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ANALYTICAL RESULTS
FOR
U.S. GEOLOGICAL SURVEY
ENSECO-RMAL NO. 011386



OCTOBER 12, 1990

KAFB1059



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**ANALYTICAL RESULTS
FOR
U.S. GEOLOGICAL SURVEY
ENSECO-RMAL NO. 011386**



OCTOBER 12, 1990

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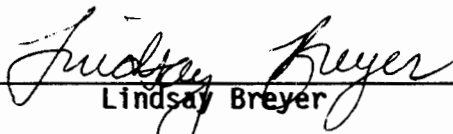
ANALYTICAL RESULTS
FOR
U.S. GEOLOGICAL SURVEY
ENSECO-RMAL NO. 011386

Enseco

OCTOBER 12, 1990

Reviewed by:


Randall Thompson


Lindsay Breyer

Introduction

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:

- o Sample Description Information
- o Analytical Test Requests
- o Analytical Results
- o Quality Control Report

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	Time	Received Date
011386-0001-SA	KAFB010703-2	AQUEOUS	18 SEP 90	14:11	19 SEP 90
011386-0002-SA	KAFB010704-2	AQUEOUS	18 SEP 90	14:13	19 SEP 90

ANALYTICAL TEST REQUESTS
for
U.S. Geological Survey

Lab ID: 011386	Group Code	Analysis Description	Custom Test?
0001	A	Total Organic Carbon (TOC)	N
		Total Organic Halogen (TOX)	N
		Nitrate Plus Nitrite	N
		Chromium, Furnace AA	N
		Chromium, Furnace AA (Total)	N
		Prep - Total Metals, ICP	N
		Halogenated Volatile Organics	N
		Halogenated Volatile Organics-2nd Column Analysis	N
0002	B	Halogenated Volatile Organics	N
		Halogenated Volatile Organics-2nd Column Analysis	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 data is the date when the project was defined by the client such that laboratory work could begin.

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.

The results from the Standard Enseco QA/QC Program, which generates data which are independent of matrix effects, is provided subsequently.

Halogenated Volatile Organics

Method 8010

Client Name: U.S. Geological Survey

Client ID: KAFB010703-2

Lab ID: 011386-0001-SA

Matrix: AQUEOUS

Authorized: 19 SEP 90

Sampled: 18 SEP 90

Prepared: NA

Received: 19 SEP 90

Analyzed: 24 SEP 90

Parameter	Result	Units	Reporting Limit	
Chloromethane	ND	ug/L	1.1	T
Bromomethane	ND	ug/L	6.0	
Dichlorodifluoromethane	ND	ug/L	9.0	
Vinyl chloride	ND	ug/L	0.60	
Chloroethane	ND	ug/L	3.0	
Methylene chloride	ND	ug/L	2.0	
Trichlorofluoromethane	ND	ug/L	5.0	
1,1-Dichloroethene	ND	ug/L	0.70	
1,1-Dichloroethane	ND	ug/L	0.40	
trans-1,2-Dichloroethene	ND	ug/L	0.50	
Chloroform	ND	ug/L	0.30	
1,2-Dichloroethane	ND	ug/L	0.50	
1,1,1-Trichloroethane	ND	ug/L	0.20	
Carbon tetrachloride	ND	ug/L	0.60	
Bromodichloromethane	ND	ug/L	0.50	
1,2-Dichloropropane	ND	ug/L	0.50	
trans-1,3-Dichloropropene	ND	ug/L	2.0	
Trichloroethene	ND	ug/L	0.60	
Dibromochloromethane	ND	ug/L	0.60	
1,1,2-Trichloroethane	ND	ug/L	0.20	
2-Chloroethyl vinyl ether	ND	ug/L	5.5	
Bromoform	ND	ug/L	1.0	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.4	
Tetrachloroethene	ND	ug/L	0.40	
Chlorobenzene	ND	ug/L	1.2	
1,3-Dichlorobenzene	ND	ug/L	1.0	
1,2-Dichlorobenzene	ND	ug/L	0.50	
1,4-Dichlorobenzene	ND	ug/L	0.50	
Benzyl chloride	ND	ug/L	6.8	
Bromobenzene	ND	ug/L	5.0	
bis(2-Chloroisopropyl)- ether	ND	ug/L	10	
1-Chlorohexane	ND	ug/L	5.0	
4-Chlorotoluene	ND	ug/L	23	
Dibromomethane	ND	ug/L	5.0	
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0	
1,2,3-Trichloropropane	ND	ug/L	5.0	

Surrogate

Recovery

Bromochloromethane

124

%

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(continued on following page)

ND = Not detected

NA = Not applicable

Reported By: Leewaphath Xaiyasang

Approved By: Jeff Lowry

Halogenated Volatile Organics (CONT.)

Method 8010

Client Name: U.S. Geological Survey

Client ID: KAFB010703-2

Lab ID: 011386-0001-SA

Matrix: AQUEOUS

Authorized: 19 SEP 90

Sampled: 18 SEP 90

Prepared: NA

Received: 19 SEP 90

Analyzed: 24 SEP 90

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

ND = Not detected

NA = Not applicable

Reported By: Leewaphath Xaiyasang

Approved By: Jeff Lowry

Halogenated Volatile Organics

Method 8010

Client Name: U.S. Geological Survey

Client ID: KAFB010704-2

Lab ID: 011386-0002-SA

Matrix: AQUEOUS

Authorized: 19 SEP 90

Sampled: 18 SEP 90

Prepared: NA

Received: 19 SEP 90

Analyzed: 24 SEP 90

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	1.1
Bromomethane	ND	ug/L	6.0
Dichlorodifluoromethane	ND	ug/L	9.0
Vinyl chloride	ND	ug/L	0.60
Chloroethane	ND	ug/L	3.0
Methylene chloride	ND	ug/L	2.0
Trichlorofluoromethane	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.70
1,1-Dichloroethane	ND	ug/L	0.40
trans-1,2-Dichloroethene	ND	ug/L	0.50
Chloroform	0.81	ug/L	0.30
1,2-Dichloroethane	ND	ug/L	0.50
1,1,1-Trichloroethane	ND	ug/L	0.20
Carbon tetrachloride	ND	ug/L	0.60
Bromodichloromethane	ND	ug/L	0.50
1,2-Dichloropropane	ND	ug/L	0.50
trans-1,3-Dichloropropene	ND	ug/L	2.0
Trichloroethene	ND	ug/L	0.60
Dibromochloromethane	ND	ug/L	0.60
1,1,2-Trichloroethane	ND	ug/L	0.20
2-Chloroethyl vinyl ether	ND	ug/L	5.5
Bromoform	ND	ug/L	1.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.4
Tetrachloroethene	ND	ug/L	0.40
Chlorobenzene	ND	ug/L	1.2
1,3-Dichlorobenzene	ND	ug/L	1.0
1,2-Dichlorobenzene	ND	ug/L	0.50
1,4-Dichlorobenzene	ND	ug/L	0.50
Benzyl chloride	ND	ug/L	6.8
Bromobenzene	ND	ug/L	5.0
bis(2-Chloroisopropyl)- ether	ND	ug/L	10
1-Chlorohexane	ND	ug/L	5.0
4-Chlorotoluene	ND	ug/L	23
Dibromomethane	ND	ug/L	5.0
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0
1,2,3-Trichloropropane	ND	ug/L	5.0

Surrogate

Recovery

Bromochloromethane

119

%

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ND = Not detected

NA = Not applicable

Reported By: Barbara Sullivan

Approved By: Jeff Lowry

Halogenated Volatile Organics-2nd Column Analysis

Method 8010

Client Name: U.S. Geological Survey

Client ID: KAFB010704-2

Lab ID: 011386-0002-SA

Matrix: AQUEOUS

Authorized: 19 SEP 90

Sampled: 18 SEP 90

Prepared: NA

Received: 19 SEP 90

Analyzed: 24 SEP 90

Parameter	Result	Units	Reporting Limit	
Chloromethane	ND	ug/L	1.1	
Bromomethane	ND	ug/L	6.0	
Dichlorodifluoromethane	ND	ug/L	9.0	
Vinyl chloride	ND	ug/L	0.60	
Chloroethane	ND	ug/L	3.0	
Methylene chloride	ND	ug/L	2.0	
Trichlorofluoromethane	ND	ug/L	5.0	
1,1-Dichloroethene	ND	ug/L	0.70	
1,1-Dichloroethane	ND	ug/L	0.40	
trans-1,2-Dichloroethene	ND	ug/L	0.50	
Chloroform	0.55	ug/L	0.30	V
1,2-Dichloroethane	ND	ug/L	0.50	
1,1,1-Trichloroethane	ND	ug/L	0.20	
Carbon tetrachloride	ND	ug/L	0.60	
Bromodichloromethane	ND	ug/L	0.50	
1,2-Dichloropropane	ND	ug/L	0.50	
trans-1,3-Dichloropropene	ND	ug/L	2.0	
Trichloroethene	ND	ug/L	0.60	
Dibromochloromethane	ND	ug/L	0.60	
1,1,2-Trichloroethane	ND	ug/L	0.20	
2-Chloroethyl vinyl ether	ND	ug/L	5.5	
Bromoform	ND	ug/L	1.0	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.4	
Tetrachloroethene	ND	ug/L	0.40	
Chlorobenzene	ND	ug/L	1.2	
1,3-Dichlorobenzene	ND	ug/L	1.0	
1,2-Dichlorobenzene	ND	ug/L	0.50	
1,4-Dichlorobenzene	ND	ug/L	0.50	
Benzyl chloride	ND	ug/L	6.8	
Bromobenzene	ND	ug/L	5.0	
bis(2-Chloroisopropyl)- ether	ND	ug/L	10	
1-Chlorohexane	ND	ug/L	5.0	
4-Chlorotoluene	ND	ug/L	23	
Dibromomethane	ND	ug/L	5.0	
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0	
1,2,3-Trichloropropane	ND	ug/L	5.0	
Surrogate	Recovery			
Bromochloromethane	104	%	--	

(continued on following page)

ND = Not detected
NA = Not applicable

Reported By: Barbara Sullivan

Approved By: Jeff Lowry

Halogenated Volatile Organics-2nd Column Analysis (CONT.)

Method 8010

Client Name: U.S. Geological Survey

Client ID: KAFB010704-2

Lab ID: 011386-0002-SA

Matrix: AQUEOUS

Authorized: 19 SEP 90

Sampled: 18 SEP 90

Prepared: NA

Received: 19 SEP 90

Analyzed: 24 SEP 90

Note V : Secondary column result is the preferred value.

ND = Not detected

NA = Not applicable

Reported By: Barbara Sullivan

Approved By: Jeff Lowry

Metals**Total Metals**

Client Name: U.S. Geological Survey

Client ID: KAFB010703-2

Lab ID: 011386-0001-SA

Matrix: AQUEOUS

Authorized: 19 SEP 90

Sampled: 18 SEP 90

Prepared: See Below

Received: 19 SEP 90

Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Chromium	0.024	mg/L	0.0050	7191	01 OCT 90	11 OCT 90

ND = Not detected

NA = Not applicable

Reported By: Mark Brundege

Approved By: Lindsay Breyer

Metals

Dissolved Metals

Client Name: U.S. Geological Survey
Client ID: KAFB010703-2
Lab ID: 011386-0001-SA
Matrix: AQUEOUS
Authorized: 19 SEP 90

Sampled: 18 SEP 90
Prepared: See Below

Received: 19 SEP 90
Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Chromium	ND	mg/L	0.0050	7191	NA	04 OCT 90

ND = Not detected
NA = Not applicable

Reported By: Harold Borquez

Approved By: Lindsay Breyer

General Inorganics

Client Name: U.S. Geological Survey
 Client ID: KAFB010703-2
 Lab ID: 011386-0001-SA
 Matrix: AQUEOUS
 Authorized: 19 SEP 90

Sampled: 18 SEP 90
 Prepared: See Below

Received: 19 SEP 90
 Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Nitrate plus Nitrite	ND	mg/L	0.050	353.2	NA	24 SEP 90
Total Organic Carbon	0.69	mg/L	0.50	9060	NA	26 SEP 90
Total Organic Halogen as Cl	ND	ug/L	30.0	9020	NA	04 OCT 90

ND = Not detected
 NA = Not applicable

Reported By: Dan Appelhans

Approved By: Toni Lusk

Quality Control Results

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 either representative target compounds or surrogate compounds appropriate to the method being used. An SCS is prepared for each sample lot for which the DCS pair are not analyzed.

Accuracy for DCS and SCS is measured by Percent Recovery.

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

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

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

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

QC LOT ASSIGNMENT REPORT
Volatile Organics by GC

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
011386-0001-SA	AQUEOUS	601-A	23 SEP 90-F	23 SEP 90-F
011386-0002-SA	AQUEOUS	601-A	23 SEP 90-F	23 SEP 90-F
011386-0002-SA	AQUEOUS	601-A	23 SEP 90-F	23 SEP 90-F2

DUPLICATE CONTROL SAMPLE REPORT
Volatile Organics by GC

Analyte	Concentration Spiked	Concentration Measured		AVG	Accuracy Average (%)		Precision (RPD)		
		DCS1	DCS2		DCS	Limits	DCS	Limit	
Category: 601-A									
Matrix: AQUEOUS									
QC Lot: 23 SEP 90-F									
Concentration Units: ug/L									
1,1-Dichloroethane	5.0	4.81	5.28	5.04	101	80-130	9.3	20	
Chloroform	5.0	5.43	5.60	5.52	110	80-120	3.1	20	
Bromodichloromethane	5.0	8.58	9.65	9.12	182	80-120	12	20	
Trichloroethene	5.0	5.64	5.70	5.67	113	70-120	1.1	20	
Chlorobenzene	5.0	3.84	4.74	4.29	86	80-120	21	20	

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

SINGLE CONTROL SAMPLE REPORT
 Volatile Organics by GC

Analyte	Concentration		Accuracy(%)	
	Spiked	Measured	SCS	Limits

Category: 601-A
 Matrix: AQUEOUS
 QC Lot: 23 SEP 90-F QC Run: 23 SEP 90-F
 Concentration Units: ug/L

Bromochloromethane	5.00	5.85	117	20-160
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Category: 601-A
 Matrix: AQUEOUS
 QC Lot: 23 SEP 90-F QC Run: 23 SEP 90-F2
 Concentration Units: ug/L

Bromochloromethane	5.00	7.66	153	20-160
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Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT
Volatile Organics by GC

Analyte	Result	Units	Reporting Limit
Test: 601-AFIR-A			
Matrix: AQUEOUS			
QC Lot: 23 SEP 90-F QC Run: 23 SEP 90-F			
Chloromethane	ND	ug/L	1.1
Bromomethane	ND	ug/L	6.0
Dichlorodifluoromethane	ND	ug/L	9.0
Vinyl chloride	ND	ug/L	0.60
Chloroethane	ND	ug/L	3.0
Methylene chloride	ND	ug/L	2.0
Trichlorofluoromethane	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.70
1,1-Dichloroethane	ND	ug/L	0.40
trans-1,2-Dichloroethene	ND	ug/L	0.50
Chloroform	ND	ug/L	0.30
1,2-Dichloroethane	ND	ug/L	0.50
1,1,1-Trichloroethane	ND	ug/L	0.20
Carbon tetrachloride	ND	ug/L	0.60
Bromodichloromethane	ND	ug/L	0.50
1,2-Dichloropropane	ND	ug/L	0.50
trans-1,3-Dichloropropene	ND	ug/L	2.0
Trichloroethene	ND	ug/L	0.60
Dibromochloromethane	ND	ug/L	0.60
1,1,2-Trichloroethane	ND	ug/L	0.20
2-Chloroethyl vinyl ether	ND	ug/L	5.5
Bromoform	ND	ug/L	1.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.4
Tetrachloroethene	ND	ug/L	0.40
Chlorobenzene	ND	ug/L	1.2
1,3-Dichlorobenzene	ND	ug/L	1.0
1,2-Dichlorobenzene	ND	ug/L	0.50
1,4-Dichlorobenzene	ND	ug/L	0.50
Benzyl chloride	ND	ug/L	6.8
Bromobenzene	ND	ug/L	5.0
bis(2-Chloroisopropyl)- ether	ND	ug/L	10
1-Chlorohexane	ND	ug/L	5.0
4-Chlorotoluene	ND	ug/L	23
Dibromomethane	ND	ug/L	5.0
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0
1,2,3-Trichloropropane	ND	ug/L	5.0

METHOD BLANK REPORT
Volatile Organics by GC (cont.)

Analyte	Result	Units	Reporting Limit
Test: 601-AFIR-A			
Matrix: AQUEOUS			
QC Lot: 23 SEP 90-F QC Run: 23 SEP 90-F			
Chloromethane	ND	ug/L	1.1
Bromomethane	ND	ug/L	6.0
Dichlorodifluoromethane	ND	ug/L	9.0
Vinyl chloride	ND	ug/L	0.60
Chloroethane	ND	ug/L	3.0
Methylene chloride	ND	ug/L	2.0
Trichlorofluoromethane	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.70
1,1-Dichloroethane	ND	ug/L	0.40
trans-1,2-Dichloroethene	ND	ug/L	0.50
Chloroform	ND	ug/L	0.30
1,2-Dichloroethane	ND	ug/L	0.50
1,1,1-Trichloroethane	ND	ug/L	0.20
Carbon tetrachloride	ND	ug/L	0.60
Bromodichloromethane	ND	ug/L	0.50
1,2-Dichloropropane	ND	ug/L	0.50
trans-1,3-Dichloropropene	ND	ug/L	2.0
Trichloroethene	ND	ug/L	0.60
Dibromochloromethane	ND	ug/L	0.60
1,1,2-Trichloroethane	ND	ug/L	0.20
2-Chloroethyl vinyl ether	ND	ug/L	5.5
Bromoform	ND	ug/L	1.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.4
Tetrachloroethene	ND	ug/L	0.40
Chlorobenzene	ND	ug/L	1.2
1,3-Dichlorobenzene	ND	ug/L	1.0
1,2-Dichlorobenzene	ND	ug/L	0.50
1,4-Dichlorobenzene	ND	ug/L	0.50
Benzyl chloride	ND	ug/L	6.8
Bromobenzene	ND	ug/L	5.0
bis(2-Chloroisopropyl)- ether	ND	ug/L	10
1-Chlorohexane	ND	ug/L	5.0
4-Chlorotoluene	ND	ug/L	23
Dibromomethane	ND	ug/L	5.0
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0
1,2,3-Trichloropropane	ND	ug/L	5.0

METHOD BLANK REPORT
 Volatile Organics by GC (cont.)

Analyte	Result	Units	Reporting Limit
Test: 601-AFIR-2-A			
Matrix: AQUEOUS			
QC Lot: 23 SEP 90-F QC Run: 23 SEP 90-F2			
Chloromethane	ND	ug/L	1.1
Bromomethane	ND	ug/L	6.0
Dichlorodifluoromethane	ND	ug/L	9.0
Vinyl chloride	ND	ug/L	0.60
Chloroethane	ND	ug/L	3.0
Methylene chloride	ND	ug/L	2.0
Trichlorofluoromethane	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.70
1,1-Dichloroethane	ND	ug/L	0.40
trans-1,2-Dichloroethene	ND	ug/L	0.50
Chloroform	ND	ug/L	0.30
1,2-Dichloroethane	ND	ug/L	0.50
1,1,1-Trichloroethane	ND	ug/L	0.20
Carbon tetrachloride	ND	ug/L	0.60
Bromodichloromethane	ND	ug/L	0.50
1,2-Dichloropropane	ND	ug/L	0.50
trans-1,3-Dichloropropene	ND	ug/L	2.0
Trichloroethene	ND	ug/L	0.60
Dibromochloromethane	ND	ug/L	0.60
1,1,2-Trichloroethane	ND	ug/L	0.20
2-Chloroethyl vinyl ether	ND	ug/L	5.5
Bromoform	ND	ug/L	1.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.4
Tetrachloroethene	ND	ug/L	0.40
Chlorobenzene	ND	ug/L	1.2
1,3-Dichlorobenzene	ND	ug/L	1.0
1,2-Dichlorobenzene	ND	ug/L	0.50
1,4-Dichlorobenzene	ND	ug/L	0.50
Benzyl chloride	ND	ug/L	6.8
Bromobenzene	ND	ug/L	5.0
bis(2-Chloroisopropyl)- ether	ND	ug/L	10
1-Chlorohexane	ND	ug/L	5.0
4-Chlorotoluene	ND	ug/L	23
Dibromomethane	ND	ug/L	5.0
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0
1,2,3-Trichloropropane	ND	ug/L	5.0

QC LOT ASSIGNMENT REPORT
Metals Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
011386-0001-SA	AQUEOUS	CR-FAA-AD	04 OCT 90-A	-
011386-0001-SA	AQUEOUS	CR-FAA-AT	01 OCT 90-X	01 OCT 90-X

DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation

Analyte	Concentration Spiked	Concentration Measured		AVG	Accuracy Average (%)		Precision (RPD)	
		DCS1	DCS2		DCS	Limits	DCS	Limit

Category: CR-FAA-AD
Matrix: AQUEOUS
QC Lot: 04 OCT 90-A
Concentration Units: mg/L

Chromium	0.50	0.482	0.502	0.492	98	75-125	4.1	20
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Category: CR-FAA-AT
Matrix: AQUEOUS
QC Lot: 01 OCT 90-X
Concentration Units: mg/L

Chromium	0.20	0.188	0.193	0.190	95	75-125	2.6	20
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Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT
Metals Analysis and Preparation

Analyte	Result	Units	Reporting Limit
Test: CR-FAA-AT			
Matrix: AQUEOUS			
QC Lot: 01 OCT 90-X	QC Run: 01 OCT 90-X		
Chromium	ND	mg/L	0.0050

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)
011386-0001-SA	AQUEOUS	TOC-A	26 SEP 90-A	-
011386-0001-SA	AQUEOUS	TOX-A	04 OCT 90-A	-
011386-0001-SA	AQUEOUS	N03-A	24 SEP 90-A	-

DUPLICATE CONTROL SAMPLE REPORT
Wet Chemistry Analysis and Preparation

Analyte	Spiked	Concentration		AVG	Accuracy		Precision		
		DCS1	Measured DCS2		DCS	Average(%) Limits	(RPD) DCS Limit	DCS Limit	
Category: TOC-A Matrix: AQUEOUS QC Lot: 26 SEP 90-A Concentration Units: mg/L									
Total Organic Carbon	25	25.0	25.1	25.0	100	91-109	0.4	20	
Category: TOX-A Matrix: AQUEOUS QC Lot: 04 OCT 90-A Concentration Units: ug Cl/L									
Total Organic Halogen as Cl	100	110	100	105	105	80-120	9.5	20	
Category: NO3-A Matrix: AQUEOUS QC Lot: 24 SEP 90-A Concentration Units: mg/L									
Nitrate as N	2.6	2.77	2.69	2.73	105	91-109	2.9	10	

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

Appendix

ENSECO ANALYTICAL SERVICES REQUEST FORM

11386-01

Special Handling

(Circle as appropriate and explain in record 5)

Site Type (circle one)

SW - Surface Water
GW - Ground Water
 ME - Meteorological

LK - Lake
 ES - Estuary
 SP - Spring
 SS - Special Source
 (505) 262-6678
 Phone (FTS)
BILL DAM

Hazardous material

Field ID

KAFB010703-2
 Station Name

USGS/WRD/NEW MEXICO SWMU
 Field Office

USGS
 Collector

File Deposition*

Sample identification

(Circle one)
 Q - WATSTORE
 X - Lab File

For Laboratory Use Only

KAFB010703-2
 Station ID or Unique Number*

463536001
 Project Account #

1990
 Year*

09
 Month*

18
 Day*

1411
 Time*

09
 Month

18
 Day

1427
 Time

NM
 State Code*

035
 District/ User Code*

001
 County Code

Begin Date

Composite End Date

Analysis level codes and schedules

6 = GW
 9 = SW

1 = SPIKE
 5 = DUPLICATE
 9 = REGULAR

J = STORM
 9 = ROUTINE

6
 Sample Medium**

Geologic Unit

H or 9
 Analysis Status**

GS FIELD
 NON-GS-LAB
G
 Analysis Source**

Hydrologic Condition**

Sample Type**

Hydrologic Event**

PARAMETER:
 METHOD:

TOC
SW 9060

TOX
SW 9020

NO2+NO3
E 353.2

DISSOLVED CHROMIUM
SW 3005/SW 791

TOTAL CHROMIUM
SW 3020/SW 791

PARAMETER:
 METHOD:

VOC
SW 5030/SW 8010

VOC
SW 5030/SW 8240

DIOXIN-FURANS
SW 3520/SW 8280

HERBICIDES
SW 3520/SW 8150

PARAMETER:
 METHOD:

APPENDIX IX ICP, DISSOLVED
CO, CU, FE, PB, Mn, MO, NI, V, ZN
SW 3005/SW 6010

APPENDIX IX ICP TOTAL
CO, CU, FE, PB, Mn, MO, NI, V, ZN
SW 3010/SW 6010

PARAMETER:
 METHOD:

APP. IX SEMI-VOC
SW 3520/SW 8270

Chain-of-Custody Record

PROJECT NAME KIRTLAND AFB SWMU PROJECT NO. 463536001 P.O. NO. _____

Relinquished by: (Signature) [Signature] Received by: (Signature) AIRBORNE EXPRESS Date 900918 Time 1645

Relinquished by: (Signature) [Signature] Received by: (Signature) [Signature] Date 900919 Time 1030

Relinquished by: (Signature) _____ Received at lab by: (Signature) _____ Date _____ Time _____

Relinquished from lab by: (Signature) _____ Received by: (Signature) _____ Date _____ Time _____

Comments (Only 50 characters stored in NWIS)

Record 5 WELL AT LANDFILL NO. 1

Record 6 _____

Total number of sample bottles for this request: 7

SHIP TO:

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

ATTENTION: THOMPSON, BREYER OR MCDEVITT

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

Hazardous material

Site Type (circle one)

- SW - Surface Water, GW - Ground Water, ME - Meteorological, LK - Lake, ES - Estuary, SP - Spring, SS - Special Source

Station Name: KAFB010704-2, Field Office: USGS/WRD/NEW MEXICO SWMU, Project: USGS, Collector: (505) 262-6678, Phone (FTS): BILL DAM

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

Sample identification

AMBIENT CONDITION BLANK

Station ID or Unique Number*: KAFB010704-2, Project Account #: 463536001

Begin Date: 1990 09 18 14:13, Composite End Date: N.M., District/User Code: 035, County Code: 001

Analysis level codes and schedules

Analysis level codes: 6=GW, 9=SW, H or 9, GS FIELD, ANALYSIS-LAB, 9=STABLE, 1=SPIKE, 5=DUPLICATE, 9=REGULAR, J=STORM, 9=ROUTINE

PARAMETER: TOC, TOX, NO2+NO3, DISSOLVED CHROMIUM, TOTAL CHROMIUM; METHOD: SW9060, SW9020, E353.2, SW3005/SW791, SW3020/SW791; PARAMETER: VOX, APP. IX VOC, DIOXIN FURANS, APP. IX HERBICIDES; METHOD: SW5030/SW8010, SW5030/SW8240, SW3520/SW8280, SW3520/SW8150; APPENDIX IX ICP, DISSOLVED CO, CU, FE, PB, MANG, NI, V, ZN; APPENDIX IX ICP TOTAL CO, CU, FE, PB, MANG, NI, V, ZN; METHOD: SW3005/SW6010, SW3010/SW6010

Chain-of-Custody Record

PROJECT NAME: KIRTLAND AFB SWMU, PROJECT NO.: 463536001, P.O. NO.:

Relinquished by: (Signature) [Signature], Received by: (Signature) AIRBORNE EXPRESS, Date: 900918, Time: 1645; Relinquished by: (Signature) [Signature], Received by: (Signature) R. Mal B. Mason, Date: 900919, Time: 1030; Relinquished from lab by: (Signature), Received by: (Signature)

Comments (Only 50 characters stored in NWIS)

Record 5: AMBIENT CONDITION BLANK FOR WELL AT LANDFILL NO-1

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: THOMPSON, BREYER, OR MCDEVITT