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REPORTS

DATE:

2003

IR248

Sunoco Logistics

Sunoco Partners Marketing & Terminals L.P.
907 S. Detroit
Tulsa, OK 74120

February 7, 2003
Mr. William Olson
Hydrologist
Environmental Bureau
New Mexico Energy, Mineral & Natural Resources Department
Oil Conservation Division
Santa Fe, NM 87505

RE: 2002 Annual Groundwater Sampling Results
Sunoco, Inc. (R&M) Lea Crude Oil Station
Lea County, New Mexico

Dear Mr. Olson:

Enclosed is the annual groundwater sampling report for the above referenced facility prepared by our consultant, ARCADIS G&M, Inc.

If you have any questions or require any additional information please contact me at (918) 586-6394.

Sincerely,

David M. Minielly
Manager- HES West

cc: (w/attachments)
File
D. Humiston-Abilene
C. Rutland-Abilene

Chris Williams
OCD Hobbs District Office
1625 North French Drive
Hobbs, New Mexico 88240

File/Projects/Lea Station N.M.

ARCADIS

Infrastructure, buildings, environment, communications

ARCADIS G&M, Inc.
5100 E Skelly Drive
Suite 1000
Tulsa
Oklahoma 74135
Tel 918 664 9900
Fax 918 664 9925

Mr. David Minielly
Sunoco Logistics
907 South Detroit
Tulsa, OK 74120

ENVIRONMENTAL

Subject:
Annual Groundwater Sampling and Reporting; Lea Crude Oil Station, Lea County, New Mexico

Dear Mr. Minielly:

January 30, 2003

Contact:
Michael M. Gates

Contact Number:
(918) 664-9900

On December 9, 2002, ARCADIS conducted the annual groundwater sampling at Sunoco's Crude Oil Station in Lea County, New Mexico. The sampling event was conducted to comply with requirements of the New Mexico Oil Conservation Division (OCD) based on their letter to you dated July 5, 2001.

Specifically, the OCD scope of work requires Sunoco to (1) sample and analyze groundwater from each monitor well on an annual basis for concentrations of benzene, toluene, ethylbenzene, and xylenes (BTEX); total dissolved solids; and major cations and anions using USEPA approved methods and quality assurance/quality control (QA/QC) procedures; and (2) submit an annual report to the OCD by April 1 of each year that includes the following:

a) A description of the sampling activities which occurred during the past calendar year.
b) A water-table map showing the location of the station, excavated areas, monitor wells, and any other pertinent site features as well as the direction and magnitude of the hydraulic gradient created using the water-table elevation from each monitor well.
c) Summary tables of all groundwater quality sampling results and copies of all recent laboratory analytical data sheets and associated QA/QC data.
d) The disposition of all wastes generated.

This letter report summarizes the annual sampling event and provides the information required for annual reporting to the OCD.

Groundwater Sampling Activities

On December 9, 2002, ARCADIS collected groundwater samples from the three monitor wells located at the Lea Crude Oil Station. A site map showing the location

of the monitor wells and other pertinent site features is attached as Figure 1. Prior to sampling, the water level in each well was measured using an electronic interface probe. Liquid hydrocarbons were not present in any site monitor well and the depth to groundwater averaged 32 feet below ground surface. The groundwater elevation and general groundwater flow direction are shown on Figure 1. The general groundwater flow direction remains to the east-southeast consistent with past measurements.

Prior to collecting groundwater samples each monitor well was purged of three well volumes of water. The purge water was placed in on-site drums. Purging and sampling was conducted with disposable bailers dedicated for each well. Groundwater samples were collected in approved laboratory containers, labeled and preserved on ice and shipped to Severn Trent Laboratory in Austin, Texas under appropriate chain of custody.

Groundwater Sample Results

All groundwater samples were submitted to Severn Trent Laboratory in Austin, Texas for analysis of BTEX, total dissolved solids, and major cations and anions. The BTEX results are summarized in the attached Table 1. BTEX were detectable in only trace amounts in one of the three monitor wells. As shown in Table 1, BTEX concentrations detected in MW99-3 remain well below New Mexico Water Quality Control Commission groundwater standards.

The results of the general water chemistry are summarized in the attached Table 2. The analyses including major cations and anions, and total dissolved solids. The results for this sampling event are generally similar to the December 2001 sample results as presented in Table 2. A decrease in iron was noted in all three wells.

Summary

The results of the annual groundwater sampling event conducted in December 2002 are summarized as follows:

- Groundwater flow direction is to the east-southeast consistent with historical observations. The hydraulic gradient across the site is low.
- BTEX was detected in one of the three monitor wells in trace amounts. The BTEX concentrations are below applicable groundwater standards.
- The general water chemistry observed for this sampling event is similar to the general water chemistry observed in December 2001.
- A decrease in iron in all three monitor wells was noted compared to December 2001.

A copy of this report should be sent to the OCD Office in Santa Fe with a copy provided to the Hobbs District Office. The report should be provided to the OCD prior to April 1, 2003. If you have any questions concerning the field work or report please give me a call.

Sincerely,

ARCADIS G&M, Inc.

Michael M. Gates
Project Advisor

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ARCADIS

Table 1. Groundwater Analytical Results, Sunoco, Inc., Lea Truck Station.

Sample Number	Date Collected	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)
MW99-1	12/9/2002	<1.0	<1.0	<1.0	<3.0
	12/12/2001	<1.0	<1.0	<1.0	<3.0
	12/5/2000	<1.0	<1.0	<1.0	<3.0
MW99-2	12/9/2002	<1.0	<1.0	<1.0	<3.0
	12/12/2001	1.3	<1.0	2.2	<3.0
	12/5/2000	2.6	1.5	3.7	<3.0
MW99-3	12/9/2002	<1.0	<1.0	37	4.0
	12/12/2001	<1.0	<1.0	6	<3.0
	12/5/2000	<1.0	<1.0	22	<3.0

(µg/L) micrograms per liter.
< less than.

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ARCADIS

Table 2. General Chemistry and Total Metals, Sunoco, Inc., Lea Truck Station.

Sample Number	Date Collected	Bicarbonate Alkalinity (mg/l)	Bromide (mg/l)	Carbonate Alkalinity (mg/l)	Chloride (mg/l)	Fluoride (mg/l)	Nitrate (mg/l)	Sulfate (mg/l)	Total Dissolved Solids (mg/l)	Calcium (mg/l)	Iron (mg/l)	Potassium (mg/l)	Magnesium (mg/l)	Sodium (mg/l)
MW99-1	12/9/2002	336	6.1	ND	359	6	ND	237	1,390	81	0.86	17.9	66.2	305
	12/12/2001	332	3.1	ND	387	5.5	ND	244	1,360	102	17.2	21.3	80.6	ND
	12/5/2000	185	3.4	ND	344	4.6	46.4	237	1,530	80.5	2.79	14.2	65.5	285
MW99-2	12/9/2002	341	7.1	ND	361	6.2	ND	238	1,720	82.7	0.82	19.1	65.3	327
	12/12/2001	352	3.0	ND	364	5.9	ND	237	1,300	91.7	56.8	21.8	71.9	280
	12/5/2000	227	3.2	ND	344	5.1	48.6	245	1,580	93.8	13.1	17.9	72.5	295
MW99-3	12/9/2002	640	17.8	ND	1480	10.5	ND	513	3,760	285	0.99	70.4	336	509
	12/12/2001	525	7.7	ND	1,120	7.7	ND	366	2,790	208	19.2	68	220	495
	12/5/2000	445	9.9	ND	1,210	3.6	45.6	367	3,460	288	52.6	70	301	550

ND Non detect.
mg/L Milligrams per liter.
G:\Aproject\SUNPIPE\OK1351001\[TBL2.XLS]Table 1

ARCADIS

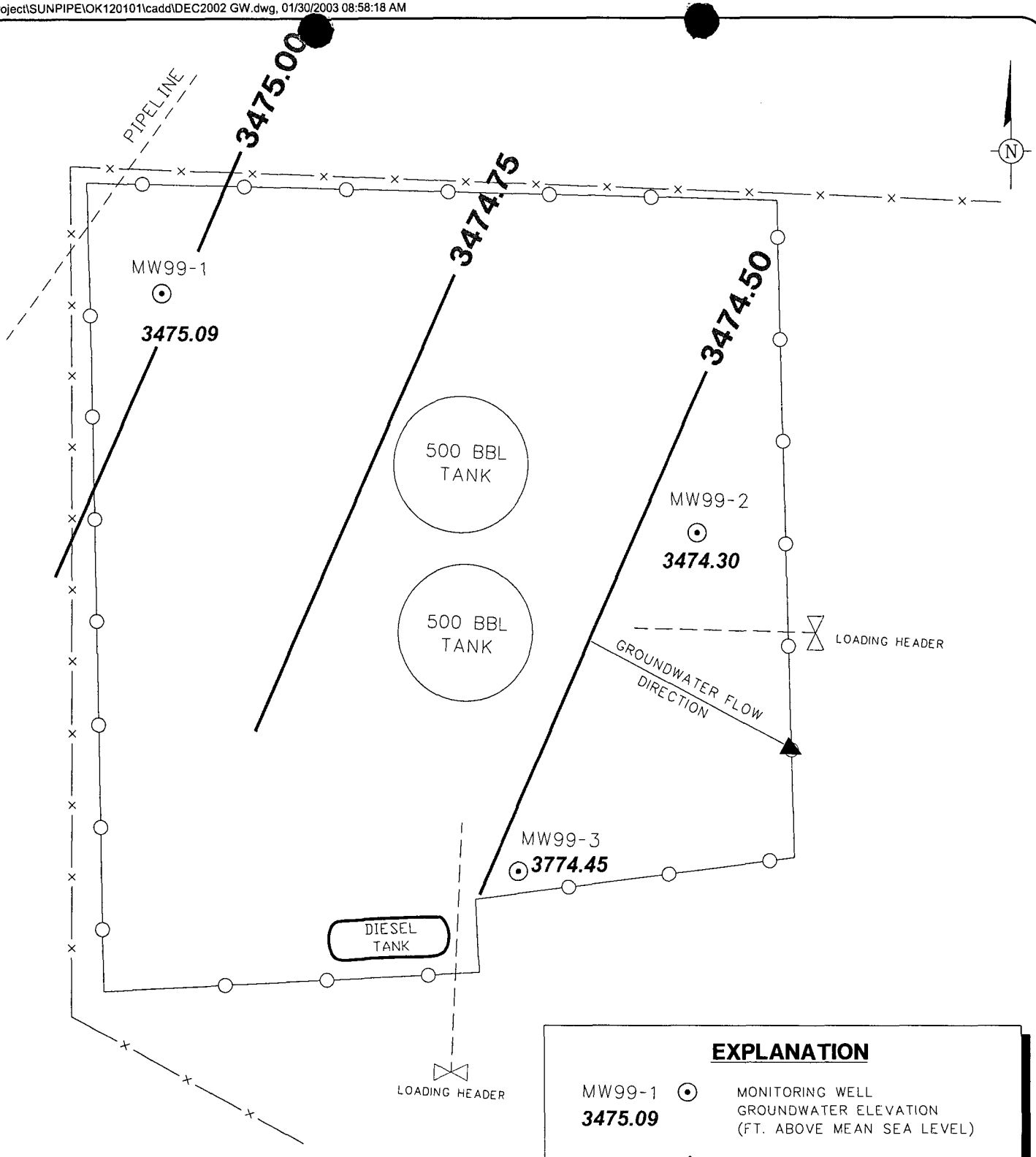
Table 3. Summary of Fluid Level Measurements, Sunoco, Inc., Lea Truck Station.

Well Number	Date Measured	Measuring Point Elevation (i.e. TOC) (ft)	Depth to Water (ft bTOC)	Water Level Elevation (ft)	Depth to Product (ft bTOC)	Product Level Elevation (ft)	Product Thickness (ft)	Corrected Water Level Elevation (ft)
MW99-1	12/9/02	3507.15	32.06	3475.09	--	--	--	3475.09
	12/12/01		33.1	3474.05	--	--	--	3474.05
MW99-2	12/9/02	3506.51	32.21	3474.3	--	--	--	3474.3
	12/12/01		32.94	3473.57	--	--	--	3473.57
MW99-3	12/9/02	3506.59	32.14	3474.45	--	--	--	3474.45
	12/12/01		33.06	3473.53	--	--	--	3473.53

TOC Top of Casing.
ft bTOC Feet below top of casing.
NA Not applicable.

G:\Aproject\SUNPIPE\OK1351001\[GWELE.XLS]TIER 2

G:\Aproject\SUNPIPE\OK120101\cadd\DEC2002 GW.dwg, 01/30/2003 08:58:18 AM



EXPLANATION

MW99-1 ⊙ 3475.09 — MONITORING WELL GROUNDWATER ELEVATION (FT. ABOVE MEAN SEA LEVEL)

3475.00 — GROUNDWATER ELEVATION CONTOURS (DASHED WHERE INFERRED) CONTOUR INTERVAL = 0.25 FT

→ GROUNDWATER FLOW DIRECTION

FILE NAME: DEC2002 GW | COMPILED BY: SCOTT ROSE | PROJECT MANAGER: MIKE GATES | DRAWN BY: JIM HARBESTON | DATE:

ARCADIS G&M
5100 EAST SKELLY DRIVE SUITE 1000
TULSA, OKLAHOMA 74135
Tel: (918) 664-9900 Fax: (918) 664-9925

NOT TO SCALE

GROUNDWATER ELEVATION CONTOURS DECEMBER 2002

SUN PIPE LINE COMPANY
LEA CRUDE OIL STATION
LEA CO. NEW MEXICO

PROJECT NUMBER
OK001201001

FIGURE NUMBER
1

Certificate of Analysis

STL Austin
14046 Summit Drive
Austin, Texas 78728

Tel: 512 244 0855
Fax: 512 244 0160
www.stl-inc.com

SEVERN TRENT SERVICES
STL Austin

ANALYTICAL REPORT

PROJECT NO. OK001201.0001

Lee Truck Station

Lot #: I2L100191

Mike Gates

ARCADIS Geraghty & Miller, Inc
5100 East Skelly Drive
Suite 1000
Tulsa, OK 74135

SEVERN TRENT LABORATORIES, INC.

Linda Voigt for
Linda Bendele Voigt
Project Manager

December 26, 2002

American Council of Independent Laboratories
International Association of Environmental Testing Laboratories

STL Austin is a part of Severn Trent Laboratories, Inc.

December 26, 2002

STL LOT NUMBER: **I2L100191**

Mike Gates
ARCADIS Geraghty & Miller, Inc
5100 East Skelly Drive
Suite 1000
Tulsa, OK 74135

Dear Mike Gates,

This report contains the analytical results for the seven samples received under chain of custody by Severn Trent Laboratories (STL) on December 10, 2002. These samples are associated with your Lee Truck Station project.

All applicable quality control procedures met method-specified acceptance criteria except as noted on the following page.

This report shall not be reproduced except in full, without the written approval of the laboratory.

If you have any questions, please feel free to call me at (512) 244-0855.

Sincerely,

Linda Voigt
Project Manager

cc: Project File

LOT NUMBER I2L100191

Nonconformance 09-06909

Affected Samples:
I2L100191 (1): MW99-3

Affected Methods:
160.1

Case Narrative:
Unable to reach constant weight.

Corrective Action:
none

EXECUTIVE SUMMARY - Detection Highlights

I2L100191

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
MW99-3 12/09/02 13:50 001				
Ethylbenzene	37	1.0	ug/L	SW846 8021B
Xylenes (total)	4.0	3.0	ug/L	SW846 8021B
Iron	0.99	0.10	mg/L	SW846 6010B
Total Dissolved Solids	3760	40.0	mg/L	MCAWW 160.1
Chloride	1480	200	mg/L	MCAWW 300.0A
Sulfate	513	100	mg/L	MCAWW 300.0A
Fluoride	10.5 G	5.0	mg/L	MCAWW 300.0A
Bromide	17.8	0.50	mg/L	MCAWW 300.0A
Bicarbonate Alkalinity	640	5.0	mg/L	MCAWW 310.1
MW99-3-DIS 12/09/02 13:50 002				
Calcium - DISSOLVED	285	5.0	mg/L	SW846 6010B
Potassium - DISSOLVED	70.4	5.0	mg/L	SW846 6010B
Magnesium - DISSOLVED	336	5.0	mg/L	SW846 6010B
Sodium - DISSOLVED	509	25.0	mg/L	SW846 6010B
MW99-2 12/09/02 14:15 003				
Iron	0.82	0.10	mg/L	SW846 6010B
Total Dissolved Solids	1720	40.0	mg/L	MCAWW 160.1
Chloride	361	50.0	mg/L	MCAWW 300.0A
Sulfate	238	50.0	mg/L	MCAWW 300.0A
Fluoride	6.2 G	5.0	mg/L	MCAWW 300.0A
Bromide	7.1	0.50	mg/L	MCAWW 300.0A
Bicarbonate Alkalinity	341	5.0	mg/L	MCAWW 310.1
MW99-2-DIS 12/09/02 14:15 004				
Calcium - DISSOLVED	82.7	5.0	mg/L	SW846 6010B
Potassium - DISSOLVED	19.1	5.0	mg/L	SW846 6010B
Magnesium - DISSOLVED	65.3	5.0	mg/L	SW846 6010B
Sodium - DISSOLVED	327	25.0	mg/L	SW846 6010B
MW99-1 12/09/02 15:00 005				
Iron	0.86	0.10	mg/L	SW846 6010B
Total Dissolved Solids	1390	40.0	mg/L	MCAWW 160.1

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

I2L100191

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
MW99-1 12/09/02 15:00 005				
Chloride	359	50.0	mg/L	MCAWW 300.0A
Sulfate	237	50.0	mg/L	MCAWW 300.0A
Fluoride	6.0 G	5.0	mg/L	MCAWW 300.0A
Bromide	6.1	0.50	mg/L	MCAWW 300.0A
Bicarbonate Alkalinity	336	5.0	mg/L	MCAWW 310.1
MW99-1-DIS 12/09/02 15:00 006				
Calcium - DISSOLVED	81.0	5.0	mg/L	SW846 6010B
Potassium - DISSOLVED	17.9	5.0	mg/L	SW846 6010B
Magnesium - DISSOLVED	66.2	5.0	mg/L	SW846 6010B
Sodium - DISSOLVED	305	25.0	mg/L	SW846 6010B

ANALYTICAL METHODS SUMMARY

I2L100191

PARAMETER	ANALYTICAL METHOD
Bicarbonate Alkalinity	MCAWW 310.1
Bromide	MCAWW 300.0A
Carbonate Alkalinity	MCAWW 310.1
Chloride	MCAWW 300.0A
Filterable Residue (TDS)	MCAWW 160.1
Fluoride	MCAWW 300.0A
Nitrate as N	MCAWW 300.0A
Sulfate	MCAWW 300.0A
Trace Inductively Coupled Plasma (ICP) Metals	SW846 6010B
Volatiles by GC	SW846 8021B

References:

MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

SAMPLE SUMMARY

I2L100191

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
FEH2N	001	MW99-3	12/09/02	13:50
FEH3X	002	MW99-3-DIS	12/09/02	13:50
FEH30	003	MW99-2	12/09/02	14:15
FEH33	004	MW99-2-DIS	12/09/02	14:15
FEH34	005	MW99-1	12/09/02	15:00
FEH35	006	MW99-1-DIS	12/09/02	15:00
FEH38	007	TRIP BLANK	12/09/02	

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

QC DATA ASSOCIATION SUMMARY

I2L100191

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WATER	MCAWW 160.1		2350381	2350173
	WATER	MCAWW 310.1		2352393	2352197
	WATER	MCAWW 300.0A		2345394	2345178
	WATER	MCAWW 300.0A		2346161	2346046
	WATER	MCAWW 300.0A		2353245	2353104
	WATER	MCAWW 300.0A		2345373	2345167
	WATER	MCAWW 300.0A		2344420	2344209
	WATER	SW846 6010B		2345450	2345215
	WATER	SW846 8021B		2352458	2352238
	WATER	MCAWW 310.1		2352388	2352195
002	WATER	SW846 6010B		2350217	2350085
003	WATER	MCAWW 160.1		2350381	2350173
	WATER	MCAWW 310.1		2352393	2352197
	WATER	MCAWW 300.0A		2345394	2345178
	WATER	MCAWW 300.0A		2346161	2346046
	WATER	MCAWW 300.0A		2353245	2353104
	WATER	MCAWW 300.0A		2345373	2345167
	WATER	MCAWW 300.0A		2344420	2344209
	WATER	SW846 6010B		2345450	2345215
	WATER	SW846 8021B		2352458	2352238
	WATER	MCAWW 310.1		2352388	2352195
004	WATER	SW846 6010B		2350217	2350085
005	WATER	MCAWW 160.1		2350381	2350173
	WATER	MCAWW 310.1		2352393	2352197
	WATER	MCAWW 300.0A		2345394	2345178
	WATER	MCAWW 300.0A		2346161	2346046
	WATER	MCAWW 300.0A		2353245	2353104
	WATER	MCAWW 300.0A		2345373	2345167
	WATER	MCAWW 300.0A		2344420	2344209
	WATER	SW846 6010B		2345450	2345215
	WATER	SW846 8021B		2352458	2352238
	WATER	MCAWW 310.1		2352388	2352195
006	WATER	SW846 6010B		2350217	2350085
007	WATER	SW846 8021B		2352458	2352238

ARCADIS GERAGHTY & MILLER, INC

Client Sample ID: MW99-3

GC Volatiles

Lot-Sample #...: I2L100191-001	**Work Order #...:** FEH2N1AK	**Matrix.....:** WATER
Date Sampled...: 12/09/02 13:50	**Date Received..:** 12/10/02	**MS Run #.....:** 2352238
Prep Date.....: 12/16/02	**Analysis Date..:** 12/17/02	
Prep Batch #...: 2352458	**Analysis Time..:** 06:28	
Dilution Factor: 1		
	Method.....: SW846 8021B	

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Benzene	ND	1.0	ug/L
Ethylbenzene	**37**	**1.0**	**ug/L**
Toluene	ND	1.0	ug/L
Xylenes (total)	**4.0**	**3.0**	**ug/L**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	94	(70 - 130)
a,a,a-Trifluorotoluene (TFT)	100	(83 - 118)

ARCADIS GERAGHTY & MILLER, INC

Client Sample ID: MW99-3

TOTAL Metals

Lot-Sample #...: I2L100191-001 **Matrix.....:** WATER
Date Sampled...: 12/09/02 13:50 **Date Received..:** 12/10/02

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 2345450						
Iron	**0.99**	**0.10**	**mg/L**	**SW846 6010B**	**12/12-12/13/02**	**FEH2N1AJ**
		Dilution Factor: 1		Analysis Time..: 12:46	MS Run #.....: 2345215	

ARCADIS GERAGHTY & MILLER, INC

Client Sample ID: MW99-3

General Chemistry

Lot-Sample #...: I2L100191-001 **Work Order #...:** FEH2N **Matrix.....:** WATER
Date Sampled...: 12/09/02 13:50 **Date Received..:** 12/10/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Bicarbonate Alkalinity	**640**	**5.0**	**mg/L**	**MCAWW 310.1**	**12/18/02**	**2352388**
		Dilution Factor: 1		Analysis Time..: 15:00	MS Run #.....: 2352195	
Bromide	**17.8**	**0.50**	**mg/L**	**MCAWW 300.0A**	**12/10/02**	**2344420**
		Dilution Factor: 1		Analysis Time..: 14:01	MS Run #.....: 2344209	
Carbonate Alkalinity	ND	5.0	mg/L	MCAWW 310.1	12/18/02	2352393
		Dilution Factor: 1		Analysis Time..: 15:00	MS Run #.....: 2352197	
Chloride	**1480**	**200**	**mg/L**	**MCAWW 300.0A**	**12/11/02**	**2345394**
		Dilution Factor: 200		Analysis Time..: 13:24	MS Run #.....: 2345178	
Fluoride	**10.5 G**	**5.0**	**mg/L**	**MCAWW 300.0A**	**12/19/02**	**2353245**
		Dilution Factor: 5		Analysis Time..: 08:55	MS Run #.....: 2353104	
Nitrate	ND	0.50	mg/L	MCAWW 300.0A	12/10/02	2345373
		Dilution Factor: 1		Analysis Time..: 14:01	MS Run #.....: 2345167	
Sulfate	**513**	**100**	**mg/L**	**MCAWW 300.0A**	**12/11/02**	**2346161**
		Dilution Factor: 100		Analysis Time..: 10:54	MS Run #.....: 2346046	
Total Dissolved Solids	**3760**	**40.0**	**mg/L**	**MCAWW 160.1**	**12/16-12/20/02**	**2350381**
		Dilution Factor: 1		Analysis Time..: 12:00	MS Run #.....: 2350173	

NOTE(S):

RL Reporting Limit

G Elevated reporting limit. The reporting limit is elevated due to matrix interference.

ARCADIS GERAGHTY & MILLER, INC

Client Sample ID: MW99-3-DIS

DISSOLVED Metals

Lot-Sample #...: I2L100191-002 Matrix.....: WATER
Date Sampled...: 12/09/02 13:50 Date Received..: 12/10/02

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 2350217						
Calcium	285	5.0	mg/L	SW846 6010B	12/16-12/17/02	FEH3X1AA
		Dilution Factor: 1		Analysis Time..: 13:21	MS Run #.....: 2350085	
Potassium	70.4	5.0	mg/L	SW846 6010B	12/16-12/17/02	FEH3X1AC
		Dilution Factor: 1		Analysis Time..: 13:21	MS Run #.....: 2350085	
Magnesium	336	5.0	mg/L	SW846 6010B	12/16-12/17/02	FEH3X1AD
		Dilution Factor: 1		Analysis Time..: 13:21	MS Run #.....: 2350085	
Sodium	509	25.0	mg/L	SW846 6010B	12/16-12/17/02	FEH3X1AE
		Dilution Factor: 5		Analysis Time..: 13:27	MS Run #.....: 2350085	

ARCADIS GERAGHTY & MILLER, INC

Client Sample ID: MW99-2

GC Volatiles

Lot-Sample #...: I2L100191-003 **Work Order #...:** FEH301AK **Matrix.....:** WATER
Date Sampled...: 12/09/02 14:15 **Date Received..:** 12/10/02 **MS Run #.....:** 2352238
Prep Date.....: 12/16/02 **Analysis Date..:** 12/17/02
Prep Batch #...: 2352458 **Analysis Time..:** 07:05
Dilution Factor: 1

Method.....: SW846 8021B

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Benzene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
Xylenes (total)	ND	3.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	99	(70 - 130)
a,a,a-Trifluorotoluene (TFT)	108	(83 - 118)

ARCADIS GERAGHTY & MILLER, INC

Client Sample ID: MW99-2

TOTAL Metals

Lot-Sample #...: I2L100191-003 **Matrix.....:** WATER
Date Sampled...: 12/09/02 14:15 **Date Received..:** 12/10/02

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 2345450						
Iron	**0.82**	**0.10**	**mg/L**	**SW846 6010B**	**12/12-12/13/02**	**FEH301AJ**
		Dilution Factor: 1		Analysis Time..: 12:51	MS Run #.....: 2345215	

ARCADIS GERAGHTY & MILLER, INC

Client Sample ID: MW99-2

General Chemistry

Lot-Sample #...: I2L100191-003 **Work Order #...:** FEH30 **Matrix.....:** WATER
Date Sampled...: 12/09/02 14:15 **Date Received..:** 12/10/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Bicarbonate Alkalinity	**341**	**5.0**	**mg/L**	**MCAWW 310.1**	**12/18/02**	**2352388**
		Dilution Factor: 1		Analysis Time..: 15:00	MS Run #.....: 2352195	
Bromide	**7.1**	**0.50**	**mg/L**	**MCAWW 300.0A**	**12/10/02**	**2344420**
		Dilution Factor: 1		Analysis Time..: 13:50	MS Run #.....: 2344209	
Carbonate Alkalinity	ND	5.0	mg/L	MCAWW 310.1	12/18/02	2352393
		Dilution Factor: 1		Analysis Time..: 15:00	MS Run #.....: 2352197	
Chloride	**361**	**50.0**	**mg/L**	**MCAWW 300.0A**	**12/11/02**	**2345394**
		Dilution Factor: 50		Analysis Time..: 11:26	MS Run #.....: 2345178	
Fluoride	**6.2 G**	**5.0**	**mg/L**	**MCAWW 300.0A**	**12/19/02**	**2353245**
		Dilution Factor: 5		Analysis Time..: 09:27	MS Run #.....: 2353104	
Nitrate	ND	0.50	mg/L	MCAWW 300.0A	12/10/02	2345373
		Dilution Factor: 1		Analysis Time..: 13:50	MS Run #.....: 2345167	
Sulfate	**238**	**50.0**	**mg/L**	**MCAWW 300.0A**	**12/11/02**	**2346161**
		Dilution Factor: 50		Analysis Time..: 11:26	MS Run #.....: 2346046	
Total Dissolved Solids	**1720**	**40.0**	**mg/L**	**MCAWW 160.1**	**12/16-12/20/02**	**2350381**
		Dilution Factor: 1		Analysis Time..: 12:00	MS Run #.....: 2350173	

NOTE(S):

RL Reporting Limit

G Elevated reporting limit. The reporting limit is elevated due to matrix interference.

ARCADIS GERAGHTY & MILLER, INC

Client Sample ID: MW99-2-DIS

DISSOLVED Metals

Lot-Sample #...: I2L100191-004 Matrix.....: WATER
Date Sampled...: 12/09/02 14:15 Date Received..: 12/10/02

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 2350217						
Calcium	82.7	5.0	mg/L	SW846 6010B	12/16-12/17/02	FEH331AA
		Dilution Factor: 1		Analysis Time..: 13:49	MS Run #.....: 2350085	
Potassium	19.1	5.0	mg/L	SW846 6010B	12/16-12/17/02	FEH331AC
		Dilution Factor: 1		Analysis Time..: 13:49	MS Run #.....: 2350085	
Magnesium	65.3	5.0	mg/L	SW846 6010B	12/16-12/17/02	FEH331AD
		Dilution Factor: 1		Analysis Time..: 13:49	MS Run #.....: 2350085	
Sodium	327	25.0	mg/L	SW846 6010B	12/16-12/17/02	FEH331AE
		Dilution Factor: 5		Analysis Time..: 17:17	MS Run #.....: 2350085	

ARCADIS GERAGHTY & MILLER, INC

Client Sample ID: MW99-1

GC Volatiles

Lot-Sample #...:	I2L100191-005	**Work Order #...:**	FEH341AK	**Matrix.....:**	WATER
Date Sampled...:	12/09/02 15:00	**Date Received..:**	12/10/02	**MS Run #.....:**	2352238
Prep Date.....:	12/16/02	**Analysis Date..:**	12/17/02		
Prep Batch #...:	2352458	**Analysis Time..:**	07:43		
Dilution Factor:	1				
		Method.....:	SW846 8021B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Benzene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
Xylenes (total)	ND	3.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	98	(70 - 130)
a,a,a-Trifluorotoluene (TFT)	107	(83 - 118)

ARCADIS GERAGHTY & MILLER, INC

Client Sample ID: MW99-1

TOTAL Metals

Lot-Sample #...: I2L100191-005 Matrix.....: WATER
Date Sampled...: 12/09/02 15:00 Date Received..: 12/10/02

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 2345450						
Iron	0.86	0.10	mg/L	SW846 6010B	12/12-12/13/02	FEH341AJ
		Dilution Factor: 1		Analysis Time..: 12:57	MS Run #.....: 2345215	

ARCADIS GERAGHTY & MILLER, INC

Client Sample ID: MW99-1

General Chemistry

Lot-Sample #...: I2L100191-005 **Work Order #...:** FEH34 **Matrix.....:** WATER
Date Sampled...: 12/09/02 15:00 **Date Received..:** 12/10/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Bicarbonate Alkalinity	**336**	**5.0**	**mg/L**	**MCAWW 310.1**	**12/18/02**	**2352388**
		Dilution Factor: 1		Analysis Time..: 15:00	MS Run #.....: 2352195	
Bromide	**6.1**	**0.50**	**mg/L**	**MCAWW 300.0A**	**12/10/02**	**2344420**
		Dilution Factor: 1		Analysis Time..: 13:18	MS Run #.....: 2344209	
Carbonate Alkalinity	ND	5.0	mg/L	MCAWW 310.1	12/18/02	2352393
		Dilution Factor: 1		Analysis Time..: 15:00	MS Run #.....: 2352197	
Chloride	**359**	**50.0**	**mg/L**	**MCAWW 300.0A**	**12/11/02**	**2345394**
		Dilution Factor: 50		Analysis Time..: 11:37	MS Run #.....: 2345178	
Fluoride	**6.0 G**	**5.0**	**mg/L**	**MCAWW 300.0A**	**12/19/02**	**2353245**
		Dilution Factor: 5		Analysis Time..: 10:11	MS Run #.....: 2353104	
Nitrate	ND	0.50	mg/L	MCAWW 300.0A	12/10/02	2345373
		Dilution Factor: 1		Analysis Time..: 13:18	MS Run #.....: 2345167	
Sulfate	**237**	**50.0**	**mg/L**	**MCAWW 300.0A**	**12/11/02**	**2346161**
		Dilution Factor: 50		Analysis Time..: 11:37	MS Run #.....: 2346046	
Total Dissolved Solids	**1390**	**40.0**	**mg/L**	**MCAWW 160.1**	**12/16-12/20/02**	**2350381**
		Dilution Factor: 1		Analysis Time..: 12:00	MS Run #.....: 2350173	

NOTE(S):

RL Reporting Limit

G Elevated reporting limit. The reporting limit is elevated due to matrix interference.

ARCADIS GERAGHTY & MILLER, INC

Client Sample ID: MW99-1-DIS

DISSOLVED Metals

Lot-Sample #...: I2L100191-006 Matrix.....: WATER
Date Sampled...: 12/09/02 15:00 Date Received..: 12/10/02

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 2350217						
Calcium	81.0	5.0	mg/L	SW846 6010B	12/16-12/17/02	FEH351AA
		Dilution Factor: 1		Analysis Time..: 13:54	MS Run #.....: 2350085	
Potassium	17.9	5.0	mg/L	SW846 6010B	12/16-12/17/02	FEH351AC
		Dilution Factor: 1		Analysis Time..: 13:54	MS Run #.....: 2350085	
Magnesium	66.2	5.0	mg/L	SW846 6010B	12/16-12/17/02	FEH351AD
		Dilution Factor: 1		Analysis Time..: 13:54	MS Run #.....: 2350085	
Sodium	305	25.0	mg/L	SW846 6010B	12/16-12/17/02	FEH351AE
		Dilution Factor: 5		Analysis Time..: 17:22	MS Run #.....: 2350085	

ARCADIS GERAGHTY & MILLER, INC

Client Sample ID: TRIP BLANK

GC Volatiles

Lot-Sample #...: I2L100191-007 **Work Order #...:** FEH381AA **Matrix.....:** WATER
Date Sampled...: 12/09/02 **Date Received..:** 12/10/02 **MS Run #.....:** 2352238
Prep Date.....: 12/16/02 **Analysis Date..:** 12/16/02
Prep Batch #...: 2352458 **Analysis Time..:** 19:56
Dilution Factor: 1

Method.....: SW846 8021B

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Benzene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
Xylenes (total)	ND	3.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	99	(70 - 130)
a,a,a-Trifluorotoluene (TFT)	107	(83 - 118)

METHOD BLANK REPORT

GC Volatiles

Client Lot #...: I2L100191 **Work Order #...:** FE4GJ1AA **Matrix.....:** WATER
MB Lot-Sample #: I2L180000-458

Prep Date.....: 12/16/02 **Analysis Time..:** 19:19
Analysis Date..: 12/16/02 **Prep Batch #...:** 2352458
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Benzene	ND	1.0	ug/L	SW846 8021B
Ethylbenzene	ND	1.0	ug/L	SW846 8021B
Toluene	ND	1.0	ug/L	SW846 8021B
Xylenes (total)	ND	3.0	ug/L	SW846 8021B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	96	(70 - 130)
a,a,a-Trifluorotoluene (TFT)	104	(83 - 118)

NOTE(S):

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

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: I2L100191 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: I2L110000-450 **Prep Batch #...:** 2345450						
Iron	ND	0.10	mg/L	SW846 6010B	12/12-12/13/02	FEL4C1AE
		Dilution Factor: 1				
		Analysis Time..: 09:48				

NOTE(S):

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

METHOD BLANK REPORT

DISSOLVED Metals

Client Lot #...: I2L100191 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: I2L160000-217 **Prep Batch #...:** 2350217						
Calcium	ND	5.0	mg/L	SW846 6010B	12/16-12/17/02	FEW3Q1AA
		Dilution Factor: 1				
		Analysis Time..: 11:08				
Magnesium	ND	5.0	mg/L	SW846 6010B	12/16-12/17/02	FEW3Q1AD
		Dilution Factor: 1				
		Analysis Time..: 11:08				
Potassium	ND	5.0	mg/L	SW846 6010B	12/16-12/17/02	FEW3Q1AC
		Dilution Factor: 1				
		Analysis Time..: 11:08				
Sodium	ND	5.0	mg/L	SW846 6010B	12/16-12/17/02	FEW3Q1AE
		Dilution Factor: 1				
		Analysis Time..: 11:08				

NOTE(S):

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

METHOD BLANK REPORT

General Chemistry

Client Lot #...: I2L100191 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Bromide		Work Order #: FEJE61AA		MB Lot-Sample #:	I2L100000-420	
	ND	0.50	mg/L	MCAWW 300.0A	12/10/02	2344420
		Dilution Factor: 1				
		Analysis Time..: 09:23				
Chloride		Work Order #: FELQ81AA		MB Lot-Sample #:	I2L110000-394	
	ND	1.0	mg/L	MCAWW 300.0A	12/11/02	2345394
		Dilution Factor: 1				
		Analysis Time..: 08:03				
Fluoride		Work Order #: FE5041AA		MB Lot-Sample #:	I2L190000-245	
	ND	1.0	mg/L	MCAWW 300.0A	12/19/02	2353245
		Dilution Factor: 1				
		Analysis Time..: 08:01				
Nitrate		Work Order #: FELKM1AA		MB Lot-Sample #:	I2L110000-373	
	ND	0.50	mg/L	MCAWW 300.0A	12/10/02	2345373
		Dilution Factor: 1				
		Analysis Time..: 09:23				
Sulfate		Work Order #: FEM801AA		MB Lot-Sample #:	I2L120000-161	
	ND	1.0	mg/L	MCAWW 300.0A	12/11/02	2346161
		Dilution Factor: 1				
		Analysis Time..: 08:03				
Total Dissolved Solids		Work Order #: FEXN61AA		MB Lot-Sample #:	I2L160000-381	
	ND	40.0	mg/L	MCAWW 160.1	12/16-12/20/02	2350381
		Dilution Factor: 1				
		Analysis Time..: 12:00				

NOTE(S):

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC Volatiles

Client Lot #...: I2L100191 **Work Order #...:** FE4GJ1AC **Matrix.....:** WATER
LCS Lot-Sample#: I2L180000-458
Prep Date.....: 12/16/02 **Analysis Date..:** 12/16/02
Prep Batch #...: 2352458 **Analysis Time..:** 18:00
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Methyl tert-butyl ether	**87**	**(64 - 138)**	**SW846 8021B**
Benzene	**110**	**(85 - 115)**	**SW846 8021B**
Ethylbenzene	**106**	**(85 - 115)**	**SW846 8021B**
Toluene	**111**	**(85 - 115)**	**SW846 8021B**
Xylenes (total)	**102**	**(85 - 115)**	**SW846 8021B**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	94	(70 - 130)
a,a,a-Trifluorotoluene (TFT)	98	(83 - 118)

NOTE(S):

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

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC Volatiles

Client Lot #...: I2L100191 **Work Order #...:** FE4GJ1AC **Matrix.....:** WATER
LCS Lot-Sample#: I2L180000-458
Prep Date.....: 12/16/02 **Analysis Date..:** 12/16/02
Prep Batch #...: 2352458 **Analysis Time..:** 18:00
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Methyl tert-butyl ether	**20.0**	**17.4**	**ug/L**	**87**	**SW846 8021B**
Benzene	**20.0**	**22.0**	**ug/L**	**110**	**SW846 8021B**
Ethylbenzene	**20.0**	**21.2**	**ug/L**	**106**	**SW846 8021B**
Toluene	**20.0**	**22.1**	**ug/L**	**111**	**SW846 8021B**
Xylenes (total)	**60.0**	**60.9**	**ug/L**	**102**	**SW846 8021B**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	94	(70 - 130)
a,a,a-Trifluorotoluene (TFT)	98	(83 - 118)

NOTE(S):

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

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: I2L100191 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: I2L110000-450 **Prep Batch #...:** 2345450					
Iron	101	(80 - 120)	SW846 6010B	12/12-12/13/02	FEL4C1CD
		Dilution Factor: 1	Analysis Time..: 09:59		

NOTE(S):

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

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: I2L100191 **Matrix.....:** WATER

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: I2L110000-450 **Prep Batch #...:** 2345450							
Iron	50.0	50.5	mg/L	101	SW846 6010B	12/12-12/13/02	FEL4C1CD
		Dilution Factor: 1			Analysis Time..: 09:59		

NOTE(S):

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

DISSOLVED Metals

Client Lot #...: I2L100191 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: I2L160000-217 **Prep Batch #...:** 2350217					
Calcium	105	(80 - 120)	SW846 6010B	12/16-12/17/02	FEW3Q1AF
		Dilution Factor: 1		Analysis Time..: 11:19	
Potassium	106	(80 - 120)	SW846 6010B	12/16-12/17/02	FEW3Q1AG
		Dilution Factor: 1		Analysis Time..: 11:19	
Magnesium	104	(80 - 120)	SW846 6010B	12/16-12/17/02	FEW3Q1AH
		Dilution Factor: 1		Analysis Time..: 11:19	
Sodium	109	(80 - 120)	SW846 6010B	12/16-12/17/02	FEW3Q1AJ
		Dilution Factor: 1		Analysis Time..: 11:19	

NOTE(S):

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

LABORATORY CONTROL SAMPLE DATA REPORT

DISSOLVED Metals

Client Lot #...: I2L100191 **Matrix.....:** WATER

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: I2L160000-217 **Prep Batch #...:** 2350217							
Calcium	50.0	52.3	mg/L	105	SW846 6010B	12/16-12/17/02	FEW3Q1AF
			Dilution Factor: 1		Analysis Time..: 11:19		
Potassium	50.0	53.0	mg/L	106	SW846 6010B	12/16-12/17/02	FEW3Q1AG
			Dilution Factor: 1		Analysis Time..: 11:19		
Magnesium	50.0	51.8	mg/L	104	SW846 6010B	12/16-12/17/02	FEW3Q1AH
			Dilution Factor: 1		Analysis Time..: 11:19		
Sodium	50.0	54.4	mg/L	109	SW846 6010B	12/16-12/17/02	FEW3Q1AJ
			Dilution Factor: 1		Analysis Time..: 11:19		

NOTE(S):

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: I2L100191 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Bromide		Work Order #: FEJE61AC	LCS Lot-Sample#: I2L100000-420		
	101	(89 - 107)	MCAWW 300.0A	12/10/02	2344420
		Dilution Factor: 1	Analysis Time..: 09:34		
Chloride		Work Order #: FELQ81AC	LCS Lot-Sample#: I2L110000-394		
	95	(86 - 105)	MCAWW 300.0A	12/11/02	2345394
		Dilution Factor: 1	Analysis Time..: 08:14		
Fluoride		Work Order #: FE5041AC	LCS Lot-Sample#: I2L190000-245		
	106	(92 - 107)	MCAWW 300.0A	12/19/02	2353245
		Dilution Factor: 1	Analysis Time..: 08:12		
Nitrate		Work Order #: FELKM1AC	LCS Lot-Sample#: I2L110000-373		
	101	(89 - 108)	MCAWW 300.0A	12/10/02	2345373
		Dilution Factor: 1	Analysis Time..: 09:34		
Sulfate		Work Order #: FEM801AC	LCS Lot-Sample#: I2L120000-161		
	97	(91 - 105)	MCAWW 300.0A	12/11/02	2346161
		Dilution Factor: 1	Analysis Time..: 08:14		
Total Dissolved Solids		Work Order #: FEXN61AC	LCS Lot-Sample#: I2L160000-381		
	104	(87 - 113)	MCAWW 160.1	12/16-12/20/02	2350381
		Dilution Factor: 1	Analysis Time..: 12:00		

NOTE(S):

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

LABORATORY CONTROL SAMPLE DATA REPORT

General Chemistry

Client Lot #...: I2L100191 **Matrix.....:** WATER

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Bromide			Work Order #: FEJE61AC	LCS Lot-Sample#:		I2L100000-420	
	10.0	10.1	mg/L	101	MCAWW 300.0A	12/10/02	2344420
			Dilution Factor: 1		Analysis Time..: 09:34		
Chloride			Work Order #: FELQ81AC	LCS Lot-Sample#:		I2L110000-394	
	3.00	2.86	mg/L	95	MCAWW 300.0A	12/11/02	2345394
			Dilution Factor: 1		Analysis Time..: 08:14		
Fluoride			Work Order #: FE5041AC	LCS Lot-Sample#:		I2L190000-245	
	2.00	2.12	mg/L	106	MCAWW 300.0A	12/19/02	2353245
			Dilution Factor: 1		Analysis Time..: 08:12		
Nitrate			Work Order #: FELKM1AC	LCS Lot-Sample#:		I2L110000-373	
	3.00	3.02	mg/L	101	MCAWW 300.0A	12/10/02	2345373
			Dilution Factor: 1		Analysis Time..: 09:34		
Sulfate			Work Order #: FEM801AC	LCS Lot-Sample#:		I2L120000-161	
	15.0	14.6	mg/L	97	MCAWW 300.0A	12/11/02	2346161
			Dilution Factor: 1		Analysis Time..: 08:14		
Total Dissolved Solids			Work Order #: FEXN61AC	LCS Lot-Sample#:		I2L160000-381	
	2010	2100	mg/L	104	MCAWW 160.1	12/16-12/20/02	2350381
			Dilution Factor: 1		Analysis Time..: 12:00		

NOTE(S):

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

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC Volatiles

Client Lot #...: I2L100191 **Work Order #...:** FELL71AE-MS **Matrix.....:** WATER
MS Lot-Sample #: I2L110220-007 FELL71AF-MSD
Date Sampled...: 12/10/02 11:20 **Date Received..:** 12/11/02 **MS Run #.....:** 2352238
Prep Date.....: 12/16/02 **Analysis Date..:** 12/17/02
Prep Batch #...: 2352458 **Analysis Time..:** 15:11
Dilution Factor: 20

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Methyl tert-butyl ether	**80**	**(64 - 138)**			**SW846 8021B**
	80	**(64 - 138)**	**0.83**	**(0-30)**	**SW846 8021B**
Benzene	**102**	**(85 - 115)**			**SW846 8021B**
	96	**(85 - 115)**	**1.9**	**(0-20)**	**SW846 8021B**
Ethylbenzene	**112**	**(85 - 118)**			**SW846 8021B**
	109	**(85 - 118)**	**1.9**	**(0-20)**	**SW846 8021B**
Toluene	**106**	**(85 - 115)**			**SW846 8021B**
	105	**(85 - 115)**	**0.76**	**(0-20)**	**SW846 8021B**
Xylenes (total)	**103**	**(85 - 115)**			**SW846 8021B**
	101	**(85 - 115)**	**2.3**	**(0-20)**	**SW846 8021B**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	91	(70 - 130)
	96	(70 - 130)
a,a,a-Trifluorotoluene (TFT)	104	(83 - 118)
	104	(83 - 118)

NOTE(S):

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

Bold print denotes control parameters

MATRIX SPIKE SAMPLE DATA REPORT

GC Volatiles

Client Lot #...: I2L100191 **Work Order #...:** FELL71AE-MS **Matrix.....:** WATER
MS Lot-Sample #: I2L110220-007 FELL71AF-MSD
Date Sampled...: 12/10/02 11:20 **Date Received..:** 12/11/02 **MS Run #.....:** 2352238
Prep Date.....: 12/16/02 **Analysis Date..:** 12/17/02
Prep Batch #...: 2352458 **Analysis Time..:** 15:11
Dilution Factor: 20

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Methyl tert-butyl ether	**ND**	**400**	**318**	**ug/L**	**80**		**SW846 8021B**
	ND	**400**	**321**	**ug/L**	**80**	**0.83**	**SW846 8021B**
Benzene	**710**	**400**	**1120**	**ug/L**	**102**		**SW846 8021B**
	710	**400**	**1100**	**ug/L**	**96**	**1.9**	**SW846 8021B**
Ethylbenzene	**230**	**400**	**679**	**ug/L**	**112**		**SW846 8021B**
	230	**400**	**666**	**ug/L**	**109**	**1.9**	**SW846 8021B**
Toluene	**14**	**400**	**438**	**ug/L**	**106**		**SW846 8021B**
	14	**400**	**435**	**ug/L**	**105**	**0.76**	**SW846 8021B**
Xylenes (total)	**ND**	**1200**	**1240**	**ug/L**	**103**		**SW846 8021B**
	ND	**1200**	**1210**	**ug/L**	**101**	**2.3**	**SW846 8021B**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	91	(70 - 130)
	96	(70 - 130)
a,a,a-Trifluorotoluene (TFT)	104	(83 - 118)
	104	(83 - 118)

NOTE(S):

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

Bold print denotes control parameters

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: I2L100191 **Matrix.....:** WATER
Date Sampled...: 12/04/02 09:00 **Date Received..:** 12/06/02

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: I2L060196-001 **Prep Batch #...:** 2345450							
Iron	101	(75 - 125)			SW846 6010B	12/12-12/13/02	FECTG1AN
	100	(75 - 125)	0.50	(0-20)	SW846 6010B	12/12-12/13/02	FECTG1AP
		Dilution Factor: 1					
		Analysis Time..: 10:32					
		MS Run #.....: 2345215					

NOTE(S):

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

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: I2L100191 **Matrix.....:** WATER
Date Sampled...: 12/04/02 09:00 **Date Received..:** 12/06/02

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: I2L060196-001 **Prep Batch #...:** 2345450									
Iron									
	0.11	50.0	50.5	mg/L	101		SW846 6010B	12/12-12/13/02	FECTG1AN
	0.11	50.0	50.2	mg/L	100	0.50	SW846 6010B	12/12-12/13/02	FECTG1AP

Dilution Factor: 1
Analysis Time..: 10:32
MS Run #.....: 2345215

NOTE(S):

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

MATRIX SPIKE SAMPLE EVALUATION REPORT

DISSOLVED Metals

Client Lot #...: I2L100191 **Matrix.....:** WATER
Date Sampled...: 12/09/02 13:50 **Date Received..:** 12/10/02

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: I2L100191-002 **Prep Batch #...:** 2350217							
Calcium	NC	(75 - 125)			SW846 6010B	12/16-12/17/02	FEH3X1AF
	NC	(75 - 125)		(0-20)	SW846 6010B	12/16-12/17/02	FEH3X1AG
		Dilution Factor: 1					
		Analysis Time..: 13:38					
		MS Run #.....: 2350085					
Magnesium	NC	(75 - 125)			SW846 6010B	12/16-12/17/02	FEH3X1AK
	NC	(75 - 125)		(0-20)	SW846 6010B	12/16-12/17/02	FEH3X1AL
		Dilution Factor: 1					
		Analysis Time..: 13:38					
		MS Run #.....: 2350085					
Potassium	115	(75 - 125)			SW846 6010B	12/16-12/17/02	FEH3X1AH
	120	(75 - 125)	2.2	(0-20)	SW846 6010B	12/16-12/17/02	FEH3X1AJ
		Dilution Factor: 1					
		Analysis Time..: 13:38					
		MS Run #.....: 2350085					
Sodium	NC	(75 - 125)			SW846 6010B	12/16-12/17/02	FEH3X1AM
	NC	(75 - 125)		(0-20)	SW846 6010B	12/16-12/17/02	FEH3X1AN
		Dilution Factor: 5					
		Analysis Time..: 17:06					
		MS Run #.....: 2350085					

NOTE(S):

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

NC The recovery and/or RPD were not calculated.

MATRIX SPIKE SAMPLE DATA REPORT

DISSOLVED Metals

Client Lot #...: I2L100191 **Matrix.....:** WATER
Date Sampled...: 12/09/02 13:50 **Date Received..:** 12/10/02

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: I2L100191-002 **Prep Batch #...:** 2350217									
Calcium									
	285	50.0	337 NC	mg/L			SW846 6010B	12/16-12/17/02	FEH3X1AF
	285	50.0	342 NC	mg/L			SW846 6010B	12/16-12/17/02	FEH3X1AG
			Dilution Factor: 1						
			Analysis Time..: 13:38						
			MS Run #.....: 2350085						
Magnesium									
	336	50.0	391 NC	mg/L			SW846 6010B	12/16-12/17/02	FEH3X1AK
	336	50.0	399 NC	mg/L			SW846 6010B	12/16-12/17/02	FEH3X1AL
			Dilution Factor: 1						
			Analysis Time..: 13:38						
			MS Run #.....: 2350085						
Potassium									
	70.4	50.0	128	mg/L	115		SW846 6010B	12/16-12/17/02	FEH3X1AH
	70.4	50.0	131	mg/L	120	2.2	SW846 6010B	12/16-12/17/02	FEH3X1AJ
			Dilution Factor: 1						
			Analysis Time..: 13:38						
			MS Run #.....: 2350085						
Sodium									
	509	50.0	580 NC	mg/L			SW846 6010B	12/16-12/17/02	FEH3X1AM
	509	50.0	577 NC	mg/L			SW846 6010B	12/16-12/17/02	FEH3X1AN
			Dilution Factor: 5						
			Analysis Time..: 17:06						
			MS Run #.....: 2350085						

NOTE(S):

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

NC The recovery and/or RPD were not calculated.

MATRIX SPIKE SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: I2L100191 **Matrix.....:** WATER
Date Sampled...: 12/12/02 13:05 **Date Received..:** 12/12/02

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Bromide		WO#: FEH341AM-MS/FEH341AN-MSD				MS Lot-Sample #: I2L100191-005	
	94	(89 - 107)			MCAWW 300.0A	12/10/02	2344420
	95	(89 - 107)	0.63	(0-20)	MCAWW 300.0A	12/10/02	2344420
		Dilution Factor: 1					
		Analysis Time..: 13:29					
		MS Run #.....: 2344209					
Chloride		WO#: FEH2N1AM-MS/FEH2N1AN-MSD				MS Lot-Sample #: I2L100191-001	
	119 N	(86 - 105)			MCAWW 300.0A	12/11/02	2345394
	120 N	(86 - 105)	0.47	(0-22)	MCAWW 300.0A	12/11/02	2345394
		Dilution Factor: 1					
		Analysis Time..: 13:35					
		MS Run #.....: 2345178					
Fluoride		WO#: FEH2N1AU-MS/FEH2N1AV-MSD				MS Lot-Sample #: I2L100191-001	
	107	(92 - 107)			MCAWW 300.0A	12/19/02	2353245
	106	(92 - 107)	0.46	(0-20)	MCAWW 300.0A	12/19/02	2353245
		Dilution Factor: 1					
		Analysis Time..: 09:06					
		MS Run #.....: 2353104					
Fluoride		WO#: FER4A1AF-MS/FER4A1AG-MSD				MS Lot-Sample #: I2L130250-002	
	95	(92 - 107)			MCAWW 300.0A	12/19/02	2353245
	105	(92 - 107)	6.7	(0-20)	MCAWW 300.0A	12/19/02	2353245
		Dilution Factor: 1					
		Analysis Time..: 08:33					
		MS Run #.....: 2353104					
Nitrate		WO#: FEHQ61AD-MS/FEHQ61AE-MSD				MS Lot-Sample #: I2L100162-001	
	120 N	(89 - 108)			MCAWW 300.0A	12/10/02	2345373
	122 N	(89 - 108)	0.78	(0-28)	MCAWW 300.0A	12/10/02	2345373
		Dilution Factor: 1					
		Analysis Time..: 11:25					
		MS Run #.....: 2345167					
Sulfate		WO#: FEH2N1AP-MS/FEH2N1AQ-MSD				MS Lot-Sample #: I2L100191-001	
	102	(91 - 105)			MCAWW 300.0A	12/11/02	2346161
	101	(91 - 105)	0.74	(0-26)	MCAWW 300.0A	12/11/02	2346161
		Dilution Factor: 1					
		Analysis Time..: 11:05					
		MS Run #.....: 2346046					

NOTE(S):

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

N Spiked analyte recovery is outside stated control limits.

MATRIX SPIKE SAMPLE DATA REPORT

General Chemistry

Client Lot #...: I2L100191 **Matrix.....:** WATER
Date Sampled...: 12/12/02 13:05 **Date Received..:** 12/12/02

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Bromide			WO#: FEH341AM-MS/FEH341AN-MSD				MS Lot-Sample #: I2L100191-005		
	6.1	10.0	15.5	mg/L	94		MCAWW 300.0A	12/10/02	2344420
	6.1	10.0	15.6	mg/L	95	0.63	MCAWW 300.0A	12/10/02	2344420
			Dilution Factor: 1						
			Analysis Time..: 13:29						
			MS Run #.....: 2344209						
Chloride			WO#: FEH2N1AM-MS/FEH2N1AN-MSD				MS Lot-Sample #: I2L100191-001		
	1480	600	2190 N	mg/L	119		MCAWW 300.0A	12/11/02	2345394
	1480	600	2200 N	mg/L	120	0.47	MCAWW 300.0A	12/11/02	2345394
			Dilution Factor: 1						
			Analysis Time..: 13:35						
			MS Run #.....: 2345178						
Fluoride			WO#: FEH2N1AU-MS/FEH2N1AV-MSD				MS Lot-Sample #: I2L100191-001		
	10.5	10.0	21.1	mg/L	107		MCAWW 300.0A	12/19/02	2353245
	10.5	10.0	21.0	mg/L	106	0.46	MCAWW 300.0A	12/19/02	2353245
			Dilution Factor: 1						
			Analysis Time..: 09:06						
			MS Run #.....: 2353104						
Fluoride			WO#: FER4A1AF-MS/FER4A1AG-MSD				MS Lot-Sample #: I2L130250-002		
	10.4	20.0	29.4	mg/L	95		MCAWW 300.0A	12/19/02	2353245
	10.4	20.0	31.5	mg/L	105	6.7	MCAWW 300.0A	12/19/02	2353245
			Dilution Factor: 1						
			Analysis Time..: 08:33						
			MS Run #.....: 2353104						
Nitrate			WO#: FEHQ61AD-MS/FEHQ61AE-MSD				MS Lot-Sample #: I2L100162-001		
	6.4	3.00	9.96 N	mg/L	120		MCAWW 300.0A	12/10/02	2345373
	6.4	3.00	10.0 N	mg/L	122	0.78	MCAWW 300.0A	12/10/02	2345373
			Dilution Factor: 1						
			Analysis Time..: 11:25						
			MS Run #.....: 2345167						
Sulfate			WO#: FEH2N1AP-MS/FEH2N1AQ-MSD				MS Lot-Sample #: I2L100191-001		
	513	1500	2040	mg/L	102		MCAWW 300.0A	12/11/02	2346161
	513	1500	2020	mg/L	101	0.74	MCAWW 300.0A	12/11/02	2346161
			Dilution Factor: 1						
			Analysis Time..: 11:05						
			MS Run #.....: 2346046						

NOTE (S) :

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

N Spiked analyte recovery is outside stated control limits.

MATRIX SPIKE SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: I2L100191 **Matrix.....:** WATER
Date Sampled...: 12/09/02 14:15 **Date Received..:** 12/10/02

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Fluoride		Work Order #...: FEH301AM		MS Lot-Sample #: I2L100191-003	
	107	(92 - 107)	MCAWW 300.0A	12/19/02	2353245
		Dilution Factor: 5		Analysis Time..: 09:27	
		MS Run #.....: 2353104			
Fluoride		Work Order #...: FEH341AP		MS Lot-Sample #: I2L100191-005	
	106	(92 - 107)	MCAWW 300.0A	12/19/02	2353245
		Dilution Factor: 5		Analysis Time..: 10:11	
		MS Run #.....: 2353104			

NOTE(S):

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

MATRIX SPIKE SAMPLE DATA REPORT

General Chemistry

Client Lot #...: I2L100191 **Matrix.....:** WATER
Date Sampled...: 12/09/02 14:15 **Date Received..:** 12/10/02

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Fluoride			Work Order #...: FEH301AM			MS Lot-Sample #: I2L100191-003		
	6.2	10.0	16.9	mg/L	107	MCAWW 300.0A	12/19/02	2353245
			Dilution Factor: 5		Analysis Time..: 09:27			
			MS Run #.....: 2353104					
Fluoride			Work Order #...: FEH341AP			MS Lot-Sample #: I2L100191-005		
	6.0	10.0	16.6	mg/L	106	MCAWW 300.0A	12/19/02	2353245
			Dilution Factor: 5		Analysis Time..: 10:11			
			MS Run #.....: 2353104					

NOTE(S):

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

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: I2L100191 **Work Order #...:** FELKW-SMP FELKW-DUP **Matrix.....:** WATER

Date Sampled...: 12/11/02 10:51 **Date Received..:** 12/11/02

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Dissolved Solids						SD Lot-Sample #: I2L110215-001		
	734	702	mg/L	4.5	(0-20)	MCAWW 160.1	12/16-12/20/02	2350381
			Dilution Factor: 1			Analysis Time..: 12:00	MS Run Number..: 2350173	

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: I2L100191 **Work Order #...:** FEH2N-SMP FEH2N-DUP **Matrix.....:** WATER

Date Sampled...: 12/09/02 13:50 **Date Received..:** 12/10/02

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Bicarbonate Alkalinity						SD Lot-Sample #: I2L100191-001		
	640	645	mg/L	0.71	(0-20)	MCAWW 310.1	12/18/02	2352388
			Dilution Factor: 1			Analysis Time..: 15:00	MS Run Number..: 2352195	
Carbonate Alkalinity						SD Lot-Sample #: I2L100191-001		
	ND	ND	mg/L	0	(0-20)	MCAWW 310.1	12/18/02	2352393
			Dilution Factor: 1			Analysis Time..: 15:00	MS Run Number..: 2352197	

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: I2L100191 **Work Order #...:** FELKV-SMP FELKV-DUP **Matrix.....:** WATER

Date Sampled...: 12/09/02 11:05 **Date Received..:** 12/11/02

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Bicarbonate Alkalinity						SD Lot-Sample #: I2L110214-001		
	308	307	mg/L	0.39	(0-20)	MCAWW 310.1	12/18/02	2352388
			Dilution Factor: 1			Analysis Time..: 15:00	MS Run Number..: 2352195	
Carbonate Alkalinity						SD Lot-Sample #: I2L110214-001		
	ND	ND	mg/L	0	(0-20)	MCAWW 310.1	12/18/02	2352393
			Dilution Factor: 1			Analysis Time..: 15:00	MS Run Number..: 2352197	

ARCADIS GERAGHTY & MILLER

Laboratory Task Order No./P.O. No. _____

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name OR0001351.0001

Project Location Ace Truck Section

Laboratory STL

Project Manager Mike Gores

Sampler(s)/Affiliation Tracy Shoemaker

I2L100191

Sample ID/Location	Matrix	Date/~~Time~~ Sampled	Time / Lab ID	ANALYSIS / METHOD / SIZE: 250mL Carbonate, alkalinity	500mL NEAT Bicarbonate, Chloride, Nitrate, Sulfate, TDS	500mL Dissolved Mn, Ca, K, Na NEAT	500mL Dissolved Iron	40mL VOA BTEX HCl		Remarks	Total
MW99-3	L	12/9/02	1350	1	1	1	1	3		2nd Rt. 10-02 cc	7
MW99-2	L	12/9/02	1415	1	1	1	1	3			7
MW99-1	L	12/9/02	1500	1	1	1	1	3			7
Trip Blank	L	—	—	—	—	—	—	3			1
											22

Sample Matrix: L = ~~Liquid~~; S = Solid; A = Air

Total No. of Bottles/ Containers: 22

Relinquished by:		Organization: Arcadis	Date 12/9/02	Time 1645	Seal Intact?	
Received by:		Organization: STL	Date 12/10/02	Time 0830	Yes	No N/A
Relinquished by:		Organization:	Date / /	Time	Seal Intact?	
Received by:		Organization:	Date / /	Time	Yes	No N/A

Special Instructions/Remarks: _____

Delivery Method: ☐ In Person ☐ Common Carrier FedEx (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

AG 05-0597

1R248

Mid-Continent
Pipe Line Company
PO Box 2039
Tulsa OK 74102-2039

January 23, 2002

Mr. William Olson
Hydrologist
Environmental Bureau
New Mexico Energy, Mineral & Natural Resources Department
Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, NM 87505

RE: 2001 Annual Groundwater Sampling Results
Sunoco, Inc. (R&M) Lea Crude Oil Station
Lea County, New Mexico

Dear Mr. Olson:

Enclosed is the annual groundwater sampling report for the above referenced facility prepared by our consultant, ARCADIS G&M, Inc.

If you have any questions or require any additional information, please contact me at (918) 586-6394.

Sincerely,

David M. Minielly

Sr. Environmental Specialist

cc: (w/attachments)
D. Humiston – Abilene
C. Rutland - Abilene
File
Chris Williams – OCD Hobbs District Office
1625 North French Drive
Hobbs, New Mexico
88240

File/Projects/Lea Station N.M.

ARCADIS

Infrastructure, buildings, environment, communications

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Oklahoma 74135
Tel 918 664 9900
Fax 918 664 9925

ENVIRONMENTAL SERVICES

Mr. David Minielly
Sun Pipe Line Company
907 South Detroit
Tulsa, OK 74120

Subject:
Annual Groundwater Sampling and Reporting; Lea Crude Oil Station, Lea County, New Mexico

Tulsa, OK,
16 January 2002

Contact:
Michael M. Gates

Extension:
918-664-9900

Dear Mr. Minielly:

On December 12, 2002, ARCADIS conducted the annual groundwater sampling at Sunoco's Crude Oil Station in Lea County, New Mexico. The sampling event was conducted to comply with requirements of the New Mexico Oil Conservation Division (OCD) based on their letter to you dated July 5, 2001.

Specifically, the OCD scope of work requires Sunoco to (1) sample and analyze groundwater from each monitor well on an annual basis for concentrations of benzene, toluene, ethylbenzene and xylenes (BTEX); total dissolved solids; and major cations and anions using USEPA approved methods and quality assurance/quality control (QA/QC) procedures; and (2) submit an annual report to the OCD by April 1 of each year that includes the following:

a) A description of the sampling activities which occurred during the past calendar year.
b) A water-table map showing the location of the station, excavated areas, monitor wells, and any other pertinent site features as well as the direction and magnitude of the hydraulic gradient created using the water-table elevation from each monitor well.
c) Summary tables of all groundwater quality sampling results and copies of all recent laboratory analytical data sheets and associated QA/QC data.
d) The disposition of all wastes generated.

This letter report summarizes the annual sampling event and provides the information required for annual reporting to the OCD.

Groundwater Sampling Activities

On December 12, 2001, ARCADIS collected groundwater samples from the three monitor wells located at the Lea Crude Oil Station. A site map showing the location of the monitor wells and other pertinent site features is attached as Figure 1. Prior to

sampling, the water level in each well was measured using an electronic interface probe. Liquid hydrocarbons were not present in any site monitor well and the depth to groundwater averaged 33 feet below ground surface. The groundwater elevation and general groundwater flow direction are shown on Figure 1. The general groundwater flow direction remains to the east-southeast consistent with past measurements.

Prior to collecting groundwater samples each monitor well was purged of three well volumes of water. The purge water was placed in on-site drums. Purging and sampling was conducted with disposable bailers dedicated for each well. Groundwater samples were collected in approved laboratory containers, labeled and preserved on ice and shipped to Severn Trent Laboratory in Austin, Texas under appropriate chain of custody.

Groundwater Sample Results

All groundwater samples were submitted to Severn Trent Laboratory in Austin, Texas for analysis of BTEX, total dissolved solids, and major cations and ions. The BTEX results are summarized in the attached Table 1. BTEX were detectable in only trace amounts in two of the three monitor wells. As shown in Table 1, BTEX concentrations have decreased from the trace amounts measured in site wells in December 2000 and remain well below New Mexico Water Quality Control Commission groundwater standards.

The results of the general water chemistry are summarized in the attached Table 2. The analyses include major cations and anions, and total dissolved solids. The results for this sampling event are generally similar to the December 2000 sample results as presented in Table 2. A decrease in total dissolved solids and chlorides is noted for MW99-3.

The Severn Trent Laboratory report including the QA/QC data and chain of custody records are attached.

Summary

The results of the annual groundwater sampling event conducted in December 2001 are summarized as follows:

- Groundwater flow direction is to the east-southeast consistent with historical observations. The hydraulic gradient across the site is low.
- BTEX was detected in two of the three monitor wells in trace amounts. The BTEX concentrations are below applicable groundwater standards.

- The general water chemistry observed for this sampling event is similar to the general water chemistry observed in December 2000.
- A decrease in chloride and total dissolved solids concentrations in MW99-3 was noted compared to December 2000

A copy of this report should be sent to the OCD Office in Santa Fe with a copy provided to the Hobbs District Office. The report should be provided to the OCD prior to April 1, 2002. If you have any questions concerning the field work or report, please give me a call.

Sincerely,

ARCADIS G&M, Inc.

Michael M. Gates
Project Advisor

Copies:

ARCADIS

Table 1. Groundwater Analytical Results, Sunoco, Inc., Lea Truck Station.

Sample Number	Date Collected	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)
MW99-1	12/12/01	<1.0	<1.0	<1.0	<3.0
	12/5/00	<1.0	<1.0	<1.0	<3.0
MW99-2	12/12/01	1.3	<1.0	2.2	<3.0
	12/5/00	2.6	1.5	3.7	<3.0
MW99-3	12/12/01	<1.0	<1.0	6	<3.0
	12/5/00	<1.0	<1.0	22	<3.0

(µg/L) micrograms per liter.
< less than.

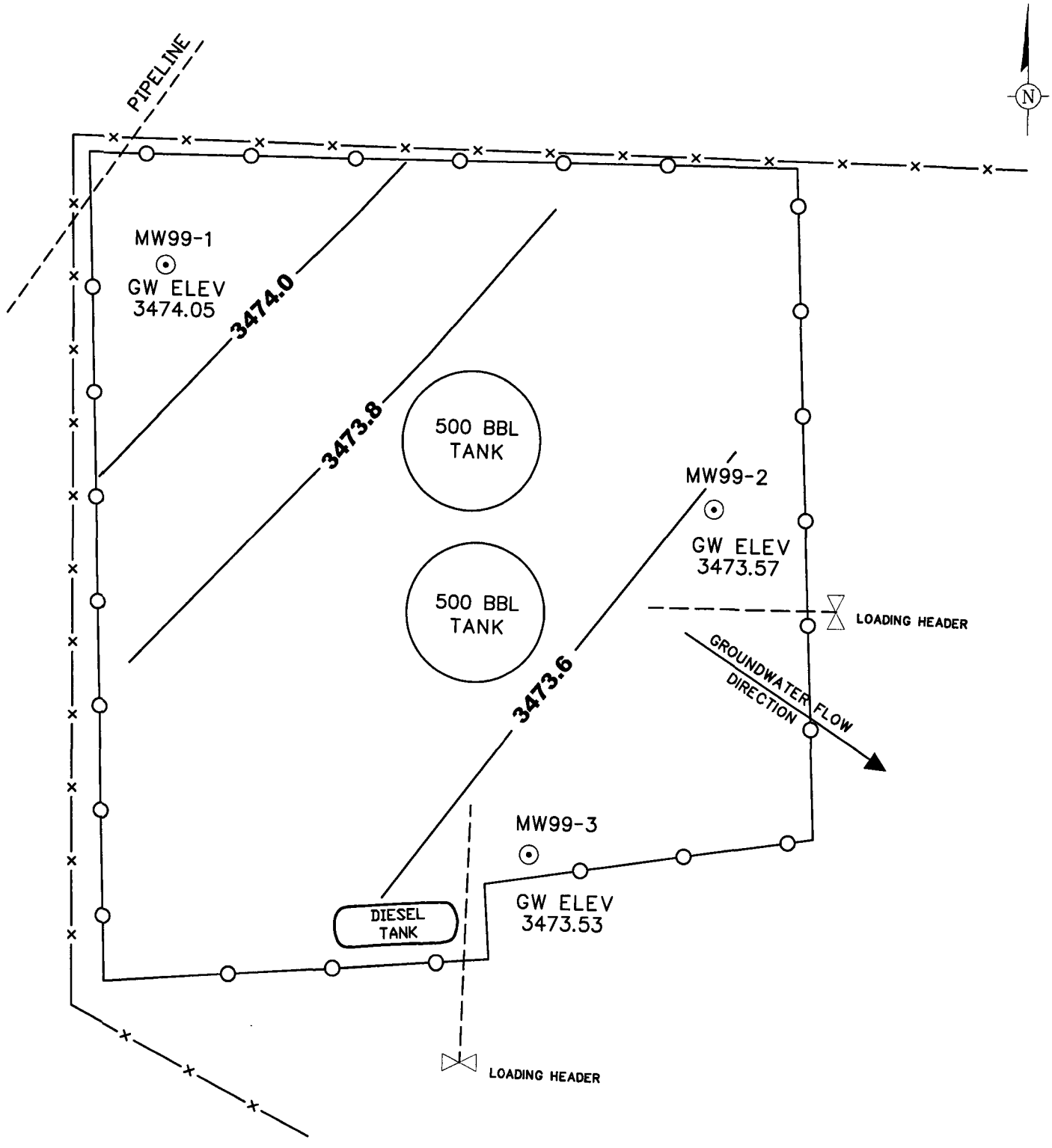
G:\APROJECT\SUNPIPE\OK120101\TABLES\[TBL1.XLS]BTEX

ARCADIS

Table 2. General Chemistry and Total Metals, Sunoco, Inc., Lea Truck Station.

Sample Number	Date Collected	Bicarbonate Alkalinity (mg/l)	Bromide (mg/l)	Carbonate Alkalinity (mg/l)	Chloride (mg/l)	Fluoride (mg/l)	Nitrate (mg/l)	Sulfate (mg/l)	Total Dissolved Solids (mg/l)	Calcium (mg/l)	Iron (mg/l)	Potassium (mg/l)	Magnesium (mg/l)	Sodium (mg/l)
MW99-1	12/12/01	332	3.1	ND	387	5.5	ND	244	1,360	102	17.2	21.3	80.6	ND
	12/5/00	185	3.4	ND	344	4.6	46.4	237	1,530	80.5	2.79	14.2	65.5	285
MW99-2	12/12/01	352	3.0	ND	364	5.9	ND	237	1,300	91.7	56.8	21.8	71.9	280
	12/5/00	227	3.2	ND	344	5.1	48.6	245	1,580	93.8	13.1	17.9	72.5	295
MW99-3	12/12/01	525	7.7	ND	1,120	7.7	ND	366	2,790	208	19.2	68	220	495
	12/5/00	445	9.9	ND	1,210	3.6	45.6	367	3,460	288	52.6	70	301	550

ND Non detect.
mg/L Milligrams per liter.
G:\APROJECT\SUNPIPE\OK120101\TABLES\[TBL2.XLS]Table 1



DATE: 16JAN02 | FILE NAME: MAP2 | COMPILED BY: MIKE GATES | PROJECT MANAGER: MIKE GATES | DRAWN BY: SHANON WALKER

ARCADIS G&M
5100 EAST SKELLY DRIVE SUITE 1000
TULSA, OKLAHOMA 74135
Tel: (918) 664-9900 Fax: (918) 664-9925

NOT TO SCALE

SITE MAP

SUN PIPE LINE COMPANY
LEA CRUDE OIL STATION
LEA CO. NEW MEXICO

PROJECT NUMBER
OK001201001

FIGURE NUMBER
1

Certificate of Analysis

STL Austin
14046 Summit Drive
Austin, Texas 78728

Tel: 512 244 0855
Fax: 512 244 0160
www.stl-inc.com

SEVERN TRENT SERVICES
STL Austin

ANALYTICAL REPORT

PROJECT NO. OK001201.0001

Lee Truck Station

Lot #: I1L130271

Mike Gates

ARCADIS Geraghty & Miller, Inc
5100 East Skelly Drive
Suite 1000
Tulsa, OK 74135

SEVERN TRENT LABORATORIES, INC.

Linda Bendele Voigt
Project Manager

December 26, 2001

December 26, 2001

STL LOT NUMBER: **I1L130271**

Mike Gates
ARCADIS Geraghty & Miller, Inc
5100 East Skelly Drive
Suite 1000
Tulsa, OK 74135

Dear Mike Gates,

This report contains the analytical results for the seven samples received under chain of custody by Severn Trent Laboratories (STL) on December 13, 2001. These samples are associated with your Lee Truck Station project.

All applicable quality control procedures met method-specified acceptance criteria.

This report shall not be reproduced except in full, without the written approval of the laboratory.

If you have any questions, please feel free to call me at (512) 244-0855.

Sincerely,

Linda Voigt

Linda Voigt
Project Manager

cc: Project File

EXECUTIVE SUMMARY - Detection Highlights

I1L130271

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
MW99-1 12/12/01 11:45 001				
Iron	17.2	0.10	mg/L	SW846 6010B
Total Dissolved Solids	1360	80.0	mg/L	MCAWW 160.1
Chloride	387	50.0	mg/L	MCAWW 300.0A
Sulfate	244	20.0	mg/L	MCAWW 300.0A
Fluoride	5.5	1.0	mg/L	MCAWW 300.0A
Bromide	3.1	0.50	mg/L	MCAWW 300.0A
Bicarbonate Alkalinity	332	5.0	mg/L	MCAWW 310.1
MW99-1-DIS 12/12/01 11:45 002				
Calcium - DISSOLVED	102	5.0	mg/L	SW846 6010B
Potassium - DISSOLVED	21.3	5.0	mg/L	SW846 6010B
Magnesium - DISSOLVED	80.6	5.0	mg/L	SW846 6010B
MW99-2 12/12/01 12:30 003				
Benzene	1.3	1.0	ug/L	SW846 8021B
Ethylbenzene	2.2	1.0	ug/L	SW846 8021B
Iron	56.8	0.10	mg/L	SW846 6010B
Total Dissolved Solids	1300	160	mg/L	MCAWW 160.1
Chloride	364	50.0	mg/L	MCAWW 300.0A
Sulfate	237	20.0	mg/L	MCAWW 300.0A
Fluoride	5.9	1.0	mg/L	MCAWW 300.0A
Bromide	3.0	0.50	mg/L	MCAWW 300.0A
Bicarbonate Alkalinity	352	5.0	mg/L	MCAWW 310.1
MW99-2-DIS 12/12/01 12:30 004				
Calcium - DISSOLVED	91.7	5.0	mg/L	SW846 6010B
Potassium - DISSOLVED	21.8	5.0	mg/L	SW846 6010B
Magnesium - DISSOLVED	71.9	5.0	mg/L	SW846 6010B
Sodium - DISSOLVED	280	250	mg/L	SW846 6010B
MW99-3 12/12/01 11:00 005				
Ethylbenzene	6.0	1.0	ug/L	SW846 8021B
Iron	19.2	0.10	mg/L	SW846 6010B
Total Dissolved Solids	2790	160	mg/L	MCAWW 160.1

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

I1L130271

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
MW99-3 12/12/01 11:00 005				
Chloride	1120	200	mg/L	MCAWW 300.0A
Sulfate	366	20.0	mg/L	MCAWW 300.0A
Fluoride	7.7	5.0	mg/L	MCAWW 300.0A
Bromide	7.7	0.50	mg/L	MCAWW 300.0A
Bicarbonate Alkalinity	525	5.0	mg/L	MCAWW 310.1
MW99-3-DIS 12/12/01 11:00 006				
Calcium - DISSOLVED	208	5.0	mg/L	SW846 6010B
Potassium - DISSOLVED	68.0	5.0	mg/L	SW846 6010B
Magnesium - DISSOLVED	220	5.0	mg/L	SW846 6010B
Sodium - DISSOLVED	495	250	mg/L	SW846 6010B

ANALYTICAL METHODS SUMMARY

I1L130271

PARAMETER	ANALYTICAL METHOD
Bicarbonate Alkalinity	MCAWW 310.1
Bromide	MCAWW 300.0A
Carbonate Alkalinity	MCAWW 310.1
Chloride	MCAWW 300.0A
Filterable Residue (TDS)	MCAWW 160.1
Fluoride	MCAWW 300.0A
Nitrate as N	MCAWW 300.0A
Sulfate	MCAWW 300.0A
Trace Inductively Coupled Plasma (ICP) Metals	SW846 6010B
Volatiles by GC	SW846 8021B

References:

MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

SAMPLE SUMMARY

I1L130271

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
EQF0V	001	MW99-1	12/12/01	11:45
EQF07	002	MW99-1-DIS	12/12/01	11:45
EQF1A	003	MW99-2	12/12/01	12:30
EQF1F	004	MW99-2-DIS	12/12/01	12:30
EQF1G	005	MW99-3	12/12/01	11:00
EQF1J	006	MW99-3-DIS	12/12/01	11:00
EQF1N	007	TRIP BLANKS	12/12/01	

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

ARCADIS GERAGHTY & MILLER, INC

Client Sample ID: MW99-1

GC Volatiles

Lot-Sample #...: I1L130271-001 **Work Order #...:** EQF0V1AK **Matrix.....:** WATER
Date Sampled...: 12/12/01 11:45 **Date Received..:** 12/13/01 **MS Run #.....:** 1352166
Prep Date.....: 12/17/01 **Analysis Date..:** 12/17/01
Prep Batch #...: 1352339 **Analysis Time..:** 18:38
Dilution Factor: 1

Method.....: SW846 8021B

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Benzene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
Xylenes (total)	ND	3.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	102	(70 - 130)
a,a,a-Trifluorotoluene (TFT)	97	(77 - 128)

ARCADIS GERAGHTY & MILLER, INC

Client Sample ID: MW99-2

GC Volatiles

Lot-Sample #...:	I1L130271-003	**Work Order #...:**	EQF1A1AK	**Matrix.....:**	WATER
Date Sampled...:	12/12/01 12:30	**Date Received..:**	12/13/01	**MS Run #.....:**	1352166
Prep Date.....:	12/17/01	**Analysis Date..:**	12/17/01		
Prep Batch #...:	1352339	**Analysis Time..:**	22:00		
Dilution Factor:	1				
		Method.....:	SW846 8021B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Benzene	**1.3**	**1.0**	**ug/L**
Ethylbenzene	**2.2**	**1.0**	**ug/L**
Toluene	ND	1.0	ug/L
Xylenes (total)	ND	3.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	102	(70 - 130)
a,a,a-Trifluorotoluene (TFT)	100	(77 - 128)

ARCADIS GERAGHTY & MILLER, INC

Client Sample ID: MW99-3

GC Volatiles

Lot-Sample #...: I1L130271-005 **Work Order #...:** EQF1G1AK **Matrix.....:** WATER
Date Sampled...: 12/12/01 11:00 **Date Received..:** 12/13/01 **MS Run #.....:** 1352166
Prep Date.....: 12/17/01 **Analysis Date..:** 12/17/01
Prep Batch #...: 1352339 **Analysis Time..:** 22:40
Dilution Factor: 1

Method.....: SW846 8021B

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Benzene	ND	1.0	ug/L
Ethylbenzene	**6.0**	**1.0**	**ug/L**
Toluene	ND	1.0	ug/L
Xylenes (total)	ND	3.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	102	(70 - 130)
a,a,a-Trifluorotoluene (TFT)	96	(77 - 128)

ARCADIS GERAGHTY & MILLER, INC

Client Sample ID: TRIP BLANKS

GC Volatiles

Lot-Sample #...: I1L130271-007 **Work Order #...:** EQF1N1AA **Matrix.....:** WATER
Date Sampled...: 12/12/01 **Date Received..:** 12/13/01 **MS Run #.....:** 1352166
Prep Date.....: 12/17/01 **Analysis Date..:** 12/17/01
Prep Batch #...: 1352339 **Analysis Time..:** 15:15
Dilution Factor: 1

Method.....: SW846 8021B

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Benzene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
Xylenes (total)	ND	3.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	98	(70 - 130)
a,a,a-Trifluorotoluene (TFT)	100	(77 - 128)

ARCADIS GERAGHTY & MILLER, INC

Client Sample ID: MW99-1

General Chemistry

Lot-Sample #...: I1L130271-001 Work Order #...: EQF0V Matrix.....: WATER
Date Sampled...: 12/12/01 11:45 Date Received..: 12/13/01

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Bicarbonate Alkalinity	332	5.0	mg/L	MCAWW 310.1	12/17/01	1352207
		Dilution Factor: 1		Analysis Time..: 17:36	MS Run #.....:	
Bromide	3.1	0.50	mg/L	MCAWW 300.0A	12/13/01	1348166
		Dilution Factor: 1		Analysis Time..: 16:43	MS Run #.....: 1348050	
Carbonate Alkalinity	ND	5.0	mg/L	MCAWW 310.1	12/17/01	1352208
		Dilution Factor: 1		Analysis Time..: 00:00	MS Run #.....:	
Chloride	387	50.0	mg/L	MCAWW 300.0A	12/13/01	1348162
		Dilution Factor: 50		Analysis Time..: 16:56	MS Run #.....: 1348054	
Fluoride	5.5	1.0	mg/L	MCAWW 300.0A	12/19/01	1353405
		Dilution Factor: 1		Analysis Time..: 16:18	MS Run #.....: 1354036	
Nitrate	ND	0.50	mg/L	MCAWW 300.0A	12/13/01	1348163
		Dilution Factor: 1		Analysis Time..: 16:43	MS Run #.....: 1348051	
Sulfate	244	20.0	mg/L	MCAWW 300.0A	12/13/01	1348164
		Dilution Factor: 20		Analysis Time..: 18:13	MS Run #.....: 1348053	
Total Dissolved Solids	1360	80.0	mg/L	MCAWW 160.1	12/12-12/20/01	1346502
		Dilution Factor: 2		Analysis Time..: 10:00	MS Run #.....: 1347216	

ARCADIS GERAGHTY & MILLER, INC

Client Sample ID: MW99-2

General Chemistry

Lot-Sample #...: I1L130271-003 Work Order #...: EQF1A Matrix.....: WATER
Date Sampled...: 12/12/01 12:30 Date Received..: 12/13/01

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Bicarbonate Alkalinity	**352**	**5.0**	**mg/L**	**MCAWW 310.1**	**12/17/01**	**1352207**
		Dilution Factor: 1		Analysis Time..: 17:57	MS Run #.....:	
Bromide	**3.0**	**0.50**	**mg/L**	**MCAWW 300.0A**	**12/13/01**	**1348166**
		Dilution Factor: 1		Analysis Time..: 17:09	MS Run #.....: 1348050	
Carbonate Alkalinity	ND	5.0	mg/L	MCAWW 310.1	12/17/01	1352208
		Dilution Factor: 1		Analysis Time..: 00:00	MS Run #.....:	
Chloride	**364**	**50.0**	**mg/L**	**MCAWW 300.0A**	**12/13/01**	**1348162**
		Dilution Factor: 50		Analysis Time..: 17:22	MS Run #.....: 1348054	
Fluoride	**5.9**	**1.0**	**mg/L**	**MCAWW 300.0A**	**12/19/01**	**1353405**
		Dilution Factor: 1		Analysis Time..: 16:50	MS Run #.....: 1354036	
Nitrate	ND	0.50	mg/L	MCAWW 300.0A	12/13/01	1348163
		Dilution Factor: 1		Analysis Time..: 17:09	MS Run #.....: 1348051	
Sulfate	**237**	**20.0**	**mg/L**	**MCAWW 300.0A**	**12/13/01**	**1348164**
		Dilution Factor: 20		Analysis Time..: 18:26	MS Run #.....: 1348053	
Total Dissolved Solids	**1300**	**160**	**mg/L**	**MCAWW 160.1**	**12/12-12/20/01**	**1346502**
		Dilution Factor: 4		Analysis Time..: 10:00	MS Run #.....: 1347216	

ARCADIS GERAGHTY & MILLER, INC

Client Sample ID: MW99-3

General Chemistry

Lot-Sample #...: I1L130271-005 **Work Order #...:** EQF1G **Matrix.....:** WATER
Date Sampled...: 12/12/01 11:00 **Date Received..:** 12/13/01

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Bicarbonate Alkalinity	**525**	**5.0**	**mg/L**	**MCAWW 310.1**	**12/17/01**	**1352207**
		Dilution Factor: 1		Analysis Time..: 18:02	MS Run #.....:	
Bromide	**7.7**	**0.50**	**mg/L**	**MCAWW 300.0A**	**12/13/01**	**1348166**
		Dilution Factor: 1		Analysis Time..: 15:38	MS Run #.....: 1348050	
Carbonate Alkalinity	ND	5.0	mg/L	MCAWW 310.1	12/17/01	1352208
		Dilution Factor: 1		Analysis Time..: 00:00	MS Run #.....:	
Chloride	**1120**	**200**	**mg/L**	**MCAWW 300.0A**	**12/13/01**	**1348162**
		Dilution Factor: 200		Analysis Time..: 15:00	MS Run #.....: 1348054	
Fluoride	**7.7**	**5.0**	**mg/L**	**MCAWW 300.0A**	**12/19/01**	**1353405**
		Dilution Factor: 5		Analysis Time..: 18:06	MS Run #.....: 1354036	
Nitrate	ND	0.50	mg/L	MCAWW 300.0A	12/13/01	1348163
		Dilution Factor: 1		Analysis Time..: 15:38	MS Run #.....: 1348051	
Sulfate	**366**	**20.0**	**mg/L**	**MCAWW 300.0A**	**12/13/01**	**1348164**
		Dilution Factor: 20		Analysis Time..: 18:00	MS Run #.....: 1348053	
Total Dissolved Solids	**2790**	**160**	**mg/L**	**MCAWW 160.1**	**12/12-12/20/01**	**1346502**
		Dilution Factor: 4		Analysis Time..: 10:00	MS Run #.....: 1347216	

QC DATA ASSOCIATION SUMMARY

I1L130271

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WATER	MCAWW 160.1		1346502	1347216
	WATER	MCAWW 310.1		1352208	
	WATER	MCAWW 300.0A		1348162	1348054
	WATER	MCAWW 300.0A		1348164	1348053
	WATER	MCAWW 300.0A		1353405	1354036
	WATER	MCAWW 300.0A		1348163	1348051
	WATER	MCAWW 300.0A		1348166	1348050
	WATER	SW846 6010B		1352281	1352131
	WATER	SW846 8021B		1352339	1352166
	WATER	MCAWW 310.1		1352207	
002	WATER	SW846 6010B		1348339	1348159
003	WATER	MCAWW 160.1		1346502	1347216
	WATER	MCAWW 310.1		1352208	
	WATER	MCAWW 300.0A		1348162	1348054
	WATER	MCAWW 300.0A		1348164	1348053
	WATER	MCAWW 300.0A		1353405	1354036
	WATER	MCAWW 300.0A		1348163	1348051
	WATER	MCAWW 300.0A		1348166	1348050
	WATER	SW846 6010B		1352281	1352131
	WATER	SW846 8021B		1352339	1352166
	WATER	MCAWW 310.1		1352207	
004	WATER	SW846 6010B		1348339	1348159
005	WATER	MCAWW 160.1		1346502	1347216
	WATER	MCAWW 310.1		1352208	
	WATER	MCAWW 300.0A		1348162	1348054
	WATER	MCAWW 300.0A		1348164	1348053
	WATER	MCAWW 300.0A		1353405	1354036
	WATER	MCAWW 300.0A		1348163	1348051
	WATER	MCAWW 300.0A		1348166	1348050
	WATER	SW846 6010B		1352281	1352131
	WATER	SW846 8021B		1352339	1352166
	WATER	MCAWW 310.1		1352207	
006	WATER	SW846 6010B		1348339	1348159
007	WATER	SW846 8021B		1352339	1352166

ARCADIS GERAGHTY & MILLER, INC

Client Sample ID: MW99-1

TOTAL Metals

Lot-Sample #...: I1L130271-001 **Matrix.....:** WATER
Date Sampled...: 12/12/01 11:45 **Date Received..:** 12/13/01

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1352281						
Iron	**17.2**	**0.10**	**mg/L**	**SW846 6010B**	**12/18-12/19/01**	**EQF0V1AJ**
		Dilution Factor: 1		Analysis Time..: 15:35	MS Run #.....: 1352131	

ARCADIS GERAGHTY & MILLER, INC

Client Sample ID: MW99-1-DIS

DISSOLVED Metals

Lot-Sample #...: I1L130271-002 Matrix.....: WATER
Date Sampled...: 12/12/01 11:45 Date Received..: 12/13/01

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1348339						
Calcium	102	5.0	mg/L	SW846 6010B	12/14-12/17/01	EQF071AA
		Dilution Factor: 1		Analysis Time..: 17:39	MS Run #.....: 1348159	
Potassium	21.3	5.0	mg/L	SW846 6010B	12/14-12/17/01	EQF071AC
		Dilution Factor: 1		Analysis Time..: 17:39	MS Run #.....: 1348159	
Magnesium	80.6	5.0	mg/L	SW846 6010B	12/14-12/17/01	EQF071AD
		Dilution Factor: 1		Analysis Time..: 17:39	MS Run #.....: 1348159	
Sodium	ND	250	mg/L	SW846 6010B	12/14-12/18/01	EQF071AE
		Dilution Factor: 50		Analysis Time..: 12:47	MS Run #.....: 1348159	

ARCADIS GERAGHTY & MILLER, INC

Client Sample ID: MW99-2

TOTAL Metals

Lot-Sample #...: I1L130271-003 Matrix.....: WATER
Date Sampled...: 12/12/01 12:30 Date Received..: 12/13/01

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1352281						
Iron	56.8	0.10	mg/L	SW846 6010B	12/18-12/19/01	EQF1A1AJ
		Dilution Factor: 1		Analysis Time..: 15:40	MS Run #.....: 1352131	

ARCADIS GERAGHTY & MILLER, INC

Client Sample ID: MW99-2-DIS

DISSOLVED Metals

Lot-Sample #...: I1L130271-004 Matrix.....: WATER
Date Sampled...: 12/12/01 12:30 Date Received..: 12/13/01

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1348339						
Calcium	91.7	5.0	mg/L	SW846 6010B	12/14-12/17/01	EQF1F1AA
		Dilution Factor: 1		Analysis Time..: 17:43	MS Run #.....: 1348159	
Potassium	21.8	5.0	mg/L	SW846 6010B	12/14-12/17/01	EQF1F1AC
		Dilution Factor: 1		Analysis Time..: 17:43	MS Run #.....: 1348159	
Magnesium	71.9	5.0	mg/L	SW846 6010B	12/14-12/17/01	EQF1F1AD
		Dilution Factor: 1		Analysis Time..: 17:43	MS Run #.....: 1348159	
Sodium	280	250	mg/L	SW846 6010B	12/14-12/18/01	EQF1F1AE
		Dilution Factor: 50		Analysis Time..: 12:52	MS Run #.....: 1348159	

ARCADIS GERAGHTY & MILLER, INC

Client Sample ID: MW99-3

TOTAL Metals

Lot-Sample #...: I1L130271-005 Matrix.....: WATER
Date Sampled...: 12/12/01 11:00 Date Received..: 12/13/01

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1352281						
Iron	19.2	0.10	mg/L	SW846 6010B	12/18-12/19/01	EQF1G1AJ
		Dilution Factor: 1		Analysis Time..: 15:45	MS Run #.....: 1352131	

ARCADIS GERAGHTY & MILLER, INC

Client Sample ID: MW99-3-DIS

DISSOLVED Metals

Lot-Sample #...: I1L130271-006 Matrix.....: WATER
Date Sampled...: 12/12/01 11:00 Date Received..: 12/13/01

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1348339						
Calcium	208	5.0	mg/L	SW846 6010B	12/14-12/17/01	EQF1J1AA
		Dilution Factor: 1		Analysis Time..: 17:48	MS Run #.....: 1348159	
Potassium	68.0	5.0	mg/L	SW846 6010B	12/14-12/17/01	EQF1J1AC
		Dilution Factor: 1		Analysis Time..: 17:48	MS Run #.....: 1348159	
Magnesium	220	5.0	mg/L	SW846 6010B	12/14-12/17/01	EQF1J1AD
		Dilution Factor: 1		Analysis Time..: 17:48	MS Run #.....: 1348159	
Sodium	495	250	mg/L	SW846 6010B	12/14-12/18/01	EQF1J1AE
		Dilution Factor: 50		Analysis Time..: 12:57	MS Run #.....: 1348159	

METHOD BLANK REPORT

GC Volatiles

Client Lot #...: I1L130271 **Work Order #...:** EQN0G1AA **Matrix.....:** WATER
MB Lot-Sample #: I1L180000-339

Prep Date.....: 12/17/01 **Analysis Time..:** 14:16
Analysis Date..: 12/17/01 **Prep Batch #...:** 1352339
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Benzene	ND	1.0	ug/L	SW846 8021B
Ethylbenzene	ND	1.0	ug/L	SW846 8021B
Toluene	ND	1.0	ug/L	SW846 8021B
Xylenes (total)	ND	3.0	ug/L	SW846 8021B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	102	(70 - 130)
a,a,a-Trifluorotoluene (TFT)	97	(77 - 128)

NOTE(S):

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

METHOD BLANK REPORT

General Chemistry

Client Lot #...: I1L130271 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Bromide		Work Order #: EQGW41AA		MB Lot-Sample #:	I1L140000-166	
	ND	0.50	mg/L	MCAWW 300.0A	12/13/01	1348166
		Dilution Factor: 1				
		Analysis Time..: 11:20				
Chloride		Work Order #: EQGXC1AA		MB Lot-Sample #:	I1L140000-162	
	ND	1.0	mg/L	MCAWW 300.0A	12/13/01	1348162
		Dilution Factor: 1				
		Analysis Time..: 11:20				
Fluoride		Work Order #: EQTET1AA		MB Lot-Sample #:	I1L190000-405	
	ND	1.0	mg/L	MCAWW 300.0A	12/19/01	1353405
		Dilution Factor: 1				
		Analysis Time..: 13:24				
Nitrate		Work Order #: EQGW71AA		MB Lot-Sample #:	I1L140000-163	
	ND	0.50	mg/L	MCAWW 300.0A	12/13/01	1348163
		Dilution Factor: 1				
		Analysis Time..: 11:20				
Sulfate		Work Order #: EQGXA1AA		MB Lot-Sample #:	I1L140000-164	
	ND	1.0	mg/L	MCAWW 300.0A	12/13/01	1348164
		Dilution Factor: 1				
		Analysis Time..: 11:20				
Total Dissolved Solids		Work Order #: EQGJG1AA		MB Lot-Sample #:	I1L120000-502	
	ND	40.0	mg/L	MCAWW 160.1	12/12-12/20/01	1346502
		Dilution Factor: 1				
		Analysis Time..: 10:00				

NOTE(S):

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

METHOD BLANK REPORT

DISSOLVED Metals

Client Lot #...: I1L130271 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: I1L140000-339 **Prep Batch #...:** 1348339						
Calcium	ND	5.0	mg/L	SW846 6010B	12/14-12/17/01	EQHVA1AQ
		Dilution Factor: 1				
		Analysis Time..: 15:01				
Magnesium	ND	5.0	mg/L	SW846 6010B	12/14-12/17/01	EQHVA1AT
		Dilution Factor: 1				
		Analysis Time..: 15:01				
Potassium	ND	5.0	mg/L	SW846 6010B	12/14-12/17/01	EQHVA1AR
		Dilution Factor: 1				
		Analysis Time..: 15:01				
Sodium	ND	5.0	mg/L	SW846 6010B	12/14-12/17/01	EQHVA1AU
		Dilution Factor: 1				
		Analysis Time..: 15:01				

NOTE(S):

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

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: I1L130271 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: I1L180000-281 **Prep Batch #...:** 1352281						
Iron	ND	0.10	mg/L	SW846 6010B	12/18-12/19/01	EQNN31A1
		Dilution Factor: 1				
		Analysis Time..: 14:01				

NOTE(S):

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

LABORATORY CONTROL SAMPLE DATA REPORT

DISSOLVED Metals

Lot-Sample #...: I1L130271 **Matrix.....:** WATER

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Calcium	50.0	52.5	mg/L	105		SW846 6010B	12/14-12/17/01	1348339
	50.0	55.8	mg/L	112	6.1	SW846 6010B	12/14-12/17/01	1348339
			Dilution Factor: 1					
Magnesium	50.0	51.3	mg/L	103		SW846 6010B	12/14-12/17/01	1348339
	50.0	53.9	mg/L	108	5.0	SW846 6010B	12/14-12/17/01	1348339
			Dilution Factor: 1					
Potassium	50.0	49.7	mg/L	99		SW846 6010B	12/14-12/17/01	1348339
	50.0	51.6	mg/L	103	3.8	SW846 6010B	12/14-12/17/01	1348339
			Dilution Factor: 1					
Sodium	50.0	49.2	mg/L	98		SW846 6010B	12/14-12/17/01	1348339
	50.0	51.2	mg/L	102	4.1	SW846 6010B	12/14-12/17/01	1348339
			Dilution Factor: 1					

NOTE(S):

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

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Lot-Sample #...: I1L130271 **Matrix.....:** WATER

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Iron	50.0	50.6	mg/L	101		SW846 6010B	12/18-12/19/01	1352281
	50.0	51.0	mg/L	102	0.82	SW846 6010B	12/18-12/19/01	1352281

Dilution Factor: 1

NOTE(S):

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

DISSOLVED Metals

Lot-Sample #...: I1L130271 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP-BATCH #
Calcium	105	(80 - 120)			SW846 6010B	12/14-12/17/01	1348339
	112	(80 - 120)	6.1	(0-20)	SW846 6010B	12/14-12/17/01	1348339
		Dilution Factor: 1					
Magnesium	103	(80 - 120)			SW846 6010B	12/14-12/17/01	1348339
	108	(80 - 120)	5.0	(0-20)	SW846 6010B	12/14-12/17/01	1348339
		Dilution Factor: 1					
Potassium	99	(80 - 120)			SW846 6010B	12/14-12/17/01	1348339
	103	(80 - 120)	3.8	(0-20)	SW846 6010B	12/14-12/17/01	1348339
		Dilution Factor: 1					
Sodium	98	(80 - 120)			SW846 6010B	12/14-12/17/01	1348339
	102	(80 - 120)	4.1	(0-20)	SW846 6010B	12/14-12/17/01	1348339
		Dilution Factor: 1					

NOTE(S):

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Lot-Sample #...: I1L130271 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP-BATCH #
Iron	101	(80 - 120)			SW846 6010B	12/18-12/19/01	1352281
	102	(80 - 120)	0.82	(0-20)	SW846 6010B	12/18-12/19/01	1352281

Dilution Factor: 1

NOTE(S):

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

LABORATORY CONTROL SAMPLE DATA REPORT

GC Volatiles

Client Lot #...: I1L130271 **Work Order #...:** EQN0G1AC **Matrix.....:** WATER
LCS Lot-Sample#: I1L180000-339
Prep Date.....: 12/17/01 **Analysis Date..:** 12/17/01
Prep Batch #...: 1352339 **Analysis Time..:** 13:08
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Methyl tert-butyl ether	20.0	23.2	ug/L	116	SW846 8021B
Benzene	**20.0**	**20.7**	**ug/L**	**104**	**SW846 8021B**
Toluene	**20.0**	**21.7**	**ug/L**	**109**	**SW846 8021B**
Ethylbenzene	20.0	20.3	ug/L	102	SW846 8021B
Xylenes (total)	60.0	64.1	ug/L	107	SW846 8021B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	103	(70 - 130)
a,a,a-Trifluorotoluene (TFT)	101	(83 - 118)

NOTE(S):

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

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

General Chemistry

Client Lot #...: I1L130271 **Matrix.....:** WATER

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Bromide			Work Order #: EQGW41AC LCS Lot-Sample#: I1L140000-166				
	10.0	9.88	mg/L	99	MCAWW 300.0A	12/13/01	1348166
			Dilution Factor: 1				
			Analysis Time..: 11:33				
Chloride			Work Order #: EQGXC1AC LCS Lot-Sample#: I1L140000-162				
	3.00	2.88	mg/L	96	MCAWW 300.0A	12/13/01	1348162
			Dilution Factor: 1				
			Analysis Time..: 11:33				
Fluoride			Work Order #: EQTET1AC LCS Lot-Sample#: I1L190000-405				
	2.00	1.93	mg/L	97	MCAWW 300.0A	12/19/01	1353405
			Dilution Factor: 1				
			Analysis Time..: 13:35				
Nitrate			Work Order #: EQGW71AC LCS Lot-Sample#: I1L140000-163				
	3.00	2.97	mg/L	99	MCAWW 300.0A	12/13/01	1348163
			Dilution Factor: 1				
			Analysis Time..: 11:33				
Sulfate			Work Order #: EQGXA1AC LCS Lot-Sample#: I1L140000-164				
	15.0	14.2	mg/L	94	MCAWW 300.0A	12/13/01	1348164
			Dilution Factor: 1				
			Analysis Time..: 11:33				
Total Dissolved Solids			Work Order #: EQGJG1AC LCS Lot-Sample#: I1L120000-502				
	2010	1980	mg/L	98	MCAWW 160.1	12/12-12/20/01	1346502
			Dilution Factor: 1				
			Analysis Time..: 10:00				

NOTE(S):

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC Volatiles

Client Lot #...: I1L130271 **Work Order #...:** EQN0G1AC **Matrix.....:** WATER
LCS Lot-Sample#: I1L180000-339
Prep Date.....: 12/17/01 **Analysis Date..:** 12/17/01
Prep Batch #...: 1352339 **Analysis Time..:** 13:08
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Methyl tert-butyl ether	116	(64 - 138)	SW846 8021B
Benzene	**104**	**(85 - 115)**	**SW846 8021B**
Toluene	**109**	**(85 - 115)**	**SW846 8021B**
Ethylbenzene	102	(85 - 115)	SW846 8021B
Xylenes (total)	107	(85 - 115)	SW846 8021B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	103	(70 - 130)
a,a,a-Trifluorotoluene (TFT)	101	(83 - 118)

NOTE(S):

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

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: I1L130271 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Bromide		Work Order #: EQGW41AC LCS Lot-Sample#: I1L140000-166			
	99	(80 - 120)	MCAWW 300.0A	12/13/01	1348166
		Dilution Factor: 1			
		Analysis Time..: 11:33			
Chloride		Work Order #: EQGXC1AC LCS Lot-Sample#: I1L140000-162			
	96	(80 - 120)	MCAWW 300.0A	12/13/01	1348162
		Dilution Factor: 1			
		Analysis Time..: 11:33			
Fluoride		Work Order #: EQTET1AC LCS Lot-Sample#: I1L190000-405			
	97	(80 - 120)	MCAWW 300.0A	12/19/01	1353405
		Dilution Factor: 1			
		Analysis Time..: 13:35			
Nitrate		Work Order #: EQGW71AC LCS Lot-Sample#: I1L140000-163			
	99	(80 - 120)	MCAWW 300.0A	12/13/01	1348163
		Dilution Factor: 1			
		Analysis Time..: 11:33			
Sulfate		Work Order #: EQGXA1AC LCS Lot-Sample#: I1L140000-164			
	94	(80 - 120)	MCAWW 300.0A	12/13/01	1348164
		Dilution Factor: 1			
		Analysis Time..: 11:33			
Total Dissolved Solids		Work Order #: EQGJG1AC LCS Lot-Sample#: I1L120000-502			
	98	(87 - 113)	MCAWW 160.1	12/12-12/20/01	1346502
		Dilution Factor: 1			
		Analysis Time..: 10:00			

NOTE(S):

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

MATRIX SPIKE SAMPLE DATA REPORT

DISSOLVED Metals

Client Lot #...: I1L130271 **Matrix.....:** WATER
Date Sampled...: 12/06/01 15:45 **Date Received..:** 12/07/01

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASURED AMOUNT		UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: U1L070278-008 **Prep Batch #...:** 1348339										
Calcium										
	4830	50.0	4960	NC	mg/L			SW846 6010B	12/14-12/18/01	EP57K1AU
	4830	50.0	4830	NC	mg/L			SW846 6010B	12/14-12/18/01	EP57K1AV
			Dilution Factor: 50							
			Analysis Time..: 13:22							
			MS Run #.....: 1348159							
Magnesium										
	1890	50.0	1940	NC	mg/L			SW846 6010B	12/14-12/18/01	EP57K1A2
	1890	50.0	1870	NC	mg/L			SW846 6010B	12/14-12/18/01	EP57K1A3
			Dilution Factor: 50							
			Analysis Time..: 13:22							
			MS Run #.....: 1348159							
Potassium										
	34.4	50.0	122	N	mg/L	174		SW846 6010B	12/14-12/17/01	EP57K1AX
	34.4	50.0	119	N	mg/L	169	2.1	SW846 6010B	12/14-12/17/01	EP57K1A0
			Dilution Factor: 1							
			Analysis Time..: 16:34							
			MS Run #.....: 1348159							
Sodium										
	2350	50.0	2330	NC	mg/L			SW846 6010B	12/14-12/18/01	EP57K1A5
	2350	50.0	2170	NC	mg/L			SW846 6010B	12/14-12/18/01	EP57K1A6
			Dilution Factor: 50							
			Analysis Time..: 13:22							
			MS Run #.....: 1348159							

NOTE(S):

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

NC The recovery and/or RPD were not calculated.

N Spiked analyte recovery is outside stated control limits.

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: I1L130271 **Matrix.....:** WATER
Date Sampled...: 12/13/01 11:15 **Date Received..:** 12/13/01

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: I1L130259-002 **Prep Batch #...:** 1352281									
Iron									
	2.3	50.0	53.9	mg/L	103		SW846 6010B	12/18-12/19/01	EQFW31A3
	2.3	50.0	54.1	mg/L	104	0.34	SW846 6010B	12/18-12/19/01	EQFW31A4

Dilution Factor: 1
Analysis Time..: 15:06
MS Run #.....: 1352131

NOTE(S):

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

MATRIX SPIKE SAMPLE DATA REPORT

GC Volatiles

Client Lot #...: I1L130271 **Work Order #...:** EQF0V1AM-MS **Matrix.....:** WATER
MS Lot-Sample #: I1L130271-001 EQF0V1AN-MSD
Date Sampled...: 12/12/01 11:45 **Date Received..:** 12/13/01 **MS Run #.....:** 1352166
Prep Date.....: 12/17/01 **Analysis Date..:** 12/17/01
Prep Batch #...: 1352339 **Analysis Time..:** 19:19
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
Methyl tert-butyl ether	ND	20.0	23.8	ug/L	119		SW846 8021B
	ND	20.0	24.3	ug/L	121	1.8	SW846 8021B
Benzene	**ND**	**20.0**	**20.6**	**ug/L**	**103**		**SW846 8021B**
	ND	**20.0**	**20.7**	**ug/L**	**103**	**0.68**	**SW846 8021B**
Toluene	**ND**	**20.0**	**21.9**	**ug/L**	**110**		**SW846 8021B**
	ND	**20.0**	**22.3**	**ug/L**	**111**	**1.7**	**SW846 8021B**
Ethylbenzene	ND	20.0	20.2	ug/L	101		SW846 8021B
	ND	20.0	20.7	ug/L	103	2.4	SW846 8021B
Xylenes (total)	ND	60.0	64.8	ug/L	108		SW846 8021B
	ND	60.0	64.2	ug/L	107	0.96	SW846 8021B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	105	(70 - 130)
	104	(70 - 130)
a,a,a-Trifluorotoluene (TFT)	81	(77 - 128)
	80	(77 - 128)

NOTE(S):

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

Bold print denotes control parameters

MATRIX SPIKE SAMPLE DATA REPORT

General Chemistry

Client Lot #...: I1L130271 **Matrix.....:** WATER
Date Sampled...: 12/18/01 06:00 **Date Received..:** 12/19/01

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Bromide			WO#: EQF1G1AM-MS/EQF1G1AN-MSD MS Lot-Sample #: I1L130271-005						
	7.7	10.0	18.5	mg/L	108		MCAWW 300.0A	12/13/01	1348166
	7.7	10.0	18.4	mg/L	107	0.73	MCAWW 300.0A	12/13/01	1348166
			Dilution Factor: 1						
			Analysis Time..: 15:51						
			MS Run #.....: 1348050						
Chloride			WO#: EQELA1DU-MS/EQELA1DV-MSD MS Lot-Sample #: H1L130130-003						
	3.0	3.00	6.21	mg/L	107		MCAWW 300.0A	12/13/01	1348162
	3.0	3.00	6.23	mg/L	108	0.43	MCAWW 300.0A	12/13/01	1348162
			Dilution Factor: 1						
			Analysis Time..: 14:21						
			MS Run #.....: 1348054						
Chloride			WO#: EQEP21EF-MS/EQEP21EG-MSD MS Lot-Sample #: H1L130138-003						
	6.8	3.00	9.83	mg/L	100		MCAWW 300.0A	12/13/01	1348162
	6.8	3.00	9.94	mg/L	104	1.2	MCAWW 300.0A	12/13/01	1348162
			Dilution Factor: 1						
			Analysis Time..: 13:17						
			MS Run #.....: 1348054						
Fluoride			WO#: EP75Q1CK-MS/EP75Q1CL-MSD MS Lot-Sample #: I1L100118-001						
	ND	2.00	2.36	mg/L	101		MCAWW 300.0A	12/19/01	1353405
	ND	2.00	2.33	mg/L	100	0.91	MCAWW 300.0A	12/19/01	1353405
			Dilution Factor: 1						
			Analysis Time..: 18:28						
			MS Run #.....: 1354036						
Fluoride			WO#: EQQTJ1CL-MS/EQQTJ1CM-MSD MS Lot-Sample #: I1L190185-001						
	ND	2.00	2.11	mg/L	105		MCAWW 300.0A	12/19/01	1353405
	ND	2.00	2.08	mg/L	104	1.3	MCAWW 300.0A	12/19/01	1353405
			Dilution Factor: 1						
			Analysis Time..: 14:08						
			MS Run #.....: 1354036						
Nitrate			WO#: EQF1G1AP-MS/EQF1G1AQ-MSD MS Lot-Sample #: I1L130271-005						
	ND	3.00	3.00	mg/L	100		MCAWW 300.0A	12/13/01	1348163
	ND	3.00	3.01	mg/L	100	0.13	MCAWW 300.0A	12/13/01	1348163
			Dilution Factor: 1						
			Analysis Time..: 15:51						
			MS Run #.....: 1348051						

(Continued on next page)

MATRIX SPIKE SAMPLE DATA REPORT

General Chemistry

Client Lot #...: I1L130271 **Matrix.....:** WATER
Date Sampled...: 12/18/01 06:00 **Date Received..:** 12/19/01

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Sulfate			WO#: EQELA1D2-MS/EQELA1D3-MSD		MS Lot-Sample #: H1L130130-003				
	1.4	15.0	15.2	mg/L	92		MCAWW 300.0A	12/13/01	1348164
	1.4	15.0	15.3	mg/L	93	0.45	MCAWW 300.0A	12/13/01	1348164
			Dilution Factor: 1						
			Analysis Time..: 14:21						
			MS Run #.....: 1348053						
Sulfate			WO#: EQEP21DU-MS/EQEP21DV-MSD		MS Lot-Sample #: H1L130138-003				
	1.4	15.0	14.7	mg/L	89		MCAWW 300.0A	12/13/01	1348164
	1.4	15.0	15.1	mg/L	91	2.1	MCAWW 300.0A	12/13/01	1348164
			Dilution Factor: 1						
			Analysis Time..: 13:17						
			MS Run #.....: 1348053						

NOTE(S):

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

MATRIX SPIKE SAMPLE EVALUATION REPORT

DISSOLVED Metals

Client Lot #...: I1L130271 **Matrix.....:** WATER
Date Sampled...: 12/06/01 15:45 **Date Received..:** 12/07/01

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: U1L070278-008 **Prep Batch #...:** 1348339							
Calcium	NC	(75 - 125)			SW846 6010B	12/14-12/18/01	EP57K1AU
	NC	(75 - 125)		(0-20)	SW846 6010B	12/14-12/18/01	EP57K1AV
		Dilution Factor: 50					
		Analysis Time..: 13:22					
		MS Run #.....: 1348159					
Magnesium	NC	(75 - 125)			SW846 6010B	12/14-12/18/01	EP57K1A2
	NC	(75 - 125)		(0-20)	SW846 6010B	12/14-12/18/01	EP57K1A3
		Dilution Factor: 50					
		Analysis Time..: 13:22					
		MS Run #.....: 1348159					
Potassium	174 N	(75 - 125)			SW846 6010B	12/14-12/17/01	EP57K1AX
	169 N	(75 - 125)	2.1	(0-20)	SW846 6010B	12/14-12/17/01	EP57K1A0
		Dilution Factor: 1					
		Analysis Time..: 16:34					
		MS Run #.....: 1348159					
Sodium	NC	(75 - 125)			SW846 6010B	12/14-12/18/01	EP57K1A5
	NC	(75 - 125)		(0-20)	SW846 6010B	12/14-12/18/01	EP57K1A6
		Dilution Factor: 50					
		Analysis Time..: 13:22					
		MS Run #.....: 1348159					

NOTE(S):

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

NC The recovery and/or RPD were not calculated.

N Spiked analyte recovery is outside stated control limits.

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: I1L130271 **Matrix.....:** WATER
Date Sampled...: 12/13/01 11:15 **Date Received..:** 12/13/01

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: I1L130259-002 **Prep Batch #...:** 1352281							
Iron	103	(75 - 125)			SW846 6010B	12/18-12/19/01	EQFW31A3
	104	(75 - 125)	0.34	(0-20)	SW846 6010B	12/18-12/19/01	EQFW31A4

Dilution Factor: 1
Analysis Time..: 15:06
MS Run #.....: 1352131

NOTE(S):

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

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC Volatiles

Client Lot #...: I1L130271 **Work Order #...:** EQF0V1AM-MS **Matrix.....:** WATER
MS Lot-Sample #: I1L130271-001 EQF0V1AN-MSD
Date Sampled...: 12/12/01 11:45 **Date Received..:** 12/13/01 **MS Run #.....:** 1352166
Prep Date.....: 12/17/01 **Analysis Date..:** 12/17/01
Prep Batch #...: 1352339 **Analysis Time..:** 19:19
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Methyl tert-butyl ether	119	(64 - 138)			SW846 8021B
	121	(64 - 138)	1.8	(0-30)	SW846 8021B
Benzene	**103**	**(85 - 115)**			**SW846 8021B**
	103	**(85 - 115)**	**0.68**	**(0-20)**	**SW846 8021B**
Toluene	**110**	**(85 - 115)**			**SW846 8021B**
	111	**(85 - 115)**	**1.7**	**(0-20)**	**SW846 8021B**
Ethylbenzene	101	(85 - 118)			SW846 8021B
	103	(85 - 118)	2.4	(0-20)	SW846 8021B
Xylenes (total)	108	(85 - 115)			SW846 8021B
	107	(85 - 115)	0.96	(0-20)	SW846 8021B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	105	(70 - 130)
	104	(70 - 130)
a,a,a-Trifluorotoluene (TFT)	81	(77 - 128)
	80	(77 - 128)

NOTE(S):

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

Bold print denotes control parameters

MATRIX SPIKE SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: I1L130271 **Matrix.....:** WATER
Date Sampled...: 12/18/01 06:00 **Date Received..:** 12/19/01

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Bromide			WO#: EQF1G1AM-MS/EQF1G1AN-MSD			MS Lot-Sample #:	I1L130271-005
	108	(75 - 125)			MCAWW 300.0A	12/13/01	1348166
	107	(75 - 125)	0.73	(0-20)	MCAWW 300.0A	12/13/01	1348166
		Dilution Factor: 1					
		Analysis Time..: 15:51					
		MS Run #.....: 1348050					
Chloride			WO#: EQELA1DU-MS/EQELA1DV-MSD			MS Lot-Sample #:	H1L130130-003
	107	(75 - 125)			MCAWW 300.0A	12/13/01	1348162
	108	(75 - 125)	0.43	(0-20)	MCAWW 300.0A	12/13/01	1348162
		Dilution Factor: 1					
		Analysis Time..: 14:21					
		MS Run #.....: 1348054					
Chloride			WO#: EQEP21EF-MS/EQEP21EG-MSD			MS Lot-Sample #:	H1L130138-003
	100	(75 - 125)			MCAWW 300.0A	12/13/01	1348162
	104	(75 - 125)	1.2	(0-20)	MCAWW 300.0A	12/13/01	1348162
		Dilution Factor: 1					
		Analysis Time..: 13:17					
		MS Run #.....: 1348054					
Fluoride			WO#: EP75Q1CK-MS/EP75Q1CL-MSD			MS Lot-Sample #:	I1L100118-001
	101	(75 - 125)			MCAWW 300.0A	12/19/01	1353405
	100	(75 - 125)	0.91	(0-20)	MCAWW 300.0A	12/19/01	1353405
		Dilution Factor: 1					
		Analysis Time..: 18:28					
		MS Run #.....: 1354036					
Fluoride			WO#: EQQTJ1CL-MS/EQQTJ1CM-MSD			MS Lot-Sample #:	I1L190185-001
	105	(75 - 125)			MCAWW 300.0A	12/19/01	1353405
	104	(75 - 125)	1.3	(0-20)	MCAWW 300.0A	12/19/01	1353405
		Dilution Factor: 1					
		Analysis Time..: 14:08					
		MS Run #.....: 1354036					
Nitrate			WO#: EQF1G1AP-MS/EQF1G1AQ-MSD			MS Lot-Sample #:	I1L130271-005
	100	(75 - 125)			MCAWW 300.0A	12/13/01	1348163
	100	(75 - 125)	0.13	(0-20)	MCAWW 300.0A	12/13/01	1348163
		Dilution Factor: 1					
		Analysis Time..: 15:51					
		MS Run #.....: 1348051					

(Continued on next page)

MATRIX SPIKE SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: I1L130271 **Matrix.....:** WATER
Date Sampled...: 12/18/01 06:00 **Date Received..:** 12/19/01

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Sulfate		WO#: EQELA1D2-MS/EQELA1D3-MSD				MS Lot-Sample #: H1L130130-003	
	92	(75 - 125)			MCAWW 300.0A	12/13/01	1348164
	93	(75 - 125)	0.45	(0-20)	MCAWW 300.0A	12/13/01	1348164
		Dilution Factor: 1					
		Analysis Time..: 14:21					
		MS Run #.....: 1348053					
Sulfate		WO#: EQEP21DU-MS/EQEP21DV-MSD				MS Lot-Sample #: H1L130138-003	
	89	(75 - 125)			MCAWW 300.0A	12/13/01	1348164
	91	(75 - 125)	2.1	(0-20)	MCAWW 300.0A	12/13/01	1348164
		Dilution Factor: 1					
		Analysis Time..: 13:17					
		MS Run #.....: 1348053					

NOTE(S):

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

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: I1L130271 **Work Order #...:** EP71V-SMP EP71V-DUP **Matrix.....:** WATER

Date Sampled...: 12/06/01 11:01 **Date Received..:** 12/08/01

% Moisture.....: 100 **Dilution Factor:** **Initial Wgt/Vol:**

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Dissolved Solids						SD Lot-Sample #: I1L100114-002		
	10400	10300	mg/L	0.97	(0-20)	MCAWW 160.1	12/12-12/20/01	1346502

Dilution Factor: 2 Analysis Time..: 10:00 MS Run Number..: 1347216

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: I1L130271 **Work Order #...:** EP712-SMP EP712-DUP **Matrix.....:** WATER

Date Sampled...: 12/06/01 12:16 **Date Received..:** 12/08/01

% Moisture.....: 100 **Dilution Factor:** **Initial Wgt/Vol:**

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Dissolved Solids						SD Lot-Sample #: I1L100114-003		
	1780	1740	mg/L	2.3	(0-20)	MCAWW 160.1	12/12-12/20/01	1346502

Dilution Factor: 4 Analysis Time..: 10:00 MS Run Number..: 1347216

ILL130271

ARCADIS G&M

Laboratory Task Order No./P.O. No. ______

CHAIN-OF-CUSTODY RECORD

Project Number/Name OK000201.0001
Project Location Lee truck station
Laboratory STL
Project Manager Mike Gates
Sampler(s)/Affiliation Brady Kolb

ANALYSIS / METHOD / SIZE

Sample ID/Location	Matrix	Date/~~Time~~ Sampled	TIME ~~Lab ID~~	250 mL Carb/bicarb alkalinity NEAT	500 mL Br, Cl, Fl, Sulfate, Nitrate, TDS NEAT	500 mL Dissolved Mg, Ca, K, Na NEAT	250 mL Fe HNO3	40 mL vo BTEX HCl		Remarks	Total
MW99-1	L	12-12-01	1145	1	1	1	1	3		2.2°C Good	7
MW99-2	L	12-12-01	1230	1	1	1	1	3		12/13/01	7
MW99-3	L	12-12-01	1100	1	1	1	1	3			7
Trip blanks	L	—	—	—	—	—	—	2			2

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers: 23

Relinquished by: Brady Thomas Kolb	Organization: Arcadis G&M	Date 12/12/01	Time 1830	Seal Intact? (Yes) No N/A
Received by: [signature]	Organization: STL - Austin	Date 12/13/01	Time 0830	
Relinquished by:	Organization:	Date / /	Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	

Special Instructions/Remarks: Questions? Call Mike Gates @ 918-664-9900

Delivery Method: ☐ In Person ☒ Common Carrier FedEx (SPECIFY) ☐ Lab Courier ☐ Other ______ (SPECIFY)

AG 05 0597

SEVERN TRENT SERVICES

Lot No: JIL130271

CHAIN-OF-CUSTODY ADDENDUM

RECEIVED BY: Eric Fish

COC NUMBER: _____

DATE/TIME RECEIVED: 12/13/01 0830

QUOTE: Q# (45513)

UNPACKED DATE/TIME: 12/13/01 0950

CLIENT/PROJECT: ARCADIS - LEE TRUCK STATION

SAMPLES LOGGED IN: DW

LOG-IN REVISED: EF

Number of Shipping Containers Received with Chain of Custody: 1

VOC SAMPLES SEE SECTION 1.0, 2.0 & 6.0 ☐ YES

1.0 CONTAINERS EXAMINED UPON RECEIPT: EF

Container Sealed: ☑ YES ☐ NO

Custody Seal Present: ☑ YES ☐ NO Custody Seal Signed/Dated: ☑ YES ☐ NO

If seal not intact, list air bill number of that container(s): _____

2.0 VOC CANISTERS EXAMINED UPON RECEIPT: _____

Canister Valves Closed: ☐ YES ☐ NO Samples Received Match Chain: ☐ YES ☐ NO

Canister Valves Capped: ☐ YES ☐ NO See Additional Comments: ☐ YES ☐ NO

Packing Material Used: _____ Can Size: ☐ 6L ☐ 15L Other _____

3.0 SAMPLE TEMPERATURE UPON RECEIPT: EF **PYROMETER#:** P-4

The temperature of the container(s) is: *(acceptable tolerance 1-4°C)*

2.2										

If temperature is outside acceptable tolerance, Project Manager was notified (_____PM). Date: _____ Time: _____

Samples received do not require cooling _____ OK to analyze samples: ☑ YES ☐ NO

PRESERVATION OF SAMPLES REQUIRED: ☐ NA ☑ YES **VERIFIED BY:** EF

Base samples are>pH 12: ☐ YES ☐ NO Acid preserved are<pH 2: ☑ YES ☐ NO

Cyanide samples checked for sulfides: ☐ YES Sulfide samples appear to be preserved with zinc acetate: ☐ YES ☐ NO

Samples checked for chlorine per specification: ☐ YES Free chlorine present: ☐ YES ☐ NO

If sample preservation/temperature (°C) is outside acceptable tolerance, Project Manager was notified (_____PM)
Date: _____ Time: _____ ☐ see pH adjustment form

VOLATILE SAMPLES FILLED COMPLETELY, IF NOT, LIST ID AND HEADSPACE OF VOA'S CONTAINING BUBBLES EXCEEDING 6MM IN DIAMETER:

Sample ID	mm Headspace

Sample ID	mm Headspace

4.0 CONDITION OF BOTTLES/CONTAINERS **VERIFIED BY:** ET

Samples received match COC: ☑ YES ☐ NO Bottles received intact: ☑ YES ☐ NO

See additional discrepancies/comments section: ☐ YES ☑ NO Samples received from USDA restricted area: ☐ YES ☑ NO

VOA trip blanks included: ☑ YES ☐ NO ☐ N/A 2XTB

5.0 ADDITIONAL DISCREPANCIES

Appears on COC		Appears on Label		
Sample ID	**Date/Time**	**Sample ID**	**Date/Time**	**Comments**

6.0 SHIPPING DOCUMENTATION

Air/freight bill is available and attached to COC: ☑ YES ☐ NO Air bill #: _____

Hand-delivered Carrier: _____ Date: _____ Time: _____

7.0 OTHER COMMENTS:

No Quote

Client COC is signed, dated with time of receipt, and addendum number is noted in the comments section. ☑ YES

CORRECTIVE ACTION:

Client's Name: _____ Informed verbally on: _____ By: _____

Client's Name: _____ Informed verbally on: _____ By: _____

Sample(s) processed "as is" comments: _____

Samples(s) on hold until: _____ If released, notify: _____

REVIEW:

Project Management: Lisa for CBU Date: 12/17/01

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE