Enseco

ENTERED

6 of 11

ANALYTICAL RESULTS

FOR

U.S. GEOLOGICAL SURVEY

ENSECO-RMAL NO. 022916

July 02, 1992

Reviewed by:

Julieann L. Kramer

Mark Dymerski

I. OVERVIEW

On May 21,1992, Enseco-Rocky Mountain Analytical Laboratory received two aqueous samples from U.S. Geological Survey.

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

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

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.

Method 8280 Dioxin analysis was performed by our sister laboratory Enseco California Analytical Laboratory under Enseco CAL project number 064250. Dioxin results are included as an appendix to the report provided by RMAL.

II. SAMPLE DESCRIPTION INFORMATION/ANALYTICAL TEST REQUESTS

Sample Description Information

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

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

Analytical Test Requests

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

SAMPLE DESCRIPTION INFORMATION
for
U.S. Geological Survey

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
022916-0001-SA	KAFB061014-2 - Sample	AQUEOUS	20 MAY 92	13:30	21 MAY 92
022916-0002-SA	KAFB061015-2 - Trip Blank	AQUEOUS	20 MAY 92	09:35	21 MAY 92

ANALYTICAL TEST REQUESTS
for
U.S. Geological Survey

Lab ID: 022916	Group Code	Analysis Description	Custom Test?
0001	A	Volatile Organics	N
		Appendix IX List	N
		Screen - Volatile Organics	N
		Semivolatile Organics	N
		Appendix IX List	
		Prep - Semivolatile Organics by GC/MS	N
		Chlorinated Pesticides and PCB's	N
		Appendix IX List	
		Prep - Organochlorine Pesticides/PCBs by GC	N
		Appendix IX Herbicides	N
		Prep - Herbicides by GC	N
		Appendix IX Metals (Total) done by ICP	N
		Prep - Total Metals, ICP	N
		Appendix IX Metals done by ICP	N
		Cyanide, Total	N
		Sulfide, Total	N
		Nitrate Plus Nitrite	N
		Volatiles Library Search (10 Compound TID)	N
		Semivolatiles Library Search (20 Compound TID)	N
		Arsenic, Furnace AA (Dissolved)	N
		Arsenic, Furnace AA (Total)	N
		Prep - Total Metals, Furnace AA	N
		Lead, Furnace AA (Dissolved)	N
		Lead, Furnace AA (Total)	N
		Selenium, Furnace AA (Dissolved)	N
		Selenium, Furnace AA (Total)	N
		Thallium, Furnace AA (Dissolved)	N
		Thallium, Furnace AA (Total)	N
		Mercury, Cold Vapor AA (Dissolved)	N
		Prep - Mercury, Cold Vapor AA, (Dissolved)	N
		Mercury, Cold Vapor AA (Total)	N
		Prep - Mercury, Cold Vapor AA (Total)	N
		Dioxins and Furans	N
		Appendix IX List	N
		Prep- Low Res. Method 8280 Extraction for Dioxins/Furans	N
		Chlorinated Pesticides and PCB's	N
		Appendix IX List	
		Appendix IX Herbicides	N
0002	B	Volatile Organics	N
		Appendix IX List	N
		Screen - Volatile Organics	N

ANALYTICAL TEST REQUESTS
for
U.S. Geological Survey

Lab ID: 022916	Group Code	Analysis Description	Custom Test?
		Volatiles Library Search (10 Compound TID)	N

III. ANALYTICAL RESULTS

The analytical results for this project are presented in the following data tables. Each data table includes sample identification information, and when available and appropriate, dates sampled, received, authorized, prepared and analyzed. The authorization data 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 Enseco 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.

Enseco-RMAL is no longer routinely blank-correcting 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. This policy is described in detail in the Enseco Incorporated Quality Assurance Program Plan for Environmental Chemical Monitoring, Revision 3.3, May, 1989.

In addition, surrogate recovery data is presented for all GC/MS analyses. The surrogate recovery is an indication of the affect of the sample matrix on the performance of the method. The results from the Standard Enseco QA/QC Program, which generates data which are independent of matrix effects, is given in Section IV.

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

Volatile Organics

a) The cis- and trans-isomers of 1,2-dichloroethene cannot be distinguished using EPA Method 624 or 8240. All dichloroethene present is reported as 1,2-dichloroethene (total).

b) Due to the chemical nature of ethanol, this component cannot be consistantly recovered using EPA Method 624 or 8240. This component is reported with a NR (Not Recoverable) in place of a reporting limit.

c) Methylene chloride and acetone are common laboratory contaminants in GC/MS analysis. We have programs in place to minimize contamination, occasionally these compounds will be found at low levels in samples.

Semivolatile Organics

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

b) 1,2-diphenylhydrazine is measured as azobenzene.

c) Diphenylamine cannot be distinguished from N-nitrosodiphenylamine.

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

e) Several Appendix IX and Refinery List compounds are not consistently recovered using Method 8270, and reporting limits cannot be established. These compounds include: dimethoate, famphur, hexachlorophene, 4-nitroquinoline-1-oxide, 4-phenylenedianine, and benzenethiol.

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

g) Bis-2-(ethyl)hexyl-phthalate is a common laboratory contaminant in GC/MS analysis. We have programs in place to minimize this contamination, occasionally these compounds will be found at low levels in samples.

Metals

All nominal reporting limits for metals have been established from instrument detection limit (IDL) evaluations and represent the level above which reliable data can be routinely obtained. Low level standards are analyzed seven times on three non-consecutive days on each instrument. The standard deviations of the three runs are summed to yield the IDL. Nominal reporting limits are generally 2-5 times the IDL (consistent with the American Chemical Society definition for the Limit of Quantification). The ability to achieve these quoted reporting limits is verified each quarter. Reporting limits above the nominal levels are often submitted due to matrix interferences or elevated analyte levels.

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

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

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

Reporting limits for metals analyzed by inductively coupled plasma - mass spectrometry (ICPMS) may be raised for dilution due to an analyte exceeding the linear range of the instrument or matrix interference. An internal standard is analyzed with each sample to measure the degree of matrix interference - a dilution is performed when appropriate. Isobaric and

molecular interferences are corrected at the instrument and do not require dilution.

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

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

Level 3: Confirmed Identification

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

Level 2: Confident Identification

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

Level 1: Tentative Identification

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

Class Identification

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

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

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

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

Enseco

Volatile Organics
Appendix IX List
Method 8240

Client Name: U.S. Geological Survey
Client ID: KAFB061014-2
Lab ID: 022916-0001-SA
Matrix: AQUEOUS Sampled: 20 MAY 92 Received: 21 MAY 92
Authorized: 21 MAY 92 Prepared: 26 MAY 92 Analyzed: 02 JUN 92

Parameter	Result	Units	Reporting Limit
Acetone	ND	ug/L	10
Acetonitrile	ND	ug/L	200
Acrolein	ND	ug/L	100
Acrylonitrile	ND	ug/L	100
Allyl chloride	ND	ug/L	10
Benzene	ND	ug/L	5.0
Bromodichloromethane	ND	ug/L	5.0
Bromoform	ND	ug/L	5.0
Bromomethane	ND	ug/L	10
2-Butanone (MEK)	15	ug/L	10
Carbon disulfide	ND	ug/L	5.0
Carbon tetrachloride	ND	ug/L	5.0
Chlorobenzene	ND	ug/L	5.0
Chloroethane	ND	ug/L	10
Chloroform	ND	ug/L	5.0
Chloromethane	ND	ug/L	10
Chloroprene	ND	ug/L	5.0
Dibromochloromethane	ND	ug/L	5.0
1,2-Dibromo-3-chloro-propane (DBCP)	ND	ug/L	10
1,2-Dibromoethane (EDB)	ND	ug/L	10
Dibromomethane	ND	ug/L	5.0
trans-1,4-Dichloro-2-butene	ND	ug/L	5.0
Dichlorodifluoromethane	ND	ug/L	20
1,1-Dichloroethane	ND	ug/L	5.0
1,2-Dichloroethane	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	5.0
1,2-Dichloroethene (total)	ND	ug/L	5.0
1,2-Dichloropropane	ND	ug/L	5.0
cis-1,3-Dichloropropene	ND	ug/L	5.0
trans-1,3-Dichloropropene	ND	ug/L	5.0
1,4-Dioxane	ND	ug/L	500
Ethylbenzene	ND	ug/L	5.0
Ethyl methacrylate	ND	ug/L	20
Iodomethane	ND	ug/L	5.0
Isobutanol	ND	ug/L	200
2-Hexanone	ND	ug/L	10
Methacrylonitrile	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0

(continued on following page)

ND = Not detected
NA = Not applicable

Reported By: Michael Blades Approved By: Mark Pokorny

Enseco

Volatile Organics
Appendix IX List
Method 8240

Client Name: U.S. Geological Survey
Client ID: KAFB061014-2
Lab ID: 022916-0001-SA
Matrix: AQUEOUS Sampled: 20 MAY 92 Received: 21 MAY 92
Authorized: 21 MAY 92 Prepared: 26 MAY 92 Analyzed: 02 JUN 92

Parameter	Result	Units	Reporting Limit
Methyl methacrylate	ND	ug/L	20
4-Methyl-2-pentanone (MIBK)	ND	ug/L	10
Propionitrile	ND	ug/L	5.0
Styrene	ND	ug/L	5.0
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0
Tetrachloroethene	ND	ug/L	5.0
Toluene	ND	ug/L	5.0
1,1,1-Trichloroethane	ND	ug/L	5.0
1,1,2-Trichloroethane	ND	ug/L	5.0
Trichloroethene	ND	ug/L	5.0
Trichlorofluoromethane	ND	ug/L	5.0
1,2,3-Trichloropropane	ND	ug/L	5.0
Vinyl acetate	ND	ug/L	10
Vinyl chloride	ND	ug/L	10
Xylenes (total)	ND	ug/L	5.0

Surrogate	Recovery	
Toluene-d8	100	%
4-Bromofluorobenzene	90	%
1,2-Dichloroethane-d4	102	%

ND = Not detected
NA = Not applicable

Reported By: Michael Blades Approved By: Mark Pokorny

TENTATIVELY IDENTIFIED COMPOUNDS

FOR

U.S. GEOLOGICAL SURVEY

SAMPLE NUMBER 022916-0001

Compound Name	Fraction	Confidence Level	Estimated Concentration ug/L
Hexane	VOA	2	12
1-Pentene, 2-methyl-	VOA	2	17
Trimethylsilyl Catechollactate tris- (trimethylsilyl) ether	VOA	2	8.6

NOTES:

Confidence Levels

Level 3 - Confirmed Identification
Level 2 - Confident Identification
Level 1 - Tentative Identification

Enseco

Volatile Organics
Appendix IX List
Method 8240

Client Name: U.S. Geological Survey
Client ID: KAFB061015-2
Lab ID: 022916-0002-SA
Matrix: AQUEOUS Sampled: 20 MAY 92 Received: 21 MAY 92
Authorized: 21 MAY 92 Prepared: 26 MAY 92 Analyzed: 02 JUN 92

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

(continued on following page)

ND = Not detected
NA = Not applicable

Reported By: Michael Blades Approved By: Mark Pokorny

Enseco

Volatile Organics
Appendix IX List
Method 8240

Client Name: U.S. Geological Survey
Client ID: KAFB061015-2
Lab ID: 022916-0002-SA
Matrix: AQUEOUS Sampled: 20 MAY 92 Received: 21 MAY 92
Authorized: 21 MAY 92 Prepared: 26 MAY 92 Analyzed: 02 JUN 92

Parameter	Result	Units	Reporting Limit
Methyl methacrylate	ND	ug/L	20
4-Methyl-2-pentanone (MIBK)	ND	ug/L	10
Propionitrile	ND	ug/L	5.0
Styrene	ND	ug/L	5.0
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0
Tetrachloroethene	ND	ug/L	5.0
Toluene	ND	ug/L	5.0
1,1,1-Trichloroethane	ND	ug/L	5.0
1,1,2-Trichloroethane	ND	ug/L	5.0
Trichloroethene	ND	ug/L	5.0
Trichlorofluoromethane	ND	ug/L	5.0
1,2,3-Trichloropropane	ND	ug/L	5.0
Vinyl acetate	ND	ug/L	10
Vinyl chloride	ND	ug/L	10
Xylenes (total)	ND	ug/L	5.0

Surrogate	Recovery	
Toluene-d8	105	%
4-Bromofluorobenzene	93	%
1,2-Dichloroethane-d4	96	%

ND = Not detected
NA = Not applicable

Reported By: Michael Blades Approved By: Mark Pokorny

TENTATIVELY IDENTIFIED COMPOUNDS

FOR

U.S. GEOLOGICAL SURVEY

SAMPLE NUMBER 022916-0002

Compound Name	Fraction	Confidence Level	Estimated Concentration ug/L
Nonanal	VOA	1	10

NOTES:

Confidence Levels

Level 3 - Confirmed Identification
Level 2 - Confident Identification
Level 1 - Tentative Identification

Enseco
A Corning Company

Semivolatile Organics
Appendix IX List
Method 8270

Client Name: U.S. Geological Survey
Client ID: KAFB061014-2
Lab ID: 022916-0001-SA
Matrix: AQUEOUS Sampled: 20 MAY 92 Received: 21 MAY 92
Authorized: 21 MAY 92 Prepared: 25 MAY 92 Analyzed: 26 JUN 92

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

(continued on following page)

ND = Not detected
NA = Not applicable

Reported By: Paul Smith Approved By: Mark Pokorny

Enseco

Semivolatile Organics
Appendix IX List
Method 8270

Client Name: U.S. Geological Survey
Client ID: KAFB061014-2
Lab ID: 022916-0001-SA
Matrix: AQUEOUS Sampled: 20 MAY 92 Received: 21 MAY 92
Authorized: 21 MAY 92 Prepared: 25 MAY 92 Analyzed: 26 JUN 92

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

(continued on following page)

ND = Not detected
NA = Not applicable

Reported By: Paul Smith Approved By: Mark Pokorny

Enseco

Semivolatile Organics
Appendix IX List
Method 8270

Client Name: U.S. Geological Survey
Client ID: KAFB061014-2
Lab ID: 022916-0001-SA
Matrix: AQUEOUS Sampled: 20 MAY 92 Received: 21 MAY 92
Authorized: 21 MAY 92 Prepared: 25 MAY 92 Analyzed: 26 JUN 92

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

(continued on following page)

ND = Not detected
NA = Not applicable

Reported By: Paul Smith Approved By: Mark Pokorny

Enseco

Semivolatile Organics
Appendix IX List
Method 8270

Client Name: U.S. Geological Survey
Client ID: KAFB061014-2
Lab ID: 022916-0001-SA
Matrix: AQUEOUS
Authorized: 21 MAY 92

Sampled: 20 MAY 92
Prepared: 25 MAY 92

Received: 21 MAY 92
Analyzed: 26 JUN 92

Parameter	Result	Units	Reporting Limit
2-Toluidine	ND	ug/L	10
1,2,4-Trichlorobenzene	ND	ug/L	10
2,4,5-Trichlorophenol	ND	ug/L	50
2,4,6-Trichlorophenol	ND	ug/L	10
O,O,O-Triethylphosphorothioate	ND	ug/L	10
1,3,5-Trinitrobenzene	ND	ug/L	10
Surrogate	**Recovery**		
Nitrobenzene-d5	65	%	
2-Fluorobiphenyl	59	%	
Terphenyl-d14	59	%	
Phenol-d5	63	%	
2-Fluorophenol	60	%	
2,4,6-Tribromophenol	78	%	

ND = Not detected
NA = Not applicable

Reported By: Paul Smith

Approved By: Mark Pokorny

TENTATIVELY IDENTIFIED COMPOUNDS

FOR

U.S. GEOLOGICAL SURVEY

SAMPLE NUMBER 022916-0001

Compound Name	Fraction	Confidence Level	Estimated Concentration ug/L
None Detected	BNA		

NOTES:

Confidence Levels

Level 3 - Confirmed Identification
Level 2 - Confident Identification
Level 1 - Tentative Identification

Please refer to the discussion for further details.

Enseco

Chlorinated Pesticides and PCB's
Appendix IX List
Method 8080

Client Name: U.S. Geological Survey
Client ID: KAFB061014-2
Lab ID: 022916-0001-SA
Matrix: AQUEOUS Sampled: 20 MAY 92 Received: 21 MAY 92
Authorized: 21 MAY 92 Prepared: 24 MAY 92 Analyzed: 04 JUN 92

Parameter	Result	Units	Reporting Limit	
Aldrin	ND	ug/L	0.050	T
Aroclor 1016	ND	ug/L	1.0	
Aroclor 1221	ND	ug/L	1.0	
Aroclor 1232	ND	ug/L	1.0	
Aroclor 1242	ND	ug/L	1.0	
Aroclor 1248	ND	ug/L	1.0	
Aroclor 1254	ND	ug/L	1.0	
Aroclor 1260	ND	ug/L	1.0	
alpha-BHC	ND	ug/L	0.050	
beta-BHC	ND	ug/L	0.050	
delta-BHC	ND	ug/L	0.050	
gamma-BHC (Lindane)	ND	ug/L	0.050	
alpha-Chlordane	ND	ug/L	0.050	
gamma-Chlordane	ND	ug/L	0.050	
Chlorobenzilate	ND	ug/L	0.10	
4,4'-DDD	ND	ug/L	0.10	
4,4'-DDE	ND	ug/L	0.10	
4,4'-DDT	ND	ug/L	0.10	
Diallate	ND	ug/L	1.0	
Dieldrin	ND	ug/L	0.10	
Endosulfan I	ND	ug/L	0.050	
Endosulfan II	ND	ug/L	0.10	
Endosulfan sulfate	ND	ug/L	0.10	
Endrin	ND	ug/L	0.10	
Endrin aldehyde	ND	ug/L	0.10	
Heptachlor	ND	ug/L	0.050	
Heptachlor epoxide	ND	ug/L	0.050	
Isodrin	ND	ug/L	0.10	
Kepone	ND	ug/L	1.0	
Methoxychlor	ND	ug/L	0.50	
Toxaphene	ND	ug/L	5.0	

Surrogate	Recovery	
Dibutyl chlorendate	86	%

Note T : Preferred values unless footnoted on secondary column test.

ND = Not detected
NA = Not applicable

Reported By: Lue Lor Approved By: Donna Reinwald

Enseco

Appendix IX Herbicides

Method 8150

Client Name: U.S. Geological Survey
Client ID: KAFB061014-2
Lab ID: 022916-0001-SA
Matrix: AQUEOUS
Authorized: 21 MAY 92

Sampled: 20 MAY 92
Prepared: 24 MAY 92

Received: 21 MAY 92
Analyzed: 03 JUN 92

Parameter	Result	Units	Reporting Limit
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
Surrogate	**Recovery**		
DCAA	79	%	

ND = Not detected
NA = Not applicable

Reported By: Susan McCool

Approved By: Donna Reinwald

Enseco
A Corning Company

Metals

Total Metals

Client Name: U.S. Geological Survey
Client ID: KAFB061014-2
Lab ID: 022916-0001-SA
Matrix: AQUEOUS Sampled: 20 MAY 92 Received: 21 MAY 92
Authorized: 21 MAY 92 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Antimony	ND	mg/L	0.060	6010	04 JUN 92	09 JUN 92
Arsenic	ND	mg/L	0.010	7060	04 JUN 92	09 JUN 92
Barium	0.12	mg/L	0.010	6010	04 JUN 92	09 JUN 92
Beryllium	ND	mg/L	0.0020	6010	04 JUN 92	09 JUN 92
Cadmium	ND	mg/L	0.0050	6010	04 JUN 92	09 JUN 92
Chromium	ND	mg/L	0.010	6010	04 JUN 92	09 JUN 92
Cobalt	ND	mg/L	0.010	6010	04 JUN 92	09 JUN 92
Copper	ND	mg/L	0.020	6010	04 JUN 92	09 JUN 92
Lead	ND	mg/L	0.0050	7421	04 JUN 92	09 JUN 92
Mercury	ND	mg/L	0.00020	7470	02 JUN 92	02 JUN 92
Nickel	ND	mg/L	0.040	6010	04 JUN 92	09 JUN 92
Selenium	ND	mg/L	0.020	7740	04 JUN 92	09 JUN 92
Silver	ND	mg/L	0.010	6010	04 JUN 92	09 JUN 92
Thallium	ND	mg/L	0.010	7841	04 JUN 92	09 JUN 92
Tin	ND	mg/L	0.10	6010	04 JUN 92	09 JUN 92
Vanadium	ND	mg/L	0.010	6010	04 JUN 92	09 JUN 92
Zinc	0.026	mg/L	0.020	6010	04 JUN 92	09 JUN 92

Sample

ND = Not detected
NA = Not applicable

Reported By: Scott Moroschan Approved By: Dave Roberts

Enseco

Metals

Dissolved Metals

Client Name: U.S. Geological Survey
Client ID: KAFB061014-2
Lab ID: 022916-0001-SA
Matrix: AQUEOUS Sampled: 20 MAY 92 Received: 21 MAY 92
Authorized: 21 MAY 92 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Antimony	ND	mg/L	0.060	6010	NA	18 JUN 92
Arsenic	ND	mg/L	0.0050	7060	NA	09 JUN 92
Barium	0.12	mg/L	0.010	6010	NA	18 JUN 92
Beryllium	ND	mg/L	0.0020	6010	NA	18 JUN 92
Cadmium	ND	mg/L	0.0050	6010	NA	18 JUN 92
Chromium	ND	mg/L	0.010	6010	NA	18 JUN 92
Cobalt	ND	mg/L	0.010	6010	NA	18 JUN 92
Copper	ND	mg/L	0.020	6010	NA	18 JUN 92
Lead	ND	mg/L	0.0050	7421	NA	09 JUN 92
Mercury	ND	mg/L	0.00020	7470	02 JUN 92	02 JUN 92
Nickel	ND	mg/L	0.040	6010	NA	18 JUN 92
Selenium	ND	mg/L	0.0050	7740	NA	09 JUN 92
Silver	ND	mg/L	0.010	6010	NA	18 JUN 92
Thallium	ND	mg/L	0.010	7841	NA	09 JUN 92
Tin	ND	mg/L	0.10	6010	NA	18 JUN 92
Vanadium	ND	mg/L	0.010	6010	NA	18 JUN 92
Zinc	0.025	mg/L	0.020	6010	NA	18 JUN 92

ND = Not detected
NA = Not applicable

Reported By: Scott Moroschan Approved By: Dave Roberts

Enseco
A Corning Company

General Inorganics

Client Name: U.S. Geological Survey
Client ID: KAFB061014-2
Lab ID: 022916-0001-SA
Matrix: AQUEOUS
Authorized: 21 MAY 92

Sampled: 20 MAY 92
Prepared: See Below

Received: 21 MAY 92
Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Cyanide	ND	mg/L	0.010	9012	NA	25 MAY 92
Nitrate plus Nitrite	21.6	mg/L	1.0	353.2	NA	14 JUN 92
Sulfide, Total	ND	mg/L	0.050	376.2	NA	21 MAY 92

ND = Not detected
NA = Not applicable

Reported By: Matt Coyle

Approved By: Kathryn Okonzak

IV. QUALITY CONTROL REPORT

The Enseco 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.

In addition, the Enseco laboratories maintain a comprehensive set of certifications from both state and federal governmental agencies which require frequent analyses of blind audit samples. Enseco - Rocky Mountain Analytical Laboratory is certified by the EPA under the EPA/CLP program for both Organic and Inorganic analyses, under the USATHAMA (U.S. Army) program, by the Army Corps of Engineers, and the states of Colorado, New Jersey, New York, Utah, and Florida, among others.

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 Enseco 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).

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

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

QC LOT ASSIGNMENT REPORT
Volatile Organics by GC/MS

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
022916-0001-SA	AQUEOUS	624-A	27 MAY 92-F	02 JUN 92-F
022916-0002-SA	AQUEOUS	624-A	27 MAY 92-F	02 JUN 92-F

DUPLICATE CONTROL SAMPLE REPORT
Volatile Organics by GC/MS

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: 624-A Matrix: AQUEOUS QC Lot: 27 MAY 92-F Concentration Units: ug/L								
1,1-Dichloroethene	50	24.6	28.1	26.4	53	56-138	13	20
Trichloroethene	50	48.2	45.2	46.7	93	76-109	6.4	13
Benzene	50	55.3	53.1	54.2	108	78-119	4.1	12
Toluene	50	45.4	46.5	46.0	92	82-114	2.4	13
Chlorobenzene	50	53.2	54.4	53.8	108	84-117	2.2	10

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

Enseco

SINGLE CONTROL SAMPLE REPORT
Volatile Organics by GC/MS

Analyte	Concentration Spiked	Concentration Measured	Accuracy(%) SCS	Accuracy(%) Limits
Category: 624-A				
Matrix: AQUEOUS				
QC Lot: 27 MAY 92-F QC Run: 02 JUN 92-F				
Concentration Units: ug/L				
1,2-Dichloroethane-d4	50.0	49.5	99	82-112
4-Bromofluorobenzene	50.0	45.6	91	83-113
Toluene-d8	50.0	51.9	104	90-112

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

Enseco
A Corning Company

METHOD BLANK REPORT
Volatile Organics by GC/MS

Test: 8240CP-AP9-AP
Matrix: AQUEOUS
QC Lot: 27 MAY 92-F QC Run: 02 JUN 92-F

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

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

Analyte	Result	Units	Reporting Limit
Test: 8240CP-AP9-AP Matrix: AQUEOUS QC Lot: 27 MAY 92-F QC Run: 02 JUN 92-F			
Methyl methacrylate	ND	ug/L	20
4-Methyl-2-pentanone (MIBK)	ND	ug/L	10
Propionitrile	ND	ug/L	5.0
Styrene	ND	ug/L	5.0
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0
Tetrachloroethene	ND	ug/L	5.0
Toluene	ND	ug/L	5.0
1,1,1-Trichloroethane	ND	ug/L	5.0
1,1,2-Trichloroethane	ND	ug/L	5.0
Trichloroethene	ND	ug/L	5.0
Trichlorofluoromethane	ND	ug/L	5.0
1,2,3-Trichloropropane	ND	ug/L	5.0
Vinyl acetate	ND	ug/L	10
Vinyl chloride	ND	ug/L	10
Xylenes (total)	ND	ug/L	5.0
Test: 8240CP-AP9-AP Matrix: AQUEOUS QC Lot: 27 MAY 92-F QC Run: 02 JUN 92-F			
Acetone	ND	ug/L	10
Acetonitrile	ND	ug/L	200
Acrolein	ND	ug/L	100
Acrylonitrile	ND	ug/L	100
Allyl chloride	ND	ug/L	10
Benzene	ND	ug/L	5.0
Bromodichloromethane	ND	ug/L	5.0
Bromoform	ND	ug/L	5.0
Bromomethane	ND	ug/L	10
2-Butanone (MEK)	ND	ug/L	10
Carbon disulfide	ND	ug/L	5.0
Carbon tetrachloride	ND	ug/L	5.0
Chlorobenzene	ND	ug/L	5.0
Chloroethane	ND	ug/L	10
Chloroform	ND	ug/L	5.0
Chloromethane	ND	ug/L	10
Chloroprene	ND	ug/L	5.0
Dibromochloromethane	ND	ug/L	5.0

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

Test: 8240CP-AP9-AP
Matrix: AQUEOUS
QC Lot: 27 MAY 92-F QC Run: 02 JUN 92-F

Analyte	Result	Units	Reporting Limit
1,2-Dibromo-3-chloro-propane (DBCP)	ND	ug/L	10
1,2-Dibromoethane (EDB)	ND	ug/L	10
Dibromomethane	ND	ug/L	5.0
trans-1,4-Dichloro-2-butene	ND	ug/L	5.0
Dichlorodifluoromethane	ND	ug/L	20
1,1-Dichloroethane	ND	ug/L	5.0
1,2-Dichloroethane	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	5.0
1,2-Dichloroethene (total)	ND	ug/L	5.0
1,2-Dichloropropane	ND	ug/L	5.0
cis-1,3-Dichloropropene	ND	ug/L	5.0
trans-1,3-Dichloropropene	ND	ug/L	5.0
1,4-Dioxane	ND	ug/L	500
Ethylbenzene	ND	ug/L	5.0
Ethyl methacrylate	ND	ug/L	20
Iodomethane	ND	ug/L	5.0
Isobutanol	ND	ug/L	200
2-Hexanone	ND	ug/L	10
Methacrylonitrile	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
Methyl methacrylate	ND	ug/L	20
4-Methyl-2-pentanone (MIBK)	ND	ug/L	10
Propionitrile	ND	ug/L	5.0
Styrene	ND	ug/L	5.0
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0
Tetrachloroethene	ND	ug/L	5.0
Toluene	ND	ug/L	5.0
1,1,1-Trichloroethane	ND	ug/L	5.0
1,1,2-Trichloroethane	ND	ug/L	5.0
Trichloroethene	ND	ug/L	5.0
Trichlorofluoromethane	ND	ug/L	5.0
1,2,3-Trichloropropane	ND	ug/L	5.0
Vinyl acetate	ND	ug/L	10
Vinyl chloride	ND	ug/L	10
Xylenes (total)	ND	ug/L	5.0

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)
022916-0001-SA	AQUEOUS	625-A	21 MAY 92-6A	25 MAY 92-6A

Enseco
A Corning Company

DUPLICATE CONTROL SAMPLE REPORT
Semivolatile Organics by GC/MS

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Category: 625-A Matrix: AQUEOUS QC Lot: 21 MAY 92-6A Concentration Units: ug/L								
Phenol	100	71.8	74.6	73.2	73	42-109	3.8	33
2-Chlorophenol	100	75.0	77.8	76.4	76	50-104	3.7	38
1,4-Dichlorobenzene	50	31.3	31.2	31.2	63	31-101	0.3	33
N-Nitroso-di-n-propylamine	50	40.0	40.8	40.4	81	49-109	2.0	30
1,2,4-Trichlorobenzene	50	31.3	29.2	30.2	61	29-100	6.9	33
4-Chloro-3-methylphenol	100	86.0	82.6	84.3	84	48-112	4.0	37
Acenaphthene	50	35.5	32.7	34.1	68	48- 99	8.2	27
4-Nitrophenol	100	89.7	81.5	85.6	86	29-124	9.6	53
2,4-Dinitrotoluene	50	39.1	38.3	38.7	77	52-104	2.1	26
Pentachlorophenol	100	97.9	95.9	96.9	97	25-132	2.1	49
Pyrene	50	34.6	40.0	37.3	75	51-116	14	26

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

SINGLE CONTROL SAMPLE REPORT
Semivolatile Organics by GC/MS

Analyte	Concentration Spiked	Concentration Measured	Accuracy(%) SCS	Accuracy(%) Limits
Category: 625-A				
Matrix: AQUEOUS				
QC Lot: 21 MAY 92-6A QC Run: 25 MAY 92-6A				
Concentration Units: ug/L				
Nitrobenzene-d5	100	83.3	83	44-103
2-Fluorobiphenyl	100	74.7	75	41- 99
Terphenyl-d14	100	102	102	41-126
2-Fluorophenol	200	144	72	37-100
Phenol-d5	200	147	74	25-112
2,4,6-Tribromophenol	200	168	84	40-115

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

Enseco

METHOD BLANK REPORT
Semivolatile Organics by GC/MS

Test: 8270CP-AP9-A
Matrix: AQUEOUS
QC Lot: 21 MAY 92-6A QC Run: 25 MAY 92-6A

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	10	
Aniline	ND	ug/L	10	
Anthracene	ND	ug/L	10	
Aramite	ND	ug/L	10	
Benzo(a)anthracene	ND	ug/L	10	
Benzo(b)fluoranthene	ND	ug/L	10	
Benzo(k)fluoranthene	ND	ug/L	10	
Benzo(g,h,i)perylene	ND	ug/L	10	
Benzo(a)pyrene	ND	ug/L	10	
Benzyl alcohol	ND	ug/L	10	
4-Bromophenyl phenyl ether	ND	ug/L	10	
Butyl benzyl phthalate	ND	ug/L	10	
2-sec-Butyl-4,6-dinitro-phenol	ND	ug/L	10	
4-Chloroaniline	ND	ug/L	10	
bis(2-Chloroethoxy)-methane	ND	ug/L	10	
bis(2-Chloroethyl) ether	ND	ug/L	10	
bis(2-Chloroisopropyl)-ether	ND	ug/L	10	
4-Chloro-3-methylphenol	ND	ug/L	10	
2-Chloronaphthalene	ND	ug/L	10	
2-Chlorophenol	ND	ug/L	10	
4-Chlorophenyl phenyl ether	ND	ug/L	10	
Chrysene	ND	ug/L	10	
Dibenz(a,h)anthracene	ND	ug/L	10	
Dibenzofuran	ND	ug/L	10	
Di-n-butyl phthalate	2.9	ug/L	10	J
1,2-Dichlorobenzene	ND	ug/L	10	
1,3-Dichlorobenzene	ND	ug/L	10	
1,4-Dichlorobenzene	ND	ug/L	10	
3,3'-Dichlorobenzidine	ND	ug/L	20	
2,4-Dichlorophenol	ND	ug/L	10	
2,6-Dichlorophenol	ND	ug/L	10	
Diethyl phthalate	ND	ug/L	10	

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

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

Test: 8270CP-AP9-A
Matrix: AQUEOUS
QC Lot: 21 MAY 92-6A QC Run: 25 MAY 92-6A

Analyte	Result	Units	Reporting Limit	
Dimethoate	ND	ug/L	--	
p-Dimethylaminoazobenzene	ND	ug/L	10	
7,12-Dimethylbenz(a)-anthracene	ND	ug/L	10	
3,3'-Dimethylbenzidine	ND	ug/L	10	
a,a-Dimethylphenethyl-amine	ND	ug/L	10	
2,4-Dimethylphenol	ND	ug/L	10	
Dimethyl phthalate	ND	ug/L	10	
1,3-Dinitrobenzene	ND	ug/L	10	
4,6-Dinitro-2-methylphenol	ND	ug/L	50	
2,4-Dinitrophenol	ND	ug/L	50	
2,4-Dinitrotoluene	ND	ug/L	10	
2,6-Dinitrotoluene	ND	ug/L	10	
Di-n-octyl phthalate	ND	ug/L	10	
Diphenylamine	ND	ug/L	10	
Disulfoton	ND	ug/L	50	
bis(2-Ethylhexyl) phthalate	1.8	ug/L	10	J
Ethyl methanesulfonate	ND	ug/L	10	
Famphur	ND	ug/L	--	
Fluoranthene	ND	ug/L	10	
Fluorene	ND	ug/L	10	
Hexachlorobenzene	ND	ug/L	10	
Hexachlorobutadiene	ND	ug/L	10	
Hexachlorocyclopentadiene	ND	ug/L	10	
Hexachloroethane	ND	ug/L	10	
Hexachlorophene	ND	ug/L	--	
Hexachloropropene	ND	ug/L	10	
Indeno(1,2,3-cd)pyrene	ND	ug/L	10	
Isophorone	ND	ug/L	10	
Isosafrole	ND	ug/L	20	
Methapyrilene	ND	ug/L	10	
3-Methylcholanthrene	ND	ug/L	10	
Methyl methanesulfonate	ND	ug/L	10	
2-Methylnaphthalene	ND	ug/L	10	
Methyl parathion	ND	ug/L	50	
2-Methylphenol	ND	ug/L	10	
3/4-Methylphenol	ND	ug/L	10	
Naphthalene	ND	ug/L	10	

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

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

Test: 8270CP-AP9-A
Matrix: AQUEOUS
QC Lot: 21 MAY 92-6A QC Run: 25 MAY 92-6A

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

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

Test: 8270CP-AP9-A
Matrix: AQUEOUS
QC Lot: 21 MAY 92-6A QC Run: 25 MAY 92-6A

Analyte	Result	Units	Reporting Limit
2-Toluidine	ND	ug/L	10
1,2,4-Trichlorobenzene	ND	ug/L	10
2,4,5-Trichlorophenol	ND	ug/L	50
2,4,6-Trichlorophenol	ND	ug/L	10
O,O,O-Triethylphosphoro-thioate	ND	ug/L	10
1,3,5-Trinitrobenzene	ND	ug/L	10

QC LOT ASSIGNMENT REPORT
Semivolatile Organics by GC

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
022916-0001-SA	AQUEOUS	608-A	01 MAY 92-6A	24 MAY 92-6A
022916-0001-SA	AQUEOUS	615-A	18 MAY 92-7A	24 MAY 92-7A

DUPLICATE CONTROL SAMPLE REPORT
Semivolatile Organics by GC

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: 608-A Matrix: AQUEOUS QC Lot: 01 MAY 92-6A Concentration Units: ug/L								
gamma-BHC (Lindane)	0.200	0.189	0.195	0.192	96	56-111	3.1	12
Heptachlor	0.200	0.194	0.201	0.198	99	50-121	3.5	21
Aldrin	0.200	0.180	0.185	0.182	91	49-109	2.7	16
Dieldrin	0.500	0.459	0.479	0.469	94	47-111	4.3	13
Endrin	0.500	0.481	0.499	0.490	98	50-123	3.7	16
4,4'-DDT	0.500	0.489	0.529	0.509	102	45-117	7.9	14
Category: 615-A Matrix: AQUEOUS QC Lot: 18 MAY 92-7A Concentration Units: ug/L								
2,4-D	5.0	3.43	3.46	3.44	69	36-126	0.9	33
2,4,5-TP (Silvex)	1.0	0.811	0.844	0.828	83	52-135	4.0	28
2,4,5-T	1.0	0.790	0.807	0.798	80	41-158	2.1	34

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

SINGLE CONTROL SAMPLE REPORT
Semivolatile Organics by GC

Analyte	Concentration Spiked	Concentration Measured	Accuracy(%) SCS	Accuracy(%) Limits
Category: 608-A Matrix: AQUEOUS QC Lot: 01 MAY 92-6A QC Run: 24 MAY 92-6A Concentration Units: ug/L				
Dibutyl chlorendate	1.00	0.741	74	41-135
Category: 615-A Matrix: AQUEOUS QC Lot: 18 MAY 92-7A QC Run: 24 MAY 92-7A Concentration Units: ug/L				
DCAA	5.00	3.80	76	51-138

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

Enseco
A Corning Company

METHOD BLANK REPORT
Semivolatile Organics by GC

Analyte	Result	Units	Reporting Limit
Test: 8080CP-AP9-A			
Matrix: AQUEOUS			
QC Lot: 01 MAY 92-6A QC Run: 24 MAY 92-6A			
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	0.10
4,4'-DDD	ND	ug/L	0.10
4,4'-DDE	ND	ug/L	0.10
4,4'-DDT	ND	ug/L	0.10
Diallate	ND	ug/L	1.0
Dieldrin	ND	ug/L	0.10
Endosulfan I	ND	ug/L	0.050
Endosulfan II	ND	ug/L	0.10
Endosulfan sulfate	ND	ug/L	0.10
Endrin	ND	ug/L	0.10
Endrin aldehyde	ND	ug/L	0.10
Heptachlor	ND	ug/L	0.050
Heptachlor epoxide	ND	ug/L	0.050
Isodrin	ND	ug/L	0.10
Kepone	ND	ug/L	1.0
Methoxychlor	ND	ug/L	0.50
Toxaphene	ND	ug/L	5.0
Test: 8150-AP9-A			
Matrix: AQUEOUS			
QC Lot: 18 MAY 92-7A QC Run: 24 MAY 92-7A			
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

QC LOT ASSIGNMENT REPORT
Metals Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
022916-0001-SA	AQUEOUS	ICP-AT	04 JUN 92-H7	04 JUN 92-H7
022916-0001-SA	AQUEOUS	ICP-AD	18 JUN 92-M7	-
022916-0001-SA	AQUEOUS	AS-FAA-AD	09 JUN 92-G7	-
022916-0001-SA	AQUEOUS	AS-FAA-AT	04 JUN 92-H7	04 JUN 92-H7
022916-0001-SA	AQUEOUS	PB-FAA-AD	09 JUN 92-L7	-
022916-0001-SA	AQUEOUS	PB-FAA-AT	04 JUN 92-H7	04 JUN 92-H7
022916-0001-SA	AQUEOUS	SE-FAA-AD	09 JUN 92-L7	-
022916-0001-SA	AQUEOUS	SE-FAA-AT	04 JUN 92-H7	04 JUN 92-H7
022916-0001-SA	AQUEOUS	TL-FAA-AD	09 JUN 92-G7	-
022916-0001-SA	AQUEOUS	TL-FAA-AT	04 JUN 92-H7	04 JUN 92-H7
022916-0001-SA	AQUEOUS	HG-CVAA-AT	02 JUN 92-E7	02 JUN 92-E7
022916-0001-SA	AQUEOUS	HG-CVAA-AT	02 JUN 92-E7	02 JUN 92-E7

Enseco

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: ICP-AT Matrix: AQUEOUS QC Lot: 04 JUN 92-H7 Concentration Units: mg/L								
Aluminum	2.0	2.21	1.86	2.04	102	75-125	17	20
Antimony	0.5	0.491	0.508	0.500	100	75-125	3.4	20
Arsenic	0.5	0.416	0.384	0.400	80	75-125	7.9	20
Barium	2.0	1.86	1.85	1.85	93	75-125	0.5	20
Beryllium	0.05	0.0462	0.0462	0.0462	92	75-125	0.2	20
Cadmium	0.05	0.0455	0.0465	0.0460	92	75-125	2.2	20
Calcium	100	96.0	88.7	92.4	92	75-125	7.9	20
Chromium	0.2	0.170	0.168	0.169	85	75-125	1.0	20
Cobalt	0.5	0.434	0.435	0.435	87	75-125	0.2	20
Copper	0.25	0.240	0.239	0.240	96	75-125	0.6	20
Iron	1.0	1.19	0.967	1.08	108	75-125	21	20
Lead	0.5	0.416	0.413	0.414	83	75-125	0.7	20
Magnesium	50	47.7	46.8	47.3	95	75-125	2.0	20
Manganese	0.5	0.468	0.463	0.466	93	75-125	1.1	20
Nickel	0.5	0.452	0.440	0.446	89	75-125	2.9	20
Potassium	50	46.6	45.5	46.0	92	75-125	2.4	20
Silver	0.05	0.0430	0.0433	0.0432	86	75-125	0.6	20
Sodium	100	99.3	96.7	98.0	98	75-125	2.7	20
Vanadium	0.5	0.456	0.455	0.456	91	75-125	0.2	20
Zinc	0.5	0.455	0.442	0.449	90	75-125	2.8	20
Category: ICP-AD Matrix: AQUEOUS QC Lot: 18 JUN 92-M7 Concentration Units: mg/L								
Aluminum	1.0	0.945	0.958	0.951	95	85-115	1.3	10
Antimony	1.0	0.970	0.980	0.975	98	85-115	1.0	10
Arsenic	1.0	0.954	0.975	0.965	96	85-115	2.2	10
Barium	1.0	0.973	0.961	0.967	97	85-115	1.2	10
Beryllium	1.0	0.955	0.947	0.951	95	85-115	0.8	10
Cadmium	1.0	0.958	0.953	0.956	96	85-115	0.5	10
Calcium	20	20.1	20.1	20.1	101	85-115	0.3	10
Chromium	1.0	0.975	0.971	0.973	97	85-115	0.4	10
Cobalt	1.0	0.945	0.942	0.944	94	85-115	0.3	10
Copper	1.0	0.975	0.969	0.972	97	85-115	0.6	10
Iron	1.0	0.963	0.953	0.958	96	85-115	1.1	10
Lead	1.0	0.935	0.926	0.930	93	85-115	0.9	10
Magnesium	20	20.1	19.9	20.0	100	85-115	1.1	10

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

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

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: ICP-AD								
Matrix: AQUEOUS								
QC Lot: 18 JUN 92-M7								
Concentration Units: mg/L								
Manganese	1.0	0.950	0.945	0.948	95	85-115	0.5	10
Nickel	1.0	0.937	0.935	0.936	94	85-115	0.3	10
Potassium	20	20.7	20.0	20.3	102	85-115	3.2	10
Silver	1.0	0.963	0.956	0.959	96	85-115	0.8	10
Sodium	200	212	196	204	102	85-115	7.8	10
Vanadium	1.0	0.977	0.965	0.971	97	85-115	1.2	10
Zinc	1.0	0.959	0.958	0.958	96	85-115	0.1	10
Category: AS-FAA-AD								
Matrix: AQUEOUS								
QC Lot: 09 JUN 92-G7								
Concentration Units: mg/L								
Arsenic	0.03	0.0261	0.0303	0.0282	94	75-125	15	20
Category: AS-FAA-AT								
Matrix: AQUEOUS								
QC Lot: 04 JUN 92-H7								
Concentration Units: mg/L								
Arsenic	0.03	0.0324	0.0344	0.0334	111	75-125	6.0	20
Category: PB-FAA-AD								
Matrix: AQUEOUS								
QC Lot: 09 JUN 92-L7								
Concentration Units: mg/L								
Lead	0.03	0.0341	0.0346	0.0344	115	75-125	1.5	20
Category: PB-FAA-AT								
Matrix: AQUEOUS								
QC Lot: 04 JUN 92-H7								
Concentration Units: mg/L								
Lead	0.03	0.0324	0.0330	0.0327	109	75-125	1.8	20

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

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: SE-FAA-AD Matrix: AQUEOUS QC Lot: 09 JUN 92-L7 Concentration Units: mg/L								
Selenium	0.03	0.0285	0.0239	0.0262	87	75-125	18	20
Category: SE-FAA-AT Matrix: AQUEOUS QC Lot: 04 JUN 92-H7 Concentration Units: mg/L								
Selenium	0.03	0.0237	0.0234	0.0236	79	75-125	1.3	20
Category: TL-FAA-AD Matrix: AQUEOUS QC Lot: 09 JUN 92-G7 Concentration Units: mg/L								
Thallium	0.03	0.0289	0.0272	0.0280	94	75-125	6.1	20
Category: TL-FAA-AT Matrix: AQUEOUS QC Lot: 04 JUN 92-H7 Concentration Units: mg/L								
Thallium	0.03	0.0238	0.0283	0.0260	87	75-125	17	20
Category: HG-CVAA-AT Matrix: AQUEOUS QC Lot: 02 JUN 92-E7 Concentration Units: mg/L								
Mercury	0.0010	0.000899	0.00102	0.000959	96	75-125	13	20

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

Enseco

METHOD BLANK REPORT
Metals Analysis and Preparation

Analyte	Result	Units	Reporting Limit
Test: ICP-AP9-AT			
Matrix: AQUEOUS			
QC Lot: 04 JUN 92-H7 QC Run: 04 JUN 92-H7			
Antimony	ND	mg/L	0.060
Barium	ND	mg/L	0.010
Beryllium	ND	mg/L	0.0020
Cadmium	ND	mg/L	0.0050
Chromium	ND	mg/L	0.010
Cobalt	ND	mg/L	0.010
Copper	ND	mg/L	0.020
Nickel	ND	mg/L	0.040
Silver	ND	mg/L	0.010
Tin	ND	mg/L	0.10
Vanadium	ND	mg/L	0.010
Zinc	ND	mg/L	0.020
Test: AS-FAA-AT			
Matrix: AQUEOUS			
QC Lot: 04 JUN 92-H7 QC Run: 04 JUN 92-H7			
Arsenic	ND	mg/L	0.0050
Test: PB-FAA-AT			
Matrix: AQUEOUS			
QC Lot: 04 JUN 92-H7 QC Run: 04 JUN 92-H7			
Lead	ND	mg/L	0.0050
Test: SE-FAA-AT			
Matrix: AQUEOUS			
QC Lot: 04 JUN 92-H7 QC Run: 04 JUN 92-H7			
Selenium	ND	mg/L	0.0050

METHOD BLANK REPORT
Metals Analysis and Preparation (cont.)

Analyte	Result	Units	Reporting Limit
Test: TL-FAA-AT Matrix: AQUEOUS QC Lot: 04 JUN 92-H7 QC Run: 04 JUN 92-H7			
Thallium	ND	mg/L	0.0050
Test: HG-CVAA-AD Matrix: AQUEOUS QC Lot: 02 JUN 92-E7 QC Run: 02 JUN 92-E7			
Mercury	ND	mg/L	0.00020
Test: HG-CVAA-AT Matrix: AQUEOUS QC Lot: 02 JUN 92-E7 QC Run: 02 JUN 92-E7			
Mercury	ND	mg/L	0.00020

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)
022916-0001-SA	AQUEOUS	CN-A	25 MAY 92-7B	25 MAY 92-7B
022916-0001-SA	AQUEOUS	S-A	21 MAY 92-7B	-
022916-0001-SA	AQUEOUS	NO3-A	14 JUN 92-7L	-

DUPLICATE CONTROL SAMPLE REPORT
Wet Chemistry Analysis and Preparation

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: CN-A Matrix: AQUEOUS QC Lot: 25 MAY 92-7B Concentration Units: mg/L								
Cyanide	0.20	0.178	0.186	0.182	91	75-125	4.4	20
Category: S-A Matrix: AQUEOUS QC Lot: 21 MAY 92-7B Concentration Units: mg/L								
Sulfide, Total	0.494	0.441	0.484	0.462	94	80-120	9.3	20
Category: NO3-A Matrix: AQUEOUS QC Lot: 14 JUN 92-7L Concentration Units: mg/L								
Nitrate as N	2.0	2.01	1.95	1.98	99	91-109	3.0	10

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

Enseco
A Corning Company

METHOD BLANK REPORT
Wet Chemistry Analysis and Preparation

Analyte	Result	Units	Reporting Limit
Test: CNTOT-TEC-A Matrix: AQUEOUS QC Lot: 25 MAY 92-7B QC Run: 25 MAY 92-7B			
Cyanide	ND	mg/L	0.010

QC LOT ASSIGNMENT REPORT
Special Services - Low Resolution Mass Spectrometry

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
064250-0001-SA	AQUEOUS	DXNFUR-A	14 MAY 92-A	-
064250-0001-MB	AQUEOUS	DXNFUR-A	14 MAY 92-A	-

DUPLICATE CONTROL SAMPLE REPORT
Special Services - Low Resolution Mass Spectrometry

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: DXNFUR-A								
Matrix: AQUEOUS								
QC Lot: 14 MAY 92-A								
Concentration Units: ng								
2,3,7,8-TCDF	10	12.0	11.0	11.5	115	60-140	8.7	50.0
2,3,4,7,8-PeCDF	10	11.0	9.10	10.0	101	60-140	19	50.0
1,2,3,4,7,8-HxCDF	10	9.40	10.0	9.70	97	60-140	6.2	50.0
1,2,3,4,6,7,8-HpCDF	10	12.0	14.0	13.0	130	60-140	15	50.0
OCDF	50	71.0	70.0	70.5	141#	60-140	1.4	50.0
2,3,7,8-TCDD	10	10.0	9.90	9.95	100	60-140	1.0	50.0
1,2,3,7,8-PeCDD	10	12.0	9.40	10.7	107	60-140	24	50.0
1,2,3,4,7,8-HxCDD	10	9.70	9.70	9.70	97	60-140	0.0	50.0
1,2,3,4,6,7,8-HpCDD	10	9.80	12.0	10.9	109	60-140	20	50.0
OCDD	50	63.0	63.0	63.0	126	60-140	0.0	50.0

= Recovery outside QC Limits

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

Enseco

APPENDIX IX DIOXINS/FURANS

LOW RESOLUTION

Client Name: Enseco, Inc.
Client ID: Method Blank
Lab ID: 064250-0001-MB
Matrix: AQUEOUS
Authorized: 22 MAY 92

Sampled: NA
Prepared: 26 MAY 92

Received: NA
Analyzed: 28 MAY 92

Sample Amount 1.00 L
Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/L	0.15	
PeCDFs (total)	ND	ng/L	0.17	
HxCDFs (total)	ND	ng/L	0.35	
Dioxins				
TCDDs (total)	ND	ng/L	0.18	
2,3,7,8-TCDD	ND	ng/L	0.18	
PeCDDs (total)	ND	ng/L	0.45	
HxCDDs (total)	ND	ng/L	0.57	
	% Recovery			
13C-2,3,7,8-TCDF	95			
13C-2,3,7,8-TCDD	99			
13C-1,2,3,7,8-PeCDD	105			
13C-1,2,3,6,7,8-HxCDD	118			

ND = Not detected
NA = Not applicable

Reported By: Robert Hrabak

Approved By: Shelly Eyraud

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

APPENDIX IX DIOXINS/FURANS

LOW RESOLUTION

Client Name: Enseco, Inc.
Client ID: 22916-01
Lab ID: 064250-0001-SA
Matrix: AQUEOUS Sampled: Unknown Received: 22 MAY 92
Authorized: 22 MAY 92 Prepared: 26 MAY 92 Analyzed: 28 MAY 92

Sample Amount 0.983 L
Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/L	0.083	
PeCDFs (total)	ND	ng/L	0.11	
HxCDFs (total)	ND	ng/L	0.20	
Dioxins				
TCDDs (total)	ND	ng/L	0.20	
2,3,7,8-TCDD	ND	ng/L	0.20	
PeCDDs (total)	ND	ng/L	0.27	
HxCDDs (total)	ND	ng/L	0.31	
	% Recovery			
13C-2,3,7,8-TCDF	84			
13C-2,3,7,8-TCDD	88			
13C-1,2,3,7,8-PeCDD	95			
13C-1,2,3,6,7,8-HxCDD	103			

ND = Not detected
NA = Not applicable

Reported By: Robert Hrabak Approved By: Shelly Eyraud

The cover letter is an integral part of this report.
Rev 230787

ENSECO CAL LABS
SPECIAL SERVICES
LOW RESOLUTION DIOXIN/FURANS ANALYSIS

2WK TAT

LR-11

ANALYSIS: Cl4-Cl8 DD/DF + 2378-TCDD APIX PROJECT NUMBER: 64250

PAGE ____ OF ____ LOCATION: R16

DATE RECIEVED: 5/22/92 DATE IN PREP: 5/26/92

DATE TO GCMS: 5/30/92 DCS REF: ~~5-26-92A~~ 5-14-92A

SAMPLE ID	EXTRACTION	QC		13C-INTERNAL STDS	
64250 -1	613 1.0L	X	MB		25 ng 13c-2378 tcdd/df
			DU	X	25 ng 13c- tcdd/tcdf
			MS		50 ng 13c-cl5-cl7 d/d
					250 ng 13c-ocdd
			SD		SPECIAL
		X	DCS		

10 NG 37CL-2378 TCDD

OPTIONAL OPT C

OPT C

SPECIAL INSTRUCTION

IFB

BASIC AL

OPTION D2

% MOISTURE

X	25 NG 13C 1234 TCDD	20 ul	X	DB-5
	SPECIAL		X	SP2331
				SPECIAL

DATE DUE: 6/1/92

SAMPLES _____ WENT BACK FOR

RX ON _____ DUE TO:

COMMENTS:

CALLAB-064250

Enseco, Inc. - Cal Lab Analytical
2544 Industrial Blvd.

West Sacramento, California 95691
(916) 372-1393

Date Received : 22 MAY 92 08:30

Ms. Julieahn L. Kramer
Enseco, Inc. -
5955 Yarrow Street
Arvada, Colorado
80002

(303) 421-6611

Project ID,
EPA Case, RMA Lot : ENICO04 PO:02034
AQUEOUS DXNFUR(AP9) 052
P.O. Number : 02031

Delivered By :

Storage Location : R16

Logged in by : RBONALY

One aqueous sample received under Chain-of-Custody in good condition.
Delivered by Federal Express.

Sample ID	Enseco ID	Client's label info	Date/Time Samp.	Containers
64250-0001-SA	240349	22916-01		2-1AGB
u64250-0001-MB	240350	Method Blank		

Samples not destroyed in testing are retained a maximum of thirty (30) days unless otherwise requested.

Client Manager: Shelly Eyraud

ENSECO - CALIFORNIA ANALYTICAL LABORATORY
LOW-RES PROJECT CHECKLIST

	REVIEW I	REVIEW II
PREP:		
All samples were extracted within hold time	RH 6/3	6/3
LIMS entry completed with correct dates		
INSTRUMENT:		
Standards		
CPSM/WDM criteria met		
Standard criteria met		
Blank/Samples		
Blank criteria met		
IS recovery checked		
S/N ratio checked		
Chromatography checked		
All samples run within 12 hours of standard		
Logbook pages included		
ANALYSIS:		
DCS included		
CPSM/WDM correctly labeled and included		
All associated standards inncluded		
All samples and associated blanks reported		
- correct RRF's used in calculations		
- IS recoveries met		
- all ratios in		
- correct sample volume used in calculations		
All anomaly's noted on anomaly sheet		
LIM's entry		

completed RH 6/3 (EU)

released 6/4

Appendix

ENSECO ANALYTICAL SERVICES REQUEST FORM

22916 – 01

Special Handling (Circle as appropriate and explain in record 5)

Hazardous material

SAMPLE

Site Type (circle one): SW - Surface Water; (GW) - Ground Water; ME - Meteorological; LK - Lake; ES - Estuary; SP - Spring; SS - Special Source

KAFB 061014-2	USGS/WRD/NM	KAFB-IRP	TOM CROUCH MIKO ROYBAL	(505)262-5399
Station Name	Field Office	Project	Collector	Phone (FTS)

File Deposition* (Circle one): Q - WATSTORE; X - Lab File

For Laboratory Use Only

Sample identification

KAFB 061014-2 — Station ID or Unique Number*

463536001 — Project Account #

1992	05	20	1330	05	20	1405	NM	035	001
Year*	Month*	Day*	Time*	Month	Day	Time	State Code*	District/ User Code*	County Code
Begin Date				Composite End Date					

Analysis level codes and schedules

6		(H) or 9	9		9	9
Sample Medium**	Geologic Unit	Analysis Status**	Analysis Source**	Hydrologic Condition**	Sample Type**	Hydrologic Event**

PARAMETER:	APPX IX-VOC	APPX IX-SEMIVOC	APPX IX-PESTICIDES	APPX IX-HERBICIDES
METHOD:	SW5030/SW8240	SW3510/SW8270	SW3520/SW8080	SW3520/SW8150
PARAMETER:	APPX IX-DIOXINS	APPX IX-METALS(TOTAL)	APPX IX-METALS(DISS)	APPX IX-CYANIDE
METHOD:	SW3520/SW8280	SW3005/SW6010	SW3005/SW6010	SW9010
PARAMETER:	APPX IX-SULFIDE	NITRATE & NITRITE	URANIUM, GROSS ALPHA & BETA	~~VOX~~
METHOD:	SW 9030	E353.2	D2907, ~~E900~~	~~SW5030/SW8010~~

EXTRA SAMPLES

Chain-of-Custody Record

PROJECT NAME KIRTLAND AFB IRP PROJECT NO. 463536001 P.O. NO.

Relinquished by: (Signature)	Received by: (Signature)	Date	Time
Miko Roybal	FEDERAL EXPRESS	20 MAY 98	1600
Relinquished by: (Signature)	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Received at lab by: (Signature)	Date	Time
	RMAE	05-21-98	0830
Relinquished from lab by: (Signature)	Received by: (Signature)	Date	Time

Comments (Only 50 characters stored in NWIS)

Record 5 SAMPLE FROM WELL AT SW CNR OF GOLF C. POND

Record 6

Total number of sample bottles for this request: 13

SHIP TO:

Enseco-Rocky Mountain Analytical
4955 Yarrow Street
Arvada, CO 80002
(303) 421-6611

ATTENTION: TRACY CONROY / JULIE CRAMER

SS-034

ENSECO ANALYTICAL SERVICES REQUEST FORM

22916 - 02

Special Handling (Circle as appropriate and explain in record 5)

Hazardous material

KAFB 0610 15-2 TRIP
Station Name

Field ID

USGS/WRD/NM
Field Office

KAFB-IRP
Project

TOM CROUCH
MIKO ROYBAL
Collector

(505)262-5399
Phone (FTS)

Site Type (circle one)
SW - Surface Water
(GW) - Ground Water
ME - Meteorological
LK - Lake
ES - Estuary
SP - Spring
SS - Special Source

File Deposition*
(Circle one)
Q - WATSTORE
X - Lab File

For Laboratory Use Only

Sample identification

KAFB 0 6 1 0 1 5 - 2
Station ID or Unique Number*

4 6 3 5 3 6 0 0 1
Project Account #

1992	05	20	0935				NM	035	001
Year*	Month*	Day*	Time*	Month	Day	Time	State Code*	District/ User Code*	County Code
Begin Date				Composite End Date					

Analysis level codes and schedules

6		(H) or 9	9		9	9
Sample Medium**	Geologic Unit	Analysis Status**	Analysis Source**	Hydrologic Condition**	Sample Type**	Hydrologic Event**

PARAMETER:	APPX IX-VOC	APPX IX-SEMIVOC	APPX IX-PESTICIDES	APPX IX-HERBICIDES
METHOD:	SW5030/SW8240	SW3510/SW8270	SW3520/SW8080	SW3520/SW8150
PARAMETER:	APPX IX-DIOXINS	APPX IX-METALS(TOTAL)	APPX IX-METALS(DISS)	APPX IX-CYANIDE
METHOD:	SW3520/SW8280	SW3005/SW6010	SW3005/SW6010	SW9010
PARAMETER:	APPX IX-SULFIDE	NITRATE & NITRITE	URANIUM, GROSS ALPHA & BETA	VOX
METHOD:	SW 9030	E353.2	D2907, E900	SW5030/SW8010

EXTRA SAMPLES

Chain-of-Custody Record

PROJECT NAME KIRTLAND AFB IRP PROJECT NO. 463536001 P.O. NO.

Relinquished by: (Signature)	Received by: (Signature)	Date	Time
Miko Roybal	FEDERAL EXPRESS	20MAY92	1600
Relinquished by: (Signature)	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Received at lab by: (Signature)	Date	Time
	RMAL	05-21-92	0830
Relinquished from lab by: (Signature)	Received by: (Signature)	Date	Time

Comments (Only 50 characters stored in NWIS)

Record 5 TRIP BLANK - SW GOLF C.P.

Record 6

Total number of sample bottles for this request: 3

SHIP TO:

Enseco-Rocky Mountain Analytical
4955 Yarrow Street
Arvada, CO 80002
(303) 421-6611

ATTENTION: TRACY CONROY / JULIE CRAMER

SS-034