CAFB97

Stu

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

12 MAR 1997

Colonel W. P. Ard
Commander, 27th Support Group
110 E Sextant Avenue Suite 1098
Cannon AFB NM 88130-5323

ENTERED

RECEIVED MAR 1997

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

HSWA/CAFB/Landfill 5

Dear Mr. Garcia

Attached are the sampling results for sampling performed at the downgradient wells at Landfill 5 on 16-17 Dec 96. We are gathering data by performing quarterly sampling at all wells at Landfill 5 for a period of one year. We will then have a statistical study done to determine background levels and determine if the landfill has had any effect on water quality.

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

Sincerely

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

Attachment:
Sampling Results at Landfill 5

cc:
NMED (C. Will)
NMED w/o atch (S. Pullen)
NMED GW Bureau (J. Jacobs)
EPA Region VI (D. Neleigh)
HQ ACC CES/ESVW w/o atch (M. Calvert)

LIBRARY COPY

Cannon Air Force Base, New Mexico

RCRA Ground-Water Sampling at Landfill 5

Data Report for December 16-17, 1996 Sampling

Prepared for

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

February 27, 1997

Prepared by

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

CONTENTS

Page

Executive Summary 1

Figure 1.--Location of Cannon Air Force Base, New Mexico 3

Figure 2.--Cannon Air Force Base and location of Landfill 5 4

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

Table 1.--Summary of concentrations of analytes in ground-water from wells I, L, and M around Landfill 5 for samples collected on December 16-17, 1996, Cannon Air Force Base, New Mexico 6

Monitoring well identification reports 7

Third sampling event semi-annual reports 10

APPENDIX I

Analytical Results from Quanterra Environmental Services Laboratory for Ground-Water Samples Collected December 16-17, 1996

Quanterra No. 053047 (wells I, L, and M) I-1

Appendix IX - Volatile organic compounds results I-15

Appendix IX - Semivolatile organic compounds results I-33

Polynuclear aromatic hydrocarbons I-53

Appendix IX - Herbicides results I-57

Appendix IX - Pesticides and PCB's results I-61

Metals results I-65

General inorganics results I-69

CONTENTS--Continued

Page

APPENDIX I--Concluded

Analytical Results from Quanterra Environmental Services Laboratory for Ground-Water Samples Collected December 16-17, 1996

Quanterra No. 053050 (wells I, L, and M) I-73

Appendix IX - Dioxins and furans results I-81

APPENDIX II

Laboratory Quality Assurance / Quality Control Results

Quanterra No. 053047 (wells I, L, and M) II-1

DODEC Laboratory data review worksheet II-1

Quality control report from Quanterra Environmental Services laboratory for ground-water samples collected December 16-17, 1996 ..... II-5

U.S. Geological Survey, Water Resources Division, New Mexico District analytical request / chain of custody II-66

Sample checklist II-72

Quanterra No. 053050 (wells I, L, and M for Dioxins only) II-74

DODEC Laboratory data review worksheet II-74

Quality control report from Quanterra Environmental Services laboratory for ground-water samples collected December 16-17, 1996 ..... II-78

U.S. Geological Survey, Water Resources Division, New Mexico District analytical request / chain of custody II-85

Quanterra chain of custody record II-91

CONTENTS--Concluded

Page

APPENDIX III

Field Data

Sample container and preservation requirements..... III-1

Field notes..... III-2

EXECUTIVE SUMMARY

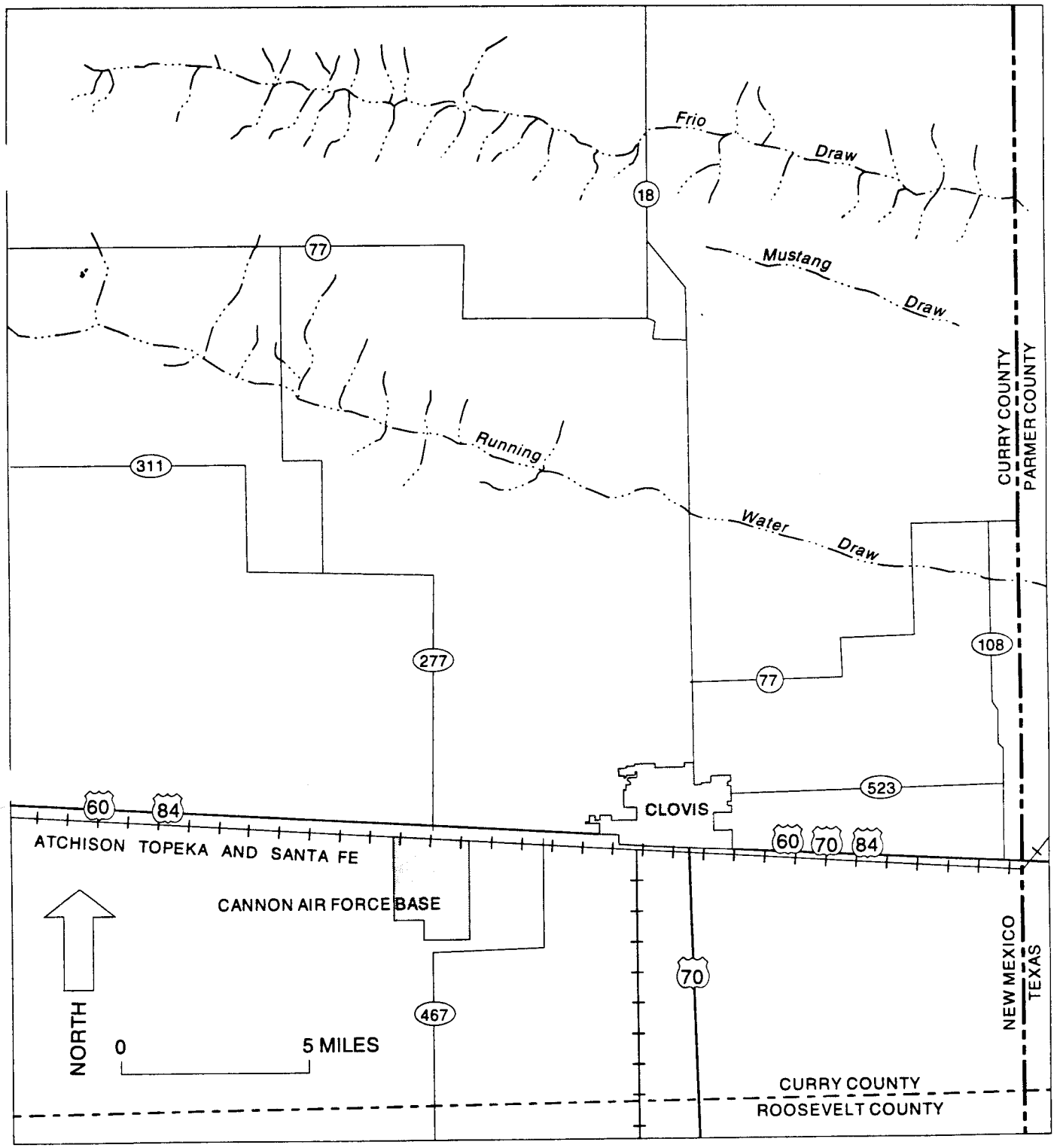
The U.S. Geological Survey (USGS), Water Resources Division and the U.S. Air Force Air Combat Command (ACC) have a memorandum of understanding that addresses the USGS assisting any ACC base in their hydrology or environmental programs. The USGS has agreed to assist Cannon Air Force Base (CAFB), an ACC base, in their RCRA ground-water sampling program. Cannon AFB is located in east-central New Mexico about 7 miles west of Clovis as shown on Figure 1. The ground-water sampling is at Landfill 5 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 three wells around Landfill 5 (figure 3), CAFB on December 16-17, 1996. The monitoring wells sampled at the landfill 5 are downgradient wells I, L, and M 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 furrans by method SW8280, polynuclear aromatic hydrocarbons by method SW8310, pesticides and PCB's by method SW8080A, herbicides by method SW8150, total metals for twenty-three metals (aluminum, antimony, arsenic barium, beryllium, cadmium, chromium, cobalt, copper, iron, lead, magnesium, manganese, moluybdenum, nickel, potassium, selenium, silver, sodium, thallium, vanadium, and zinc by SW6010, also antimony by SW7041, silver by SW7761, cadmium by SW7131, arsenic by SW7060, chromium by SW7191, lead by SW7421, mercury by SW7470, selenium by SW7740, and thallium by SW7841), and general inorganics (cyanide by SW9012, sulfide by E376.2, total organic carbon by SW9060, and total organic halogen by SW9020).

Water quality data results from wells around Landfill 5 are shown in table 1. Dichlorodifluoromethane by method SW8260 was detected in water from well M at 15 μg/L which is slightly above the reporting limit of 10 μg/L. Chromium (method SW6010) was detected in water from well L at concentration 0.031 mg/L. Chromium by method SW7191 were detected in all three wells at concentrations less than 0.048 mg/L. The EPA MCL for chromium is 0.1 mg/L. Iron was detected in water from all three wells ranging in concentrations from 0.33 mg/L in water from well I to 0.77 mg/L in water from well L. The EPA Secondary MCL for iron is 0.3 mg/L. Manganese was detected in water from well I and well M at concentrations less than 0.014 mg/L. The EPA Secondary MCL for manganese is

0.05 mg/L. Nickel was detected in water from well L and well M at concentrations of 0.076 mg/L and 0.13 mg/L respectively. The EPA MCL for nickel is 0.1 mg/L. Zinc was detected in water from well M at concentration of 0.016 mg/L, slightly above reporting limit but less than the EPA Secondary MCL of 5.0 mg/L.

As part of the quality assurance and quality control (QA/QC) procedures for the Landfill 5 site, trip blank, equipment blank, matrix spike, and matrix spike duplicate samples were collected. Methylene chloride was detected in the trip blanks at concentrations slightly higher than the reporting limit. Methylene chloride was not detected in any on the environmental samples. Iron was detected in the method blank at 0.098 mg/L. The data results of associated samples that are similar to the method blank should be used with caution and note that similar results were detected in the laboratory method blank.



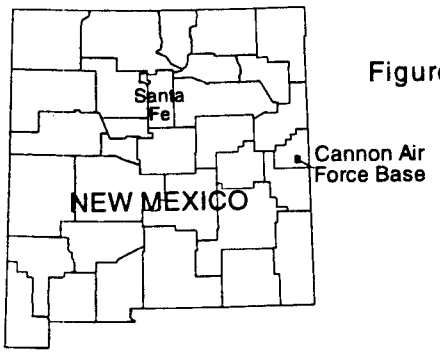


Figure 1.--Location of Cannon Air Force Base, New Mexico.

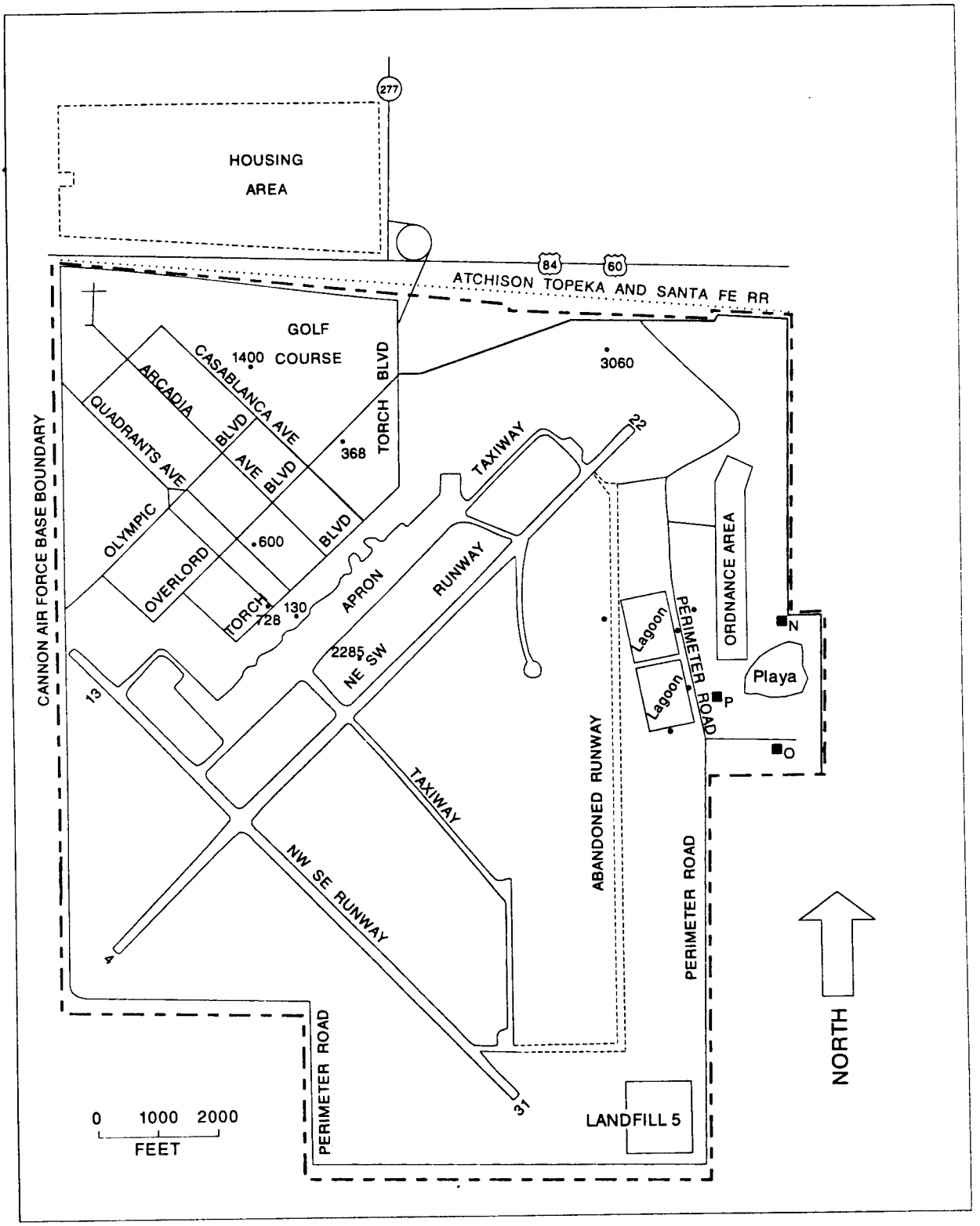


Figure 2.--Cannon Air Force Base and location of Landfill 5.

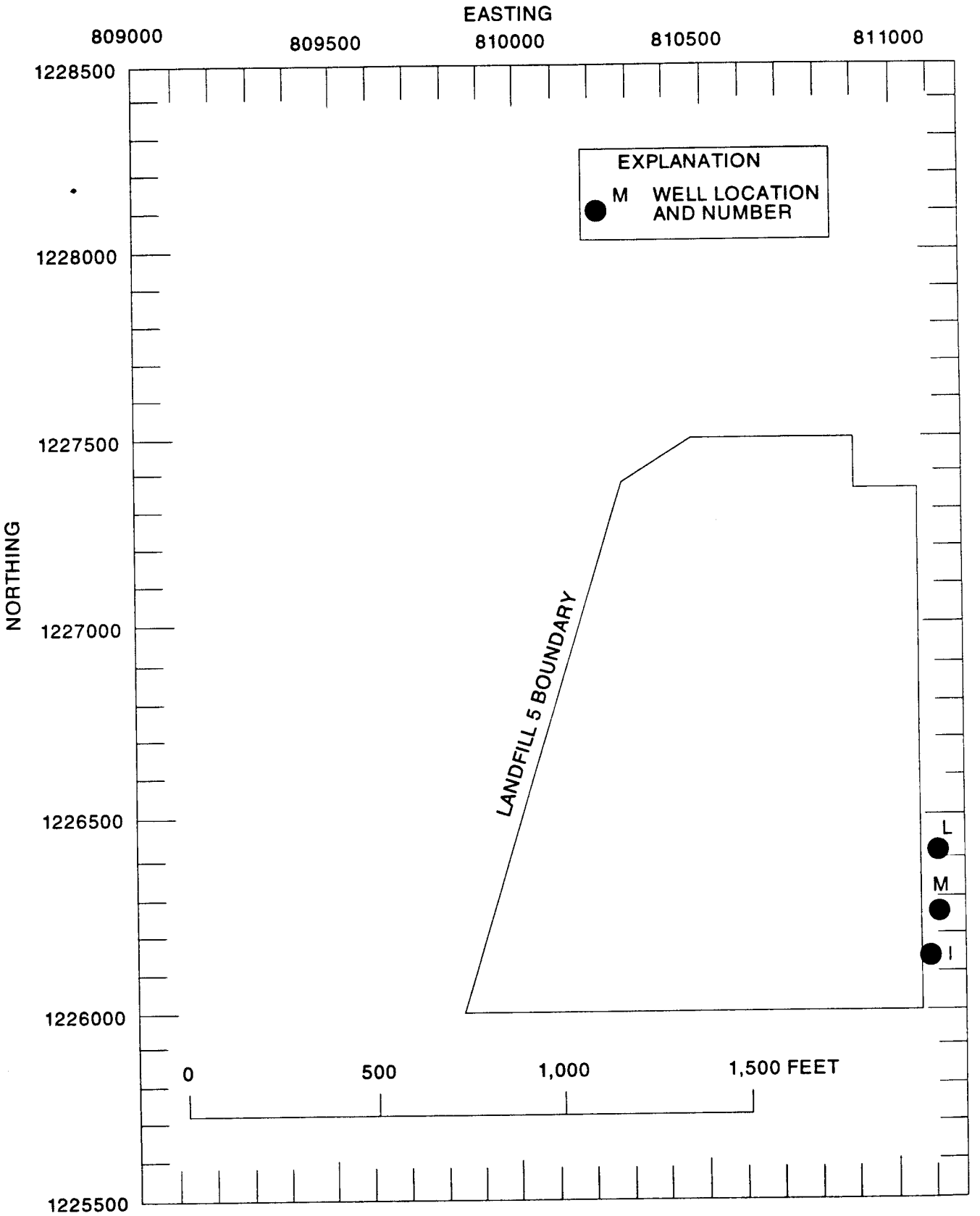


Figure 3.--Location of monitoring wells around Landfill 5.

Table 1.-- Summary of concentrations of analytes in ground-water from wells I, L, and M around Landfill 5 for samples collected on December 16-17, 1996, Cannon Air Force Base, New Mexico

[B, Compound is also detected in the method blank; G, Reporting limit raised due to the matrix of the sample; ND, Not Detected; RL, Reporting Limit]

Well/sample ID: Date sampled:		I/CAFB-I-1296-1 12-17-96		L/CAFB-L-1296-1 12-16-96		M/CAFB-M-1296-1 12-17-96	
Analytes and Method		Result	RL	Result	RL	Result	RL
Appendix-IX, Volatile organic compounds, SW8260, (µg/L)							
Dichlorodifluoromethane		ND	10.0	ND	10.0	15.0	10.0
Appendix-IX, Metals, Total (mg/L)							
Aluminum	SW6010	0.2	0.2	ND	0.2	ND	0.2
Calcium	SW6010	51.8	5.0	52.8	5.0	63.0	5.0
Chromium	SW6010	ND	0.03	0.031	0.03	ND	0.03
Chromium	SW7191	0.014	0.005	0.048 G	0.01	0.015	0.005
Iron	SW6010	0.33	0.04	0.77 B	0.04	0.38	0.04
Magnesium	SW6010	47.3	5.0	47.3	5.0	50.7	5.0
Manganese	SW6010	0.014	0.01	ND	0.01	0.013	0.01
Nickel	SW6010	ND	0.04	0.076	0.04	0.13	0.04
Potassium	SW6010	5.9	5.0	6.0	5.0	6.4	5.0
Sodium	SW6010	38.4	5.0	45.9	5.0	41.0	5.0
Zinc	SW6010	ND	0.01	ND	0.01	0.016	0.01

MONITORING WELL IDENTIFICATION REPORT

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

FACILITY NAME Cannon Air Force Base

EPA I.D. NUMBER NM 7572124454

COUNTY Curry

WELL NUMBER I

WELL LOCATION (LONGITUDE) 103° 18' 06.8"

WELL LOCATION (LATITUDE) 34° 21' 58.8"

AQUIFER NAME Ogalalla

AQUIFER CONFINED _____ UNCONFINED X

WELL INSTALLATION DATE 08-19-88

DRILLING METHOD HYDRT

INNER CASING DIAMETER 6"

BOREHOLE DIAMETER 9 7/8"

CASING MATERIAL PVC

METHOD OF DEVELOPMENT 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

THIRD SAMPLING EVENT
SEMI-ANNUAL REPORT

SAMPLE COLLECTED BY Jerry Larson

LABORATORY NAME Quanterra Environmental Services WELL NUMBER CAFB-I-1296-1

WELL DEPTH 293.00 WELL CASING VOLUME 15.56

DATE SAMPLED 12-17-96 LABORATORY SAMPLE I.D.# 053047-0005-SA

TIME SAMPLED 0850 DATE RECEIVED BY LAB 12-19-96

PARAMETERS	STORET CODE	UNITS	VALUE	DATE ANALYZED
Elevation of G. Water	71993	ft.	3979.96	12-17-96
Pump Rate	-----	gal/min	1.0	12-17-96
Pump Period	72004	min.	35.0	12-17-96
Volume Evacuated	73675	gal	35.0	12-17-96
Well Sampling Method	84077	---	PSPMP	12-17-96

Sampler Material: TEFLN Well Sampling Method: PSPMP

THIRD SAMPLING EVENT
SEMI-ANNUAL REPORT
(continued)

PARAMETERS	STORET CODE	UNITS	VALUE	DETECTION LIMIT	DATE ANALYZED	METHOD USED
pH	00400	S.U.	7.63	N/A	12-17-96	
	00400	S.U.				(f)
	00400	S.U.				
	00400	S.U.				
Specific Conductivity	00095	umhos/cm	700	N/A	12-17-96	
	00095	umhos/cm				(f)
	00095	umhos/cm				
	00095	umhos/cm				
T.O.X.	70354	ug/l	ND	30.0	01-13-97	
	70354	ug/l				SW9020
	70354	ug/l				
	70354	ug/l				
T.O.C.	00680	mg/l	ND	1.0	01-03-97	
	00680	mg/l				SW9060
	00680	mg/l				
	00680	mg/l				

SIGNATURE: F. Eileen Roybal

NAME (PRINTED): F. Eileen Roybal

THIRD SAMPLING EVENT
SEMI-ANNUAL REPORT

SAMPLE COLLECTED BY Jerry Larson

LABORATORY NAME Quanterra Environmental Services WELL NUMBER CAFB-L-1296-1

WELL DEPTH 287.00 WELL CASING VOLUME 2.79

DATE SAMPLED 12-16-96 LABORATORY SAMPLE I.D.# 053047-0001-SA

TIME SAMPLED 1420 DATE RECEIVED BY LAB 12-17-96

PARAMETERS	STORET CODE	UNITS	VALUE	DATE ANALYZED
Elevation of G. Water	71993	ft.	3982.00	12-16-96
Pump Rate	-----	gal/min	0.18	12-16-96
Pump Period	72004	min.	39.0	12-16-96
Volume Evacuated	73675	gal	7.0	12-16-96
Well Sampling Method	84077	---	PSPMP	

Sampler Material: TEFLN Well Sampling Method: PSPMP

THIRD SAMPLING EVENT
SEMI-ANNUAL REPORT
(continued)

PARAMETERS	STORET CODE	UNITS	VALUE	DETECTION LIMIT	DATE ANALYZED	METHOD USED
pH	00400	S.U.	7.42	N/A	12-16-96	
	00400	S.U.				(f)
	00400	S.U.				
	00400	S.U.				
Specific Conductivity	00095	umhos/cm	822	N/A	12-16-96	
	00095	umhos/cm				(f)
	00095	umhos/cm				
	00095	umhos/cm				
T.O.X.	70354	ug/l	ND	30.0	01-13-97	
	70354	ug/l				SW9020
	70354	ug/l				
	70354	ug/l				
T.O.C.	00680	mg/l	ND	1.0	01-03-97	
	00680	mg/l				SW9060
	00680	mg/l				
	00680	mg/l				

SIGNATURE: F. Eileen Roybal

NAME (PRINTED): F.Eileen Roybal

THIRD SAMPLING EVENT
SEMI-ANNUAL REPORT

SAMPLE COLLECTED BY Jerry Larson

LABORATORY NAME Quanterra Environmental Services WELL NUMBER CAFB-M-1296-1

WELL DEPTH 289.00 WELL CASING VOLUME 8.91

DATE SAMPLED 12-17-96 LABORATORY SAMPLE I.D.# 053047-0004-SA

TIME SAMPLED 1110 DATE RECEIVED BY LAB 12-18-96

PARAMETERS	STORET CODE	UNITS	VALUE	DATE ANALYZED
Elevation of G. Water	71993	ft.	3981.79	12-17-96
Pump Rate	-----	gal/min	0.55	12-17-96
Pump Period	72004	min.	9.0	12-17-96
Volume Evacuated	73675	gal	5.0	12-17-96
Well Sampling Method	84077	---	PSPMP	12-17-96

Sampler Material: TEFLN Well Sampling Method: PSPMP

THIRD SAMPLING EVENT
SEMI-ANNUAL REPORT
(continued)

PARAMETERS	STORET CODE	UNITS	VALUE	DETECTION LIMIT	DATE ANALYZED	METHOD USED
pH	00400	S.U.	7.03	N/A	12-17-96	
	00400	S.U.				(f)
	00400	S.U.				
	00400	S.U.				
Specific Conductivity	00095	umhos/cm	929	N/A	12-17-96	
	00095	umhos/cm				(f)
	00095	umhos/cm				
	00095	umhos/cm				
T.O.X.	70354	ug/l	ND	30.0	01-13-97	
	70354	ug/l				SW9020
	70354	ug/l				
	70354	ug/l				
T.O.C.	00680	mg/l	ND	1.0	01-03-97	
	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 December 16-17, 1996

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. 053047

JANUARY 23, 1997

Prepared by: _____
Mark D. Stella

Reviewed by: _____
Lindsay Breyer

Quanterra
Environmental Services

Table Of Contents

Standard Deliverables With Supporting Documentation

Report Contents	Section	Number Of Pages
Standard Deliverables		
Introduction	A	140
• Table of Contents		
• Narrative		
• LIMs Report Key		
• Sample Description		
• Test Requests		
• Analytical Results		
• QC Summary		
• Chain-of-Custody		
• Miscellaneous		
Supporting Documentation		
[Please Note: A one-page "Description of Supporting Documentation" is provided in the Supporting Documentation section(s).]		
Volatile GC/MS	B	303
Semivolatile GC/MS	C	346
Volatile GC	D	159
Semivolatile GC	E	453
LC/MS	F	NA
Metals	G	141
General Chemistry	H	66
Subcontracted Data	I	NA

NARRATIVE

On December 17, 18 & 19, 1996, Quanterra Environmental Services, Denver received six 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 have also been sent to Quanterra's West Sacramento, California laboratory for Appendix IX dioxins and furans. These results will be reported separately on project 053050.

General Comments

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

GC/MS Semivolatile Organics

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

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

1,2-diphenylhydrazine is measured and reported as azobenzene.

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

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

Tentatively Identified Compounds

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

In summary, the mass spectra of chromatographic peaks in concentrations in excess of 10% of the internal standard were obtained. Normally, the number of unknown compounds identified is limited to 10 compounds in the volatile fraction and 20 compounds in the semivolatile fraction. Each mass spectrum was then compared to a library of over 30,000 reference spectra in a computerized "library search." The three "best" matches obtained by the computer were hardcopied along with the mass spectrum of the unknown peak. This information was then reviewed by an analyst who "identified" the compound based on the available information. In general, mass spectrometry cannot distinguish isomers (compounds with the same molecular formula). Therefore, an identified compound may be any one of several different isomers.

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

3 Confirmed Identification; the identification is based on the analysis of an authentic standard.

2 Confident Identification; good agreement was observed between the unknown compound and a specific library spectrum.

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

If the unknown compound was not similar to a specific library spectrum, but it did contain ions characteristic of a class of compounds (saturated hydrocarbon, chlorinated hydrocarbon, etc.), a class identification is made without assigning a level of confidence.

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

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

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

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.

Appendix IX Herbicides

All compounds in the matrix spike duplicate were recovered above the upper control limit. A matrix effect is suspected. Since the duplicate control samples were recovered within control limits, 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.

Thallium, cadmium and chromium were recovered outside control limits in their respective matrix spike/spike duplicate for the graphite furnace atomic absorption analyses. Matrix effects are suspected. Since these analytes were recovered within control limits in their respective DCS, the data were accepted.

General Inorganics

The MS/SD for total organic carbon (TOC) was recovered above the upper control limit. A matrix effect has been indicated. Since the DCS for TOC 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
053047-0001-SA	CAFB-L-1296-1	AQUEOUS	16 DEC 96	14:20	17 DEC 96
053047-0002-EB	CAFB-L-1296-EB	AQUEOUS	16 DEC 96	12:15	17 DEC 96
053047-0003-TB	CAFB-L-1296-TB	AQUEOUS	16 DEC 96	11:00	17 DEC 96
053047-0004-SA	CAFB-M-1296-1	AQUEOUS	17 DEC 96	11:10	18 DEC 96
053047-0005-SA	CAFB-I-1296-1	AQUEOUS	17 DEC 96	08:50	19 DEC 96
053047-0005-MS	CAFB-I-1296-MS	AQUEOUS	17 DEC 96	08:50	19 DEC 96
053047-0005-SD	CAFB-I-1296-SD	AQUEOUS	17 DEC 96	08:50	19 DEC 96
053047-0006-TB	CAFB-I-1296-TB	AQUEOUS	17 DEC 96	07:40	19 DEC 96

Quanterra
Environmental Services

ANALYTICAL TEST REQUESTS
for
U.S. Geological Survey

Lab ID: 053047	Group Code	Analysis Description	Custom Test?
0001 - 0002, 0004 - 0005	A	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
		ICP Suite: Air Force	N
		Prep - Total Metals, ICP	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	N
		Appendix IX List	N
		Volatiles Library Search (20 Compound TID)	N
0003 , 0006	B	Screen - Volatile Organics	N
		Volatile Organics	N
		Appendix IX List	N

Quanterra
Environmental Services

ANALYTICAL TEST REQUESTS
for
U.S. Geological Survey

Lab ID: 053047	Group Code	Analysis Description	Custom Test?
		Volatiles Library Search (20 Compound TID)	N

ANALYTICAL RESULTS

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

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

Quanterra does not routinely blank-correct analytical data. Uncorrected analytical results are reported, along with associated blank results, for all organic and metals analyses. Analytical results and blank results are reported for conventional inorganic parameters as specified in the method. In addition, surrogate recovery data is presented for all GC/MS analyses. The surrogate recovery is an indication of the affect of the sample matrix on the performance of the method.

Quanterra
Environmental Services

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-L-1296-1
Lab ID: 053047-0001-SA
Matrix: AQUEOUS Sampled: 16 DEC 96 Prepared: 18 DEC 96
Authorized: 17 DEC 96 Received: 17 DEC 96 Analyzed: 27 DEC 96

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-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	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: Lynn S. Calvin

Quanterra Environmental Services

(cont.)

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-L-1296-1
Lab ID: 053047-0001-SA
Matrix: AQUEOUS
Authorized: 17 DEC 96

Sampled: 16 DEC 96
Received: 17 DEC 96

Prepared: 18 DEC 96
Analyzed: 27 DEC 96

Parameter	Result	Units	Reporting Limit
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
m- & p-Xylenes	ND	ug/L	2.5
o-Xylene	ND	ug/L	2.5
Xylenes (total)	ND	ug/L	5.0

Surrogate	Recovery		Limits
1,2-Dichloroethane-d4	91	%	80-120
4-Bromofluorobenzene	95	%	86-115
Toluene-d8	99	%	88-110

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

ND = Not Detected

Reported By: Steven Francis

Approved By: Lynn S. Calvin

Quanterra Environmental Services

Volatiles Library Search (20 Compound TID)
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-L-1296-1
Lab ID: 053047-0001-SA
Matrix AQUEOUS Sampled: 16 DEC 96 Prepared: NA
Authorized: 17 DEC 96 Received: 17 DEC 96 Analyzed: 27 DEC 96

Parameter	Result	Units	Reporting Limit
None Detected	ND	ug/L	

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

ND = Not Detected

Reported By: Steven Francis Approved By: Lynn S. Calvin

Quanterra Environmental Services

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-L-1296-EB
Lab ID: 053047-0002-EB
Matrix: AQUEOUS
Authorized: 17 DEC 96

Sampled: 16 DEC 96
Received: 17 DEC 96

Prepared: 18 DEC 96
Analyzed: 27 DEC 96

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-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	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: Lynn S. Calvin

Quanterra Environmental Services

(cont.)

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-L-1296-EB
Lab ID: 053047-0002-EB
Matrix: AQUEOUS
Authorized: 17 DEC 96

Sampled: 16 DEC 96
Received: 17 DEC 96

Prepared: 18 DEC 96
Analyzed: 27 DEC 96

Parameter	Result	Units	Reporting Limit
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
m- & p-Xylenes	ND	ug/L	2.5
o-Xylene	ND	ug/L	2.5
Xylenes (total)	ND	ug/L	5.0

Surrogate	Recovery		Limits
1,2-Dichloroethane-d4	89	%	80-120
4-Bromofluorobenzene	93	%	86-115
Toluene-d8	99	%	88-110

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

ND = Not Detected

Reported By: Steven Francis

Approved By: Lynn S. Calvin

Quanterra
Environmental Services

Volatiles Library Search (20 Compound TID)
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-L-1296-EB
Lab ID: 053047-0002-EB
Matrix AQUEOUS Sampled: 16 DEC 96 Prepared: NA
Authorized: 17 DEC 96 Received: 17 DEC 96 Analyzed: 27 DEC 96

Parameter	Result	Units	Reporting Limit
None Detected	ND	ug/L	

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

ND = Not Detected

Reported By: Steven Francis Approved By: Lynn S. Calvin

Quanterra Environmental Services

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-L-1296-TB
Lab ID: 053047-0003-TB
Matrix: AQUEOUS Sampled: 16 DEC 96 Prepared: 18 DEC 96
Authorized: 17 DEC 96 Received: 17 DEC 96 Analyzed: 27 DEC 96

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-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	11	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: Lynn S. Calvin

Quanterra Environmental Services

(cont.)

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-L-1296-TB
Lab ID: 053047-0003-TB
Matrix: AQUEOUS — Sampled: 16 DEC 96 — Prepared: 18 DEC 96
Authorized: 17 DEC 96 — Received: 17 DEC 96 — Analyzed: 27 DEC 96

Parameter	Result	Units	Reporting Limit
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
m- & p-Xylenes	ND	ug/L	2.5
o-Xylene	ND	ug/L	2.5
Xylenes (total)	ND	ug/L	5.0

Surrogate	Recovery		Limits
1,2-Dichloroethane-d4	93	%	80-120
4-Bromofluorobenzene	91	%	86-115
Toluene-d8	101	%	88-110

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

ND = Not Detected

Reported By: Steven Francis — Approved By: Lynn S. Calvin

Quanterra Environmental Services

Volatiles Library Search (20 Compound TID)
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-L-1296-TB
Lab ID: 053047-0003-TB
Matrix AQUEOUS Sampled: 16 DEC 96 Prepared: NA
Authorized: 17 DEC 96 Received: 17 DEC 96 Analyzed: 27 DEC 96

Parameter	Result	Units	Reporting Limit
None Detected	ND	ug/L	

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

ND = Not Detected

Reported By: Steven Francis Approved By: Lynn S. Calvin

Quanterra
Environmental Services

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-M-1296-1
Lab ID: 053047-0004-SA
Matrix: AQUEOUS — Sampled: 17 DEC 96 — Prepared: 23 DEC 96
Authorized: 17 DEC 96 — Received: 18 DEC 96 — Analyzed: 30 DEC 96

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	15	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-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	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: Lynn S. Calvin

Quanterra Environmental Services

(cont.)

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-M-1296-1
Lab ID: 053047-0004-SA
Matrix: AQUEOUS
Authorized: 17 DEC 96

Sampled: 17 DEC 96
Received: 18 DEC 96

Prepared: 23 DEC 96
Analyzed: 30 DEC 96

Parameter	Result	Units	Reporting Limit
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
m- & p-Xylenes	ND	ug/L	2.5
o-Xylene	ND	ug/L	2.5
Xylenes (total)	ND	ug/L	5.0

Surrogate	Recovery		Limits
1,2-Dichloroethane-d4	92	%	80-120
4-Bromofluorobenzene	93	%	86-115
Toluene-d8	103	%	88-110

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

ND = Not Detected

Reported By: Steven Francis

Approved By: Lynn S. Calvin

Quanterra Environmental Services

Volatiles Library Search (20 Compound TID)
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-M-1296-1
Lab ID: 053047-0004-SA
Matrix AQUEOUS Sampled: 17 DEC 96 Prepared: NA
Authorized: 17 DEC 96 Received: 18 DEC 96 Analyzed: 30 DEC 96

Parameter	Result	Units	Reporting Limit
None Detected	ND	ug/L	

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

ND = Not Detected

Reported By: Steven Francis Approved By: Lynn S. Calvin

Quanterra
Environmental Services

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-I-1296-1
Lab ID: 053047-0005-SA
Matrix: AQUEOUS — Sampled: 17 DEC 96 — Prepared: 23 DEC 96
Authorized: 17 DEC 96 — Received: 19 DEC 96 — Analyzed: 30 DEC 96

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-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	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: Lynn S. Calvin

Quanterra Environmental Services

(cont.)

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-I-1296-1
Lab ID: 053047-0005-SA
Matrix: AQUEOUS
Authorized: 17 DEC 96

Sampled: 17 DEC 96
Received: 19 DEC 96

Prepared: 23 DEC 96
Analyzed: 30 DEC 96

Parameter	Result	Units	Reporting Limit
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
m- & p-Xylenes	ND	ug/L	2.5
o-Xylene	ND	ug/L	2.5
Xylenes (total)	ND	ug/L	5.0

Surrogate	Recovery		Limits
1,2-Dichloroethane-d4	93	%	80-120
4-Bromofluorobenzene	94	%	86-115
Toluene-d8	101	%	88-110

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

ND = Not Detected

Reported By: Steven Francis

Approved By: Lynn S. Calvin

Quanterra
Environmental Services

Volatiles Library Search (20 Compound TID)
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-I-1296-1
Lab ID: 053047-0005-SA
Matrix AQUEOUS Sampled: 17 DEC 96 Prepared: NA
Authorized: 17 DEC 96 Received: 19 DEC 96 Analyzed: 30 DEC 96

Parameter	Result	Units	Reporting Limit
None Detected	ND	ug/L	

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

ND = Not Detected

Reported By: Steven Francis Approved By: Lynn S. Calvin

Quanterra Environmental Services

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-I-1296-TB
Lab ID: 053047-0006-TB
Matrix: AQUEOUS Sampled: 17 DEC 96 Prepared: 23 DEC 96
Authorized: 17 DEC 96 Received: 19 DEC 96 Analyzed: 30 DEC 96

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-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	8.0	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: Lynn S. Calvin

Quanterra Environmental Services

(cont.)

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-I-1296-TB
Lab ID: 053047-0006-TB
Matrix: AQUEOUS
Authorized: 17 DEC 96

Sampled: 17 DEC 96
Received: 19 DEC 96

Prepared: 23 DEC 96
Analyzed: 30 DEC 96

Parameter	Result	Units	Reporting Limit
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
m- & p-Xylenes	ND	ug/L	2.5
o-Xylene	ND	ug/L	2.5
Xylenes (total)	ND	ug/L	5.0

Surrogate	Recovery		Limits
1,2-Dichloroethane-d4	91	%	80-120
4-Bromofluorobenzene	94	%	86-115
Toluene-d8	101	%	88-110

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

ND = Not Detected

Reported By: Steven Francis

Approved By: Lynn S. Calvin

Quanterra Environmental Services

Volatiles Library Search (20 Compound TID)
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-I-1296-TB
Lab ID: 053047-0006-TB
Matrix AQUEOUS Sampled: 17 DEC 96 Prepared: NA
Authorized: 17 DEC 96 Received: 19 DEC 96 Analyzed: 30 DEC 96

Parameter	Result	Units	Reporting Limit
None Detected	ND	ug/L	

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

ND = Not Detected

Reported By: Steven Francis Approved By: Lynn S. Calvin

Quanterra
Environmental Services

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-L-1296-1
Lab ID: 053047-0001-SA
Matrix: AQUEOUS
Authorized: 17 DEC 96

Sampled: 16 DEC 96
Received: 17 DEC 96

Prepared: 22 DEC 96
Analyzed: 10 JAN 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: Kristin Shadowlight

Quanterra Environmental Services

(cont.)

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-L-1296-1
Lab ID: 053047-0001-SA
Matrix: AQUEOUS
Authorized: 17 DEC 96

Sampled: 16 DEC 96
Received: 17 DEC 96

Prepared: 22 DEC 96
Analyzed: 10 JAN 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: Kristin Shadowlight

Quanterra Environmental Services

(cont.)

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-L-1296-1
Lab ID: 053047-0001-SA
Matrix: AQUEOUS
Authorized: 17 DEC 96

Sampled: 16 DEC 96
Received: 17 DEC 96

Prepared: 22 DEC 96
Analyzed: 10 JAN 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: Kristin Shadowlight

Quanterra Environmental Services

(cont.)

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-L-1296-1
Lab ID: 053047-0001-SA
Matrix: AQUEOUS — Sampled: 16 DEC 96 — Prepared: 22 DEC 96
Authorized: 17 DEC 96 — Received: 17 DEC 96 — Analyzed: 10 JAN 97

Parameter	Result	Units	Reporting Limit
Surrogate	Recovery		Limits
Nitrobenzene-d5	79	%	35-114
2-Fluorobiphenyl	69	%	43-116
Terphenyl-d14	72	%	33-141
Phenol-d5	88	%	54-105
2-Fluorophenol	69	%	21-100
2,4,6-Tribromophenol	79	%	10-123

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

Reported By: Lisa Burgesser Approved By: Kristin Shadowlight

Quanterra
Environmental Services

Semivolatiles Library Search (30 Compound TID)
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-L-1296-1
Lab ID: 053047-0001-SA
Matrix AQUEOUS Sampled: 16 DEC 96 Prepared: NA
Authorized: 17 DEC 96 Received: 17 DEC 96 Analyzed: 10 JAN 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-1296-EB
Lab ID: 053047-0002-EB
Matrix: AQUEOUS Sampled: 16 DEC 96 Prepared: 22 DEC 96
Authorized: 17 DEC 96 Received: 17 DEC 96 Analyzed: 10 JAN 97

Parameter	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	9.8
Acenaphthylene	ND	ug/L	9.8
Acetophenone	ND	ug/L	9.8
2-Acetylaminofluorene	ND	ug/L	98
4-Aminobiphenyl	ND	ug/L	49
Aniline	ND	ug/L	9.8
Anthracene	ND	ug/L	9.8
Aramite	ND	ug/L	20
Benzo(a)anthracene	ND	ug/L	9.8
Benzo(b)fluoranthene	ND	ug/L	9.8
Benzo(k)fluoranthene	ND	ug/L	9.8
Benzo(g,h,i)perylene	ND	ug/L	9.8
Benzo(a)pyrene	ND	ug/L	9.8
Benzyl alcohol	ND	ug/L	9.8
4-Bromophenyl phenyl ether	ND	ug/L	9.8
Butyl benzyl phthalate	ND	ug/L	9.8
2-sec-Butyl-4,6-dinitro-phenol	ND	ug/L	20
4-Chloroaniline	ND	ug/L	9.8
bis(2-Chloroethoxy)methane	ND	ug/L	9.8
bis(2-Chloroethyl) ether	ND	ug/L	9.8
2,2'-oxybis(1-chloropropane)	ND	ug/L	9.8
4-Chloro-3-methylphenol	ND	ug/L	9.8
2-Chloronaphthalene	ND	ug/L	9.8
2-Chlorophenol	ND	ug/L	9.8
4-Chlorophenyl phenyl ether	ND	ug/L	9.8
Chrysene	ND	ug/L	9.8
Dibenz(a,h)anthracene	ND	ug/L	9.8
Dibenzofuran	ND	ug/L	9.8
Di-n-butyl phthalate	ND	ug/L	9.8
1,2-Dichlorobenzene	ND	ug/L	9.8
1,3-Dichlorobenzene	ND	ug/L	9.8
1,4-Dichlorobenzene	ND	ug/L	9.8
3,3'-Dichlorobenzidine	ND	ug/L	49
2,4-Dichlorophenol	ND	ug/L	9.8
2,6-Dichlorophenol	ND	ug/L	9.8
Diethyl phthalate	ND	ug/L	9.8
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	49
a,a-Dimethylphenethyl-amine	ND	ug/L	49

Dilution factor is 0.98. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Lisa Burgesser Approved By: Kristin Shadowlight

Quanterra Environmental Services

(cont.)

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-L-1296-EB
Lab ID: 053047-0002-EB
Matrix: AQUEOUS
Authorized: 17 DEC 96

Sampled: 16 DEC 96
Received: 17 DEC 96

Prepared: 22 DEC 96
Analyzed: 10 JAN 97

Parameter	Result	Units	Reporting Limit
2,4-Dimethylphenol	ND	ug/L	9.8
Dimethyl phthalate	ND	ug/L	9.8
1,3-Dinitrobenzene	ND	ug/L	9.8
4,6-Dinitro-2-methylphenol	ND	ug/L	49
2,4-Dinitrophenol	ND	ug/L	49
2,4-Dinitrotoluene	ND	ug/L	9.8
2,6-Dinitrotoluene	ND	ug/L	9.8
Di-n-octyl phthalate	ND	ug/L	9.8
Diphenylamine	ND	ug/L	9.8
Disulfoton	ND	ug/L	49
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.8
Ethyl methanesulfonate	ND	ug/L	9.8
Famphur	ND	ug/L	98
Fluoranthene	ND	ug/L	9.8
Fluorene	ND	ug/L	9.8
Hexachlorobenzene	ND	ug/L	9.8
Hexachlorobutadiene	ND	ug/L	9.8
Hexachlorocyclopentadiene	ND	ug/L	49
Hexachloroethane	ND	ug/L	9.8
Hexachlorophene	ND	ug/L	--
Hexachloropropene	ND	ug/L	98
Indeno(1,2,3-cd)pyrene	ND	ug/L	9.8
Isophorone	ND	ug/L	9.8
Isosafrole	ND	ug/L	20
Methapyrilene	ND	ug/L	49
3-Methylcholanthrene	ND	ug/L	20
Methyl methanesulfonate	ND	ug/L	9.8
2-Methylnaphthalene	ND	ug/L	9.8
Methyl parathion	ND	ug/L	49
2-Methylphenol	ND	ug/L	9.8
3/4-Methylphenol	ND	ug/L	9.8
Naphthalene	ND	ug/L	9.8
1,4-Naphthoquinone	ND	ug/L	49
1-Naphthylamine	ND	ug/L	9.8
2-Naphthylamine	ND	ug/L	9.8
2-Nitroaniline	ND	ug/L	49
3-Nitroaniline	ND	ug/L	49
4-Nitroaniline	ND	ug/L	49
Nitrobenzene	ND	ug/L	9.8
2-Nitrophenol	ND	ug/L	9.8
4-Nitrophenol	ND	ug/L	49

Dilution factor is 0.98. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Lisa Burgesser

Approved By: Kristin Shadowlight

Quanterra Environmental Services

(cont.)

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-L-1296-EB
Lab ID: 053047-0002-EB
Matrix: AQUEOUS
Authorized: 17 DEC 96

Sampled: 16 DEC 96
Received: 17 DEC 96

Prepared: 22 DEC 96
Analyzed: 10 JAN 97

Parameter	Result	Units	Reporting Limit
4-Nitroquinoline-1-oxide	ND	ug/L	98
N-Nitroso-di-n-butylamine	ND	ug/L	9.8
N-Nitrosodiethylamine	ND	ug/L	9.8
N-Nitrosodimethylamine	ND	ug/L	9.8
N-Nitrosodiphenylamine	ND	ug/L	9.8
N-Nitroso-di-n-propylamine	ND	ug/L	9.8
N-Nitrosomethylethylamine	ND	ug/L	9.8
N-Nitrosomorpholine	ND	ug/L	9.8
N-Nitrosopiperidine	ND	ug/L	9.8
N-Nitrosopyrrolidine	ND	ug/L	9.8
5-Nitro-o-toluidine	ND	ug/L	20
Parathion	ND	ug/L	49
Pentachlorobenzene	ND	ug/L	9.8
Pentachloroethane	ND	ug/L	49
Pentachloronitrobenzene	ND	ug/L	49
Pentachlorophenol	ND	ug/L	49
Phenacetin	ND	ug/L	20
Phenanthrene	ND	ug/L	9.8
Phenol	ND	ug/L	9.8
p-Phenylenediamine	ND	ug/L	98
Phorate	ND	ug/L	49
2-Picoline	ND	ug/L	20
Pronamide	ND	ug/L	20
Pyrene	ND	ug/L	9.8
Pyridine	ND	ug/L	20
Safrole	ND	ug/L	20
Sulfotepp	ND	ug/L	49
1,2,4,5-Tetrachloro-benzene	ND	ug/L	9.8
2,3,4,6-Tetrachlorophenol	ND	ug/L	49
Thionazin	ND	ug/L	49
o-Toluidine	ND	ug/L	9.8
1,2,4-Trichlorobenzene	ND	ug/L	9.8
2,4,5-Trichlorophenol	ND	ug/L	9.8
2,4,6-Trichlorophenol	ND	ug/L	9.8
0,0,0-Triethylphosphoro-thioate	ND	ug/L	49
1,3,5-Trinitrobenzene	ND	ug/L	49

Dilution factor is 0.98. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Lisa Burgesser

Approved By: Kristin Shadowlight

Quanterra Environmental Services

(cont.)

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-L-1296-EB
Lab ID: 053047-0002-EB
Matrix: AQUEOUS Sampled: 16 DEC 96 Prepared: 22 DEC 96
Authorized: 17 DEC 96 Received: 17 DEC 96 Analyzed: 10 JAN 97

Parameter	Result	Units	Reporting Limit
Surrogate	Recovery		Limits
Nitrobenzene-d5	70	%	35-114
2-Fluorobiphenyl	66	%	43-116
Terphenyl-d14	66	%	33-141
Phenol-d5	59	%	54-105
2-Fluorophenol	46	%	21-100
2,4,6-Tribromophenol	56	%	10-123

Dilution factor is 0.98. All results and limits are corrected for dilution.

Reported By: Lisa Burgesser Approved By: Kristin Shadowlight

Quanterra
Environmental Services

Semivolatiles Library Search (30 Compound TID)
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-L-1296-EB
Lab ID: 053047-0002-EB
Matrix AQUEOUS Sampled: 16 DEC 96 Prepared: NA
Authorized: 17 DEC 96 Received: 17 DEC 96 Analyzed: 10 JAN 97

Parameter	Result	Units	Reporting Limit	
Phenol, 4-(1,1,3,3-tetramethylbutyl)-	4.1	ug/L		2
Aromatic Hydrocarbon	4.0	ug/L		
Phenol, 4-(1,1,3,3-tetramethylbutyl)-	4.0	ug/L		2

Dilution factor is 0.98. All results and limits are corrected for dilution.

2 = Confident Identification

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-M-1296-1
Lab ID: 053047-0004-SA
Matrix: AQUEOUS Sampled: 17 DEC 96 Prepared: 22 DEC 96
Authorized: 17 DEC 96 Received: 18 DEC 96 Analyzed: 10 JAN 97

Parameter	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	9.7
Acenaphthylene	ND	ug/L	9.7
Acetophenone	ND	ug/L	9.7
2-Acetylaminofluorene	ND	ug/L	97
4-Aminobiphenyl	ND	ug/L	49
Aniline	ND	ug/L	9.7
Anthracene	ND	ug/L	9.7
Aramite	ND	ug/L	19
Benzo(a)anthracene	ND	ug/L	9.7
Benzo(b)fluoranthene	ND	ug/L	9.7
Benzo(k)fluoranthene	ND	ug/L	9.7
Benzo(g,h,i)perylene	ND	ug/L	9.7
Benzo(a)pyrene	ND	ug/L	9.7
Benzyl alcohol	ND	ug/L	9.7
4-Bromophenyl phenyl ether	ND	ug/L	9.7
Butyl benzyl phthalate	ND	ug/L	9.7
2-sec-Butyl-4,6-dinitro-phenol	ND	ug/L	19
4-Chloroaniline	ND	ug/L	9.7
bis(2-Chloroethoxy)methane	ND	ug/L	9.7
bis(2-Chloroethyl) ether	ND	ug/L	9.7
2,2'-oxybis(1-chloropropane)	ND	ug/L	9.7
4-Chloro-3-methylphenol	ND	ug/L	9.7
2-Chloronaphthalene	ND	ug/L	9.7
2-Chlorophenol	ND	ug/L	9.7
4-Chlorophenyl phenyl ether	ND	ug/L	9.7
Chrysene	ND	ug/L	9.7
Dibenz(a,h)anthracene	ND	ug/L	9.7
Dibenzofuran	ND	ug/L	9.7
Di-n-butyl phthalate	ND	ug/L	9.7
1,2-Dichlorobenzene	ND	ug/L	9.7
1,3-Dichlorobenzene	ND	ug/L	9.7
1,4-Dichlorobenzene	ND	ug/L	9.7
3,3'-Dichlorobenzidine	ND	ug/L	49
2,4-Dichlorophenol	ND	ug/L	9.7
2,6-Dichlorophenol	ND	ug/L	9.7
Diethyl phthalate	ND	ug/L	9.7
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	49
a,a-Dimethylphenethyl-amine	ND	ug/L	49

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

ND = Not Detected

Reported By: Lisa Burgesser Approved By: Kristin Shadowlight

Quanterra Environmental Services

(cont.)

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-M-1296-1
Lab ID: 053047-0004-SA
Matrix: AQUEOUS
Authorized: 17 DEC 96

Sampled: 17 DEC 96
Received: 18 DEC 96

Prepared: 22 DEC 96
Analyzed: 10 JAN 97

Parameter	Result	Units	Reporting Limit
2,4-Dimethylphenol	ND	ug/L	9.7
Dimethyl phthalate	ND	ug/L	9.7
1,3-Dinitrobenzene	ND	ug/L	9.7
4,6-Dinitro-2-methylphenol	ND	ug/L	49
2,4-Dinitrophenol	ND	ug/L	49
2,4-Dinitrotoluene	ND	ug/L	9.7
2,6-Dinitrotoluene	ND	ug/L	9.7
Di-n-octyl phthalate	ND	ug/L	9.7
Diphenylamine	ND	ug/L	9.7
Disulfoton	ND	ug/L	49
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.7
Ethyl methanesulfonate	ND	ug/L	9.7
Famphur	ND	ug/L	97
Fluoranthene	ND	ug/L	9.7
Fluorene	ND	ug/L	9.7
Hexachlorobenzene	ND	ug/L	9.7
Hexachlorobutadiene	ND	ug/L	9.7
Hexachlorocyclopentadiene	ND	ug/L	49
Hexachloroethane	ND	ug/L	9.7
Hexachlorophene	ND	ug/L	--
Hexachloropropene	ND	ug/L	97
Indeno(1,2,3-cd)pyrene	ND	ug/L	9.7
Isophorone	ND	ug/L	9.7
Isosafrole	ND	ug/L	19
Methapyrilene	ND	ug/L	49
3-Methylcholanthrene	ND	ug/L	19
Methyl methanesulfonate	ND	ug/L	9.7
2-Methylnaphthalene	ND	ug/L	9.7
Methyl parathion	ND	ug/L	49
2-Methylphenol	ND	ug/L	9.7
3/4-Methylphenol	ND	ug/L	9.7
Naphthalene	ND	ug/L	9.7
1,4-Naphthoquinone	ND	ug/L	49
1-Naphthylamine	ND	ug/L	9.7
2-Naphthylamine	ND	ug/L	9.7
2-Nitroaniline	ND	ug/L	49
3-Nitroaniline	ND	ug/L	49
4-Nitroaniline	ND	ug/L	49
Nitrobenzene	ND	ug/L	9.7
2-Nitrophenol	ND	ug/L	9.7
4-Nitrophenol	ND	ug/L	49

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

ND = Not Detected

Reported By: Lisa Burgesser

Approved By: Kristin Shadowlight

Quanterra Environmental Services

(cont.)

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-M-1296-1
Lab ID: 053047-0004-SA
Matrix: AQUEOUS
Authorized: 17 DEC 96

Sampled: 17 DEC 96
Received: 18 DEC 96

Prepared: 22 DEC 96
Analyzed: 10 JAN 97

Parameter	Result	Units	Reporting Limit
4-Nitroquinoline-1-oxide	ND	ug/L	97
N-Nitroso-di-n-butylamine	ND	ug/L	9.7
N-Nitrosodiethylamine	ND	ug/L	9.7
N-Nitrosodimethylamine	ND	ug/L	9.7
N-Nitrosodiphenylamine	ND	ug/L	9.7
N-Nitroso-di-n-propylamine	ND	ug/L	9.7
N-Nitrosomethylethylamine	ND	ug/L	9.7
N-Nitrosomorpholine	ND	ug/L	9.7
N-Nitrosopiperidine	ND	ug/L	9.7
N-Nitrosopyrrolidine	ND	ug/L	9.7
5-Nitro-o-toluidine	ND	ug/L	19
Parathion	ND	ug/L	49
Pentachlorobenzene	ND	ug/L	9.7
Pentachloroethane	ND	ug/L	49
Pentachloronitrobenzene	ND	ug/L	49
Pentachlorophenol	ND	ug/L	49
Phenacetin	ND	ug/L	19
Phenanthrene	ND	ug/L	9.7
Phenol	ND	ug/L	9.7
p-Phenylenediamine	ND	ug/L	97
Phorate	ND	ug/L	49
2-Picoline	ND	ug/L	19
Pronamide	ND	ug/L	19
Pyrene	ND	ug/L	9.7
Pyridine	ND	ug/L	19
Safrole	ND	ug/L	19
Sulfotepp	ND	ug/L	49
1,2,4,5-Tetrachloro-benzene	ND	ug/L	9.7
2,3,4,6-Tetrachlorophenol	ND	ug/L	49
Thionazin	ND	ug/L	49
o-Toluidine	ND	ug/L	9.7
1,2,4-Trichlorobenzene	ND	ug/L	9.7
2,4,5-Trichlorophenol	ND	ug/L	9.7
2,4,6-Trichlorophenol	ND	ug/L	9.7
O,O,O-Triethylphosphoro-thioate	ND	ug/L	49
1,3,5-Trinitrobenzene	ND	ug/L	49

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

ND = Not Detected

Reported By: Lisa Burgesser

Approved By: Kristin Shadowlight

Quanterra Environmental Services

(cont.)

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-M-1296-1
Lab ID: 053047-0004-SA
Matrix: AQUEOUS
Authorized: 17 DEC 96

Sampled: 17 DEC 96
Received: 18 DEC 96

Prepared: 22 DEC 96
Analyzed: 10 JAN 97

Parameter	Result	Units	Reporting Limit
Surrogate	Recovery		Limits
Nitrobenzene-d5	81	%	35-114
2-Fluorobiphenyl	73	%	43-116
Terphenyl-d14	72	%	33-141
Phenol-d5	67	%	54-105
2-Fluorophenol	53	%	21-100
2,4,6-Tribromophenol	63	%	10-123

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

Reported By: Lisa Burgesser

Approved By: Kristin Shadowlight

Quanterra
Environmental Services

Semivolatiles Library Search (30 Compound TID)
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-M-1296-1
Lab ID: 053047-0004-SA
Matrix AQUEOUS Sampled: 17 DEC 96 Prepared: NA
Authorized: 17 DEC 96 Received: 18 DEC 96 Analyzed: 10 JAN 97

Parameter	Result	Units	Reporting Limit
None Detected	ND	ug/L	

Dilution factor is 0.97. 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-I-1296-1
Lab ID: 053047-0005-SA
Matrix: AQUEOUS
Authorized: 17 DEC 96

Sampled: 17 DEC 96
Received: 19 DEC 96

Prepared: 22 DEC 96
Analyzed: 10 JAN 97

Parameter	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	9.7
Acenaphthylene	ND	ug/L	9.7
Acetophenone	ND	ug/L	9.7
2-Acetylaminofluorene	ND	ug/L	97
4-Aminobiphenyl	ND	ug/L	48
Aniline	ND	ug/L	9.7
Anthracene	ND	ug/L	9.7
Aramite	ND	ug/L	19
Benzo(a)anthracene	ND	ug/L	9.7
Benzo(b)fluoranthene	ND	ug/L	9.7
Benzo(k)fluoranthene	ND	ug/L	9.7
Benzo(g,h,i)perylene	ND	ug/L	9.7
Benzo(a)pyrene	ND	ug/L	9.7
Benzyl alcohol	ND	ug/L	9.7
4-Bromophenyl phenyl ether	ND	ug/L	9.7
Butyl benzyl phthalate	ND	ug/L	9.7
2-sec-Butyl-4,6-dinitro-phenol	ND	ug/L	19
4-Chloroaniline	ND	ug/L	9.7
bis(2-Chloroethoxy)methane	ND	ug/L	9.7
bis(2-Chloroethyl) ether	ND	ug/L	9.7
2,2'-oxybis(1-chloropropane)	ND	ug/L	9.7
4-Chloro-3-methylphenol	ND	ug/L	9.7
2-Chloronaphthalene	ND	ug/L	9.7
2-Chlorophenol	ND	ug/L	9.7
4-Chlorophenyl phenyl ether	ND	ug/L	9.7
Chrysene	ND	ug/L	9.7
Dibenz(a,h)anthracene	ND	ug/L	9.7
Dibenzofuran	ND	ug/L	9.7
Di-n-butyl phthalate	ND	ug/L	9.7
1,2-Dichlorobenzene	ND	ug/L	9.7
1,3-Dichlorobenzene	ND	ug/L	9.7
1,4-Dichlorobenzene	ND	ug/L	9.7
3,3'-Dichlorobenzidine	ND	ug/L	48
2,4-Dichlorophenol	ND	ug/L	9.7
2,6-Dichlorophenol	ND	ug/L	9.7
Diethyl phthalate	ND	ug/L	9.7
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 0.97. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Lisa Burgesser

Approved By: Kristin Shadowlight

Quanterra Environmental Services

(cont.)

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-I-1296-1
Lab ID: 053047-0005-SA
Matrix: AQUEOUS Sampled: 17 DEC 96 Prepared: 22 DEC 96
Authorized: 17 DEC 96 Received: 19 DEC 96 Analyzed: 10 JAN 97

Parameter	Result	Units	Reporting Limit
2,4-Dimethylphenol	ND	ug/L	9.7
Dimethyl phthalate	ND	ug/L	9.7
1,3-Dinitrobenzene	ND	ug/L	9.7
4,6-Dinitro-2-methylphenol	ND	ug/L	48
2,4-Dinitrophenol	ND	ug/L	48
2,4-Dinitrotoluene	ND	ug/L	9.7
2,6-Dinitrotoluene	ND	ug/L	9.7
Di-n-octyl phthalate	ND	ug/L	9.7
Diphenylamine	ND	ug/L	9.7
Disulfoton	ND	ug/L	48
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.7
Ethyl methanesulfonate	ND	ug/L	9.7
Famphur	ND	ug/L	97
Fluoranthene	ND	ug/L	9.7
Fluorene	ND	ug/L	9.7
Hexachlorobenzene	ND	ug/L	9.7
Hexachlorobutadiene	ND	ug/L	9.7
Hexachlorocyclopentadiene	ND	ug/L	48
Hexachloroethane	ND	ug/L	9.7
Hexachlorophene	ND	ug/L	--
Hexachloropropene	ND	ug/L	97
Indeno(1,2.3-cd)pyrene	ND	ug/L	9.7
Isophorone	ND	ug/L	9.7
Isosafrole	ND	ug/L	19
Methapyrilene	ND	ug/L	48
3-Methylcholanthrene	ND	ug/L	19
Methyl methanesulfonate	ND	ug/L	9.7
2-Methylnaphthalene	ND	ug/L	9.7
Methyl parathion	ND	ug/L	48
2-Methylphenol	ND	ug/L	9.7
3/4-Methylphenol	ND	ug/L	9.7
Naphthalene	ND	ug/L	9.7
1,4-Naphthoquinone	ND	ug/L	48
1-Naphthylamine	ND	ug/L	9.7
2-Naphthylamine	ND	ug/L	9.7
2-Nitroaniline	ND	ug/L	48
3-Nitroaniline	ND	ug/L	48
4-Nitroaniline	ND	ug/L	48
Nitrobenzene	ND	ug/L	9.7
2-Nitrophenol	ND	ug/L	9.7
4-Nitrophenol	ND	ug/L	48

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

ND = Not Detected

Reported By: Lisa Burgesser Approved By: Kristin Shadowlight

Quanterra Environmental Services

(cont.)

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-I-1296-1
Lab ID: 053047-0005-SA
Matrix: AQUEOUS
Authorized: 17 DEC 96

Sampled: 17 DEC 96
Received: 19 DEC 96

Prepared: 22 DEC 96
Analyzed: 10 JAN 97

Parameter	Result	Units	Reporting Limit
4-Nitroquinoline-1-oxide	ND	ug/L	97
N-Nitroso-di-n-butylamine	ND	ug/L	9.7
N-Nitrosodiethylamine	ND	ug/L	9.7
N-Nitrosodimethylamine	ND	ug/L	9.7
N-Nitrosodiphenylamine	ND	ug/L	9.7
N-Nitroso-di-n-propylamine	ND	ug/L	9.7
N-Nitrosomethylethylamine	ND	ug/L	9.7
N-Nitrosomorpholine	ND	ug/L	9.7
N-Nitrosopiperidine	ND	ug/L	9.7
N-Nitrosopyrrolidine	ND	ug/L	9.7
5-Nitro-o-toluidine	ND	ug/L	19
Parathion	ND	ug/L	48
Pentachlorobenzene	ND	ug/L	9.7
Pentachloroethane	ND	ug/L	48
Pentachloronitrobenzene	ND	ug/L	48
Pentachlorophenol	ND	ug/L	48
Phenacetin	ND	ug/L	19
Phenanthrene	ND	ug/L	9.7
Phenol	ND	ug/L	9.7
p-Phenylenediamine	ND	ug/L	97
Phorate	ND	ug/L	48
2-Picoline	ND	ug/L	19
Pronamide	ND	ug/L	19
Pyrene	ND	ug/L	9.7
Pyridine	ND	ug/L	19
Safrole	ND	ug/L	19
Sulfotepp	ND	ug/L	48
1,2,4,5-Tetrachloro-benzene	ND	ug/L	9.7
2,3,4,6-Tetrachlorophenol	ND	ug/L	48
Thionazin	ND	ug/L	48
o-Toluidine	ND	ug/L	9.7
1,2,4-Trichlorobenzene	ND	ug/L	9.7
2,4,5-Trichlorophenol	ND	ug/L	9.7
2,4,6-Trichlorophenol	ND	ug/L	9.7
0,0,0-Triethylphosphoro-thioate	ND	ug/L	48
1,3,5-Trinitrobenzene	ND	ug/L	48

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

ND = Not Detected

Reported By: Lisa Burgesser

Approved By: Kristin Shadowlight

Quanterra Environmental Services

(cont.)

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-I-1296-1
Lab ID: 053047-0005-SA
Matrix: AQUEOUS
Authorized: 17 DEC 96

Sampled: 17 DEC 96
Received: 19 DEC 96

Prepared: 22 DEC 96
Analyzed: 10 JAN 97

Parameter	Result	Units	Reporting Limit
Surrogate	Recovery		Limits
Nitrobenzene-d5	75	%	35-114
2-Fluorobiphenyl	70	%	43-116
Terphenyl-d14	73	%	33-141
Phenol-d5	61	%	54-105
2-Fluorophenol	49	%	21-100
2,4,6-Tribromophenol	62	%	10-123

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

Reported By: Lisa Burgesser

Approved By: Kristin Shadowlight

Quanterra
Environmental Services

Semivolatiles Library Search (30 Compound TID)
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-I-1296-1
Lab ID: 053047-0005-SA
Matrix AQUEOUS
Authorized: 17 DEC 96

Sampled: 17 DEC 96
Received: 19 DEC 96

Prepared: NA
Analyzed: 10 JAN 97

Parameter	Result	Units	Reporting Limit
None Detected	ND	ug/L	

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

ND = Not Detected

Reported By: Lisa Burgesser

Approved By: Audrey Cornell

Quanterra Environmental Services

Polynuclear Aromatic Hydrocarbons, HPLC
Method 8310

Client Name: U.S. Geological Survey
Client ID: CAFB-L-1296-1
Lab ID: 053047-0001-SA
Matrix: AQUEOUS — Sampled: 16 DEC 96 — Prepared: 20 DEC 96
Authorized: 17 DEC 96 — Received: 17 DEC 96 — Analyzed: 23 DEC 96

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

Surrogate	Recovery		Limits
Terphenyl-d14	65	%	31-157

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

ND = Not Detected

Reported By: Matthew Graves — Approved By: Audrey Cornell

Quanterra Environmental Services

Polynuclear Aromatic Hydrocarbons, HPLC
Method 8310

Client Name: U.S. Geological Survey
Client ID: CAFB-L-1296-EB
Lab ID: 053047-0002-EB
Matrix: AQUEOUS
Authorized: 17 DEC 96

Sampled: 16 DEC 96
Received: 17 DEC 96

Prepared: 20 DEC 96
Analyzed: 23 DEC 96

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	70	%	31-157

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

ND = Not Detected

Reported By: Matthew Graves

Approved By: Audrey Cornell

Quanterra Environmental Services

Polynuclear Aromatic Hydrocarbons, HPLC
Method 8310

Client Name: U.S. Geological Survey
Client ID: CAFB-M-1296-1
Lab ID: 053047-0004-SA
Matrix: AQUEOUS
Authorized: 17 DEC 96

Sampled: 17 DEC 96
Received: 18 DEC 96

Prepared: 20 DEC 96
Analyzed: 23 DEC 96

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

Surrogate	Recovery		Limits
Terphenyl-d14	72	%	31-157

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

ND = Not Detected

Reported By: Matthew Graves

Approved By: Audrey Cornell

Quanterra Environmental Services

Polynuclear Aromatic Hydrocarbons, HPLC
Method 8310

Client Name: U.S. Geological Survey
Client ID: CAFB-I-1296-1
Lab ID: 053047-0005-SA
Matrix: AQUEOUS — Sampled: 17 DEC 96 — Prepared: 20 DEC 96
Authorized: 17 DEC 96 — Received: 19 DEC 96 — Analyzed: 23 DEC 96

Parameter	Result	Units	Reporting Limit
Naphthalene	ND	ug/L	0.98
Acenaphthylene	ND	ug/L	0.98
Acenaphthene	ND	ug/L	0.98
Fluorene	ND	ug/L	0.20
Phenanthrene	ND	ug/L	0.20
Anthracene	ND	ug/L	0.098
Fluoranthene	ND	ug/L	0.20
Pyrene	ND	ug/L	0.20
Benzo(a)anthracene	ND	ug/L	0.098
Chrysene	ND	ug/L	0.20
Benzo(b)fluoranthene	ND	ug/L	0.098
Benzo(k)fluoranthene	ND	ug/L	0.098
Benzo(a)pyrene	ND	ug/L	0.098
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	69	%	31-157

Dilution factor is 0.98. All results and limits are corrected for dilution.

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-1296-1
Lab ID: 053047-0001-SA
Matrix: AQUEOUS
Authorized: 17 DEC 96

Sampled: 16 DEC 96
Received: 17 DEC 96

Prepared: 23 DEC 96
Analyzed: 07 JAN 97

Parameter	Result	Units	Reporting Limit	
2,4-D	ND	ug/L	1.2	T
2,4,5-TP (Silvex)	ND	ug/L	0.18	
2,4,5-T	ND	ug/L	0.21	

Surrogate	Recovery		Limits
DCAA	83	%	45-123

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

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

Reported By: Bret Collins

Approved By: Audrey Cornell

Quanterra Environmental Services

Appendix IX Herbicides
Method 8150

Client Name: U.S. Geological Survey
Client ID: CAFB-L-1296-EB
Lab ID: 053047-0002-EB
Matrix: AQUEOUS
Authorized: 17 DEC 96

Sampled: 16 DEC 96
Received: 17 DEC 96

Prepared: 23 DEC 96
Analyzed: 07 JAN 97

Parameter	Result	Units	Reporting Limit	
2,4-D	ND	ug/L	1.2	T
2,4,5-TP (Silvex)	ND	ug/L	0.17	
2,4,5-T	ND	ug/L	0.19	

Surrogate	Recovery		Limits
DCAA	93	%	45-123

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

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

Reported By: Bret Collins

Approved By: Audrey Cornell

Quanterra
Environmental Services

Appendix IX Herbicides
Method 8150

Client Name: U.S. Geological Survey
Client ID: CAFB-M-1296-1
Lab ID: 053047-0004-SA
Matrix: AQUEOUS
Authorized: 17 DEC 96

Sampled: 17 DEC 96
Received: 18 DEC 96

Prepared: 23 DEC 96
Analyzed: 07 JAN 97

Parameter	Result	Units	Reporting Limit	
2,4-D	ND	ug/L	1.2	T
2,4,5-TP (Silvex)	ND	ug/L	0.16	
2,4,5-T	ND	ug/L	0.19	

Surrogate	Recovery		Limits
DCAA	99	%	45-123

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

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

Reported By: Bret Collins

Approved By: Audrey Cornell

Quanterra Environmental Services

Appendix IX Herbicides
Method 8150

Client Name: U.S. Geological Survey
Client ID: CAFB-I-1296-1
Lab ID: 053047-0005-SA
Matrix: AQUEOUS
Authorized: 17 DEC 96

Sampled: 17 DEC 96
Received: 19 DEC 96

Prepared: 23 DEC 96
Analyzed: 07 JAN 97

Parameter	Result	Units	Reporting Limit	
2,4-D	ND	ug/L	1.2	T
2,4,5-TP (Silvex)	ND	ug/L	0.17	
2,4,5-T	ND	ug/L	0.20	
Surrogate	**Recovery**		**Limits**	
DCAA	95	%	45-123	

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

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

Reported By: Bret Collins

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-1296-1
Lab ID: 053047-0001-SA
Matrix: AQUEOUS — Sampled: 16 DEC 96 — Prepared: 23 DEC 96
Authorized: 17 DEC 96 — Received: 17 DEC 96 — Analyzed: 02 JAN 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	%	54-106
Dibutyl chlorendate	95	%	56-138
Decachlorobiphenyl	100	%	65-145

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

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

Reported By: Houa Vue — 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-1296-EB
Lab ID: 053047-0002-EB
Matrix: AQUEOUS — Sampled: 16 DEC 96 — Prepared: 23 DEC 96
Authorized: 17 DEC 96 — Received: 17 DEC 96 — Analyzed: 02 JAN 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	81	%	54-106
Dibutyl chlorendate	91	%	56-138
Decachlorobiphenyl	91	%	65-145

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

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

Reported By: Houa Vue — 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-1296-1
Lab ID: 053047-0004-SA
Matrix: AQUEOUS — Sampled: 17 DEC 96 — Prepared: 23 DEC 96
Authorized: 17 DEC 96 — Received: 18 DEC 96 — Analyzed: 03 JAN 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	80	%	54-106
Dibutyl chlorendate	92	%	56-138
Decachlorobiphenyl	99	%	65-145

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

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

Reported By: Houa Vue — 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-1296-1
Lab ID: 053047-0005-SA
Matrix: AQUEOUS
Authorized: 17 DEC 96

Sampled: 17 DEC 96
Received: 19 DEC 96

Prepared: 23 DEC 96
Analyzed: 03 JAN 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	82	%	54-106
Dibutyl chlorendate	92	%	56-138
Decachlorobiphenyl	86	%	65-145

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

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

Reported By: Houa Vue

Approved By: Audrey Cornell

Quanterra
Environmental Services

Metals
Total Metals

Client Name: U.S. Geological Survey
Client ID: CAFB-L-1296-1
Lab ID: 053047-0001-SA
Matrix: AQUEOUS — Sampled: 16 DEC 96 — Received: 17 DEC 96
Authorized: 17 DEC 96 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Aluminum	ND		1.0	0.20	mg/L	6010	20 DEC 96	24 DEC 96
Antimony	ND		1.0	0.20	mg/L	6010	20 DEC 96	24 DEC 96
Arsenic	ND		1.0	0.30	mg/L	6010	20 DEC 96	24 DEC 96
Barium	ND		1.0	0.10	mg/L	6010	20 DEC 96	24 DEC 96
Beryllium	ND		1.0	0.0020	mg/L	6010	20 DEC 96	24 DEC 96
Cadmium	ND		1.0	0.0050	mg/L	6010	20 DEC 96	24 DEC 96
Calcium	52.8		1.0	5.0	mg/L	6010	20 DEC 96	24 DEC 96
Chromium	0.031		1.0	0.030	mg/L	6010	20 DEC 96	24 DEC 96
Cobalt	ND		1.0	0.040	mg/L	6010	20 DEC 96	24 DEC 96
Copper	ND		1.0	0.030	mg/L	6010	20 DEC 96	24 DEC 96
Iron	0.77	B	1.0	0.040	mg/L	6010	20 DEC 96	24 DEC 96
Lead	ND		1.0	0.20	mg/L	6010	20 DEC 96	24 DEC 96
Magnesium	47.3		1.0	5.0	mg/L	6010	20 DEC 96	24 DEC 96
Manganese	ND		1.0	0.010	mg/L	6010	20 DEC 96	24 DEC 96
Molybdenum	ND		1.0	0.040	mg/L	6010	20 DEC 96	24 DEC 96
Nickel	0.076		1.0	0.040	mg/L	6010	20 DEC 96	24 DEC 96
Potassium	6.0		1.0	5.0	mg/L	6010	20 DEC 96	24 DEC 96
Selenium	ND		1.0	0.40	mg/L	6010	20 DEC 96	24 DEC 96
Silver	ND		1.0	0.030	mg/L	6010	20 DEC 96	24 DEC 96
Sodium	45.9		1.0	5.0	mg/L	6010	20 DEC 96	24 DEC 96
Thallium	ND		1.0	5.0	mg/L	6010	20 DEC 96	24 DEC 96
Vanadium	ND		1.0	0.040	mg/L	6010	20 DEC 96	24 DEC 96
Zinc	ND		1.0	0.010	mg/L	6010	20 DEC 96	24 DEC 96
Antimony	ND		1.0	0.010	mg/L	7041	20 DEC 96	02 JAN 97
Silver	ND	G	1.0	0.0010	mg/L	7761	23 DEC 96	26 DEC 96
Cadmium	ND		1.0	0.00050	mg/L	7131	23 DEC 96	26 DEC 96
Arsenic	ND		1.0	0.0050	mg/L	7060	23 DEC 96	26 DEC 96
Chromium	0.048	G	2.0	0.010	mg/L	7191	23 DEC 96	26 DEC 96
Lead	ND		1.0	0.0050	mg/L	7421	23 DEC 96	26 DEC 96
Mercury	ND		1.0	0.00020	mg/L	7470	06 JAN 97	07 JAN 97
Selenium	ND	G	2.0	0.010	mg/L	7740	23 DEC 96	26 DEC 96
Thallium	ND	G	1.0	0.010	mg/L	7841	23 DEC 96	26 DEC 96

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

Reported By: Robin Tipton — Approved By: Richard Persichitte

Quanterra Environmental Services

Metals
Total Metals

Client Name: U.S. Geological Survey
Client ID: CAFB-L-1296-EB
Lab ID: 053047-0002-EB
Matrix: AQUEOUS — Sampled: 16 DEC 96 — Received: 17 DEC 96
Authorized: 17 DEC 96 — Prepared: See Below — Analyzed: See Below

Parameter	Result Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Aluminum	ND	1.0	0.20	mg/L	6010	20 DEC 96	24 DEC 96
Antimony	ND	1.0	0.20	mg/L	6010	20 DEC 96	24 DEC 96
Arsenic	ND	1.0	0.30	mg/L	6010	20 DEC 96	24 DEC 96
Barium	ND	1.0	0.10	mg/L	6010	20 DEC 96	24 DEC 96
Beryllium	ND	1.0	0.0020	mg/L	6010	20 DEC 96	24 DEC 96
Cadmium	ND	1.0	0.0050	mg/L	6010	20 DEC 96	24 DEC 96
Calcium	ND	1.0	5.0	mg/L	6010	20 DEC 96	24 DEC 96
Chromium	ND	1.0	0.030	mg/L	6010	20 DEC 96	24 DEC 96
Cobalt	ND	1.0	0.040	mg/L	6010	20 DEC 96	24 DEC 96
Copper	ND	1.0	0.030	mg/L	6010	20 DEC 96	24 DEC 96
Iron	ND	1.0	0.040	mg/L	6010	20 DEC 96	24 DEC 96
Lead	ND	1.0	0.20	mg/L	6010	20 DEC 96	24 DEC 96
Magnesium	ND	1.0	5.0	mg/L	6010	20 DEC 96	24 DEC 96
Manganese	ND	1.0	0.010	mg/L	6010	20 DEC 96	24 DEC 96
Molybdenum	ND	1.0	0.040	mg/L	6010	20 DEC 96	24 DEC 96
Nickel	ND	1.0	0.040	mg/L	6010	20 DEC 96	24 DEC 96
Potassium	ND	1.0	5.0	mg/L	6010	20 DEC 96	24 DEC 96
Selenium	ND	1.0	0.40	mg/L	6010	20 DEC 96	24 DEC 96
Silver	ND	1.0	0.030	mg/L	6010	20 DEC 96	24 DEC 96
Sodium	ND	1.0	5.0	mg/L	6010	20 DEC 96	24 DEC 96
Thallium	ND	1.0	5.0	mg/L	6010	20 DEC 96	24 DEC 96
Vanadium	ND	1.0	0.040	mg/L	6010	20 DEC 96	24 DEC 96
Zinc	ND	1.0	0.010	mg/L	6010	20 DEC 96	24 DEC 96
Antimony	ND	1.0	0.010	mg/L	7041	20 DEC 96	02 JAN 97
Silver	ND	1.0	0.00050	mg/L	7761	23 DEC 96	26 DEC 96
Cadmium	ND	1.0	0.00050	mg/L	7131	23 DEC 96	26 DEC 96
Arsenic	ND	1.0	0.0050	mg/L	7060	23 DEC 96	26 DEC 96
Chromium	ND	1.0	0.0050	mg/L	7191	23 DEC 96	26 DEC 96
Lead	ND	1.0	0.0050	mg/L	7421	23 DEC 96	26 DEC 96
Mercury	ND	1.0	0.00020	mg/L	7470	06 JAN 97	07 JAN 97
Selenium	ND	1.0	0.0050	mg/L	7740	23 DEC 96	26 DEC 96
Thallium	ND	1.0	0.0050	mg/L	7841	23 DEC 96	26 DEC 96

ND = Not Detected

Reported By: Robin Tipton — Approved By: Richard Persichitte

Quanterra
Environmental Services

Metals
Total Metals

Client Name: U.S. Geological Survey
Client ID: CAFB-M-1296-1
Lab ID: 053047-0004-SA
Matrix: AQUEOUS
Authorized: 17 DEC 96

Sampled: 17 DEC 96
Prepared: See Below

Received: 18 DEC 96
Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Aluminum	ND		1.0	0.20	mg/L	6010	31 DEC 96	03 JAN 97
Antimony	ND		1.0	0.20	mg/L	6010	31 DEC 96	03 JAN 97
Arsenic	ND		1.0	0.30	mg/L	6010	31 DEC 96	03 JAN 97
Barium	ND		1.0	0.10	mg/L	6010	31 DEC 96	03 JAN 97
Beryllium	ND		1.0	0.0020	mg/L	6010	31 DEC 96	03 JAN 97
Cadmium	ND		1.0	0.0050	mg/L	6010	31 DEC 96	03 JAN 97
Calcium	63.0		1.0	5.0	mg/L	6010	31 DEC 96	03 JAN 97
Chromium	ND		1.0	0.030	mg/L	6010	31 DEC 96	03 JAN 97
Cobalt	ND		1.0	0.040	mg/L	6010	31 DEC 96	03 JAN 97
Copper	ND		1.0	0.030	mg/L	6010	31 DEC 96	03 JAN 97
Iron	0.38		1.0	0.040	mg/L	6010	31 DEC 96	03 JAN 97
Lead	ND		1.0	0.20	mg/L	6010	31 DEC 96	03 JAN 97
Magnesium	50.7		1.0	5.0	mg/L	6010	31 DEC 96	03 JAN 97
Manganese	0.013		1.0	0.010	mg/L	6010	31 DEC 96	03 JAN 97
Molybdenum	ND		1.0	0.040	mg/L	6010	31 DEC 96	03 JAN 97
Nickel	0.13		1.0	0.040	mg/L	6010	31 DEC 96	03 JAN 97
Potassium	6.4		1.0	5.0	mg/L	6010	31 DEC 96	03 JAN 97
Selenium	ND		1.0	0.40	mg/L	6010	31 DEC 96	03 JAN 97
Silver	ND		1.0	0.030	mg/L	6010	31 DEC 96	03 JAN 97
Sodium	41.0		1.0	5.0	mg/L	6010	31 DEC 96	03 JAN 97
Thallium	ND		1.0	5.0	mg/L	6010	31 DEC 96	03 JAN 97
Vanadium	ND		1.0	0.040	mg/L	6010	31 DEC 96	03 JAN 97
Zinc	0.016		1.0	0.010	mg/L	6010	31 DEC 96	03 JAN 97
Antimony	ND		1.0	0.010	mg/L	7041	31 DEC 96	02 JAN 97
Silver	ND	G	1.0	0.0010	mg/L	7761	23 DEC 96	26 DEC 96
Cadmium	ND		1.0	0.00050	mg/L	7131	23 DEC 96	26 DEC 96
Arsenic	ND		1.0	0.0050	mg/L	7060	23 DEC 96	26 DEC 96
Chromium	0.015		1.0	0.0050	mg/L	7191	23 DEC 96	26 DEC 96
Lead	ND		1.0	0.0050	mg/L	7421	23 DEC 96	26 DEC 96
Mercury	ND		1.0	0.00020	mg/L	7470	06 JAN 97	07 JAN 97
Selenium	ND	G	2.0	0.010	mg/L	7740	23 DEC 96	26 DEC 96
Thallium	ND	G	1.0	0.010	mg/L	7841	23 DEC 96	26 DEC 96

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

Reported By: Robin Tipton

Approved By: Richard Persichitte

Quanterra
Environmental Services

Metals
Total Metals

Client Name: U.S. Geological Survey
Client ID: CAFB-I-1296-1
Lab ID: 053047-0005-SA
Matrix: AQUEOUS
Authorized: 17 DEC 96

Sampled: 17 DEC 96
Prepared: See Below

Received: 19 DEC 96
Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Aluminum	0.20		1.0	0.20	mg/L	6010	31 DEC 96	03 JAN 97
Antimony	ND		1.0	0.20	mg/L	6010	31 DEC 96	03 JAN 97
Arsenic	ND		1.0	0.30	mg/L	6010	31 DEC 96	03 JAN 97
Barium	ND		1.0	0.10	mg/L	6010	31 DEC 96	03 JAN 97
Beryllium	ND		1.0	0.0020	mg/L	6010	31 DEC 96	03 JAN 97
Cadmium	ND		1.0	0.0050	mg/L	6010	31 DEC 96	03 JAN 97
Calcium	51.8		1.0	5.0	mg/L	6010	31 DEC 96	03 JAN 97
Chromium	ND		1.0	0.030	mg/L	6010	31 DEC 96	03 JAN 97
Cobalt	ND		1.0	0.040	mg/L	6010	31 DEC 96	03 JAN 97
Copper	ND		1.0	0.030	mg/L	6010	31 DEC 96	03 JAN 97
Iron	0.33		1.0	0.040	mg/L	6010	31 DEC 96	03 JAN 97
Lead	ND		1.0	0.20	mg/L	6010	31 DEC 96	03 JAN 97
Magnesium	43.3		1.0	5.0	mg/L	6010	31 DEC 96	03 JAN 97
Manganese	0.014		1.0	0.010	mg/L	6010	31 DEC 96	03 JAN 97
Molybdenum	ND		1.0	0.040	mg/L	6010	31 DEC 96	03 JAN 97
Nickel	ND		1.0	0.040	mg/L	6010	31 DEC 96	03 JAN 97
Potassium	5.9		1.0	5.0	mg/L	6010	31 DEC 96	03 JAN 97
Selenium	ND		1.0	0.40	mg/L	6010	31 DEC 96	03 JAN 97
Silver	ND		1.0	0.030	mg/L	6010	31 DEC 96	03 JAN 97
Sodium	38.4		1.0	5.0	mg/L	6010	31 DEC 96	03 JAN 97
Thallium	ND		1.0	5.0	mg/L	6010	31 DEC 96	03 JAN 97
Vanadium	ND		1.0	0.040	mg/L	6010	31 DEC 96	03 JAN 97
Zinc	ND		1.0	0.010	mg/L	6010	31 DEC 96	03 JAN 97
Antimony	ND		1.0	0.010	mg/L	7041	31 DEC 96	02 JAN 97
Silver	ND	G	1.0	0.0010	mg/L	7761	23 DEC 96	26 DEC 96
Cadmium	ND		1.0	0.00050	mg/L	7131	23 DEC 96	26 DEC 96
Arsenic	ND		1.0	0.0050	mg/L	7060	23 DEC 96	26 DEC 96
Chromium	0.014		1.0	0.0050	mg/L	7191	23 DEC 96	26 DEC 96
Lead	ND		1.0	0.0050	mg/L	7421	23 DEC 96	26 DEC 96
Mercury	ND		1.0	0.00020	mg/L	7470	06 JAN 97	07 JAN 97
Selenium	ND	G	2.0	0.010	mg/L	7740	23 DEC 96	26 DEC 96
Thallium	ND	G	1.0	0.010	mg/L	7841	23 DEC 96	26 DEC 96

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

Reported By: Robin Tipton

Approved By: Richard Persichitte

Quanterra
Environmental Services

General Inorganics

Client Name: U.S. Geological Survey
Client ID: CAFB-L-1296-1
Lab ID: 053047-0001-SA
Matrix: AQUEOUS
Authorized: 17 DEC 96

Sampled: 16 DEC 96
Prepared: See Below

Received: 17 DEC 96
Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Cyanide	ND		1.0	0.010	mg/L	9012	26 DEC 96	26 DEC 96
Sulfide, Total	ND		1.0	0.050	mg/L	376.2	NA	19 DEC 96
Total Organic Carbon	ND		1.0	1.0	mg/L	9060	NA	03 JAN 97
Total Organic Halogen as Cl	ND		1.0	30.0	ug/L	9020	NA	13 JAN 97

ND = Not Detected

Reported By: Judy Lange

Approved By: Roxanne Sullivan

Quanterra Environmental Services

General Inorganics

Client Name: U.S. Geological Survey
Client ID: CAFB-L-1296-EB
Lab ID: 053047-0002-EB
Matrix: AQUEOUS
Authorized: 17 DEC 96

Sampled: 16 DEC 96
Prepared: See Below

Received: 17 DEC 96
Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Cyanide	ND		1.0	0.010	mg/L	9012	26 DEC 96	26 DEC 96
Sulfide, Total	ND		1.0	0.050	mg/L	376.2	NA	19 DEC 96
Total Organic Carbon	ND		1.0	1.0	mg/L	9060	NA	03 JAN 97
Total Organic Halogen as Cl	ND		1.0	30.0	ug/L	9020	NA	13 JAN 97

ND = Not Detected

Reported By: Judy Lange

Approved By: Roxanne Sullivan

Quanterra
Environmental Services

General Inorganics

Client Name: U.S. Geological Survey
Client ID: CAFB-M-1296-1
Lab ID: 053047-0004-SA
Matrix: AQUEOUS
Authorized: 17 DEC 96

Sampled: 17 DEC 96
Prepared: See Below

Received: 18 DEC 96
Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Cyanide	ND		1.0	0.010	mg/L	9012	26 DEC 96	26 DEC 96
Sulfide, Total	ND		1.0	0.050	mg/L	376.2	NA	24 DEC 96
Total Organic Carbon	ND		1.0	1.0	mg/L	9060	NA	03 JAN 97
Total Organic Halogen as Cl	ND		1.0	30.0	ug/L	9020	NA	13 JAN 97

ND = Not Detected

Reported By: Judy Lange

Approved By: Roxanne Sullivan

Quanterra Environmental Services

General Inorganics

Client Name: U.S. Geological Survey
Client ID: CAFB-I-1296-1
Lab ID: 053047-0005-SA
Matrix: AQUEOUS
Authorized: 17 DEC 96

Sampled: 17 DEC 96
Prepared: See Below

Received: 19 DEC 96
Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Cyanide	ND		1.0	0.010	mg/L	9012	26 DEC 96	26 DEC 96
Sulfide, Total	ND		1.0	0.050	mg/L	376.2	NA	24 DEC 96
Total Organic Carbon	ND		1.0	1.0	mg/L	9060	NA	03 JAN 97
Total Organic Halogen as Cl	ND		1.0	30.0	ug/L	9020	NA	13 JAN 97

ND = Not Detected

Reported By: Judy Lange

Approved By: Roxanne Sullivan

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. 053050

JANUARY 24, 1997

Prepared by: _____
Mark D. Stella

Reviewed by: _____
FOR **Lindsay Breyer**

Quanterra
Environmental Services

Table Of Contents

Standard Deliverables With Supporting Documentation

Report Contents	Section	Number Of Pages
Standard Deliverables		
Introduction	A	26
• Table of Contents		
• Narrative		
• LIMs Report Key		
• Sample Description		
• Test Requests		
• Analytical Results		
• QC Summary		
• Chain-of-Custody		
• Miscellaneous		
Supporting Documentation		
[Please Note: A one-page "Description of Supporting Documentation" is provided in the Supporting Documentation section(s).]		
Volatile GC/MS	B	NA
Semivolatile GC/MS	C	NA
Volatile GC	D	NA
Semivolatile GC	E	NA
LC/MS	F	NA
Metals	G	NA
General Chemistry	H	NA
Subcontracted Data	I	301

NARRATIVE

On December 17, 18 & 19,1996, Quanterra Environmental Services, Denver received four aqueous samples from the U.S. Geological Survey.

This report presents the analytical results as well as supporting information to aid in the evaluation and interpretation of the data.

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

Sample Receipt/Chain-of-Custody

The samples were analyzed for dioxins and furans at Quanterra's West Sacramento, California laboratory. Other parameters requested for the samples will be reported separately on project 053047.

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.

1,2,3,7,8-PeCDD was recovered outside precision and accuracy control limits in the duplicate control samples (DCS). Reanalysis of the DCS yielded similar results. Since PeCDD was not detected in the samples, the data were reported.

Some internal standard recoveries are lower than the method recommended goal of 40%. Generally, data quality is not considered affected if internal standard signal-to-noise is greater than 10:1, which is achieved for all internal standards in all samples. Furthermore, none of the low internal standard recoveries results in elevated detection limits for any target analyte.

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
053050-0001-SA	CAFB-L-1296-1	AQUEOUS	16 DEC 96	14:20	17 DEC 96
053050-0001-MB	METHOD BLANK	AQUEOUS	16 DEC 96		17 DEC 96
053050-0002-EB	CAFB-L-1296-EB	AQUEOUS	16 DEC 96	12:15	17 DEC 96
053050-0003-SA	CAFB-M-1296-1	AQUEOUS	17 DEC 96	11:10	18 DEC 96
053050-0004-SA	CAFB-I-1296-1	AQUEOUS	17 DEC 96	08:50	19 DEC 96
053050-0004-MS	CAFB-I-1296-MS	AQUEOUS	17 DEC 96	08:50	19 DEC 96
053050-0004-SD	CAFB-I-1296-SD	AQUEOUS	17 DEC 96	08:50	19 DEC 96

Quanterra
Environmental Services

ANALYTICAL TEST REQUESTS
for
U.S. Geological Survey

Lab ID: 053050	Group Code	Analysis Description	Custom Test?
0001 - 0004	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-L-1296-1
Lab ID: 053050-0001-SA
Matrix: AQUEOUS Sampled: 16 DEC 96 Received: 17 DEC 96
Authorized: 17 DEC 96 Prepared: 09 JAN 97 Analyzed: 13 JAN 97

Sample Amount 1.05 L
Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/L	0.86	
PeCDFs (total)	ND	ng/L	0.49	
HxCDFs (total)	ND	ng/L	0.53	
Dioxins				
TCDDs (total)	ND	ng/L	0.45	
2,3,7,8-TCDD	ND	ng/L	0.45	
PeCDDs (total)	ND	ng/L	1.2	
HxCDDs (total)	ND	ng/L	0.85	
	% Recovery			
13C-2,3,7,8-TCDF	74			
13C-2,3,7,8-TCDD	65			
13C-1,2,3,6,7,8-HxCDD	72			
13C-1,2,3,4,6,7,8-HpCDF	79			

ND = Not detected
NA = Not applicable

Reported By: SBARMBY Approved By: RHRABAK

Quanterra Environmental Services

Appendix IX Dioxins/Furans

Low Resolution

Name: U.S. Geological Survey
CAFB-L-1296-EB
053050-0002-EB
AQUEOUS
17 DEC 96

Sampled: 16 DEC 96
Prepared: 09 JAN 97

Received: 17 DEC 96
Analyzed: 13 JAN 97

Amount 1.02 L
DB-5

	Result	Units	Detection Limit	Data Qualifiers
total)	ND	ng/L	0.78	
total)	ND	ng/L	0.54	
total)	ND	ng/L	0.56	
total)	ND	ng/L	0.51	
8-TCDD	ND	ng/L	0.51	
(total)	ND	ng/L	1.2	
(total)	ND	ng/L	0.90	

	% Recovery
1,3,7,8-TCDF	74
1,3,7,8-TCDD	63
1,2,3,6,7,8-HxCDD	71
1,2,3,4,6,7,8-HpCDF	77

ND - Not detected
NA - Not applicable

Reported By: SBARMBY

Approved By: RHRABAK

Quanterra Environmental Services

Appendix IX Dioxins/Furans

Low Resolution

Client Name: U.S. Geological Survey
Client ID: CAFB-M-1296-1
Lab ID: 053050-0003-SA
Matrix: AQUEOUS Sampled: 17 DEC 96 Received: 18 DEC 96
Authorized: 17 DEC 96 Prepared: 09 JAN 97 Analyzed: 13 JAN 97

Sample Amount 1.0 L
Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/L	0.77	
PeCDFs (total)	ND	ng/L	0.54	
HxCDFs (total)	ND	ng/L	0.48	
Dioxins				
TCDDs (total)	ND	ng/L	0.46	
2,3,7,8-TCDD	ND	ng/L	0.46	
PeCDDs (total)	ND	ng/L	1.2	
HxCDDs (total)	ND	ng/L	0.68	
	% Recovery			
13C-2,3,7,8-TCDF	79			
13C-2,3,7,8-TCDD	70			
13C-1,2,3,6,7,8-HxCDD	75			
13C-1,2,3,4,6,7,8-HpCDF	83			

ND = Not detected
NA = Not applicable

Reported By: SBARMBY Approved By: RHRABAK

Quanterra Environmental Services

Appendix IX Dioxins/Furans

Low Resolution

Client Name: U.S. Geological Survey
Client ID: CAFB-I-1296-1
Lab ID: 053050-0004-SA
Matrix: AQUEOUS Sampled: 17 DEC 96 Received: 19 DEC 96
Authorized: 17 DEC 96 Prepared: 09 JAN 97 Analyzed: 13 JAN 97

Sample Amount 0.972 L
Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/L	0.77	
PeCDFs (total)	ND	ng/L	0.70	
HxCDFs (total)	ND	ng/L	0.63	
Dioxins				
TCDDs (total)	ND	ng/L	0.48	
2,3,7,8-TCDD	ND	ng/L	0.48	
PeCDDs (total)	ND	ng/L	1.9	
HxCDDs (total)	ND	ng/L	0.83	
	% Recovery			
13C-2,3,7,8-TCDF	77			
13C-2,3,7,8-TCDD	64			
13C-1,2,3,6,7,8-HxCDD	73			
13C-1,2,3,4,6,7,8-HpCDF	81			

ND = Not detected
NA = Not applicable

Reported By: SBARMBY Approved By: RHRABAK

APPENDIX II

Laboratory Quality Assurance / Quality Control Results

DODEC LABORATORY DATA REVIEW WORKSHEET

1.0 GENERAL INFORMATION

Data reviewer: BOB BRECK
Date of review: 1/30/97
Sample project number: 53047
Project name: NM - CANNON AFB
Sample collection date: 12/16 - 12/17/97
Sample matrix and number: 8 AQUEOUS

Type and number of samples in project:

Type	Number
Environmental	3
Trip blank	2
Equipment blank	1
Ambient blank	
MS/MSD	2
Other	

2.0 DATA REPORT

Date of Analytical Results Report: 1/23/97
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 cancelled analyses and reason for non-performance:

ASSOCIATED DIOXIN & FURAN SAMPLES ARE REPORTED IN PROJECT 53050

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

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)
X	Chlorinated herbicides (SW 8150)
	Dioxins and Furans (SW 8280)
	Explosives (8330)
X	TOC (E415.1 or SW 9060)
	TPH (E418.1)
	Oil and Grease (E413.2)
X	TOX (SW9020)
X	ICP screen for metals (SW 6010)
	ICP/MS screen for metals (SW 6020)
	Trace ICP screen for metals (SW 6010 modified)
X	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)
	Inorganic anions (E300.0)
	Alkalinity (310.1)
X	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)
X	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)
X	Other analyses : SILVER 7761
	CADMIUM 7131

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:

_____
_____
_____
_____
_____
_____

Inorganic analyses: Yes _____ No X

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 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 _____

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

6010 METHOD BLANK 20 DEC 96-J2 WAS FOUND IN IT ABOVE THE RL - ASSOCIATED SAMPLES ARE "B" FLAGGED WHEN APPLICABLE

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 :

S150 SAMPLE - 6005 MS/MSD DID NOT MEET %R LIMITS (WERE FROM 2-7%) FOR ALL COMPOUNDS

THE THALLIUM MS/MSD DID NOT MEET %R LIMITS (LOW)
CADMIUM ↓ (HIGH)
CHROMIUM (LOW)

Additional comments:

METHOD 8260 USED A S-L PURGE

TOC & TOX MS/MSD DID NOT MEET %R LIMITS (TOC MS/MSD THAT DID NOT MEET QC CRITERIA WAS NOT FROM THIS SAMPLE SET)

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
Volatile Organics by GC/MS

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
053047-0001-SA	AQUEOUS	Q8260-5M-A	27 DEC 96-W	27 DEC 96-W
053047-0002-EB	AQUEOUS	Q8260-5M-A	27 DEC 96-W	27 DEC 96-W
053047-0003-TB	AQUEOUS	Q8260-5M-A	27 DEC 96-W	27 DEC 96-W
053047-0004-SA	AQUEOUS	Q8260-5M-A	30 DEC 96-W	30 DEC 96-W
053047-0005-SA	AQUEOUS	Q8260-5M-A	30 DEC 96-W	30 DEC 96-W
053047-0005-MS	AQUEOUS	Q8260-5M-A	30 DEC 96-W	30 DEC 96-W
053047-0005-SD	AQUEOUS	Q8260-5M-A	30 DEC 96-W	30 DEC 96-W
053047-0006-TB	AQUEOUS	Q8260-5M-A	30 DEC 96-W	30 DEC 96-W

Quanterra Environmental Services

DUPLICATE CONTROL SAMPLE REPORT
Volatile Organics by GC/MS
Project: 053047

Category: Q8260-5M-A Volatile Organics
Matrix: AQUEOUS
QC Lot: 27 DEC 96-W
Concentration Units: ug/L

Date Analyzed: 13 JAN 97

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
1,1-Dichloroethene	50.0	58.2		57.0		57.6	115	74-124	2.1	17
Trichloroethene	50.0	51.1		48.5		49.8	100	77-119	5.2	13
Benzene	50.0	51.7		51.0		51.4	103	80-117	1.4	12
Toluene	50.0	52.7		50.9		51.8	104	80-119	3.5	11
Chlorobenzene	50.0	51.6		51.5		51.6	103	81-120	0.19	14

Surrogate	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	Accuracy Average(%) DCS	Limits
1,2-Dichloroethane-d4	50.0	48.1		47.4		96	80-120
4-Bromofluorobenzene	50.0	50.8		49.4		100	86-115
Toluene-d8	50.0	52.0		52.1		104	88-110

Category: Q8260-5M-A Volatile Organics
Matrix: AQUEOUS
QC Lot: 30 DEC 96-W
Concentration Units: ug/L

Date Analyzed: 30 DEC 96

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
1,1-Dichloroethene	50.0	56.2		55.5		55.8	112	74-124	1.3	17
Trichloroethene	50.0	50.1		51.6		50.8	102	77-119	2.9	13
Benzene	50.0	49.9		49.5		49.7	99	80-117	0.80	12
Toluene	50.0	52.2		48.8		50.5	101	80-119	6.7	11
Chlorobenzene	50.0	51.0		48.8		49.9	100	81-120	4.4	14

Surrogate	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	Accuracy Average(%) DCS	Limits
1,2-Dichloroethane-d4	50.0	46.9		46.1		93	80-120
4-Bromofluorobenzene	50.0	49.9		48.0		98	86-115
Toluene-d8	50.0	51.1		49.4		101	88-110

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: 27 DEC 96-W QC Run: 27 DEC 96-W				
Concentration Units: ug/L				
1,2-Dichloroethane-d4	50.0	48.0	96	80-120
4-Bromofluorobenzene	50.0	50.8	102	86-115
Toluene-d8	50.0	51.3	103	88-110
Category: Q8260-5M-A				
Matrix: AQUEOUS				
QC Lot: 30 DEC 96-W QC Run: 30 DEC 96-W				
Concentration Units: ug/L				
1,2-Dichloroethane-d4	50.0	44.3	89	80-120
4-Bromofluorobenzene	50.0	48.7	97	86-115
Toluene-d8	50.0	51.2	102	88-110

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

Quanterra
Environmental Services

METHOD BLANK REPORT
Volatile Organics by GC/MS

Test: Q8260-AP9-5ML-AP
Matrix: AQUEOUS
QC Lot: 27 DEC 96-W QC Run: 27 DEC 96-W

Analyte	Result	Units	Reporting Limit	
Acetone	3.4	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	
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	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: 27 DEC 96-W QC Run: 27 DEC 96-W				
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: 27 DEC 96-W QC Run: 27 DEC 96-W				
Acetone	3.4	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: 27 DEC 96-W QC Run: 27 DEC 96-W

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
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	ND	ug/L	5.0
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

Quanterra
Environmental Services

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

Test: Q8260-AP9-5ML-AP
Matrix: AQUEOUS
QC Lot: 30 DEC 96-W QC Run: 30 DEC 96-W

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)	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
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	ND	ug/L	5.0

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: 30 DEC 96-W QC Run: 30 DEC 96-W			
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: 30 DEC 96-W QC Run: 30 DEC 96-W			
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

Quanterra Environmental Services

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

Test: Q8260-AP9-5ML-AP
Matrix: AQUEOUS
QC Lot: 30 DEC 96-W QC Run: 30 DEC 96-W

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
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	ND	ug/L	5.0
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

Quanterra
Environmental Services

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

Test: Q8260-AP9-5ML-AP
Matrix: AQUEOUS
QC Lot: 30 DEC 96-W QC Run: 30 DEC 96-W

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)	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
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	ND	ug/L	5.0

Quanterra
Environmental Services

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

Test: Q8260-AP9-5ML-AP
Matrix: AQUEOUS
QC Lot: 30 DEC 96-W QC Run: 30 DEC 96-W

Analyte	Result	Units	Reporting Limit
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

Quanterra
Environmental Services

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Volatile Organics by GC/MS
Project: 053047

Category: Q8260-5M-A Volatile Organics
Matrix: AQUEOUS
Sample: 053047-0005
MS Run: 30 DEC 96-W
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
1,1-Dichloroethene	ND	53.5	56.8	50.0	50.0	107	114	1-234	5.9	17
Trichloroethene	ND	48.6	49.6	50.0	50.0	97	99	71-157	1.9	13
Benzene	ND	51.1	52.2	50.0	50.0	102	104	37-151	2.3	12
Toluene	ND	49.9	51.1	50.0	50.0	100	102	47-150	2.4	11
Chlorobenzene	ND	51.2	51.0	50.0	50.0	102	102	37-160	0.2	14

Surrogates	%Recovery			Rec. Accept. Limits
1,2-Dichloroethane-d4	93.3	89.8	92.6	80-120
4-Bromofluorobenzene	94.3	99.4	97.0	86-115
Toluene-d8	101	103	101	88-110

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/MS

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
053047-0001-SA	AQUEOUS	Q8270-A	22 DEC 96-03	22 DEC 96-03
053047-0002-EB	AQUEOUS	Q8270-A	22 DEC 96-03	22 DEC 96-03
053047-0004-SA	AQUEOUS	Q8270-A	22 DEC 96-03	22 DEC 96-03
053047-0005-SA	AQUEOUS	Q8270-A	22 DEC 96-03	22 DEC 96-03
053047-0005-MS	AQUEOUS	Q8270-A	22 DEC 96-03	22 DEC 96-03
053047-0005-SD	AQUEOUS	Q8270-A	22 DEC 96-03	22 DEC 96-03

Quanterra
Environmental Services

DUPLICATE CONTROL SAMPLE REPORT
Semivolatile Organics by GC/MS
Project: 053047

Category: Q8270-A Acid, Base and Neutrals by GC/MS.
Matrix: AQUEOUS
QC Lot: 22 DEC 96-03 Date Analyzed: 02 JAN 97
Concentration Units: ug/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Phenol	150	107		106		107	71	45-109	0.43	29
2-Chlorophenol	150	105		106		106	70	47-111	1.5	29
1,4-Dichlorobenzene	100	60.1		62.8		61.4	61	32-103	4.4	28
N-Nitroso-di-n-propylamine	100	75.9		69.3		72.6	73	49-107	9.0	24
1,2,4-Trichlorobenzene	100	60.8		63.3		62.1	62	44-102	4.1	27
4-Chloro-3-methylphenol	150	104		103		103	69	50-115	0.39	27
Acenaphthene	100	63.0		66.4		64.7	65	47-109	5.2	24
4-Nitrophenol	150	122		121		121	81	40-127	0.64	51
2,4-Dinitrotoluene	100	79.0		80.5		79.8	80	46-118	1.9	22
Pentachlorophenol	150	103		104		104	69	30-136	0.16	34
Pyrene	100	69.6		71.5		70.6	71	52-115	2.8	23

Surrogate	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	Accuracy Average(%) DCS	Limits
Nitrobenzene-d5	100	75.4		74.1		75	49-113
2-Fluorobiphenyl	100	71.8		66.9		69	43-104
Terphenyl-d14	100	66.2		67.5		67	33-139
2-Fluorophenol	150	110		108		73	21-91
Phenol-d5	150	123		120		81	54-105
2,4,6-Tribromophenol	150	107		108		72	33-123

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

Quanterra
Environmental Services

SINGLE CONTROL SAMPLE REPORT
Semivolatile Organics by GC/MS

Category: Q8270-A
Matrix: AQUEOUS
QC Lot: 22 DEC 96-03 QC Run: 22 DEC 96-03
Concentration Units: ug/L

Analyte	Concentration Spiked	Concentration Measured	Accuracy(%) SCS	Accuracy(%) Limits
Nitrobenzene-d5	100	79.4	79	49-113
2-Fluorobiphenyl	100	68.5	68	43-104
Terphenyl-d14	100	70.1	70	33-139
2-Fluorophenol	150	106	71	21- 91
Phenol-d5	150	131	87	54-105
2,4,6-Tribromophenol	150	119	79	33-123

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

Quanterra
Environmental Services

METHOD BLANK REPORT
Semivolatile Organics by GC/MS

Test: Q8270-AP9-3520-A
Matrix: AQUEOUS
QC Lot: 22 DEC 96-03 QC Run: 22 DEC 96-03

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: 22 DEC 96-03 QC Run: 22 DEC 96-03

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-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	4.0	ug/L	10	J
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	

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

Quanterra
Environmental Services

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

Test: Q8270-AP9-3520-A
Matrix: AQUEOUS
QC Lot: 22 DEC 96-03 QC Run: 22 DEC 96-03

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: 22 DEC 96-03 QC Run: 22 DEC 96-03			
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: 22 DEC 96-03 QC Run: 22 DEC 96-03			
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

Quanterra Environmental Services

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

Test: Q8270-AP9-3520-A
Matrix: AQUEOUS
QC Lot: 22 DEC 96-03 QC Run: 22 DEC 96-03

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	4.0	ug/L	10	J
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	

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

Quanterra
Environmental Services

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

Test: Q8270-AP9-3520-A
Matrix: AQUEOUS
QC Lot: 22 DEC 96-03 QC Run: 22 DEC 96-03

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

Quanterra Environmental Services

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

Test: Q8270-AP9-3520-A
Matrix: AQUEOUS
QC Lot: 22 DEC 96-03 QC Run: 22 DEC 96-03

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

Quanterra
Environmental Services

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Semivolatile Organics by GC/MS
Project: 053047 (cont.)

Category: Q8270-A Acid, Base and Neutrals by GC/MS.
Matrix: AQUEOUS
Sample: 053038-0002
MS Run: 22 DEC 96-03
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	108	109	153	151	70	72	5-112	3.0	29
2-Chlorophenol	ND	107	109	153	151	70	72	23-134	3.3	29
1,4-Dichlorobenzene	ND	65.3	73.5	102	101	64	73	20-124	13	28
N-Nitroso-di-n-propylamine	ND	72.3	71.7	102	101	71	71	1-230	0.7	24
1,2,4-Trichlorobenzene	ND	63.9	69.4	102	101	63	69	44-142	9.7	27
4-Chloro-3-methylphenol	ND	106	103	153	151	69	68	22-147	1.7	27
Acenaphthene	ND	66.6	67.1	102	101	65	67	47-145	2.3	24
4-Nitrophenol	ND	125	114	153	151	82	76	1-132	7.5	51
2,4-Dinitrotoluene	ND	81.8	77.0	102	101	80	77	39-139	4.5	22
Pentachlorophenol	ND	106	97.1	153	151	69	64	14-176	7.2	34
Pyrene	ND	72.2	67.9	102	101	71	68	52-115	4.7	23

Surrogates		%Recovery		Rec. Accept. Limits
Nitrobenzene-d5	81.2	74.9	75.2	35-114
2-Fluorobiphenyl	72.2	68.2	66.3	43-116
Terphenyl-d14	71.3	67.6	64.0	33-141
2-Fluorophenol	75.2	72.3	73.5	21-100
Phenol-d5	91.4	80.7	81.6	54-105
2,4,6-Tribromophenol	79.1	72.9	68.3	10-123

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
Semivolatile Organics by GC/MS
Project: 053047

Category: Q8270-A Acid, Base and Neutrals by GC/MS.
Matrix: AQUEOUS
Sample: 053047-0005
MS Run: 22 DEC 96-031
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	117	118	146	153	80	77	5-112	4.1	29
2-Chlorophenol	ND	114	114	146	153	78	75	23-134	4.8	29
1,4-Dichlorobenzene	ND	76.5	78.6	97.1	102	79	77	20-124	2.3	28
N-Nitroso-di-n-propylamine	ND	83.0	83.4	97.1	102	86	82	1-230	4.5	24
1,2,4-Trichlorobenzene	ND	74.6	74.9	97.1	102	77	73	44-142	4.5	27
4-Chloro-3-methylphenol	ND	108	112	146	153	74	73	22-147	1.1	27
Acenaphthene	ND	74.7	76.7	97.1	102	77	75	47-145	2.3	24
4-Nitrophenol	ND	126	129	146	153	86	84	1-132	2.4	51
2,4-Dinitrotoluene	ND	84.4	85.3	97.1	102	87	84	39-139	3.8	22
Pentachlorophenol	ND	113	116	146	153	78	76	14-176	2.2	34
Pyrene	ND	74.7	74.9	97.1	102	77	73	52-115	4.7	23

Surrogates		%Recovery		Rec. Accept. Limits
Nitrobenzene-d5	74.6	88.2	83.1	35-114
2-Fluorobiphenyl	70.5	75.4	72.5	43-116
Terphenyl-d14	72.7	74.4	70.9	33-141
2-Fluorophenol	48.6	59.7	57.0	21-100
Phenol-d5	61.4	69.0	65.4	54-105
2,4,6-Tribromophenol	61.9	66.8	63.7	10-123

ND = Not Detected

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

Quanterra
Environmental Services

DUPLICATE CONTROL SAMPLE REPORT
Organics by Chromatography

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: 8310-A								
Matrix: AQUEOUS								
QC Lot: 20 DEC 96-01								
Concentration Units: ug/L								
Naphthalene	10.0	9.50	9.87	9.68	97	30-117	3.8	37
Fluorene	2.00	2.02	2.05	2.04	102	33-123	1.5	37
Pyrene	2.00	1.79	1.81	1.80	90	54-117	1.1	35
Benzo(a)pyrene	1.00	0.894	0.911	0.902	90	55-109	1.9	39
Indeno(1,2,3-cd)pyrene	1.00	0.973	1.02	0.996	100	62-126	4.7	39

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

Quanterra
Environmental Services

SINGLE CONTROL SAMPLE REPORT
Organics by Chromatography

Analyte	Concentration Spiked	Concentration Measured	Accuracy(%) SCS	Accuracy(%) Limits
Category: 8310-A				
Matrix: AQUEOUS				
QC Lot: 20 DEC 96-01 QC Run: 20 DEC 96-01				
Concentration Units: ug/L				
Terphenyl-d14	20.0	12.4	62	31-157

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

Quanterra
Environmental Services

METHOD BLANK REPORT
Organics by Chromatography

Analyte	Result	Units	Reporting Limit
Test: 8310-HPLC-A			
Matrix: AQUEOUS			
QC Lot: 20 DEC 96-01 QC Run: 20 DEC 96-01			
Naphthalene	ND	ug/L	1.0
Acenaphthylene	ND	ug/L	1.0
Acenaphthene	ND	ug/L	1.0
Fluorene	ND	ug/L	0.20
Phenanthrene	ND	ug/L	0.20
Anthracene	ND	ug/L	0.10
Fluoranthene	ND	ug/L	0.20
Pyrene	ND	ug/L	0.20
Benzo(a)anthracene	ND	ug/L	0.10
Chrysene	ND	ug/L	0.20
Benzo(b)fluoranthene	ND	ug/L	0.10
Benzo(k)fluoranthene	ND	ug/L	0.10
Benzo(a)pyrene	ND	ug/L	0.10
Dibenz(a,h)anthracene	ND	ug/L	0.20
Benzo(g,h,i)perylene	ND	ug/L	0.20
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.20

Test: 8310-HPLC-A			
Matrix: AQUEOUS			
QC Lot: 20 DEC 96-01 QC Run: 20 DEC 96-01			
Naphthalene	ND	ug/L	1.0
Acenaphthylene	ND	ug/L	1.0
Acenaphthene	ND	ug/L	1.0
Fluorene	ND	ug/L	0.20
Phenanthrene	ND	ug/L	0.20
Anthracene	ND	ug/L	0.10
Fluoranthene	ND	ug/L	0.20
Pyrene	ND	ug/L	0.20
Benzo(a)anthracene	ND	ug/L	0.10
Chrysene	ND	ug/L	0.20
Benzo(b)fluoranthene	ND	ug/L	0.10
Benzo(k)fluoranthene	ND	ug/L	0.10
Benzo(a)pyrene	ND	ug/L	0.10
Dibenz(a,h)anthracene	ND	ug/L	0.20
Benzo(g,h,i)perylene	ND	ug/L	0.20
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.20

Quanterra
Environmental Services

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Organics by Chromatography
Project: 053047

Category: 8310-A Polynuclear Aromatic Hydrocarbons by HPLC
Matrix: AQUEOUS
Sample: 053047-0005
MS Run: 20 DEC 96-01Z
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	10	10	9.7	9.6	105	104	30-117	1.2	37
Fluorene	ND	2.0	2.0	1.9	1.9	103	106	33-123	2.5	37
Pyrene	ND	1.8	1.9	1.9	1.9	95	97	54-117	1.6	35
Benzo(a)pyrene	ND	0.88	0.90	0.97	0.96	91	93	55-109	3.0	39
Indeno(1,2,3-cd) pyrene	ND	0.99	1.0	0.97	0.96	102	104	62-126	1.9	39

Category: 8310-A Polynuclear Aromatic Hydrocarbons by HPLC
Matrix: AQUEOUS
Sample: 053038-0002
MS Run: 20 DEC 96-01
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	10	10	10	10	103	102	30-117	0.9	37
Fluorene	ND	2.0	2.0	2.0	2.0	100	100	33-123	0.4	37
Pyrene	ND	1.9	1.8	2.0	2.0	93	92	54-117	1.2	35
Benzo(a)pyrene	ND	0.94	0.89	1.0	1.0	92	89	55-109	3.1	39
Indeno(1,2,3-cd) pyrene	ND	1.0	1.0	1.0	1.0	101	100	62-126	1.4	39

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)
053047-0001-SA	AQUEOUS	615-A	23 DEC 96-01	23 DEC 96-01
053047-0001-SA	AQUEOUS	8080-A	23 DEC 96-01	23 DEC 96-01
053047-0002-EB	AQUEOUS	615-A	23 DEC 96-01	23 DEC 96-01
053047-0002-EB	AQUEOUS	8080-A	23 DEC 96-01	23 DEC 96-01
053047-0004-SA	AQUEOUS	615-A	23 DEC 96-01	23 DEC 96-01
053047-0004-SA	AQUEOUS	8080-A	23 DEC 96-01	23 DEC 96-01
053047-0005-SA	AQUEOUS	615-A	23 DEC 96-01	23 DEC 96-01
053047-0005-SA	AQUEOUS	8080-A	23 DEC 96-01	23 DEC 96-01
053047-0005-MS	AQUEOUS	615-A	23 DEC 96-01	23 DEC 96-01
053047-0005-MS	AQUEOUS	8080-A	23 DEC 96-01	23 DEC 96-01
053047-0005-SD	AQUEOUS	615-A	23 DEC 96-01	23 DEC 96-01
053047-0005-SD	AQUEOUS	8080-A	23 DEC 96-01	23 DEC 96-01

Quanterra
Environmental Services

DUPLICATE CONTROL SAMPLE REPORT
Semivolatile Organics by GC

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: 615-A Matrix: AQUEOUS QC Lot: 23 DEC 96-01 Concentration Units: ug/L								
2,4-D	5.00	3.72	3.99	3.86	77	44- 97	7.0	34
2,4,5-TP (Silvex)	1.00	0.853	0.912	0.882	88	49-102	6.7	32
2,4,5-T	1.00	0.918	0.994	0.956	96	47-110	7.9	32
Category: 8080-A Matrix: AQUEOUS QC Lot: 23 DEC 96-01 Concentration Units: ug/L								
gamma-BHC (Lindane)	0.200	0.187	0.188	0.188	94	81-117	0.53	13
Heptachlor	0.200	0.187	0.188	0.188	94	72-125	0.53	11
Aldrin	0.200	0.174	0.171	0.172	86	69-112	1.7	16
Dieldrin	0.500	0.435	0.437	0.436	87	77-111	0.46	13
Endrin	0.500	0.467	0.475	0.471	94	83-122	1.7	14
4,4'-DDT	0.500	0.469	0.478	0.474	95	76-125	1.9	14

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: 23 DEC 96-01 QC Run: 23 DEC 96-01 Concentration Units: ug/L				
DCAA	5.00	4.52	90	45-123
Category: 8080-A Matrix: AQUEOUS QC Lot: 23 DEC 96-01 QC Run: 23 DEC 96-01 Concentration Units: ug/L				
Tetrachloro-m-xylene	1.00	0.823	82	54-106
Dibutyl chlorendate	1.00	0.932	93	56-138
Decachlorobiphenyl	0.200	0.173	86	65-145

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: 23 DEC 96-01 QC Run: 23 DEC 96-01			
2,4-D	ND	ug/L	1.2
2,4,5-TP (Silvex)	ND	ug/L	0.17
2,4,5-T	ND	ug/L	0.20
Test: 8080-AP9-A			
Matrix: AQUEOUS			
QC Lot: 23 DEC 96-01 QC Run: 23 DEC 96-01			
Aldrin	ND	ug/L	0.050
Aroclor 1016	ND	ug/L	1.0
Aroclor 1221	ND	ug/L	1.0
Aroclor 1232	ND	ug/L	1.0
Aroclor 1242	ND	ug/L	1.0
Aroclor 1248	ND	ug/L	1.0
Aroclor 1254	ND	ug/L	1.0
Aroclor 1260	ND	ug/L	1.0
alpha-BHC	ND	ug/L	0.050
beta-BHC	ND	ug/L	0.050
delta-BHC	ND	ug/L	0.050
gamma-BHC (Lindane)	ND	ug/L	0.050
alpha-Chlordane	ND	ug/L	0.050
gamma-Chlordane	ND	ug/L	0.050
Chlorobenzilate	ND	ug/L	1.0
4,4'-DDD	ND	ug/L	0.10
4,4'-DDE	ND	ug/L	0.10
4,4'-DDT	ND	ug/L	0.10
Diallate	ND	ug/L	1.0
Dieldrin	ND	ug/L	0.10
Endosulfan I	ND	ug/L	0.050
Endosulfan II	ND	ug/L	0.10
Endosulfan sulfate	ND	ug/L	0.10
Endrin	ND	ug/L	0.10
Endrin aldehyde	ND	ug/L	0.10
Heptachlor	ND	ug/L	0.050
Heptachlor epoxide	ND	ug/L	0.050
Isodrin	ND	ug/L	0.10
Kepone	ND	ug/L	2.5
Methoxychlor	ND	ug/L	0.50
Toxaphene	ND	ug/L	5.0

Quanterra
Environmental Services

METHOD BLANK REPORT
Semivolatile Organics by GC (cont.)

Analyte	Result	Units	Reporting Limit
Test: 8150-AP9-A			
Matrix: AQUEOUS			
QC Lot: 23 DEC 96-01 QC Run: 23 DEC 96-01			
2,4-D	ND	ug/L	1.2
2,4,5-TP (Silvex)	ND	ug/L	0.17
2,4,5-T	ND	ug/L	0.20
Test: 8080-AP9-A			
Matrix: AQUEOUS			
QC Lot: 23 DEC 96-01 QC Run: 23 DEC 96-01			
Aldrin	ND	ug/L	0.050
Aroclor 1016	ND	ug/L	1.0
Aroclor 1221	ND	ug/L	1.0
Aroclor 1232	ND	ug/L	1.0
Aroclor 1242	ND	ug/L	1.0
Aroclor 1248	ND	ug/L	1.0
Aroclor 1254	ND	ug/L	1.0
Aroclor 1260	ND	ug/L	1.0
alpha-BHC	ND	ug/L	0.050
beta-BHC	ND	ug/L	0.050
delta-BHC	ND	ug/L	0.050
gamma-BHC (Lindane)	ND	ug/L	0.050
alpha-Chlordane	ND	ug/L	0.050
gamma-Chlordane	ND	ug/L	0.050
Chlorobenzilate	ND	ug/L	1.0
4,4'-DDD	ND	ug/L	0.10
4,4'-DDE	ND	ug/L	0.10
4,4'-DDT	ND	ug/L	0.10
Diallate	ND	ug/L	1.0
Dieldrin	ND	ug/L	0.10
Endosulfan I	ND	ug/L	0.050
Endosulfan II	ND	ug/L	0.10
Endosulfan sulfate	ND	ug/L	0.10
Endrin	ND	ug/L	0.10
Endrin aldehyde	ND	ug/L	0.10
Heptachlor	ND	ug/L	0.050
Heptachlor epoxide	ND	ug/L	0.050
Isodrin	ND	ug/L	0.10
Kepone	ND	ug/L	2.5
Methoxychlor	ND	ug/L	0.50
Toxaphene	ND	ug/L	5.0

Quanterra Environmental Services

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Semivolatile Organics by GC
Project: 053047

Category: 615-A Herbicides
Matrix: AQUEOUS
Sample: 053047-0005
MS Run: 23 DEC 96-01
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	4.0	5.1	5.4	5.0	75	102	44-97	31	34
2,4,5-TP (Silvex)	ND		0.96	1.1	1.1	0.99	89	109	49-102	20	32
2,4,5-T	ND		1.0	1.1	1.1	0.99	93	112	47-110	19	32

Category: 8080-A Organochlorine Pesticides
Matrix: AQUEOUS
Sample: 053047-0005
MS Run: 23 DEC 96-01
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		0.18	0.19	0.19	0.20	94	95	32-127	0.9	20
Heptachlor	ND		0.16	0.18	0.19	0.20	85	90	34-111	5.5	20
Aldrin	ND	T	0.14	0.17	0.19	0.20	72	84	42-122	15	20
Dieldrin	ND		0.42	0.46	0.48	0.51	87	90	36-146	3.5	20
Endrin	ND		0.46	0.51	0.48	0.51	95	101	30-147	5.5	20
4,4'-DDT	ND		0.47	0.51	0.48	0.51	97	101	25-160	3.3	20

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

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

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)
053047-0001-SA	AQUEOUS	PB-FAA-AT	23 DEC 96-Y1	23 DEC 96-Y1
053047-0001-SA	AQUEOUS	AS-FAA-AT	23 DEC 96-X1	23 DEC 96-X1
053047-0001-SA	AQUEOUS	SE-FAA-AT	23 DEC 96-X1	23 DEC 96-X1
053047-0001-SA	AQUEOUS	TL-FAA-AT	23 DEC 96-Y1	23 DEC 96-Y1
053047-0001-SA	AQUEOUS	HG-CVAA-AT	06 JAN 97-N1	06 JAN 97-N1
053047-0001-SA	AQUEOUS	CD-FAA-AT	23 DEC 96-Y1	23 DEC 96-Y1
053047-0001-SA	AQUEOUS	CR-FAA-AT	23 DEC 96-Y1	23 DEC 96-Y1
053047-0001-SA	AQUEOUS	SB-FAA-AT	20 DEC 96-J2	20 DEC 96-J2
053047-0001-SA	AQUEOUS	AG-FAA-AT	23 DEC 96-Y1	23 DEC 96-Y1
053047-0001-SA	AQUEOUS	ICP-AT	20 DEC 96-J2	20 DEC 96-J2
053047-0002-EB	AQUEOUS	PB-FAA-AT	23 DEC 96-Y1	23 DEC 96-Y1
053047-0002-EB	AQUEOUS	AS-FAA-AT	23 DEC 96-X1	23 DEC 96-X1
053047-0002-EB	AQUEOUS	SE-FAA-AT	23 DEC 96-X1	23 DEC 96-X1
053047-0002-EB	AQUEOUS	TL-FAA-AT	23 DEC 96-Y1	23 DEC 96-Y1
053047-0002-EB	AQUEOUS	HG-CVAA-AT	06 JAN 97-N1	06 JAN 97-N1
053047-0002-EB	AQUEOUS	CD-FAA-AT	23 DEC 96-Y1	23 DEC 96-Y1
053047-0002-EB	AQUEOUS	CR-FAA-AT	23 DEC 96-Y1	23 DEC 96-Y1
053047-0002-EB	AQUEOUS	SB-FAA-AT	20 DEC 96-J2	20 DEC 96-J2
053047-0002-EB	AQUEOUS	AG-FAA-AT	23 DEC 96-Y1	23 DEC 96-Y1
053047-0002-EB	AQUEOUS	ICP-AT	20 DEC 96-J2	20 DEC 96-J2
053047-0004-SA	AQUEOUS	PB-FAA-AT	23 DEC 96-Y1	23 DEC 96-Y1
053047-0004-SA	AQUEOUS	AS-FAA-AT	23 DEC 96-X1	23 DEC 96-X1
053047-0004-SA	AQUEOUS	SE-FAA-AT	23 DEC 96-X1	23 DEC 96-X1
053047-0004-SA	AQUEOUS	TL-FAA-AT	23 DEC 96-Y1	23 DEC 96-Y1
053047-0004-SA	AQUEOUS	HG-CVAA-AT	06 JAN 97-N1	06 JAN 97-N1
053047-0004-SA	AQUEOUS	CD-FAA-AT	23 DEC 96-Y1	23 DEC 96-Y1
053047-0004-SA	AQUEOUS	CR-FAA-AT	23 DEC 96-Y1	23 DEC 96-Y1
053047-0004-SA	AQUEOUS	SB-FAA-AT	31 DEC 96-N1	31 DEC 96-N1
053047-0004-SA	AQUEOUS	AG-FAA-AT	23 DEC 96-Y1	23 DEC 96-Y1
053047-0004-SA	AQUEOUS	ICP-AT	31 DEC 96-N1	31 DEC 96-N1
053047-0005-SA	AQUEOUS	PB-FAA-AT	23 DEC 96-Y1	23 DEC 96-Y1
053047-0005-SA	AQUEOUS	AS-FAA-AT	23 DEC 96-X1	23 DEC 96-X1
053047-0005-SA	AQUEOUS	SE-FAA-AT	23 DEC 96-X1	23 DEC 96-X1
053047-0005-SA	AQUEOUS	TL-FAA-AT	23 DEC 96-Y1	23 DEC 96-Y1
053047-0005-SA	AQUEOUS	HG-CVAA-AT	06 JAN 97-N1	06 JAN 97-N1
053047-0005-SA	AQUEOUS	CD-FAA-AT	23 DEC 96-Y1	23 DEC 96-Y1
053047-0005-SA	AQUEOUS	CR-FAA-AT	23 DEC 96-Y1	23 DEC 96-Y1
053047-0005-SA	AQUEOUS	SB-FAA-AT	31 DEC 96-N1	31 DEC 96-N1
053047-0005-SA	AQUEOUS	AG-FAA-AT	23 DEC 96-Y1	23 DEC 96-Y1
053047-0005-SA	AQUEOUS	ICP-AT	31 DEC 96-N1	31 DEC 96-N1
053047-0005-MS	AQUEOUS	PB-FAA-AT	23 DEC 96-Y1	23 DEC 96-Y1
053047-0005-MS	AQUEOUS	AS-FAA-AT	23 DEC 96-X1	23 DEC 96-X1
053047-0005-MS	AQUEOUS	SE-FAA-AT	23 DEC 96-X1	23 DEC 96-X1
053047-0005-MS	AQUEOUS	TL-FAA-AT	23 DEC 96-Y1	23 DEC 96-Y1
053047-0005-MS	AQUEOUS	HG-CVAA-AT	06 JAN 97-N1	06 JAN 97-N1
053047-0005-MS	AQUEOUS	CD-FAA-AT	23 DEC 96-Y1	23 DEC 96-Y1
053047-0005-MS	AQUEOUS	CR-FAA-AT	23 DEC 96-Y1	23 DEC 96-Y1

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)
053047-0005-MS	AQUEOUS	SB-FAA-AT	31 DEC 96-N1	31 DEC 96-N1
053047-0005-MS	AQUEOUS	AG-FAA-AT	23 DEC 96-Y1	23 DEC 96-Y1
053047-0005-MS	AQUEOUS	ICP-AT	31 DEC 96-N1	31 DEC 96-N1
053047-0005-SD	AQUEOUS	PB-FAA-AT	23 DEC 96-Y1	23 DEC 96-Y1
053047-0005-SD	AQUEOUS	AS-FAA-AT	23 DEC 96-X1	23 DEC 96-X1
053047-0005-SD	AQUEOUS	SE-FAA-AT	23 DEC 96-X1	23 DEC 96-X1
053047-0005-SD	AQUEOUS	TL-FAA-AT	23 DEC 96-Y1	23 DEC 96-Y1
053047-0005-SD	AQUEOUS	HG-CVAA-AT	06 JAN 97-N1	06 JAN 97-N1
053047-0005-SD	AQUEOUS	CD-FAA-AT	23 DEC 96-Y1	23 DEC 96-Y1
053047-0005-SD	AQUEOUS	CR-FAA-AT	23 DEC 96-Y1	23 DEC 96-Y1
053047-0005-SD	AQUEOUS	SB-FAA-AT	31 DEC 96-N1	31 DEC 96-N1
053047-0005-SD	AQUEOUS	AG-FAA-AT	23 DEC 96-Y1	23 DEC 96-Y1
053047-0005-SD	AQUEOUS	ICP-AT	31 DEC 96-N1	31 DEC 96-N1

Quanterra
Environmental Services

DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: PB-FAA-AT Matrix: AQUEOUS QC Lot: 23 DEC 96-Y1 Concentration Units: mg/L								
Lead	0.040	0.0417	0.0427	0.0422	106	71-136	2.4	17
Category: AS-FAA-AT Matrix: AQUEOUS QC Lot: 23 DEC 96-X1 Concentration Units: mg/L								
Arsenic	0.040	0.0390	0.0388	0.0389	97	81-116	0.51	13
Category: SE-FAA-AT Matrix: AQUEOUS QC Lot: 23 DEC 96-X1 Concentration Units: mg/L								
Selenium	0.040	0.0412	0.0427	0.0420	105	73-125	3.6	15
Category: TL-FAA-AT Matrix: AQUEOUS QC Lot: 23 DEC 96-Y1 Concentration Units: mg/L								
Thallium	0.0400	0.0391	0.0378	0.0384	96	75-125	3.4	20
Category: HG-CVAA-AT Matrix: AQUEOUS QC Lot: 06 JAN 97-N1 Concentration Units: mg/L								
Mercury	0.0010	0.00100	0.00100	0.00100	101	80-114	0.0	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 (cont.)

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: CD-FAA-AT Matrix: AQUEOUS QC Lot: 23 DEC 96-Y1 Concentration Units: mg/L								
Cadmium	0.00400	0.00449	0.00431	0.00440	110	75-125	4.1	20
Category: CR-FAA-AT Matrix: AQUEOUS QC Lot: 23 DEC 96-Y1 Concentration Units: mg/L								
Chromium	0.0100	0.0102	0.00990	0.0100	101	75-125	3.0	20
Category: SB-FAA-AT Matrix: AQUEOUS QC Lot: 20 DEC 96-J2 Concentration Units: mg/L								
Antimony	0.5000	0.511	0.525	0.518	104	75-125	2.7	20
Category: AG-FAA-AT Matrix: AQUEOUS QC Lot: 23 DEC 96-Y1 Concentration Units: mg/L								
Silver	0.00500	0.00532	0.00555	0.00544	109	75-125	4.2	20
Category: ICP-AT Matrix: AQUEOUS QC Lot: 20 DEC 96-J2 Concentration Units: mg/L								
Aluminum	2.00	2.06	2.07	2.07	103	80-116	0.28	10
Antimony	0.500	0.525	0.533	0.529	106	80-115	1.6	14
Arsenic	2.00	1.98	1.97	1.98	99	80-115	0.66	17
Barium	2.00	2.06	2.08	2.07	103	80-114	0.90	10
Beryllium	0.0500	0.0532	0.0532	0.0532	106	80-120	0.075	10
Boron	1.00	1.02	1.02	1.02	102	80-120	0.28	10
Cadmium	0.0500	0.0489	0.0493	0.0491	98	80-119	0.65	16
Calcium	50.0	49.1	49.7	49.4	99	80-114	1.2	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 (cont.)

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: ICP-AT Matrix: AQUEOUS QC Lot: 20 DEC 96-J2 Concentration Units: mg/L								
Chromium	0.200	0.201	0.202	0.202	101	80-116	0.22	11
Cobalt	0.500	0.531	0.533	0.532	106	80-114	0.45	10
Copper	0.250	0.254	0.258	0.256	102	80-120	1.7	10
Iron	1.00	1.02	1.03	1.03	103	80-120	0.58	11
Lead	0.500	0.479	0.475	0.477	95	80-119	0.96	10
Lithium	1.00	0.830	0.841	0.836	84	80-120	1.3	20
Magnesium	50.0	48.6	49.9	49.3	99	81-120	2.6	10
Manganese	0.500	0.500	0.502	0.501	100	80-116	0.41	10
Molybdenum	1.00	1.01	1.02	1.02	102	80-120	0.98	20
Nickel	0.500	0.513	0.512	0.512	102	80-114	0.21	10
Potassium	50.0	46.0	46.6	46.3	93	80-120	1.3	13
Selenium	2.00	2.03	2.02	2.03	101	80-120	0.56	20
Silver	0.050	0.0522	0.0513	0.0518	104	80-119	1.7	15
Sodium	50.0	49.8	49.3	49.6	99	80-120	0.92	10
Tin	2.00	2.04	2.06	2.05	102	80-120	1.1	20
Titanium	1.00	1.02	1.03	1.02	102	80-120	1.1	20
Vanadium	0.500	0.509	0.517	0.513	103	80-116	1.6	10
Zinc	0.500	0.497	0.503	0.500	100	80-120	1.2	13
Category: SB-FAA-AT Matrix: AQUEOUS QC Lot: 31 DEC 96-N1 Concentration Units: mg/L								
Antimony	0.5000	0.529	0.537	0.533	107	75-125	1.5	20
Category: ICP-AT Matrix: AQUEOUS QC Lot: 31 DEC 96-N1 Concentration Units: mg/L								
Aluminum	2.00	2.00	2.05	2.03	101	80-116	2.7	10
Antimony	0.500	0.525	0.530	0.527	105	80-115	0.99	14
Arsenic	2.00	1.97	2.02	1.99	100	80-115	2.5	17
Barium	2.00	2.10	2.13	2.12	106	80-114	1.6	10
Beryllium	0.0500	0.0498	0.0488	0.0493	99	80-120	2.0	10
Boron	1.00	1.03	1.04	1.03	103	80-120	1.7	10
Cadmium	0.0500	0.0464	0.0414	0.0439	88	80-119	11	16

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

Quanterra
Environmental Services

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

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: ICP-AT								
Matrix: AQUEOUS								
QC Lot: 31 DEC 96-N1								
Concentration Units: mg/L								
Calcium	50.0	49.9	50.6	50.2	100	80-114	1.4	10
Chromium	0.200	0.208	0.208	0.208	104	80-116	0.37	11
Cobalt	0.500	0.549	0.552	0.551	110	80-114	0.54	10
Copper	0.250	0.269	0.270	0.269	108	80-120	0.33	10
Iron	1.00	1.06	1.07	1.06	106	80-120	1.4	11
Lead	0.500	0.483	0.495	0.489	98	80-119	2.5	10
Lithium	1.00	0.877	0.901	0.889	89	80-120	2.6	20
Magnesium	50.0	51.0	51.9	51.5	103	81-120	1.7	10
Manganese	0.500	0.537	0.543	0.540	108	80-116	1.2	10
Molybdenum	1.00	1.05	1.07	1.06	106	80-120	2.1	20
Nickel	0.500	0.519	0.526	0.523	105	80-114	1.3	10
Potassium	50.0	48.5	49.5	49.0	98	80-120	2.0	13
Selenium	2.00	2.05	1.99	2.02	101	80-120	2.6	20
Silver	0.050	0.0521	0.0515	0.0518	104	80-119	1.3	15
Sodium	50.0	51.4	52.5	51.9	104	80-120	2.0	10
Tin	2.00	2.04	2.01	2.02	101	80-120	1.6	20
Titanium	1.00	1.04	1.04	1.04	104	80-120	0.17	20
Vanadium	0.500	0.530	0.538	0.534	107	80-116	1.6	10
Zinc	0.500	0.506	0.513	0.510	102	80-120	1.2	13

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: 23 DEC 96-Y1 QC Run: 23 DEC 96-Y1			
Lead	ND	mg/L	0.0050
Test: AS-FAA-AT Matrix: AQUEOUS QC Lot: 23 DEC 96-X1 QC Run: 23 DEC 96-X1			
Arsenic	ND	mg/L	0.0050
Test: SE-FAA-AT Matrix: AQUEOUS QC Lot: 23 DEC 96-X1 QC Run: 23 DEC 96-X1			
Selenium	ND	mg/L	0.0050
Test: TL-FAA-AT Matrix: AQUEOUS QC Lot: 23 DEC 96-Y1 QC Run: 23 DEC 96-Y1			
Thallium	ND	mg/L	0.0050
Test: HG-CVAA-7470-AT Matrix: AQUEOUS QC Lot: 06 JAN 97-N1 QC Run: 06 JAN 97-N1			
Mercury	ND	mg/L	0.00020
Test: CD-FAA-AT Matrix: AQUEOUS QC Lot: 23 DEC 96-Y1 QC Run: 23 DEC 96-Y1			
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: 23 DEC 96-Y1 QC Run: 23 DEC 96-Y1			
Chromium	ND	mg/L	0.0050
Test: SB-FAA-AT			
Matrix: AQUEOUS			
QC Lot: 20 DEC 96-J2 QC Run: 20 DEC 96-J2			
Antimony	ND	mg/L	0.010
Test: AG-FAA-AT			
Matrix: AQUEOUS			
QC Lot: 23 DEC 96-Y1 QC Run: 23 DEC 96-Y1			
Silver	ND	mg/L	0.00050
Test: ICP-AFIR-AT			
Matrix: AQUEOUS			
QC Lot: 20 DEC 96-J2 QC Run: 20 DEC 96-J2			
Aluminum	ND	mg/L	0.20
Antimony	ND	mg/L	0.20
Arsenic	ND	mg/L	0.30
Barium	ND	mg/L	0.10
Beryllium	ND	mg/L	0.0020
Cadmium	ND	mg/L	0.0050
Calcium	ND	mg/L	5.0
Chromium	ND	mg/L	0.030
Cobalt	ND	mg/L	0.040
Copper	ND	mg/L	0.030
Iron	0.098	mg/L	0.040
Lead	ND	mg/L	0.20
Magnesium	ND	mg/L	5.0
Manganese	ND	mg/L	0.010
Molybdenum	ND	mg/L	0.040
Nickel	ND	mg/L	0.040
Potassium	ND	mg/L	5.0
Selenium	ND	mg/L	0.40
Silver	ND	mg/L	0.030
Sodium	ND	mg/L	5.0

Quanterra Environmental Services

METHOD BLANK REPORT
Metals Analysis and Preparation (cont.)

Analyte	Result	Units	Reporting Limit
Test: ICP-AFIR-AT			
Matrix: AQUEOUS			
QC Lot: 20 DEC 96-J2 QC Run: 20 DEC 96-J2			
Thallium	ND	mg/L	5.0
Vanadium	ND	mg/L	0.040
Zinc	ND	mg/L	0.010
Test: SB-FAA-AT			
Matrix: AQUEOUS			
QC Lot: 31 DEC 96-N1 QC Run: 31 DEC 96-N1			
Antimony	ND	mg/L	0.010
Test: ICP-AFIR-AT			
Matrix: AQUEOUS			
QC Lot: 31 DEC 96-N1 QC Run: 31 DEC 96-N1			
Aluminum	ND	mg/L	0.20
Antimony	ND	mg/L	0.20
Arsenic	ND	mg/L	0.30
Barium	ND	mg/L	0.10
Beryllium	ND	mg/L	0.0020
Cadmium	ND	mg/L	0.0050
Calcium	ND	mg/L	5.0
Chromium	ND	mg/L	0.030
Cobalt	ND	mg/L	0.040
Copper	ND	mg/L	0.030
Iron	ND	mg/L	0.040
Lead	ND	mg/L	0.20
Magnesium	ND	mg/L	5.0
Manganese	ND	mg/L	0.010
Molybdenum	ND	mg/L	0.040
Nickel	ND	mg/L	0.040
Potassium	ND	mg/L	5.0
Selenium	ND	mg/L	0.40
Silver	ND	mg/L	0.030
Sodium	ND	mg/L	5.0
Thallium	ND	mg/L	5.0
Vanadium	ND	mg/L	0.040
Zinc	ND	mg/L	0.010

Quanterra Environmental Services

METHOD BLANK REPORT
Metals Analysis and Preparation (cont.)

Analyte	Result	Units	Reporting Limit
Test: PB-FAA-AT Matrix: AQUEOUS QC Lot: 23 DEC 96-Y1 QC Run: 23 DEC 96-Y1			
Lead	ND	mg/L	0.0050
Test: AS-FAA-AT Matrix: AQUEOUS QC Lot: 23 DEC 96-X1 QC Run: 23 DEC 96-X1			
Arsenic	ND	mg/L	0.0050
Test: SE-FAA-AT Matrix: AQUEOUS QC Lot: 23 DEC 96-X1 QC Run: 23 DEC 96-X1			
Selenium	ND	mg/L	0.0050
Test: TL-FAA-AT Matrix: AQUEOUS QC Lot: 23 DEC 96-Y1 QC Run: 23 DEC 96-Y1			
Thallium	ND	mg/L	0.0050
Test: HG-CVAA-7470-AT Matrix: AQUEOUS QC Lot: 06 JAN 97-N1 QC Run: 06 JAN 97-N1			
Mercury	ND	mg/L	0.00020
Test: CD-FAA-AT Matrix: AQUEOUS QC Lot: 23 DEC 96-Y1 QC Run: 23 DEC 96-Y1			
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: 23 DEC 96-Y1 QC Run: 23 DEC 96-Y1			
Chromium	ND	mg/L	0.0050
Test: SB-FAA-AT Matrix: AQUEOUS QC Lot: 31 DEC 96-N1 QC Run: 31 DEC 96-N1			
Antimony	ND	mg/L	0.010
Test: AG-FAA-AT Matrix: AQUEOUS QC Lot: 23 DEC 96-Y1 QC Run: 23 DEC 96-Y1			
Silver	ND	mg/L	0.00050
Test: ICP-AFIR-AT Matrix: AQUEOUS QC Lot: 31 DEC 96-N1 QC Run: 31 DEC 96-N1			
Aluminum	ND	mg/L	0.20
Antimony	ND	mg/L	0.20
Arsenic	ND	mg/L	0.30
Barium	ND	mg/L	0.10
Beryllium	ND	mg/L	0.0020
Cadmium	ND	mg/L	0.0050
Calcium	ND	mg/L	5.0
Chromium	ND	mg/L	0.030
Cobalt	ND	mg/L	0.040
Copper	ND	mg/L	0.030
Iron	ND	mg/L	0.040
Lead	ND	mg/L	0.20
Magnesium	ND	mg/L	5.0
Manganese	ND	mg/L	0.010
Molybdenum	ND	mg/L	0.040
Nickel	ND	mg/L	0.040
Potassium	ND	mg/L	5.0
Selenium	ND	mg/L	0.40
Silver	ND	mg/L	0.030
Sodium	ND	mg/L	5.0

Quanterra Environmental Services

METHOD BLANK REPORT
Metals Analysis and Preparation (cont.)

Analyte	Result	Units	Reporting Limit
Test: ICP-AFIR-AT			
Matrix: AQUEOUS			
QC Lot: 31 DEC 96-N1 QC Run: 31 DEC 96-N1			
Thallium	ND	mg/L	5.0
Vanadium	ND	mg/L	0.040
Zinc	ND	mg/L	0.010

Quanterra
Environmental Services

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Metals Analysis and Preparation
Project: 053047

Category: PB-FAA-AT Lead, Furnace AA / Total Metals
Matrix: AQUEOUS
Sample: 053047-0005
MS Run: 23 DEC 96-Y1
Units: mg/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
Lead	ND	0.032	0.032	0.040	0.040	80	81	71-136	1.6	17

Category: AS-FAA-AT Arsenic, Furnace AA / Total Metals
Matrix: AQUEOUS
Sample: 053047-0005
MS Run: 23 DEC 96-X1
Units: mg/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
Arsenic	ND	0.0389	0.0397	0.0400	0.0400	97	99	81-116	2.0	13

Category: SE-FAA-AT Selenium, Furnace AA / Total Metals
Matrix: AQUEOUS
Sample: 053047-0005
MS Run: 23 DEC 96-X1
Units: mg/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
Selenium	ND G	0.035	0.035	0.040	0.040	87	88	73-125	1.7	15

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

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

Quanterra
Environmental Services

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Metals Analysis and Preparation
Project: 053047 (cont.)

Category: TL-FAA-AT Thallium, Furnace AA / Total Metals
Matrix: AQUEOUS
Sample: 053047-0005
MS Run: 23 DEC 96-Y1
Units: mg/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
Thallium	ND	G	0.022	0.022	0.040	0.040	54	56	75-125	4.1	20

Category: HG-CVAA-AT Mercury by CVAA / Total Mercury
Matrix: AQUEOUS
Sample: 053047-0005
MS Run: 06 JAN 97-N12
Units: mg/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
Mercury	ND	0.00097	0.00096	0.0010	0.0010	97	96	80-114	0.5	10

Category: HG-CVAA-AT Mercury by CVAA / Total Mercury
Matrix: AQUEOUS
Sample: 053038-0002
MS Run: 06 JAN 97-N1
Units: mg/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
Mercury	ND	0.00099	0.00097	0.0010	0.0010	99	97	80-114	1.6	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: 053047 (cont.)

Category: CD-FAA-AT Cadmium,Furnace AA/ Total Metals
Matrix: AQUEOUS
Sample: 053047-0005
MS Run: 23 DEC 96-Y1
Units: mg/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
Cadmium	ND	0.0058	0.0052	0.0040	0.0040	145	130	75-125	10	20

Category: CR-FAA-AT Chromium, Furnace AA, Total
Matrix: AQUEOUS
Sample: 053047-0005
MS Run: 23 DEC 96-Y1
Units: mg/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
Chromium	0.014	0.019	0.017	0.010	0.010	47	34	75-125	7.2	20

Category: SB-FAA-AT Antimony by Furnace
Matrix: AQUEOUS
Sample: 053047-0005
MS Run: 31 DEC 96-N1
Units: mg/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
Antimony	ND	0.55	0.55	0.50	0.50	110	109	75-125	0.7	20

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: 053047 (cont.)

Category: AG-FAA-AT Silver,Furnace AA/Total Metals
Matrix: AQUEOUS
Sample: 053047-0005
MS Run: 23 DEC 96-Y1
Units: mg/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
Silver	ND	G	0.0039	0.0040	0.0050	0.0050	78	80	75-125	3.0	20

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

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

Quanterra
Environmental Services

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Metals Analysis and Preparation
Project: 053047 (cont.)

Category: ICP-AT ICP Metals / Total
Matrix: AQUEOUS
Sample: 053047-0005
MS Run: 31 DEC 96-N1
Units: mg/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
Aluminum	0.202	2.48	2.49	2.00	2.00	114	114	80-120	0.2	20
Antimony	ND	0.526	0.532	0.500	0.500	105	106	80-120	1.3	20
Arsenic	ND	1.96	2.02	2.00	2.00	98	101	80-120	3.1	20
Barium	ND	2.11	2.14	2.00	2.00	106	107	80-120	1.1	20
Beryllium	ND	0.0492	0.0506	0.0500	0.0500	98	101	80-120	2.9	20
Boron	NA	NA	NA	1.00	1.00	NC	NC	80-120	NC	20
Cadmium	ND	0.0510	0.0480	0.0500	0.0500	102	96	80-120	6.2	20
Calcium	51.8	102	102	50.0	50.0	101	101	80-120	0.2	20
Chromium	ND	0.218	0.221	0.200	0.200	109	110	80-120	1.1	20
Cobalt	ND	0.533	0.545	0.500	0.500	107	109	80-120	2.2	20
Copper	ND	0.267	0.270	0.250	0.250	107	108	80-120	1.2	20
Iron	0.334	1.43	1.44	1.00	1.00	110	110	80-120	0.3	20
Lead	ND	0.471	0.515	0.500	0.500	94	103	80-120	8.9	20
Lithium	NA	NA	NA	1.00	1.00	NC	NC	80-120	NC	20
Magnesium	43.3	95.4	95.6	50.0	50.0	104	105	80-120	0.1	20
Manganese	0.0142	0.538	0.545	0.500	0.500	105	106	80-120	1.2	20
Molybdenum	ND	NA	NA	1.00	1.00	NC	NC	80-120	NC	20
Nickel	ND	0.514	0.524	0.500	0.500	103	105	80-120	2.0	20
Potassium	5.93	55.3	55.2	50.0	50.0	99	99	80-120	0.0	20
Selenium	ND	2.03	2.08	2.00	2.00	102	104	80-120	2.0	20
Silver	ND	0.0510	0.0529	0.0500	0.0500	102	106	80-120	3.7	20
Sodium	38.4	89.3	90.0	50.0	50.0	102	103	80-120	0.7	20
Thallium	ND	2.27	2.28	2.00	2.00	113	114	80-120	0.3	20
Tin	NA	NA	NA	2.00	2.00	NC	NC	80-120	NC	20
Titanium	NA	NA	NA	1.00	1.00	NC	NC	80-120	NC	20
Vanadium	ND	0.554	0.558	0.500	0.500	111	112	80-120	0.6	20
Zinc	ND	0.499	0.505	0.500	0.500	100	101	80-120	1.2	20

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

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

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)
053047-0001-SA	AQUEOUS	TOX-A	13 JAN 97-N1	13 JAN 97-N1
053047-0001-SA	AQUEOUS	CN-A	26 DEC 96-S1	26 DEC 96-S1
053047-0001-SA	AQUEOUS	S-A	19 DEC 96-S1	19 DEC 96-S1
053047-0001-SA	AQUEOUS	TOC-9060-A	03 JAN 97-N1	03 JAN 97-N1
053047-0002-EB	AQUEOUS	TOX-A	13 JAN 97-N1	13 JAN 97-N1
053047-0002-EB	AQUEOUS	CN-A	26 DEC 96-S1	26 DEC 96-S1
053047-0002-EB	AQUEOUS	S-A	19 DEC 96-S1	19 DEC 96-S1
053047-0002-EB	AQUEOUS	TOC-9060-A	02 JAN 97-N1	02 JAN 97-N1
053047-0004-SA	AQUEOUS	TOX-A	13 JAN 97-N1	13 JAN 97-N1
053047-0004-SA	AQUEOUS	CN-A	26 DEC 96-S1	26 DEC 96-S1
053047-0004-SA	AQUEOUS	S-A	24 DEC 96-S1	24 DEC 96-S1
053047-0004-SA	AQUEOUS	TOC-9060-A	03 JAN 97-N1	03 JAN 97-N1
053047-0005-SA	AQUEOUS	TOX-A	13 JAN 97-N1	13 JAN 97-N1
053047-0005-SA	AQUEOUS	CN-A	26 DEC 96-S1	26 DEC 96-S1
053047-0005-SA	AQUEOUS	S-A	24 DEC 96-S1	24 DEC 96-S1
053047-0005-SA	AQUEOUS	TOC-9060-A	03 JAN 97-N1	03 JAN 97-N1
053047-0005-MS	AQUEOUS	TOX-A	13 JAN 97-N1	13 JAN 97-N1
053047-0005-MS	AQUEOUS	CN-A	26 DEC 96-S1	26 DEC 96-S1
053047-0005-MS	AQUEOUS	S-A	24 DEC 96-S1	24 DEC 96-S1
053047-0005-MS	AQUEOUS	TOC-9060-A	03 JAN 97-N1	03 JAN 97-N1
053047-0005-SD	AQUEOUS	TOX-A	13 JAN 97-N1	13 JAN 97-N1
053047-0005-SD	AQUEOUS	CN-A	26 DEC 96-S1	26 DEC 96-S1
053047-0005-SD	AQUEOUS	S-A	24 DEC 96-S1	24 DEC 96-S1
053047-0005-SD	AQUEOUS	TOC-9060-A	03 JAN 97-N1	03 JAN 97-N1

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)
053047-0001-SA	AQUEOUS	TOX-A	13 JAN 97-N1	13 JAN 97-N1
053047-0001-SA	AQUEOUS	CN-A	26 DEC 96-S1	26 DEC 96-S1
053047-0001-SA	AQUEOUS	S-A	19 DEC 96-S1	19 DEC 96-S1
053047-0001-SA	AQUEOUS	TOC-9060-A	03 JAN 97-N1	03 JAN 97-N1
053047-0002-EB	AQUEOUS	TOX-A	13 JAN 97-N1	13 JAN 97-N1
053047-0002-EB	AQUEOUS	CN-A	26 DEC 96-S1	26 DEC 96-S1
053047-0002-EB	AQUEOUS	S-A	19 DEC 96-S1	19 DEC 96-S1
053047-0002-EB	AQUEOUS	TOC-9060-A	02 JAN 97-N1	02 JAN 97-N1
053047-0004-SA	AQUEOUS	TOX-A	13 JAN 97-N1	13 JAN 97-N1
053047-0004-SA	AQUEOUS	CN-A	26 DEC 96-S1	26 DEC 96-S1
053047-0004-SA	AQUEOUS	S-A	24 DEC 96-S1	24 DEC 96-S1
053047-0004-SA	AQUEOUS	TOC-9060-A	03 JAN 97-N1	03 JAN 97-N1
053047-0005-SA	AQUEOUS	TOX-A	13 JAN 97-N1	13 JAN 97-N1
053047-0005-SA	AQUEOUS	CN-A	26 DEC 96-S1	26 DEC 96-S1
053047-0005-SA	AQUEOUS	S-A	24 DEC 96-S1	24 DEC 96-S1
053047-0005-SA	AQUEOUS	TOC-9060-A	03 JAN 97-N1	03 JAN 97-N1
053047-0005-MS	AQUEOUS	TOX-A	13 JAN 97-N1	13 JAN 97-N1
053047-0005-MS	AQUEOUS	CN-A	26 DEC 96-S1	26 DEC 96-S1
053047-0005-MS	AQUEOUS	S-A	24 DEC 96-S1	24 DEC 96-S1
053047-0005-MS	AQUEOUS	TOC-9060-A	03 JAN 97-N1	03 JAN 97-N1
053047-0005-SD	AQUEOUS	TOX-A	13 JAN 97-N1	13 JAN 97-N1
053047-0005-SD	AQUEOUS	CN-A	26 DEC 96-S1	26 DEC 96-S1
053047-0005-SD	AQUEOUS	S-A	24 DEC 96-S1	24 DEC 96-S1
053047-0005-SD	AQUEOUS	TOC-9060-A	03 JAN 97-N1	03 JAN 97-N1

Quanterra Environmental Services

DUPLICATE CONTROL SAMPLE REPORT
Wet Chemistry Analysis and Preparation

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: TOX-A Matrix: AQUEOUS QC Lot: 13 JAN 97-N1 Concentration Units: ug/L								
Total Organic Halogen as Cl	100	107	100	104	104	79-114	6.6	20
Category: CN-A Matrix: AQUEOUS QC Lot: 26 DEC 96-S1 Concentration Units: mg/L								
Cyanide	0.176	0.159	0.160	0.160	91	74-112	0.56	21
Category: S-A Matrix: AQUEOUS QC Lot: 19 DEC 96-S1 Concentration Units: mg/L								
Sulfide, Total	0.485	0.443	0.458	0.450	93	70-128	3.2	13
Category: TOC-9060-A Matrix: AQUEOUS QC Lot: 03 JAN 97-N1 Concentration Units: mg/L								
Total Organic Carbon	30.0	30.9	31.2	31.1	104	90-113	1.2	10
Category: TOC-9060-A Matrix: AQUEOUS QC Lot: 02 JAN 97-N1 Concentration Units: mg/L								
Total Organic Carbon	30.0	30.5	31.0	30.7	102	90-113	1.7	10

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 (cont.)

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: S-A Matrix: AQUEOUS QC Lot: 24 DEC 96-S1 Concentration Units: mg/L								
Sulfide, Total	0.414	0.398	0.437	0.418	101	70-128	9.3	13

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: TOX-TOX-A Matrix: AQUEOUS QC Lot: 13 JAN 97-N1 QC Run: 13 JAN 97-N1			
Total Organic Halogen as Cl	ND	ug/L	30.0
Test: CNTOT-TEC-A Matrix: AQUEOUS QC Lot: 26 DEC 96-S1 QC Run: 26 DEC 96-S1			
Cyanide	ND	mg/L	0.010
Test: S-SPEC-AT Matrix: AQUEOUS QC Lot: 19 DEC 96-S1 QC Run: 19 DEC 96-S1			
Sulfide, Total	ND	mg/L	0.050
Test: TOC-TOC-A Matrix: AQUEOUS QC Lot: 03 JAN 97-N1 QC Run: 03 JAN 97-N1			
Total Organic Carbon	ND	mg/L	1.0
Test: TOC-TOC-A Matrix: AQUEOUS QC Lot: 02 JAN 97-N1 QC Run: 02 JAN 97-N1			
Total Organic Carbon	ND	mg/L	1.0
Test: S-SPEC-AT Matrix: AQUEOUS QC Lot: 24 DEC 96-S1 QC Run: 24 DEC 96-S1			
Sulfide, Total	ND	mg/L	0.050

Quanterra
Environmental Services

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

Analyte	Result	Units	Reporting Limit
Test: TOX-TOX-A Matrix: AQUEOUS QC Lot: 13 JAN 97-N1 QC Run: 13 JAN 97-N1			
Total Organic Halogen as Cl	ND	ug/L	30.0
Test: CNTOT-TEC-A Matrix: AQUEOUS QC Lot: 26 DEC 96-S1 QC Run: 26 DEC 96-S1			
Cyanide	ND	mg/L	0.010
Test: S-SPEC-AT Matrix: AQUEOUS QC Lot: 24 DEC 96-S1 QC Run: 24 DEC 96-S1			
Sulfide, Total	ND	mg/L	0.050
Test: TOC-TOC-A Matrix: AQUEOUS QC Lot: 03 JAN 97-N1 QC Run: 03 JAN 97-N1			
Total Organic Carbon	ND	mg/L	1.0

Quanterra
Environmental Services

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Wet Chemistry Analysis and Preparation
Project: 053047

Category: TOX-A Total Organic Halogen
Matrix: AQUEOUS
Sample: 053047-0005
MS Run: 13 JAN 97-N1
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
Total Organic Halogen as Cl	ND	120	120	100	100	115	116	89-109	0.3	20

Category: CN-A Cyanide
Matrix: AQUEOUS
Sample: 053047-0005
MS Run: 26 DEC 96-S1
Units: mg/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
Cyanide	ND	0.098	0.091	0.098	0.098	100	93	75-119	7.6	17

Category: S-A Sulfide
Matrix: AQUEOUS
Sample: 053047-0005
MS Run: 24 DEC 96-S1
Units: mg/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
Sulfide, Total	ND	0.38	0.37	0.40	0.40	95	93	89-109	2.8	13

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
Wet Chemistry Analysis and Preparation
Project: 053047 (cont.)

Category: TOC-9060-A Total Organic Carbon
Matrix: AQUEOUS
Sample: 053047-0005
MS Run: 03 JAN 97-N1
Units: mg/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
Total Organic Carbon	ND	25	25	25	25	101	100	87-107	0.6	10

Category: TOC-9060-A Total Organic Carbon
Matrix: AQUEOUS
Sample: 052954-0001
MS Run: 02 JAN 97-N1
Units: mg/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
Total Organic Carbon	6.0	34	34	25	25	110	110	87-107	0.1	10

ND = Not Detected

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

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

Project Name & Number	PACKING AND SHIPPING DETAILS	
Cannon Air Force Base, Ground Water Sampling 463536004	Packed and Sealed for Shipping by: F. E. Roybal	Seal Number: 002
Sampling Location: Landfill-5, Cannon Air Force Base, NM	Delivered to Shipper by: F. E. Roybal	Airbill Number: 2767643255
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
16 DEC96	14 20	CAFB- L -1296-1	Ground-water	18	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 -01

Additional Comments: VOCs are in cooler with airbill # 2767643244

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. E. Roybal		16DEC96	1600	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer	Condition of Contents: good
	Anthony J Cidaco ANTHONY J. CIDACO	12/17/96	1100		Contents Temperature: 5.6°
					Laboratory Project Number: 53047

A-123 KW 6.9.7.3

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. E. Roybal
	Seal Number: 001
Sampling Location: Landfill-5, Cannon Air Force Base, NM	Delivered to Shipper by: F. E. Roybal
	Airbill Number: 2767643244
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
16DEC96	1215	CAFB-L-1296-EB	~~Ground-water~~ Ultra Pure Water	18	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~~ Equipment blank -02
16DEC96	1100	CAFB-L-1296-TB	Ultra Pure Water	2	SW8260	Trip Blank -03

Additional Comments: VOC's from CAFB-L-1296-1 is in this cooler

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. E. Roybal		16DEC96	1600	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer	Condition of Contents: good
	Anthony J Ciacco Anthony J. Ciacco	12/17/96	11:00		Contents Temperature: 5.2°
					Laboratory Project Number: 53047

II-67

11-134.72.9

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. E. Roybal; Seal Number: 081566
Team Leader: ~~Jerry Larson~~ F. Eileen Roybal	Delivered to Shipper by: F. E. Roybal; Airbill Number: 2767643266
	Sampling Status: [X] Done [ ] Continuing

Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
17-DEC96	1110	CAFB-M-1296-1	Ground-water	18	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: VOCs from this sample are in cooler with air bill # 2767643292

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. E. Roybal		17DEC96	1230	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer	Condition of Contents: good
	[illegible]	12/18/96	1115		Contents Temperature: 3.4
					Laboratory Project Number: 53147

A-135 Rw

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. Eileen Roybal	Seal Number: 153905
Sampling Location: Landfill-5, Cannon Air Force Base, NM	Delivered to Shipper by: F. Eileen Roybal	Airbill Number: 2767643292
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
17DEC96	0850	CAFB-I-1296-1	Ground-water	18	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
17DEC96	0740	CAFB-I-1296-TB	Ultra Pure Water	2	SW 8260	Trip Blank -06

Additional Comments: All VOC's from CAFB-I-1296-MS and CAFB-I-1296-SD are in this cooler
CAFB-M-1296-1

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		17DEC96	1230	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer	Condition of Contents: Good
	[illegible]	19Dec96 ~~17DEC96~~	1115		Contents Temperature: 2.0
					Laboratory Project Number: 53047

A-12/1 Rev

U.S. GEOLOGICAL SURVEY, WATER HE[illegible]RCES DIVISION, NEW MEXICO DISTRICT
ANALYTICAL REQUE[illegible]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. E. Roybal
	Seal Number: 081567
Sampling Location: Landfill-5, Cannon Air Force Base, NM	Delivered to Shipper by: F. E. Roybal
	Airbill Number: 2767643281
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
17DEC96	0850	CAFB-I-1296-MS	Ground-water	18	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~~ Matrix Spike - 05ms

Additional Comments: VOC's from this sample is in cooler with Airbill 2767643292

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. E. Roybal		17DEC96	1230	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph. (303) 421-6611 Attention: Lindsay Breyer	Condition of Contents: good
	[illegible]	19 Dec 96	1115		Contents Temperature: 2.6
					Laboratory Project Number: 53047

D-127

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. E. Roybal; Seal Number: 081565
Team Leader: ~~Jerry Larson~~ F. Eileen Roybal	Delivered to Shipper by: F. E. Roybal; Airbill Number: 2767643270
	Sampling Status: [X] Done [ ] Continuing

Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
17DEC96	0850	CAFB-I-1296-SD	Ground-water	18	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~~ Matrix spike Duplicate-OSSD

Additional Comments: VOCs from this sample are in cooler with airbill 2767 643292

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. E. Roybal		17DEC96	1200	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer	Condition of Contents: good
	[signature]	12/19/96	1115		Contents Temperature: 1.8
					Laboratory Project Number: 57047

Sample Checklist

Quanterra Environmental Services

Project #: S 3047 Date/Time Received: 12/17/96 / 11:00

Company Name & Sampling Site: USGS Camon

*Cooler #(s): #1 Seal #002 5.6°C #2 Seal #001 5.2°C

Temperatures: 5.6° 5.2°

*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. Sediment present in "D," dissolved, bottles. (N/A)	
☐	☑	13. Are analyses with short holding times requested.	
☐	☑	14. Is extra sample volume provided for MS, MSD or matrix duplicates.	
☐	☑	15. Multiphase samples present, comment is yes.	
		PHOTOGRAPH MULTIPHASE SAMPLES	
☑	☐	16. Clear picture taken, labeled, and stapled to project folder.	

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

Initials:

Sample Checklist

Quanterra Environmental Services

Project #: S3047 Date/Time Received: 12/19/96 1115

Company Name & Sampling Site: USGS Carmon

*Cooler #(s): (12/18@1100)

Temperatures: 3.4 2.0 2.6 1.8

*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. Sediment present in "D," dissolved, bottles.	
☑	☐	13. Are analyses with short holding times requested.	
☑	☐	14. Is extra sample volume provided for MS, MSD or matrix duplicates.	
☐	☑	15. Multiphase samples present, comment is yes.	
		PHOTOGRAPH MULTIPHASE SAMPLES	
☑	☐	16. Clear picture taken, labeled, and stapled to project folder.	

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

Initials: _____

Revision 1 - April, 19, 1995

\\Qarvco01\public\qa\forms\sampchck.doc

DODEC LABORATORY DATA REVIEW WORKSHEET

1.0 GENERAL INFORMATION

Data reviewer: BCB Beck
Date of review: 1/30/97
Sample project number: 53650
Project name: NM - CANNON AFB
Sample collection date: 12/16 - 12/17 1996
Sample matrix and number: 7 Areas

Type and number of samples in project:

Type	Number
Environmental	3
Trip blank	
Equipment blank	1
Ambient blank	
MS/MSD	2
Other	1

2.0 DATA REPORT

Date of Analytical Results Report: 1/24/97
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 53647

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)
_____	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? NA
Yes_____ No _____

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

_____

Did actual reporting limits meet project detection limits? NA
Organic analyses : Yes_____ No_____

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

REPORTED ON A SAMPLE-SPECIFIC BASIS & CORRECTED USING ISOTOPE DILUTION TECHNIQUE

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:

DCS CA JAN 97-A DID NOT MEET QC LIMITS FOR CAE COMPOUND (BCM %R AND RPD) WERE HIGH. ALL OTHER DCS COMPOUNDS WERE ACCEPTABLE

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 BELOW 40% FOR SOME SAMPLES. SIGNAL-TO-NOISE RATIOS WERE > 10:1 FOR THESE SAMPLES (REPORTED IN RAW DATA)

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
Subcontracted to Quanterra Lab

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
053050-0001-SA	AQUEOUS	DXNFUR-A	09 JAN 97-A	-
053050-0001-MB	AQUEOUS	DXNFUR-A	09 JAN 97-A	-
053050-0002-EB	AQUEOUS	DXNFUR-A	09 JAN 97-A	-
053050-0003-SA	AQUEOUS	DXNFUR-A	09 JAN 97-A	-
053050-0004-SA	AQUEOUS	DXNFUR-A	09 JAN 97-A	-
053050-0004-MS	AQUEOUS	DXNFUR-A	09 JAN 97-A	-
053050-0004-SD	AQUEOUS	DXNFUR-A	09 JAN 97-A	-

Quanterra
Environmental Services

DUPLICATE CONTROL SAMPLE REPORT
Subcontracted to Quanterra Lab

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	AVG	Accuracy Average(%) DCS	Accuracy Average(%) Limits	Precision (RPD) DCS	Precision (RPD) Limit
Category: DXNFUR2-A								
Matrix: AQUEOUS								
QC Lot: 09 JAN 97-A								
Concentration Units: ng/L								
2,3,7,8-TCDF	25	26.2	27.9	27.0	108	62-129	6.5	18
1,2,3,7,8-PeCDF	62.5	69.0	74.7	71.8	115	60-140	8.0	50
1,2,3,6,7,8-HxCDF	62.5	65.6	70.4	68.0	109	60-140	7.0	50
1,2,3,4,6,7,8-HpCDF	62.5	63.2	67.8	65.5	105	50-150	7.1	50
OCDF	125	137	148	143	114	50-150	7.4	28
2,3,7,8-TCDD	25	26.4	26.7	26.6	106	57-128	1.1	20
1,2,3,7,8-PeCDD	62.5	147	87.6	117	188#	80-125	51*	25
1,2,3,6,7,8-HxCDD	62.5	68.6	68.8	68.7	110	60-140	0.25	50
1,2,3,4,6,7,8-HpCDD	62.5	65.3	69.1	67.2	107	60-131	5.7	23
OCDD	125	124	134	129	103	50-147	8.0	20
13C-2,3,7,8-TCDF	25	20.0	20.2	20.1	80	40-120		
13C-2,3,7,8-TCDD	25	9.31	17.1	13.2	53	40-120		
13C-1,2,3,6,7,8-HxCDD	25	20.1	19.9	20.0	80	40-120		
13C-1,2,3,4,6,7,8-HpCDF	50	41.5	40.2	40.8	82	40-120		
13C-OCDD	50	38.7	37.2	37.9	76	40-120		

= Recovery outside QC Limits
* = RPD outside QC 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: METHOD BLANK
Lab ID: 053050-0001-MB
Matrix: AQUEOUS
Authorized: 17 DEC 96

Sampled: NA
Prepared: 09 JAN 97

Received: NA
Analyzed: 13 JAN 97

Sample Amount 1.0 L
Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/L	0.65	
PeCDFs (total)	ND	ng/L	0.43	
HxCDFs (total)	ND	ng/L	0.41	
Dioxins				
TCDDs (total)	ND	ng/L	0.48	
2,3,7,8-TCDD	ND	ng/L	0.48	
PeCDDs (total)	ND	ng/L	0.86	
HxCDDs (total)	ND	ng/L	0.65	

	% Recovery
13C-2,3,7,8-TCDF	81
13C-2,3,7,8-TCDD	63
13C-1,2,3,6,7,8-HxCDD	77
13C-1,2,3,4,6,7,8-HpCDF	82

ND = Not detected
NA = Not applicable

Reported By: MBAQUERFO

Approved By: RHRABAK

Quanterra
Environmental Services

APPENDIX IX DIOXINS/FURANS
LOW RESOLUTION
QUALITY CONTROL SUMMARY

Client Name: U.S. Geological Survey
Lab ID: 053050-0004-MS
Matrix: AQUEOUS
Authorized: 17 DEC 96

Sampled: 17 DEC 96 Received: 19 DEC 96
Prepared: 09 JAN 97 Analyzed: 13 JAN 97

Sample Amount: 0.947 L
Column Type: DB-5

Parameters	ng/L Found in Sample	ng/L Spiked	ng/L Found in MS Sample	% Recovery
Furans				
2,3,7,8-TCDF	ND	26.4	28.6	108
1,2,3,7,8-PeCDF	ND	66.0	75.8	115
1,2,3,6,7,8-HxCDF	ND	66.0	70.2	106
Dioxins				
2,3,7,8-TCDD	ND	26.4	27.3	103
1,2,3,7,8-PeCDD	ND	66.0	75.3	114
1,2,3,6,7,8-HxCDD	ND	66.0	70.0	106

	% Recovery
13C-2,3,7,8-TCDF	78
13C-2,3,7,8-TCDD	77
13C-1,2,3,6,7,8-HxCDD	74
13C-1,2,3,4,6,7,8-HpCDF	76

NC=Not Calculated
ND=Not Detected
NA=Not Applicable

Reported by: Scott Barmby Approved by: Robert Hrabak

The cover letter is an integral part of this report.
Version 070187

Quanterra
Environmental Services

APPENDIX IX DIOXINS/FURANS
LOW RESOLUTION
QUALITY CONTROL SUMMARY

Client Name: U.S. Geological Survey
Client ID: CAFB-I-I296-SD
Lab ID: 053050-0004-SD
Matrix: AQUEOUS Sampled: 17 DEC 96 Received: 19 DEC 96
Authorized: 17 DEC 96 Prepared: 09 JAN 97 Analyzed: 13 JAN 97

Sample Amount: 1.05 L
Column Type: DB-5

Parameters	ng/L Found in Sample	ng/L Spiked	ng/L Found in MSD Sample	% Recovery
Furans				
2,3,7,8-TCDF	ND	23.8	26.2	110
1,2,3,7,8-PeCDF	ND	59.5	69.5	117
1,2,3,6,7,8-HxCDF	ND	59.5	60.2	101
Dioxins				
2,3,7,8-TCDD	ND	23.8	25.1	105
1,2,3,7,8-PeCDD	ND	59.5	75.9	128
1,2,3,6,7,8-HxCDD	ND	59.5	68.5	115

	% Recovery
13C-2,3,7,8-TCDF	68
13C-2,3,7,8-TCDD	61
13C-1,2,3,6,7,8-HxCDD	69
13C-1,2,3,4,6,7,8-HpCDF	69

NC=Not Calculated
ND=Not Detected
NA=Not Applicable

Reported by: Scott Barmby Approved by: Robert Hrabak

The cover letter is an integral part of this report.
Version 070187

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. E. Roybal; Seal Number: 002
Team Leader: F. Eileen Roybal	Delivered to Shipper by: F. E. Roybal; Airbill Number: 276764325 5
	Sampling Status: ☐ Done ☒ Continuing

Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
16 DEC96	14 20	CAFB- L -1296-1	Ground-water	18	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 -d

Additional Comments: VOC's are in cooler with airbill # 276764324-

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. E. Roybal		16DEC96	1600	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer	Condition of Contents: good
	Anthony J Ciacco ANTHONY J. CIACCO	12/17/96	1100		Contents Temperature: 5.6°
					Laboratory Project Number: 53047

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

20

Project Name & Number	PACKING AND SHIPPING DETAILS	
Cannon Air Force Base, Ground Water Sampling 463536004	Packed and Sealed for Shipping by: F. E. Roybal	Seal Number: 001
Sampling Location: Landfill-5, Cannon Air Force Base, NM	Delivered to Shipper by: F. E. Roybal	Airbill Number: 2767643244
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
16DEC96	1215	CAFB-L-1296-EB	~~Ground water~~ Ultra Pure Water	18	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~~ Equipment blank -02
16DEC96	1100	CAFB-L-1296-TB	Ultra Pure Water	2	SW8260	Trip Blank -03

Additional Comments: VOC's from CAFB-L-1296-1 is in this cooler

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. E. Roybal		16DEC96	1600	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer	Condition of Contents: good
	Anthony J Ciacco Anthony J. Ciacco	12/17/96	11:00		Contents Temperature: 5.2°
					Laboratory Project Number: 53047

U.S. GEOLOGICAL SURVEY, WATER R[illegible]URCES DIVISION, NEW MEXICO DISTRICT
ANALYTICAL REQU[illegible]T/CHAIN OF CUSTODY

21

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. E. Roybal; Seal Number: 081566
Team Leader: ~~Jerry Larson~~ F. Eileen Roybal	Delivered to Shipper by: F. E. Roybal; Airbill Number: 2767643266
	Sampling Status: ☒ Done ☐ Continuing

Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
17-DEC96	1110	CAFB-M-1296-1	Ground-water	18	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: VOCs from this sample are in cooler with airbill # 2767643292

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. E. Roybal		17DEC96	1230	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer	Condition of Contents: good
	[illegible]	12/18/96	1115		Contents Temperature: 3.4
					Laboratory Project Number: 53147

U.S. GEOLOGICAL SURVEY, WATER RE[illegible]RCES DIVISION, NEW MEXICO DISTRICT
ANALYTICAL REQU[illegible]/CHAIN OF CUSTODY

22

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. Eileen Roybal; Seal Number: 153905
Team Leader: F. Eileen Roybal	Delivered to Shipper by: F. Eileen Roybal; Airbill Number: 2767643292
	Sampling Status: ☒ Done ☐ Continuing

Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
17DEC96	0850	CAFB-I-1296-1	Ground-water	18	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
17DEC96	0740	CAFB-I-1296-TB	Ultra Pure Water	2	SW8260	Trip Blank -06

Additional Comments: All VOC's from CAFB-I-1296-MS and CAFB-I-1296-SD are in this cooler
CAFB-M-1296-1

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		17DEC96	1230	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer	Condition of Contents: Ice
	[illegible]	19Dec96 ~~17DEC96~~	1115		Contents Temperature: 2.0
					Laboratory Project Number: 53047

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

23

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. E. Roybal; Seal Number: 081567
Team Leader: F. Eileen Roybal	Delivered to Shipper by: F. E. Roybal; Airbill Number: 2767643281
	Sampling Status: [X] Done [ ] Continuing

Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
17DEC96	0850	CAFB-I-1296-HS	Ground-water	18	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~~ Matrix Spike -05ms

Additional Comments: VOC's from this sample is in cooler with Airbill 2767643292

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. E. Roybal		17DEC96	1230	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer	Condition of Contents: Good
	[illegible]	19 Dec 96	1115		Contents Temperature: 2.6
					Laboratory Project Number: 53147

U.S. GEOLOGICAL SURVEY, WATER RE URCES DIVISION, NEW MEXICO DISTRICT
ANALYTICAL REQU ./CHAIN OF CUSTODY

24

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. E. Roybal; Seal Number: 081565
Team Leader: ~~Jerry Larson~~ F. Eileen Roybal	Delivered to Shipper by: F. E. Roybal; Airbill Number: 2767643270
	Sampling Status: [X] Done [ ] Continuing

Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
17DEC96	CRSC	CAFB- I -1296-SD	Ground-water	18	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~~ Matrix spike Duplicate-OSSD

Additional Comments: VOC's from this sample are in cooler with airbill 2767 643292

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. E. Roybal		17DEC96	1200	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer	Condition of Contents: good
	[signature]	12/19/96	1115		Contents Temperature: 1.8
					Laboratory Project Number: 5 7047

11-90

Chain of Custody Record

Quanterra Environmental Services

QUA-4124-1

Client: USGS	Project Manager: Mark Stella	Date:	Chain Of Custody Number: 67775
Address: Canon	Telephone Number (Area Code)/Fax Number: 303-421-6611	Lab Number:	Page ____ of ____
City: / State: / Zip Code:	Site Contact: / Lab Contact:		
Project Name:	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.:			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Aqueous	Sed.	Soil		Containers & Preservatives: Unpres.	H_2SO_4	HNO_3	HCl	NaOH	ZnAc/NaOH	Analysis (Attach list if more space is needed): Diaxins	Special Instructions/ Conditions of Receipt
53050-01	12/16		✓				✓						✓	
-02	↓		↓				↓						↓	

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☑ Other ≥ 8d

QC Requirements (Specify):

		Date	Time			Date	Time
1. Relinquished By	[signature]	12/17/96	1700	1. Received By	Kari A. Filiz	121896	1130
2. Relinquished By				2. Received By			
3. Relinquished By				3. Received By			

Comments:

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

[redacted]

Chain of Custody Record

Quanterra Environmental Services

26

QUA-4124-1

Client: VJOS	Project Manager: Mark Stella	Date: 12/19	Chain Of Custody Number: 65528
Address: Canon	Telephone Number (Area Code)/Fax Number: 303-421-6611	Lab Number:	Page 1 of 1
City / State / Zip Code	Site Contact	Lab Contact	
Project Name	Carrier/Waybill Number		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Aqueous	Sed.	Soil		Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis (Attach list if more space is needed): Dioxins	Special Instructions/ Conditions of Receipt
53050-03	12/17		↓				↓						↓	
-04														
-04ms														
-04sd														

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☑ Other _____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: [signature]	12/19/96	1630	1. Received By: Kara Filegi	122096	1200
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments: * one bottle received broken.

DISTRIBUTION: WHITE - Stays with the 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 SW8260	Three 40 ml glass vials	200 uL 50 % Hydrochloric Acid, Chilled
Appendix-IX, Semivolatile Organic Compounds SW8270	Two 32 oz. glass (amber)	None, Chilled
Appendix-IX, Pesticides and PCB's SW8080A	Two 32 oz. glass	None, Chilled
Appendix-IX, Dioxins and Furans SW8280	Two 32 oz. glass (amber)	None, Chilled
Polynuclear Aromatic Hydrocarbons SW8310	Two 32 oz. glass (amber)	None, Chilled
Appendix-IX, Herbicides SW8150	32 oz. glass	None, Chilled
Appendix-IX, 23 Metals, total by SW6010, also SW7041,SW7060, SW7131, SW7191, SW7421, 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

Readings with GPS
34 22 01.11
103 18 09.58 4312 ft.

16 DEC 96 WELL L

1030 - M. ROYBAL, RK DEWEES, arrive at environment office. Delivered 7 hats. Received MIPR from Sanford Hutzel. R. Wilcox not here yet. Placing rebuilt Bennett pump with filter at bottom.

1040 - Arrive at well L. HNU = 0.0 unit
M. Roybal calibrate meters, RK Dewees measure WL and get pump ready
PH 7 = 7.04 PH 10 = 10.14 Temp = 13.1 °c Slope = 102.1
SPC calibrated with 783 µs/cm.

1100 - R. Wilcox arrive on site @ 1100 TRIP BLANK - CAFB-L-1296-TB

1215 - collect equipment blank CAFB-L-1296-EB

1258 - WL = 282.72 Below Top of pvc disc

1313 - Start purging

TIME	VOL (gal)	PH	TEMP (oC)	COND (µs/cm)	
1316	2	6.99	17.2	844	
1319	4	7.02	17.3	844	
1321	5	7.45	17.4	842	well drying up let it recover
1341	start purging again		RK placing pump in well M.		
1350	6	6.87	17.0	842	
1352	7	7.42	17.2	822	well dry

1420 collect env. sample CAFB-L-1296-1

1530 Picked up coolers with sample ready for Fed EX.
M. Roybal leave site for Clovis Inn to deliver coolers for Fed Ex by 4:00 pm.
RK Dewees and R. Wilcox stay and install pumps in well I and M.

M. R. Roybal

17 DEC 96 WELL-I

0730 - M. Royal arrive on site. Weather condition: cold and windy (northerly wind). It snowed overnight but not enough to cover the streets. Calibrate meters PH & SPC.

PH 7 = 7.02 PH 10 = 10.11 Temp = 15.9 Slope = 102.4

SPC calibrated with 763 us/cm Standard

0740 - Trip Blank CAFB-I-1296-TB

0745 - R.K. Dewees arrive on site.

0750 - R. Wilcox arrive on site

HNU = 0.0 W.L. = 282.40 TD = 303

0812 - Begin purging

TIME	VOL (gal)	TEMP (°C)	PH	COND (us/cm)
0814	1	13.6	7.43	702
0817	5	14.3	7.49	704
0822	10	15.2	7.58	701
0827	15	15.4	7.61	700
0832	20	15.4	7.63	701
0837	25	15.4	7.63	699
0842	30	15.7	7.63	700
0847	35	15.9	7.63	700

0850 collect env. sample CAFB-I-1296-1
matrix spike CAFB-I-1296-MS and
matrix spike dup CAFB-I-1296-SD

0930 - Move to well-M

17DEC96 Well-M

0935 - HNU = 0.0

WL = 282.50 TD = 289.5

SPC calibrated with 763 us/cm standard

pH 7 = 7.04 pH 10 = 10.13 Temp = 13.9 slope = 101.1

0951 Begin purging

TIME	VOL (gal	TEMP (°C)	PH	COND (us/cm)	
0952	1L	13.1	6.85	933	
0954	1 gal	14.8	6.86	925	
0955	2	16.4	6.88	926	
0956	3	16.7	6.89	922	
0957	4	17.0	6.89	924	
0958	well dry, let it recover				
1020	start purging again				
1021	4.5	16.0	7.00	924	
1023	5.0	15.0	7.03	929	well dry let it recover-

1110 Collect env. sample CAFB-M-1296-1

Take coolers to env. office for Fed Ex pick up

1200 - Leave site - Done for this sampling round.

G. E. Rogers