Received: 29 MAY 97 Analyzed: 19 JUN 97

Parameter	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	10
Acenaphthylene	ND	ug/L	10
Acetophenone	ND	ug/L	10
2-Acetylaminofluorene	ND	ug/L	100
4-Aminobiphenyl	ND	ug/L	50
Aniline	ND	ug/L	10
Anthracene	ND	ug/L	10
Aramite	ND	ug/L	20
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	20
4-Chloroaniline	ND	ug/L	10
bis(2-Chloroethoxy)methane	ND	ug/L	10
bis(2-Chloroethyl) ether	ND	ug/L	10
2,2'-oxybis(1-chloropropane)	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	50
2,4-Dichlorophenol	ND	ug/L	10
2,6-Dichlorophenol	ND	ug/L	10
Diethyl phthalate	ND	ug/L	10
Dimethoate	ND	ug/L	20
p-Dimethylaminoazobenzene	ND	ug/L	20
7,12-Dimethylbenz(a)-anthracene	ND	ug/L	20
3,3'-Dimethylbenzidine	ND	ug/L	50
a,a-Dimethylphenethyl-amine	ND	ug/L	50

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

ND = Not Detected

Reported By: Lisa Burgesser Approved By: Audrey Cornell

Quanterra Environmental Services

(cont.)

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-L-0597-1
Lab ID: 055362-0005-SA
Matrix: AQUEOUS Sampled: 28 MAY 97 Prepared: 02 JUN 97
Authorized: 28 MAY 97 Received: 29 MAY 97 Analyzed: 19 JUN 97

Parameter	Result	Units	Reporting Limit
2,4-Dimethylphenol	ND	ug/L	10
Dimethyl phthalate	ND	ug/L	10
1,3-Dinitrobenzene	ND	ug/L	10
4,6-Dinitro-2-methylphenol	ND	ug/L	50
2,4-Dinitrophenol	ND	ug/L	50
2,4-Dinitrotoluene	ND	ug/L	10
2,6-Dinitrotoluene	ND	ug/L	10
Di-n-octyl phthalate	ND	ug/L	10
Diphenylamine	ND	ug/L	10
Disulfoton	ND	ug/L	50
bis(2-Ethylhexyl)phthalate	ND	ug/L	10
Ethyl methanesulfonate	ND	ug/L	10
Famphur	ND	ug/L	100
Fluoranthene	ND	ug/L	10
Fluorene	ND	ug/L	10
Hexachlorobenzene	ND	ug/L	10
Hexachlorobutadiene	ND	ug/L	10
Hexachlorocyclopentadiene	ND	ug/L	50
Hexachloroethane	ND	ug/L	10
Hexachlorophene	ND	ug/L	--
Hexachloropropene	ND	ug/L	100
Indeno(1,2,3-cd)pyrene	ND	ug/L	10
Isophorone	ND	ug/L	10
Isosafrole	ND	ug/L	20
Methapyrilene	ND	ug/L	50
3-Methylcholanthrene	ND	ug/L	20
Methyl methanesulfonate	ND	ug/L	10
2-Methylnaphthalene	ND	ug/L	10
Methyl parathion	ND	ug/L	50
2-Methylphenol	ND	ug/L	10
3/4-Methylphenol	ND	ug/L	10
Naphthalene	ND	ug/L	10
1,4-Naphthoquinone	ND	ug/L	50
1-Naphthylamine	ND	ug/L	10
2-Naphthylamine	ND	ug/L	10
2-Nitroaniline	ND	ug/L	50
3-Nitroaniline	ND	ug/L	50
4-Nitroaniline	ND	ug/L	50
Nitrobenzene	ND	ug/L	10
2-Nitrophenol	ND	ug/L	10
4-Nitrophenol	ND	ug/L	50

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

ND = Not Detected

Reported By: Lisa Burgesser Approved By: Audrey Cornell

Quanterra Environmental Services

Semivolatile Organics
Appendix IX List
Method 8270B (cont.)

Client Name: U.S. Geological Survey
Client ID: CAFB-L-0597-1
Lab ID: 055362-0005-SA
Matrix: AQUEOUS Sampled: 28 MAY 97 Prepared: 02 JUN 97
Authorized: 28 MAY 97 Received: 29 MAY 97 Analyzed: 19 JUN 97

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

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

ND = Not Detected

Reported By: Lisa Burgesser Approved By: Audrey Cornell

Quanterra Environmental Services

(cont.)

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-L-0597-1
Lab ID: 055362-0005-SA
Matrix: AQUEOUS Sampled: 28 MAY 97 Prepared: 02 JUN 97
Authorized: 28 MAY 97 Received: 29 MAY 97 Analyzed: 19 JUN 97

Parameter	Result	Units	Reporting Limit
Surrogate	Recovery		Limits
Nitrobenzene-d5	63	%	51-104
2-Fluorobiphenyl	59	%	43-116
Terphenyl-d14	74	%	33-141
Phenol-d5	75	%	47-106
2-Fluorophenol	63	%	36-108
2,4,6-Tribromophenol	85	%	49-106

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

Reported By: Lisa Burgesser Approved By: Audrey Cornell

Quanterra
Environmental Services

Semivolatiles Library Search (30 Compound TID)
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-L-0597-1
Lab ID: 055362-0005-SA
Matrix AQUEOUS Sampled: 28 MAY 97 Prepared: NA
Authorized: 28 MAY 97 Received: 29 MAY 97 Analyzed: 19 JUN 97

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: Lisa Burgesser Approved By: Audrey Cornell

Quanterra
Environmental Services

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-X-0597-1
Lab ID: 055362-0006-SA
Matrix: AQUEOUS Sampled: 28 MAY 97 Prepared: 02 JUN 97
Authorized: 28 MAY 97 Received: 29 MAY 97 Analyzed: 19 JUN 97

Parameter	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	9.9
Acenaphthylene	ND	ug/L	9.9
Acetophenone	ND	ug/L	9.9
2-Acetylaminofluorene	ND	ug/L	99
4-Aminobiphenyl	ND	ug/L	50
Aniline	ND	ug/L	9.9
Anthracene	ND	ug/L	9.9
Aramite	ND	ug/L	20
Benzo(a)anthracene	ND	ug/L	9.9
Benzo(b)fluoranthene	ND	ug/L	9.9
Benzo(k)fluoranthene	ND	ug/L	9.9
Benzo(g,h,i)perylene	ND	ug/L	9.9
Benzo(a)pyrene	ND	ug/L	9.9
Benzyl alcohol	ND	ug/L	9.9
4-Bromophenyl phenyl ether	ND	ug/L	9.9
Butyl benzyl phthalate	ND	ug/L	9.9
2-sec-Butyl-4,6-dinitro-phenol	ND	ug/L	20
4-Chloroaniline	ND	ug/L	9.9
bis(2-Chloroethoxy)methane	ND	ug/L	9.9
bis(2-Chloroethyl) ether	ND	ug/L	9.9
2,2'-oxybis(1-chloropropane)	ND	ug/L	9.9
4-Chloro-3-methylphenol	ND	ug/L	9.9
2-Chloronaphthalene	ND	ug/L	9.9
2-Chlorophenol	ND	ug/L	9.9
4-Chlorophenyl phenyl ether	ND	ug/L	9.9
Chrysene	ND	ug/L	9.9
Dibenz(a,h)anthracene	ND	ug/L	9.9
Dibenzofuran	ND	ug/L	9.9
Di-n-butyl phthalate	ND	ug/L	9.9
1,2-Dichlorobenzene	ND	ug/L	9.9
1,3-Dichlorobenzene	ND	ug/L	9.9
1,4-Dichlorobenzene	ND	ug/L	9.9
3,3'-Dichlorobenzidine	ND	ug/L	50
2,4-Dichlorophenol	ND	ug/L	9.9
2,6-Dichlorophenol	ND	ug/L	9.9
Diethyl phthalate	ND	ug/L	9.9
Dimethoate	ND	ug/L	20
p-Dimethylaminoazobenzene	ND	ug/L	20
7,12-Dimethylbenz(a)-anthracene	ND	ug/L	20
3,3'-Dimethylbenzidine	ND	ug/L	50
a,a-Dimethylphenethyl-amine	ND	ug/L	50

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

ND = Not Detected

Reported By: Lisa Burgesser Approved By: Audrey Cornell

Quanterra Environmental Services

(cont.)

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-X-0597-1
Lab ID: 055362-0006-SA
Matrix: AQUEOUS Sampled: 28 MAY 97 Prepared: 02 JUN 97
Authorized: 28 MAY 97 Received: 29 MAY 97 Analyzed: 19 JUN 97

Parameter	Result	Units	Reporting Limit
2,4-Dimethylphenol	ND	ug/L	9.9
Dimethyl phthalate	ND	ug/L	9.9
1,3-Dinitrobenzene	ND	ug/L	9.9
4,6-Dinitro-2-methylphenol	ND	ug/L	50
2,4-Dinitrophenol	ND	ug/L	50
2,4-Dinitrotoluene	ND	ug/L	9.9
2,6-Dinitrotoluene	ND	ug/L	9.9
Di-n-octyl phthalate	ND	ug/L	9.9
Diphenylamine	ND	ug/L	9.9
Disulfoton	ND	ug/L	50
bis(2-Ethylhexyl)phthalate	24	ug/L	9.9
Ethyl methanesulfonate	ND	ug/L	9.9
Famphur	ND	ug/L	99
Fluoranthene	ND	ug/L	9.9
Fluorene	ND	ug/L	9.9
Hexachlorobenzene	ND	ug/L	9.9
Hexachlorobutadiene	ND	ug/L	9.9
Hexachlorocyclopentadiene	ND	ug/L	50
Hexachloroethane	ND	ug/L	9.9
Hexachlorophene	ND	ug/L	--
Hexachloropropene	ND	ug/L	99
Indeno(1,2,3-cd)pyrene	ND	ug/L	9.9
Isophorone	ND	ug/L	9.9
Isosafrole	ND	ug/L	20
Methapyrilene	ND	ug/L	50
3-Methylcholanthrene	ND	ug/L	20
Methyl methanesulfonate	ND	ug/L	9.9
2-Methylnaphthalene	ND	ug/L	9.9
Methyl parathion	ND	ug/L	50
2-Methylphenol	ND	ug/L	9.9
3/4-Methylphenol	ND	ug/L	9.9
Naphthalene	ND	ug/L	9.9
1,4-Naphthoquinone	ND	ug/L	50
1-Naphthylamine	ND	ug/L	9.9
2-Naphthylamine	ND	ug/L	9.9
2-Nitroaniline	ND	ug/L	50
3-Nitroaniline	ND	ug/L	50
4-Nitroaniline	ND	ug/L	50
Nitrobenzene	ND	ug/L	9.9
2-Nitrophenol	ND	ug/L	9.9
4-Nitrophenol	ND	ug/L	50

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

ND = Not Detected

Reported By: Lisa Burgesser Approved By: Audrey Cornell

Quanterra Environmental Services

Semivolatile Organics
Appendix IX List
Method 8270B (cont.)

Client Name: U.S. Geological Survey
Client ID: CAFB-X-0597-1
Lab ID: 055362-0006-SA
Matrix: AQUEOUS Sampled: 28 MAY 97 Prepared: 02 JUN 97
Authorized: 28 MAY 97 Received: 29 MAY 97 Analyzed: 19 JUN 97

Parameter	Result	Units	Reporting Limit
4-Nitroquinoline-1-oxide	ND	ug/L	99
N-Nitroso-di-n-butylamine	ND	ug/L	9.9
N-Nitrosodiethylamine	ND	ug/L	9.9
N-Nitrosodimethylamine	ND	ug/L	9.9
N-Nitrosodiphenylamine	ND	ug/L	9.9
N-Nitroso-di-n-propylamine	ND	ug/L	9.9
N-Nitrosomethylethylamine	ND	ug/L	9.9
N-Nitrosomorpholine	ND	ug/L	9.9
N-Nitrosopiperidine	ND	ug/L	9.9
N-Nitrosopyrrolidine	ND	ug/L	9.9
5-Nitro-o-toluidine	ND	ug/L	20
Parathion	ND	ug/L	50
Pentachlorobenzene	ND	ug/L	9.9
Pentachloroethane	ND	ug/L	50
Pentachloronitrobenzene	ND	ug/L	50
Pentachlorophenol	ND	ug/L	50
Phenacetin	ND	ug/L	20
Phenanthrene	ND	ug/L	9.9
Phenol	ND	ug/L	9.9
p-Phenylenediamine	ND	ug/L	99
Phorate	ND	ug/L	50
2-Picoline	ND	ug/L	20
Pronamide	ND	ug/L	20
Pyrene	ND	ug/L	9.9
Pyridine	ND	ug/L	20
Safrole	ND	ug/L	20
Sulfotepp	ND	ug/L	50
1,2,4,5-Tetrachloro-benzene	ND	ug/L	9.9
2,3,4,6-Tetrachlorophenol	ND	ug/L	50
Thionazin	ND	ug/L	50
o-Toluidine	ND	ug/L	9.9
1,2,4-Trichlorobenzene	ND	ug/L	9.9
2,4,5-Trichlorophenol	ND	ug/L	9.9
2,4,6-Trichlorophenol	ND	ug/L	9.9
0,0,0-Triethylphosphoro-thioate	ND	ug/L	50
1,3,5-Trinitrobenzene	ND	ug/L	50

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

ND = Not Detected

Reported By: Lisa Burgesser Approved By: Audrey Cornell

Quanterra Environmental Services

Semivolatile Organics (cont.)
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-X-0597-1
Lab ID: 055362-0006-SA
Matrix: AQUEOUS Sampled: 28 MAY 97 Prepared: 02 JUN 97
Authorized: 28 MAY 97 Received: 29 MAY 97 Analyzed: 19 JUN 97

Parameter	Result	Units	Reporting Limit
Surrogate	Recovery		Limits
Nitrobenzene-d5	63	%	51-104
2-Fluorobiphenyl	55	%	43-116
Terphenyl-d14	71	%	33-141
Phenol-d5	72	%	47-106
2-Fluorophenol	60	%	36-108
2,4,6-Tribromophenol	69	%	49-106

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

Reported By: Lisa Burgesser Approved By: Audrey Cornell

Quanterra
Environmental Services

Semivolatiles Library Search (30 Compound TID)
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-X-0597-1
Lab ID: 055362-0006-SA
Matrix AQUEOUS Sampled: 28 MAY 97 Prepared: NA
Authorized: 28 MAY 97 Received: 29 MAY 97 Analyzed: 19 JUN 97

Parameter	Result	Units	Reporting Limit
None Detected	ND	ug/L	

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

ND = Not Detected

Reported By: Lisa Burgesser Approved By: Audrey Cornell

Quanterra
Environmental Services

Appendix IX Herbicides
Method 8150

Client Name: U.S. Geological Survey
Client ID: CAFB-M-0597-1
Lab ID: 055362-0001-SA
Matrix: AQUEOUS
Authorized: 28 MAY 97

Sampled: 27 MAY 97
Received: 28 MAY 97

Prepared: 03 JUN 97
Analyzed: 09 JUN 97

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	0.22	

Surrogate	Recovery		Limits
DCAA	57	%	27-121

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: Matthew Graves

Approved By: Audrey Cornell

Quanterra
Environmental Services

Appendix IX Herbicides
Method 8150

Client Name: U.S. Geological Survey
Client ID: CAFB-Q-0597-1
Lab ID: 055362-0002-SA
Matrix: AQUEOUS Sampled: 27 MAY 97 Prepared: 03 JUN 97
Authorized: 28 MAY 97 Received: 28 MAY 97 Analyzed: 09 JUN 97

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	31	%	27-121

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: Matthew Graves Approved By: Audrey Cornell

Quanterra Environmental Services

Appendix IX Herbicides
Method 8150

Client Name: U.S. Geological Survey
Client ID: CAFB-I-0597-1
Lab ID: 055362-0004-SA
Matrix: AQUEOUS Sampled: 28 MAY 97 Prepared: 03 JUN 97
Authorized: 28 MAY 97 Received: 29 MAY 97 Analyzed: 09 JUN 97

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	44	%	27-121

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: Matthew Graves Approved By: Audrey Cornell

Quanterra
Environmental Services

Appendix IX Herbicides
Method 8150

Client Name: U.S. Geological Survey
Client ID: CAFB-L-0597-1
Lab ID: 055362-0005-SA
Matrix: AQUEOUS Sampled: 28 MAY 97 Prepared: 03 JUN 97
Authorized: 28 MAY 97 Received: 29 MAY 97 Analyzed: 10 JUN 97

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	64	%	27-121

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: Matthew Graves Approved By: Audrey Cornell

Quanterra Environmental Services

Appendix IX Herbicides
Method 8150

Client Name: U.S. Geological Survey
Client ID: CAFB-X-0597-1
Lab ID: 055362-0006-SA
Matrix: AQUEOUS Sampled: 28 MAY 97 Prepared: 03 JUN 97
Authorized: 28 MAY 97 Received: 29 MAY 97 Analyzed: 10 JUN 97

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	63	%	27-121

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: Matthew Graves Approved By: Audrey Cornell

Quanterra
Environmental Services

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

Client Name: U.S. Geological Survey
Client ID: CAFB-M-0597-1
Lab ID: 055362-0001-SA
Matrix: AQUEOUS Sampled: 27 MAY 97 Prepared: 03 JUN 97
Authorized: 28 MAY 97 Received: 28 MAY 97 Analyzed: 20 JUN 97

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	96	%	51-103
Dibutyl chlorendate	94	%	71-109
Decachlorobiphenyl	109	%	50-138

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: Andy Burcham Approved By: Audrey Cornell

Quanterra Environmental Services

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

Client Name: U.S. Geological Survey
Client ID: CAFB-Q-0597-1
Lab ID: 055362-0002-SA
Matrix: AQUEOUS Sampled: 27 MAY 97 Prepared: 03 JUN 97
Authorized: 28 MAY 97 Received: 28 MAY 97 Analyzed: 20 JUN 97

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	83	%	51-103
Dibutyl chlorendate	79	%	71-109
Decachlorobiphenyl	93	%	50-138

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: Andy Burcham Approved By: Audrey Cornell

Quanterra
Environmental Services

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

Client Name: U.S. Geological Survey
Client ID: CAFB-I-0597-1
Lab ID: 055362-0004-SA
Matrix: AQUEOUS — Sampled: 28 MAY 97 — Prepared: 03 JUN 97
Authorized: 28 MAY 97 — Received: 29 MAY 97 — Analyzed: 20 JUN 97

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	93	%	51-103
Dibutyl chlorendate	88	%	71-109
Decachlorobiphenyl	103	%	50-138

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: Andy Burcham — Approved By: Audrey Cornell

Quanterra Environmental Services

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

Client Name: U.S. Geological Survey
Client ID: CAFB-L-0597-1
Lab ID: 055362-0005-SA
Matrix: AQUEOUS
Authorized: 28 MAY 97

Sampled: 28 MAY 97
Received: 29 MAY 97

Prepared: 03 JUN 97
Analyzed: 20 JUN 97

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	98	%	51-103
Dibutyl chlorendate	95	%	71-109
Decachlorobiphenyl	102	%	50-138

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: Andy Burcham

Approved By: Audrey Cornell

Quanterra
Environmental Services

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

Client Name: U.S. Geological Survey
Client ID: CAFB-X-0597-1
Lab ID: 055362-0006-SA
Matrix: AQUEOUS Sampled: 28 MAY 97 Prepared: 03 JUN 97
Authorized: 28 MAY 97 Received: 29 MAY 97 Analyzed: 20 JUN 97

Parameter	Result	Units	Reporting Limit	
Aldrin	ND	ug/L	0.051	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	0.051	
beta-BHC	ND	ug/L	0.051	
delta-BHC	ND	ug/L	0.051	
gamma-BHC (Lindane)	ND	ug/L	0.051	
alpha-Chlordane	ND	ug/L	0.051	
gamma-Chlordane	ND	ug/L	0.051	
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	0.051	
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	0.051	
Heptachlor epoxide	ND	ug/L	0.051	
Isodrin	ND	ug/L	0.10	
Kepone	ND	ug/L	2.6	
Methoxychlor	ND	ug/L	0.51	
Toxaphene	ND	ug/L	5.1	

Surrogate	Recovery		Limits
Tetrachloro-m-xylene	101	%	51-103
Dibutyl chlorendate	96	%	71-109
Decachlorobiphenyl	106	%	50-138

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: Andy Burcham Approved By: Audrey Cornell

Quanterra Environmental Services

Polynuclear Aromatic Hydrocarbons, HPLC
Method 8310

Client Name: U.S. Geological Survey
Client ID: CAFB-M-0597-1
Lab ID: 055362-0001-SA
Matrix: AQUEOUS
Authorized: 28 MAY 97

Sampled: 27 MAY 97
Received: 28 MAY 97

Prepared: 03 JUN 97
Analyzed: 18 JUN 97

Parameter	Result	Units	Reporting Limit
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

Surrogate	Recovery		Limits
Terphenyl-d14	65	%	37-123

Dilution factor is 0.97. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Blake Besser

Approved By: Audrey Cornell

Quanterra
Environmental Services

Polynuclear Aromatic Hydrocarbons, HPLC
Method 8310

Client Name: U.S. Geological Survey
Client ID: CAFB-Q-0597-1
Lab ID: 055362-0002-SA
Matrix: AQUEOUS Sampled: 27 MAY 97 Prepared: 03 JUN 97
Authorized: 28 MAY 97 Received: 28 MAY 97 Analyzed: 18 JUN 97

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	56	%	37-123

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

ND = Not Detected

Reported By: Blake Besser Approved By: Audrey Cornell

Quanterra Environmental Services

Polynuclear Aromatic Hydrocarbons, HPLC
Method 8310

Client Name: U.S. Geological Survey
Client ID: CAFB-I-0597-1
Lab ID: 055362-0004-SA
Matrix: AQUEOUS Sampled: 28 MAY 97 Prepared: 03 JUN 97
Authorized: 28 MAY 97 Received: 29 MAY 97 Analyzed: 18 JUN 97

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	56	%	37-123

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

ND = Not Detected

Reported By: Blake Besser Approved By: Audrey Cornell

Quanterra Environmental Services

Polynuclear Aromatic Hydrocarbons, HPLC
Method 8310

Client Name: U.S. Geological Survey
Client ID: CAFB-L-0597-1
Lab ID: 055362-0005-SA
Matrix: AQUEOUS — Sampled: 28 MAY 97 — Prepared: 03 JUN 97
Authorized: 28 MAY 97 — Received: 29 MAY 97 — Analyzed: 18 JUN 97

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	61	%	37-123

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

ND = Not Detected

Reported By: Blake Besser — Approved By: Audrey Cornell

Quanterra Environmental Services

Polynuclear Aromatic Hydrocarbons, HPLC
Method 8310

Client Name: U.S. Geological Survey
Client ID: CAFB-X-0597-1
Lab ID: 055362-0006-SA
Matrix: AQUEOUS Sampled: 28 MAY 97 Prepared: 03 JUN 97
Authorized: 28 MAY 97 Received: 29 MAY 97 Analyzed: 18 JUN 97

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	68	%	37-123

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

ND = Not Detected

Reported By: Blake Besser Approved By: Audrey Cornell

Quanterra
Environmental Services

Metals
Total Metals

Client Name: U.S. Geological Survey
Client ID: CAFB-M-0597-1
Lab ID: 055362-0001-SA
Matrix: AQUEOUS — Sampled: 27 MAY 97 — Received: 28 MAY 97
Authorized: 28 MAY 97 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Antimony	ND		1.0	0.010	mg/L	7041	17 JUN 97	18 JUN 97
Silver	ND	G	1.0	0.0010	mg/L	7761	16 JUN 97	17 JUN 97
Cadmium	ND		1.0	0.00050	mg/L	7131	16 JUN 97	17 JUN 97
Arsenic	ND		1.0	0.0050	mg/L	7060	17 JUN 97	18 JUN 97
Chromium	0.0053		1.0	0.0050	mg/L	7191	16 JUN 97	18 JUN 97
Barium	0.051		1.0	0.010	mg/L	6010	17 JUN 97	18 JUN 97
Beryllium	ND		1.0	0.0020	mg/L	6010	17 JUN 97	18 JUN 97
Calcium	74.8		1.0	0.20	mg/L	6010	17 JUN 97	18 JUN 97
Cobalt	ND		1.0	0.010	mg/L	6010	17 JUN 97	18 JUN 97
Copper	ND		1.0	0.020	mg/L	6010	17 JUN 97	18 JUN 97
Iron	ND		1.0	0.10	mg/L	6010	17 JUN 97	18 JUN 97
Lead	ND	G	2.0	0.020	mg/L	7421	16 JUN 97	17 JUN 97
Magnesium	52.2		1.0	0.20	mg/L	6010	17 JUN 97	18 JUN 97
Manganese	ND		1.0	0.010	mg/L	6010	17 JUN 97	18 JUN 97
Mercury	ND		1.0	0.00020	mg/L	7470	30 MAY 97	30 MAY 97
Molybdenum	ND		1.0	0.020	mg/L	6010	17 JUN 97	18 JUN 97
Nickel	0.077		1.0	0.040	mg/L	6010	17 JUN 97	18 JUN 97
Selenium	ND	G	2.0	0.010	mg/L	7740	17 JUN 97	18 JUN 97
Sodium	40.9		1.0	5.0	mg/L	6010	17 JUN 97	18 JUN 97
Thallium	ND	G	5.0	0.025	mg/L	7841	16 JUN 97	17 JUN 97
Tin	ND		1.0	0.10	mg/L	6010	17 JUN 97	18 JUN 97
Vanadium	0.014		1.0	0.010	mg/L	6010	17 JUN 97	18 JUN 97
Zinc	0.034		1.0	0.020	mg/L	6010	17 JUN 97	18 JUN 97

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

Reported By: Michelle Walker — Approved By: Richard Persichitte

Quanterra
Environmental Services

Metals
Total Metals

Client Name: U.S. Geological Survey
Client ID: CAFB-Q-0597-1
Lab ID: 055362-0002-SA
Matrix: AQUEOUS — Sampled: 27 MAY 97 — Received: 28 MAY 97
Authorized: 28 MAY 97 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Antimony	ND		1.0	0.010	mg/L	7041	17 JUN 97	18 JUN 97
Silver	ND	G	1.0	0.0010	mg/L	7761	16 JUN 97	17 JUN 97
Cadmium	ND		1.0	0.00050	mg/L	7131	16 JUN 97	17 JUN 97
Arsenic	0.0063		1.0	0.0050	mg/L	7060	17 JUN 97	18 JUN 97
Chromium	ND		1.0	0.0050	mg/L	7191	16 JUN 97	18 JUN 97
Barium	0.028		1.0	0.010	mg/L	6010	17 JUN 97	18 JUN 97
Beryllium	ND		1.0	0.0020	mg/L	6010	17 JUN 97	18 JUN 97
Calcium	44.1		1.0	0.20	mg/L	6010	17 JUN 97	18 JUN 97
Cobalt	ND		1.0	0.010	mg/L	6010	17 JUN 97	18 JUN 97
Copper	ND		1.0	0.020	mg/L	6010	17 JUN 97	18 JUN 97
Iron	ND		1.0	0.10	mg/L	6010	17 JUN 97	18 JUN 97
Lead	ND	G	2.0	0.020	mg/L	7421	16 JUN 97	17 JUN 97
Magnesium	38.3		1.0	0.20	mg/L	6010	17 JUN 97	18 JUN 97
Manganese	ND		1.0	0.010	mg/L	6010	17 JUN 97	18 JUN 97
Mercury	ND		1.0	0.00020	mg/L	7470	30 MAY 97	30 MAY 97
Molybdenum	ND		1.0	0.020	mg/L	6010	17 JUN 97	18 JUN 97
Nickel	ND		1.0	0.040	mg/L	6010	17 JUN 97	18 JUN 97
Selenium	0.0053		1.0	0.0050	mg/L	7740	17 JUN 97	18 JUN 97
Sodium	47.5		1.0	5.0	mg/L	6010	17 JUN 97	18 JUN 97
Thallium	ND	G	2.0	0.020	mg/L	7841	16 JUN 97	17 JUN 97
Tin	ND		1.0	0.10	mg/L	6010	17 JUN 97	18 JUN 97
Vanadium	0.026		1.0	0.010	mg/L	6010	17 JUN 97	18 JUN 97
Zinc	ND		1.0	0.020	mg/L	6010	17 JUN 97	18 JUN 97

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

Reported By: Michelle Walker — Approved By: Richard Persichitte

Quanterra
Environmental Services

Metals
Total Metals

Client Name: U.S. Geological Survey
Client ID: CAFB-I-0597-1
Lab ID: 055362-0004-SA
Matrix: AQUEOUS — Sampled: 28 MAY 97 — Received: 29 MAY 97
Authorized: 28 MAY 97 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Antimony	ND		1.0	0.010	mg/L	7041	17 JUN 97	18 JUN 97
Silver	ND	G	1.0	0.0010	mg/L	7761	16 JUN 97	17 JUN 97
Cadmium	ND		1.0	0.00050	mg/L	7131	16 JUN 97	17 JUN 97
Arsenic	ND	G	1.0	0.010	mg/L	7060	17 JUN 97	18 JUN 97
Chromium	ND		1.0	0.0050	mg/L	7191	16 JUN 97	18 JUN 97
Barium	0.029		1.0	0.010	mg/L	6010	17 JUN 97	18 JUN 97
Beryllium	ND		1.0	0.0020	mg/L	6010	17 JUN 97	18 JUN 97
Calcium	51.5		1.0	0.20	mg/L	6010	17 JUN 97	18 JUN 97
Cobalt	ND		1.0	0.010	mg/L	6010	17 JUN 97	18 JUN 97
Copper	ND		1.0	0.020	mg/L	6010	17 JUN 97	18 JUN 97
Iron	ND		1.0	0.10	mg/L	6010	17 JUN 97	18 JUN 97
Lead	ND	G	1.0	0.010	mg/L	7421	16 JUN 97	17 JUN 97
Magnesium	44.1		1.0	0.20	mg/L	6010	17 JUN 97	18 JUN 97
Manganese	ND		1.0	0.010	mg/L	6010	17 JUN 97	18 JUN 97
Mercury	ND		1.0	0.00020	mg/L	7470	30 MAY 97	30 MAY 97
Molybdenum	ND		1.0	0.020	mg/L	6010	17 JUN 97	18 JUN 97
Nickel	ND		1.0	0.040	mg/L	6010	17 JUN 97	18 JUN 97
Selenium	0.0067		1.0	0.0050	mg/L	7740	17 JUN 97	18 JUN 97
Sodium	38.5		1.0	5.0	mg/L	6010	17 JUN 97	18 JUN 97
Thallium	ND	G	5.0	0.025	mg/L	7841	16 JUN 97	17 JUN 97
Tin	ND		1.0	0.10	mg/L	6010	17 JUN 97	18 JUN 97
Vanadium	0.025		1.0	0.010	mg/L	6010	17 JUN 97	18 JUN 97
Zinc	ND		1.0	0.020	mg/L	6010	17 JUN 97	18 JUN 97

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

Reported By: Michelle Walker — Approved By: Richard Persichitte

Quanterra
Environmental Services

Metals
Total Metals

Client Name: U.S. Geological Survey
Client ID: CAFB-L-0597-1
Lab ID: 055362-0005-SA
Matrix: AQUEOUS — Sampled: 28 MAY 97 — Received: 29 MAY 97
Authorized: 28 MAY 97 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Antimony	ND		1.0	0.010	mg/L	7041	17 JUN 97	18 JUN 97
Silver	ND	G	1.0	0.0010	mg/L	7761	16 JUN 97	17 JUN 97
Cadmium	ND		1.0	0.00050	mg/L	7131	16 JUN 97	17 JUN 97
Arsenic	ND	G	1.0	0.010	mg/L	7060	17 JUN 97	18 JUN 97
Chromium	0.025		1.0	0.0050	mg/L	7191	16 JUN 97	18 JUN 97
Barium	0.049		1.0	0.010	mg/L	6010	17 JUN 97	18 JUN 97
Beryllium	ND		1.0	0.0020	mg/L	6010	17 JUN 97	18 JUN 97
Calcium	58.1		1.0	0.20	mg/L	6010	17 JUN 97	18 JUN 97
Cobalt	ND		1.0	0.010	mg/L	6010	17 JUN 97	18 JUN 97
Copper	ND		1.0	0.020	mg/L	6010	17 JUN 97	18 JUN 97
Iron	0.39		1.0	0.10	mg/L	6010	17 JUN 97	18 JUN 97
Lead	ND	G	1.0	0.010	mg/L	7421	16 JUN 97	17 JUN 97
Magnesium	52.3		1.0	0.20	mg/L	6010	17 JUN 97	18 JUN 97
Manganese	ND		1.0	0.010	mg/L	6010	17 JUN 97	18 JUN 97
Mercury	ND		1.0	0.00020	mg/L	7470	30 MAY 97	30 MAY 97
Molybdenum	ND		1.0	0.020	mg/L	6010	17 JUN 97	18 JUN 97
Nickel	ND		1.0	0.040	mg/L	6010	17 JUN 97	18 JUN 97
Selenium	0.0068		1.0	0.0050	mg/L	7740	17 JUN 97	18 JUN 97
Sodium	46.4		1.0	5.0	mg/L	6010	17 JUN 97	18 JUN 97
Thallium	ND	G	2.0	0.020	mg/L	7841	16 JUN 97	17 JUN 97
Tin	ND		1.0	0.10	mg/L	6010	17 JUN 97	18 JUN 97
Vanadium	0.018		1.0	0.010	mg/L	6010	17 JUN 97	18 JUN 97
Zinc	ND		1.0	0.020	mg/L	6010	17 JUN 97	18 JUN 97

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

Reported By: Michelle Walker — Approved By: Richard Persichitte

Quanterra
Environmental Services

Metals
Total Metals

Client Name: U.S. Geological Survey
Client ID: CAFB-X-0597-1
Lab ID: 055362-0006-SA
Matrix: AQUEOUS — Sampled: 28 MAY 97 — Received: 29 MAY 97
Authorized: 28 MAY 97 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Antimony	ND		1.0	0.010	mg/L	7041	17 JUN 97	18 JUN 97
Silver	ND	G	1.0	0.0010	mg/L	7761	16 JUN 97	17 JUN 97
Cadmium	ND		1.0	0.00050	mg/L	7131	16 JUN 97	17 JUN 97
Arsenic	ND	G	1.0	0.010	mg/L	7060	17 JUN 97	18 JUN 97
Chromium	0.028		1.0	0.0050	mg/L	7191	16 JUN 97	18 JUN 97
Barium	0.048		1.0	0.010	mg/L	6010	17 JUN 97	18 JUN 97
Beryllium	ND		1.0	0.0020	mg/L	6010	17 JUN 97	18 JUN 97
Calcium	58.2		1.0	0.20	mg/L	6010	17 JUN 97	18 JUN 97
Cobalt	ND		1.0	0.010	mg/L	6010	17 JUN 97	18 JUN 97
Copper	ND		1.0	0.020	mg/L	6010	17 JUN 97	18 JUN 97
Iron	0.37		1.0	0.10	mg/L	6010	17 JUN 97	18 JUN 97
Lead	ND	G	2.0	0.020	mg/L	7421	16 JUN 97	17 JUN 97
Magnesium	52.1		1.0	0.20	mg/L	6010	17 JUN 97	18 JUN 97
Manganese	ND		1.0	0.010	mg/L	6010	17 JUN 97	18 JUN 97
Mercury	ND		1.0	0.00020	mg/L	7470	30 MAY 97	30 MAY 97
Molybdenum	ND		1.0	0.020	mg/L	6010	17 JUN 97	18 JUN 97
Nickel	ND		1.0	0.040	mg/L	6010	17 JUN 97	18 JUN 97
Selenium	0.0075		1.0	0.0050	mg/L	7740	17 JUN 97	18 JUN 97
Sodium	46.5		1.0	5.0	mg/L	6010	17 JUN 97	18 JUN 97
Thallium	ND	G	2.0	0.020	mg/L	7841	16 JUN 97	17 JUN 97
Tin	ND		1.0	0.10	mg/L	6010	17 JUN 97	18 JUN 97
Vanadium	0.017		1.0	0.010	mg/L	6010	17 JUN 97	18 JUN 97
Zinc	ND		1.0	0.020	mg/L	6010	17 JUN 97	18 JUN 97

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

Reported By: Michelle Walker — Approved By: Richard Persichitte

Quanterra Environmental Services

General Inorganics

Client Name: U.S. Geological Survey
Client ID: CAFB-M-0597-1
Lab ID: 055362-0001-SA
Matrix: AQUEOUS — Sampled: 27 MAY 97 — Received: 28 MAY 97
Authorized: 28 MAY 97 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Cyanide	ND		1.0	0.010	mg/L	9012	09 JUN 97	09 JUN 97
Sulfide, Total	ND		1.0	0.050	mg/L	376.2	NA	02 JUN 97
Total Organic Carbon	ND		1.0	1.0	mg/L	9060	NA	13 JUN 97
Total Organic Halogen as Cl	ND		1.0	30.0	ug/L	9020	NA	10 JUN 97

ND = Not Detected

Reported By: Judy Lange

Approved By: Linda Sullivan

Quanterra
Environmental Services

General Inorganics

Client Name: U.S. Geological Survey
Client ID: CAFB-Q-0597-1
Lab ID: 055362-0002-SA
Matrix: AQUEOUS — Sampled: 27 MAY 97 — Received: 28 MAY 97
Authorized: 28 MAY 97 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Cyanide	ND		1.0	0.010	mg/L	9012	09 JUN 97	09 JUN 97
Sulfide, Total	ND		1.0	0.050	mg/L	376.2	NA	02 JUN 97
Total Organic Carbon	ND		1.0	1.0	mg/L	9060	NA	13 JUN 97
Total Organic Halogen as Cl	ND		1.0	30.0	ug/L	9020	NA	10 JUN 97

ND = Not Detected

Reported By: Judy Lange

Approved By: Linda Sullivan

Quanterra Environmental Services

General Inorganics

Client Name: U.S. Geological Survey
Client ID: CAFB-I-0597-1
Lab ID: 055362-0004-SA
Matrix: AQUEOUS — Sampled: 28 MAY 97 — Received: 29 MAY 97
Authorized: 28 MAY 97 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Cyanide	ND		1.0	0.010	mg/L	9012	09 JUN 97	09 JUN 97
Sulfide, Total	ND		1.0	0.050	mg/L	376.2	NA	02 JUN 97
Total Organic Carbon	ND		1.0	1.0	mg/L	9060	NA	13 JUN 97
Total Organic Halogen as Cl	ND		1.0	30.0	ug/L	9020	NA	10 JUN 97

ND = Not Detected

Reported By: Judy Lange

Approved By: Linda Sullivan

Quanterra
Environmental Services

General Inorganics

Client Name: U.S. Geological Survey
Client ID: CAFB-L-0597-1
Lab ID: 055362-0005-SA
Matrix: AQUEOUS — Sampled: 28 MAY 97 — Received: 29 MAY 97
Authorized: 28 MAY 97 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Cyanide	ND		1.0	0.010	mg/L	9012	09 JUN 97	09 JUN 97
Sulfide, Total	ND		1.0	0.050	mg/L	376.2	NA	02 JUN 97
Total Organic Carbon	ND		1.0	1.0	mg/L	9060	NA	13 JUN 97
Total Organic Halogen as Cl	ND		1.0	30.0	ug/L	9020	NA	19 JUN 97

ND = Not Detected

Reported By: Judy Lange

Approved By: Linda Sullivan

Quanterra
Environmental Services

General Inorganics

Client Name: U.S. Geological Survey
Client ID: CAFB-X-0597-1
Lab ID: 055362-0006-SA
Matrix: AQUEOUS
Authorized: 28 MAY 97

Sampled: 28 MAY 97
Prepared: See Below

Received: 29 MAY 97
Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Cyanide	ND		1.0	0.010	mg/L	9012	09 JUN 97	09 JUN 97
Sulfide, Total	ND		1.0	0.050	mg/L	376.2	NA	02 JUN 97
Total Organic Carbon	ND		1.0	1.0	mg/L	9060	NA	13 JUN 97
Total Organic Halogen as Cl	ND		1.0	30.0	ug/L	9020	NA	19 JUN 97

ND = Not Detected

Reported By: Judy Lange

Approved By: Linda Sullivan

Quanterra
Environmental Services

Quanterra Incorporated
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303 421-6611 Telephone
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ANALYTICAL RESULTS

FOR

U.S. GEOLOGICAL SURVEY

QUANTERRA NO. 055364

JUNE 18, 1997

Prepared by: _____
Mark D. Stella

Reviewed by: _____
Lindsay Breyer

Quanterra
Environmental Services

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NARRATIVE

On May 28 & 29, 1997, 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.

Sample Receipt/Chain-of-Custody

The samples were analyzed for the dioxin and furan Appendix IX list at Quanterra's West Sacramento, California laboratory. The other parameters requested for the samples will be reported separately on project 055362.

Dioxins and Furans

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.

Quanterra
Environmental Services

SAMPLE DESCRIPTION INFORMATION
for
U.S. Geological Survey

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
055364-0001-SA	CAFB-M-0597-1	AQUEOUS	27 MAY 97	13:00	28 MAY 97
055364-0001-MB	CAFB-Q-0597-1	AQUEOUS	27 MAY 97		28 MAY 97
055364-0002-SA	CAFB-Q-0597-1	AQUEOUS	27 MAY 97	11:52	28 MAY 97
055364-0003-SA	CAFB-I-0597-1	AQUEOUS	28 MAY 97	09:20	29 MAY 97
055364-0003-MS	CAFB-I-0597-MS	AQUEOUS	28 MAY 97	09:20	29 MAY 97
055364-0003-SD	CAFB-I-0597-SD	AQUEOUS	28 MAY 97	09:20	29 MAY 97
055364-0004-SA	CAFB-L-0597-1	AQUEOUS	28 MAY 97	10:00	29 MAY 97
055364-0005-SA	CAFB-X-0597-1	AQUEOUS	28 MAY 97	10:00	29 MAY 97

Quanterra
Environmental Services

ANALYTICAL TEST REQUESTS
for
U.S. Geological Survey

Lab ID: 055364	Group Code	Analysis Description	Custom Test?
0001 - 0005	A	Appendix IX C14-C16 Dioxins and Furans	N
		Prep - Low Res. Method 613 L-L Extraction for Dioxins/Furans	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.

Quanterra
Environmental Services

Appendix IX Dioxins/Furans

Low Resolution

Client Name: U.S. Geological Survey
Client ID: CAFB-M-0597-1
Lab ID: 055364-0001-SA
Matrix: AQUEOUS Sampled: 27 MAY 97 Received: 28 MAY 97
Authorized: 29 MAY 97 Prepared: 05 JUN 97 Analyzed: 09 JUN 97

Sample Amount 1.05 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	1.1	
HxCDFs (total)	ND	ng/L	0.53	
Dioxins				
TCDDs (total)	ND	ng/L	0.41	
2,3,7,8-TCDD	ND	ng/L	0.41	
PeCDDs (total)	ND	ng/L	0.98	
HxCDDs (total)	ND	ng/L	0.73	
	% Recovery			
13C-2,3,7,8-TCDF	72			
13C-2,3,7,8-TCDD	83			
13C-1,2,3,6,7,8-HxCDD	83			
13C-1,2,3,4,6,7,8-HpCDF	78			

ND = Not detected
NA = Not applicable

Reported By: TSTONE Approved By: AALGAZI

Quanterra
Environmental Services

Appendix IX Dioxins/Furans

Low Resolution

Client Name: U.S. Geological Survey
Client ID: CAFB-Q-0597-1
Lab ID: 055364-0002-SA
Matrix: AQUEOUS Sampled: 27 MAY 97 Received: 28 MAY 97
Authorized: 29 MAY 97 Prepared: 05 JUN 97 Analyzed: 09 JUN 97

Sample Amount 1.05 L
Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/L	0.52	
PeCDFs (total)	ND	ng/L	1.4	
HxCDFs (total)	ND	ng/L	0.56	
Dioxins				
TCDDs (total)	ND	ng/L	0.41	
2,3,7,8-TCDD	ND	ng/L	0.41	
PeCDDs (total)	ND	ng/L	1.1	
HxCDDs (total)	ND	ng/L	0.76	
	% Recovery			
13C-2,3,7,8-TCDF	84			
13C-2,3,7,8-TCDD	93			
13C-1,2,3,6,7,8-HxCDD	100			
13C-1,2,3,4,6,7,8-HpCDF	92			

ND = Not detected
NA = Not applicable

Reported By: TSTONE Approved By: AALGAZI

Quanterra
Environmental Services

Appendix IX Dioxins/Furans

Low Resolution

Client Name: U.S. Geological Survey
Client ID: CAFB-I-0597-1
Lab ID: 055364-0003-SA
Matrix: AQUEOUS Sampled: 28 MAY 97 Received: 29 MAY 97
Authorized: 29 MAY 97 Prepared: 05 JUN 97 Analyzed: 09 JUN 97

Sample Amount 1.05 L
Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/L	0.64	
PeCDFs (total)	ND	ng/L	1.2	
HxCDFs (total)	ND	ng/L	0.61	
Dioxins				
TCDDs (total)	ND	ng/L	0.29	
2,3,7,8-TCDD	ND	ng/L	0.29	
PeCDDs (total)	ND	ng/L	0.94	
HxCDDs (total)	ND	ng/L	0.88	
	% Recovery			
13C-2,3,7,8-TCDF	74			
13C-2,3,7,8-TCDD	85			
13C-1,2,3,6,7,8-HxCDD	86			
13C-1,2,3,4,6,7,8-HpCDF	78			

ND = Not detected
NA = Not applicable

Reported By: TSTONE Approved By: AALGAZI

Quanterra
Environmental Services

Appendix IX Dioxins/Furans

Low Resolution

Client Name: U.S. Geological Survey
Client ID: CAFB-L-0597-1
Lab ID: 055364-0004-SA
Matrix: AQUEOUS Sampled: 28 MAY 97 Received: 29 MAY 97
Authorized: 29 MAY 97 Prepared: 05 JUN 97 Analyzed: 09 JUN 97

Sample Amount 1.03 L
Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/L	0.70	
PeCDFs (total)	ND	ng/L	1.3	
HxCDFs (total)	ND	ng/L	0.57	
Dioxins				
TCDDs (total)	ND	ng/L	0.39	
2,3,7,8-TCDD	ND	ng/L	0.39	
PeCDDs (total)	ND	ng/L	1.2	
HxCDDs (total)	ND	ng/L	0.83	
	% Recovery			
13C-2,3,7,8-TCDF	70			
13C-2,3,7,8-TCDD	78			
13C-1,2,3,6,7,8-HxCDD	84			
13C-1,2,3,4,6,7,8-HpCDF	77			

ND = Not detected
NA = Not applicable

Reported By: TSTONE Approved By: AALGAZI

Quanterra
Environmental Services

Appendix IX Dioxins/Furans

Low Resolution

Client Name: U.S. Geological Survey
Client ID: CAFB-X-0597-1
Lab ID: 055364-0005-SA
Matrix: AQUEOUS Sampled: 28 MAY 97 Received: 29 MAY 97
Authorized: 29 MAY 97 Prepared: 05 JUN 97 Analyzed: 09 JUN 97

Sample Amount 1.05 L
Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/L	0.76	
PeCDFs (total)	ND	ng/L	1.3	
HxCDFs (total)	ND	ng/L	0.56	
Dioxins				
TCDDs (total)	ND	ng/L	0.47	
2,3,7,8-TCDD	ND	ng/L	0.47	
PeCDDs (total)	ND	ng/L	1.0	
HxCDDs (total)	ND	ng/L	0.89	
	% Recovery			
13C-2,3,7,8-TCDF	69			
13C-2,3,7,8-TCDD	74			
13C-1,2,3,6,7,8-HxCDD	86			
13C-1,2,3,4,6,7,8-HpCDF	77			

ND = Not detected
NA = Not applicable

Reported By: TSTONE Approved By: AALGAZI

APPENDIX II

Laboratory Quality Assurance / Quality Control Results

LABORATORY DATA VALIDATION CHECKLIST

SECTION 1.0: GENERAL INFORMATION *(also see Appendix A)*

Data reviewer(s) name, affiliation, title, signature, and date of review:

F. Eileen Roybal, USGS-WRD, Hydrologist F. Eileen Roybal 22AUG97

DATA INVENTORY

1.1 Sample project number: Quanterra Environmental Services 053362.

1.2 Operable unit and site: Landfill 5 unit, Cell 3

Sample collection date: 27,28MAY97

1.3 Sample locations (location IDs): Wells CAFB-I, CAFB-L, CAFB-M, and CAFB-Q; CAFB-X-0597-1 was a duplicate sample for CAFB-L.

1.4 Sample matrix (ground water, soil, other): ground water

1.5 Type and number of field samples (environmental and quality control) in sample project:

Type	number	Type	number
environmental	4	MS/MSD	1 pair
field duplicate	1	trip blank	2
equipment blank	0	ambient blank	0

Data validation level: **(circle one)** note--see appendix A for description of different levels

LEVEL 1 **LEVEL 2**

OTHER CHECKLIST SECTIONS COMPLETED FOR SAMPLE PROJECT:

√ 2.0 Data Reports and Completeness
√ 3.0 Appendix-IX, Volatile organic compounds (VOC)--Method SW5030/SW8260A
√ 4.0 Appendix-IX, Semivolatile organic compounds (SVOC)--Method SW3510/SW8270B
√ 5.0 Appendix-IX, Pesticides and PCB's--Method SW3520/SW8080A
√ 6.0 Appendix-IX, Herbicides--Method SW3520/SW8150
√ 7.0 Appendix-IX, Dioxins and Furans--Method SW3520/SW8280
√ 8.0 Appendix-IX, Polynuclear aromatic hydrocarbons (PAH)--Method SW3510/SW8310

__√__ 9.0 Appendix-IX, Metals (Total)--Methods SW3005/SW6010 (Barium, Beryllium, Calcium, Cobalt, Copper, Iron, Magnesium, Manganese, Molybdenum, Nickel, Sodium, Tin, Vanadium, and Zinc), SW3020/SW7041 (Antimony), SW3020/SW7060 (Arsenic), SW3020/SW7131 (Cadmium), SW3020/SW7191 (Chromium), SW3020/SW7421 (Lead), SW3020/SW7470 (Mercury), SW3020/SW7740 (Selenium), SW3020/SW7761 (Silver), and SW3020/SW7841 (Thallium)

__√__ 10.0 Cyanide and Sulfide--Methods SW9012 (cyanide), E376.2 (sulfide)

__√__ 11.0 Total Organic Carbon (TOC)--Method SW9060

__√__ 12.0 Total Organic Halogens (TOX)--Method SW9020

SECTION 2.0: DATA REPORTS AND COMPLETENESS

Name of reviewer(s) and review date: F. Eileen Roybal 22AUG97

LABORATORY DATA REPORTS

2.1 Analytical Results Report--report date: 24JUN97

2.2 Raw Data Report--number of volumes: N/A

2.3 Was completeness of lab reports acceptable? yes __√__ no ____

(overview, analytical results, quality-control report)

Lab reports were complete and acceptable.

DATA COMPLETENESS

2.4 Were all samples requested on chain of custody form analyzed by lab? yes __√__ no ____

All appendix IX parameters:

	VOC SW8260A	SVOC SW8270B	Pesticide SW8080A	Herbicide SW8150	Dioxin SW8280
requested:	9	7	7	7	7
analyzed:	9	7	7	7	7

	PAH SW8310	Total Metals: 14 by ICP, 9 by GFAA	Cyanide by SW9012, Sulfide by E376.2	TOC SW9060	TOX SW9020
requested:	7	7	7	7	7
analyzed:	7	7	7	7	7

2.5 List cancelled analyses on cancelled-data worksheet: None.

2.6 Was sample cooler seal intact upon receipt by lab? Yes

2.7 What was the sample cooler temperature upon receipt by lab? Temperatures ranged from 2.8 - 6.0 °C.

2.8 Additional comments:
Equipment blank was not collected because dedicated pumps were installed in each well at various times by contractors.

SECTION 3.0: APPENDIX-IX, VOLATILE ORGANIC COMPOUNDS-- METHOD SW5030/SW8260A

Name of reviewer(s) and review date: F. Eileen Roybal 22AUG97

LEVEL I AND II -- Data Validation

HOLDING TIMES

3.1 Were project-required analytical holding times met? yes √ no ____

(14-day limit from sample date to analysis date for water samples)

[FG-ORG, p. 6-8]

sample date: 27,28MAY97 analysis date limit: 10,11JUN97

Samples were analyzed by 5JUN97, and met required holding times.

SURROGATE SPIKE RECOVERY

3.2 Did surrogate spike results meet frequency and QC acceptance criteria? yes √ no ____

(all samples and blanks: SW8260A:%R varies)

[FG-ORG, p. 26-29]

All surrogate spike recovery results met Quanterra QC accetance criteria.

PROJECT REPORTING LIMIT (PRL)

3.3 Did sample results meet project reporting limits? yes √ no ____

PRL's were not provided in Sampling and Analysis Plan (SAP). Reporting limits were not raised for any of the sample.

FIELD DUPLICATES

3.4 Did field duplicate results meet frequency and QC acceptance criteria?yes √ no ____

(1 set per sampling period; RPD < 30 %)

Field duplicate results met QC acceptance criteria.

EQUIPMENT BLANKS

3.5 Did equipment blank results meet frequency and QC acceptance criteria? yes ____ no ____

(1 set for non-dedicated pump; analytes <3 x RL)

[FG-ORG, p. 20-25]

N/A - See Comment 2.8.

AMBIENT and TRIP BLANKS (water samples only)

3.6 Did blank results meet frequency and QC acceptance criteria? yes √ no ____

(ambient and trip blank frequency varies per sampling period)

[FG-ORG, p. 20-25]

All results were ND for both trip blanks. Ambient condition blank was not collected for this sampling period.

TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

3.7 List number and level of TICs for each sample analyzed on TIC data sheet.

[FG-ORG, p. 41-44]

Sample ID	Page Number	Number of TICs	Reporting Level*
CAFB-X-0597-1(well-L)	I-32	1	3
CAFB-M-0597-1	I-17	1	3
CAFB-Q-0597-1	I-20	1	2

* 1 = tentative identification, 2 = confident identification, and 3 = confirmed identification.

DUPLICATE CONTROL SAMPLES (DCSs)

3.8 Did DCS results meet frequency and QC acceptance criteria? yes √ no ____

(1 DCS per quarter; %R and RPD within 3 SD of historical results of lab performance)

[FG-ORG, p. 32-33]

All DCS results met QC acceptance criteria.

SINGLE CONTROL SAMPLES (SCSs)

3.9 Did SCS results meet frequency and QC acceptance criteria? yes √ no ____

(1 SCS per sample lot; %R limits established by laboratory)

[FG-ORG, p. 32-33]

All SCS results met QC acceptance criteria.

LABORATORY METHOD BLANKS

3.10 Did method blank results meet frequency and QC acceptance criteria? yes √ no ____

(1 method blank per batch; analyte concentration ≤ RL except for common lab contaminants ≤ 5 times RL)

[FG-ORG, p. 20-25]

All method blank results were ND or J value (less than RL) and met QC acceptance criteria.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE (MS/MSD)

3.11 Did MS/MSD results meet frequency and QC acceptance criteria? yes √ no ____

(1 set per quarter; method SW8260A: %R and RPD varies)

[FG-ORG, p. 30-31]

All MS/MSD results met QC acceptance criteria.

LEVEL II -- Data Validation

INSTRUMENT CALIBRATION

3.12 Did initial calibrations meet frequency and QC acceptance criteria? yes ____ no ____

[FG-ORG, p. 12-16]

Not reviewed.

3.13 Did continuing calibrations meet frequency and QC acceptance criteria? yes ____ no ____

[FG-ORG, p. 17-19]

Not reviewed.

GC/MS TUNING

3.14 Did BFB tuning results meet frequency and QC acceptance criteria? yes ____ no ____

[FG-ORG, p. 9-11]

Not reviewed.

INTERNAL STANDARDS (IS)

3.15 Did IS results meet frequency and QC acceptance criteria? yes _____ no _____

(all blanks, standards, and samples; IS area limits within 50 to 200%)
[FG-ORG, p. 35-36]

Not reviewed

SAMPLE RESULT VERIFICATION

3.16 No omissions, problems, discrepancies, transcription errors, or reduction (dilution, conversion) errors in selected raw data? [FG-ORG, p. 47] yes _____ no _____

Not reviewed

LEVEL I and II -- Data Validation

ANALYTE RESULTS WITH DATA QUALIFIERS

3.17 Summarize analyte results with data qualifiers. List pertinent information on qualified-data worksheet: _____

3.18 Additional comments: _____

SECTION 4.0: APPENDIX-IX SEMIVOLATILE ORGANIC COMPOUNDS--METHOD SW3510/SW8270B

Name of reviewer(s) and review date: F. Eileen Roybal 22AUG97

LEVEL I AND II -- Data Validation

HOLDING TIMES

4.1 Were project-required analytical holding times met? yes √ no ____

(7-day limit from sample date to extraction date for water samples)
(40-day limit from sample extraction date to analysis date for water samples)
[FG-ORG, p. 49-50]

sample date: 27,28MAY97 extraction date limit: 3, 4JUN97
extraction date: 2JUN97 analysis date limit: 12JUL97

Samples were extracted by 2JUN97.
Samples were analyzed by 20JUN97 and met required holding times.

SURROGATE SPIKE RECOVERY

4.2 Did surrogate spike results meet frequency and QC acceptance criteria? yes √ no ____

(frequency: all samples and blanks: SW8270B:%R varies)
[FG-ORG, p. 66-68]

All surrogate recoveries were within QC acceptance criteria.

PROJECT REPORTING LIMIT (PRL)

4.3 Did sample results meet project reporting limits? yes √ no ____

PRL's were not provided in SAP. Reporting limits were not raised for any of the samples.

FIELD DUPLICATES

4.4 Did field duplicate results meet frequency and QC acceptance criteria?yes √ no ____

(1 set per sampling period; RPD ≤ 30%)

Field duplicate results met QC acceptance criteria except for bis(2-Ethylhexyl)phthalate. The RPD for bis(2-Ethylhexyl)phthalate was 82 %.

EQUIPMENT BLANKS

4.5 Did equipment blank results meet frequency and QC acceptance criteria? yes ____ no ____

(1 set for non-dedicated pump; analytes < 3 x RL)

[FG-ORG, p. 62-65]

N/A - See Comment 2.8.

TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

4.6 List number and level of TICs for each sample analyzed on TIC data sheet.

[FG-ORG, p. 80-83]

Sample ID	Page Number	Number of TICs	Reporting Level*
CAFB-Q-0597-1	I-45	2	1

* 1 = tentative identification, 2 = confident identification, and 3 = confirmed identification.

DUPLICATE CONTROL SAMPLES (DCSs)

4.7 Did DCS results meet frequency and QC acceptance criteria? yes √ no ____

(1 DCS per quarter; %R and RPD within 3 SD of historical results of lab performance)

[FG-ORG, p. 71-72]

All DCS results met QC acceptance criteria.

SINGLE CONTROL SAMPLES (SCSs)

4.8 Did SCS results meet frequency and QC acceptance criteria? yes √ no ____

(1 SCS per quarter; %R limits established by laboratory)

[FG-ORG, p. 71-72]

All SCS results met QC acceptance criteria.

LABORATORY METHOD BLANKS

4.9 Did method blank results meet frequency and QC acceptance criteria?yes √ no ____

(1 method blank per batch; analyte concentration ≤ RL except for common lab contaminants ≤ 5 times RL)

[FG-ORG, p. 62-65]

All results were ND and met QC acceptance criteria.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE (MS/MSD)

4.10 Did MS/MSD results meet frequency and QC acceptance criteria? yes √ no ____

(1 set per quarter; method SW8270B:%R and RPD varies)

[FG-ORG, p. 69-70]

All MS/MSD results met QC acceptance criteria.

LEVEL II -- Data Validation

INSTRUMENT CALIBRATION

4.11 Did initial calibration meet frequency and QC acceptance criteria? yes ____ no ____

[FG-ORG, p. 55-58]

Not reviewed

4.12 Did continuing calibrations meet frequency and QC acceptance criteria? yes ____ no ____

[FG-ORG, p. 59-61]

Not reviewed

GC/MS TUNING

4.13 Did BFB tuning results meet frequency and QC acceptance criteria? yes ____ no ____

[FG-ORG, p. 51-54]

Not reviewed

INTERNAL STANDARDS (IS)

4.14 Did IS results meet frequency and QC acceptance criteria? yes ____ no ____

(all blanks, standards, and samples; IS area limits within 50 to 200%)

[FG-ORG, p. 74-75]

Not reviewed

SAMPLE RESULT VERIFICATION

4.15 No omissions, problems, discrepancies, transcription errors, or reduction (dilution, conversion) errors in selected raw data? yes _____ no _____

Not reviewed

LEVEL I and II -- Data Validation

ANALYTE RESULTS WITH DATA QUALIFIERS

4.16 Summarize analyte results with data qualifiers. List pertinent information on qualified-data worksheet: _____

4.17 Additional comments: _____

SECTION 5.0: APPENDIX-IX, PESTICIDES AND PCB'S-- METHOD SW3520/SW8080A

Name of reviewer(s) and review date: F. Eileen Roybal 22AUG97

LEVEL I AND II -- Data Validation

HOLDING TIMES

5.1 Were project-required analytical holding times met? yes √ no ____

(7-day limit from sample date to extraction date and 40-day limit from extraction date to analysis date for method SW8080A)
[FG-ORG, p. 49-50]

sample date: 27,28MAY97 extraction date limit: 3,4JUN97
extraction date: 3JUN97 analysis date limit: 13JUL97

Samples were extracted by 3JUN97.
Samples were analyzed by 20JUN97 and met required holding times.

SURROGATE SPIKE RECOVERY

5.2 Did surrogate spike results meet frequency and QC acceptance criteria? yes √ no ____

(frequency: all samples and blanks: SW8080A:%R varies)
[FG-ORG, p. 66-68]

All surrogate spike recovery results met QC acceptance criteria.

PROJECT REPORTING LIMIT

5.3 Did sample results meet project reporting limits? yes √ no ____

PRL's were not provided in SAP. Reporting limits were not raised for any of the samples.

FIELD DUPLICATES

5.4 Did field duplicate results meet frequency and QC acceptance criteria?yes √ no ____

(1 set per sampling period; RPD ≤ 30%)

Field duplicate results met QC acceptance criteria.

EQUIPMENT BLANKS

5.5 Did equipment blank results meet frequency and QC acceptance criteria? yes ____ no ____

(1 set for non-dedicated pump; target compound concentration ≤ RL)

[FG-ORG, p. 62-65]

N/A - See Comment 2.8.

DUPLICATE CONTROL SAMPLES (DCSs)

5.6 Did DCS results meet frequency and QC acceptance criteria? yes ____ no √

(1 DCS per quarter; %R and RPD within 3 SD of historical results of lab performance)

[FG-ORG, p. 71-72]

DCS results did not meet QC acceptance criteria. RPD for gamma-BHC, heptachlor, aldrin, and dieldrin were outside control limits.

SINGLE CONTROL SAMPLES (SCSs)

5.7 Did SCS results meet frequency and QC acceptance criteria? yes √ no ____

(1 SCS per quarter; %R limits established by laboratory)

[FG-ORG, p. 71-72]

SCS results met QC acceptance criteria.

LABORATORY METHOD BLANKS

5.8 Did method blank results meet frequency and QC acceptance criteria?yes √ no ____

(1 method blank per batch; concentration ≤ 2 times RL)

[FG-ORG, p. 62-65]

All method blank results were ND and met QC acceptance criteria.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE (MS/MSD)

5.9 Did MS/MSD results meet frequency and QC acceptance criteria? yes √ no ____

(1 set per quarter; %R and RPD limits varies)

[FG-ORG, p. 69-70]

MS/MSD results met QC acceptance criteria.

LEVEL II -- Data Validation

INSTRUMENT CALIBRATION

5.10 Did initial and continuing calibrations meet frequency and QC criteria?yes ____ no ____

[FG-ORG, p. 55-58]

Not reviewed

SAMPLE RESULT VERIFICATION

5.11 No omissions, problems, discrepancies, transcription errors, or reduction (dilution, conversion) errors in selected raw data? yes ____ no ____

Not reviewed

5.12 Additional comments: Analyte results with data qualifiers were:

Sample ID	Page number	Qualifier
CAFB-I-0597-1	I-68	T
CAFB-L-0597-1	I-69	T
CAFB-X-0597-1(Duplicate of L)	I-70	T
CAFB-M-0597-1	I-66	T
CAFB-Q-0597-1	I-67	T

T = Preferred values unless footnoted on secondary column test.

SECTION 6.0: APPENDIX-IX, HERBICIDES--METHOD SW3520/SW8150

Name of reviewer(s) and review date: F. Eileen Roybal 22AUG97

LEVEL I AND II -- Data Validation

HOLDING TIMES

6.1 Were project-required analytical holding times met? yes √ no ____

(7-day limit from sample date to extraction date and 40-day limit from extraction date to analysis date for method SW8150)

[FG-ORG, p. 49-50]

sample date: 27,28MAY97 extraction date limit: 3,4JUN97

extraction date: 3JUN97 analysis date limit: 13JUL97

Samples were extracted by 3JUN97.

Samples were analyzed by 10JUN97 and met required holding times.

SURROGATE SPIKE RECOVERY

6.2 Did surrogate spike results meet frequency and QC acceptance criteria? yes √ no ____

(frequency: all samples and blanks: SW8150:%R varies)

[FG-ORG, p. 66-68]

All surrogate spike recovery results met QC acceptance criteria.

PROJECT REPORTING LIMIT

6.3 Did sample results meet project reporting limits? yes √ no ____

PRL's were not provided in SAP. Reporting limits were not raised for any of the samples.

FIELD DUPLICATES

6.4 Did field duplicate results meet frequency and QC acceptance criteria?yes __√__ no ____

(1 set per sampling period; RPD ≤ 30%)

Field duplicate results met QC acceptance criteria.

EQUIPMENT BLANKS

6.5 Did equipment blank results meet frequency and QC acceptance criteria? yes ____ no ____

(1 set for non-dedicated pump; target compound concentration ≤ RL)

[FG-ORG, p. 62-65]

N/A - See Comment 2.8.

DUPLICATE CONTROL SAMPLES (DCSs)

6.6 Did DCS results meet frequency and QC acceptance criteria? yes __√__ no ____

(1 DCS per quarter; %R and RPD within 3 SD of historical results of lab performance)

[FG-ORG, p. 71-72]

DCS results met QC acceptance criteria.

SINGLE CONTROL SAMPLES (SCSs)

6.7 Did SCS results meet frequency and QC acceptance criteria? yes __√__ no ____

(1 SCS per quarter; %R limits established by laboratory)

[FG-ORG, p. 71-72]

SCS results met QC acceptance criteria.

LABORATORY METHOD BLANKS

6.8 Did method blank results meet frequency and QC acceptance criteria?yes __√__ no ____

(1 method blank per batch; concentration ≤ 2 times RL)

[FG-ORG, p. 62-65]

All method blank results were ND and met QC acceptance criteria.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE (MS/MSD)

6.9 Did MS/MSD results meet frequency and QC acceptance criteria? yes √ no ____

(1 set per quarter; %R and RPD limits varies)

[FG-ORG, p. 69-70]

MS/MSD results met QC acceptance criteria.

LEVEL II -- Data Validation

INSTRUMENT CALIBRATION

6.10 Did initial and continuing calibrations meet frequency and QC criteria?yes ____ no ____

[FG-ORG, p. 55-58]

Not reviewed

SAMPLE RESULT VERIFICATION

6.11 No omissions, problems, discrepancies, transcription errors, or reduction (dilution, conversion) errors in selected raw data? yes ____ no ____

Not reviewed

6.12 Additional comments: Analyte results with data qualifiers were:

Sample ID	Page number	Qualifier
CAFB-I-0597-1	I-63	T
CAFB-L-0597-1	I-64	T
CAFB-X-0597-1(Duplicate of L)	I-65	T
CAFB-M-0597-1	I-61	T
CAFB-Q-0597-1	I-62	T

T = Preferred values unless footnoted on secondary column test.

SECTION 7.0: APPENDIX-IX, DIOXINS AND FURANS-- METHOD SW3520/SW8280

Name of reviewer(s) and review date: F. Eileen Roybal 22AUG97

LEVEL I AND II -- Data Validation

HOLDING TIMES

7.1 Were project-required analytical holding times met? yes √ no ____

(30-day limit from sample date to extraction date and 45-day limit from extraction date to analysis date for method SW8280)
[FG-ORG, p. 49-50]

sample date: 27,28MAY97 extraction date limit: 27,28JUN97
extraction date: 5JUN97 analysis date limit: 20JUL97

Samples were extracted by 5JUN97.
Samples were analyzed by 9JUN97 and met required holding times.

SURROGATE SPIKE RECOVERY

7.2 Did surrogate spike results meet frequency and QC acceptance criteria? yes √ no ____

(frequency: all samples and blanks: SW8280:%R varies)
[FG-ORG, p. 66-68]

All surrogate spike recovery results met QC acceptance criteria.

PROJECT REPORTING LIMIT

7.3 Did sample results meet project reporting limits? yes √ no ____

PRL's were not provided in SAP. Reporting limits were not raised for any of the samples.

FIELD DUPLICATES

7.4 Did field duplicate results meet frequency and QC acceptance criteria?yes √ no ____

(1 set per sampling period; RPD ≤ 30%)

Field duplicate results met QC acceptance criteria.

EQUIPMENT BLANKS

7.5 Did equipment blank results meet frequency and QC acceptance criteria? yes ____ no ____

(1 set for non-dedicated pump; target compound concentration ≤ RL)

[FG-ORG, p. 62-65]

N/A - See Comment 2.8.

DUPLICATE CONTROL SAMPLES (DCSs)

7.6 Did DCS results meet frequency and QC acceptance criteria? yes √ no ____

(1 DCS per quarter; %R and RPD within 3 SD of historical results of lab performance)

[FG-ORG, p. 71-72]

DCS results met QC acceptance criteria.

LABORATORY METHOD BLANKS

7.7 Did method blank results meet frequency and QC acceptance criteria?yes √ no ____

(1 method blank per batch; concentration ≤ 2 times RL)

[FG-ORG, p. 62-65]

All method blank results were ND and met QC acceptance criteria.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE (MS/MSD)

7.8 Did MS/MSD results meet frequency and QC acceptance criteria? yes √ no ____

(1 set per quarter; %R and RPD limits varies)

[FG-ORG, p. 69-70]

MS/MSD results met QC acceptance criteria.

LEVEL II -- Data Validation

INSTRUMENT CALIBRATION

7.9 Did initial and continuing calibrations meet frequency and QC criteria? yes _____ no _____
[FG-ORG, p. 55-58]

Not reviewed

SAMPLE RESULT VERIFICATION

7.10 No omissions, problems, discrepancies, transcription errors, or reduction (dilution, conversion) errors in selected raw data? yes _____ no _____

Not reviewed

7.11 Additional comments: _____

SECTION 8.0: APPENDIX-IX, POLYNUCLEAR AROMATIC HYDROCARBONS (PAH)--METHOD SW3510/SW8310

Name of reviewer(s) and review date: F. Eileen Roybal 22AUG97

LEVEL I AND II -- Data Validation

HOLDING TIMES

8.1 Were project-required analytical holding times met? yes √ no ____

(7-day limit from sample date to extraction date and 40-day limit from extraction date to analysis date for method SW8310)

[FG-ORG, p. 49-50]

sample date: 27,28MAY97 extraction date limit: 3,4JUN97

extraction date: 3JUN97 analysis date limit: 13JUL97

Samples were extracted by 3JUN97.

Samples were analyzed by 18JUN97 and met required holding times.

SURROGATE SPIKE RECOVERY

8.2 Did surrogate spike results meet frequency and QC acceptance criteria? yes √ no ____

(frequency: all samples and blanks: SW8310:%R varies)

[FG-ORG, p. 66-68]

All surrogate spike recovery results met QC acceptance criteria.

PROJECT REPORTING LIMIT

8.3 Did sample results meet project reporting limits? yes √ no ____

PRL's were not provided in SAP. Reporting limits were not raised for any of the samples.

FIELD DUPLICATES

8.4 Did field duplicate results meet frequency and QC acceptance criteria?yes __√__ no _____

(1 set per sampling period; RPD ≤ 30%)

Field duplicate results met QC acceptance criteria.

EQUIPMENT BLANKS

8.5 Did equipment blank results meet frequency and QC acceptance criteria? yes _____ no _____

(1 set for non-dedicated pump; target compound concentration ≤ RL)

[FG-ORG, p. 62-65]

N/A - See Comment 2.8.

DUPLICATE CONTROL SAMPLES (DCSs)

8.6 Did DCS results meet frequency and QC acceptance criteria? yes __√__ no _____

(1 DCS per quarter; %R and RPD within 3 SD of historical results of lab performance)

[FG-ORG, p. 71-72]

DCS results met QC acceptance criteria.

SINGLE CONTROL SAMPLES (SCSs)

8.7 Did SCS results meet frequency and QC acceptance criteria? yes __√__ no _____

(1 SCS per quarter; %R limits established by laboratory)

[FG-ORG, p. 71-72]

SCS results met QC acceptance criteria.

LABORATORY METHOD BLANKS

8.8 Did method blank results meet frequency and QC acceptance criteria?yes __√__ no _____

(1 method blank per batch; concentration ≤ 2 times RL)

[FG-ORG, p. 62-65]

All method blank results were ND and met QC acceptance criteria.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE (MS/MSD)

8.9 Did MS/MSD results meet frequency and QC acceptance criteria? yes √ no ____

(1 set per quarter; %R and RPD limits varies)

[FG-ORG, p. 69-70]

MS/MSD results met QC acceptance criteria.

LEVEL II -- Data Validation

INSTRUMENT CALIBRATION

8.10 Did initial and continuing calibrations meet frequency and QC criteria?yes ____ no ____

[FG-ORG, p. 55-58]

Not reviewed

SAMPLE RESULT VERIFICATION

8.11 No omissions, problems, discrepancies, transcription errors, or reduction (dilution, conversion) errors in selected raw data? yes ____ no ____

Not reviewed

8.12 Additional comments: ____

SECTION 9.0: APPENDIX-IX, METALS (TOTAL)-- METHODS SW3005/SW6010 (BARIUM, BERYLLIUM, CALCIUM, COBALT, COPPER, IRON, MAGNESIUM, MANGANESE, MOLYBDENUM, NICKEL, SODIUM, TIN, VANADIUM, AND ZINC), SW3020/SW7041 (ANTIMONY), SW3020/SW7060 (ARSENIC), SW3020/SW7131 (CADMIUM), SW3020/ SW7191 (CHROMIUM), SW3020/SW7421 (LEAD), SW3020/SW7470 (MERCURY), SW3020/SW7740 (SELENIUM), SW3020/SW7761 (SILVER), AND SW3020/SW7841 (THALLIUM).

Name of reviewer(s) and review date: F. Eileen Roybal 22AUG97

LEVEL I AND II -- Data Validation

HOLDING TIMES

9.1 Were project-required analytical holding times met? yes √ no ____

(180-day limit from sample date to analysis, except mercury-28 days)

[FG-INORG, p. 6-7]

Mercury sample date: 27,28MAY97 analysis date limit: 24,25JUN97

All rest sample date: 27,28MAY97 analysis date limit: 24,25NOV97

Mercury samples were analyzed by 30MAY97 and met required hold time. All rest were analyzed by 18JUN97 and met required hold time.

PROJECT REPORTING LIMIT (PRL)

9.2 Did sample results meet project reporting limits? yes ____ no √

PRL's were not provided in SAP. Quanterra reporting limits were raised for arsenic(SW7060) for samples CAFB-I, L, and X. RL's were raised for silver(SW7761), lead(SW7421), and thallium(SW7841) for all the samples. RL was raised for selenium(SW7740) for a sample CAFB-M.

FIELD DUPLICATES

9.3 Did field duplicate results meet frequency and QC acceptance criteria? yes √ no ____

(1 set for each sampling period; RPD < 30 %)

[FG-INORG, p. 35]

All field duplicate results met QC acceptance criteria.

EQUIPMENT BLANKS

9.4 Did equipment blank results meet frequency and QC acceptance criteria? yes ____ no ____

(1 set for non-dedicated pump; analytes < 3 x RL)

[FG-INORG, p. 16-18]

N/A - See Comment 2.8.

DUPLICATE CONTROL SAMPLES (DCSs)

9.5 Did DCS results meet frequency and QC acceptance criteria? yes √ no ____

(1 DCS per quarter; % R and RPD within 3 SD of historical results of lab performance)

[FG-INORG, p. 25-26]

All DCS results met QC acceptance criteria.

LABORATORY METHOD BLANKS

9.6 Did method blank results meet frequency and QC acceptance criteria? yes √ no ____

(1 method blank per batch; analyte concentration ≤ RL except for common lab contaminants ≤ 2 times RL)

[FG-INORG, p. 16-18]

All method blank results were ND and met QC acceptance criteria.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE (MS/MSD)

9.7 Did MS/MSD results meet frequency and QC acceptance criteria? yes ____ no √

(1 set per quarter; %R and RPD varies)

[FG-INORG, p. 27-29]

MS/MSD for lead, selenium, thallium, and silver for GFAA analyses were recovered below control limits. Matrix effects are suspected.

LEVEL II -- Data Validation

CALIBRATION

9.8 Did initial (ICV) and continuing (CCV) calibrations meet QC acceptance criteria?
[FG-INORG, p. 8-15] yes _____ no _____

Not reviewed.

INTERELEMENT CHECK SAMPLES (method SW6010 only)

9.9 Did interelement check results meet frequency and QC criteria? yes _____ no _____

(within 20% of known value)
[FG-INORG, p. 19-21]

Not reviewed.

ANALYTICAL SPIKE RECOVERY (all methods except SW6010 and mercury)

9.10 Did analytical spike results meet frequency and QC acceptance criteria? yes _____ no _____

(every sample; %R within 80-120% except when sample results are ND, the %R within 40-120%)the %R within 40-120%)
[FG-INORG, p. 27-29]

Not reviewed.

SAMPLE RESULT VERIFICATION

9.11 No omissions, problems, discrepancies, transcription errors, or reduction (dilution, conversion) errors in selected raw data? **[FG-INORG, p. 36]** yes _____ no _____

Not reviewed.

LEVEL I AND II -- Data Validation

ANALYTE RESULTS WITH DATA QUALIFIERS

9.12 Summarize analyte results with data qualifiers. List pertinent information on qualified-data worksheet: All samples had qualifier G for silver, lead, and thallium. Samples CAFB-I, L, and X had arsenic with qualifier G. A sample CAFB-M had selenium with qualifer G.

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

9.13 Additional comments: None.

SECTION 10.0: CYANIDE--METHOD SW9012 AND SULFIDE--METHOD E376.2

Name of reviewer(s) and review date: F. Eileen Roybal 22AUG97

LEVEL I AND II -- Data Validation

HOLDING TIMES

10.1 Were project-required analytical holding times met? yes √ no ____

(Cyanide: 14-day limit from sample date to analysis date for water samples)
(Sulfide: 7-day limit from sample date to analysis date for water samples)
[FG-INORG, p. 6-7]

Cyanide sample date: 27,28MAY97 analysis date limit: 10,11JUN97
Sulfide sample date: 27,28MAY97 analysis date limit: 3,4JUN97

Cyanide samples were analyzed by 9JUN97.
Sulfide samples were analyzed by 2JUN97. All samples met required holding times.

PROJECT REPORTING LIMIT

10.2 Did sample results meet project reporting limits? yes √ no ____

(Quanterra RL for: Cyanide 0.01 mg/L, Sulfide 0.05 mg/L)

PRL's were not provided in SAP. Reporting limits were not raised for any of the samples for methods SW9012, or E376.2.

FIELD DUPLICATES

10.3 Did field duplicate results meet frequency and QC acceptance criteria? yes √ no ____

(1 set per each sampling period; RPD ≤ 30%)
[FG-INORG, p. 35]

Field duplicate results met QC acceptance criteria.

EQUIPMENT BLANKS

10.4 Did equipment blank results meet frequency and QC acceptance criteria? yes ____ no ____

(1 set for non-dedicted pump; target compound concentration ≤ 3 times RL)
[FG-INORG, p. 16-18]

N/A - See Comment 2.8.

DUPLICATE CONTROL SAMPLES (DCSs)

10.5 Did DCS results meet frequency and QC acceptance criteria? yes √ no ____

(1 DCS per batch; %R and RPD within 3 SD of historical results of lab performance)

[FG-INORG, p. 25-26]

All DCS results met QC acceptance criteria.

LABORATORY METHOD BLANKS

10.6 Did method blank results meet frequency and QC acceptance criteria?yes √ no ____

(1 method blank per batch; concentration ≤ 2 times RL)

[FG-INORG, p. 16-18]

Laborotory method blank results for both cyanide and sulfide were ND and met QC acceptance criteria.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE (MS/MSD)

10.7 Did MS/MSD results meet frequency and QC acceptance criteria? yes √ no ____

(1 set per quarter; %R and RPD varies)

[FG-INORG, p. 27-29]

MS/MSD results met QC acceptance criteria for both sulfide and cyanide.

LEVEL II -- Data Validation

INSTRUMENT CALIBRATION

10.8 Did initial and continuing calibrations meet frequency and QC criteria?yes ____ no ____

(%R within 90-110%)

[FG-INORG, p. 8-15]

Not reviewed

SAMPLE RESULT VERIFICATION

10.9 No omissions, problems, discrepancies, transcription errors, or reduction (dilution, conversion) errors in selected raw data? **[FG-INORG, p. 36]** yes ____ no ____

Not reviewed

10.10 Additional comments: No qualifiers for data results by methods SW9012 and E376.2.

SECTION 11.0: TOTAL ORGANIC CARBON (TOC)-- METHOD SW9060

Name of reviewer(s) and review date: F. Eileen Roybal 22AUG97

LEVEL I AND II -- Data Validation

HOLDING TIMES

11.1 Were project-required analytical holding times met? yes √ no ____

(28-day limit from sample date to analysis date for water samples)

[FG-ORG, p. 6-8]

sample date: 27,28MAY97 analysis date limit: 24,25JUN97

Samples were analyzed by 13JUN97 and met required holding times.

PROJECT REPORTING LIMIT (PRL)

11.2 Did sample results meet project reporting limits? yes √ no ____

(Quanterra RL: 1.0 mg/L)

PRL was not provided in SAP. Reporting limit was not raised on any of the samples for method SW9060.

FIELD DUPLICATES

11.3 Did field duplicate results meet frequency and QC acceptance criteria? yes √ no ____

(1 set per each sampling period; RPD <30 %)

Field duplicate resuts were within acceptance criteria.

EQUIPMENT BLANKS

11.4 Did equipment blank results meet frequency and QC acceptance criteria? yes ____ no ____

(1 set for non-dedicated pum; target compound concentration ≤ RL)

[FG-ORG, p. 20-25]

N/A - See Comment 2.8.

DUPLICATE CONTROL SAMPLES (DCSs)

11.5 Did DCS results meet frequency and QC acceptance criteria? yes √ no ____

(1 DCS per batch; %R and RPD within 3 SD of historical results of Lab performance)

[FG-ORG, p. 32-33]

All DCS results were within acceptance criteria.

LABORATORY METHOD BLANK

11.6 Did method blank results meet frequency and QC acceptance criteria? yes √ no ____

(1 method blank per batch)

[FG-ORG, p. 20-25]

Laboratory method blank results were ND and met QC acceptance criteria.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE (MS/MSD)

11.7 Did MS/MSD results meet frequency and QC acceptance criteria? yes √ no ____

(1 set per quarter)

[FG-ORG, p. 30-31]

MS/MSD results met QC acceptance criteria.

LEVEL II -- Data Validation

INSTRUMENT CALIBRATION

11.8 Did initial and continuing calibrations meet frequency and QC criteria? yes ____ no ____

[FG-ORG, p. 12-16]

Not reviewed.

SAMPLE RESULT VERIFICATION

11.9 No omissions, problems, discrepancies, transcription errors, or reduction (dilution, conversion) errors in selected raw data? yes ____ no ____

Not reviewed.

11.10 Additional comments: None.

SECTION 12.0: TOTAL ORGANIC HALOGENS (TOX) METHOD SW9020

Name of reviewer(s) and review date: F. Eileen Roybal 22AUG97

LEVEL I AND II -- Data Validation

HOLDING TIMES

12.1 Were project-required analytical holding times met? yes √ no ____

(28-day limit from sample date to analysis date for water samples)

[FG-ORG, p. 6-8]

sample date: 27,28MAY97 analysis date limit: 24,25JUN97

Samples were analyzed by 19JUN97 and met required holding times.

PROJECT REPORTING LIMIT

12.2 Did sample results meet project reporting limits? yes √ no ____

(Quanterra RL: 30 µg/L)

PRL was not provided in SAP. Reporting limits were not raised for any of the samples for TOX analyses.

FIELD DUPLICATES

12.3 Did field duplicate results meet frequency and QC acceptance criteria? yes √ no ____

(1 set per each sampling period; RPD ≤ 30 %)

Field duplicate results met QC acceptance criteria.

EQUIPMENT BLANKS

12.4 Did equipment blank results meet frequency and QC acceptance criteria? yes ____ no ____

(1 set for non-dedicated pump; target compound concentration ≤ RL)

[FG-ORG, p. 20-25]

N/A - See Comment 2.8.

DUPLICATE CONTROL SAMPLES (DCSs)

12.5 Did DCS results meet frequency and QC acceptance criteria? yes √ no ____

(1 DCS per batch; %R within 80 to 120% and RPD < 20%)

[FG-ORG, p. 32-33]

DCS results met QC acceptance criteria.

LABORATORY METHOD BLANKS

12.6 Did method blank results meet frequency and QC acceptance criteria? yes √ no ____

(1 method blank per quarter)

[FG-ORG, p. 20-25]

Laboratory method blank results were ND and met QC acceptance criteria.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE (MS/MSD)

12.7 Did MS/MSD results meet frequency and QC acceptance criteria? yes √ no ____

(1 set per quarter; %R within 80 to 120 %; RPD < 20 %)

[FG-ORG, p. 30-31]

MS/MSD results met QC acceptance criteria.

LEVEL II -- Data Validation

INSTRUMENT CALIBRATION

12.8 Did initial and continuing calibrations meet frequency and QC criteria? yes ____ no ____

[FG-ORG, p. 12-16]

Not reviewed.

SAMPLE RESULT VERIFICATION

12.9 No omissions, problems, discrepancies, transcription errors, or reduction (dilution, conversion) errors in selected raw data? yes ____ no ____

Not reviewed.

12.10 Additional comments: No qualifiers reported for TOX analyses.

Appendix A -- Laboratory Data Validation Checklist

Instruction Notes for the Data Validation Checklist

This data validation checklist will be used when validating the chemical analytical results. Data validation is a systematic and independent verification of data quality and consists of checking, verifying, evaluating, and qualifying the chemical analytical results.

Two different levels of data validation are used with level I being not as detailed or as rigorous as level II. Level I data validation includes: (1) checking holding times limits, (2) evaluating the results of field and laboratory quality-control (QC) samples such as field replicates, matrix spikes, surrogate samples, and duplicate control samples, and (3) checking that contamination during sample processing has not occurred in QC blanks such as equipment, method, ambient, and trip blanks. Most of the information and data used to conduct a level I data validation is contained in the summary-data reports prepared by the reporting laboratory. Level II data validation includes all the level I guidelines plus using the raw-data reports prepared by the reporting laboratory to: (1) check that the laboratory instruments have been properly tuned and calibrated, and (2) verify that selected sample results do not have any omissions, problems, discrepancies, transcription errors, and reduction (dilution, conversion) errors.

Field samples (environmental and QC) are processed and analyzed by the reporting laboratory in specific groups of samples called sample projects (also called sample cases). A sample project usually consists of 20 or fewer samples that are collected from one or more sampling locations (monitoring well) in a given sampling period. Numerous laboratory QC samples also are analyzed with the field samples for each sample project.

This data validation checklist is designed to be used when validating the analytical results for a given sample project and it has a multi-level organization. The first part of the checklist contains general information (section 1.0) about the scope (who, when, how, and what) of the data validation and data reports and completeness (section 2.0) for each sample project. Sections 1.0 and 2.0 will be completed and included with all data validation checklists. The data validation checklist also contains numerous supplemental sections which are listed at the bottom of the first page of this document. These supplemental checklist sections are used for specific analytical methods and will be marked with a checkmark (√) when they are completed for a given sample project. Specific project-required frequency and QC acceptance criteria, and pertinent reference page numbers are listed with most of the checklist items. The major data-validation references are the USEPA guidance documents (USEPA 1994).

Checklist Abbreviations, Acronyms, and Notes

Abbreviations:

Al	aluminum
Ag	silver
As	arsenic
CAP	Chromic Acid Pit
CCV	continuing calibration verification
Cr	chromium
DCS	duplicate control sample
Ba	barium
Be	beryllium
Ca	calcium
Cd	cadmium
Cl	chloride
Co	cobalt
Conc.	concentration
Cu	copper
Diss.	dissolved
DRO	diesel range organics with GC/FID analysis C10-C28
DU	duplicate environmental sample
EB	equipment blank
Fe	iron
FG-INORG	Functional guidelines (EPA) for evaluating inorganic analyses
FG-ORG	Functional guidelines (EPA) for evaluating organic analyses
Fl	fluoride
GFAA	graphite furnace atomic absorption
Hg	mercury
ICP	inductively coupled plasma
ID	identification
IS	internal standards
J	estimated value qualifier
K	potassium
Mg	magnesium
mg/L	milligrams per liter
Mn	manganese
Mo	molybdenum
MS/MSD	matrix spike/matrix spike duplicate
MW	monitoring well
Na	sodium

Checklist Abbreviations, Acronyms, and Notes -- *continued*

Abbreviations:

Ni	nickel
NO_2	nitrate
NO_3	nitrite
PAC	Chromic Acid Pit duplicate sample identification
PAH	polynuclear aromatic hydrocarbons
Pb	lead
PO_4	orthophosphate
PRL	project reporting limit
QC	quality control
RCLs	Recovery Control Limits
RL	reporting limits
RMAL	Rocky Mountain Analytical Laboratory
RPD	relative percent difference
SA	environmental sample
SAP	Sampling and Analysis Plan
Sb	antimony
SCS	single control sample
Se	selenium
Sn	tin
SO_4	sulfate
SVOC	semivolatile organic compounds
TB	trip blank
TDS	total dissolved solids
TIC	tentatively identified compound
Tl	thallium
TOC	total organic carbon
Tot.	total
TOX	total organic halogen
TPH	total petroleum hydrocarbons
TSS	total suspended solids
USEPA	United States Environmental Protection Agency
USGS/WRD	United States Geological Survey, Water Resources Division
V	vanadium
VOC	volatile organic compounds
Zn	zinc
µg/L	microgram per liter

Checklist Abbreviations, Acronyms, and Notes -- *continued*

Abbreviations:

<	less than
>	greater than
%	percent
%R	percent recovery

USEPA, 1994, USEPA Contract laboratory program national functional guidelines for organic data review, February, 1994, Publication 9240.1-05, Document number PB94-963501, 124 p.

NOTE: this reference is abbreviated FG-ORG in this checklist.

USEPA, 1994, USEPA contract laboratory program national functional guidelines for inorganic data review, February, 1994, Publication 9240.1-05-01, Document number PB94-963502, 42 p.

NOTE: this reference is abbreviated FG-INORG in this checklist.

USGS, 1992, Laboratory data validation checklist: Wyoming District, U.S. Geological Survey checklist prepared for the U.S. Air Force, multiple pages.

DODEC LABORATORY DATA REVIEW WORKSHEET

1.0 GENERAL INFORMATION

Data reviewer: BOB BRECK
Date of review: 7/3/97
Sample project number: 55362
Project name: NM- CANNON AFB
Sample collection date: 5/27- 5/28/97
Sample matrix and number: 9 AQUEOUS

Type and number of samples in project:

Type	Number
Environmental	5
Trip blank	2
Equipment blank	
Ambient blank	
MS/MSD	2
Other	

2.0 DATA REPORT

Date of Analytical Results Report: 6/24/97
Number of volumes in Raw Data Report: 3
Raw Data Report reviewed? Yes____ No X

Were all analyses requested on the COC form performed by the laboratory?
Yes X No____

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

ASSOCIATED DIOXIN / FURAN ANALYSES ARE REPORTED IN PROJECT 55364

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

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

TOX SAMPLES WERE NOT PRESERVED - LAB WAS INSTRUCTED BY THE CLIENT TO PRESERVE THE SAMPLE ACCORDINGLY AND ANALYZE THE SAMPLES

3.0 ANALYTICAL METHODS

Analytical methods used in this project

X	VOC by GC/MS (SW 8240, SW 8260, E524, E624)
	Halogenated VOC by GC (SW 8010)
	Aromatic VOC by GC (SW 8020)
X	SVOC by GC/MS (SW 8270)
X	PAH by HPLC (SW 8310)
X	Organochlorine pesticides and PCB (SW 8080)
	Organophosphorous pesticides (SW 8140)
	Chlorinated herbicides (SW 8150)
X	Dioxins and Furans (SW 8280)
	Explosives (8330)
	TOC (E415.1 or SW 9060)
X	TPH (E418.1)
	Oil and Grease (E413.2)
	TOX (SW9020)
X	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)
X	Arsenic by GFAA (SW 7060)
X	Chromium (SW 7191 or 7196)
X	Lead by GFAA (SW 7421)
X	Mercury by CVAA (SW 7470 or 7471)
X	Selenium by GFAA (SW 7740)
X	Thallium by GFAA (SW 7841)
X	Inorganic anions (E300.0)
	Alkalinity (310.1)
	Cyanide, total and amenable (SW 9010/9012)
X	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)
X	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)
X	Other analyses : CADMIUM 7131
	SILVER 7761

Were analytical holding times met? Yes X No _____

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

_____

Did surrogate recoveries meet QC acceptance criteria?
Yes X No _____

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

_____

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

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

_____

ALL ENVIRONMENTAL SAMPLES

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:

SG60 DCS 03 JUN 97-01 DID NOT MEET RPD LIMITS FOR SEVERAL COMPOUNDS (HIGH BY NO MORE THAN 5%)

Did SCS meet QC acceptance criteria? Yes X 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 X

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

Did the MS/MSD meet QC acceptance criteria? Yes X 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 : ~~[illegible]~~

LEAD, SELENIUM, THALLIUM & SILVER MS/MSD'S BY GFAA DID NOT MEET %R LIMITS - MATRIX EFFECT'S ARE SUSPECTED

TOX MS DID NOT MEET %R LIMITS (HIGH BY 11%)

Additional comments:

CHLOROFLUOROCARBONS REPORTED IN THE VOL SAMPLES -0001 & -0006 ARE USED AS REFRIGERANTS

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.

Quanterra
Environmental Services

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)
055362-0001-SA	AQUEOUS	Q8260-5M-A	04 JUN 97-H	04 JUN 97-H
055362-0002-SA	AQUEOUS	Q8260-5M-A	04 JUN 97-H	04 JUN 97-H
055362-0003-TB	AQUEOUS	Q8260-5M-A	04 JUN 97-H	04 JUN 97-H
055362-0004-SA	AQUEOUS	Q8260-5M-A	04 JUN 97-H	04 JUN 97-H
055362-0004-MS	AQUEOUS	Q8260-5M-A	04 JUN 97-H	04 JUN 97-H
055362-0004-SD	AQUEOUS	Q8260-5M-A	04 JUN 97-H	04 JUN 97-H
055362-0005-SA	AQUEOUS	Q8260-5M-A	04 JUN 97-Z	04 JUN 97-Z
055362-0006-SA	AQUEOUS	Q8260-5M-A	05 JUN 97-Z	05 JUN 97-Z
055362-0007-TB	AQUEOUS	Q8260-5M-A	05 JUN 97-Z	05 JUN 97-Z

Quanterra
Environmental Services

DUPLICATE CONTROL SAMPLE REPORT
Volatile Organics by GC/MS
Project: 055362

Category: Q8260-5M-A Volatile Organics
Matrix: AQUEOUS
QC Lot: 04 JUN 97-H
Date Analyzed: 04 JUN 97
Concentration Units: ug/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
1,1-Dichloroethene	50.0	53.3		53.1		53.2	106	80-132	0.45	20
Trichloroethene	50.0	51.5		50.3		50.9	102	85-112	2.4	20
Benzene	50.0	51.2		50.1		50.6	101	83-121	2.2	20
Toluene	50.0	52.9		50.8		51.9	104	85-120	4.1	20
Chlorobenzene	50.0	53.0		51.6		52.3	105	90-113	2.6	20

Surrogate	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	Accuracy Average(%) DCS	Limits
1,2-Dichloroethane-d4	50.0	47.1		47.6		95	77-115
4-Bromofluorobenzene	50.0	49.7		50.7		100	87-113
Toluene-d8	50.0	50.3		49.3		100	90-112

Category: Q8260-5M-A Volatile Organics
Matrix: AQUEOUS
QC Lot: 04 JUN 97-Z
Date Analyzed: 04 JUN 97
Concentration Units: ug/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
1,1-Dichloroethene	50.0	46.3		48.9		47.6	95	80-132	5.5	20
Trichloroethene	50.0	47.5		50.8		49.1	98	85-112	6.8	20
Benzene	50.0	45.4		48.2		46.8	94	83-121	6.1	20
Toluene	50.0	45.3		48.5		46.9	94	85-120	6.9	20
Chlorobenzene	50.0	47.3		50.4		48.8	98	90-113	6.3	20

Surrogate	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	Accuracy Average(%) DCS	Limits
1,2-Dichloroethane-d4	50.0	52.6		52.7		105	77-115
4-Bromofluorobenzene	50.0	52.6		53.0		106	87-113
Toluene-d8	50.0	51.2		51.2		102	90-112

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

Quanterra
Environmental Services

DUPLICATE CONTROL SAMPLE REPORT
Volatile Organics by GC/MS
Project: 055362

Category: Q8260-5M-A Volatile Organics
Matrix: AQUEOUS
QC Lot: 05 JUN 97-Z
Date Analyzed: 05 JUN 97
Concentration Units: ug/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
1,1-Dichloroethene	50.0	45.3		47.8		46.6	93	80-132	5.4	20
Trichloroethene	50.0	47.3		50.1		48.7	97	85-112	5.7	20
Benzene	50.0	45.0		47.7		46.3	93	83-121	5.8	20
Toluene	50.0	45.4		47.3		46.3	93	85-120	4.1	20
Chlorobenzene	50.0	47.5		49.5		48.5	97	90-113	4.2	20

Surrogate	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	Accuracy Average(%) DCS	Limits
1,2-Dichloroethane-d4	50.0	54.3		55.0		109	77-115
4-Bromofluorobenzene	50.0	53.5		53.2		107	87-113
Toluene-d8	50.0	52.2		51.3		103	90-112

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

Quanterra
Environmental Services

SINGLE CONTROL SAMPLE REPORT
Volatile Organics by GC/MS

Analyte	Concentration Spiked	Concentration Measured	Accuracy(%) SCS	Accuracy(%) Limits
Category: Q8260-5M-A				
Matrix: AQUEOUS				
QC Lot: 04 JUN 97-H QC Run: 04 JUN 97-H				
Concentration Units: ug/L				
1,2-Dichloroethane-d4	50.0	47.4	95	77-115
4-Bromofluorobenzene	50.0	50.2	100	87-113
Toluene-d8	50.0	49.5	99	90-112
Category: Q8260-5M-A				
Matrix: AQUEOUS				
QC Lot: 04 JUN 97-Z QC Run: 04 JUN 97-Z				
Concentration Units: ug/L				
1,2-Dichloroethane-d4	50.0	49.0	98	77-115
4-Bromofluorobenzene	50.0	51.0	102	87-113
Toluene-d8	50.0	51.2	102	90-112
Category: Q8260-5M-A				
Matrix: AQUEOUS				
QC Lot: 05 JUN 97-Z QC Run: 05 JUN 97-Z				
Concentration Units: ug/L				
1,2-Dichloroethane-d4	50.0	51.4	103	77-115
4-Bromofluorobenzene	50.0	52.1	104	87-113
Toluene-d8	50.0	52.4	105	90-112

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

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Environmental Services

METHOD BLANK REPORT
Volatile Organics by GC/MS

Test: Q8260-AP9-5ML-AP
Matrix: AQUEOUS
QC Lot: 04 JUN 97-H QC Run: 04 JUN 97-H

Analyte	Result	Units	Reporting Limit	
Acetone	ND	ug/L	20	
Acetonitrile	ND	ug/L	100	
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	20	
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)	5.1	ug/L	10	J
1,2-Dibromoethane (EDB)	ND	ug/L	5.0	
Dibromomethane	ND	ug/L	5.0	
trans-1,4-Dichloro-2-butene	ND	ug/L	5.0	
Dichlorodifluoromethane	ND	ug/L	10	
1,1-Dichloroethane	ND	ug/L	5.0	
1,2-Dichloroethane	ND	ug/L	5.0	
1,1-Dichloroethene	ND	ug/L	5.0	
cis-1,2-Dichloroethene	ND	ug/L	2.5	
trans-1,2-Dichloroethene	ND	ug/L	2.5	
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	5.0	
2-Hexanone	ND	ug/L	20	
Iodomethane	ND	ug/L	5.0	
Isobutyl alcohol	ND	ug/L	200	
Methacrylonitrile	ND	ug/L	5.0	
Methylene chloride	3.4	ug/L	5.0	J
Methyl methacrylate	ND	ug/L	5.0	

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

Quanterra Environmental Services

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

Analyte	Result	Units	Reporting Limit	
Test: Q8260-AP9-5ML-AP Matrix: AQUEOUS QC Lot: 04 JUN 97-H QC Run: 04 JUN 97-H				
4-Methyl-2-pentanone (MIBK)	ND	ug/L	20	
Propionitrile	ND	ug/L	20	
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	10	
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: Q8260-AP9-5ML-AP Matrix: AQUEOUS QC Lot: 04 JUN 97-H QC Run: 04 JUN 97-H				
Acetone	ND	ug/L	20	
Acetonitrile	ND	ug/L	100	
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	20	
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)	5.1	ug/L	10	J

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

Quanterra
Environmental Services

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

Test: Q8260-AP9-5ML-AP
Matrix: AQUEOUS
QC Lot: 04 JUN 97-H QC Run: 04 JUN 97-H

Analyte	Result	Units	Reporting Limit	
1,2-Dibromoethane (EDB)	ND	ug/L	5.0	
Dibromomethane	ND	ug/L	5.0	
trans-1,4-Dichloro-2-butene	ND	ug/L	5.0	
Dichlorodifluoromethane	ND	ug/L	10	
1,1-Dichloroethane	ND	ug/L	5.0	
1,2-Dichloroethane	ND	ug/L	5.0	
1,1-Dichloroethene	ND	ug/L	5.0	
cis-1,2-Dichloroethene	ND	ug/L	2.5	
trans-1,2-Dichloroethene	ND	ug/L	2.5	
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	5.0	
2-Hexanone	ND	ug/L	20	
Iodomethane	ND	ug/L	5.0	
Isobutyl alcohol	ND	ug/L	200	
Methacrylonitrile	ND	ug/L	5.0	
Methylene chloride	3.4	ug/L	5.0	J
Methyl methacrylate	ND	ug/L	5.0	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	20	
Propionitrile	ND	ug/L	20	
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	10	
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 = Result is detected below the reporting limit or is an estimated concentration.

Quanterra
Environmental Services

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

Test: Q8260-AP9-5ML-AP
Matrix: AQUEOUS
QC Lot: 04 JUN 97-H QC Run: 04 JUN 97-H

Analyte	Result	Units	Reporting Limit	
Acetone	ND	ug/L	20	
Acetonitrile	ND	ug/L	100	
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	20	
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)	5.1	ug/L	10	J
1,2-Dibromoethane (EDB)	ND	ug/L	5.0	
Dibromomethane	ND	ug/L	5.0	
trans-1,4-Dichloro-2-butene	ND	ug/L	5.0	
Dichlorodifluoromethane	ND	ug/L	10	
1,1-Dichloroethane	ND	ug/L	5.0	
1,2-Dichloroethane	ND	ug/L	5.0	
1,1-Dichloroethene	ND	ug/L	5.0	
trans-1,2-Dichloroethene	ND	ug/L	2.5	
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	5.0	
2-Hexanone	ND	ug/L	20	
Iodomethane	ND	ug/L	5.0	
Isobutyl alcohol	ND	ug/L	200	
Methacrylonitrile	ND	ug/L	5.0	
Methylene chloride	3.4	ug/L	5.0	J

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

Quanterra
Environmental Services

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

Analyte	Result	Units	Reporting Limit	
Test: Q8260-AP9-5ML-AP				
Matrix: AQUEOUS				
QC Lot: 04 JUN 97-H QC Run: 04 JUN 97-H				
Methyl methacrylate	ND	ug/L	5.0	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	20	
Propionitrile	ND	ug/L	20	
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	10	
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: Q8260-AP9-5ML-AP				
Matrix: AQUEOUS				
QC Lot: 04 JUN 97-Z QC Run: 04 JUN 97-Z				
Acetone	2.8	ug/L	20	J
Acetonitrile	ND	ug/L	100	
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	20	
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.

Quanterra Environmental Services

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

Test: Q8260-AP9-5ML-AP
Matrix: AQUEOUS
QC Lot: 04 JUN 97-Z QC Run: 04 JUN 97-Z

Analyte	Result	Units	Reporting Limit	
1,2-Dibromo-3-chloro-propane (DBCP)	ND	ug/L	10	
1,2-Dibromoethane (EDB)	ND	ug/L	5.0	
Dibromomethane	ND	ug/L	5.0	
trans-1,4-Dichloro-2-butene	ND	ug/L	5.0	
Dichlorodifluoromethane	ND	ug/L	10	
1,1-Dichloroethane	ND	ug/L	5.0	
1,2-Dichloroethane	ND	ug/L	5.0	
1,1-Dichloroethene	ND	ug/L	5.0	
cis-1,2-Dichloroethene	ND	ug/L	2.5	
trans-1,2-Dichloroethene	ND	ug/L	2.5	
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	5.0	
2-Hexanone	ND	ug/L	20	
Iodomethane	ND	ug/L	5.0	
Isobutyl alcohol	ND	ug/L	200	
Methacrylonitrile	ND	ug/L	5.0	
Methylene chloride	1.4	ug/L	5.0	J
Methyl methacrylate	ND	ug/L	5.0	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	20	
Propionitrile	ND	ug/L	20	
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	10	
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 = Result is detected below the reporting limit or is an estimated concentration.

Quanterra
Environmental Services

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

Test: Q8260-AP9-5ML-AP
Matrix: AQUEOUS
QC Lot: 05 JUN 97-Z QC Run: 05 JUN 97-Z

Analyte	Result	Units	Reporting Limit	
Acetone	3.7	ug/L	20	J
Acetonitrile	ND	ug/L	100	
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	20	
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	5.0	
Dibromomethane	ND	ug/L	5.0	
trans-1,4-Dichloro-2-butene	ND	ug/L	5.0	
Dichlorodifluoromethane	ND	ug/L	10	
1,1-Dichloroethane	ND	ug/L	5.0	
1,2-Dichloroethane	ND	ug/L	5.0	
1,1-Dichloroethene	ND	ug/L	5.0	
cis-1,2-Dichloroethene	ND	ug/L	2.5	
trans-1,2-Dichloroethene	ND	ug/L	2.5	
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	5.0	
2-Hexanone	ND	ug/L	20	
Iodomethane	ND	ug/L	5.0	
Isobutyl alcohol	ND	ug/L	200	
Methacrylonitrile	ND	ug/L	5.0	
Methylene chloride	1.4	ug/L	5.0	J
Methyl methacrylate	ND	ug/L	5.0	

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

Quanterra
Environmental Services

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

Analyte	Result	Units	Reporting Limit	
Test: Q8260-AP9-5ML-AP				
Matrix: AQUEOUS				
QC Lot: 05 JUN 97-Z QC Run: 05 JUN 97-Z				
4-Methyl-2-pentanone (MIBK)	ND	ug/L	20	
Propionitrile	ND	ug/L	20	
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	10	
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: Q8260-AP9-5ML-AP				
Matrix: AQUEOUS				
QC Lot: 05 JUN 97-Z QC Run: 05 JUN 97-Z				
Acetone	3.7	ug/L	20	J
Acetonitrile	ND	ug/L	100	
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	20	
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	

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

Quanterra
Environmental Services

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

Test: Q8260-AP9-5ML-AP
Matrix: AQUEOUS
QC Lot: 05 JUN 97-Z QC Run: 05 JUN 97-Z

Analyte	Result	Units	Reporting Limit	
1,2-Dibromoethane (EDB)	ND	ug/L	5.0	
Dibromomethane	ND	ug/L	5.0	
trans-1,4-Dichloro-2-butene	ND	ug/L	5.0	
Dichlorodifluoromethane	ND	ug/L	10	
1,1-Dichloroethane	ND	ug/L	5.0	
1,2-Dichloroethane	ND	ug/L	5.0	
1,1-Dichloroethene	ND	ug/L	5.0	
cis-1,2-Dichloroethene	ND	ug/L	2.5	
trans-1,2-Dichloroethene	ND	ug/L	2.5	
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	5.0	
2-Hexanone	ND	ug/L	20	
Iodomethane	ND	ug/L	5.0	
Isobutyl alcohol	ND	ug/L	200	
Methacrylonitrile	ND	ug/L	5.0	
Methylene chloride	1.4	ug/L	5.0	J
Methyl methacrylate	ND	ug/L	5.0	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	20	
Propionitrile	ND	ug/L	20	
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	10	
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 = Result is detected below the reporting limit or is an estimated concentration.

Quanterra
Environmental Services

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Volatile Organics by GC/MS
Project: 055362

Category: Q8260-5M-A Volatile Organics
Matrix: AQUEOUS
Sample: 055362-0004
MS Run: 04 JUN 97-H
Units: ug/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
1,1-Dichloroethene	ND	48.7	49.9	50.0	97	100	2.4	80-132	20
Trichloroethene	ND	49.8	49.6	50.0	100	99	0.4	85-112	20
Benzene	ND	49.2	49.1	50.0	98	98	0.3	83-121	20
Toluene	ND	49.3	49.3	50.0	99	99	0.0	85-120	20
Chlorobenzene	ND	51.5	51.2	50.0	103	102	0.4	90-113	20

Category: Q8260-5M-A Volatile Organics
Matrix: AQUEOUS
Sample: 055323-0002
MS Run: 04 JUN 97-Z
Units: ug/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
1,1-Dichloroethene	ND	1010000	983000	1000000	101	98	2.4	80-132	20
Trichloroethene	ND	1000000	987000	1000000	100	99	1.7	85-112	20
Benzene	ND	1010000	998000	1000000	101	100	0.9	83-121	20
Toluene	ND	1010000	1000000	1000000	101	100	0.7	85-120	20
Chlorobenzene	ND	1020000	1020000	1000000	102	102	0.1	90-113	20

ND = Not Detected

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

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Environmental Services

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Volatile Organics by GC/MS
Project: 055362 (cont.)

Category: Q8260-5M-A Volatile Organics
Matrix: AQUEOUS
Sample: 055385-0003
MS Run: 05 JUN 97-Z
Units: ug/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
1,1-Dichloroethene	ND	47.9	49.4	50.0	96	99	3.0	80-132	20
Trichloroethene	ND	48.0	49.6	50.0	96	99	3.3	85-112	20
Benzene	ND	49.0	51.3	50.0	98	103	4.5	83-121	20
Toluene	ND	49.7	51.9	50.0	99	104	4.3	85-120	20
Chlorobenzene	ND	50.2	52.3	50.0	100	105	4.1	90-113	20

ND = Not Detected

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

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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)
055362-0001-SA	AQUEOUS	Q8270-A	02 JUN 97-02	02 JUN 97-02
055362-0002-SA	AQUEOUS	Q8270-A	02 JUN 97-02	02 JUN 97-02
055362-0004-SA	AQUEOUS	Q8270-A	02 JUN 97-02	02 JUN 97-02
055362-0004-MS	AQUEOUS	Q8270-A	02 JUN 97-02	02 JUN 97-02
055362-0004-SD	AQUEOUS	Q8270-A	02 JUN 97-02	02 JUN 97-02
055362-0005-SA	AQUEOUS	Q8270-A	02 JUN 97-02	02 JUN 97-02
055362-0006-SA	AQUEOUS	Q8270-A	02 JUN 97-02	02 JUN 97-02

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DUPLICATE CONTROL SAMPLE REPORT
Semivolatile Organics by GC/MS
Project: 055362

Category: Q8270-A Acid, Base and Neutrals by GC/MS.
Matrix: AQUEOUS
QC Lot: 02 JUN 97-02 Date Analyzed: 16 JUN 97
Concentration Units: ug/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Phenol	150	135		131		133	89	45-105	3.0	20
2-Chlorophenol	150	136		132		134	89	52-107	3.3	22
1,4-Dichlorobenzene	100	78.3		73.6		76.0	76	20-124	6.1	27
N-Nitroso-di-n-propylamine	100	96.0		98.8		97.4	97	52-108	2.9	20
1,2,4-Trichlorobenzene	100	80.7		79.6		80.1	80	44-142	1.5	27
4-Chloro-3-methylphenol	150	136		140		138	92	22-147	3.1	20
Acenaphthene	100	78.3		79.9		79.1	79	47-145	2.0	20
4-Nitrophenol	150	120		119		119	80	42-115	0.52	32
2,4-Dinitrotoluene	100	100		98.1		99.1	99	55-116	2.0	21
Pentachlorophenol	150	134		134		134	89	14-176	0.03	30
Pyrene	100	104		100		102	102	56-120	3.9	20

Surrogate	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	Accuracy Average(%) DCS	Limits
Nitrobenzene-d5	100	81.8		80.2		81	51-104
2-Fluorobiphenyl	100	67.6		67.6		68	43-116
Terphenyl-d14	100	79.3		75.0		77	33-141
2-Fluorophenol	150	130		129		86	36-108
Phenol-d5	150	138		138		92	47-106
2,4,6-Tribromophenol	150	147		137		94	49-106

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

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Environmental Services

SINGLE CONTROL SAMPLE REPORT
Semivolatile Organics by GC/MS

Category: Q8270-A
Matrix: AQUEOUS
QC Lot: 02 JUN 97-02 QC Run: 02 JUN 97-02
Concentration Units: ug/L

Analyte	Concentration Spiked	Concentration Measured	Accuracy(%) SCS	Accuracy(%) Limits
Nitrobenzene-d5	100	77.2	77	51-104
2-Fluorobiphenyl	100	63.8	64	43-116
Terphenyl-d14	100	74.6	75	33-141
2-Fluorophenol	150	123	82	36-108
Phenol-d5	150	129	86	47-106
2,4,6-Tribromophenol	150	121	81	49-106

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

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METHOD BLANK REPORT
Semivolatile Organics by GC/MS

Test: Q8270-AP9-3520-A
Matrix: AQUEOUS
QC Lot: 02 JUN 97-02 QC Run: 02 JUN 97-02

Analyte	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	10
Acenaphthylene	ND	ug/L	10
Acetophenone	ND	ug/L	10
2-Acetylaminofluorene	ND	ug/L	100
4-Aminobiphenyl	ND	ug/L	50
Aniline	ND	ug/L	10
Anthracene	ND	ug/L	10
Aramite	ND	ug/L	20
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	20
4-Chloroaniline	ND	ug/L	10
bis(2-Chloroethoxy) methane	ND	ug/L	10
bis(2-Chloroethyl) ether	ND	ug/L	10
2,2'-oxybis(1-chloropropane)	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	50
2,4-Dichlorophenol	ND	ug/L	10
2,6-Dichlorophenol	ND	ug/L	10
Diethyl phthalate	ND	ug/L	10
Dimethoate	ND	ug/L	20

Quanterra Environmental Services

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

Test: Q8270-AP9-3520-A
Matrix: AQUEOUS
QC Lot: 02 JUN 97-02 QC Run: 02 JUN 97-02

Analyte	Result	Units	Reporting Limit
p-Dimethylaminoazobenzene	ND	ug/L	20
7,12-Dimethylbenz(a)-anthracene	ND	ug/L	20
3,3'-Dimethylbenzidine	ND	ug/L	50
a,a-Dimethylphenethyl-amine	ND	ug/L	50
2,4-Dimethylphenol	ND	ug/L	10
Dimethyl phthalate	ND	ug/L	10
1,3-Dinitrobenzene	ND	ug/L	10
4,6-Dinitro-2-methylphenol	ND	ug/L	50
2,4-Dinitrophenol	ND	ug/L	50
2,4-Dinitrotoluene	ND	ug/L	10
2,6-Dinitrotoluene	ND	ug/L	10
Di-n-octyl phthalate	ND	ug/L	10
Diphenylamine	ND	ug/L	10
Disulfoton	ND	ug/L	50
bis(2-Ethylhexyl) phthalate	ND	ug/L	10
Ethyl methanesulfonate	ND	ug/L	10
Famphur	ND	ug/L	100
Fluoranthene	ND	ug/L	10
Fluorene	ND	ug/L	10
Hexachlorobenzene	ND	ug/L	10
Hexachlorobutadiene	ND	ug/L	10
Hexachlorocyclopentadiene	ND	ug/L	50
Hexachloroethane	ND	ug/L	10
Hexachlorophene	ND	ug/L	--
Hexachloropropene	ND	ug/L	100
Indeno(1,2,3-cd)pyrene	ND	ug/L	10
Isophorone	ND	ug/L	10
Isosafrole	ND	ug/L	20
Methapyrilene	ND	ug/L	50
3-Methylcholanthrene	ND	ug/L	20
Methyl methanesulfonate	ND	ug/L	10
2-Methylnaphthalene	ND	ug/L	10
Methyl parathion	ND	ug/L	50
2-Methylphenol	ND	ug/L	10
3/4-Methylphenol	ND	ug/L	10
Naphthalene	ND	ug/L	10
1,4-Naphthoquinone	ND	ug/L	50

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Environmental Services

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

Test: Q8270-AP9-3520-A
Matrix: AQUEOUS
QC Lot: 02 JUN 97-02 QC Run: 02 JUN 97-02

Analyte	Result	Units	Reporting Limit
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	20
Parathion	ND	ug/L	50
Pentachlorobenzene	ND	ug/L	10
Pentachloroethane	ND	ug/L	50
Pentachloronitrobenzene	ND	ug/L	50
Pentachlorophenol	ND	ug/L	50
Phenacetin	ND	ug/L	20
Phenanthrene	ND	ug/L	10
Phenol	ND	ug/L	10
p-Phenylenediamine	ND	ug/L	100
Phorate	ND	ug/L	50
2-Picoline	ND	ug/L	20
Pronamide	ND	ug/L	20
Pyrene	ND	ug/L	10
Pyridine	ND	ug/L	20
Safrole	ND	ug/L	20
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
o-Toluidine	ND	ug/L	10

Quanterra Environmental Services

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

Analyte	Result	Units	Reporting Limit
Test: Q8270-AP9-3520-A			
Matrix: AQUEOUS			
QC Lot: 02 JUN 97-02 QC Run: 02 JUN 97-02			
1,2,4-Trichlorobenzene	ND	ug/L	10
2,4,5-Trichlorophenol	ND	ug/L	10
2,4,6-Trichlorophenol	ND	ug/L	10
O,O,O-Triethylphosphorothioate	ND	ug/L	50
1,3,5-Trinitrobenzene	ND	ug/L	50
Test: Q8270-AP9-3520-A			
Matrix: AQUEOUS			
QC Lot: 02 JUN 97-02 QC Run: 02 JUN 97-02			
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	50
Aniline	ND	ug/L	10
Anthracene	ND	ug/L	10
Aramite	ND	ug/L	20
Benzo(a)anthracene	ND	ug/L	10
Benzo(b)fluoranthene	ND	ug/L	10
Benzo(k)fluoranthene	ND	ug/L	10
Benzo(g,h,i)perylene	ND	ug/L	10
Benzo(a)pyrene	ND	ug/L	10
Benzyl alcohol	ND	ug/L	10
4-Bromophenyl phenyl ether	ND	ug/L	10
Butyl benzyl phthalate	ND	ug/L	10
2-sec-Butyl-4,6-dinitrophenol	ND	ug/L	20
4-Chloroaniline	ND	ug/L	10
bis(2-Chloroethoxy) methane	ND	ug/L	10
bis(2-Chloroethyl) ether	ND	ug/L	10
2,2'-oxybis(1-chloropropane)	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

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

Test: Q8270-AP9-3520-A
Matrix: AQUEOUS
QC Lot: 02 JUN 97-02 QC Run: 02 JUN 97-02

Analyte	Result	Units	Reporting Limit
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	50
2,4-Dichlorophenol	ND	ug/L	10
2,6-Dichlorophenol	ND	ug/L	10
Diethyl phthalate	ND	ug/L	10
Dimethoate	ND	ug/L	20
p-Dimethylaminoazobenzene	ND	ug/L	20
7,12-Dimethylbenz(a)-anthracene	ND	ug/L	20
3,3'-Dimethylbenzidine	ND	ug/L	50
a,a-Dimethylphenethylamine	ND	ug/L	50
2,4-Dimethylphenol	ND	ug/L	10
Dimethyl phthalate	ND	ug/L	10
1,3-Dinitrobenzene	ND	ug/L	10
4,6-Dinitro-2-methylphenol	ND	ug/L	50
2,4-Dinitrophenol	ND	ug/L	50
2,4-Dinitrotoluene	ND	ug/L	10
2,6-Dinitrotoluene	ND	ug/L	10
Di-n-octyl phthalate	ND	ug/L	10
Diphenylamine	ND	ug/L	10
Disulfoton	ND	ug/L	50
bis(2-Ethylhexyl) phthalate	ND	ug/L	10
Ethyl methanesulfonate	ND	ug/L	10
Famphur	ND	ug/L	100
Fluoranthene	ND	ug/L	10
Fluorene	ND	ug/L	10
Hexachlorobenzene	ND	ug/L	10
Hexachlorobutadiene	ND	ug/L	10
Hexachlorocyclopentadiene	ND	ug/L	50
Hexachloroethane	ND	ug/L	10
Hexachlorophene	ND	ug/L	--
Hexachloropropene	ND	ug/L	100

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

Test: Q8270-AP9-3520-A
Matrix: AQUEOUS
QC Lot: 02 JUN 97-02 QC Run: 02 JUN 97-02

Analyte	Result	Units	Reporting Limit
Indeno(1,2,3-cd)pyrene	ND	ug/L	10
Isophorone	ND	ug/L	10
Isosafrole	ND	ug/L	20
Methapyrilene	ND	ug/L	50
3-Methylcholanthrene	ND	ug/L	20
Methyl methanesulfonate	ND	ug/L	10
2-Methylnaphthalene	ND	ug/L	10
Methyl parathion	ND	ug/L	50
2-Methylphenol	ND	ug/L	10
3/4-Methylphenol	ND	ug/L	10
Naphthalene	ND	ug/L	10
1,4-Naphthoquinone	ND	ug/L	50
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	20
Parathion	ND	ug/L	50
Pentachlorobenzene	ND	ug/L	10
Pentachloroethane	ND	ug/L	50
Pentachloronitrobenzene	ND	ug/L	50
Pentachlorophenol	ND	ug/L	50
Phenacetin	ND	ug/L	20
Phenanthrene	ND	ug/L	10
Phenol	ND	ug/L	10
p-Phenylenediamine	ND	ug/L	100

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

Test: Q8270-AP9-3520-A
Matrix: AQUEOUS
QC Lot: 02 JUN 97-02 QC Run: 02 JUN 97-02

Analyte	Result	Units	Reporting Limit
Phorate	ND	ug/L	50
2-Picoline	ND	ug/L	20
Pronamide	ND	ug/L	20
Pyrene	ND	ug/L	10
Pyridine	ND	ug/L	20
Safrole	ND	ug/L	20
Sulfotepp	ND	ug/L	50
1,2,4,5-Tetrachloro-benzene	ND	ug/L	10
2,3,4,6-Tetrachlorophenol	ND	ug/L	50
Thionazin	ND	ug/L	50
o-Toluidine	ND	ug/L	10
1,2,4-Trichlorobenzene	ND	ug/L	10
2,4,5-Trichlorophenol	ND	ug/L	10
2,4,6-Trichlorophenol	ND	ug/L	10
0,0,0-Triethylphosphoro-thioate	ND	ug/L	50
1,3,5-Trinitrobenzene	ND	ug/L	50

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MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Semivolatile Organics by GC/MS
Project: 055362

Category: Q8270-A Acid, Base and Neutrals by GC/MS.
Matrix: AQUEOUS
Sample: 055362-0004
MS Run: 02 JUN 97-023
Units: ug/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS	Amount Spiked MSD	% Recovery MS	% Recovery MSD	Recov. Accep. Limits	RPD MS-MSD	RPD Accept Limits
Phenol	ND	115	125	146	149	79	84	45-105	6.7	20
2-Chlorophenol	ND	117	126	146	149	80	85	52-107	6.0	22
1,4-Dichlorobenzene	ND	69.4	76.9	97.5	99.1	71	78	20-124	8.6	27
N-Nitroso-di-n-propylamine	ND	84.5	95.7	97.5	99.1	87	97	52-108	11	20
1,2,4-Trichlorobenzene	ND	69.8	79.9	97.5	99.1	72	81	44-142	12	27
4-Chloro-3-methylphenol	ND	112	127	146	149	77	85	22-147	11	20
Acenaphthene	ND	67.3	79.7	97.5	99.1	69	80	47-145	15	20
4-Nitrophenol	ND	112	116	146	149	76	78	42-115	2.1	32
2,4-Dinitrotoluene	ND	97.4	100	97.5	99.1	100	101	55-116	1.1	21
Pentachlorophenol	ND	132	134	146	149	90	90	14-176	0.2	30
Pyrene	ND	92.3	92.8	97.5	99.1	95	94	56-120	1.2	20

Surrogates		%Recovery		Rec. Accept. Limits
Nitrobenzene-d5	70.9	73.8	79.0	51-104
2-Fluorobiphenyl	63.9	64.4	73.0	43-116
Terphenyl-d14	73.7	75.3	75.9	33-141
2-Fluorophenol	71.5	75.0	79.5	36-108
Phenol-d5	80.7	83.6	91.9	47-106
2,4,6-Tribromophenol	77.2	89.5	93.7	49-106

ND = Not Detected

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

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Environmental Services

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Semivolatile Organics by GC/MS
Project: 055362 (cont.)

Category: Q8270-A Acid, Base and Neutrals by GC/MS.
Matrix: AQUEOUS
Sample: 055426-0005
MS Run: 02 JUN 97-02
Units: ug/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS	Amount Spiked MSD	% Recovery MS	% Recovery MSD	Recov. Accep. Limits	RPD MS-MSD	RPD Accept Limits
Phenol	ND	123	123	156	149	79	83	45-105	5.5	20
2-Chlorophenol	ND	125	127	156	149	80	86	52-107	7.2	22
1,4-Dichlorobenzene	ND	78.9	81.3	104	99.0	76	82	20-124	8.2	27
N-Nitroso-di-n-propylamine	ND	90.9	90.6	104	99.0	87	91	52-108	4.9	20
1,2,4-Trichlorobenzene	ND	83.9	85.4	104	99.0	80	86	44-142	7.0	27
4-Chloro-3-methylphenol	ND	129	134	156	149	82	90	22-147	9.2	20
Acenaphthene	ND	78.4	84.9	104	99.0	75	86	47-145	13	20
4-Nitrophenol	ND	114	118	156	149	73	79	42-115	7.9	32
2,4-Dinitrotoluene	ND	97.5	107	104	99.0	93	108	55-116	14	21
Pentachlorophenol	ND	124	126	156	149	80	85	14-176	6.8	30
Pyrene	ND	87.1	93.5	104	99.0	84	94	56-120	12	20

Surrogates		%Recovery		Rec. Accept. Limits
Nitrobenzene-d5	75.5	73.2	78.0	51-104
2-Fluorobiphenyl	67.9	67.9	77.5	43-116
Terphenyl-d14	54.1	49.3	69.9	33-141
2-Fluorophenol	80.9	76.6	83.0	36-108
Phenol-d5	84.9	83.4	90.7	47-106
2,4,6-Tribromophenol	90.9	87.9	94.8	49-106

ND = Not Detected

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

Quanterra
Environmental Services

QC LOT ASSIGNMENT REPORT
Semivolatile Organics by GC

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
055362-0001-SA	AQUEOUS	615-A	03 JUN 97-01	03 JUN 97-01
055362-0001-SA	AQUEOUS	8080-A	03 JUN 97-01	03 JUN 97-01
055362-0002-SA	AQUEOUS	615-A	03 JUN 97-01	03 JUN 97-01
055362-0002-SA	AQUEOUS	8080-A	03 JUN 97-01	03 JUN 97-01
055362-0004-SA	AQUEOUS	615-A	03 JUN 97-01	03 JUN 97-01
055362-0004-SA	AQUEOUS	8080-A	03 JUN 97-01	03 JUN 97-01
055362-0004-MS	AQUEOUS	615-A	03 JUN 97-01	03 JUN 97-01
055362-0004-MS	AQUEOUS	8080-A	03 JUN 97-01	03 JUN 97-01
055362-0004-SD	AQUEOUS	615-A	03 JUN 97-01	03 JUN 97-01
055362-0004-SD	AQUEOUS	8080-A	03 JUN 97-01	03 JUN 97-01
055362-0005-SA	AQUEOUS	615-A	03 JUN 97-01	03 JUN 97-01
055362-0005-SA	AQUEOUS	8080-A	03 JUN 97-01	03 JUN 97-01
055362-0006-SA	AQUEOUS	615-A	03 JUN 97-01	03 JUN 97-01
055362-0006-SA	AQUEOUS	8080-A	03 JUN 97-01	03 JUN 97-01

Quanterra
Environmental Services

DUPLICATE CONTROL SAMPLE REPORT
Semivolatile Organics by GC
Project: 055362

Category: 615-A Herbicides
Matrix: AQUEOUS
QC Lot: 03 JUN 97-01 Date Analyzed: 09 JUN 97
Concentration Units: ug/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
2,4-D	5.00	2.01		1.99		2.00	40	23-114	1.0	27
2,4,5-TP (Silvex)	1.00	0.465		0.460		0.462	46	26-124	1.1	31
2,4,5-T	1.00	0.455		0.450		0.452	45	26-127	1.1	29

Category: 8080-A Organochlorine Pesticides
Matrix: AQUEOUS
QC Lot: 03 JUN 97-01 Date Analyzed: 20 JUN 97
Concentration Units: ug/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
gamma-BHC (Lindane)	0.200	0.183		0.214		0.198	99	76-122	16	# 15
Heptachlor	0.200	0.181		0.216		0.198	99	69-125	18	# 15
Aldrin	0.200	0.161		0.195		0.178	89	64-116	19	# 17
Dieldrin	0.500	0.436		0.513		0.474	95	74-107	16	# 15
Endrin	0.500	0.461		0.536		0.498	100	72-118	15	15
4,4'-DDT	0.500	0.445		0.511		0.478	96	74-117	14	15

= Value outside control limits

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

Quanterra
Environmental Services

SINGLE CONTROL SAMPLE REPORT
Semivolatile Organics by GC

Analyte	Concentration Spiked	Concentration Measured	Accuracy(%) SCS	Accuracy(%) Limits
Category: 615-A				
Matrix: AQUEOUS				
QC Lot: 03 JUN 97-01 QC Run: 03 JUN 97-01				
Concentration Units: ug/L				
DCAA	5.00	2.85	57	27-121
Category: 8080-A				
Matrix: AQUEOUS				
QC Lot: 03 JUN 97-01 QC Run: 03 JUN 97-01				
Concentration Units: ug/L				
Tetrachloro-m-xylene	1.00	0.976	98	51-103
Dibutyl chlorendate	1.00	0.947	95	71-109
Decachlorobiphenyl	0.200	0.193	96	50-138

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

Quanterra
Environmental Services

METHOD BLANK REPORT
Semivolatile Organics by GC

Analyte	Result	Units	Reporting Limit
Test: 8150-AP9-A			
Matrix: AQUEOUS			
QC Lot: 03 JUN 97-01 QC Run: 03 JUN 97-01			
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: 03 JUN 97-01 QC Run: 03 JUN 97-01			
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

Quanterra Environmental Services

METHOD BLANK REPORT
Semivolatile Organics by GC (cont.)

Analyte	Result	Units	Reporting Limit
Test: 8150-AP9-A			
Matrix: AQUEOUS			
QC Lot: 03 JUN 97-01 QC Run: 03 JUN 97-01			
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: 03 JUN 97-01 QC Run: 03 JUN 97-01			
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

Quanterra
Environmental Services

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Semivolatile Organics by GC
Project: 055362

Category: 615-A Herbicides
Matrix: AQUEOUS
Sample: 055362-0004
MS Run: 03 JUN 97-01
Units: ug/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS	Amount Spiked MSD	% Recovery MS	% Recovery MSD	Recov. Accep. Limits	RPD MS-MSD	RPD Accept Limits
2,4-D	ND	T 1.53	1.71	5.10	5.43	30	31	23-114	4.9	27
2,4,5-TP (Silvex)	ND	0.344	0.387	1.02	1.09	34	36	26-124	5.1	31
2,4,5-T	ND	0.332	0.366	1.02	1.09	33	34	26-127	3.1	29

Category: 8080-A Organochlorine Pesticides
Matrix: AQUEOUS
Sample: 055362-0004
MS Run: 03 JUN 97-01
Units: ug/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS	Amount Spiked MSD	% Recovery MS	% Recovery MSD	Recov. Accep. Limits	RPD MS-MSD	RPD Accept Limits
gamma-BHC (Lindane)	ND	0.195	0.202	0.190	0.195	103	104	76-122	0.9	15
Heptachlor	ND	0.197	0.205	0.190	0.195	104	105	69-125	1.4	15
Aldrin	ND	T 0.186	0.193	0.190	0.195	98	99	64-116	1.1	17
Dieldrin	ND	0.468	0.486	0.476	0.488	98	100	74-107	1.3	15
Endrin	ND	0.486	0.509	0.476	0.488	102	104	72-118	2.1	15
4,4'-DDT	ND	0.476	0.498	0.476	0.488	100	102	74-117	2.0	15

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

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

Quanterra
Environmental Services

QC LOT ASSIGNMENT REPORT
High Performance Liquid Chromatography

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
055362-0001-SA	AQUEOUS	8310-A	03 JUN 97-01	03 JUN 97-01
055362-0002-SA	AQUEOUS	8310-A	03 JUN 97-01	03 JUN 97-01
055362-0004-SA	AQUEOUS	8310-A	03 JUN 97-01	03 JUN 97-01
055362-0004-MS	AQUEOUS	8310-A	03 JUN 97-01	03 JUN 97-01
055362-0004-SD	AQUEOUS	8310-A	03 JUN 97-01	03 JUN 97-01
055362-0005-SA	AQUEOUS	8310-A	03 JUN 97-01	03 JUN 97-01
055362-0006-SA	AQUEOUS	8310-A	03 JUN 97-01	03 JUN 97-01

Quanterra
Environmental Services

DUPLICATE CONTROL SAMPLE REPORT
High Performance Liquid Chromatography
Project: 055362

Category: 8310-A Polynuclear Aromatic Hydrocarbons by HPLC
Matrix: AQUEOUS
QC Lot: 03 JUN 97-01 Date Analyzed: 18 JUN 97
Concentration Units: ug/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Naphthalene	10.0	7.07		7.61		7.34	73	53-111	7.4	33
Fluorene	2.00	1.63		1.70		1.66	83	59-123	4.2	26
Pyrene	2.00	1.56		1.65		1.60	80	62-122	5.6	28
Benzo(a)pyrene	1.00	0.769		0.773		0.771	77	65-117	0.52	22
Indeno(1,2,3-cd)pyrene	1.00	0.893		0.888		0.890	89	53-153	0.56	22

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

Quanterra
Environmental Services

SINGLE CONTROL SAMPLE REPORT
High Performance Liquid Chromatography

Analyte	Concentration Spiked	Concentration Measured	Accuracy(%) SCS	Accuracy(%) Limits
Category: 8310-A				
Matrix: AQUEOUS				
QC Lot: 03 JUN 97-01 QC Run: 03 JUN 97-01				
Concentration Units: ug/L				
Terphenyl-d14	20.0	11.3	56	37-123

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

Quanterra
Environmental Services

METHOD BLANK REPORT
High Performance Liquid Chromatography

Analyte	Result	Units	Reporting Limit
Test: 8310-HPLC-A			
Matrix: AQUEOUS			
QC Lot: 03 JUN 97-01 QC Run: 03 JUN 97-01			
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
Test: 8310-HPLC-A			
Matrix: AQUEOUS			
QC Lot: 03 JUN 97-01 QC Run: 03 JUN 97-01			
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

Quanterra
Environmental Services

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
High Performance Liquid Chromatography
Project: 055362

Category: 8310-A Polynuclear Aromatic Hydrocarbons by HPLC
Matrix: AQUEOUS
Sample: 055362-0004
MS Run: 03 JUN 97-01
Units: ug/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS	Amount Spiked MSD	% Recovery MS	% Recovery MSD	Recov. Accep. Limits	RPD MS-MSD	RPD Accept Limits
Naphthalene	ND	5.55	6.44	9.52	9.52	58	68	53-111	15	33
Fluorene	ND	1.17	1.38	1.90	1.90	62	73	59-123	16	26
Pyrene	ND	1.44	1.36	1.90	1.90	76	72	62-122	6.0	28
Benzo(a)pyrene	ND	0.728	0.631	0.952	0.952	76	66	65-117	14	22
Indeno(1,2,3-cd) pyrene	ND	0.851	0.748	0.952	0.952	89	79	53-153	13	22

ND = Not Detected

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

Quanterra
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)
055362-0001-SA	AQUEOUS	PB-FAA-AT	16 JUN 97-L2	16 JUN 97-L2
055362-0001-SA	AQUEOUS	AS-FAA-AT	17 JUN 97-N2	17 JUN 97-N2
055362-0001-SA	AQUEOUS	SE-FAA-AT	17 JUN 97-N2	17 JUN 97-N2
055362-0001-SA	AQUEOUS	TL-FAA-AT	16 JUN 97-L2	16 JUN 97-L2
055362-0001-SA	AQUEOUS	HG-CVAA-AT	30 MAY 97-SA	30 MAY 97-SA
055362-0001-SA	AQUEOUS	CD-FAA-AT	16 JUN 97-L2	16 JUN 97-L2
055362-0001-SA	AQUEOUS	CR-FAA-AT	16 JUN 97-L2	16 JUN 97-L2
055362-0001-SA	AQUEOUS	SB-FAA-AT	17 JUN 97-N1	17 JUN 97-N1
055362-0001-SA	AQUEOUS	AG-FAA-AT	16 JUN 97-L2	16 JUN 97-L2
055362-0001-SA	AQUEOUS	ICP-AT	17 JUN 97-N1	17 JUN 97-N1
055362-0002-SA	AQUEOUS	PB-FAA-AT	16 JUN 97-L2	16 JUN 97-L2
055362-0002-SA	AQUEOUS	AS-FAA-AT	17 JUN 97-N2	17 JUN 97-N2
055362-0002-SA	AQUEOUS	SE-FAA-AT	17 JUN 97-N2	17 JUN 97-N2
055362-0002-SA	AQUEOUS	TL-FAA-AT	16 JUN 97-L2	16 JUN 97-L2
055362-0002-SA	AQUEOUS	HG-CVAA-AT	30 MAY 97-SA	30 MAY 97-SA
055362-0002-SA	AQUEOUS	CD-FAA-AT	16 JUN 97-L2	16 JUN 97-L2
055362-0002-SA	AQUEOUS	CR-FAA-AT	16 JUN 97-L2	16 JUN 97-L2
055362-0002-SA	AQUEOUS	SB-FAA-AT	17 JUN 97-N1	17 JUN 97-N1
055362-0002-SA	AQUEOUS	AG-FAA-AT	16 JUN 97-L2	16 JUN 97-L2
055362-0002-SA	AQUEOUS	ICP-AT	17 JUN 97-N1	17 JUN 97-N1
055362-0004-SA	AQUEOUS	PB-FAA-AT	16 JUN 97-L2	16 JUN 97-L2
055362-0004-SA	AQUEOUS	AS-FAA-AT	17 JUN 97-N2	17 JUN 97-N2
055362-0004-SA	AQUEOUS	SE-FAA-AT	17 JUN 97-N2	17 JUN 97-N2
055362-0004-SA	AQUEOUS	TL-FAA-AT	16 JUN 97-L2	16 JUN 97-L2
055362-0004-SA	AQUEOUS	HG-CVAA-AT	30 MAY 97-SA	30 MAY 97-SA
055362-0004-SA	AQUEOUS	CD-FAA-AT	16 JUN 97-L2	16 JUN 97-L2
055362-0004-SA	AQUEOUS	CR-FAA-AT	16 JUN 97-L2	16 JUN 97-L2
055362-0004-SA	AQUEOUS	SB-FAA-AT	17 JUN 97-N1	17 JUN 97-N1
055362-0004-SA	AQUEOUS	AG-FAA-AT	16 JUN 97-L2	16 JUN 97-L2
055362-0004-SA	AQUEOUS	ICP-AT	17 JUN 97-N1	17 JUN 97-N1
055362-0004-MS	AQUEOUS	PB-FAA-AT	16 JUN 97-L2	16 JUN 97-L2
055362-0004-MS	AQUEOUS	AS-FAA-AT	17 JUN 97-N2	17 JUN 97-N2
055362-0004-MS	AQUEOUS	SE-FAA-AT	17 JUN 97-N2	17 JUN 97-N2
055362-0004-MS	AQUEOUS	TL-FAA-AT	16 JUN 97-L2	16 JUN 97-L2
055362-0004-MS	AQUEOUS	HG-CVAA-AT	30 MAY 97-SA	30 MAY 97-SA
055362-0004-MS	AQUEOUS	CD-FAA-AT	16 JUN 97-L2	16 JUN 97-L2
055362-0004-MS	AQUEOUS	CR-FAA-AT	16 JUN 97-L2	16 JUN 97-L2
055362-0004-MS	AQUEOUS	SB-FAA-AT	17 JUN 97-N1	17 JUN 97-N1
055362-0004-MS	AQUEOUS	AG-FAA-AT	16 JUN 97-L2	16 JUN 97-L2
055362-0004-MS	AQUEOUS	ICP-AT	17 JUN 97-N1	17 JUN 97-N1
055362-0004-SD	AQUEOUS	PB-FAA-AT	16 JUN 97-L2	16 JUN 97-L2
055362-0004-SD	AQUEOUS	AS-FAA-AT	17 JUN 97-N2	17 JUN 97-N2
055362-0004-SD	AQUEOUS	SE-FAA-AT	17 JUN 97-N2	17 JUN 97-N2
055362-0004-SD	AQUEOUS	TL-FAA-AT	16 JUN 97-L2	16 JUN 97-L2
055362-0004-SD	AQUEOUS	HG-CVAA-AT	30 MAY 97-SA	30 MAY 97-SA
055362-0004-SD	AQUEOUS	CD-FAA-AT	16 JUN 97-L2	16 JUN 97-L2
055362-0004-SD	AQUEOUS	CR-FAA-AT	16 JUN 97-L2	16 JUN 97-L2

Quanterra Environmental Services

QC LOT ASSIGNMENT REPORT
Metals Analysis and Preparation (cont.)

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
055362-0004-SD	AQUEOUS	SB-FAA-AT	17 JUN 97-N1	17 JUN 97-N1
055362-0004-SD	AQUEOUS	AG-FAA-AT	16 JUN 97-L2	16 JUN 97-L2
055362-0004-SD	AQUEOUS	ICP-AT	17 JUN 97-N1	17 JUN 97-N1
055362-0005-SA	AQUEOUS	PB-FAA-AT	16 JUN 97-L2	16 JUN 97-L2
055362-0005-SA	AQUEOUS	AS-FAA-AT	17 JUN 97-N2	17 JUN 97-N2
055362-0005-SA	AQUEOUS	SE-FAA-AT	17 JUN 97-N2	17 JUN 97-N2
055362-0005-SA	AQUEOUS	TL-FAA-AT	16 JUN 97-L2	16 JUN 97-L2
055362-0005-SA	AQUEOUS	HG-CVAA-AT	30 MAY 97-SA	30 MAY 97-SA
055362-0005-SA	AQUEOUS	CD-FAA-AT	16 JUN 97-L2	16 JUN 97-L2
055362-0005-SA	AQUEOUS	CR-FAA-AT	16 JUN 97-L2	16 JUN 97-L2
055362-0005-SA	AQUEOUS	SB-FAA-AT	17 JUN 97-N1	17 JUN 97-N1
055362-0005-SA	AQUEOUS	AG-FAA-AT	16 JUN 97-L2	16 JUN 97-L2
055362-0005-SA	AQUEOUS	ICP-AT	17 JUN 97-N1	17 JUN 97-N1
055362-0006-SA	AQUEOUS	PB-FAA-AT	16 JUN 97-L2	16 JUN 97-L2
055362-0006-SA	AQUEOUS	AS-FAA-AT	17 JUN 97-N2	17 JUN 97-N2
055362-0006-SA	AQUEOUS	SE-FAA-AT	17 JUN 97-N2	17 JUN 97-N2
055362-0006-SA	AQUEOUS	TL-FAA-AT	16 JUN 97-L2	16 JUN 97-L2
055362-0006-SA	AQUEOUS	HG-CVAA-AT	30 MAY 97-SA	30 MAY 97-SA
055362-0006-SA	AQUEOUS	CD-FAA-AT	16 JUN 97-L2	16 JUN 97-L2
055362-0006-SA	AQUEOUS	CR-FAA-AT	16 JUN 97-L2	16 JUN 97-L2
055362-0006-SA	AQUEOUS	SB-FAA-AT	17 JUN 97-N1	17 JUN 97-N1
055362-0006-SA	AQUEOUS	AG-FAA-AT	16 JUN 97-L2	16 JUN 97-L2
055362-0006-SA	AQUEOUS	ICP-AT	17 JUN 97-N1	17 JUN 97-N1

Quanterra
Environmental Services

DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation
Project: 055362

Category: PB-FAA-AT Lead, Furnace AA / Total Metals
Matrix: AQUEOUS
QC Lot: 16 JUN 97-L2 Date Analyzed: 17 JUN 97
Concentration Units: mg/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Lead	0.0400	0.0387		0.0388		0.0388	97	84-124	0.26	10

Category: AS-FAA-AT Arsenic, Furnace AA / Total Metals
Matrix: AQUEOUS
QC Lot: 17 JUN 97-N2 Date Analyzed: 18 JUN 97
Concentration Units: mg/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Arsenic	0.0400	0.0416		0.0410		0.0413	103	85-114	1.5	10

Category: SE-FAA-AT Selenium, Furnace AA / Total Metals
Matrix: AQUEOUS
QC Lot: 17 JUN 97-N2 Date Analyzed: 18 JUN 97
Concentration Units: mg/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Selenium	0.0400	0.0392		0.0383		0.0388	97	80-118	2.3	10

Category: TL-FAA-AT Thallium, Furnace AA / Total Metals
Matrix: AQUEOUS
QC Lot: 16 JUN 97-L2 Date Analyzed: 17 JUN 97
Concentration Units: mg/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Thallium	0.0400	0.0411		0.0414		0.0412	103	84-124	0.73	10

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

Quanterra Environmental Services

DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation
Project: 055362

Category: HG-CVAA-AT Mercury by CVAA / Total Mercury
Matrix: AQUEOUS
QC Lot: 30 MAY 97-SA
Concentration Units: mg/L

Date Analyzed: 30 MAY 97

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Mercury	0.00100	0.00102		0.00103		0.00102	103	77-117	0.98	10

Category: CD-FAA-AT Cadmium,Furnace AA/ Total Metals
Matrix: AQUEOUS
QC Lot: 16 JUN 97-L2
Concentration Units: mg/L

Date Analyzed: 17 JUN 97

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Cadmium	0.00400	0.00413		0.00427		0.00420	105	83-123	3.3	10

Category: CR-FAA-AT Chromium, Furnace AA, Total
Matrix: AQUEOUS
QC Lot: 16 JUN 97-L2
Concentration Units: mg/L

Date Analyzed: 18 JUN 97

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Chromium	0.0100	0.00990		0.00960		0.00975	98	81-121	3.1	14

Category: SB-FAA-AT Antimony by Furnace
Matrix: AQUEOUS
QC Lot: 17 JUN 97-N1
Concentration Units: mg/L

Date Analyzed: 18 JUN 97

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Antimony	0.500	0.515		0.486		0.500	100	83-123	5.8	14

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

Quanterra
Environmental Services

DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation
Project: 055362

Category: AG-FAA-AT Silver,Furnace AA/Total Metals
Matrix: AQUEOUS
QC Lot: 16 JUN 97-L2 Date Analyzed: 17 JUN 97
Concentration Units: mg/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Silver	0.00500	0.00517		0.00512		0.00514	103	81-121	0.97	15

Category: ICP-AT ICP Metals / Total
Matrix: AQUEOUS
QC Lot: 17 JUN 97-N1 Date Analyzed: 18 JUN 97
Concentration Units: mg/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Aluminum	2.00	2.09		2.14		2.12	106	86-117	1.9	10
Antimony	0.500	0.501		0.520		0.511	102	81-119	3.8	10
Arsenic	2.00	1.97		2.02		2.00	100	81-110	2.8	10
Barium	2.00	2.06		2.12		2.09	104	86-114	2.7	10
Beryllium	0.0500	0.0510		0.0522		0.0516	103	83-117	2.2	10
Boron	1.00	1.00		1.02		1.01	101	82-122	1.6	10
Cadmium	0.0500	0.0488		0.0490		0.0489	98	80-120	0.37	17
Calcium	50.0	51.5		52.4		51.9	104	88-112	1.6	10
Chromium	0.200	0.202		0.205		0.203	102	83-112	1.2	10
Cobalt	0.500	0.514		0.523		0.518	104	80-120	1.7	10
Copper	0.250	0.259		0.263		0.261	104	84-115	1.3	10
Iron	1.00	1.04		1.06		1.05	105	87-117	2.2	10
Lead	0.500	0.516		0.514		0.515	103	83-114	0.43	15
Lithium	1.00	1.02		1.05		1.04	104	80-120	3.1	10
Magnesium	50.0	53.1		54.1		53.6	107	84-114	2.0	10
Manganese	0.500	0.504		0.513		0.509	102	84-113	1.6	10
Molybdenum	1.00	1.01		1.04		1.02	102	80-120	2.3	10
Nickel	0.500	0.521		0.533		0.527	105	85-112	2.3	10
Potassium	50.0	51.7		53.9		52.8	106	82-111	4.0	10
Selenium	2.00	1.99		2.09		2.04	102	86-111	4.9	10
Silver	0.0500	0.0473		0.0489		0.0481	96	83-115	3.2	10
Sodium	50.0	51.1		52.4		51.8	104	86-115	2.5	10
Tin	2.00	2.13		2.14		2.13	107	86-114	0.52	10
Titanium	1.00	1.03		1.06		1.05	105	87-112	2.6	10
Vanadium	0.500	0.511		0.523		0.517	103	85-114	2.3	10
Zinc	0.500	0.499		0.507		0.503	101	82-113	1.5	10

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

Quanterra Environmental Services

METHOD BLANK REPORT
Metals Analysis and Preparation

Analyte	Result	Units	Reporting Limit
Test: PB-FAA-AT			
Matrix: AQUEOUS			
QC Lot: 16 JUN 97-L2 QC Run: 16 JUN 97-L2			
Lead	ND	mg/L	0.0050
Test: AS-FAA-AT			
Matrix: AQUEOUS			
QC Lot: 17 JUN 97-N2 QC Run: 17 JUN 97-N2			
Arsenic	ND	mg/L	0.0050
Test: SE-FAA-AT			
Matrix: AQUEOUS			
QC Lot: 17 JUN 97-N2 QC Run: 17 JUN 97-N2			
Selenium	ND	mg/L	0.0050
Test: TL-FAA-AT			
Matrix: AQUEOUS			
QC Lot: 16 JUN 97-L2 QC Run: 16 JUN 97-L2			
Thallium	ND	mg/L	0.0050
Test: HG-CVAA-7470-AT			
Matrix: AQUEOUS			
QC Lot: 30 MAY 97-SA QC Run: 30 MAY 97-SA			
Mercury	ND	mg/L	0.00020
Test: CD-FAA-AT			
Matrix: AQUEOUS			
QC Lot: 16 JUN 97-L2 QC Run: 16 JUN 97-L2			
Cadmium	ND	mg/L	0.00050

Quanterra
Environmental Services

METHOD BLANK REPORT
Metals Analysis and Preparation (cont.)

Analyte	Result	Units	Reporting Limit
Test: CR-FAA-AT			
Matrix: AQUEOUS			
QC Lot: 16 JUN 97-L2 QC Run: 16 JUN 97-L2			
Chromium	ND	mg/L	0.0050
Test: SB-FAA-AT			
Matrix: AQUEOUS			
QC Lot: 17 JUN 97-N1 QC Run: 17 JUN 97-N1			
Antimony	ND	mg/L	0.010
Test: AG-FAA-AT			
Matrix: AQUEOUS			
QC Lot: 16 JUN 97-L2 QC Run: 16 JUN 97-L2			
Silver	ND	mg/L	0.00050
Test: ICP-AT			
Matrix: AQUEOUS			
QC Lot: 17 JUN 97-N1 QC Run: 17 JUN 97-N1			
Barium	ND	mg/L	0.010
Beryllium	ND	mg/L	0.0020
Calcium	ND	mg/L	0.20
Cobalt	ND	mg/L	0.010
Copper	ND	mg/L	0.020
Iron	ND	mg/L	0.10
Magnesium	ND	mg/L	0.20
Manganese	ND	mg/L	0.010
Molybdenum	ND	mg/L	0.020
Nickel	ND	mg/L	0.040
Sodium	ND	mg/L	5.0
Tin	ND	mg/L	0.10
Vanadium	ND	mg/L	0.010
Zinc	ND	mg/L	0.020

Quanterra Environmental Services

METHOD BLANK REPORT
Metals Analysis and Preparation (cont.)

Analyte	Result	Units	Reporting Limit
Test: PB-FAA-AT			
Matrix: AQUEOUS			
QC Lot: 16 JUN 97-L2 QC Run: 16 JUN 97-L2			
Lead	ND	mg/L	0.0050
Test: AS-FAA-AT			
Matrix: AQUEOUS			
QC Lot: 17 JUN 97-N2 QC Run: 17 JUN 97-N2			
Arsenic	ND	mg/L	0.0050
Test: SE-FAA-AT			
Matrix: AQUEOUS			
QC Lot: 17 JUN 97-N2 QC Run: 17 JUN 97-N2			
Selenium	ND	mg/L	0.0050
Test: TL-FAA-AT			
Matrix: AQUEOUS			
QC Lot: 16 JUN 97-L2 QC Run: 16 JUN 97-L2			
Thallium	ND	mg/L	0.0050
Test: HG-CVAA-7470-AT			
Matrix: AQUEOUS			
QC Lot: 30 MAY 97-SA QC Run: 30 MAY 97-SA			
Mercury	ND	mg/L	0.00020
Test: CD-FAA-AT			
Matrix: AQUEOUS			
QC Lot: 16 JUN 97-L2 QC Run: 16 JUN 97-L2			
Cadmium	ND	mg/L	0.00050

Quanterra Environmental Services

METHOD BLANK REPORT
Metals Analysis and Preparation (cont.)

Analyte	Result	Units	Reporting Limit
Test: CR-FAA-AT			
Matrix: AQUEOUS			
QC Lot: 16 JUN 97-L2 QC Run: 16 JUN 97-L2			
Chromium	ND	mg/L	0.0050
Test: SB-FAA-AT			
Matrix: AQUEOUS			
QC Lot: 17 JUN 97-N1 QC Run: 17 JUN 97-N1			
Antimony	ND	mg/L	0.010
Test: AG-FAA-AT			
Matrix: AQUEOUS			
QC Lot: 16 JUN 97-L2 QC Run: 16 JUN 97-L2			
Silver	ND	mg/L	0.00050
Test: ICP-AT			
Matrix: AQUEOUS			
QC Lot: 17 JUN 97-N1 QC Run: 17 JUN 97-N1			
Barium	ND	mg/L	0.010
Beryllium	ND	mg/L	0.0020
Calcium	ND	mg/L	0.20
Cobalt	ND	mg/L	0.010
Copper	ND	mg/L	0.020
Iron	ND	mg/L	0.10
Magnesium	ND	mg/L	0.20
Manganese	ND	mg/L	0.010
Molybdenum	ND	mg/L	0.020
Nickel	ND	mg/L	0.040
Sodium	ND	mg/L	5.0
Tin	ND	mg/L	0.10
Vanadium	ND	mg/L	0.010
Zinc	ND	mg/L	0.020

Quanterra
Environmental Services

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Metals Analysis and Preparation
Project: 055362

Category: PB-FAA-AT Lead, Furnace AA / Total Metals
Matrix: AQUEOUS
Sample: 055362-0004
MS Run: 16 JUN 97-L21
Units: mg/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Lead	ND G	0.0137	0.0139	0.0400	34	35	1.4	84-124	10

Category: AS-FAA-AT Arsenic, Furnace AA / Total Metals
Matrix: AQUEOUS
Sample: 055362-0004
MS Run: 17 JUN 97-N2
Units: mg/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Arsenic	ND	0.0451	0.0448	0.0400	113	112	0.6	85-114	10

Category: SE-FAA-AT Selenium, Furnace AA / Total Metals
Matrix: AQUEOUS
Sample: 055362-0004
MS Run: 17 JUN 97-N2
Units: mg/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Selenium	0.0067	0.0378	0.0370	0.0400	78	76	2.1	80-118	10

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.

Quanterra
Environmental Services

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Metals Analysis and Preparation
Project: 055362 (cont.)

Category: TL-FAA-AT Thallium, Furnace AA / Total Metals
Matrix: AQUEOUS
Sample: 055362-0004
MS Run: 16 JUN 97-L2
Units: mg/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Thallium	ND	0.0076	0.0075	0.040	19	19	1.3	84-124	10

Category: HG-CVAA-AT Mercury by CVAA / Total Mercury
Matrix: AQUEOUS
Sample: 055362-0004
MS Run: 30 MAY 97-SA
Units: mg/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Mercury	ND	0.00101	0.00102	0.00100	101	102	0.9	77-117	10

Category: CD-FAA-AT Cadmium,Furnace AA/ Total Metals
Matrix: AQUEOUS
Sample: 055362-0004
MS Run: 16 JUN 97-L2
Units: mg/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Cadmium	ND	0.00427	0.00431	0.00400	107	108	0.9	83-123	10

ND = Not Detected

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

Quanterra
Environmental Services

ATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Metals Analysis and Preparation
Project: 055362 (cont.)

Category: CR-FAA-AT Chromium, Furnace AA, Total
Matrix: AQUEOUS
Sample: 055362-0004
MS Run: 16 JUN 97-L2
Units: mg/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Chromium	ND	0.0113	0.0111	0.0100	113	111	1.8	81-121	14

Category: SB-FAA-AT Antimony by Furnace
Matrix: AQUEOUS
Sample: 055362-0004
MS Run: 17 JUN 97-N1
Units: mg/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
ntimony	ND	0.503	0.487	0.500	101	97	3.2	83-123	14

Category: AG-FAA-AT Silver,Furnace AA/Total Metals
Matrix: AQUEOUS
Sample: 055362-0004
MS Run: 16 JUN 97-L2
Units: mg/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Silver	ND G	0.00349	0.00354	0.00500	70	71	1.4	81-121	15

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

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

Quanterra
Environmental Services

.TRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Metals Analysis and Preparation
Project: 055362 (cont.)

Category: ICP-AT ICP Metals / Total
Matrix: AQUEOUS
Sample: 055362-0004
MS Run: 17 JUN 97-N1
Units: mg/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Barium	0.029	2.15	2.08	2.00	106	103	3.2	86-114	10
Beryllium	ND	0.0531	0.0517	0.0500	106	103	2.6	83-117	10
Cadmium	ND	0.0497	0.0492	0.0500	99	98	0.9	80-120	17
Calcium	51.5	104	104	50.0	106	104	0.8	88-112	10
Chromium	ND	0.207	0.200	0.200	103	100	3.1	83-112	10
Cobalt	ND	0.524	0.514	0.500	105	103	2.1	80-120	10
Copper	ND	0.264	0.258	0.250	106	103	2.3	84-115	10
Iron	ND	1.07	1.04	1.00	107	104	2.2	87-117	10
Magnesium	44.1	99.7	98.3	50.0	111	108	1.4	84-114	10
Manganese	ND	0.513	0.501	0.500	103	100	2.3	84-113	10
Molybdenum	ND	1.03	1.02	1.00	103	102	0.8	80-120	10
Nickel	ND	0.528	0.517	0.500	106	103	2.0	85-112	10
Silver	ND	0.0478	0.0462	0.0500	96	92	3.3	83-115	10
?odium	38.5	92.1	90.7	50.0	107	104	1.5	86-115	10
n	ND	2.09	2.08	2.00	105	104	0.3	86-114	10
,anadium	0.025	0.551	0.538	0.500	105	103	2.4	85-114	10
Zinc	ND	0.507	0.504	0.500	101	101	0.6	82-113	10

ND = Not Detected

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

Quanterra
Environmental Services

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)
055362-0001-SA	AQUEOUS	TOC-9060-A	13 JUN 97-P1	13 JUN 97-P1
055362-0001-SA	AQUEOUS	S-A	02 JUN 97-S1	02 JUN 97-S1
055362-0001-SA	AQUEOUS	TOX-A	10 JUN 97-N1	10 JUN 97-N1
055362-0001-SA	AQUEOUS	CN-A	09 JUN 97-N1	09 JUN 97-N1
055362-0002-SA	AQUEOUS	TOC-9060-A	13 JUN 97-P1	13 JUN 97-P1
055362-0002-SA	AQUEOUS	S-A	02 JUN 97-S1	02 JUN 97-S1
055362-0002-SA	AQUEOUS	TOX-A	10 JUN 97-N1	10 JUN 97-N1
055362-0002-SA	AQUEOUS	CN-A	09 JUN 97-N1	09 JUN 97-N1
055362-0004-SA	AQUEOUS	TOX-A	10 JUN 97-N1	10 JUN 97-N1
055362-0004-SA	AQUEOUS	CN-A	09 JUN 97-N1	09 JUN 97-N1
055362-0004-SA	AQUEOUS	S-A	02 JUN 97-S1	02 JUN 97-S1
055362-0004-SA	AQUEOUS	TOC-9060-A	13 JUN 97-P1	13 JUN 97-P1
055362-0004-MS	AQUEOUS	TOX-A	10 JUN 97-N1	10 JUN 97-N1
055362-0004-MS	AQUEOUS	CN-A	09 JUN 97-N1	09 JUN 97-N1
055362-0004-MS	AQUEOUS	S-A	02 JUN 97-S1	02 JUN 97-S1
055362-0004-MS	AQUEOUS	TOC-9060-A	13 JUN 97-P1	13 JUN 97-P1
055362-0004-SD	AQUEOUS	TOX-A	10 JUN 97-N1	10 JUN 97-N1
055362-0004-SD	AQUEOUS	CN-A	09 JUN 97-N1	09 JUN 97-N1
055362-0004-SD	AQUEOUS	S-A	02 JUN 97-S1	02 JUN 97-S1
055362-0004-SD	AQUEOUS	TOC-9060-A	13 JUN 97-P1	13 JUN 97-P1
055362-0005-SA	AQUEOUS	TOX-A	19 JUN 97-N1	19 JUN 97-N1
055362-0005-SA	AQUEOUS	CN-A	09 JUN 97-N1	09 JUN 97-N1
055362-0005-SA	AQUEOUS	S-A	02 JUN 97-S1	02 JUN 97-S1
055362-0005-SA	AQUEOUS	TOC-9060-A	13 JUN 97-P1	13 JUN 97-P1
055362-0006-SA	AQUEOUS	TOX-A	19 JUN 97-N1	19 JUN 97-N1
055362-0006-SA	AQUEOUS	CN-A	09 JUN 97-N1	09 JUN 97-N1
055362-0006-SA	AQUEOUS	S-A	02 JUN 97-S1	02 JUN 97-S1
055362-0006-SA	AQUEOUS	TOC-9060-A	13 JUN 97-P1	13 JUN 97-P1

Quanterra
Environmental Services

DUPLICATE CONTROL SAMPLE REPORT
Wet Chemistry Analysis and Preparation
Project: 055362

Category: TOX-A Total Organic Halogen
Matrix: AQUEOUS
QC Lot: 10 JUN 97-N1 Date Analyzed: 10 JUN 97
Concentration Units: ug/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Total Organic Halogen as Cl	100	99.2		94.7		97.0	97	84-110	4.6	13

Category: TOX-A Total Organic Halogen
Matrix: AQUEOUS
QC Lot: 19 JUN 97-N1 Date Analyzed: 19 JUN 97
Concentration Units: ug/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Total Organic Halogen as Cl	100	94.1		94.5		94.3	94	84-110	0.45	13

Category: CN-A Cyanide
Matrix: AQUEOUS
QC Lot: 09 JUN 97-N1 Date Analyzed: 09 JUN 97
Concentration Units: mg/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Cyanide	0.190	0.216		0.210		0.214	112	72-118	2.8	18

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

Quanterra
Environmental Services

DUPLICATE CONTROL SAMPLE REPORT
Wet Chemistry Analysis and Preparation
Project: 055362

Category: S-A Sulfide
Matrix: AQUEOUS
QC Lot: 02 JUN 97-S1 Date Analyzed: 02 JUN 97
Concentration Units: mg/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Sulfide, Total	0.450	0.385		0.397		0.391	87	79-131	3.1	10

Category: TOC-9060-A Total Organic Carbon
Matrix: AQUEOUS
QC Lot: 13 JUN 97-P1 Date Analyzed: 13 JUN 97
Concentration Units: mg/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Total Organic Carbon	30.0	31.4		31.3		31.4	105	90-110	0.61	10

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

Quanterra
Environmental Services

METHOD BLANK REPORT
Wet Chemistry Analysis and Preparation

Analyte	Result	Units	Reporting Limit
Test: TOC-TOC-A Matrix: AQUEOUS QC Lot: 13 JUN 97-P1 QC Run: 13 JUN 97-P1			
Total Organic Carbon	ND	mg/L	1.0
Test: S-SPEC-AT Matrix: AQUEOUS QC Lot: 02 JUN 97-S1 QC Run: 02 JUN 97-S1			
Sulfide, Total	ND	mg/L	0.050
Test: TOX-TOX-A Matrix: AQUEOUS QC Lot: 10 JUN 97-N1 QC Run: 10 JUN 97-N1			
Total Organic Halogen as Cl	ND	ug/L	30.0
Test: CNTOT-TEC-A Matrix: AQUEOUS QC Lot: 09 JUN 97-N1 QC Run: 09 JUN 97-N1			
Cyanide	ND	mg/L	0.010
Test: TOX-TOX-A Matrix: AQUEOUS QC Lot: 10 JUN 97-N1 QC Run: 10 JUN 97-N1			
Total Organic Halogen as Cl	ND	ug/L	30.0
Test: CNTOT-TEC-A Matrix: AQUEOUS QC Lot: 09 JUN 97-N1 QC Run: 09 JUN 97-N1			
Cyanide	ND	mg/L	0.010

Quanterra Environmental Services

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

Analyte	Result	Units	Reporting Limit
Test: S-SPEC-AT			
Matrix: AQUEOUS			
QC Lot: 02 JUN 97-S1 QC Run: 02 JUN 97-S1			
Sulfide, Total	ND	mg/L	0.050
Test: TOC-TOC-A			
Matrix: AQUEOUS			
QC Lot: 13 JUN 97-P1 QC Run: 13 JUN 97-P1			
Total Organic Carbon	ND	mg/L	1.0
Test: TOX-TOX-A			
Matrix: AQUEOUS			
QC Lot: 19 JUN 97-N1 QC Run: 19 JUN 97-N1			
Total Organic Halogen as Cl	ND	ug/L	30.0

Quanterra
Environmental Services

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Wet Chemistry Analysis and Preparation
Project: 055362

Category: TOX-A Total Organic Halogen
Matrix: AQUEOUS
Sample: 055362-0004
MS Run: 10 JUN 97-N1
Units: ug/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Total Organic Halogen as Cl	ND	105	110	100	105	110	4.9	84-110	13

Category: TOX-A Total Organic Halogen
Matrix: AQUEOUS
Sample: 055535-0001
MS Run: 19 JUN 97-N1
Units: ug/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Total Organic Halogen as Cl	ND	121	107	100	121	107	12	84-110	13

Category: CN-A Cyanide
Matrix: AQUEOUS
Sample: 055362-0004
MS Run: 09 JUN 97-N1
Units: mg/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Cyanide	ND	0.228	0.230	0.197	116	117	0.5	72-118	18

ND = Not Detected

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

Quanterra
Environmental Services

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Wet Chemistry Analysis and Preparation
Project: 055362 (cont.)

Category: S-A Sulfide
Matrix: AQUEOUS
Sample: 055362-0004
MS Run: 02 JUN 97-S1
Units: mg/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Sulfide, Total	ND	0.436	0.431	0.450	97	96	1.2	79-131	10

Category: TOC-9060-A Total Organic Carbon
Matrix: AQUEOUS
Sample: 055362-0004
MS Run: 13 JUN 97-P1
Units: mg/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Total Organic Carbon	ND	25.6	26.1	25.0	103	105	2.0	90-110	10

ND = Not Detected

alculations 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

55362

Project Name & Number	PACKING AND SHIPPING DETAILS	
Cannon Air Force Base, Ground Water Sampling 463536004	Packed and Sealed for Shipping by: F. Gebhardt	Seal Number: 81589
Sampling Location: Landfill-5, Cannon Air Force Base, NM	Delivered to Shipper by: F. Gebhardt.	Airbill Number: 3476848886
Team Leader: F. Eileen Roybal	Sampling Status: ☐ Done ☒ Continuing	

Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
27 MAY 97	1300	CAFB-M0597-1	Ground-water	16	All Apx-IX: SW8260,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,Sc,Na,Tl,Sn,V,Zn), plus SW7041,SW7060, SW7131,SW7191,SW7421,SW7740,SW7761,SW7841; SW9012, SW9030,SW9060,SW9020	Environmental Sample

-01

Additional Comments: VOC's and Some Samples from CAFB-M0597-1 → are in cooler w/4376773226

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 ☐ Yes ☐ No
F. Eileen Roybal		27 MAY 97	1600	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer	Condition of Contents
	[signature]	5/28/97	0830		Contents Temperature
					Laboratory Project Number

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

Project Name & Number: Cannon Air Force Base, Ground Water Sampling 463536004	PACKING AND SHIPPING DETAILS
Sampling Location: Landfill-5, Cannon Air Force Base, NM	Packed and Sealed for Shipping by: F. Gebhardt — Seal Number: 081588
Team Leader: F. Eileen Roybal	Delivered to Shipper by: F. Gebhardt — Airbill Number: 3476773215
	Sampling Status: ☐ Done ☒ Continuing

Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
-02 27 MAY 97	1152	CAFB-Q-0597-1	Ground-water	16	All Apx-IX: SW8260,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,Sc,Na,Tl,Sn,V,Zn), plus SW7041,SW7060, SW7131,SW7191,SW7421,SW7740,SW7761,SW7841; SW9012, SW9030,SW9060,SW9020	Environmental Sample
~~27 MAY 97~~		~~CAFB-Q-0597-TB~~	~~Ultra Pure water~~	~~3~~	~~SW8260~~	~~Trip Blank~~

Additional Comments: VOC's are in cooler with airbill # 3476773226

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 ☐ Yes ☐ No
F. Gebhardt		27 MAY 97	1600	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer	Condition of Contents
	[signature]	5/28/97	0830		Contents Temperature
					Laboratory Project Number

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: F. Gebhardt
	Seal Number: 081590
Sampling Location: Landfill-5, Cannon Air Force Base, NM	Delivered to Shipper by: F. Gebhardt
	Airbill Number: 3476773226
Team Leader: F. Eileen Roybal	Sampling Status: ☐ Done ☒ Continuing

	Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
-01	27 MAY 97	1300	CAFB-M-0597-1	Ground-water	16	All Apx-IX: SW8260,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,Sc,Na,Tl,Sn,V,Zn), plus SW7041,SW7060, SW7131,SW7191,SW7421,SW7740,SW7761,SW7841; SW9012, SW9030,SW9060,SW9020	Environmental Sample
-03	27 MAY 97	1110	CAFB-Q-0597-TB	Ultra-Pure H20	3	SW8260	Trip Blank

Additional Comments: All VOC's are in this cooler. Some Samples from CAFB-M-0597-1 are in Cooler w/ airbill # 4376848896

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 ☐ Yes ☐ No
F. Gebhardt		27 MAY 97	1600	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer	Condition of Contents
	[illegible]	5/28/97	0832		Contents Temperature
					Laboratory Project Number

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: F. Gebhardt	Seal Number: 81592
Sampling Location: Landfill-5, Cannon Air Force Base, NM	Delivered to Shipper by: F. Gebhardt	Airbill Number: —
Team Leader: F. Eileen Roybal	Sampling Status: [X] Done [ ] Continuing	

Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
28 MAY 97	0920	CAFB-I-0597-1	Ground-water	16	All Apx-IX: SW8260,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 04

Additional Comments: All VOC's are in cooler with Seal # 81591

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: [X] Yes [ ] No
F. Gebhardt		28 MAY 97	1600	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer	Condition of Contents
	[signature]	5-29-97	9:00		Contents Temperature: 3.0°C
					Laboratory Project Number: 055362

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: F. Gebhardt
	Seal Number: 81593
Sampling Location: Landfill-5, Cannon Air Force Base, NM	Delivered to Shipper by: F. Gebhardt
	Airbill Number: –
Team Leader: F. Eileen Roybal	Sampling Status: [X] Done [ ] Continuing

Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
28 MAY 97	0920	CAFB-I-0597-MS	Ground-water	16	All Apx-IX: SW8260,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 04 MS

Additional Comments: VOC's are in cooler with seal # 81591

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: [X] Yes [ ] No
F. Gebhardt		28 MAY 97	1600	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer	Condition of Contents
	[illegible]	5-29-97	9:00		Contents Temperature: 6.0°C
					Laboratory Project Number: 55362

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: F. Gebhardt — Seal Number: 81594
Sampling Location: Landfill-5, Cannon Air Force Base, NM	Delivered to Shipper by: F. Gebhardt — Airbill Number: —
Team Leader: F. Eileen Roybal	Sampling Status: [X] Done [ ] Continuing

Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
28 MAY 97	0920	CAFB-I-0547-SD	Ground-water	16	All Apx-IX: SW8260,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 0457D

Additional Comments: VOC's are in cooler with Seal # 81591

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: [X] Yes [ ] No
F. Gebhardt	[signature]	28 MAY 97	1600	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer	Condition of Contents
		5-29-97	9:00		Contents Temperature: 4.9°C
					Laboratory Project Number: 55362

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

Project Name & Number: Cannon Air Force Base, Ground Water Sampling 463536004	PACKING AND SHIPPING DETAILS
Sampling Location: Landfill-5, Cannon Air Force Base, NM	Packed and Sealed for Shipping by: F. Gebhardt; Seal Number: 81591
Team Leader: F. Eileen Roybal	Delivered to Shipper by: F. Gebhardt; Airbill Number: 3476848885
	Sampling Status: [X] Done [ ] Continuing

Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
28 MAY 97	1000	CAFB-L-0597-1	Ground-water	16	All Apx-IX: SW8260,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 05
28 MAY 97	1000	CAFB-X-0597-1	"	16	Same as above	Env. Sample 06
28 MAY 97	0850	CAFB-I-0597-TB	Ultra-Pure H2O	3	SW8260	Trip Blank 07 TB

Additional Comments: ALL VOC's from well-I are in this cooler - Total 4 coolers

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: [X] Yes [ ] No
F. Gebhardt		28 MAY 97	1600	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer	Condition of Contents
	[signature]	5-29-97	9.00		Contents Temperature: 4.0°C
					Laboratory Project Number: 55362

Sample Checklist

Quanterra Environmental Services

Project #: _____ Date/Time Received: 5/28/97 0830

Company Name & Sampling Site: USGS – CANNON AFB

*Cooler #(s): 1 2 3

Temperatures: 0.0 3.8 2.8

(Little Blue) Big Blue Big Red

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

Unpacking & Labeling Check Points:

Yes	No		Initials
☐	☐	1. Radiation checked, record if reading > 0.5 mR/hr. (_____mR/hr)	
☑	☐	2. Cooler seals intact.	
☑	☐	3. Chain of custody present.	
☐	☑	4. Bottles broken and/or are leaking, comment if yes.	
		PHOTOGRAPH BROKEN BOTTLES	
☑	☐	5. Containers labeled, comment if no.	
☐	☑	6. pH of all samples checked and meet requirements, note exceptions.	
☑	☐	7. Chain of custody includes "received by" and "relinquished" by signatures, dates, and times	
☑	☐	8. Chain of custody agrees with bottle count, comment if no.	
☑	☐	9. Chain of custody agrees with labels, comment if no.	
☑	☐	10. VOA samples filled completely, comment if no.	
☐	☑	11. Are VOA bottles preserved, check for labels.	
☐	☐	12. Did samples require preservation with sodium thiosulfate?	
☐	☐	13. If yes to #12, did the samples contain residual chlorine?	
☐	☐	14. Sediment present in "D," dissolved, bottles.	
☐	☐	15. Are analyses with short holding times requested.	
☐	☐	16. Is extra sample volume provided for MS, MSD or matrix duplicates.	
☐	☐	17. Multiphase samples present, comment is yes.	
☐	☐	18. Any subsampling for volatiles, if yes, list samples.	
		PHOTOGRAPH MULTIPHASE SAMPLES	
☐	☐	19. 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.

TOX bottles pH 3.7 – not preserved

Sample Checklist

Quanterra Environmental Services

Project #: 055362 Date/Time Received: 5-29-97 @ 9:00

Company Name & Sampling Site: USGS Cannon AFB NM

*Cooler #(s): _____ _____ _____ _____ _____ _____ _____ _____

Temperatures: 3.0 6.0 4.9 4.0 _____ _____ _____ _____

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

Unpacking & Labeling Check Points:

Yes	No		Initials
☑	☐	1. Radiation checked, record if reading > 0.5 mR/hr. (_____mR/hr)	M
☑	☐	2. Cooler seals intact.	
☑	☐	3. Chain of custody present.	
☐	☑	4. Bottles broken and/or are leaking, comment if yes.	
		PHOTOGRAPH BROKEN BOTTLES	
☑	☐	5. Containers labeled, comment if no.	
☐	☑	6. pH of all samples checked and meet requirements, note exceptions. (See comments + NCM)	
☑	☐	7. Chain of custody includes "received by" and "relinquished" by signatures, dates, and times	
☑	☐	8. Chain of custody agrees with bottle count, comment if no.	
☑	☐	9. Chain of custody agrees with labels, comment if no.	
☑	☐	10. VOA samples filled completely, comment if no.	
☑	☐	11. Are VOA bottles preserved, check for labels.	
☐	☑	12. Did samples require preservation with sodium thiosulfate?	
☐	☐	13. If yes to #12, did the samples contain residual chlorine?	
☐	☐	14. Sediment present in "D," dissolved, bottles. NA	
☐	☑	15. Are analyses with short holding times requested.	
☑	☐	16. Is extra sample volume provided for MS, MSD or matrix duplicates.	
☐	☑	17. Multiphase samples present, comment is yes.	
☐	☑	18. Any subsampling for volatiles, if yes, list samples.	
		PHOTOGRAPH MULTIPHASE SAMPLES	
☑	☐	19. 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.

TOX bottles unpreserved; Mike Reybal contacted: Proceed w/analysis

- TOX bottles preserved @ lab

DODEC LABORATORY DATA REVIEW WORKSHEET

1.0 GENERAL INFORMATION

Data reviewer: BOB BIRCK
Date of review: 6/24/97
Sample project number: SS364
Project name: NM-CANNON AFB
Sample collection date: 5/27-5/28/97
Sample matrix and number: 8 AQUEOUS

Type and number of samples in project:

Type	Number
Environmental	5
Trip blank	
Equipment blank	
Ambient blank	
MS/MSD	2
Other	1 METHOD BLANK

2.0 DATA REPORT

Date of Analytical Results Report: 6/18/97
Number of volumes in Raw Data Report: 1
Raw Data Report reviewed? Yes____ No X

Were all analyses requested on the COC form performed by the laboratory?
Yes X No____

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

ASSOCIATED SAMPLES ARE REPORTED IN PROJECT SS362

Were the samples properly preserved upon receipt by the laboratory?
Yes X No____

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

3.0 ANALYTICAL METHODS

Analytical methods used in this project

	VOC by GC/MS (SW 8240, SW 8260, E524, E624)
	Halogenated VOC by GC (SW 8010)
	Aromatic VOC by GC (SW 8020)
	SVOC by GC/MS (SW 8270)
	PAH by HPLC (SW 8310)
	Organochlorine pesticides and PCB (SW 8080)
	Organophosphorous pesticides (SW 8140)
	Chlorinated herbicides (SW 8150)
X	Dioxins and Furans (SW 8280) APP IX
	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 X No _____

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

_____
_____
_____
_____
_____
_____

Did surrogate recoveries meet QC acceptance criteria?
Yes_____ No _____ NA

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_____ NA

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

_____
_____
_____
_____
_____
_____

Inorganic analyses: Yes_____ No_____ NA

GFAA metals and some inorganic anions are subject to matrix interferences and their reporting limits may be raised accordingly as required by USEPA protocols. Reporting limits for ICP metals and mercury by CVAA are typically only raised when the sample concentration exceeds the instrument linear range.

Did DCS meet QC acceptance criteria? Yes X No_____

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

_____
_____
_____
_____
_____
_____

Did SCS meet QC acceptance criteria? Yes_____ 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 X

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

Did the MS/MSD meet QC acceptance criteria? Yes X 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-comfrormance :

Additional comments:

INTERNAL STANDARD RECOVERIES WERE WITHIN CONTROL LIMITS FOR ALL SAMPLES AND ASSOCIATED QC SAMPLES

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).

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

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.

Quanterra
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)
055364-0001-SA	AQUEOUS	DXNFUR-A	05 JUN 97-B	09 JUN 97-A
055364-0001-MB	AQUEOUS	DXNFUR-A	05 JUN 97-B	09 JUN 97-A
055364-0002-SA	AQUEOUS	DXNFUR-A	05 JUN 97-B	09 JUN 97-A
055364-0003-SA	AQUEOUS	DXNFUR-A	05 JUN 97-B	09 JUN 97-A
055364-0003-MS	AQUEOUS	DXNFUR-A	05 JUN 97-B	09 JUN 97-A
055364-0003-SD	AQUEOUS	DXNFUR-A	05 JUN 97-B	09 JUN 97-A
055364-0004-SA	AQUEOUS	DXNFUR-A	05 JUN 97-B	09 JUN 97-A
055364-0005-SA	AQUEOUS	DXNFUR-A	05 JUN 97-B	09 JUN 97-A

Quanterra
Environmental Services

DUPLICATE CONTROL SAMPLE REPORT
Subcontracted to Quanterra Lab
Project: 055364

Category: DXNFUR-A C14-C18 Dioxins & Furans
Matrix: AQUEOUS
QC Lot: 05 JUN 97-B
Concentration Units: ng/L

Date Analyzed: 09 JUN 97

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
2,3,7,8-TCDF	25.0	26.9		27.0		26.9	108	62-129	0.50	18
1,2,3,7,8-PeCDF	62.5	80.7		80.2		80.4	129	60-140	0.66	50
1,2,3,6,7,8-HxCDF	62.5	65.5		60.5		63.0	101	60-140	8.0	50
2,3,7,8-TCDD	25.0	25.6		25.4		25.5	102	57-128	1.0	20
1,2,3,7,8-PeCDD	62.5	69.5		69.8		69.7	111	80-125	0.43	25
1,2,3,6,7,8-HxCDD	62.5	85.7		71.8		78.8	126	60-140	18	50
13C-2,3,7,8-TCDF	25.0	16.6		17.8		17.2	69	40-120	7.1	
13C-2,3,7,8-TCDD	25.0	19.5		20.5		20.0	80	40-120	4.6	
13C-1,2,3,6,7,8-HxCDD	25.0	22.1		22.1		22.1	88	40-120	0.21	
13C-1,2,3,4,6,7,8-HpCDF	50.0	40.2		42.8		41.5	83	40-120	6.4	

= Value outside control limits

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

Quanterra
Environmental Services

Appendix IX Dioxins/Furans

Low Resolution

Client Name: U.S. Geological Survey
Client ID: CAFB-Q-0597-1
Lab ID: 055364-0001-MB
Matrix: AQUEOUS Sampled: NA Received: NA
Authorized: 29 MAY 97 Prepared: 05 JUN 97 Analyzed: 09 JUN 97

Sample Amount 1.0 L
Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/L	0.73	
PeCDFs (total)	ND	ng/L	1.1	
HxCDFs (total)	ND	ng/L	0.27	
Dioxins				
TCDDs (total)	ND	ng/L	0.36	
2,3,7,8-TCDD	ND	ng/L	0.36	
PeCDDs (total)	ND	ng/L	1.0	
HxCDDs (total)	ND	ng/L	0.25	
	% Recovery			
13C-2,3,7,8-TCDF	78			
13C-2,3,7,8-TCDD	87			
13C-1,2,3,6,7,8-HxCDD	95			
13C-1,2,3,4,6,7,8-HpCDF	85			

ND = Not detected
NA = Not applicable

Reported By: TSTONE Approved By: AALGAZI

Quanterra
Environmental Services

ATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
pecial Services - Low Resolution Mass Spectrometry
Project: 055364

Category: DXNFUR2-A C14-C18 Dioxin and Furans by Low Resolution MS
Test : DXNFUR-AP9-A Method: 8280
Matrix : AQUEOUS
Sample : 055364-0003
MS Run : 09 JUN 97-A
Units : ng/L

Analyte	Concentration Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS	Amount Spiked MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
2,3,7,8-TCDF	ND	24.7	26.4	23.8	23.8	104	111	6.4	60-140	50
1,2,3,7,8-PeCDF	ND	73.4	77.0	59.5	59.5	123	129	4.7	60-140	50
1,2,3,6,7,8-HxCDF	ND	64.6	63.6	59.5	59.5	109	107	1.5	60-140	50
2,3,7,8-TCDD	ND	24.0	25.6	23.8	23.8	101	108	6.4	60-140	50
1,2,3,7,8-PeCDD	ND	65.8	69.3	59.5	59.5	111	116	5.2	60-140	50
1,2,3,6,7,8-HxCDD	ND	61.5	70.1	59.5	59.5	103	118	13	60-140	50

Surrogates	Sample %Recovery	%Recovery MS	%Recovery MSD	Acceptance Limit Recovery
13C-2,3,7,8-TCDF	74	70	68	40-120
13C-2,3,7,8-TCDD	85	78	76	40-120
13C-1,2,3,6,7,8-HxCDD	86	90	86	40-120
13C-1,2,3,4,6,7,8-HpCDF	78	80	78	40-120

ND = Not Detected

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

055364
55. 7

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

Project Name & Number: Cannon Air Force Base, Ground Water Sampling 463536004	PACKING AND SHIPPING DETAILS
Sampling Location: Landfill-5, Cannon Air Force Base, NM	Packed and Sealed for Shipping by: F. Gebhardt
Team Leader: F. Eileen Roybal	Delivered to Shipper by: F. Gebhardt.
	Seal Number: 081589
	Airbill Number: 3476848876
	Sampling Status: ☐ Done ☒ Continuing

Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
27 MAY 97	1300	CAFB-M0597-1	Ground-water	16	All Apx-IX: SW8260,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

Additional Comments: VOC's and Some Samples from CAFB-M0597-1 → are in cooler w/437677326

CHAIN OF CUSTODY RECORD			
Relinquished by (signed)	Received by (signed)	Date	Time
F. Eileen Roybal		27 MAY 97	1600
	[signature]	5/28/97	0820

LABORATORY LOG-IN OF SAMPLE SHIPPING CONTAINER	
Analytical Laboratory: Quanterra Environmental, 4955 Yarrow Street, Arvada, CO 80002, ph: (303) 421-6611, Attention: Lindsay Breyer	Seal Intact upon Receipt: ☐ Yes ☐ No
	Condition of Contents
	Contents Temperature
	Laboratory Project Number

U.S. GEOLOGICAL SURVEY, WATER R URCES DIVISION, NEW MEXICO DISTRICT
ANALYTICAL REQ T/CHAIN OF CUSTODY

055364

Project Name & Number	PACKING AND SHIPPING DETAILS	
Cannon Air Force Base, Ground Water Sampling 463536004	Packed and Sealed for Shipping by F. Gebhardt	Seal Number 081588
Sampling Location: Landfill-5, Cannon Air Force Base, NM	Delivered to Shipper by F. Gebhardt	Airbill Number 3476773215
Team Leader: F. Eileen Roybal	Sampling Status ☐ Done ☒ Continuing	

Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
02 27 MAY 97	1152	CAFB-Q-0597-1	Ground-water	16	All Apx-IX: SW8260,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
~~27 MAY 97~~		~~CAFB-Q-0597-TB~~	~~Ultra Pure~~ water	~~3~~	~~SW8260~~	~~Trip Blank~~

Additional Comments: VOC's are in cooler with airbill # 3476773226

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 ☐ Yes ☐ No
F. Gebhardt		27 MAY 97	1600	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer	Condition of Contents
	[signature]	5/28/97	0830		Contents Temperature
					Laboratory Project Number

U.S. GEOLOGICAL SURVEY, WATER RE 'RCES DIVISION, NEW MEXICO DISTRICT
ANALYTICAL REQU ./CHAIN OF CUSTODY

Project Name & Number: Cannon Air Force Base, Ground Water Sampling 463536004	PACKING AND SHIPPING DETAILS
Sampling Location: Landfill-5, Cannon Air Force Base, NM	Packed and Sealed for Shipping by: F. Gebhardt; Seal Number: 81592
Team Leader: F. Eileen Roybal	Delivered to Shipper by: F. Gebhardt; Airbill Number: —
	Sampling Status: [X] Done [ ] Continuing

Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
28 MAY 97	0920	CAFB-I-0597-1	Ground-water	16	All Apx-IX: SW8260,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,Sc,Na,Tl,Sn,V,Zn), plus SW7041,SW7060, SW7131,SW7191,SW7421,SW7740,SW7761,SW7841, SW9012, SW9030,SW9060,SW9020	Environmental Sample Duplicate 55364 03

Additional Comments: All VOC's are in cooler with Seal # 81591

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: [X] Yes [ ] No
F. Gebhardt		28 MAY 97	1600	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer	Condition of Contents
	[illegible]	5-28-97	9:00		Contents Temperature: 3.0°C
					Laboratory Project Number: 055362

U.S. GEOLOGICAL SURVEY, WATER R' 'URCES DIVISION, NEW MEXICO DISTRICT
ANALYTICAL REQU. .T/CHAIN OF CUSTODY

Project Name & Number: Cannon Air Force Base, Ground Water Sampling 463536004	PACKING AND SHIPPING DETAILS
	Packed and Sealed for Shipping by: F. Gebhardt
	Seal Number: 81593
Sampling Location: Landfill-5, Cannon Air Force Base, NM	Delivered to Shipper by: F. Gebhardt
	Airbill Number: –
Team Leader: F. Eileen Roybal	Sampling Status: [X] Done [ ] Continuing

Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
28 MAY 97	0920	CAFB-I-0597-MS	Ground-water	16	All Apx-IX: SW8260,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 04 24 MS

Additional Comments: VOC's are in cooler with seal # 81591

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: [X] Yes [ ] No
F. Gebhardt		28 MAY 97	1600	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer	Condition of Contents
	[illegible]	5-29-97	9:00		Contents Temperature: 6.0°C
					Laboratory Project Number: 55362

U.S. GEOLOGICAL SURVEY, WATER R[illegible]JRCES DIVISION, NEW MEXICO DISTRICT
ANALYTICAL REQUEST/CHAIN OF CUSTODY

Project Name & Number: Cannon Air Force Base, Ground Water Sampling 463536004	PACKING AND SHIPPING DETAILS
Sampling Location: Landfill-5, Cannon Air Force Base, NM	Packed and Sealed for Shipping by: F. Gebhardt — Seal Number: 81594
Team Leader: F. Eileen Roybal	Delivered to Shipper by: F. Gebhardt — Airbill Number: —
	Sampling Status: [X] Done [ ] Continuing

Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
28 MAY 97	0920	CAFB-I-054-SD	Ground-water	16	All Apx-IX: SW8260,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 ~~04~~ SD 03

Additional Comments: VOC's are in cooler with Seal # 81591

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: [X] Yes [ ] No
F. Gebhardt	[signature]	28 MAY 97	1600	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer	Condition of Contents
		5-29-97	9:00		Contents Temperature: 4.9°C
					Laboratory Project Number: 55362

U.S. GEOLOGICAL SURVEY, WATER R[illegible]URCES DIVISION, NEW MEXICO DISTRICT
ANALYTICAL REQU[illegible]T/CHAIN OF CUSTODY

Project Name & Number: Cannon Air Force Base, Ground Water Sampling 463536004	PACKING AND SHIPPING DETAILS
Sampling Location: Landfill-5, Cannon Air Force Base, NM	Packed and Sealed for Shipping by: F. Gebhardt
Team Leader: F. Eileen Roybal	Delivered to Shipper by: F. Gebhardt
	Seal Number: 81591
	Airbill Number: 3476848885
	Sampling Status: [X] Done [ ] Continuing

Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
28 MAY 97	1000	CAFB-L-0597-1	Ground-water	16	All Apx-IX: SW8260,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 04 ~~03~~
28 MAY 97	1000	CAFB-X-0597-1	"	16	Same as above	Env. Sample 06 05
28 MAY 97	0850	CAFB-I-0597-TB	Ultra-Pure H2O	3	SW8260	Trip Blank ~~07 TB~~

Additional Comments: ALL VOC's from well-I are in this cooler - Total 4 coolers

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: [X] Yes [ ] No
F. Gebhardt		28 MAY97	1600	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer	Condition of Contents
	[illegible]	5-29-97	9.00		Contents Temperature: 4.0°C
					Laboratory Project Number: 55362

[redacted]

Chain [redacted]
Custody Record

Quanter[illegible] Environmental Services

Client: QUANTERA DENVER
Address: 4955 YARROW
City: ARVADA | State: CO | Zip Code: 80002
Project Name: USGS CANNON AFB
Contract/Purchase Order/Quote No.:

Project Manager: MARK STELLA
Telephone Number (Area Code)/Fax Number: 303 421 6611 ex 179
Site Contact:
Carrier/Waybill Number:

Date: 5/25/97
Lab Number:

Chain Of Custody Number: 27867
Page of

Analysis: DIOXINS

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt
55364 - 01	5/27/97	1300	AQ	1 L	G	1	None	
-02	"	1152	AQ	1 L	G	1		

Special Instructions:

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Turn Around Time Required: ☒ Normal ☐ Rush

QC Level: ☐ I ☐ II ☐ III

1. Relinquished By: [signature] Date: 5/28/97 Time: 1630
2. Relinquished By: Date: Time:
3. Relinquished By: Date: Time:

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For Months

Project Specific (Specify):

1. Received By: Kari A. Filiggi Date: 052997 Time: 1010
2. Received By: Date: Time:
3. Received By: Date: Time:

Comments:

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

Chain of Custody Record

Attn: [illegible]

Quanterra Environmental Services

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
QES - DENVER	MARK STREET	5-22-97	26062
Address	Telephone Number (Area Code)/Fax Number	Lab Number	Page ____ of ____

City	State	Zip Code	Site Contact

Project Name: USGS - CANNON AFB, NM

Carrier/Waybill Number:

Contract/Purchase Order/Quote No.:

Analysis: Arsenic, Selenium

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt
55364 03								
03-MS								
03-SD								
04								
05								

Special Instructions:

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify):

	Date	Time		Date	Time
1. Relinquished By	5-29-97	15:15	1. Received By	5/30/97	1250
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments:

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

APPENDIX III

Field Data

Sample container and preservation requirements

Parameters and methods	Bottle Size and Type	Preservatives
Appendix-IX, Volatile Organic Compounds SW8260A	Three 40 ml glass vials	200 uL 50 % Hydrochloric Acid, Chilled
Appendix-IX, Semivolatile Organic Compounds SW8270B	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, Total Metals: 14 metals by SW6010, 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
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

27MAY97 well-Q

1040 - M. Roybal arrive on site (well-Q)
Weather - Partly cloudy, sunny, warm, and slight NE breez.
Calibrate PH meter - Orion mode 250A (W493926)
PH7 = 7.02 PH10 = 10.07 Slope = 102.4 Temp = 19.3°C

1046 - Fred Gebhardt arrive on site
SPC meter - Orion model 126 (SN 33445025)
calibrated with 765 µS/cm standard.

1100 - WL = 27.51 HNU = BACKGROUND

1110 - RK. Dewees arrive on site

* 1110 - CAFB-Q-0597-TB

TIME	VOL (gal)	TEMP °C	PH	COND (µS/cm)	NOTE
1117	0	19.3	8.17	735	Clear
1123	5	19.0	7.73	733	
1128	10	18.7	7.68	733	
1132	15	18.7	7.68	732	
1137	20	18.6	7.68	738	
1141	25	18.7	7.68	739	
1146	30	18.7	7.70	739	
1151	35	18.7	7.69	739	

* 1152 Collect env. Sample CAFB-Q-0597-1

1200 J. Larson arrive on site.

Go to well-M

27 MAY 97 [Well-M]

1210 - M. Roybal arrive on site : SPC calibrated w 763 µS/cm

1217 - PH7 = 7.01 PH 10 = 10.04 Slope = 101.3 TEMP = 22.5

WL = 283.12 HNU = BACKGRD

TIME	VOL(gal)	TEMP °C	PH	COND(µS/cm)	NOTE
1219	0	22.5	7.97	944	clear
1223	3	19.0	6.79	981	
1224	5	18.7	6.79	984	
1226	7	18.6	6.79	985	

1228 8½ well Dry, Let it recover

1300 Collect env. Sample CAFB-M-0597-1

14000 - Pack up and go to Fed Ex.

28 MAY 97 [Well-L]

0737 - Same clear as yesterday arrive at well L.

PH7 = 7.04 PH10 = 10.14 Slope = 104.4

Temp = 13.6 °C

WL = 283.86 Blw TOC HN = 0.0

SPC calibrated w/ 763 µS/cm standard

TIME	VOL(gal	TEMP °C	PH	COND(µS/cm)	NOTE
0745	0	15.6	7.07	842	Clear
0746	1½	16.7	7.04	842	
0750	2½	17.2	7.15	844	
0751	3½	17.5	7.43	844	
0752	4	17.2	7.91	843	Dry,
0812	Begin pumping				
0817	5	16.9	8.06	850	
0820	6	17.4	8.09	894	

well dry let it recover

1000 collect env. sample CAFB-L-0597-1 and duplicate CAFB-X-0597-1

28MAY97

0829 - Arrive at $\boxed{\text{Well I}}$ Weather: cool, cloudy, E-wind

PH 7 = 7.03 PH 10 = 10.13 Slope = 101.8 Temp = 14.6 °C

SPC calibrated with 763 µS/cm.

WL = 283.54 B/W TOC HNU = 0.0

* 0850 - TRIP BLANK - CAFB-I-0597-TB

TIME	VOL (gal)	TEMP °C	PH	COND (µS/cm)	NOTE
0830	0	16.9	7.69	838	Clear
0836	5	17.7	7.56	781	
0841	10	17.8	7.57	781	
0845	15	17.7	7.60	781	
0850	20	17.9	7.58	780	
0854	25	17.9	7.59	780	
0902	30	17.7	7.60	781	
0808	35	17.7	7.60	782	
0813	40	17.9	7.60	781	
0919	45	18.1	7.59	780	

* 0920 collect env. sample CAFB-I-0597-1 and
matrix spike CAFB-I-0597-MS and
matrix spike duplicate CAFB-I-0597-SD

1100 - Pock up for Fed EX. -

End of this sampling round

J. Eden Roybal