

Frontier Chemical - Pendleton Site
Order on Consent (#B9-0270-89-05)

April 2002
Semi-Annual Report #10

Prepared by Pendleton PRP Group

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Semi-Annual Report #10
April 2002

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Introduction

This tenth semi-annual report is submitted on behalf of the Frontier Chemical - Pendleton Site PRP Group (PRP Group) for the Frontier Chemical - Pendleton Site located in Pendleton, New York. This report summarizes the activities performed since October 2001 for Post-Closure Operation, Maintenance, and Monitoring of the Closure Components at the subject site.

Background

The Frontier Chemical-Pendleton Site is located on Town Line Road in the Town of Pendleton, Niagara County, New York. The total site comprises approximately 22 acres of the 75-acre Frontier Chemical property. Prior to remediation activities, Quarry Lake, a flooded quarry that resulted from the excavation of clay for use in clay brick and tile manufacturing at an on-site facility, occupied 15 acres of the 22-acre site. The remaining 7 acres, identified as the former Process Area, were utilized by Frontier Chemical Waste Process, Inc. (Frontier) when the site was operated as an industrial waste treatment facility from 1958 to 1974. Plating wastes, pickle liquors and other liquid acid wastes from plating and metal finishing industries were treated at the site, with residuals from the waste treatment process being discharged into Quarry Lake. Much of the former Process Area was filled and graded following termination of waste treatment operations.

The site remediation project with remedial designed by O'Brien & Gere Engineers, Inc. and remedial action by Severson Environmental Services, Inc. included the following major components:

1. Dewatering Quarry Lake to allow drying and consolidation of sediments;
2. Excavation and relocation of sediments from Quarry Lake after dewatering operations to within the limits of the capped area;
3. Excavation and relocation of surface soils, fill or debris to within the limits of the capped area;
4. Capping of consolidated sediments, previously dredged materials, and surface soils with a low-permeability cap;
5. Installation, in conjunction with a cap, of a low-permeability barrier to ground water flow;
6. Construction of a ground water collection trench along the eastern shore of Quarry Lake and the southern portion of the capped area;
7. Reconstruction of the berm around Quarry Lake and installation of a new outlet structure;
8. Construction of a ground water pumping station consisting of a wet well and dry vault;
9. Installation of a ground water pre-treatment system within the dry vault;
10. Conveyance of collected and pre-treated ground water to the local Publicly Owned Treatment Works (POTW);
11. Creation of new wetlands at the site;
12. Construction of a surface water swale adjacent to the cap access road to direct surface water away from the capped area;
13. Installation of piezometers inside and outside the capped area and a standpipe within the ground water collection trench; and
14. Installation of a chain link fence around the capped area and pump station to limit access.

Discussion

Post-closure operation, maintenance, and monitoring of the closure components of the Frontier Chemical-Pendleton Site are the responsibility of the Pendleton PRP Group. Operation, maintenance, and monitoring activities performed by the Pendleton PRP Group during this reporting period includes the following five elements:

1. Routine inspection and maintenance of constructed features, including the capped area, ground water collection and conveyance system, surface water runoff facilities, constructed wetlands, access road, perimeter and containment berms, and outlet weir.

The relocated wetlands inside the Quarry Lake levee have bottom elevations of 574 feet for aquatic bed species (Zone A), 575 feet for non-persistent emergent species (Zone B), and 576 feet for persistent emergence species (Zone C). A water elevation chart is included as Attachment A. This water level chart shows the history of the lake elevation starting in April 1996 until present.

2. Operation and maintenance of the ground water pre-treatment system, as described in the Pre-Treatment System Operations Plan, O'Brien & Gere, 1997.

Included in Attachment B are the operation and maintenance activities performed during this reporting period. The activities include semi-annual submittals to the Niagara Country Sewer District #1 detailing analytical and discharge flow data. The semi-annual submittal is included as Attachment B-1.

Operation, Maintenance, and Monitoring Activities for the site during this reporting period are summarized in Attachment B-2.

3. Regarding performance of a ground water monitoring program, the report "Frontier Chemical - Pendleton Site, Semi-Annual Ground Water Monitoring Report" dated June 2002 is included as Attachment C-2.

The main purpose of the groundwater monitoring program is to monitor on-site and off-site groundwater condition and to verify that an inward hydraulic gradient is occurring within the capped area and to evaluate the operation, maintenance, and monitoring activities and identify proposed changes to the O&M Manual or site procedures and policies which would provide a safer and/or more cost-effective operation.

5. Recordkeeping

Records for site operation and maintenance activities are maintained at the site and Severson's office in Niagara Falls, New York. These records include daily and weekly logs and charts. Glynn Geotechnical provides assistance to the site caretaker and updates O&M documentation.

Severson Environmental Services also provides ground water level measurement, sampling, and monitoring. O'Brien & Gere Engineers continue to provide technical

reports and analytical, field, and office support. The PRP representative maintains analytical results and reports submitted to NCSD #1 and NYSDEC at the Olin's Charleston Plant. These records are available for your review and inspection.

Conclusions

The work performed during this reporting period, October 2001 to April 2002 was reviewed and found to be in accordance with the approved O&M Manual for the Site.

Attachment A – Quarry Lake Level Plot versus Time
Quarry Lake Level – April 3, 2002

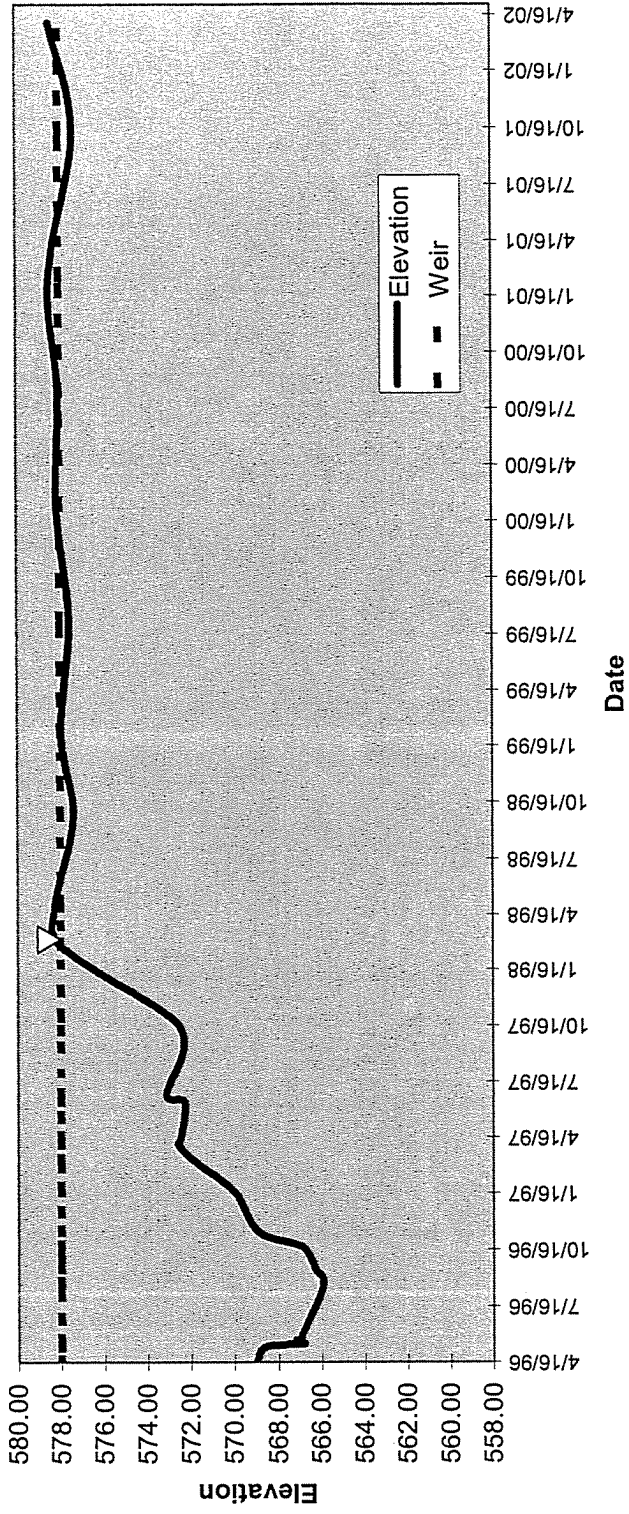
Quarry Lake Level – April 3, 2002

- **Table A-1 Quarry Lake Level**
- **Chart A-1 Quarry Lake Water Elevations**

TABLE A-1
Quarry Lake Level

Date	Elevation
04/16/96	569.00
05/09/96	568.70
05/14/96	567.70
05/15/96	567.20
05/16/96	566.80
05/21/96	567.20
05/24/96	567.00
08/19/96	565.92
09/13/96	566.30
09/30/96	566.50
10/22/96	567.00
11/13/96	568.90
01/17/97	570.00
03/07/97	571.80
04/04/97	572.60
04/16/97	572.50
06/13/97	572.30
06/24/97	573.15
09/08/97	572.34
10/28/97	572.88
02/23/98	578.00
04/30/98	578.26
09/21/98	577.42
02/04/99	577.97
08/04/99	577.60
02/07/00	578.16
08/09/00	578.07
02/14/01	578.47
10/08/01	577.39
04/03/02	578.46

**CHART A-1
QUARRY LAKE WATER LEVELS**



**ATTACHMENT B –Niagara County Sewer District #1 Submittals and
Operation, Maintenance and Monitoring Activities**

B-1 Niagara County Sewer District #1 Submittals

B-2 Operation, Maintenance and Monitoring Activities

B-1 Niagara County Sewer District #1 Submittals

TABLE B-1

Niagara County Sewer District #1 Submittals

Submittal Date	Sampling Date
May 23, 2002	04/04/2002 Semi-Annual Sample

**FRONTIER CHEMICAL PENDLETON PRP GROUP
C/O OLIN CORPORATION
1186 LOWER RIVER ROAD
CHARLESTON, TN 37310**

FILE COPY

May 23, 2002

VIA AIRBORNE EXPRESS

Mr. Frank Nerone
Chief Operator
Niagara County Sewer District #1
7346 Liberty Drive
Niagara Falls, NY 14304

Subject: Analytical Sampling Results (04/04/2002 Semi-Annual Sample)
Groundwater Discharge Through Pre-Treatment System
Pendleton (Frontier Chemical) Site

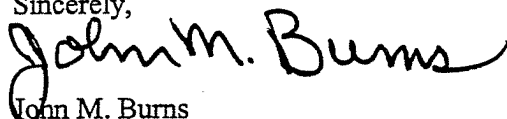
Dear Mr. Nerone:

Enclosed for your review are the analytical results from the April 4, 2002, sampling event for discharge of collected groundwater from the pre-treatment system at the Pendleton Site. Analytical results for this sampling event are compared against the Permit (#00-11) requirements on the attached Analytical Summary and Monthly Reports for daily flow.

A review of the analytical data report shows that all permit parameters are significantly below the permit discharge requirements. A review of the daily flows from October 2001 to March 2002 show no change during normal operating conditions. However the flow volume recorded by the flowmeter, which is inside the pumping facility and prior to the filters and carbon beds, is high due to a series of leaks in the lead carbon bed. The PRP Group plans to overhaul the system during this coming summer.

This data is being provided for your review and concurrence that all permit parameters are well within their limits. If, following review of the enclosed information, you are not in agreement with the above stated conclusion, please contact me at 423-336-4057 as soon as possible so we may discuss any future monitoring requirements.

Sincerely,



John M. Burns
For the Frontier Chemical - Pendleton Site PRP Group

Enclosures: as stated

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Tracy Goad Walter, Esq.
Legal Department
The Dow Chemical Company
2030 Dow Center
Midland, MI 48674

April 2002 Analytical Summary for WS 001

Permit # 00-11

Groundwater Discharge Point: D 002

541,941 Gallons Discharged Prior To September 30, 2001

74,411 Gallons from September 30, 2001 Through April 30, 2002 (1)

351 Average Gallons per Day Flow Between Reporting Events

Parameters	Permit Limit	Detection Limits	April 4, 2002 Sample Results
Treatment System Discharge			
624 Analytes	ug/L	ug/L	ug/L
Toluene	10.0	1.0	< 1.0
1,2-Dichloroethane	10.0	1.0	< 1.0
4-Methyl-2-Pentanone	10.0	5.0	< 5.0
Vinyl Chloride	10.0	2.0	< 2.0
Methylene Chloride	10.0	2.8	< 2.8
trans-1,2-Dichloroethene	10.0	1.0	< 1.0
1,1,1-Trichloroethane	10.0	1.0	< 1.0
Trichloroethene	10.0	1.0	< 1.0
Benzene	10.0	1.0	< 1.0
Chloromethane		2.0	< 2.0
Bromomethane		2.0	< 2.0
Chloroethane		2.0	< 2.0
Chloroform		1.0	< 1.0
Carbon Tetrachloride		1.0	< 1.0
1,1-Dichloroethene		1.0	< 2.0
Trichlorofluoromethane		2.0	< 2.0
1,1-Dichloroethane		1.0	< 1.0
1,2-Dichloropropane		1.0	< 1.0
Bromodichloromethane		1.0	< 1.0
2-Chloroethylvinyl ether		2.0	< 2.0
cis-1,3-Dichloropropene		1.0	< 1.0
trans-1,3-Dichloropropene		1.0	< 1.0
1,1,2-Trichloroethane		1.0	< 1.0
Tetrachloroethene		1.0	< 1.0
Dibromochloromethane		1.0	< 1.0
Chlorobenzene		1.0	< 1.0
Ethylbenzene		1.0	< 1.0
Bromoform		1.0	< 1.0
1,1,2,2-Tetrachloroethane		1.0	< 1.0
1,3-Dichlorobenzene		1.0	< 1.0
1,4-Dichlorobenzene		1.0	< 1.0
1,2-Dichlorobenzene		1.0	< 1.0
Sum of 624 Analytes		100.0	< 44.8
608 Pesticides	ug/L	ug/L	ug/L
alpha BHC	10.0		NA
beta BHC	20.0		NA
delta BHC	10.0		NA
gamme BHC	10.0		NA
Heptachlor	8.0		NA
Aldrin	8.0		NA
Heptachlor Epoxide	9.0		NA
4,4-DDE	20.0		NA
Methoxychlor	18.0		NA
Metals	mg/L		mg/L
Antimony	0.1	0.011	< 0.011
Boron	4.00	0.100	0.148
Chromium	5.33	0.005	< 0.005
Cyanide(T)	2.0	0.005	< 0.005
Other	mg/L	mg/L	mg/L
Total Phenolics	NA	0.005	< 0.005
TSS	300	4.000	< 4.000

Legend:

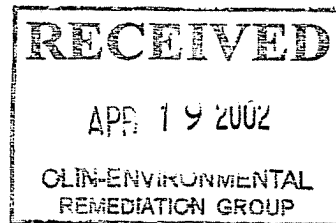
(B) Detected in blank

NA Not applicable

(1) Volume includes water from hole in GAC unit and bag filter recycling to sump.

WASTE STREAM TECHNOLOGY, INC.

302 Grote Street
Buffalo, NY 14207
(716) 876-5290



Analytical Data Report

Report Date : 04/15/02
Group Number : 2029-034

Prepared For :
Mr. John Burns
Olin Corporation
P.O. Box 248
1186 Lower River Road NW
Charleston, TN 37310

Site : Frontier Landfill

Analytical Parameters	Analytical Services Number of Samples	Turnaround Time
EPA 624	1	Standard
Metals (3)	1	Standard
Cyanide	1	Standard
Total Recoverable Phenol	1	Standard
Total Suspended Solids	1	Standard

Report Released By : B. Schepart
Brian S. Schepart, Ph.D., Laboratory Director

ENVIRONMENTAL LABORATORY ACCREDITATION CERTIFICATION NUMBERS
NYSDOH ELAP #11179 NJDEPE #73977



Waste Stream Technology, Inc.

302 Grote Street
Buffalo, NY 14207
(716) 876-5290

Analytical Data Report

Group Number: 2029-034

Site: Frontier Landfill

Field and Laboratory Information

WST ID	Client ID	Matrix	Date Sampled	Date Received	Time
WT03917	TW-E737-04-04-02-01	Aqueous	04/04/02	04/04/02	15:41

METHODOLOGIES

The specific methodologies employed in obtaining the analytical data reported are indicated on each of the result forms. The method numbers shown refer to the following U.S. Environmental Protection Agency Reference:

Methods for Chemical Analysis of Water and Wastes. EPA 600/4-79-020, March 1979, Revised 1983, U.S. Environmental Monitoring and Support Laboratory, Cincinnati, Ohio 45268.

Federal Register, 40 CFR Part 136: Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act. Revised July 1992.

Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. Third Edition, Revised December 1996, U.S. EPA SW-846.

Annual Book of ASTM Standards, Volume II. ASTM, 100 Harbor Drive, West Conshohocken, PA 19428-2959.

Standard Methods for the Examination of Water and Wastewater. (20th Edition). American Public Health Association, 1105 18th Street, NW, Washington, D.C. 20036.

ORGANIC DATA QUALIFIERS

- U** - Indicates compound was analyzed for but not detected.
- J** - Indicates an estimated value. This flag is used to qualify the following: when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed; a compound is detected in the sample but the result is less than the method quantitation limit but greater than the statistically calculated laboratory method detection limit; the result for a compound is estimated due to the analysis of a sample beyond the USEPA defined holding time; the result for a compound is estimated due to a quality control sample result that is outside the laboratory quality control recovery limits.
- C** - This flag applies to pesticide results where the identification has been confirmed by GC/MS.
- B** - This flag is used when the analyte is found in the associated blank as well as the sample.
- E** - This flag identifies all compounds whose concentrations exceed the calibration range of the GC/MS instrument of that specific analysis.
- D** - This flag identifies all compounds identified in an analysis at a secondary dilution factor.
- G** - Matrix spike recovery is greater than the expected upper limit of analytical performance.
- L** - Matrix spike recovery is less than the expected lower limit of analytical performance.
- #** - Indicates that a surrogate recovery was found to be outside the expected limits of analytical performance.
- \$** - Indicates that the surrogate compound was diluted out. The sample had to be diluted to obtain analytical results and a recovery could not be calculated.
- (%)** - Indicates that the compound is a surrogate and that the value reported for this compound is in percent recovery. The quality control recovery limits are indicated in the detection limit or QC limits column.

Waste Stream Technology, Inc.

Volatile Organics in Water

EPA 624

Site: Frontier Landfill
 Date Sampled: 04/04/02
 Date Received: 04/04/02

Group Number: 2029-034
 Units: µg/L
 Matrix: Aqueous

WST ID: WT03917
 Client ID: TW-E737-04-04-02-01
 Extraction Date: NA
 Date Analyzed: 04/10/02

Compound	Detection Limit	Result	QC Limits (%)	Qualifier
chloromethane	2.0	Not detected		U
vinyl chloride	2.0	Not detected		U
bromomethane	2.0	Not detected		U
chloroethane	2.0	Not detected		U
trichlorofluoromethane	2.0	Not detected		U
1,1-dichloroethene	1.0	Not detected		U
methylene chloride	2.8	Not detected		U
trans-1,2-dichloroethene	1.0	Not detected		U
1,1-dichloroethane	1.0	Not detected		U
chloroform	1.0	Not detected		U
1,1,1-trichloroethane	1.0	Not detected		U
carbon tetrachloride	1.0	Not detected		U
benzene	1.0	Not detected		U
1,2-dichloroethane	1.0	Not detected		U
trichloroethene	1.0	Not detected		U
1,2-dichloropropane	1.0	Not detected		U
bromodichloromethane	1.0	Not detected		U
2-chloroethylvinyl ether	2.0	Not detected		U
cis-1,3-dichloropropene	1.0	Not detected		U
toluene	1.0	Not detected		U
trans-1,3-dichloropropene	1.0	Not detected		U
1,1,2-trichloroethane	1.0	Not detected		U
tetrachloroethene	1.0	Not detected		U
dibromochloromethane	1.0	Not detected		U
chlorobenzene	1.0	Not detected		U
ethylbenzene	1.0	Not detected		U
bromoform	1.0	Not detected		U
1,1,2,2-tetrachloroethane	1.0	Not detected		U
1,3-dichlorobenzene	1.0	Not detected		U
1,4-dichlorobenzene	1.0	Not detected		U
1,2-dichlorobenzene	1.0	Not detected		U
4-methyl-2-pentanone	5.0	Not detected		U
1,2-Dichloroethane-d4 (%)		96	76- 119	
Toluene-d8 (%)		103	82- 117	
Bromofluorobenzene (%)		96	80- 117	
Dilution Factor	1			

Waste Stream Technology, Inc.
Metals Analysis Result Report

Site: Frontier Landfill
Date Sampled: 04/04/02
Date Received: 04/04/02

Group Number: 2029-034
Units: mg/L
Matrix: Aqueous

WST ID: WT03917
Client ID: TW-E737-04-04-02-01
Digestion Date: 04/05/02

Analyte	Detection Limit	Result	Date Analyzed	Analysis Method
Antimony by ICP	0.011	Not detected	04/09/02	EPA 200.7
Boron by ICP	0.100	0.148	04/09/02	EPA 200.7
Chromium by ICP	0.005	Not detected	04/09/02	EPA 200.7

Waste Stream Technology, Inc.
Wet Chemistry Analyses

Site: Frontier Landfill
Date Sampled: 04/04/02
Date Received: 04/04/02

Group Number: 2029-034
Matrix: Aqueous

WST ID: WT03917
Client ID TW-E737-04-04-02-01

Analysis	Method Reference	Detection Limit	Result	Units	Date Analyzed
Cyanide in Water	SW-846 9014	0.005	Not detected	mg/L	04/10/02
Total Recoverable Phenol	EPA 420.1	0.005	Not detected	mg/L	04/12/02
Total Suspended Solids	EPA 160.2	4.0	Not detected	mg/L	04/05/02



Waste Stream Technology Inc.
 302 Grote Street, Buffalo, NY 14207
 (716) 876-5290 • FAX (716) 876-2412

OFFICE USE ONLY
 GROUP # 2029-034
 DUE DATE _____

PAGE 1 OF 1
 ARE SPECIAL DETECTION LIMITS REQUIRED:
 YES _____ NO _____
 If yes please attach requirements.

TURN AROUND TIME: 5 PD
 QUOTATION NUMBER: _____

DW DRINKING WATER
 GW GROUND WATER
 SW SURFACE WATER
 WW WASTE WATER
 O OIL

SL SLUDGE
 SO SOIL
 S SOLID
 W WIPE
 OTHER _____

ANALYSES TO BE PERFORMED

DATE SAMPLED
 TIME OF SAMPLING
 SAMPLE TYPE
 TOTAL NO. OF CONTAINERS

TYPE OF CONTAINER/
 COMMENTS:
 OFFICE USE ONLY
 WST. I.D.

CHAIN OF CUSTODY

REPORT TO: Michael Walker

CONTACT: Michael Walker

PH.# () 716 876-5290

FAX # () 716-4201

BILL TO: _____

PO# _____

PROJECT DESCRIPTION: Frank's Bank

SAMPLER SIGNATURE: _____

SAMPLE I.D.	DATE SAMPLED	TIME OF SAMPLING	SAMPLE TYPE	TOTAL NO. OF CONTAINERS	ANALYSES TO BE PERFORMED	TYPE OF CONTAINER/ COMMENTS:	OFFICE USE ONLY WST. I.D.
1	4/12/11	11:30 AM	VOC	6	SW	T-20	WTO3480
2							
3							
4							
5							
6							
7							
8							
9							
10							

REMARKS:

RELINQUISHED BY: Frank's Bank DATE: 4/19/11 TIME: 15:00

RECEIVED BY: [Signature] DATE: 4/19/11 TIME: 15:41

OCTOBER 2001
PENDLETON SITE

DATE	INTEGRATOR READING	DIFFERENCE	GALLONS PER DAY	COMMENTS
10/1/2001	363003	151	151	
10/2/2001	363101	98	98	
10/3/2001	363150	49	49	
10/4/2001	363216	66	66	
10/5/2001			615	SAMPLING/INSPECTION
10/6/2001			614	
10/7/2001	365059	1843	614	
10/8/2001	365591	532	532	SITE SAMPLING EVENT
10/9/2001	365957	366	366	SITE SAMPLING EVENT
10/10/2001	366051	94	94	SITE SAMPLING EVENT
10/11/2001	366172	121	121	SITE SAMPLING EVENT
10/12/2001	366280	108	108	
10/13/2001			375	RAIN
10/14/2001			375	RAIN
10/15/2001	367405	1125	375	RAIN
10/16/2001	367777	372	372	RAIN
10/17/2001	368355	578	578	RAIN
10/18/2001	368755	400	400	
10/19/2001	369204	449	449	RAIN
10/20/2001			295	
10/21/2001			295	
10/22/2001	370089	885	295	
10/23/2001	370345	256	256	
10/24/2001	370653	308	308	
10/25/2001	371004	351	351	RAIN
10/26/2001	371365	361	361	MONTHLY INSPECTION
10/27/2001			331	
10/28/2001			331	
10/29/2001	372358	993	331	TROUBLESHOOT AUTODIALER
10/30/2001	372506	148	148	TROUBLESHOOT AUTODIALER
10/31/2001	372654	148	148	
Phone Number 743-1335		Total flow =	9,802	Gallons
		Avg. flow =	320	Gallons per day

NOVEMBER 2001
PENDLETON SITE

DATE	INTEGRATOR READING	DIFFERENCE	GALLONS PER DAY	COMMENTS
11/1/2001	372949	295	295	
11/2/2001	373179	230	230	
11/3/2001			245	
11/4/2001			246	
11/5/2001	373916	737	246	
11/6/2001	374188	272	272	
11/7/2001	374398	210	210	
11/8/2001	374595	197	197	
11/9/2001	374806	211	211	
11/10/2001			232	
11/11/2001			232	
11/12/2001	375501	695	232	
11/13/2001	375744	243	243	
11/14/2001	375975	231	231	
11/15/2001	376315	340	340	
11/16/2001	376610	295	295	
11/17/2001			176	
11/18/2001			176	
11/19/2001	377139	529	176	
11/20/2001	377397	258	258	
11/21/2001	377655	258	258	
11/22/2001			258	
11/23/2001			258	
11/24/2001			258	
11/25/2001			258	
11/26/2001	378944	1289	258	
11/27/2001	379269	325	325	
11/28/2001	379574	305	305	
11/29/2001	379928	354	354	
11/30/2001	380634	706	706	
Phone Number 743-1335		Total flow =	7,980	Gallons
		Avg. flow =	270	Gallons per day

DECEMBER 2001
PENDLETON SITE

DATE	INTEGRATOR READING	DIFFERENCE	GALLONS PER DAY	COMMENTS
12/1/2001			497	HEAVY RAINS
12/2/2001			498	
12/3/2001	382127	1493	498	
12/4/2001	382602	475	475	
12/5/2001	382898	296	296	
12/6/2001	383157	259	259	
12/7/2001	383515	358	358	
12/8/2001			275	
12/9/2001			276	
12/10/2001	384342	827	276	
12/11/2001	384495	153	153	
12/12/2001	384762	267	267	
12/13/2001	385025	263	263	
12/14/2001			441	
12/15/2001			442	
12/16/2001			442	
12/17/2001	386791	1766	442	
12/18/2001	387374	583	583	
12/19/2001	387907	533	533	
12/20/2001			325	
12/21/2001			325	
12/22/2001			325	
12/23/2001			325	
12/24/2001			325	
12/25/2001			325	
12/26/2001			325	
12/27/2001			325	
12/28/2001			325	
12/29/2001			325	
12/30/2001			325	
12/31/2001			326	
Phone Number 743-1335		Total flow =	11,174	Gallons
		Avg. flow =	360	Gallons per day

JANUARY 2002
PENDLETON SITE

DATE	INTEGRATOR READING	DIFFERENCE	GALLONS PER DAY	COMMENTS
1/1/2002			326	
1/2/2002			326	
1/3/2002			326	
1/4/2002			326	
1/5/2002			326	
1/6/2002			325	
1/7/2002	394089	6,182	325	
1/8/2002	394435	346	346	
1/9/2002	394701	266	266	SNOW MELTING
1/10/2002	395160	459	459	SNOW MELTING
1/11/2002	395832	672	672	
1/12/2002			333	
1/13/2002			333	
1/14/2002	396830	998	333	
1/15/2002	397182	352	352	
1/16/2002	397550	368	368	
1/17/2002	397976	426	426	
1/18/2002	398339	363	363	
1/19/2002			274	
1/20/2002			275	
1/21/2002	399163	824	275	
1/22/2002	399370	207	207	SNOW MELTING/RAIN
1/23/2002	399982	612	612	
1/24/2002	400718	736	736	
1/25/2002			270	
1/26/2002			271	
1/27/2002			271	
1/28/2002	401801	1,083	271	
1/29/2002	402108	307	307	
1/30/2002	402365	257	257	
1/31/2002			615	
Phone Number 743-1335		Total flow =	11,171	Gallons
		Avg. flow =	360	Gallons per day

FEBRUARY 2002
PENDLETON SITE

DATE	INTEGRATOR READING	DIFFERENCE	GALLONS PER DAY	COMMENTS
2/1/02			615	
2/2/02			615	
2/3/02			615	ALARM CALL
2/4/02	405440	3,075	615	
2/5/02	405704	264	264	
2/6/02	405974	270	270	
2/7/02	406334	360	360	
2/8/02	406541	207	207	
2/9/02			302	
2/10/02			302	
2/11/02	407447	906	302	
2/12/02	407758	311	311	
2/13/02	408104	346	346	
2/14/02	408365	261	261	
2/15/02	408561	196	196	
2/16/02			464	
2/17/02			464	
2/18/02	409954	1,393	464	
2/19/02	410471	517	517	
2/20/02	410826	355	355	
2/21/02	411128	302	302	
2/22/02	411633	505	505	
2/23/02			369	
2/24/02			369	
2/25/02	412740	1,107	369	
2/26/02	413042	302	302	MONTHLY INSPECTION
2/27/02	413327	285	285	
2/28/02	413679	352	352	
Phone Number 743-1335		Total flow =	10,698	Gallons
		Avg. flow =	382	Gallons per day

MARCH 2002
PENDLETON SITE

DATE	INTEGRATOR READING	DIFFERENCE	GALLONS PER DAY	COMMENTS
3/1/2002			395	
3/2/2002			395	
3/3/2002			395	
3/4/2002	415257	1578	395	
3/5/2002	415787	530	530	
3/6/2002	416139	352	352	
3/7/2002	416392	253	253	
3/8/2002	416777	385	385	
3/9/2002			398	
3/10/2002			398	
3/11/2002			398	
3/12/2002	418368	1591	397	
3/13/2002	418622	254	254	
3/14/2002	418884	262	262	
3/15/2002	419183	299	299	
3/16/2002			304	
3/17/2002			304	
3/18/2002	420096	913	305	
3/19/2002	420398	302	302	
3/20/2002	420769	371	371	
3/21/2002	421123	354	354	
3/22/2002	421463	340	340	
3/23/2002			306	
3/24/2002			306	
3/25/2002	422380	917	305	
3/26/2002			299	
3/27/2002	422979	599	300	
3/28/2002	423557	578	578	
3/29/2002			510	
3/30/2002			510	
3/31/2002			511	
		Total flow =	11,410	Gallons
		Avg. flow =	368	Gallons per day

B-2 Operation, Maintenance and Monitoring Activities

Operation, Maintenance, and Monitoring Activities

Table B-3

Date	Event	Action Taken
October 26, 2001	Monthly Inspection	Filled varmint hole
October 30, 2001	Autodialer	Reset Channel 2
December 28, 2001	Monthly Inspection	Leak in bag filter housing discovered; bypassed filter
January 24, 2002	Monthly Inspection	Bag filter housing can not be repaired; locate replacement
February 3, 2002	Alarm – Pump #2 Failure	“Heaters” tripped due to “brown out”
April 30, 2002	Monthly Inspection	GAC #1 developed another leak around bottom drain valve; epoxy applied to area

FRONTIER CHEMICAL – PENDLETON SITE
Pretreatment System Operator's Log

Date: 10-26-01

Time In:	8:40AM
Time Out:	12:40PM

Weather: High winds, Rain

Precipitation: 1"

Temperature: 45-50°F

Reason for Visit: Monthly Inspection

	Reading		Time
Flowmeter Totalization Reading (arrival)	531,664	Gal	8:40AM
Flowmeter Totalization Reading (departure)	531,697	Gal	12:30PM
Flow rate during test	0	Gpm	
Pump Hour Meter Readings: Pump #1	584.2	Hrs	
Pump Hour Meter Readings: Pump #2	440.2	Hrs	
Wet Well Level	1.8077	Ft	
Pressure Sensor Reading (Bar Graph)	.24	Psi	

	Influent Gauge, Psi	Effluent Gauge, Psi	Differential, Psi
BF1	0	0	0
BF2	0	0	0
GAC1	3	3	0
GAC2	3	3	0

Change Filter Bags (Check One)	YES	<input checked="" type="checkbox"/>	NO	<input type="checkbox"/>	TIME	9:00AM
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FRONTIER CHEMICAL – PENDLETON SITE
Pretreatment System Operator's Log

Details	<ol style="list-style-type: none"> 1. Checked out alarm system with Steve Frank from Carrier Controls 2. Deleted all previous phone numbers on the autodialer and replaced them with Severson personnel numbers. 3. Changed bag filters 4. Ran the system on manual to check for leaks or other abnormalities.
----------------	--

Actions taken to correct problems:	
---	--

Recommended actions to prevent future problems:	Eventually the sealing surfaces on the bag filters 1&2 will have to be re-machined to prevent leaking, due to iron buildup and corrosion.
--	---

Other relevant information:	During the sampling event on 10-10-01, I filled in the varmint holes on the landfill cap. Since then there seems to be no varmint activity. It looks like the lawn crew also may have spread out some of the sand that had accumulated in that area.
------------------------------------	--

SYSTEM CHECK LIST	Arrival	Departure
#1 Vault Door	OK	OK
#2 Panel Door	OK	OK
#3 Vault Sump High	OK	OK
#4 Containment Pipe Alarm	OK	OK
#5 High Wet Well Alarm	OK	OK
#6 Pump #1 Fail (Yes / No)	NO	NO
#7 Pump # 2 Fail (Yes / No)	NO	NO
#8 Bag Filter Differential Pressure High	OK	OK
#9 Wet Well Level (Actual Measure Spoken)	1.8	
#10 Flow Rate	0	
#11 #16; Reserved for future use		
FOR CURRENT STATUS CALL: (716) 743-1335		

Operator Name: Michael Walker

Operator Signature:

FRONTIER CHEMICAL – PENDLETON SITE
Pretreatment System Operator's Log

Date: 4-29-01

Time In: 8:30AM
Time Out: 4:00PM

Weather: Cloudy, Breezy

Precipitation: No

Temperature: 55°F

Reason for Visit: Malfunctioning Autodialer

	Reading		Time
Flowmeter Totalization Reading (arrival)	532,700	Gal	8:30AM
Flowmeter Totalization Reading (departure)		Gal	
Flow rate	0	Gpm	
Pump Hour Meter Readings: Pump #1	585.1	Hrs	8:30AM
Pump Hour Meter Readings: Pump #2	441.2	Hrs	8:30AM
Wet Well Level	1.895	Ft	8:30AM
Pressure Sensor Reading (Bar Graph)	0.29	Psi	8:30AM

	Influent Gauge, Psi	Effluent Gauge, Psi	Differential, Psi
BF1			
BF2			
GAC1			
GAC2			

Change Filter Bags (Check One)	YES	NO	X	TIME

FRONTIER CHEMICAL – PENDLETON SITE
Pretreatment System Operator's Log

Details:	Alarm #2 (or Vault / Panel door) kept ringing on my phone, so I came back Friday afternoon to check it out. All was secure. All weekend the auto dialer would not clear and reset itself to normal mode even though I had acknowledged the alarm call, and the site was secure. This morning I came out to the site to see if there was some thing that I could do to reset the system, After contacting both the manufacturer and the installer and doing my own trouble shooting work up, I called to have Steve Frank of Carrier Controls meet me onsite on Tuesday AM. Another report to follow.
-----------------	--

Actions taken to correct problems:	None yet
---	----------

Recommended actions to prevent future problems:	Recommendation will follow after diagnosis.
--	---

Other relevant information:	The WWTP system kicked on a couple of times while I was working in the panel, that side of it seems to be running smoothly.
------------------------------------	---

SYSTEM CHECK LIST	Arrival	Departure
#1 Vault Door	OK	OK
#2 Panel Door	OK	OK
#3 Vault Sump High	OK	OK
#4 Containment Pipe Alarm	OK	OK
#5 High Wet Well Alarm	OK	OK
#6 Pump #1 Fail (Yes / No)	NO	NO
#7 Pump # 2 Fail (Yes / No)	NO	NO
#8 Bag Filter Differential Pressure High	NO	NO
#9 Wet Well Level (Actual Measure Spoken)	1.8956	
#10 Flow Rate	0	
#11 #16; Reserved for future use		
FOR CURRENT STATUS CALL: (716) 743-1335		

Operator Name: Michael Walker

Operator Signature:

FRONTIER CHEMICAL – PENDLETON SITE
Pretreatment System Operator's Log

Date: 10-30-01

Time In:	1:00PM
Time Out:	4:00PM

Weather: Sunny, Cool

Precipitation: 0

Temperature: Low 60's

Reason for Visit: Fix autodialer

	Reading		Time
Flowmeter Totalization Reading (upon arrival)		Gal	
Flowmeter Totalization Reading (upon departure)		Gal	
Flow rate		Gpm	
Pump Hour Meter Readings: Pump #1		Hrs	
Pump Hour Meter Readings: Pump #2		Hrs	
Wet Well Level		Ft	
Pressure Sensor Reading (Bar Graph)		Psi	

	Influent Gauge, Psi	Effluent Gauge, Psi	Differential, Psi
BF1			
BF2			
GAC1			
GAC2			

Change Filter Bags (Check One)	YES	<input type="checkbox"/>	NO	<input checked="" type="checkbox"/>	TIME	
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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
 Project: Frontier Chemical - Niagara County, NY
 Proj. Desc:
 Package#: 1735
 Sample: U3575
 Samp. Description: URS-7D-1
 Units: mg/L

Job No.: 3435.017.31381
 Certification NY No.: 10155

Collected: 04/04/02 Matrix: Water
 Received: 04/05/02 %Solids:
 Number of analytes: 21

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Aluminum	J .03	6010	04/16/02	04/22/02	041602W1	1	
Antimony	<.005	6010	04/16/02	04/22/02	041602W1	1	
Arsenic	<.005	6010	04/16/02	04/22/02	041602W1	1	
Barium	.02	6010	04/16/02	04/22/02	041602W1	1	
Beryllium	<.003	6010	04/16/02	04/22/02	041602W1	1	
Cadmium	<.001	6010	04/16/02	04/22/02	041602W1	1	
Calcium	450.	6010	04/16/02	04/22/02	041602W1	1	
Chromium	J .01	6010	04/16/02	04/22/02	041602W1	1	
Cobalt	<.02	6010	04/16/02	04/22/02	041602W1	1	
Copper	<.01	6010	04/16/02	04/22/02	041602W1	1	
Iron	.17	6010	04/16/02	04/22/02	041602W1	1	
Lead	<.005	6010	04/16/02	04/22/02	041602W1	1	
Magnesium	140.	6010	04/16/02	04/22/02	041602W1	1	
Manganese	.20 J	6010	04/16/02	04/22/02	041602W1	1	
Nickel	<.05	6010	04/16/02	04/22/02	041602W1	1	
Potassium	5.	6010	04/16/02	04/22/02	041602W1	1	
Selenium	<.005	6010	04/16/02	04/22/02	041602W1	1	
Silver	<.01	6010	04/16/02	04/22/02	041602W1	1	
Sodium	69.	6010	04/16/02	04/22/02	041602W1	1	
Vanadium	<.05	6010	04/16/02	04/22/02	041602W1	1	
Zinc	J .01	6010	04/16/02	04/22/02	041602W1	1	

Notes:



Authorized: _____
 Date: April 23, 2002 Thomas Alexander

J-Estimated value

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
 Project: Frontier Chemical - Niagara County, NY
 Proj. Desc:
 Package#: 1735
 Sample: U3576
 Samp. Description: Equipment Blank
 Units: mg/L

Job No.: 3435.017.31381
 Certification NY No.: 10155

Collected: 04/04/02 Matrix: Water
 Received: 04/05/02 %Solids:
 Number of analytes: 21

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Aluminum	J .01	6010	04/16/02	04/22/02	041602W1		1
Antimony	<.005	6010	04/16/02	04/22/02	041602W1		1
Arsenic	<.005	6010	04/16/02	04/22/02	041602W1		1
Barium	<.02	6010	04/16/02	04/22/02	041602W1		1
Beryllium	<.003	6010	04/16/02	04/22/02	041602W1		1
Cadmium	<.001	6010	04/16/02	04/22/02	041602W1		1
Calcium	J .1	6010	04/16/02	04/22/02	041602W1		1
Chromium	J .001	6010	04/16/02	04/22/02	041602W1		1
Cobalt	<.02	6010	04/16/02	04/22/02	041602W1		1
Copper	<.01	6010	04/16/02	04/22/02	041602W1		1
Iron	J .01	6010	04/16/02	04/22/02	041602W1		1
Lead	<.005	6010	04/16/02	04/22/02	041602W1		1
Magnesium	J .02	6010	04/16/02	04/22/02	041602W1		1
Manganese	J .0002	6010	04/16/02	04/22/02	041602W1		1
Nickel	<.05	6010	04/16/02	04/22/02	041602W1		1
Potassium	<5.	6010	04/16/02	04/22/02	041602W1		1
Selenium	<.005	6010	04/16/02	04/22/02	041602W1		1
Silver	<.01	6010	04/16/02	04/22/02	041602W1		1
Sodium	J .02	6010	04/16/02	04/22/02	041602W1		1
Vanadium	<.05	6010	04/16/02	04/22/02	041602W1		1
Zinc	<.01	6010	04/16/02	04/22/02	041602W1		1

Notes:



J-Estimated value

Authorized: _____
 Date: April 23, 2002 Thomas Alexander

**O'Brien & Gere
Laboratories, Inc.**

**Analytical Results
Trace Metals**

Client: O'Brien & Gere Engineers, Inc.
Project: Frontier Chemical - Niagara County, NY
Proj. Desc:
Package#: 1715
Sample: U3486
Samp. Description: 88-12D
Units: mg/L

Job No.: 3435.017.31381
Certification NY No.: 10155

Collected: 04/02/02 Matrix: Water
Received: 04/04/02 %Solids:
Number of analytes: 1

<u>Parameter</u>	<u>Result</u>	<u>Method</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>QC Batch</u>	<u>Dilut.</u>	<u>Note</u>
Mercury	<.0002	7470	04/23/02	04/24/02	042302W3	1	

Notes:

J-Estimated value

Authorized: 
Date: April 25, 2002 Thomas Alexander

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

**O'Brien & Gere
Laboratories, Inc.**

**Analytical Results
Trace Metals**

Client: O'Brien & Gere Engineers, Inc.
Project: Frontier Chemical - Niagara County, NY
Proj. Desc:
Package#: 1715
Sample: U3487
Samp. Description: 88-12C
Units: mg/L


Job No.: 3435.017.31381
Certification NY No.: 10155

Collected: 04/02/02 Matrix: Water
Received: 04/04/02 %Solids:
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Mercury	<.0002	7470	04/23/02	04/24/02	042302W3	1	

Notes:

J-Estimated value

Authorized: 
Date: April 25, 2002 Thomas Alexander

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: Frontier Chemical - Niagara County, NY
Proj. Desc:
Package#: 1715
Sample: U3488
Samp. Description: URS-14I
Units: mg/L


Job No.: 3435.017.31381
Certification NY No.: 10155

Collected: 04/02/02 Matrix: Water
Received: 04/04/02 %Solids:
Number of analytes: 1

<u>Parameter</u>	<u>Result</u>	<u>Method</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>QC Batch</u>	<u>Dilut.</u>	<u>Note</u>
Mercury	<.0002	7470	04/23/02	04/24/02	042302W3	1	

Notes:

J-Estimated value

Authorized: 
Date: April 25, 2002 Thomas Alexander

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: Frontier Chemical - Niagara County, NY
Proj. Desc:
Package#: 1715
Sample: U3489
Samp. Description: URS-14D
Units: mg/L


Job No.: 3435.017.31381
Certification NY No.: 10155

Collected: 04/02/02 Matrix: Water
Received: 04/04/02 %Solids:
Number of analytes: 1

<u>Parameter</u>	<u>Result</u>	<u>Method</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>QC Batch</u>	<u>Dilut.</u>	<u>Note</u>
Mercury	<.0002	7470	04/23/02	04/24/02	042302W3		1

Notes:

J-Estimated value

Authorized: 
Date: April 25, 2002 Thomas Alexander

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: Frontier Chemical - Niagara County, NY
Proj. Desc:
Package#: 1715
Sample: U3490
Samp. Description: URS-9D
Units: mg/L


Job No.: 3435.017.31381
Certification NY No.: 10155

Collected: 04/03/02 Matrix: Water
Received: 04/04/02 %Solids:
Number of analytes: 1

<u>Parameter</u>	<u>Result</u>	<u>Method</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>QC Batch</u>	<u>Dilut.</u>	<u>Note</u>
Mercury	<.0002	7470	04/23/02	04/24/02	042302W3	1	

Notes:

J-Estimated value

Authorized: 

Date: April 25, 2002

Thomas Alexander

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: Frontier Chemical - Niagara County, NY
Proj. Desc:
Package#: 1715
Sample: U3491
Samp. Description: URS 91
Units: mg/L


Job No.: 3435.017.31381
Certification NY No.: 10155

Collected: 04/03/02 Matrix: Water
Received: 04/04/02 %Solids:
Number of analytes: 1

<u>Parameter</u>	<u>Result</u>	<u>Method</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>QC Batch</u>	<u>Dilut.</u>	<u>Note</u>
Mercury	<.0002	7470	04/23/02	04/24/02	042302W3	1	

Notes:

J-Estimated value

Authorized 
Date: April 25, 2002 Thomas Alexander

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: Frontier Chemical - Niagara County, NY
Proj. Desc:
Package#: 1715
Sample: U3492
Samp. Description: URS 5D
Units: mg/L

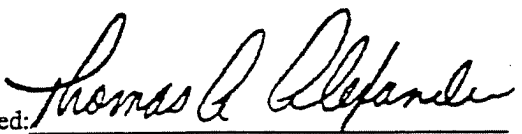
Job No.: 3435.017.31381
Certification NY No.: 10155

Collected: 04/03/02 Matrix: Water
Received: 04/04/02 %Solids:
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Mercury	<.0002	7470	04/23/02	04/24/02	042302W3	1	

Notes:

J-Estimated value

Authorized: 
Date: April 25, 2002 Thomas Alexander

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: Frontier Chemical - Niagara County, NY
Proj. Desc:
Package#: 1735
Sample: U3572
Samp. Description: 85-5R
Units: mg/L

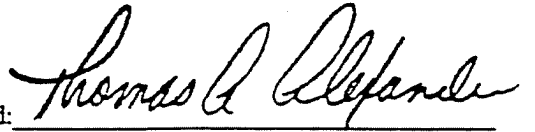
Job No.: 3435.017.31381
Certification NY No.: 10155

Collected: 04/03/02 Matrix: Water
Received: 04/05/02 %Solids:
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Mercury	<.0002	7470	04/23/02	04/24/02	042302W3	1	

Notes:

J-Estimated value

Authorized: 
Date: April 25, 2002 Thomas Alexander

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: Frontier Chemical - Niagara County, NY
Proj. Desc:
Package#: 1735
Sample: U3573
Samp. Description: URS-7D
Units: mg/L


Job No.: 3435.017.31381
Certification NY No.: 10155

Collected: 04/04/02 Matrix: Water
Received: 04/05/02 %Solids:
Number of analytes: 1

<u>Parameter</u>	<u>Result</u>	<u>Method</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>QC Batch</u>	<u>Dilut.</u>	<u>Note</u>
Mercury	<.0002	7470	04/23/02	04/24/02	042302W3	1	

Notes:

J-Estimated value

Authorized: 
Date: April 25, 2002 Thomas Alexander

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: Frontier Chemical - Niagara County, NY
Proj. Desc:
Package#: 1735
Sample: U3574
Samp. Description: 85-7R
Units: mg/L

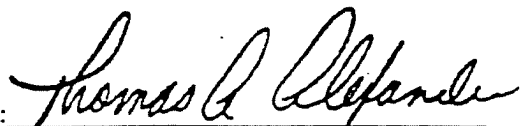
Job No.: 3435.017.31381
Certification NY No.: 10155

Collected: 04/04/02 Matrix: Water
Received: 04/05/02 %Solids:
Number of analytes: 1

<u>Parameter</u>	<u>Result</u>	<u>Method</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>QC Batch</u>	<u>Dilut.</u>	<u>Note</u>
Mercury	<.0002	7470	04/23/02	04/24/02	042302W3	1	

Notes:

J-Estimated value

Authorized: 
Date: April 25, 2002 Thomas Alexander

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: Frontier Chemical - Niagara County, NY
Proj. Desc:
Package#: 1735
Sample: U3575
Samp. Description: URS-7D-1
Units: mg/L


Job No.: 3435.017.31381
Certification NY No.: 10155

Collected: 04/04/02 Matrix: Water
Received: 04/05/02 %Solids:
Number of analytes: 1

<u>Parameter</u>	<u>Result</u>	<u>Method</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>QC Batch</u>	<u>Dilut.</u>	<u>Note</u>
Mercury	<.0002	7470	04/23/02	04/24/02	042302W3	1	

Notes:

J-Estimated value

Authorized: 
Date: April 25, 2002 Thomas Alexander

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: Frontier Chemical - Niagara County, NY
Proj. Desc:
Package#: 1735
Sample: U3576
Samp. Description: Equipment Blank
Units: mg/L

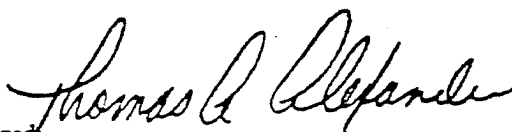
Job No.: 3435.017.31381
Certification NY No.: 10155

Collected: 04/04/02 Matrix: Water
Received: 04/05/02 %Solids:
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Mercury	<.0002	7470	04/23/02	04/24/02	042302W3	I	

Notes:

J-Estimated value

Authorized: 
Date: April 25, 2002 Thomas Alexander

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: Frontier Chemical - Niagara County, NY
Proj. Desc:
Package#: 1715
Sample: U3486
Samp. Description: 88-12D
Units: mg/L

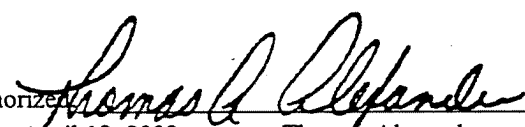
Job No.: 3435.017.31381
Certification NY No.: 10155

Collected: 04/02/02 Matrix: Water
Received: 04/04/02 %Solids:
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Thallium	<.002	7841	04/16/02	04/18/02	041602W2	1	

Notes:

J-Estimated value

Authorized: 
Date: April 18, 2002 Thomas Alexander

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: Frontier Chemical - Niagara County, NY
Proj. Desc:
Package#: 1715
Sample: U3487
Samp. Description: 88-12C
Units: mg/L


Job No.: 3435.017.31381
Certification NY No.: 10155

Collected: 04/02/02 Matrix: Water
Received: 04/04/02 %Solids:
Number of analytes: 1

<u>Parameter</u>	<u>Result</u>	<u>Method</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>QC Batch</u>	<u>Dilut.</u>	<u>Note</u>
Thallium	<.002	7841	04/16/02	04/18/02	041602W2	1	

Notes:

J-Estimated value

Authorized: 
Date: April 18, 2002 Thomas Alexander

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: Frontier Chemical - Niagara County, NY
Proj. Desc:
Package#: 1715
Sample: U3489
Samp. Description: URS-14D
Units: mg/L

Job No.: 3435.017.31381
Certification NY No.: 10155

Collected: 04/02/02 Matrix: Water
Received: 04/04/02 %Solids:
Number of analytes: 1

<u>Parameter</u>	<u>Result</u>	<u>Method</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>QC Batch</u>	<u>Dilut.</u>	<u>Note</u>
Thallium	<.002	7841	04/16/02	04/18/02	041602W2		1

Notes:



Authorized _____
Date: April 18, 2002 Thomas Alexander

J-Estimated value

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: Frontier Chemical - Niagara County, NY
Proj. Desc:
Package#: 1715
Sample: U3490
Samp. Description: URS-9D
Units: mg/L


Job No.: 3435.017.31381
Certification NY No.: 10155

Collected: 04/03/02 Matrix: Water
Received: 04/04/02 %Solids:
Number of analytes: 1

<u>Parameter</u>	<u>Result</u>	<u>Method</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>QC Batch</u>	<u>Dilut.</u>	<u>Note</u>
Thallium	<.002	7841	04/16/02	04/18/02	041602W2		1

Notes:

J-Estimated value

Authorized: 
Date: April 18, 2002 Thomas Alexander

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: Frontier Chemical - Niagara County, NY
Proj. Desc:
Package#: 1715
Sample: U3491
Samp. Description: URS 9I
Units: mg/L


Job No.: 3435.017.31381
Certification NY No.: 10155

Collected: 04/03/02 Matrix: Water
Received: 04/04/02 %Solids:
Number of analytes: 1

<u>Parameter</u>	<u>Result</u>	<u>Method</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>QC Batch</u>	<u>Dilut.</u>	<u>Note</u>
Thallium	<.002	7841	04/16/02	04/18/02	041602W2	1	

Notes:

J-Estimated value

Authorized: 

Date: April 18, 2002

Thomas Alexander

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: Frontier Chemical - Niagara County, NY
Proj. Desc:
Package#: 1715
Sample: U3492
Samp. Description: URS 5D
Units: mg/L


Job No.: 3435.017.31381
Certification NY No.: 10155

Collected: 04/03/02 Matrix: Water
Received: 04/04/02 %Solids:
Number of analytes: 1

<u>Parameter</u>	<u>Result</u>	<u>Method</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>QC Batch</u>	<u>Dilut.</u>	<u>Note</u>
Thallium	<.002	7841	04/16/02	04/18/02	041602W2		1

Notes:

J-Estimated value

Authorized: 
Date: April 18, 2002 Thomas Alexander

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: Frontier Chemical - Niagara County, NY
Proj. Desc:
Package#: 1735
Sample: U3572
Samp. Description: 85-5R
Units: mg/L


Job No.: 3435.017.31381
Certification NY No.: 10155

Collected: 04/03/02 Matrix: Water
Received: 04/05/02 %Solids:
Number of analytes: 1

<u>Parameter</u>	<u>Result</u>	<u>Method</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>QC Batch</u>	<u>Dilut.</u>	<u>Note</u>
Thallium	J .001	7841	04/16/02	04/18/02	041602W2	1	

Notes:

J-Estimated value

Authorized: 
Date: April 18, 2002 Thomas Alexander

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: Frontier Chemical - Niagara County, NY
Proj. Desc:
Package#: 1735
Sample: U3573
Samp. Description: URS-7D
Units: mg/L

Job No.: 3435.017.31381
Certification NY No.: 10155

Collected: 04/04/02 Matrix: Water
Received: 04/05/02 %Solids:
Number of analytes: 1

<u>Parameter</u>	<u>Result</u>	<u>Method</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>QC Batch</u>	<u>Dilut.</u>	<u>Note</u>
Thallium	<.002	7841	04/16/02	04/18/02	041602W2		1

Notes:

J-Estimated value

Authorized: 
Date: April 18, 2002 Thomas Alexander

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: Frontier Chemical - Niagara County, NY
Proj. Desc:
Package#: 1735
Sample: U3574
Samp. Description: 85-7R
Units: mg/L


Job No.: 3435.017.31381
Certification NY No.: 10155

Collected: 04/04/02 Matrix: Water
Received: 04/05/02 %Solids:
Number of analytes: 1

<u>Parameter</u>	<u>Result</u>	<u>Method</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>QC Batch</u>	<u>Dilut.</u>	<u>Note</u>
Thallium	<.002	7841	04/16/02	04/18/02	041602W2	1	

Notes:

J-Estimated value

Authorized: 

Date: April 18, 2002

Thomas Alexander

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: Frontier Chemical - Niagara County, NY
Proj. Desc:
Package#: 1735
Sample: U3575
Samp. Description: URS-7D-1
Units: mg/L


Job No.: 3435.017.31381
Certification NY No.: 10155

Collected: 04/04/02 Matrix: Water
Received: 04/05/02 %Solids:
Number of analytes: 1

<u>Parameter</u>	<u>Result</u>	<u>Method</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>QC Batch</u>	<u>Dilut.</u>	<u>Note</u>
Thallium	<.002	7841	04/16/02	04/18/02	041602W2	1	

Notes:

J-Estimated value

Authorized: 

Date: April 18, 2002

Thomas Alexander

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: Frontier Chemical - Niagara County, NY
Proj. Desc:
Package#: 1735
Sample: U3576
Samp. Description: Equipment Blank
Units: mg/L


Job No.: 3435.017.31381
Certification NY No.: 10155

Collected: 04/04/02 Matrix: Water
Received: 04/05/02 %Solids:
Number of analytes: 1

<u>Parameter</u>	<u>Result</u>	<u>Method</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>QC Batch</u>	<u>Dilut.</u>	<u>Note</u>
Thallium	<.002	7841	04/16/02	04/18/02	041602W2		1

Notes:

J-Estimated value

Authorized: 
Date: April 18, 2002 Thomas Alexander

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O'Brien & Gere Laboratories, Inc.

Analytical Results Wet Chemistry

Client: O'Brien & Gere Engineers, Inc.
Project: Frontier Chemical - Niagara County, NY
Proj. Desc:

Job No.: 3435.017.31381
Certification NY No.: 10155

Package#: 1715
Sample: U3486
Samp. Description: 88-12D

Collected: 04/02/02 Matrix: Water
Received: 04/04/02 10:35

Parameter	Result	Units	Method	Prepared	Analyzed	QC Batch	Note
Total cyanide	<.01	mg/L	9010B/9014		04/16/02	041502W11	

Notes:

Package#: 1715
Sample: U3487
Samp. Description: 88-12C

Collected: 04/02/02 Matrix: Water
Received: 04/04/02 10:35

Parameter	Result	Units	Method	Prepared	Analyzed	QC Batch	Note
Total cyanide	<.01	mg/L	9010B/9014		04/16/02	041502W11	

Notes:


Package#: 1715
Sample: U3488
Samp. Description: URS-14I

Collected: 04/02/02 Matrix: Water
Received: 04/04/02 10:35

Parameter	Result	Units	Method	Prepared	Analyzed	QC Batch	Note
Total cyanide	.015	mg/L	9010B/9014		04/16/02	041502W11	

Notes:

J-Estimated value

Authorized: 
Date: April 21, 2002 Thomas Alexander

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Wet Chemistry

Client: O'Brien & Gere Engineers, Inc.
Project: Frontier Chemical - Niagara County, NY
Proj. Desc:

Job No.: 3435.017.31381
Certification NY No.: 10155

Package#: 1715
Sample: U3489
Samp. Description: URS-14D

Collected: 04/02/02 Matrix: Water
Received: 04/04/02 10:35

Parameter	Result	Units	Method	Prepared	Analyzed	QC	Batch	Note
Total cyanide	<.01	mg/L	9010B/9014		04/16/02		041502W11	

Notes:

Package#: 1715
Sample: U3490
Samp. Description: URS-9D

Collected: 04/03/02 Matrix: Water
Received: 04/04/02 10:35

Parameter	Result	Units	Method	Prepared	Analyzed	QC	Batch	Note
Total cyanide	<.01	mg/L	9010B/9014		04/16/02		041502W11	

Notes:


Package#: 1715
Sample: U3491
Samp. Description: URS 9I

Collected: 04/03/02 Matrix: Water
Received: 04/04/02 10:35

Parameter	Result	Units	Method	Prepared	Analyzed	QC	Batch	Note
Total cyanide	<.01	mg/L	9010B/9014		04/16/02		041502W11	

Notes:

J-Estimated value

Authorized: 
Date: April 21, 2002 Thomas Alexander

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Wet Chemistry

Client: O'Brien & Gere Engineers, Inc.
Project: Frontier Chemical - Niagara County, NY
Proj. Desc:

Job No.: 3435.017.31381
Certification NY No.: 10155


Package#: 1715
Sample: U3492
Samp. Description: URS 5D

Collected: 04/03/02 Matrix: Water
Received: 04/04/02 10:35

<u>Parameter</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>QC</u>	<u>Batch</u>	<u>Note</u>
Total cyanide	<.01	mg/L	9010B/9014		04/16/02		041502W11	

Notes:.

J-Estimated value

Authorized: 
Date: April 21, 2002 Thomas Alexander

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Wet Chemistry

Client: O'Brien & Gere Engineers, Inc.
Project: Frontier Chemical - Niagara County, NY
Proj. Desc:

Job No.: 3435.017.31381
Certification NY No.: 10155

Package#: 1735
Sample: U3572
Samp. Description: 85-5R

Collected: 04/03/02 Matrix: Water
Received: 04/05/02 10:40

<u>Parameter</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>QC Batch</u>	<u>Note</u>
Total cyanide	<.01	mg/L	9010B/9014		04/17/02	041602W12	

Notes:

Package#: 1735
Sample: U3573
Samp. Description: URS-7D

Collected: 04/04/02 Matrix: Water
Received: 04/05/02 10:40

<u>Parameter</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>QC Batch</u>	<u>Note</u>
Total cyanide	<.01	mg/L	9010B/9014		04/17/02	041602W12	

Notes:

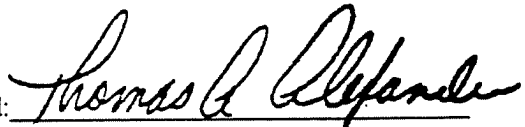
Package#: 1735
Sample: U3574
Samp. Description: 85-7R

Collected: 04/04/02 Matrix: Water
Received: 04/05/02 10:40

<u>Parameter</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>QC Batch</u>	<u>Note</u>
Total cyanide	<.01	mg/L	9010B/9014		04/17/02	041602W12	

Notes:

J-Estimated value

Authorized: 
Date: April 22, 2002 Thomas Alexander

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Wet Chemistry

Client: O'Brien & Gere Engineers, Inc.
Project: Frontier Chemical - Niagara County, NY
Proj. Desc:

Job No.: 3435.017.31381
Certification NY No.: 10155


Package#: 1735
Sample: U3575
Samp. Description: URS-7D-1

Collected: 04/04/02 Matrix: Water
Received: 04/05/02 10:40

<u>Parameter</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>QC Batch</u>	<u>Note</u>
Total cyanide	<.01	mg/L	9010E/9014		04/17/02	041602W12	

Notes:

J-Estimated value

Authorized: 
Date: April 22, 2002 Thomas Alexander

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Quality Control Results

**O'Brien & Gere
Laboratories, Inc.**

**Quality Control Summary
Matrix Spike/Matrix Spike Duplicate
Method: 8260**

Package#: 1715
Sample: U3490
Samp. Description: URS-9D
Units: ug/L
Instrument: HP5970 GC/MS#2

Matrix: Water

%Solids:
Number of analytes: 38

Parameter	Dilution	Result	Spike Added	MS Value	%R	MSD Value	%R	RPD Limits	Note
Chloromethane	1	<1	10	8.6547	87	8.6172	86	41 -149	0 0 -25
Vinyl chloride	1	<1	10	10.1424	101	10.5784	106	64 -144	4 0 -20
Bromomethane	1	<1	10	2.9688#	30	3.2628#	33	37 -164	9 0 -20
Chloroethane	1	<1	10	10.5077	105	10.7455	107	66 -141	2 0 -14
Acetone	1	<10	10	11.3175	113	10.7146	107	17 -192	5 0 -30
1,1-Dichloroethene	1	<.5	10	10.1006	101	10.9246	109	67 -131	8 0 -11
Methylene chloride	1	<2	10	8.7859	88	9.1997	92	74 -119	5 0 -12
Carbon disulfide	1	12.6555	10	22.9266	103	25.9865	133	54 -141	13 0 -17
trans-1,2-Dichloroethene	1	<.5	10	10.3889	104	10.9986	110	72 -134	6 0 -11
1,1-Dichloroethane	1	J.1881	10	10.4866	103	11.2277	110	76 -130	7 0 -11
2-Butanone	1	<10	10	J6.9852	70	J7.5193	75	40 -162	7 0 -19
cis-1,2-Dichloroethene	1	J.1756	10	10.1664	100	10.534	104	74 -133	4 0 -11
Chloroform	1	<.5	10	9.1047	91	9.6354	96	68 -125	6 0 -13
1,2-Dichloroethane	1	<.5	10	9.3115	93	10.0996	101	73 -135	8 0 -13
1,1,1-Trichloroethane	1	<.5	10	9.7936	98	10.4873	105	51 -151	7 0 -11
Carbon tetrachloride	1	<.5	10	6.8556	69	7.2051	72	61 -141	5 0 -14
Benzene	1	<.5	10	10.0449	100	10.7246	107	81 -121	7 0 -12
1,2-Dichloropropane	1	<.5	10	9.7561	98	10.4344	104	78 -124	7 0 -10
Trichloroethene	1	<.5	10	10.3725	104	10.9003	109	53 -151	5 0 -10
Bromodichloromethane	1	<.5	10	8.5737	86	9.0265	90	77 -125	5 0 -14

J-Estimated value #-Outside limits

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

**O'Brien & Gere
Laboratories, Inc.**

**Quality Control Summary
Matrix Spike/Matrix Spike Duplicate
Method: 8260**

Package#: 1715

Sample: U3490

Sample Description: URS-9D

Units: ug/L

Instrument: HP5970 GC/MS#2

Matrix: Water

%Solids:

Number of analytes: 38

Parameter	Dilution	Result	Spike Added	MS Value	%R	MSD Value	%R	RPD Limits	Note
cis-1,3-Dichloropropene	1	<.5	10	7.4604	75	7.8676	79	70-125	5 0-14
4-Methyl-2-pentanone	1	<.5	10	5.8367	58	6.3209	63	39-150	8 0-19
trans-1,3-Dichloropropene	1	<.5	10	5.4103#	54	5.6205#	56	61-124	4 0-14
1,1,2-Trichloroethane	1	<.5	10	8.6628	87	9.1311	91	82-122	5 0-12
Toluene	1	<.5	10	10.3846	104	10.8012	108	70-132	4 0-14
Dibromochloromethane	1	<.5	10	6.3578#	64	6.5689#	66	68-127	3 0-13
2-Hexanone	1	<.5	10	6.9031	69	7.4567	75	51-149	8 0-22
Tetrachloroethene	1	<.5	10	9.6353	96	10.7348	107	73-132	11 0-11
Chlorobenzene	1	<.5	10	9.7872	98	10.6231	106	79-121	8 0-12
Ethylbenzene	1	<.5	10	10.5825	106	11.3996	114	67-136	7 0-14
Bromoform	1	<.5	10	4.0647#	41	3.9897#	40	53-131	2 0-16
Xylene (total)	1	<.5	30	29.9415	100	32.7867	109	48-154	9 0-14
Styrene	1	<.5	10	7.5698	76	8.0105	80	10-171	6 0-25
1,1,2,2-Tetrachloroethane	1	<.5	10	9.2772	93	10.0079	100	67-138	8 0-16
Dibromofluoromethane (surrogate)	1	96.239%			97		96	71-130	
1,2-Dichloroethane-d4 (surrogate)	1	97.6971%			95		96	76-126	
Toluene-d8 (surrogate)	1	101.1047%			106		104	82-119	
Bromofluorobenzene (surrogate)	1	100.8452%			98		98	75-119	

Notes:

J-Estimated value #-Outside limits

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

**O'Brien & Gere
Laboratories, Inc.**

**Quality Control Summary
Matrix Spike/Matrix Spike Duplicate
Trace Metals**

Package#: 1715

Sample: U3490

Samp. Description: URS-9D

Matrix: Water Units: mg/L
% Solids: Number of analytes: 22

Parameter	MS		Sample		Spike		MSD		MS		MSD		MS/MSD		RPD		Method	Note
	Result	Limit	Result	Limit	Added	Limit	Result	Limit	%R	Limit	%R	Limit	RPD	Limit	RPD	Limit		
Aluminum	.9905	<.1	<.1	1.000	1.000	.9940	99	99	48-164	0	0-20	6010						
Antimony	.2114	<.005	<.005	.200	.200	.2147	106	107	83-123	2	0-20	6010						
Arsenic	.1979	<.005	<.005	.200	.200	.2005	99	100	85-116	1	0-20	6010						
Barium	.2070	J.0112	J.0112	.200	.200	.2080	98	98	75-124	0	0-20	6010						
Beryllium	.1936	<.003	<.003	.200	.200	.1946	97	97	75-125	1	0-20	6010						
Cadmium	.1866	<.001	<.001	.200	.200	.1878	93	94	75-125	1	0-20	6010						
Calcium	228.0000	225.7	225.7	10.000	10.000	227.5000	23	18	75-125	0	0-20	6010						
Chromium	.1965	J.0042	J.0042	.200	.200	.1981	96	97	75-125	1	0-20	6010						
Cobalt	.1901	<.025	<.025	.200	.200	.1915	95	96	75-125	1	0-20	6010						
Copper	.1936	<.01	<.01	.200	.200	.1953	97	98	75-125	1	0-20	6010						
Iron	.9889	J.0499	J.0499	1.000	1.000	.9911	94	94	35-161	0	0-11	6010						
Lead	.1877	<.005	<.005	.200	.200	.1896	94	95	75-119	1	0-20	6010						
Magnesium	82.5400	75.12	75.12	10.000	10.000	82.3700	74	73	67-127	0	0-20	6010						
Manganese	.2098	.0125	.0125	.200	.200	.2107	99	99	71-128	0	0-20	6010						
Nickel	.1871	<.05	<.05	.200	.200	.1885	94	94	75-125	1	0-20	6010						
Potassium	13.8500	J3.534	J3.534	10.000	10.000	13.9100	103	104	83-140	0	0-20	6010						
Selenium	.1555	<.005	<.005	.200	.200	.1598	78	80	76-121	3	0-18	6010						
Silver	.0492	<.01	<.01	.050	.050	.0494	98	99	75-125	0	0-20	6010						
Sodium	49.9600	41.12	41.12	10.000	10.000	49.8000	88	87	30-154	0	0-20	6010						
Thallium	.0176	<.002	<.002	.020	.020	.0174	88	87	58-140	1	0-20	7841						
Vanadium	.1977	<.05	<.05	.200	.200	.1989	99	99	75-125	1	0-20	6010						
Zinc	.1961	<.01	<.01	.200	.200	.1936	98	97	79-123	1	0-20	6010						

Notes:

J-Estimated value #-Outside limits

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

**'Brien & Gere
Laboratories, Inc.**

**Quality Control Summary
Post Digestion Spike
Trace Metals**

Sample: U3490
Sample Description: URS-9D

Matrix: Water Units: mg/L
% Solids: Number of analytes: 21

Parameter	MS Result	Sample Result	Spike Added	MS %R	%R Limits	Method
Aluminum	.9890	<.1	1.000	99	75-125	6010
Antimony	.1983	<.005	.200	99	75-125	6010
Arsenic	.1943	<.005	.200	97	75-125	6010
Barium	.2047	J.0112	.200	97	75-125	6010
Beryllium	.1887	<.003	.200	94	75-125	6010
Cadmium	.1822	<.001	.200	91	75-125	6010
Calcium	231.1000	225.7	10.000 #	54	75-125	6010
Chromium	.1929	J.0042	.200	94	75-125	6010
Cobalt	.1863	<.025	.200	93	75-125	6010
Copper	.1893	<.01	.200	95	75-125	6010
Iron	.9632	J.0499	1.000	91	75-125	6010
Lead	.1836	<.005	.200	92	75-125	6010
Magnesium	83.1600	75.12	10.000	80	75-125	6010
Manganese	.2062	.0125	.200	97	75-125	6010
Nickel	.1822	<.05	.200	91	75-125	6010
Potassium	13.7100	J3.534	10.000	102	75-125	6010
Selenium	.1922	<.005	.200	96	75-125	6010
Silver	.0479	<.01	.050	96	75-125	6010
Sodium	50.3300	41.12	10.000	92	75-125	6010
Vanadium	.1936	<.05	.200	97	75-125	6010
Zinc	.1947	<.01	.200	97	75-125	6010

J-Estimated value #-Outside limits

Internal Chain of Custody

**O'Brien & Gere
Laboratories, Inc.**

**Quality Control Summary
Matrix Spike/Matrix Spike Duplicate
Trace Metals**

Package#: 1715

Sample: U3490

Samp. Description: URS-9D

Matrix: Water Units: mg/L
% Solids: Number of analytes: 23

Parameter	MS Result	Sample Result	Spike Added	MSD Result	MS %R	MSD %R	RPD		Method	Note
							RPD Limits	RPD		
Aluminum	.9905	<.1	1.000	.9940	99	48-164	0	0-20	6010	
Antimony	.2114	<.005	.200	.2147	106	83-123	2	0-20	6010	
Arsenic	.1979	<.005	.200	.2005	99	85-116	1	0-20	6010	
Barium	.2070	J.0112	.200	.2080	98	75-124	0	0-20	6010	
Beryllium	.1936	<.003	.200	.1946	97	75-125	1	0-20	6010	
Cadmium	.1866	<.001	.200	.1878	93	75-125	1	0-20	6010	
Calcium	228.0000	225.7	10.000	227.5000 #	23 #	75-125	0	0-20	6010	
Chromium	.1965	J.0042	.200	.1981	96	75-125	1	0-20	6010	
Cobalt	.1901	<.025	.200	.1915	95	75-125	1	0-20	6010	
Copper	.1936	<.01	.200	.1953	97	75-125	1	0-20	6010	
Iron	.9889	J.0499	1.000	.9911	94	35-161	0	0-11	6010	
Lead	.1877	<.005	.200	.1896	94	75-119	1	0-20	6010	
Magnesium	82.5400	75.12	10.000	82.3700	74	67-127	0	0-20	6010	
Manganese	.2098	.0125	.200	.2107	99	71-128	0	0-20	6010	
Mercury	.0021	<.0002	.002	.0021	103	66-136	1	0-35	7470	
Nickel	.1871	<.05	.200	.1885	94	75-125	1	0-20	6010	
Potassium	13.8500	J3.534	10.000	13.9100	103	83-140	0	0-20	6010	
Selenium	.1555	<.005	.200	.1598	78	76-121	3	0-18	6010	
Silver	.0492	<.01	.050	.0494	98	75-125	0	0-20	6010	
Sodium	49.9600	41.12	10.000	49.8000	88	30-154	0	0-20	6010	
Thallium	.0176	<.002	.020	.0174	88	58-140	1	0-20	7841	
Vanadium	.1977	<.05	.200	.1989	99	75-125	1	0-20	6010	
Zinc	.1961	<.01	.200	.1936	98	79-123	1	0-20	6010	

Notes:

J-Estimated value # -Outside limits

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

**O'Brien & Gere
Laboratories, Inc.**

**Quality Control Summary
Duplicates
Trace Metals**

Package#: 1715

Sample: U3490

Samp. Description: URS-9D

Matrix: Water
%Solids:

Units: mg/L
Number of analytes: 1

Parameter	Sample Result	Duplicate Result	RPD	RPD Limits	Method	Note
Mercury	<.0002	<.0002			7470	

Notes:

J-Estimated value #-Outside limits

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

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**O'Brien & Gere
Laboratories, Inc.**

**Quality Control Summary
Matrix Spike/Matrix Spike Duplicate
Trace Metals**

Package#: 1715

Sample: U3490

Samp. Description: URS-9D

Matrix: Water Units: mg/L
% Solids: Number of analytes: 22

Parameter	MS		Sample Result	Spike Added	MSD Result	MS %R	MSD %R	MS/MSD		RPD		Note
	Result	Added						Limits	Limits	RPD	RPD	
Aluminum	.9905	1.000	<.1	1.000	.9940	99	99	48-164	0	0-20	6010	
Antimony	.2114	.200	<.005	.200	.2147	106	107	83-123	2	0-20	6010	
Arsenic	.1979	.200	<.005	.200	.2005	99	100	85-116	1	0-20	6010	
Barium	.2070	.200	J.0112	.200	.2080	98	98	75-124	0	0-20	6010	
Beryllium	.1936	.200	<.003	.200	.1946	97	97	75-125	1	0-20	6010	
Cadmium	.1866	.200	<.001	.200	.1878	93	94	75-125	1	0-20	6010	
Calcium	228.0000	10.000	225.7	10.000	227.5000 #	23 #	18	75-125	0	0-20	6010	
Chromium	.1965	.200	J.0042	.200	.1981	96	97	75-125	1	0-20	6010	
Cobalt	.1901	.200	<.025	.200	.1915	95	96	75-125	1	0-20	6010	
Copper	.1936	.200	<.01	.200	.1953	97	98	75-125	1	0-20	6010	
Iron	.9889	1.000	J.0499	1.000	.9911	94	94	35-161	0	0-11	6010	
Lead	.1877	.200	<.005	.200	.1896	94	95	75-119	1	0-20	6010	
Magnesium	82.5400	10.000	75.12	10.000	82.3700	74	73	67-127	0	0-20	6010	
Manganese	.2098	.200	.0125	.200	.2107	99	99	71-128	0	0-20	6010	
Nickel	.1871	.200	<.05	.200	.1885	94	94	75-125	1	0-20	6010	
Potassium	13.8500	10.000	J3.534	10.000	13.9100	103	104	83-140	0	0-20	6010	
Selenium	.1555	.200	<.005	.200	.1598	78	80	76-121	3	0-18	6010	
Silver	.0492	.050	<.01	.050	.0494	98	99	75-125	0	0-20	6010	
Sodium	49.9500	10.000	41.12	10.000	49.8000	88	87	30-154	0	0-20	6010	
Thallium	.0176	.020	<.002	.020	.0174	88	87	58-140	1	0-20	7841	
Vanadium	.1977	.200	<.05	.200	.1989	99	99	75-125	1	0-20	6010	
Zinc	.1961	.200	<.01	.200	.1936	98	97	79-123	1	0-20	6010	

Notes:

J-Estimated value #-Outside limits

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

**O'Brien & Gere
Laboratories, Inc.**

**Quality Control Summary
Matrix Spike/Matrix Spike Duplicate
Wet Chemistry**

Package#: 1715
Sample: U3490
Samp. Description: URS-9D

Matrix: Water
Number of analytes: 1

Parameter	MS Result	Sample Result	Spike Added	MSD Result	MS %R	MS/MSD Limits	MSD %R	RPD Limits	RPD 1	Units mg/L	Method 9010B/9014	Note
Total cyanide	.0463	<.01	.050	.0469	93	65-120	94	0-26				

Notes:

J-Estimated value #-Outside limits

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

Package#: 1715

Sample: U3490

Samp. Description: URS-9D

Matrix: Water

Number of analytes: 1

Parameter	Sample Result	Duplicate Result	RPD Limits	Units	Note
Total cyanide	<.01	<.01		mg/L	

Notes:

J-Estimated value #-Outside limits

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

**O'Brien & Gere
Laboratories, Inc.**

**Quality Control Summary
Laboratory Control Sample
GC/MS Volatile Organics**

Package#: 1715
Sample: L041502W2
Analyzed: 04/15/02

QC Batch: 041502W2
Instrument: HP5970 GC/MS#2
Number of analytes: 38

Parameter	LCS Result	Spike Added Units	%R	QC Limits	Note
Chloromethane	9.7356	10 ug/L	97	49-138	
Vinyl chloride	10.5017	10 ug/L	105	68-138	
Bromomethane	9.4515	10 ug/L	95	50-149	
Chloroethane	10.1630	10 ug/L	102	70-138	
Acetone	11.4321	10 ug/L	114	53-165	
1,1-Dichloroethene	9.6158	10 ug/L	96	76-127	
Methylene chloride	8.7001	10 ug/L	87	77-117	
Carbon disulfide	9.8317	10 ug/L	98	74-130	
trans-1,2-Dichloroethene	10.6739	10 ug/L	107	83-128	
1,1-Dichloroethane	10.2923	10 ug/L	103	78-126	
2-Butanone	8.6488	10 ug/L	86	61-142	
cis-1,2-Dichloroethene	9.6896	10 ug/L	97	84-123	
Chloroform	8.9965	10 ug/L	90	74-119	
1,2-Dichloroethane	9.3307	10 ug/L	93	73-132	
1,1,1-Trichloroethane	10.1531	10 ug/L	102	73-130	
Carbon tetrachloride	10.2809	10 ug/L	103	68-136	
Benzene	9.7669	10 ug/L	98	82-119	
1,2-Dichloropropane	9.9867	10 ug/L	100	76-125	
Trichloroethene	10.3447	10 ug/L	103	81-123	
Bromodichloromethane	9.6155	10 ug/L	96	78-125	
cis-1,3-Dichloropropene	9.1684	10 ug/L	92	74-124	
4-Methyl-2-pentanone	8.3950	10 ug/L	84	56-155	
trans-1,3-Dichloropropene	7.7644	10 ug/L	78	67-123	
1,1,2-Trichloroethane	8.5401	10 ug/L	85	78-125	
Toluene	10.2042	10 ug/L	102	81-125	
Dibromochloromethane	8.7595	10 ug/L	88	72-127	
2-Hexanone	7.4310	10 ug/L	74	62-142	
Tetrachloroethene	9.9706	10 ug/L	100	78-130	
Chlorobenzene	9.9415	10 ug/L	99	80-119	
Ethylbenzene	10.8560	10 ug/L	109	80-124	
Bromoform	8.5743	10 ug/L	86	62-129	
Xylene (total)	30.9475	30 ug/L	103	79-130	
Styrene	9.2198	10 ug/L	92	78-120	
1,1,2,2-Tetrachloroethane	9.1423	10 ug/L	91	70-129	
Dibromofluoromethane (surrogate)		%	96	71-130	
1,2-Dichloroethane-d4 (surrogate)		%	93	76-126	

- Outside control limits

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

**O'Brien & Gere
Laboratories, Inc.**

**Quality Control Summary
Laboratory Control Sample
GC/MS Volatile Organics**

Package#: 1715
Sample: L041502W2
Analyzed: 04/15/02

QC Batch: 041502W2
Instrument: HP5970 GC/MS#2
Number of analytes: 38

Parameter	LCS Result	Spike Added	Units	%R	QC Limits	Note
Toluene-d8 (surrogate)			%	106	82-119	
Bromofluorobenzene (surrogate)			%	102	75-119	

Notes:

- Outside control limits

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

**O'Brien & Gere
Laboratories, Inc.**

**Quality Control Summary
Laboratory Control Sample
GC/MS Volatile Organics**

Package#: 1715
Sample: L041602W2
Analyzed: 04/16/02

QC Batch: 041602W2
Instrument: HP5970 GC/MS#2
Number of analytes: 38

Parameter	LCS Result	Spike Added Units	%R	QC Limits Note
Chloromethane	8.1984	10 ug/L	82	49-138
Vinyl chloride	10.8698	10 ug/L	109	68-138
Bromomethane	4.8474	10 ug/L	48 #	50-149
Chloroethane	12.3254	10 ug/L	123	70-138
Acetone	11.8396	10 ug/L	118	53-165
1,1-Dichloroethene	10.9900	10 ug/L	110	76-127
Methylene chloride	9.8179	10 ug/L	98	77-117
Carbon disulfide	11.1382	10 ug/L	111	74-130
trans-1,2-Dichloroethene	11.6473	10 ug/L	116	83-128
1,1-Dichloroethane	11.2599	10 ug/L	113	78-126
2-Butanone	8.3643	10 ug/L	84	61-142
cis-1,2-Dichloroethene	10.5475	10 ug/L	105	84-123
Chloroform	9.6887	10 ug/L	97	74-119
1,2-Dichloroethane	9.7527	10 ug/L	98	73-132
1,1,1-Trichloroethane	10.6003	10 ug/L	106	73-130
Carbon tetrachloride	9.7660	10 ug/L	98	68-136
Benzene	10.5091	10 ug/L	105	82-119
1,2-Dichloropropane	10.3351	10 ug/L	103	76-125
Trichloroethene	10.7366	10 ug/L	107	81-123
Bromodichloromethane	9.6104	10 ug/L	96	78-125
cis-1,3-Dichloropropene	9.1762	10 ug/L	92	74-124
4-Methyl-2-pentanone	9.0529	10 ug/L	91	56-155
trans-1,3-Dichloropropene	7.5037	10 ug/L	75	67-123
1,1,2-Trichloroethane	8.6365	10 ug/L	86	78-125
Toluene	10.6877	10 ug/L	107	81-125
Dibromochloromethane	9.0454	10 ug/L	90	72-127
2-Hexanone	7.6523	10 ug/L	77	62-142
Tetrachloroethene	10.9469	10 ug/L	109	78-130
Chlorobenzene	10.5210	10 ug/L	105	80-119
Ethylbenzene	11.6553	10 ug/L	117	80-124
Bromoform	7.7211	10 ug/L	77	62-129
Xylene (total)	33.5566	30 ug/L	112	79-130
Styrene	9.9646	10 ug/L	100	78-120
1,1,2,2-Tetrachloroethane	9.7246	10 ug/L	97	70-129
Dibromofluoromethane (surrogate)		%	94	71-130
1,2-Dichloroethane-d4 (surrogate)		%	90	76-126

- Outside control limits

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

**O'Brien & Gere
Laboratories, Inc.**

**Quality Control Summary
Laboratory Control Sample
GC/MS Volatile Organics**

Package#: 1715
Sample: L041602W2
Analyzed: 04/16/02

QC Batch: 041602W2
Instrument: HP5970 GC/MS#2
Number of analytes: 38

Parameter	LCS Result	Spike Added Units	%R	QC Limits	Note
Toluene-d8 (surrogate)		%	104	82-119	
Bromofluorobenzene (surrogate)		%	99	75-119	

Notes:

- Outside control limits

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

**O'Brien & Gere
Laboratories, Inc.**

**Quality Control Summary
Laboratory Control Sample
Trace Metals**

Package#: 1715
Sample: L041602W1
Analyzed: 04/22/02
Units: mg/L

QC Batch: 041602W1
Number of analytes: 22

Parameter	LCS	Spike	QC		Instrument Note
	Result	Added	%R	Limits	
Aluminum	1.0090	1	101	89-116	ICAP-61
Antimony	.2146	.2	107	85-115	ICAP-61
Arsenic	.2010	.2	100	85-115	ICAP-61
Barium	.1976	.2	99	88-111	ICAP-61
Beryllium	.2006	.2	100	85-115	ICAP-61
Cadmium	.1980	.2	99	85-115	ICAP-61
Calcium	9.9560	10	100	85-115	ICAP-61
Chromium	.2008	.2	100	85-115	ICAP-61
Cobalt	.2004	.2	100	85-115	ICAP-61
Copper	.1990	.2	99	85-115	ICAP-61
Iron	.9631	1	96	89-114	ICAP-61
Lead	.1998	.2	100	85-115	ICAP-61
Magnesium	9.9280	10	99	85-115	ICAP-61
Manganese	.2023	.2	101	85-115	ICAP-61
Nickel	.1991	.2	100	85-115	ICAP-61
Potassium	10.2900	10	103	77-113	ICAP-61
Selenium	.2013	.2	101	88-109	ICAP-61
Silver	.0494	.05	99	85-115	ICAP-61
Sodium	10.0800	10	101	84-109	ICAP-61
Thallium	.1960	.2	98	90-108	ICAP-61
Vanadium	.2020	.2	101	96-108	ICAP-61
Zinc	.1995	.2	100	85-115	ICAP-61

Notes:

- Outside control limits

**O'Brien & Gere
Laboratories, Inc.**

**Quality Control Summary
Laboratory Control Sample
Trace Metals**

Package#: 1715
Sample: L042302W3
Analyzed: 04/24/02
Units: mg/L

QC Batch: 042302W3
Number of analytes: 1

Parameter	LCS Result	Spike Added	%R	QC Limits	Instrument Note
Mercury	.0043	.005	87	75-128	PE3100

Notes:

- Outside control limits

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA	88-12C	88-12C	88-12C	88-12C	88-12C	88-12C	88-12C
	Water Quality	Standards	06/24/97	02/25/98	09/17/98	02/04/99	08/11/99	02/07/00	
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
VOCs									
1,1,1-Trichloroethane	5		0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	
1,1,2,2-Tetrachloroethane	5		0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	
1,1-Dichloroethane	5		0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	
1,2-Dichloroethane	5	NA	NA	NA	NA	NA	NA	NA	
2-Butanone (MEK)	NC	10 U	10 U	10 U	10 U	10 U	10 UJ	10 UJ	
4-Methyl-2-pentanone (MIBK)	NC	5 U	5 U	5 U	5 U	5 U	5 UJ	5 UJ	
Acetone	NC	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	
Benzene	1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	
Bromodichloromethane	NC	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	
Carbon disulfide	NC	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	
Chlorobenzene	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	
Chloroform	7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	
Dibromochloromethane	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	
Ethylbenzene	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	
Methylene chloride	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	
Toluene	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	
Trichloroethene	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	
Vinyl chloride	2	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	
Xylene (total)	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	
cis-1,2-Dichloroethene	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	
Metals									
Aluminum	NC	100 U	100 U	100 U	100 U	100 U	100 U	100 U	
Antimony	3	10 U	10 U	10 U	10 U	10 U	10 U	10 U	
Arsenic	25	9	7	10	12	11 J	11 J	12	
Barium	1000	20 U	20 U	20 U	20 U	20 U	20 U	20 U	
Beryllium	NC	3 U	3 U	3 U	3 U	3 U	3 U	3 U	
Cadmium	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Calcium	NC	73000	70000	71000	76000	80000	80000	78000	
Chromium	50	10 U	10	10	20	10 U	10 U	10 U	
Cobalt	NC	30 U	30 U	25 U	25 U	25 U	25 U	25 U	
Copper	200	10 U	10 U	10 U	10 U	10 U	10 U	10 U	
Cyanide	200	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	
Iron	300	50 U	[2200]	[330]	[1600]	100	100	200	
Lead	25	10 U	10 U	5 U	5 U	5 U	5 U	5 U	
Magnesium	NC	110000	98000	110000	100000	110000	110000	110000	

NOTES: U - not detected, J.B. - estimated value, R - unusable, NA - not analyzed, ND - not detected.
 E - estimated, N - tentatively identified, NC - no criteria.
 [] - exceeds standard.

Date Printed: 05/28/02 16:29:16
 DBF File: N:\5829\22038\TEMP\DATA.DBF
 FXP File: N:\5829\22038\TABLEPR.FXP



Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA Water Quality Standards	88-12C 06/24/97	88-12C 02/25/98	88-12C 09/17/98	88-12C 02/04/99	88-12C 08/11/99	88-12C 02/07/00
	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Manganese	300	10	70	10	40	20	20	20
Mercury	0.7	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	100	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Potassium	NC	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U
Selenium	10	10 U	10 U	5 U	5 U	5 U	5 U	5 U
Silver	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Sodium	20000	[47000 J]	[43000]	[40000]	[42000]	[50000]	[47000]	[47000]
Thallium	NC	10 U	13	1 U	1 U	5 U	5 U	2 U
Vanadium	NC	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Zinc	NC	20	20	10 U	10 U	20 J	20 J	20

NOTES:
U - not detected, J,B - estimated value, R - unusable, NA - not analyzed, ND - not detected.
E - estimated, N - tentatively identified, NC - no criteria.
[] - exceeds standard.



Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA Water Quality Standards	88-12C	88-12C	88-12C	88-12C	88-12D	88-12D
	Sample Date	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	Units							
VOCs								
1,1,1-Trichloroethane	5	5 U	0.5 U	0.5 UJ	0.5 U	NA	NA	NA
1,1,2-Tetrachloroethane	5	0.5 U	0.5 U	0.5 UJ	0.5 U	NA	NA	NA
1,1-Dichloroethane	5	0.5 U	0.5 U	0.5 UJ	0.5 U	NA	NA	NA
1,2-Dichloroethane	5	NA	NA	NA	NA	2 J	2 J	2 J
2-Butanone (MEK)	NC	10 U	10 UJ	10 UJ	10 UJ	NA	NA	NA
4-Methyl-2-pentanone (MIBK)	NC	5 U	5 U	5 UJ	5 U	NA	NA	NA
Acetone	NC	10 UJ	10 UJ	10 UJ	10 UJ	NA	NA	NA
Benzene	1	0.5 U	0.5 U	0.5 UJ	0.5 U	1 J	0.9 J	0.9 J
Bromodichloromethane	NC	0.5 U	0.5 U	0.5 UJ	0.5 U	NA	NA	NA
Carbon disulfide	NC	0.5 UJ	0.72 U	0.5 UJ	12	NA	6	6
Chlorobenzene	5	0.5 U	0.5 U	0.5 UJ	0.5 U	NA	NA	NA
Chloroform	7	0.5 U	0.5 U	0.5 UJ	0.5 U	NA	NA	NA
Dibromochloromethane	5	0.5 U	0.5 U	0.5 UJ	0.5 U	NA	NA	NA
Ethylbenzene	5	0.5 U	0.5 U	0.5 UJ	0.5 U	NA	NA	NA
Methylene chloride	5	5 U	2 U	2 UJ	2 U	NA	NA	NA
Toluene	5	0.5 U	0.5 U	0.5 UJ	0.5 U	R	[13]	[13]
Trichloroethene	5	0.5 U	0.5 U	0.5 UJ	0.5 U	NA	NA	NA
Vinyl chloride	2	1 U	1 U	1 UJ	1 U	NA	NA	NA
Xylene (total)	5	0.5 U	0.5 U	0.5 UJ	0.5 U	NA	NA	NA
cis-1,2-Dichloroethene	5	0.5 U	0.5 U	0.5 UJ	0.5 U	NA	NA	NA
Metals								
Aluminum	NC	100 U	100 U	100 U	100 U	50.7 B	172 B	172 B
Antimony	3	5 U	5 U	5 U	5 U	NA	[56.1 B]	[56.1 B]
Arsenic	25	12 J	11	14	9	NA	1.3 BW	1.3 BW
Barium	1000	20 U	20 U	10 J	10 J	2.9 B	7.9 B	7.9 B
Beryllium	NC	3 U	3 U	3 U	3 U	NA	NA	NA
Cadmium	5	1 U	1 U	1 U	1 U	NA	NA	NA
Calcium	NC	78000	76000	70000	70000	464000	623000 E	623000 E
Chromium	50	10 U	10 U	10 J	10 J	7.6 B	27.8 E	27.8 E
Cobalt	NC	20 U	25 U	20 U	20 U	NA	NA	NA
Copper	200	10 U	10 U	10 U	10 U	NA	NA	NA
Cyanide	200	10 U	10 U	10 U	10 U	NA	NA	NA
Iron	300	[590]	80	[540]	50 J	168	250	250
Lead	25	5 U	5 U	5 U	5 U	NA	1.8 BW	1.8 BW
Magnesium	NC	110000	100000	100000	100000	109000	199000 E	199000 E

NOTES:
 U - not detected, J,B - estimated value, R - unusable, NA - not analyzed, ND - not detected.
 E - estimated, N - tentatively identified, NC - no criteria
 [] - exceeds standard



Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA Water Quality Standards	88-12C	88-12C	88-12C	88-12C	88-12D	88-12D
	Sample Date	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Manganese		300	10 J	20	20 J	20 J	33.9	[696]
Mercury		0.7	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA
Nickel		100	50 U	50 U	1 J	50 U	NA	25.5 B
Potassium		NC	5000 U	5000 U	2000 J	3000 J	11.5 B	12000 E
Selenium		10	5 U	5 U	5 U	5 U	[5310]	NA
Silver		50	10 U	10 U	10 U	0.8 J	NA	NA
Sodium		20000	[48000]	[43000]	[46000]	[45000]	[66400]	[474000]
Thallium		NC	2 U	2 U	2 U	2 U	NA	NA
Vanadium		NC	50 U	50 U	50 U	0.8 J	51.6	2.4 B
Zinc		NC	10 U	10 U	10 U	10 J	7.9 B	NA

NOTES: U - not detected, J,B - estimated value, R - unusable, NA - not analyzed, ND - not detected.
 E - estimated, N - tentatively identified, NC - no criteria.
 [] - exceeds standard.

Page 7 of 22 CONTINUED

File Number: 5829 22038

**O'Brien & Gere
Laboratories, Inc.**

**Quality Control Summary
Laboratory Control Sample
Trace Metals**

Package#: 1715
Sample: L041602W2
Analyzed: 04/18/02
Units: mg/L

QC Batch: 041602W2
Number of analytes: 1

Parameter	LCS Result	Spike Added	%R	QC Limits	Instrument Note
Thallium	.0200	.02	100	86-116	PE5100

Notes:

- Outside control limits

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

**O'Brien & Gere
Laboratories, Inc.**

**Quality Control Summary
Laboratory Control Sample
Wet Chemistry**

Package#: 1715
Sample: L041502W11
Analyzed: 04/16/02

QC Batch: 041502W11
Number of parameters: 1

Parameter	LCS Result	Spike Added Units	%R	QC Limits	Instrument Note
Total cyanide	.1930	.2 mg/L	97	89-107	SPEC 21

Notes:

- Outside control limits

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

**O'Brien & Gere
Laboratories, Inc.**

**Quality Control Summary
Laboratory Control Sample
Wet Chemistry**

Package#: 1735
Sample: L041602W12
Analyzed: 04/17/02

QC Batch: 041602W12
Number of parameters: 1

Parameter	LCS Result	Spike Added Units	%R	QC Limits	Instrument Note
Total cyanide	.2003	.2 mg/L	100	89-107	SPEC 21

Notes:

- Outside control limits

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

**O'Brien & Gere
Laboratories, Inc.**

**Quality Control Summary
Preparation Blank
GC/MS Volatile Organics**

Package#: 1715
Sample: PB041502W2
Analyzed: 04/15/02

Instrument: HP5970 GC/MS#2
Number of analytes: 38

Parameter	Sample Result	Surrog Limits	Det. Limit	Units	QC Batch
Chloromethane	<1.0		1	ug/L	041502W2
Vinyl chloride	<1.0		1	ug/L	041502W2
Bromomethane	<1.0		1	ug/L	041502W2
Chloroethane	<1.0		1	ug/L	041502W2
Acetone	<10.		10	ug/L	041502W2
1,1-Dichloroethene	<.50		.5	ug/L	041502W2
Methylene chloride	<2.0		2	ug/L	041502W2
Carbon disulfide	<.50		.5	ug/L	041502W2
trans-1,2-Dichloroethene	<.50		.5	ug/L	041502W2
1,1-Dichloroethane	<.50		.5	ug/L	041502W2
2-Butanone	<10.		10	ug/L	041502W2
cis-1,2-Dichloroethene	<.50		.5	ug/L	041502W2
Chloroform	<.50		.5	ug/L	041502W2
1,2-Dichloroethane	<.50		.5	ug/L	041502W2
1,1,1-Trichloroethane	<.50		.5	ug/L	041502W2
Carbon tetrachloride	<.50		.5	ug/L	041502W2
Benzene	<.50		.5	ug/L	041502W2
1,2-Dichloropropane	<.50		.5	ug/L	041502W2
Trichloroethene	<.50		.5	ug/L	041502W2
Bromodichloromethane	<.50		.5	ug/L	041502W2
cis-1,3-Dichloropropene	<.50		.5	ug/L	041502W2
4-Methyl-2-pentanone	<5.0		5	ug/L	041502W2
trans-1,3-Dichloropropene	<.50		.5	ug/L	041502W2
1,1,2-Trichloroethane	<.50		.5	ug/L	041502W2
Toluene	<.50		.5	ug/L	041502W2
Dibromochloromethane	<.50		.5	ug/L	041502W2
2-Hexanone	<5.0		5	ug/L	041502W2
Tetrachloroethene	<.50		.5	ug/L	041502W2
Chlorobenzene	<.50		.5	ug/L	041502W2
Ethylbenzene	<.50		.5	ug/L	041502W2
Bromoform	<.50		.5	ug/L	041502W2
Xylene (total)	<.50		.5	ug/L	041502W2
Styrene	<.50		.5	ug/L	041502W2
1,1,2,2-Tetrachloroethane	<.50		.5	ug/L	041502W2
Dibromofluoromethane (surrogate)	95.	71 - 130	.1	%	041502W2
1,2-Dichloroethane-d4 (surrogate)	101.	76 - 126	.1	%	041502W2
Toluene-d8 (surrogate)	101.	82 - 119	.1	%	041502W2

- Outside control limits J - Estimated value

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

**O'Brien & Gere
Laboratories, Inc.**

**Quality Control Summary
Preparation Blank
GC/MS Volatile Organics**

Package#: 1715
Sample: PB041502W2
Analyzed: 04/15/02

Instrument: HP5970 GC/MS#2
Number of analytes: 38

Parameter	Sample Result	Surrog Limits	Det. Limit	Units	QC Batch
Bromofluorobenzene (surrogate)	101.	75-119	.1	%	041502W2

Notes:

- Outside control limits J - Estimated value

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

Tentatively Identified Compound (LSC) summary

Operator ID: TSG Date Acquired: 15 Apr 2002 14:10
Data File: M:\HPCHEM\1\DATA\M8186.D
Name: PB041502W2
Misc: V5783
Method: C:\HPCHEM\1\METHODS\M415TCLU.M (RTE Integrator)
Title: VOC's w/Restek RTX-502.2, 0.53mm x 105m, 3.0 df
Library Searched: C:\DATABASE\NBS75K.L

TIC Top Hit name	RT	EstConc	Units	Area	IntStd	ISRT	ISArea	ISConc
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M8186.D M415TCLU.M								
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None

**O'Brien & Gere
Laboratories, Inc.**

**Quality Control Summary
Preparation Blank
GC/MS Volatile Organics**

Package#: 1715
Sample: PB041602W2
Analyzed: 04/16/02

Instrument: HP5970 GC/MS#2
Number of analytes: 38

Parameter	Sample Result	Surrog Limits	Det. Limit	Units	QC Batch
Chloromethane	<1.0		1	ug/L	041602W2
Vinyl chloride	<1.0		1	ug/L	041602W2
Bromomethane	<1.0		1	ug/L	041602W2
Chloroethane	<1.0		1	ug/L	041602W2
Acetone	<10.		10	ug/L	041602W2
1,1-Dichloroethene	<.50		.5	ug/L	041602W2
Methylene chloride	<2.0		2	ug/L	041602W2
Carbon disulfide	<.50		.5	ug/L	041602W2
trans-1,2-Dichloroethene	<.50		.5	ug/L	041602W2
1,1-Dichloroethane	<.50		.5	ug/L	041602W2
2-Butanone	<10.		10	ug/L	041602W2
cis-1,2-Dichloroethene	<.50		.5	ug/L	041602W2
Chloroform	<.50		.5	ug/L	041602W2
1,2-Dichloroethane	<.50		.5	ug/L	041602W2
1,1,1-Trichloroethane	<.50		.5	ug/L	041602W2
Carbon tetrachloride	<.50		.5	ug/L	041602W2
Benzene	<.50		.5	ug/L	041602W2
1,2-Dichloropropane	<.50		.5	ug/L	041602W2
Trichloroethene	<.50		.5	ug/L	041602W2
Bromodichloromethane	<.50		.5	ug/L	041602W2
cis-1,3-Dichloropropene	<.50		.5	ug/L	041602W2
4-Methyl-2-pentanone	<5.0		5	ug/L	041602W2
trans-1,3-Dichloropropene	<.50		.5	ug/L	041602W2
1,1,2-Trichloroethane	<.50		.5	ug/L	041602W2
Toluene	<.50		.5	ug/L	041602W2
Dibromochloromethane	<.50		.5	ug/L	041602W2
2-Hexanone	<5.0		5	ug/L	041602W2
Tetrachloroethene	<.50		.5	ug/L	041602W2
Chlorobenzene	<.50		.5	ug/L	041602W2
Ethylbenzene	<.50		.5	ug/L	041602W2
Bromoform	<.50		.5	ug/L	041602W2
Xylene (total)	<.50		.5	ug/L	041602W2
Styrene	<.50		.5	ug/L	041602W2
1,1,2,2-Tetrachloroethane	<.50		.5	ug/L	041602W2
Dibromofluoromethane (surrogate)	95.	71 - 130	.1	%	041602W2
1,2-Dichloroethane-d4 (surrogate)	96.	76 - 126	.1	%	041602W2
Toluene-d8 (surrogate)	104.	82 - 119	.1	%	041602W2

- Outside control limits J - Estimated value

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**O'Brien & Gere
Laboratories, Inc.**

**Quality Control Summary
Preparation Blank
GC/MS Volatile Organics**

Package#: 1715
Sample: PB041602W2
Analyzed: 04/16/02

Instrument: HP5970 GC/MS#2
Number of analytes: 38

Parameter	Sample Result	Surrog Limits	Det. Limit	Units	QC Batch
Bromofluorobenzene (surrogate)	97.	75 - 119	.1	%	041602W2

Notes:

- Outside control limits J - Estimated value

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

Tentatively Identified Compound (LSC) summary

Operator ID: TSG Date Acquired: 16 Apr 2002 10:58
Data File: m:\HPCHEM\1\DATA\M8200.D
Name: PB041602W2
Misc: V5783
Method: C:\HPCHEM\1\METHODS\M415TCLU.M (RTE Integrator)
Title: VOC's w/Restek RTX-502.2, 0.53mm x 105m, 3.0 df
Library Searched: C:\DATABASE\NBS75K.L

TIC	Top Hit name	RT	EstConc	Units	Area	IntStd	ISRT	ISArea	ISConc
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M8200.D	M415TCLU.M	Mon Apr 22	06:35:45	2002					
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None

**O'Brien & Gere
Laboratories, Inc.**

**Quality Control Summary
Preparation Blank
Trace Metals**

Package#: 1715
Sample: PB041602W1
Units: mg/L

QC Batch: 041602W1
Number of analytes: 22

Parameter	Sample Result	Det. Limit	Analyzed	Instrument Note
Aluminum	J.02	.1	04/22/02	ICAP-61
Antimony	<.005	.005	04/22/02	ICAP-61
Arsenic	<.005	.005	04/22/02	ICAP-61
Barium	<.02	.02	04/22/02	ICAP-61
Beryllium	J.0001	.003	04/22/02	ICAP-61
Cadmium	<.001	.001	04/22/02	ICAP-61
Calcium	J.03	.1	04/22/02	ICAP-61
Chromium	<.01	.01	04/22/02	ICAP-61
Cobalt	<.025	.025	04/22/02	ICAP-61
Copper	<.01	.01	04/22/02	ICAP-61
Iron	<.05	.05	04/22/02	ICAP-61
Lead	<.005	.005	04/22/02	ICAP-61
Magnesium	J.02	.3	04/22/02	ICAP-61
Manganese	<.01	.01	04/22/02	ICAP-61
Nickel	<.05	.05	04/22/02	ICAP-61
Potassium	<5.	5	04/22/02	ICAP-61
Selenium	<.005	.005	04/22/02	ICAP-61
Silver	<.01	.01	04/22/02	ICAP-61
Sodium	<.3	.3	04/22/02	ICAP-61
Thallium	<.010	.01	04/22/02	ICAP-61
Vanadium	<.05	.05	04/22/02	ICAP-61
Zinc	<.01	.01	04/22/02	ICAP-61

Notes:

J - Estimated value

O'Brien & Gere Laboratories, Inc.

Quality Control Summary Preparation Blank Trace Metals

Package#: 1715

Sample: PB042302W3

Units: mg/L

Date analyzed: 04/24/02

QC Batch: 042302W3

Number of analytes: 1

Parameter	Sample Result	Det. Limit	Instrument	Note
Mercury	<.0002	.0002	PE3100	

Notes:

J - Estimated value

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

**O'Brien & Gere
Laboratories, Inc.**

**Quality Control Summary
Preparation Blank
Trace Metals**

Package#: 1715
Sample: PB041602W2
Units: mg/L

QC Batch: 041602W2
Number of analytes: 1

Parameter	Sample Result	Det. Limit	Analyzed	Instrument Note
Thallium	<.002	.002	04/18/02	PE5100

Notes:

J - Estimated value

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

**O'Brien & Gere
Laboratories, Inc.**

**Quality Control Summary
Preparation Blank
Wet Chemistry**

Package#: 1715
Sample: PB041502W11
Analyzed: 04/16/02

Parameter	Sample Result	Det. Limit Units	QC Batch	Instrument	Note
Total cyanide	<.010	.01 mg/L	041502W11	SPEC 21	

Notes:

J - Estimated value

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

**O'Brien & Gere
Laboratories, Inc.**

**Quality Control Summary
Preparation Blank
Wet Chemistry**

Package#: 1735
Sample: PB041602W12
Analyzed: 04/17/02

Parameter	Sample Result	Det. Limit Units	QC Batch	Instrument	Note
Total cyanide	<.010	.01 mg/L	041602W12	SPEC 21	

Notes:

J - Estimated value

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'BRIEN & GERE
Laboratories, Inc.

Volatile Organics
Method 8260

Internal Standard Summary

Client: O'Brien & Gere Eng.	CCC Data File: M8181	Inst. I.D.: GC/MS#2
Job No.: 3435.017.31381	Date Analyzed: 4/15/02	Matrix: Water
Site: Frontier Chemical		

		ISTD 1		ISTD 2		ISTD 3	
		Area	Q	R.T.	Area	Q	R.T.
m8181.d	CCC	3870611		15.67	3031274		22.38
Upper Limit		7741222		16.17	6062548		22.88
Lower Limit		1935306		15.17	1515637		21.88
Data File	Sample No.						
m8184.d	L041502W2	4140127		15.66	3235450		22.38
m8186.d	PB041502W2	4365023		15.67	3178505		22.40
m8187.d	U3486	4358257		15.69	3310388		22.40
m8188.d	U3487	4307711		15.69	3341034		22.40
m8189.d	U3488	4322895		15.68	3376539		22.40
m8190.d	U3489	4331391		15.69	3275766		22.40
m8191.d	U3490	4269152		15.69	3249955		22.40
m8192.d	U3491	4267484		15.69	3312526		22.40
m8193.d	U3490MS	3999442		15.69	3209054		22.40
m8194.d	U3490MSD	3778531		15.69	2957263		22.38

ISTD 1 Fluorobenzene
 ISTD 2 Chlorobenzene-d5
 ISTD 3 1,4-Dichlorobenzene-d4

Q Column to be used to flag values outside QC limit with an asterisk.
 * Value outside of required QC limits.

Internal Standard Summary

Client: O'Brien & Gere Eng.	CCC Data File: M8197	Inst. I.D.: GC/MS#2
Job No.: 3435.017.31381	Date Analyzed: 4/16/02	Matrix: Water
Site: Frontier Chemical		

		ISTD 1			ISTD 2			ISTD 3		
		Area	Q	R.T.	Area	Q	R.T.	Area	Q	R.T.
m8197.d	CCC	4093371		15.67	3230048		22.40	1645323		27.70
Upper Limit		8186742		16.17	6460096		22.90	3290646		28.20
Lower Limit		2046686		15.17	1615024		21.90	822662		27.20
Data File	Sample No.									
m8198.d	L041602W2	3830243		15.69	2964973		22.40	1527584		27.74
m8200.d	PB041602W2	4201494		15.68	3249622		22.40	1153841		27.71
m8201.d	U3492	4230224		15.69	3300109		22.40	1545453		27.73
m8202.d	U3493	4258452		15.69	3194998		22.40	1440641		27.73
m8203.d	U3574	4251944		15.69	3215055		22.40	1431749		27.71
m8204.d	U3572	4245995		15.69	3333787		22.40	1531226		27.71
m8205.d	U3573	4227424		15.69	3277750		22.40	1494133		27.71
m8206.d	U3575	4243440		15.69	3245161		22.40	1472260		27.73
m8207.d	U3577	4201684		15.69	3202324		22.40	1485811		27.71

ISTD 1 Fluorobenzene
 ISTD 2 Chlorobenzene-d5
 ISTD 3 1,4-Dichlorobenzene-d4

Q Column to be used to flag values outside QC limit with an asterisk.
 * Value outside of required QC limits.

Chain of Custody

External Chain of Custody

Client: Frontier Chemical
Project: Pendleton, NY
Sampled by: Craig B. Peterson
Client Contact:

Phone #

Sample Description		Date Collected	Time Collected	Sample Matrix	Comp. or Grab	No. of Containers	Analysis/Method	Comments
Z-12D	4-3-02	10:50	Ag	Grab	5	1	Field Filtered	
EB-12C	4-3-02	11:10			5	1	Field Filtered	
URS-14E	4-3-02	13:40			5	1	Field Filtered	
URS-14D	4-3-02	14:30			5	1	Field Filtered	
URS-9F MS/MSD	4-3-02	16:15			15	3		
URS-9E	4-3-02	16:30			5	3		
URS-5D	4-3-02	18:00	Ag	Grab	5	1		
TRIP BLANK			Ag		1	1		

Ver: 8260
Meth: 1715
Date: 4/9/2002

Refrigquished by: Craig K. Bove Date: 4-3-02 Time: 17:30
Refrigquished by: Date: Time:
Refrigquished by: Date: Time:
Shipment Method: Received by: Mandy Jackson Date: 4/9/2002 Time: 10:35
Airbill Number:

Turnaround Time Required: UPS AIR: 1ZFC9 44720 1001868
Routine
Rush (Specify)
Cooler Temperature: 3°C

SAMPLE CONTROL RECORD

CLIENT: O'Brien & Gere Engineers, Inc., Frontier Chemical - Niagara County, NY JOB#: 3435.17.31381 DATE RECEIVED: 04-APR-02

PACKAGE(BIN)#: 1715 PROJECT MANAGER: TAA SAMPLE NUMBER(S): U3486-3493

LABORATORY SAMPLE Number	LABORATORY SAMPLE Letter	REMOVED BY	DATE AND TIME REMOVED	ANALYSIS	DATE AND TIME RETURNED
U3486-92	H	T. J. [Signature]	4/15/02 9:00	7077H - C.A.	4/15/02 13:00
U3486-93	V1	T. J. [Signature]	4/15/02 14:00	8260	4-15-02 14:40
U3486-92+93	V1	T. J. [Signature]	4-16-02 09:50	8260	4-16-02 11:30
U3486-92	N	E. T. [Signature]	4/16/02 17:00	ICAP, GFAA DIG.	4/16/02 18:00
U3486-92	N	A. [Signature]	4-16-02 16:20	Hg DIG.	4-16-02 16:45

PACKAGE/SAMPLE SCHEDULE

Thursday, May 2, 2002
 Project Manager: TAA
 Page 1 of 2

Job No.: 3435.17.31381
 Client: O'Brien & Gere Engineers, Inc.
 Scheduled: Apr-05, 2002
 Package number: 1715
 Samples: U03486 -03493
 Certification: 10155
 Comments: See 6/26/97 MEMO

Project: Frontier Chemical - Niagara County, NY
 Pkg Duc: Apr-26, 2002
 QC Level: 3
 Number of samples: 8

Description:
 Received: Apr-04, 2002
 QC Control Limits: 2002

SCHEDULED SAMPLES

Samples	# of	Group	Parameter	ID	Method	Matrix	Schedule Comments
U3486 - 3492 N	7	[MET]	Thallium	1075	7841	Water	
U3486 - 3492 H	7	[WC]	Total cyanide	4725	9010B/9014	Water	
U3486 - 3493 V	8	8260W[GCMS VOA]					See QAPP 6/26/97 MEMO
U3486 - 3492 N	7	TCL-MET-W[MET]					

LIST OF ALL SAMPLES IN PACKAGE:

Sample	Description	Type	Collected	Received	Sample Log Comments	Special codes:		
						MA	I	2
U3486	88-12D	grab	04/02/2002	04/04/2002 10:35		7	NSI	
U3487	88-12C	grab	04/02/2002	04/04/2002 10:35		7	NSI	
U3488	URS-14I	grab	04/02/2002	04/04/2002 10:35		7	NSI	
U3489	URS-14D	grab	04/02/2002	04/04/2002 10:35		7	NSI	
U3490	URS-9D	grab	04/03/2002	04/04/2002 10:35		7	NSI	
U3490 MSD	URS-9D	grab	04/03/2002	04/04/2002 10:35		7	MDI	
U3490 MS	URS-9D	grab	04/03/2002	04/04/2002 10:35		7	MSI	

PACKAGE/SAMPLE SCHEDULE

Thursday, May 2, 2002
 Project Manager: TAA
 Page 2 of 2

Job No.: 3435.17.31381
 Client: O'Brien & Gere Engineers, Inc.
 Scheduled: Apr-05, 2002
 Package number: 1715
 Samples: U03486 -03493
 Certification: 10155
 Comments: See 6/26/97 MEMO

Project: Frontier Chemical - Niagara County, NY
 Pkg Due: Apr-26, 2002
 QC Level: 3
 Number of samples: 8

Description:
 Received: Apr-04, 2002
 QC Control Limits: 2002

LIST OF ALL SAMPLES IN PACKAGE:

Sample	Description	Type	Collected	Received	Sample Log Comments	Special codes:		
						MA	1	2
U3490 D	URS-9D	grab	04/03/2002	04/04/2002 10:35	7	LDI		
U3491	URS 9I	grab	04/03/2002	04/04/2002 10:35	7	NSI		
U3492	URS 5D	grab	04/03/2002	04/04/2002 10:35	7	NSI		
U3493	QC Trip Blank	grab	04/02/2002	04/04/2002 10:35	7	TBI		



O'BRIEN & GERE
LABORATORIES, INC.

SUBJECT	SHEET	BY	DATE	JOB NO
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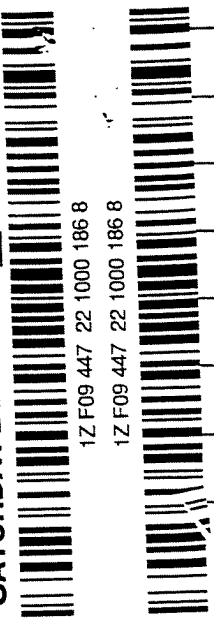
The addressee certifies that the addressee is the recipient of the goods and that the goods are for the use of the addressee. The addressee certifies that the goods were shipped from the United States in accordance with the applicable laws and regulations of the United States and that the goods are not prohibited, restricted, or controlled under the Export Administration Act of 1969, as amended, or any other applicable law.

WEIGHT	DIMENSIONAL WEIGHT
--------	--------------------

EXPRESS (INTL)
 DOCUMENTS ONLY

1

SATURDAY DELIVERY



1Z F09 447 22 1000 186 8
 1Z F09 447 22 1000 186 8

UPS Next Day Air[®]
UPS Worldwide Express
 Shipping Document

SHIPMENT FROM
 UPS ACCOUNT NO. **F 0 9 4 4 7**
 REFERENCE NUMBER

TELEPHONE
 716-284-0431

SEVENSON ENVIRONMENTAL
 2749 LOCKPORT ROAD

NIAGARA FALLS NY

DELIVERY TO

1735

Client: Frontier Chemical
Project: Fendleton, NY
Sampled by: Craig K. Bone, Lita Luman
Client Contact: _____
 Phone # _____

Analysis/Method

Vol 8260	GR 9010/9014	Trace Metals	Comprehensive
----------	--------------	--------------	---------------

Sample Description

Sample Location	Date Collected	Time Collected	Sample Matrix	Comp. or Grab	No. of Containers	Comments
85-5R	4.3.02	1230	Aqueous	Grab	5	
URS-7D	4.4.02	1240	↓	↓	5	Filtered
85-7R	4.4.02	1315	↓	↓	3	Filtered
EQUIPMENT BLANK	4.4.02	1520	↓	Grab	1	
TRIP BLANK			Aqueous	Grab	1	
URS-7D-1	4.4.02	1250	Aqueous	Grab	5	

Requisitioned by: Craig K. Bone
Requisitioned by: _____
Requisitioned by: _____
Shipment Method: _____

Date: 4.4.02 Time: 1545
 Received by: _____
 Date: _____ Time: _____

Date: _____ Time: _____
 Received by: _____
 Date: 4/5/02 Time: 10.40
 Received by: Walter F. Jackson
 Airbill Number: _____

Turnaround Time Required: _____
 Routine _____
 Rush (Specify) _____

Comments: Shipped via UPS # 1Z F09447-2210001859

Cooler Temperature: 30C

SAMPLE CONTROL RECORD

CLIENT: O'Brien & Gere Engineers, Inc., Frontier Chemical - Niagara County, NY JOB#: 3435.17.31381 DATE RECEIVED: 05-APR-02

PACKAGE(BIN)#: 1735 PROJECT MANAGER: TAA SAMPLE NUMBER(S): U3572-3577

LABORATORY SAMPLE Number	REMOVED BY	DATE AND TIME REMOVED	ANALYSIS	DATE AND TIME RETURNED
U3572-75 U3577	T. Remmers	04/16/02 7:30	CYANIDE	04/16/02 13:00
U3572-75	T. Hoffmann	4-16-02 09:50	8260	4-16-02 13:15
U3572-76	C. Trill	4/16/02 12:00	ICAP, GFAN DIG	4/16/02 18:00
U3572-76	D. ROBERT	4-22-02 16:30	149 DIG	4-22-02 16:40

PACKAGE/SAMPLE SCHEDULE

Thursday, May 2, 2002
 Project Manager: TAA
 Page 1 of 2

Job No.: 3435.17.31381
 Client: O'Brien & Gere Engineers, Inc.
 Scheduled: Apr-08, 2002
 Package number: 1735
 Samples: U03572 -03577
 Certification: 10155
 Comments: See 6/26/97 MEMO

Project: Frontier Chemical - Niagara County, NY
 Pkg Due: Apr-26, 2002
 QC Level: 3
 Number of samples: 6

Description:
 Received: Apr-05, 2002
 QC Control Limits: 2002

SCHEDULED SAMPLES

Samples	# of	Group	Parameter	ID	Method	Matrix	Schedule Comments
U3572 - 3576	5	[MET]	Thallium	1075	7841	Water	
U3572 - 3575	4	[WC]	Total cyanide	4725	9010B/9014	Water	See QAPP 6/27/97 MEMO
U3572 - 3575	4	8260W[GCMS VOA]					See QAPP 6/27/97 MEMO
U3572 - 3576	5	TCL-MET-W[MET]					
U3577 - 3577	1	8260W[GCMS VOA]					

LIST OF ALL SAMPLES IN PACKAGE:

Sample	Description	Type	Collected	Received	Sample Log Comments			Special codes:			
					MA	1	2	MA	1	2	3
U3572	85-5R	grab	04/03/2002	04/05/2002				7	NSI		
U3573	URS-7D	grab	04/04/2002	04/05/2002				7	NSI		
U3574	85-7R	grab	04/04/2002	04/05/2002				7	NSI		
U3575	URS-7D-1	grab	04/04/2002	04/05/2002				7	NSI		
U3576	Equipment Blank	grab	04/04/2002	04/05/2002				7	EBI		
U3577	QC Trip Blank	grab	04/03/2002	04/05/2002				7	TBI		



O'BRIEN & GERR
LABORATORIES, INC

SUBJECT <i>Frontier Chemical</i>	SHEET	BY <i>Duffy</i>	DATE <i>4/5/2002</i>	JOB NO <i>3455-17-31381</i>
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The shipper authorizes UPS to act as forwarding agent for export control and customs purposes. The shipper warrants that these commodities, technology or software were exported from the United States in accordance with the Export Administration Regulations, Department of Commerce to U.S. and its possessions.

WEIGHT	DIMENSIONAL WEIGHT

EXPRESS (INTL)
 DOCUMENTS ONLY

SATURDAY DELIVERY



1Z F09 447 22 1000 185 9

1Z F09 447 22 1000 185 9

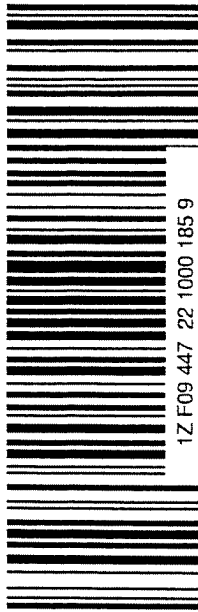


1Z F09 447 22 1000 185 9

BILL RECEIVER

UPS Next Day Air
EXTREMELY URGENT

1Z F09 447 22 1000 185 9



1Z F09 447 22 1000 185 9

TRACKING NUMBER

DATE OF SHIPMENT

SHIPMENT ID NUMBER **F094 4779 XMQ**

UPS Next Day Air
UPS Worldwide Express
Shipping Document

SHIPMENT FROM

UPS ACCOUNT NO. **F 0 9 4 4 7**

REFERENCE NUMBER

TELEPHONE
716-284-0431

SEVENSON ENVIRONMENTAL

2749 LOCKPORT ROAD

NIAGARA FALLS NY 14305

DELIVERY TO

TELEPHONE

0101911202609 6/99 W United Parcel Service, Louisville, KY

ICP METALS SAMPLE CONTROL LOG

QC Batch #: O41602W1

Date Digested: 4/16/02

Client/Job Number	Laboratory Sample Number Range	Laboratory Sample Numbers Removed	Removed by	Date Removed	Time Removed	Time Returned
086 Engineers	U3486-92	U3486-92, U3572-76	C. Tran	4/22/02	9:30 AM	1:45 PM
3435-017-31381	U3572-76				9:30	4/22/02

FURNACE METALS SAMPLE CONTROL LOG

QC Batch #: 041602W2 Date Digested: 4/16/02

Client/Job Number	Laboratory Sample Number Range	Laboratory Sample Numbers Removed	Removed by	Date Removed	Time Removed	Time Returned
OBG Engineers 3435-017-31381	U3486-92 U3572-76	U3486-92, U3572-76	C. Tran	4/18/02	10:30	16:00

ATTACHMENT D

Attachment D – Site Maintenance Work Items and Field Observation Reports

D-1 Field Observation Reports

D-1 Field Observation Reports

- April 3, 2002, Field Observation Report



a member of the GLYNN GROUP

FIELD OBSERVATION REPORT

Civil • Structural • Geotechnical • Materials Testing • Consulting

PROJECT NO.:	<u>94-1014-O</u>	REPORT NO.:	<u>02-01</u>	DATE:	<u>4/3/02</u>	PAGE:	<u>1</u> OF <u>1</u>
PROJECT:	<u>Pendleton – Frontier Chemical Site</u>			DAY:	<u>Wednesday</u>		
SUBJECT:	<u>Semi-Annual Sampling</u>			PROJECT TIME:	<u>9:30 am – 11:30 am</u>		
CLIENT:	<u>Pendleton PRP Group</u>			SITE TIME:	<u>10:00 am – 11:00 am</u>		
WEATHER:	<u>Overcast, Cool 40° F</u>			PHOTOS:	<u>Yes</u>		

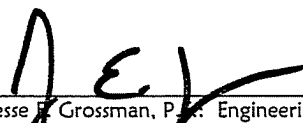
- As notified by Mike Walker (Sevenson Environmental), regarding the scheduled semi-annual sampling event, GGE visits the site to record the Quarry Lake water elevation coincidental with groundwater sampling.
- The Quarry Lake water level is recorded at El. 578.46 by level survey based on the 580.50 benchmark elevation at the top of the pre-treatment vault.
- A SES sampling team is on site and is collecting groundwater samples.
- GGE walks the site to observe general site conditions: (1) the lake level is high and the adjacent wetland areas are inundated due to heavy recent rain events, (2) the overflow weir is submerged by approx. 6" and the lake and the area adjacent to the weir are hydraulically connected, (3) though wet, the landfill cap is in good condition with no evidence of erosion, subsidence, or veneer failure, (4) there is no evidence of woodchuck activity on the landfill cap.
- GGE leaves site at approx. 11:30.

FILE COPY

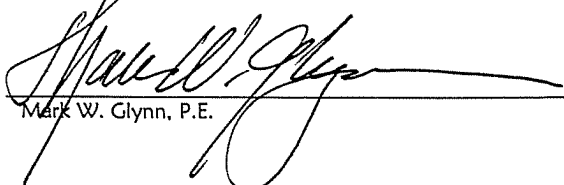
PERSONNEL ON SITE / CONTACTED:
SES Sampling Team

DISTRIBUTION:
John Burns, Jim Young – PPRP
Dave Carnevale – O'Brien & Gere

DAILY MANHOURS: 2.0



Jesse E. Grossman, P.E. Engineering Manager



Mark W. Glynn, P.E.

GLYNN GEOTECHNICAL ENGINEERING

415 South Transit Street, Lockport, New York 14094
voice 716.625.6933 / fax 716.625.6983
www.glynngroup.com

DOCFILE:02FOR.doc

Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA	88-12D	88-12D	88-12D	88-12D	88-12D	88-12D	88-12D
	Water Quality Standards		06/24/97	02/25/98	09/17/98	02/04/99	08/11/99	02/07/00	
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
VOCs									
1,1,1-Trichloroethane	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	
1,1,2,2-Tetrachloroethane	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	
1,1-Dichloroethane	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	
1,2-Dichloroethane	5	NA	NA	NA	NA	NA	NA	NA	
2-Butanone (MEK)	NC	10 U	10 U	10 U	10 U	10 U	10 UJ	10 UJ	
4-Methyl-2-pentanone (MIBK)	NC	5 U	5 U	5 U	5 U	5 U	5 UJ	5 UJ	
Acetone	NC	10 U	10 UJ	10 UJ	10 U	10 U	10 UJ	10 UJ	
Benzene	1	0.5 U	0.13 J	0.13 J	0.5 U	0.5 U	0.16 J	0.5 U	
Bromodichloromethane	NC	0.63 U	0.13 U	0.56	0.7 J	0.7 J	0.68 UJ	77	
Carbon disulfide	NC	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	
Chlorobenzene	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	
Chloroform	7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	
Dibromochloromethane	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	
Ethylbenzene	5	0.5 U	0.11 J	0.5 U	0.5 U	0.5 U	0.5 UJ	2 U	
Methylene chloride	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	
Toluene	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	
Trichloroethene	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	
Vinyl chloride	2	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	
Xylene (total)	5	0.5 U	0.48 J	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	
cis-1,2-Dichloroethene	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	
Metals									
Aluminum	NC	100 U	100 U	100 U	100 U	100 U	100 U	100 U	
Antimony	3	10 U	10 U	5 U	5 U	5 U	5 UJ	5 U	
Arsenic	25	10 U	10 U	5 U	5 U	5 U	5 UJ	6	
Barium	1000	20 U	20 U	20 U	20 U	20 U	20 U	20 U	
Beryllium	NC	3 U	3 U	3 U	3 U	3 U	3 U	3 U	
Cadmium	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Calcium	NC	490000	480000	630000	630000	630000	670000	720000	
Chromium	50	10	30	30	[90]	[90]	10 U	20	
Cobalt	NC	30 U	30 U	25 U	25 U	25 U	25 U	25 U	
Copper	200	10 U	10 U	10 U	10 U	10 U	10 U	10 U	
Cyanide	200	10 UJ	10 U	10 U	10 U	10 U	12	10 U	
Iron	300	180	[480]	110	[650]	[650]	90	70	
Lead	25	10 U	10 U	5 U	5 U	5 U	5 U	5 U	
Magnesium	NC	130000	110000	180000	160000	160000	180000	210000	

NOTES:
 U - not detected, J.B. - estimated value, R. - unusable, NA - not analyzed, ND - not detected.
 E - estimated, N - tentatively identified, NC - no criteria.
 [] - exceeds standard.



Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA	88-12D	88-12D	88-12D	88-12D	88-12D	88-12D	88-12D
	Sample Date	Water Quality Standards	06/24/97	02/25/98	09/17/98	02/04/99	08/11/99	02/07/00	
	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Manganese		300	90	60	40	50	30	30	
Mercury		0.7	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 J	
Nickel		100	50 U	50 U	50 U	70	50 U	50 U	
Potassium		NC	6000	6000	10000	9000	9000	11000	
Selenium		10	10 U	10 U	6	5 UJ	5 UJ	5 UJ	
Silver		50	10 U	10 U	10 U	10 U	10 U	10 U	
Sodium		20000	[140000 J]	[100000]	[330000]	[250000]	[330000]	[450000]	
Thallium		NC	10 U	10 U	1 UJ	1 U	5 U	2 U	
Vanadium		NC	50 U	50 U	50 U	50 U	50 U	50 U	
Zinc		NC	10 U	10	10 U	10 U	10 J	10	

NOTES: U - not detected, J,B - estimated value, R - unusable, NA - not analyzed, ND - not detected.
E - estimated, N - tentatively identified, NC - no criteria.
[] - exceeds standard.



Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA Water Quality Standards	88-12D	88-12D	88-12D	88-12D	88-12D	URS-14D	URS-14D
	Sample Date	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	Units								
VOCs									
1,1,1-Trichloroethane		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	0.5 U
1,1,2,2-Tetrachloroethane		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	0.5 U
1,1-Dichloroethane		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	0.5 U
1,2-Dichloroethane		5	NA	NA	NA	NA	NA	5 U	0.5 U
2-Butanone (MEK)		NC	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 U	0.5 U
4-Methyl-2-pentanone (MIBK)		NC	5 U	5 U	5 U	5 U	5 U	10 U	0.5 U
Acetone		NC	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 U	0.5 U
Benzene		1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	0.5 U
Bromodichloromethane		NC	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	0.5 U
Carbon disulfide		NC	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U	5 U	0.5 U
Chlorobenzene		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	0.5 U
Chloroform		7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	0.5 U
Dibromochloromethane		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	0.5 U
Ethylbenzene		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	0.5 U
Methylene chloride		5	5 U	5 U	5 U	5 U	5 U	R	0.5 U
Toluene		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	0.5 U
Trichloroethene		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	0.5 U
Vinyl chloride		2	1 U	1 U	1 U	1 U	1 U	10 U	0.5 U
Xylene (total)		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	0.5 U
cis-1,2-Dichloroethene		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA	NA
Metals									
Aluminum		NC	100 U	100 U	100 U	100 U	100 U	99.8	100 U
Antimony		3	5 U	5 U	5 U	5 U	5 U	[32.1 B]	80 U
Arsenic		25	5 U	5 U	5 U	5 U	5 U	2 B	10 U
Barium		1000	20 U	20 U	20 U	20 U	20 U	25.5 B	23
Beryllium		NC	3 U	3 U	3 U	3 U	3 U	1 U	1 U
Cadmium		5	1 U	1 U	1 U	1 U	1 U	2 U	5 U
Calcium		NC	620000	620000	620000	620000	620000	255000	292000
Chromium		50	10 U	[60.]	10 U	10 U	10 U	10.3	7
Cobalt		NC	20 U	20 U	20 U	20 U	20 U	3 U	5 U
Copper		200	10 U	10 U	10 U	10 U	10 U	12 U	8
Cyanide		200	10 U	10 U	10 U	10 U	10 U	12.2 U	8 U
Iron		300	50 U	[330.]	50 U	50 U	50 U	[357.]	193
Lead		25	5 U	5 U	5 U	5 U	5 U	1.1 B	10 U
Magnesium		NC	160000	150000	160000	160000	160000	75200	78000

NOTES: U - not detected, J,B - estimated value, R - unusable, NA - not analyzed, ND - not detected.
 E - estimated, N - tentatively identified, NC - no criteria.
 [] - exceeds standard.



Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA Water Quality Standards	88-12D 08/10/00	88-12D 02/12/01	88-12D 10/11/01	88-12D 04/02/02	URS-14D 02/01/91	URS-14D 10/01/92
	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Manganese		300	20 J	20	30 J	10 J	30.8	27
Mercury		0.7	0.2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel		100	50 U	50 U	20 J	50 U	13 U	5 U
Potassium		NC	9000	9000	19000	16000	4250 B	3700
Selenium		10	5 U	5 U	5 U	5 U	1 U	5 U
Silver		50	10 U	10 U	10 U	1 J	3 U	10 U
Sodium		20000	[240000]	[180000]	[690000]	[560000]	[40700]	[38700]
Thallium		NC	2 U	2 U	2 U	2 U	2 U	80 U
Vanadium		NC	50 U	50 U	50 U	0.8 J	2 U	5 U
Zinc		NC	10 U	20	10 U	10 J	26.8	10 U

NOTES: U - not detected, J,B - estimated value, R - unusable, NA - not analyzed, ND - not detected.
E - estimated, N - tentatively identified, NC - no criteria.
[] - exceeds standard.



Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA Water Quality Standards	URS-14D	URS-14D	URS-14D	URS-14D	URS-14D	URS-14D
	Sample Date	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	Units							
VOCs								
1,1,1-Trichloroethane		5	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U
1,1,2,2-Tetrachloroethane		5	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane		5	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U
1,2-Dichloroethane		5	NA	NA	NA	NA	NA	NA
2-Butanone (MEK)		NC	10 U	10 U	10 UJ	10 UJ	10 UJ	10 UJ
4-Methyl-2-pentanone (MIBK)		NC	5 U	5 U	5 UJ	5 U	5 U	5 UJ
Acetone		NC	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Benzene		1	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U
Bromodichloromethane		NC	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U
Carbon disulfide		NC	1.6 U	0.27 U	1.1 J	0.47 J	0.5 U	6.7
Chlorobenzene		5	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U
Chloroform		7	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U
Dibromochloromethane		5	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U
Ethylbenzene		5	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U
Methylene chloride		5	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U
Toluene		5	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U
Trichloroethene		2	1 U	1 U	1 UJ	1 U	1 U	1 U
Vinyl chloride		5	0.11 J	0.21 J	0.5 UJ	0.5 U	0.5 U	0.5 U
Xylene (total)		5	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene		5	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U
Metals								
Aluminum		NC	100 U	100 U	100 U	100 U	100 U	100 U
Antimony		3	10 U	10 U	5 U	5 U	5 U	5 U
Arsenic		25	10 U	10 U	5 U	5 UJ	5 UJ	5 U
Barium		1000	20	20 U	40	30	30	30
Beryllium		NC	3 U	3 U	3 U	3 U	3 U	3 U
Cadmium		5	1 U	1 U	1 U	1 U	1 U	1 U
Calcium		NC	210000	250000	280000	310000	360000	310000
Chromium		50	10 U	10 U	10 U	10 U	10 U	10 U
Cobalt		NC	30 U	30 U	25 U	25 U	25 U	25 U
Copper		200	10 U	10 U	10 U	10 U	10 U	10 U
Cyanide		200	10 UJ	10	10 U	10 U	10 U	10 U
Iron		300	50 U	50 U	80	50 U	50 U	50 U
Lead		25	10 U	10 U	5 U	5 U	5 U	5 U
Magnesium		NC	61000	66000	71000	81000	91000	83000

NOTES: U - not detected, J,B - estimated value, R - unusable, NA - not analyzed, ND - not detected.
E - estimated, N - tentatively identified, NC - no criteria.
[] - exceeds standard.



Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA Water Quality Standards	URS-14D	URS-14D	URS-14D	URS-14D	URS-14D	URS-14D	URS-14D
	Sample Date	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	Units								
Manganese		300	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Mercury		0.7	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel		100	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Potassium		NC	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U
Selenium		10	10 U	5 U	5 U	5 U	5 U	5 U	5 U
Silver		50	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Sodium		20000	[52000 J]	[50000]	[48000]	[58000]	[58000]	[47000]	[47000]
Thallium		NC	10 U	1 U	1 U	5 U	5 U	2 U	2 U
Vanadium		NC	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Zinc		NC	10 U	10	10 U	10 U	10 U	10 U	10 U

NOTES: U - not detected, J,B - estimated value, R - unusable, NA - not analyzed, ND - not detected.
E - estimated, N - tentatively identified, NC - no criteria.
[] - exceeds standard.



Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA Water Quality Standards	URS-14D	URS-14D	URS-14D	URS-14D	URS-14D	URS-14I	URS-14I
	Sample Date	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	Units								
VOCs									
1,1,1-Trichloroethane		5	0.5 U	0.29 J	0.5 U	0.5 U	0.5 U	5 U	0.5 U
1,1,2,2-Tetrachloroethane		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	0.5 U
1,1-Dichloroethane		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	0.5 U
1,2-Dichloroethane		5	NA	NA	NA	NA	NA	5 U	0.5 U
2-Butanone (MEK)		NC	10 U	10 UJ	10 U	10 UJ	10 U	10 U	0.5 U
4-Methyl-2-pentanone (MIBK)		NC	5 U	5 U	5 U	5 U	5 U	10 U	0.5 U
Acetone		NC	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 U	0.5 U
Benzene		1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	0.5 U
Bromodichloromethane		NC	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	0.5 U
Carbon disulfide		NC	0.5 UJ	1.8 U	0.5 U	14	0.5 U	5 U	0.5 U
Chlorobenzene		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA	NA
Chloroform		7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	0.5 U
Dibromochloromethane		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	0.5 U
Ethylbenzene		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	0.5 U
Methylene chloride		5	5 U	2 U	2 U	2 U	2 U	5 U	0.5 U
Toluene		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	0.5 U
Trichloroethene		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	0.5 U
Vinyl chloride		2	1 U	1 U	1 U	1 U	1 U	10 U	0.5 U
Xylene (total)		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	0.5 U
cis-1,2-Dichloroethene		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA	NA
Metals									
Aluminum		NC	100	100 U	100 U	100 U	100 U	7140	1170
Antimony		3	5 U	5 U	5 U	5 U	5 U	26 U	80 U
Arsenic		25	5 U	5 U	5 U	5 U	5 U	7.2 B	10 U
Barium		1000	30	20 U	20 U	20 J	20 J	115 B	47
Beryllium		NC	3 U	3 U	3 U	3 U	3 U	1.2 B	1 U
Cadmium		5	1 U	1 U	1 U	1 U	1 U	2 U	5 U
Calcium		NC	320000	260000	320000	260000	260000	73900	35200
Chromium		50	20	10	10 J	10 J	10 J	30.9	5 U
Cobalt		NC	20 U	25 U	20 U	20 U	20 U	5.8 B	5 U
Copper		200	10 U	10 U	10 U	10 U	10 U	18.5 B	8
Cyanide		200	10 U	10 U	10 U	10 U	10 U	10 U	2 U
Iron		300	[340]	110	40 J	80	[10400]	[2060]	[2060]
Lead		25	5 U	5 U	5 U	5 U	5 U	7.5	10 U
Magnesium		NC	84000	74000	88000	76000	32800	22300	22300

NOTES:
 U - not detected, JB - estimated value, R - unusable, NA - not analyzed, ND - not detected.
 E - estimated, N - tentatively identified, NC - no criteria.
 [] - exceeds standard.



Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA Water Quality Standards	URS-14D	URS-14D	URS-14D	URS-14D	URS-14D	URS-14I	URS-14I
	Sample Date	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	Units								
Manganese		300	20 J	10	10 J	10 J	10 J	[484]	145
Mercury		0.7	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel		100	50 U	50 U	1 J	1 J	50 U	30.4 B	5 U
Potassium		NC	5000 U	5000 U	3000 J	3000 J	3000 J	17100	5500
Selenium		10	5 U	5 U	5 U	5 U	5 U	1 U	5 U
Silver		50	10 U	10 U	10 U	10 U	10 U	3 U	10 U
Sodium		20000	[45000]	[35000]	[41000]	[35000]	[35000]	[44700]	[42500]
Thallium		NC	2 U	2 U	2 U	2 U	2 U	2 U	80 U
Vanadium		NC	50 U	50 U	50 U	50 U	50 U	16.1 B	5 U
Zinc		NC	10 U	10	10 U	10 J	10 J	52.3	10 U

NOTES:
 U - not detected, JB - estimated value, R - unusable, NA - not analyzed, ND - not detected.
 E - estimated, N - tentatively identified, NC - no criteria
 [] - exceeds standard.



Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA Water Quality Standards	URS-141	URS-141	URS-141	URS-141	URS-141	URS-141	URS-141
	Sample Date	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	Units								
VOCs									
1,1,1-Trichloroethane		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2,2-Tetrachloroethane		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloroethane		5	NA	NA	NA	NA	NA	NA	NA
2-Butanone (MEK)		NC	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone (MIBK)		NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acetone		NC	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzene		1	1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromodichloromethane		NC	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon disulfide		NC	1.8 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chlorobenzene		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloroform		7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dibromochloromethane		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methylene chloride		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl chloride		2	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylene (total)		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Metals									
Aluminum		NC	1300	400	100 U	300	100 U	100 U	100 U
Antimony		3	10 U	10 U	5 U	5 U	5 U	5 U	5 U
Arsenic		25	10 U	10 U	5 U	5	5 U	5 U	6
Barium		1000	50	40	40 J	40	50	50	50
Beryllium		NC	3 U	3 U	3 U	3 U	3 U	3 U	3 U
Cadmium		5	1 U	1 U	1 U	1 U	1 U	1 U	2
Calcium		NC	28000	21000	23000	26000	30000	34000	34000
Chromium		50	10 U	[160]	10 U	10 U	10 U	10 U	10
Cobalt		NC	30 U	30 U	25 U	25 U	25 U	25 U	25 U
Copper		200	10 U	10	10 U	10 U	10 U	10 U	10 U
Cyanide		200	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Iron		300	[1800]	[2300]	50 U	[320]	50 U	50 U	50 U
Lead		25	10 U	10 U	5 U	5 U	5 U	5 U	5 U
Magnesium		NC	21000	17000	21000	23000	25000	29000	29000

NOTES: U - not detected, J,B - estimated value, R - unusable, NA - not analyzed, ND - not detected.
 E - estimated, N - tentatively identified, NC - no criteria.
 [] - exceeds standard.

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Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA Water Quality Standards	URS-141	URS-141	URS-141	URS-141	URS-141	URS-141	URS-141
	Sample Date	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	Units								
Manganese		300	70	10 U	10 U	10 U	10 U	10 U	10 U
Mercury		0.7	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel		100	50 U	[170]	50 U	50 U	50 U	50 U	50 U
Potassium		NC	5000 UJ	8000	8000	6000	6000	6000	5000 U
Selenium		10	10 U	10 U	5 U	5 UJ	5 UJ	5 UJ	5 UJ
Silver		50	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Sodium		20000	[58000 J]	[48000]	[48000]	[54000]	[62000]	[67000]	[67000]
Thallium		NC	10 U	6	1 UJ	1 U	5 U	2 U	2 U
Vanadium		NC	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Zinc		NC	10	30	10 U	10 U	30 J	20	20

NOTES: U - not detected, JB - estimated value, R - unanalyzed, NA - not analyzed, ND - not detected.
E - estimated, N - tentatively identified, NC - no criteria.
[] - exceeds standard.



Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA	URS-141	URS-141	URS-141	URS-141	URS-141	URS-141	URS-5D	URS-5D
	Sample Date	Water Quality Standards	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	Units	ug/L								
VOCs										
1,1,1-Trichloroethane		5	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	10 U	5 U	5 U
1,1,2,2-Tetrachloroethane		5	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	10 U	5 U	5 U
1,1-Dichloroethane		5	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	10 U	5 U	5 U
1,2-Dichloroethane		5	NA	NA	NA	NA	NA	10 U	5 U	5 U
2-Butanone (MEK)		NC	10 U	10 UJ	10 UJ	10 UJ	10 UJ	20 U	R	10 U
4-Methyl-2-pentanone (MIBK)		NC	5 U	5 U	5 UJ	5 U	5 U	20 U	5 U	10 U
Acetone		NC	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	250	R	5 U
Benzene		1	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	10 U	5 U	5 U
Bromodichloromethane		NC	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	10 U	5 U	5 U
Carbon disulfide		NC	0.5 UJ	0.58 U	0.5 UJ	0.5 U	0.5 U	10 U	5 U	5 U
Chlorobenzene		5	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	NA	NA	NA
Chloroform		7	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	10 U	5 U	5 U
Dibromochloromethane		5	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	10 U	5 U	5 U
Ethylbenzene		5	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	10 U	5 U	5 U
Methylene chloride		5	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	10 U	5 U	5 U
Toluene		5	5 U	2 U	2 UJ	2 UJ	0.11 J	10 U	R	10 U
Trichloroethylene		5	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	10 U	1 J	5 U
Vinyl chloride		2	1 U	1 U	1 UJ	1 U	1 U	20 U	10 U	10 U
Xylene (total)		5	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	10 U	0.5 J	0.5 J
cis-1,2-Dichloroethene		5	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	NA	NA	NA
Metals										
Aluminum		NC	100 U	200	100 U	100 U	50 J	104 U	35 U	35 U
Antimony		3	5 U	5 U	5 U	5 U	5 U	18 U	[31.5 B]	[31.5 B]
Arsenic		25	5 U	5 U	5 J	5 J	4 J	1.3 B	1 B	1 B
Barium		1000	60	50	40	70	224	224	71.7 B	71.7 B
Beryllium		NC	3 U	3 U	3 U	3 U	3 U	1 U	1 U	1 U
Cadmium		5	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U
Calcium		NC	32000	32000	31000	33000	33000	378000	407000	407000
Chromium		50	10 U	10 U	10 J	10 J	10 J	3 B	4 U	4 U
Cobalt		NC	20 U	25 U	20 U	20 U	20 U	2 U	3 U	3 U
Copper		200	10 U	10 U	0.7 J	10 U	10 U	4 U	12 U	12 U
Cyanide		200	10 U	10 U	10 U	15	15	10 U	10 U	10 U
Iron		300	50 U	220	10 J	188	10 J	188	143	143
Lead		25	5 U	5 U	5 U	5 U	5 U	1 U	1.3 B	1.3 B
Magnesium		NC	26000	25000	25000	26000	26000	33300	2450 B	2450 B

NOTES: U - not detected, J,B - estimated value, R - unusable, NA - not analyzed, ND - not detected.
E - estimated, N - tentatively identified, NC - no criteria.
[] - exceeds standard.



Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA	URS-141	URS-141	URS-141	URS-141	URS-141	URS-141	URS-5D	URS-5D
		Water Quality Standards	08/11/00	02/14/01	10/09/01	04/02/02	08/01/90	02/01/91		
	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Manganese		300	250 J	20	20 J	0.7 J	8.8 B	3.5 B		
Mercury		0.7	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U		
Nickel		100	50 U	50 U	10 J	50 U	11.4 B	13 U		
Potassium		NC	5000 U	5000 U	4000 J	3000 J	22700	16900		
Selenium		10	5 U	5 U	5 U	5 U	2 U	1 U		
Silver		50	10 U	10 U	10 U	10 U	4 U	3 U		
Sodium		20000	[59000]	[56000]	[56000]	[56000]	[192000]	[194000]		
Thallium		NC	2 U	2 U	2 U	2 U	1 U	2 U		
Vanadium		NC	50 U	50 U	1 J	1 J	3.8 B	2 U		
Zinc		NC	10 U	10	10 U	20	19.9 B	14.7 B		

NOTES:
 U - not detected, JB - estimated value, R - unusable, NA - not analyzed, ND - not detected.
 E - estimated, N - tentatively identified, NC - no criteria.
 () - exceeds standard.



Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA Water Quality Standards	URS-5D 10/01/92	URS-5D 06/25/97	URS-5D 02/24/98	URS-5D 09/18/98	URS-5D 02/04/99	URS-5D 08/13/99
	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
VOCs								
1,1,1-Trichloroethane	5	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2,2-Tetrachloroethane	5	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane	5	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloroethane	5	5	0.5 U	NA	NA	NA	NA	NA
2-Butanone (MEK)	NC	NC	0.5 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone (MIBK)	NC	NC	0.5 U	5 U	5 U	5 U	5 U	5 U
Acetone	NC	NC	0.5 U	10 U	10 U	10 U	10 U	10 U
Benzene	1	1	0.5 U	0.25 J	0.25 J	0.11 J	0.5 U	0.16 J
Bromodichloromethane	NC	NC	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon disulfide	NC	NC	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.1 U
Chlorobenzene	5	5	0.5 U	0.5 U	0.31 J	0.5 U	0.5 U	0.5 U
Chloroform	7	7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dibromochloromethane	5	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	5	5	0.5 U	0.5 U	0.32 J	0.5 U	0.5 U	0.5 U
Methylene chloride	5	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	5	5	0.5 U	0.5 U	0.19 J	0.5 U	0.5 U	0.5 U
Trichloroethene	5	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl chloride	2	2	0.5 U	1 U	1 U	1 U	1 U	1 U
Xylene (total)	5	5	0.5 U	0.5 U	1.5	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	5	5	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Metals								
Aluminum	NC	NC	100 U	100 U	100 U	100 U	100 U	100 U
Antimony	3	3	80 U	10 U	10 U	5 U	5 U	5 U
Arsenic	25	25	10 U	10 U	10 U	5 U	5 U	5 U
Barium	1000	1000	32	20	20 U	20 U	100 U	20
Beryllium	NC	NC	1 U	3 U	3 U	3 U	10 U	3 U
Cadmium	5	5	5 U	1 U	1 U	1 U	10 U	1 U
Calcium	NC	NC	387000	440000	300000	490000	510000	490000
Chromium	50	50	5 U	10 U	10 U	10 U	10 U	10 U
Cobalt	NC	NC	5 U	30 U	60	210	850	350
Copper	200	200	8	10 U	10 U	10 U	10 U	10 U
Cyanide	200	200	2 U	10 U	10 U	10 U	10 U	10 U
Iron	300	300	25	50 U	120	50 U	50 U	50 U
Lead	25	25	12	10 U	10 U	5 U	5 U	5 U
Magnesium	NC	NC	570000	100000	24000	87000	76000	93000

NOTES:
 U - not detected, J,B - estimated value, R - unusable, NA - not analyzed, ND - not detected.
 E - estimated, N - tentatively identified, NC - no criteria.
 [] - exceeds standard.



Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA Water Quality Standards	URS-5D	URS-5D	URS-5D	URS-5D	URS-5D	URS-5D	URS-5D
	Sample Date	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	Units								
Manganese		300	5 U	10	70	50	70	50	50
Mercury		0.7	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel		100	5 U	50 U	[180]	90	90	80	80
Potassium		NC	8500	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U
Selenium		10	5 U	10 U	5 U	5 U	5 U	5 U	5 U
Silver		50	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Sodium		20000	[114000]	[93000]	[94000]	[120000]	[120000]	[110000]	[110000]
Thallium		NC	80 U	10 U	1 U	1 U	1 U	5 U	5 U
Vanadium		NC	5 U	50 U	50 U	50 U	50 U	50 U	50 U
Zinc		NC	10 U	10 U	10 U	10 U	10 U	10 U	10 U

NOTES: U - not detected, J.B. - estimated value, R - unusable, NA - not analyzed, ND - not detected.
E - estimated, N - tentatively identified, NC - no criteria.
[] - exceeds standard



Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA Water Quality Standards	URS-5D	URS-5D	URS-5D	URS-5D	URS-5D	URS-5D	URS-7D
	Sample Date	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	Units								
VOCs									
1,1,1-Trichloroethane		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U
1,1,2,2-Tetrachloroethane		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U
1,1-Dichloroethane		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U
1,2-Dichloroethane		5	NA	NA	NA	NA	NA	NA	5 U
2-Butanone (MEK)		NC	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 U
4-Methyl-2-pentanone (MIBK)		NC	5 UJ	5 U	5 U	5 U	5 U	5 U	10 U
Acetone		NC	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	2.4 J	120
Benzene		1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U
Bromodichloromethane		NC	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U
Carbon disulfide		NC	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U
Chlorobenzene		NC	4.2	0.73 U	0.73 U	0.73 U	0.73 U	3.9	0.5 J
Chloroform		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA
Dibromochloromethane		7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U
Ethylbenzene		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U
Methylene chloride		5	2 U	2 U	2 U	2 U	2 U	2 U	5 U
Toluene		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U
Trichloroethene		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U
Vinyl chloride		2	1 U	1 U	1 U	1 U	1 U	1 U	10 U
Xylene (total)		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U
cis-1,2-Dichloroethene		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA
Metals									
Aluminum		NC	100 U	300	200	200	200	600	167 B
Antimony		3	5 U	5 U	5 U	5 U	5 U	5 U	[20.5 B]
Arsenic		25	5 U	5 U	5 U	5 U	5 U	5 U	1 U
Barium		1000	20 U	20	20	20	20	20 J	20.3 B
Beryllium		NC	3 U	3 U	3 U	3 U	3 U	3 U	1 U
Cadmium		5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Calcium		NC	500000	430000	490000	490000	490000	160000	277000
Chromium		50	10 U	20	30	30	30	10 J	3 U
Cobalt		NC	59	50	130	80	80	20 U	2 U
Copper		200	10 U	10 U	10 U	10 U	10 U	10 U	4 U
Cyanide		200	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Iron		300	50 U	[410]	[1000]	[560]	[1000]	[1000]	[387]
Lead		25	5 U	5 U	5 U	5 U	5 U	5 U	1 U
Magnesium		NC	97000	52000	88000	66000	66000	74000	96200

NOTES: U - not detected, J,B - estimated value, R - unusable, NA - not analyzed, ND - not detected.
 E - estimated, N - tentatively identified, NC - no criteria.
 [] - exceeds standard.



Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA Water Quality Standards	URS-5D	URS-5D	URS-5D	URS-5D	URS-5D	URS-5D	URS-7D
	Sample Date	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Manganese		300	20 J	60	50 J	70 J	71.2		
Mercury		0.7	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U		08/01/90
Nickel		100	50 U	[170]	90	50 U	23.5 B		
Potassium		NC	5000 U	5000 U	4000 J	3000 J	5990		
Selenium		10	5 UJ	5 UJ	5 U	5 U	2 U		
Silver		50	10 U	10 U	10 U	10 U	4 U		
Sodium		20000	[120000]	[97000]	[120000]	[46000]	[82700]		
Thallium		NC	2 U	2 U	2 U	2 U	1 U		
Vanadium		NC	50 U	50 U	2 J	1 J	4.2 B		
Zinc		NC	10	180	190	10 J	5.3 B		

NOTES: U - not detected, J.B. - estimated value, R - unusable, NA - not analyzed, ND - not detected.
E - estimated, N - tentatively identified, NC - no criteria.
[] - exceeds standard.



Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA Water Quality Standards	URS-7D	URS-7D	URS-7D	URS-7D	URS-7D	URS-7D
	Sample Date	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	Units							
VOCs								
1,1,1-Trichloroethane		5	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2,2-Tetrachloroethane		5	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane		5	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloroethane		5	5 U	0.5 U	NA	NA	NA	NA
2-Butanone (MEK)		NC	10 U	0.5 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone (MIBK)		NC	10 U	0.5 U	5 U	5 U	5 U	5 U
Acetone		NC	R	0.5 U	10 U	10 U	61	6 J
Benzene		1	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromodichloromethane		NC	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon disulfide		NC	5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.3 J
Chlorobenzene		NC	5 U	0.5 U	0.24 U	0.24 U	0.5 U	0.5 U
Chloroform		5	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dibromochloromethane		7	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene		5	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methylene chloride		5	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene		5	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene		5	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl chloride		2	10 U	0.5 U	1 U	1 U	1 U	1 U
Xylene (total)		5	5 U	0.5 U	0.5 U	0.37 J	0.5 U	0.5 U
cis-1,2-Dichloroethene		5	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Metals								
Aluminum		NC	52.5 B	100 U	100 U	100 U	100 U	100 U
Antimony		3	[36.3 B]	80 U	10 U	10 U	10 U	5 U
Arsenic		25	1 U	10 U	10 U	10 U	5 U	5 U
Barium		1000	47.2 B	29	30	40	20 U	100 U
Beryllium		NC	1 U	1 U	3 U	3 U	3 U	10 U
Cadmium		5	2 U	5 U	1 U	1 U	1 U	10 U
Calcium		NC	333000	403000	360000	300000	480000	400000
Chromium		50	4 U	5 U	10 U	10 U	10	10
Cobalt		NC	3 U	5 U	30 U	30 U	25 U	50 U
Copper		200	12 U	8	10 U	10 U	10 U	10 U
Cyanide		200	10 U	2 U	10 U	10 U	10 U	10 U
Iron		300	283	63	50 U	70	50 U	100
Lead		25	1 U	10 U	10 U	10 U	5 U	5 U
Magnesium		NC	115000	140000	120000	89000	140000	130000

NOTES: U - not detected, J,B - estimated value, R - unusable, NA - not analyzed, ND - not detected.
 E - estimated, N - tentatively identified, NC - no criteria.
 [] - exceeds standard.



Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA Water Quality Standards	URS-7D	URS-7D	URS-7D	URS-7D	URS-7D	URS-7D	URS-7D
	Sample Date	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	Units								
Manganese		300	140	86	40	30	40	50	50
Mercury		0.7	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel		100	13 U	5 U	50 U	50 U	50 U	50 U	50 U
Potassium		NC	8550	8300	5000	5000 U	6000	5000 U	5000 U
Selenium		10	1 U	5 U	10 U	10 U	5 U	5 U	5 U
Silver		50	3 U	10 U	10 U	10 U	10 U	10 U	10 U
Sodium		20000	[68900]	[78900]	[66000 J]	[54000]	[79000]	[74000]	[74000]
Thallium		NC	2 U	80 U	10 U	10 U	1 U	1 U	1 U
Vanadium		NC	6.7 B	5 U	50 U	50 U	50 U	50 U	50 U
Zinc		NC	12.2 B	10 U	10 U	10 U	10 U	10 U	10 U

NOTES:
U - not detected, J,B - estimated value, R - unusable, NA - not analyzed, ND - not detected.
E - estimated, N - tentatively identified, NC - no criteria.
[] - exceeds standard.

Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA	URS-7D	URS-7D	URS-7D	URS-7D	URS-7D	URS-7D	URS-7D
		Water Quality Standards	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
VOCs									
1,1,1-Trichloroethane	5	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2,2-Tetrachloroethane	5	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane	5	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloroethane	5	5	NA	NA	NA	NA	NA	NA	NA
2-Butanone (MEK)	NC	NC	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
4-Methyl-2-pentanone (MIBK)	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acetone	NC	NC	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Benzene	1	1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromodichloromethane	NC	NC	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon disulfide	NC	NC	3 U	3 U	3 U	3 U	3 U	3 U	3 U
Chlorobenzene	5	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloroform	7	7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dibromochloromethane	5	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	5	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methylene chloride	5	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	5	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethane	5	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl chloride	2	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylene (total)	5	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethane	5	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Metals									
Aluminum	NC	NC	100 U	100 U	100 U	100 U	100 U	100 U	100 U
Antimony	3	3	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Arsenic	25	25	5 UJ	5 U	5 U	5 U	5 U	5 U	5 U
Barium	1000	1000	30	30	30	30	30	30	30
Beryllium	NC	NC	3 U	3 U	3 U	3 U	3 U	3 U	3 U
Cadmium	5	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Calcium	NC	NC	470000	420000	480000	450000	520000	460000	460000
Chromium	50	50	10 U	10	20	20	10 J	10 J	10 J
Cobalt	NC	NC	25 U	25 U	20 U	25 U	20 U	20 U	20 U
Copper	200	200	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Cyanide	200	200	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Iron	300	300	50 U	180	170 J	240	100	130	130
Lead	25	25	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Magnesium	NC	NC	140000	140000	150000	140000	160000	140000	140000

NOTES:
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 E - estimated, N - tentatively identified, NC - no criteria.
 [] - exceeds standard.



Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA Water Quality Standards	URS-7D	URS-7D	URS-7D	URS-7D	URS-7D	URS-7D	URS-7D
	Sample Date	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Manganese		300	50	70	50 J	140	40 J	180 J	
Mercury		0.7	0.2 U	0.2 U	0.3 J	0.2 U	0.2 U	0.2 U	
Nickel		100	50 U	50 U	50 U	50 U	2 J	50 U	
Potassium		NC	6000	5000 U	5000	5000	7000	5000	
Selenium		10	5 UJ	5 UJ	5 U	5 UJ	5 U	5 U	
Silver		50	10 U	10 U	10 U	10 U	10 U	10 U	
Sodium		20000	[81000]	[68000]	[78000]	[69000]	[83000]	[70000]	
Thallium		NC	5 U	2 U	2 U	2 U	2 U	2 U	
Vanadium		NC	50 U	50 U	50 U	50 U	50 U	0.7 J	
Zinc		NC	10 U	10 U	10 U	10 U	10 U	10 U	

NOTES: U - not detected, J,B - estimated value, R - unusable, NA - not analyzed, ND - not detected.
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[] - exceeds standard.



Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA Water Quality Standards	URS-9D	URS-9D	URS-9D	URS-9D	URS-9D	URS-9D	URS-9D
	Sample Date	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
VOCs									
1,1,1-Trichloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.5 U
1,1,2,2-Tetrachloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.5 U
1,1-Dichloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.34 J
1,2-Dichloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
2-Butanone (MEK)	NC	10 U	6 J	0.5 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone (MIBK)	NC	10 U	10 U	0.5 U	5 U	5 U	5 U	5 U	5 U
Acetone	NC	R	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Benzene	1	5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromochloromethane	NC	4 J	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon disulfide	NC	5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chlorobenzene	5	NA	NA	NA	NA	0.79	0.5 U	0.5 U	0.5 U
Chloroform	7	[8]	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dibromochloromethane	5	1 J	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	5	5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methylene chloride	5	5 U	5 U	2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	5	0.6 J	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	5	5 U	5 U	0.6	0.36 J	0.24 J	0.44 J	0.44 J	0.2 J
Vinyl chloride	2	10 U	10 U	0.5 U	0.26 J	0.44 J	0.44 J	0.44 J	0.11 NJ
Xylene (total)	5	5 U	5 U	0.5 U	0.5 U	1.8	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	5	NA	NA	NA	0.66	0.59	0.59	0.59	0.33 J
Metals									
Aluminum	NC	128	64.2 B	100 U	100 U	100 U	100 U	100 U	100 U
Antimony	3	18 U	[28 B]	80 U	10 U	10 U	10 U	10 U	5 U
Arsenic	25	1.6 B	1 U	10 U	10 U	10 U	10 U	10 U	5 U
Barium	1000	110 B	38.2 B	23	20 U	20 U	20 U	20 U	20 U
Beryllium	NC	1 U	1 U	1 U	3 U	3 U	3 U	3 U	3 U
Cadmium	5	1 U	2 U	5 U	1 U	1 U	1 U	1 U	1 U
Calcium	NC	56500	146000	120000	200000	200000	200000	200000	190000
Chromium	50	3 U	4 U	5 U	10 U	10 U	10 U	10 U	10
Cobalt	NC	2 U	3 U	5 U	30 U	30 U	30 U	30 U	25 U
Copper	200	5.2 B	12 U	5 U	10 U	10 U	10 U	10 U	10 U
Cyanide	200	10 U	11.1 B	2 U	10 U	10 U	10 U	10 U	10 U
Iron	300	127	[506]	252	50 U	50 U	50 U	50 U	80
Lead	25	1 U	1 U	10 U	10 U	10 U	10 U	10 U	5 U
Magnesium	NC	29900	70200	60000	58000	73000	73000	73000	71000

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Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA Water Quality Standards	URS-9D	URS-9D	URS-9D	URS-9D	URS-9D	URS-9D	URS-9D
	Sample Date		08/01/90	02/01/91	10/01/92	06/24/97	02/23/98	09/18/98	
	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Manganese		300	20.1	25.5	9	10 U	10 U	10	
Mercury		0.7	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	
Nickel		100	15.3 B	13 U	5 U	50 U	50 U	50 U	
Potassium		NC	9880	4170 B	3600	5000 U	5000 U	5000 U	
Selenium		10	2 U	1 U	5 U	10 U	10 U	5 U	
Silver		50	4 U	3 U	10 U	10 U	10 U	10 U	
Sodium		20000	[27400]	[37000]	[42800]	[48000 J]	[52000]	[41000]	
Thallium		NC	1 U	2 U	80 U	10 U	14	1 U	
Vanadium		NC	10.7 B	2 U	5 U	50 U	50 U	50 U	
Zinc		NC	50.5	16.7 B	10 U	10 U	10 U	10 U	

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Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA	URS-9D	URS-9D	URS-9D	URS-9D	URS-9D	URS-9D
		Water Quality Standards	08/12/99	02/08/00	08/11/00	02/13/01	10/08/01	
	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
VOCs								
1,1,1-Trichloroethane	5	0.5 U	0.5 U	0.5 U	0.5 U	0.28 J	0.5 U	0.5 U
1,1,2,2-Tetrachloroethane	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane	5	0.16 JN	0.15 J	0.14 J	0.14 J	0.12 J	0.15 J	0.15 J
1,2-Dichloroethane	5	NA	NA	NA	NA	NA	NA	NA
2-Butanone (MEK)	NC	10 U	10 UJ	10 UJ	10 U	10 UJ	10 U	10 U
4-Methyl-2-pentanone (MIBK)	NC	5 U	5 U	5 UJ	5 U	5 U	5 U	5 U
Acetone	NC	10 U	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Benzene	1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromodichloromethane	NC	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon disulfide	NC	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chlorobenzene	5	0.5 U	0.5 U	16	0.5 UJ	1.2 U	0.5 U	0.5 U
Chloroform	7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dibromochloromethane	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methylene chloride	5	0.5 U	0.5 U	2 U	5 U	2 U	2 U	2 U
Toluene	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	5	0.21 J	0.14 J	0.5 U	0.5 U	0.13 J	0.5 U	0.5 U
Vinyl chloride	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylene (total)	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ
cis-1,2-Dichloroethene	5	0.35 J	0.29 J	0.25 J	0.23 J	0.2 J	0.2 J	0.21 J
Metals								
Aluminum	NC	100 U	100 U	100 U	100 U	100 U	100 U	100 U
Antimony	3	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Arsenic	25	5 U	5 UJ	5 U	5 U	5 U	5 U	5 U
Barium	1000	20 U	20 U	20 U	20 U	20 U	20 U	10 J
Beryllium	NC	3 U	3 U	3 U	3 U	3 U	3 U	3 U
Cadmium	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Calcium	NC	200000	210000	220000	210000	200000	210000	210000
Chromium	50	10 U	10 U	10 U	10 U	10 U	10 U	20
Cobalt	NC	25 U	25 U	25 U	20 U	25 U	20 U	20 U
Copper	200	10 U	10 U	10 U	10 U	10 U	10 U	0.8 J
Cyanide	200	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Iron	300	70	60	50	220	200	200	[380]
Lead	25	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Magnesium	NC	72000	77000	78000	75000	70000	70000	85000

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Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Chas GA Water Quality Standards	URS-9D	URS-9D	URS-9D	URS-9D	URS-9D	URS-9D
	Sample Date	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	Units							
Manganese		300	10	10	10 J	10	10 J	20 J
Mercury		0.7	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel		100	50 U	50 U	50 U	50 U	50 U	10 J
Potassium		NC	5000 U	5000 U	5000 U	5000 U	5000 U	3000 J
Selenium		10	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 U
Silver		50	10 U	10 U	10 U	10 U	10 U	0.9 J
Sodium		20000	[38000]	[48000]	[45000]	[38000]	[49000]	[49000]
Thallium		NC	1 U	2 U	2 U	2 U	2 U	2 U
Vanadium		NC	50 U	50 U	50 U	50 U	50 U	1 J
Zinc		NC	10 U	10 U	10 U	10 U	10 U	5 J

NOTES:
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 E - estimated, N - tentatively identified, NC - no criteria.
 [] - exceeds standard.



Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA Water Quality Standards	URS-9D	URS-9I	URS-9I	URS-9I	URS-9I	URS-9I	URS-9I
	Sample Date	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	Units								
VOCs									
1,1,1-Trichloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.5 U
1,1,2,2-Tetrachloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.5 U
1,1-Dichloroethane	5	0.19 J	5 U	5 U	5 U	5 U	5 U	5 U	0.5 U
1,2-Dichloroethane	5	NA	5 U	5 U	5 U	5 U	5 U	5 U	NA
2-Butanone (MEK)	NC	10 UJ	10 U	2 J	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone (MIBK)	NC	5 U	10 U	10 U	10 U	10 U	10 U	10 U	5 U
Acetone	NC	10 UJ	R	R	R	R	R	R	10 U
Benzene	1	0.5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.12 J
Bromodichloromethane	NC	0.5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.5 U
Carbon disulfide	NC	13	5 U	5 U	5 U	5 U	5 U	5 U	0.5 U
Chlorobenzene	5	0.5 U	NA	NA	NA	NA	NA	NA	0.5 U
Chloroform	7	0.5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.5 U
Dibromochloromethane	5	0.5 UJ	5 U	5 U	5 U	5 U	5 U	5 U	0.5 U
Ethylbenzene	5	0.5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.5 U
Methylene chloride	5	2 U	5 U	5 U	5 U	5 U	5 U	5 U	0.5 U
Toluene	5	0.5 U	0.7 J	5 U	5 U	5 U	5 U	5 U	0.11 J
Trichloroethene	5	0.5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.5 U
Vinyl chloride	2	1 U	10 U	10 U	10 U	10 U	10 U	10 U	1 U
Xylene (total)	5	0.5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.29 J
cis-1,2-Dichloroethene	5	0.18 J	NA	NA	NA	NA	NA	NA	0.5 U
Metals									
Aluminum	NC	100 U	221	197	110	110	110	110	100 U
Antimony	3	5 U	18 U	26 U	80 U	80 U	80 U	80 U	10 U
Arsenic	25	5 U	1.7 B	1 U	10 U	10 U	10 U	10 U	10 U
Barium	1000	10 J	30.1 B	22.8 B	14	14	14	14	20 U
Beryllium	NC	3 U	1 U	1 U	1 U	1 U	1 U	1 U	3 U
Cadmium	5	1 U	1 U	2 U	5 U	5 U	5 U	5 U	1 U
Calcium	NC	230000	106000	143000	123	123	123	123	170000
Chromium	50	4 J	8.6 B	10.1	5 U	5 U	5 U	5 U	10 U
Cobalt	NC	20 U	2 U	3 U	5 U	5 U	5 U	5 U	30 U
Copper	200	10 U	12.7 B	12 U	5 U	5 U	5 U	5 U	10 U
Cyanide	200	10 U	10 U	10.5 U	2 U	2 U	2 U	2 U	10 U
Iron	300	50 J	[1020]	[1170]	[808]	[808]	[808]	[808]	[440]
Lead	25	5 U	1 U	1 B	10 U	10 U	10 U	10 U	10 U
Magnesium	NC	75000	54500	71300	63500	63500	63500	63500	69000

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Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Sample ID	NYS Class GA Water Quality Standards	URS-9D	URS-9I	URS-9I	URS-9I	URS-9I
Sample Date	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Manganese	300	10 J	67.5	80	75	30
Mercury	0.7	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	100	50 U	7.6 B	13 U	5 U	50 U
Potassium	NC	4000 J	3910 B	4250 B	2900	5000 U
Selenium	10	5 U	2 U	1 U	5 U	10 U
Silver	50	10 U	4 U	3 U	10 U	10 U
Sodium	20000	(41000)	[34500]	[54000]	[52400]	[45000]
Tiallium	NC	2 U	1 U	2 U	80 U	10 U
Vanadium	NC	50 U	2 U	9.6 B	5 U	50 U
Zinc	NC	10 U	19.3 B	34.6	10 U	10 U

NOTES: U - not detected, J,B - estimated value, R - unusable, NA - not analyzed, ND - not detected.
 E - estimated, N - tentatively identified, NC - no criteria.
 [] - exceeds standard.

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Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Sample ID	NYS Class GA	URS-91	URS-91	URS-91	URS-91	URS-91	URS-91	URS-91	URS-91
Water Quality	Standards	09/18/98	02/03/99	08/12/99	02/08/00	08/11/00	02/13/01		
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		
VOCs									
1,1,1-Trichloroethane	5	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U		
1,1,2,2-Tetrachloroethane	5	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U		
1,1-Dichloroethane	5	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U		
1,2-Dichloroethane	5	NA	NA	NA	NA	NA	NA		
2-Butanone (MEK)	NC	10 U	10 U	10 UJ	10 UJ	10 U	10 UJ		
4-Methyl-2-pentanone (MIBK)	NC	5 U	5 U	5 UJ	5 UJ	5 U	5 U		
Acetone	NC	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ		
Benzene	1	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U		
Bromodichloromethane	NC	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U		
Carbon disulfide	NC	0.13 J	0.5 U	6.3 UJ	8.5	0.5 UJ	0.68 U		
Chlorobenzene	5	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U		
Chloroform	7	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U		
Dibromochloromethane	5	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U		
Ethylbenzene	5	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U		
Methylene chloride	5	0.5 U	0.5 U	0.55 UJ	2 U	5 U	2 U		
Toluene	5	0.5 U	0.5 U	0.16 J	0.5 U	0.5 U	0.5 U		
Trichloroethene	5	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U		
Vinyl chloride	2	1 U	1 U	1 UJ	1 U	1 U	1 U		
Xylene (total)	5	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U		
cis-1,2-Dichloroethene	5	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U		
Metals									
Aluminum	NC	100 U	200	100 U	200	100 U	100 U		
Antimony	3	5 U	5 U	5 U	5 U	5 U	5 U		
Arsenic	25	5 U	5 U	5 UJ	5 U	5 U	5 U		
Barium	1000	20 U	20 U	20 U	20 U	20 U	20 U		
Beryllium	NC	3 U	3 U	3 U	3 U	3 U	3 U		
Cadmium	5	1 U	1 U	1 U	1 U	1 U	1 U		
Calcium	NC	160000	160000	160000	170000	160000	150000		
Chromium	50	10	10	10 U	10 U	10 U	10 U		
Cobalt	NC	25 U	25 U	25 U	25 U	20 U	25 U		
Copper	200	10 U	10 U	10 U	10 U	10 U	10 U		
Cyanide	200	10 U	10 U	10 U	10 U	10 U	10 U		
Iron	300	290	[590]	240	[520]	210	[390]		
Lead	25	5 U	5 U	5 U	5 U	5 U	5 U		
Magnesium	NC	77000	70000	75000	76000	75000	69000		

NOTES:
 U - not detected, J,B - estimated value, R - unusable, NA - not analyzed, ND - not detected.
 E - estimated, N - tentatively identified, NC - no criteria.
 [] - exceeds standard.



Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA Water Quality Standards	URS-91	URS-91	URS-91	URS-91	URS-91	URS-91	URS-91
	Sample Date	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	Units								
Manganese		300	40	40	50	40 J	40	40	
Mercury		0.7	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	
Nickel		100	50 U	50 U	50 U	50 U	50 U	50 U	
Potassium		NC	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U	
Selenium		10	5 U	5 U	5 U	5 U	5 U	5 U	
Silver		50	10 U	10 U	10 U	10 U	10 U	10 U	
Sodium		20000	[49000]	[54000]	[48000]	[48000]	[41000]	[41000]	
Thallium		NC	1 U	5 U	2 U	2 U	2 U	2 U	
Vanadium		NC	50 U	50 U	50 U	50 U	50 U	50 U	
Zinc		NC	20	10 U	10 U	10 U	10 U	10 U	



Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

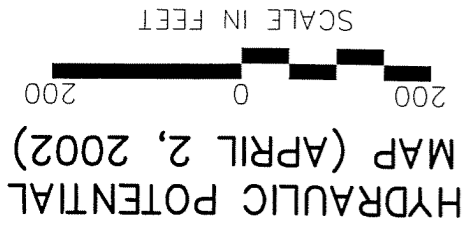
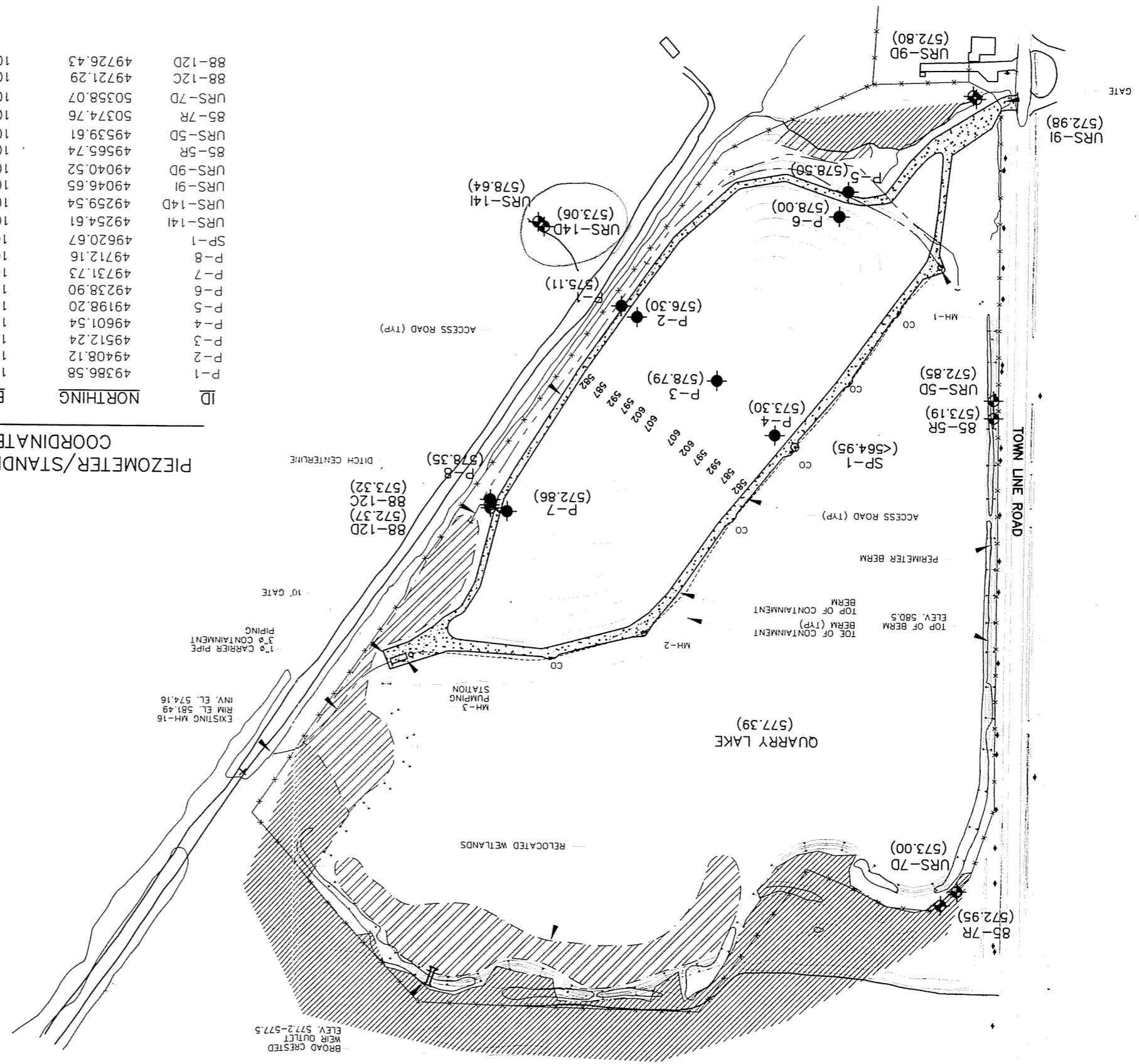
Compound	Sample ID	NYS Class GA Water Quality Standards	URS-91 10/08/01	URS-91 04/03/02	Units
VOCs					ug/L
1,1,1-Trichloroethane	5	5	0.5 U	0.5 U	
1,1,2,2-Tetrachloroethane	5	5	0.5 U	0.5 U	
1,1-Dichloroethane	5	5	0.5 U	0.5 U	
1,2-Dichloroethane	5	5	NA	NA	
2-Butanone (MEK)	NC	NC	10 U	10 UJ	
4-Methyl-2-pentanone (MIBK)	NC	NC	5 U	5 U	
Acetone	NC	NC	10 UJ	10 UJ	
Benzene	1	1	0.5 U	0.5 U	
Bromochloromethane	NC	NC	0.5 U	0.5 U	
Carbon disulfide	NC	NC	0.5 U	4.1	
Chlorobenzene	5	5	0.5 U	0.5 U	
Chloroform	7	7	0.5 U	0.5 U	
Dibromochloromethane	5	5	0.5 U	0.5 U	
Ethylbenzene	5	5	0.5 U	0.5 U	
Methylene chloride	5	5	2 U	2 U	
Toluene	5	5	0.5 U	0.5 U	
Trichloroethylene	5	5	0.5 U	0.5 U	
Vinyl chloride	2	2	1 U	1 U	
Xylene (total)	5	5	0.5 U	0.5 U	
cis-1,2-Dichloroethene	5	5	0.5 U	0.5 U	
Metals					
Aluminum	NC	NC	400	100	
Antimony	3	3	5 U	5 U	
Arsenic	25	25	5 U	5 U	
Barium	1000	1000	20 J	20	
Beryllium	NC	NC	3 U	3 U	
Cadmium	5	5	1 U	1 U	
Calcium	NC	NC	140000	500000	
Chromium	50	50	10 J	10	
Cobalt	NC	NC	20 U	170	
Copper	200	200	1 J	3 J	
Cyanide	200	200	10 U	10 U	
Iron	300	300	[480]	[990]	
Lead	25	25	5 U	5 U	
Magnesium	NC	NC	70000	88000	

NOTES: U - not detected, J,B - estimated value, R - unusable, NA - not analyzed, ND - not detected.
 E - estimated, N - tentatively identified, NC - no criteria.
 [] - exceeds standard.

FIGURES

ID	NORTHING	EASTING	RISE	COVER
P-1	49386.58	10056.87	583.21	583.50
P-2	49408.12	100630.30	582.90	583.20
P-3	49512.24	100496.39	606.33	606.64
P-4	49601.54	100399.33	583.68	583.85
P-5	49198.20	100282.65	583.05	583.55
P-6	49238.90	100296.52	584.45	584.60
P-7	49731.73	100842.30	581.84	582.00
P-8	49712.16	100869.82	582.83	583.00
SP-1	49620.67	100365.59	579.86	580.07
URS-141	49254.61	100794.43	581.14	580.84
URS-14D	49259.54	100789.09	580.71	580.85
URS-91	49046.65	100075.10	581.68	579.90
URS-9D	49040.52	100076.81	580.80	579.00
85-5R	49565.74	100036.14	580.84	578.70
URS-5D	49539.61	100035.69	580.60	578.00
85-7R	50374.76	100115.55	577.90	576.60
URS-7D	50358.07	100095.40	579.35	576.50
88-12D	49721.29	100870.45	583.12	583.70
88-12D	49726.43	100869.13	582.87	583.28

COORDINATES AND ELEVATIONS
PIEZOMETER/STANDPIPE AND MONITORING WELL



HYDRAULIC POTENTIAL
MAP (APRIL 2, 2002)

FRONTIER CHEMICAL
PENDLETON SITE
TOWN OF PENDLETON,
NIAGARA COUNTY, NY

- LEGEND**
- MONITORING WELL URS-7D
 - PIEZOMETER P-1
 - WATER ELEVATION (FT.) (578.64)
 - CREATED WETLAND AREA
 - EXISTING WETLAND AREA
 - 6' HIGH CHAIN LINK FENCE
 - GRADE ELEVATION CONTOUR 580
 - GROUND WATER COLLECTION TRENCH & CLEAN OUT
 - STANDPIPE
 - UTILITY POLE



FIGURE 1

Figure 2 - Ground Water Elevations - Piezometers P-1 & P-2

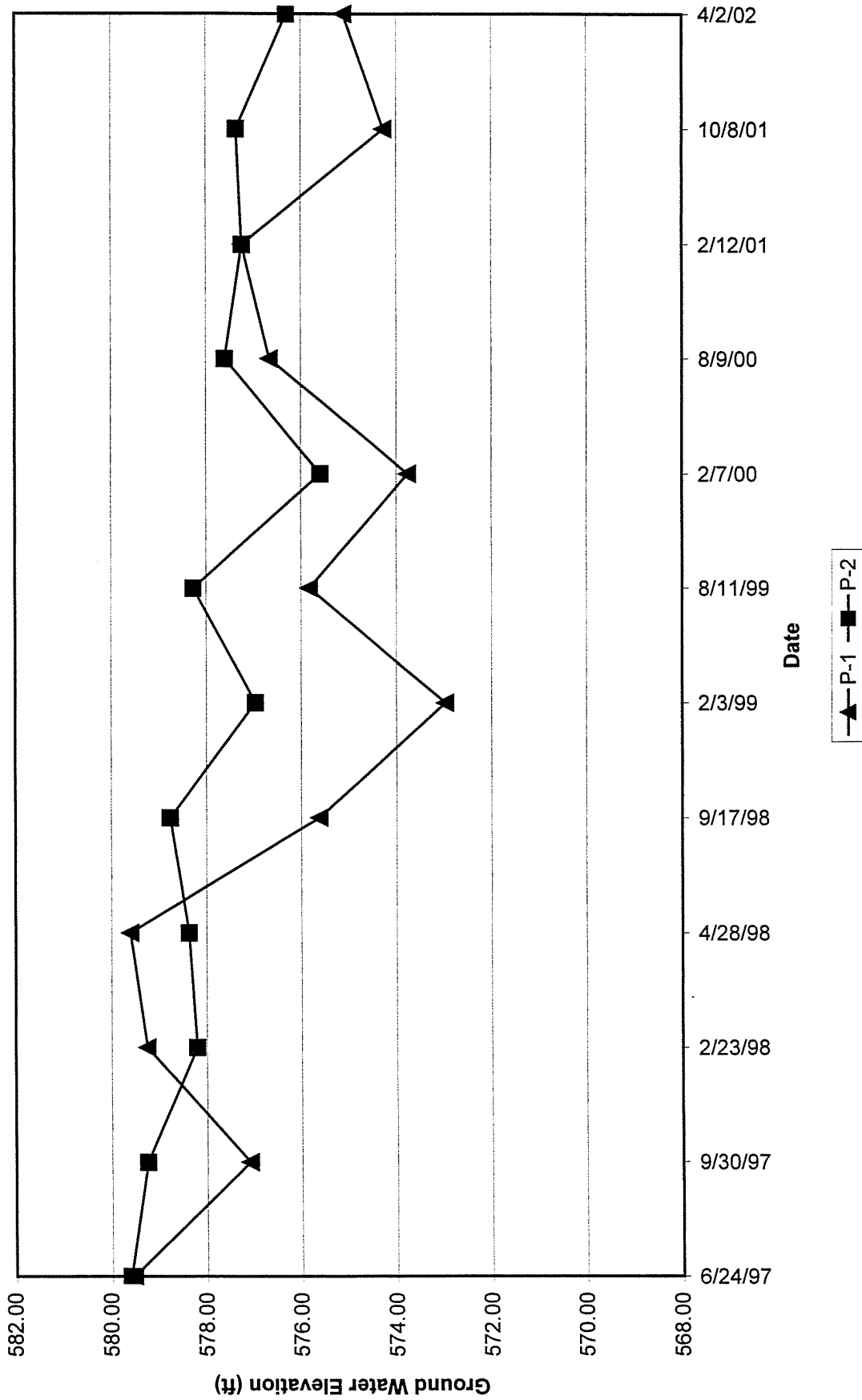


Figure 3 - Ground Water Elevations - Piezometers P-5 & P-6

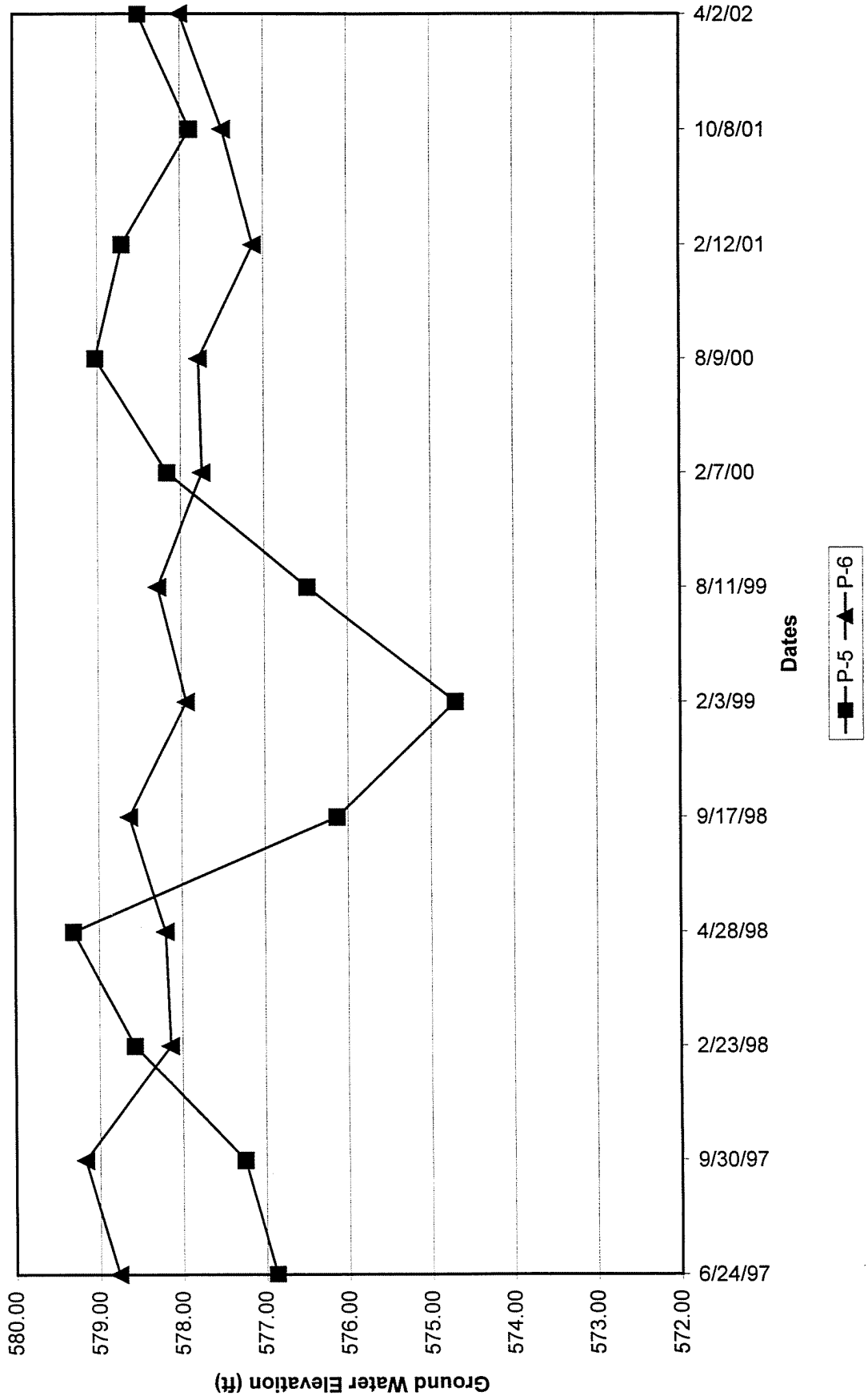
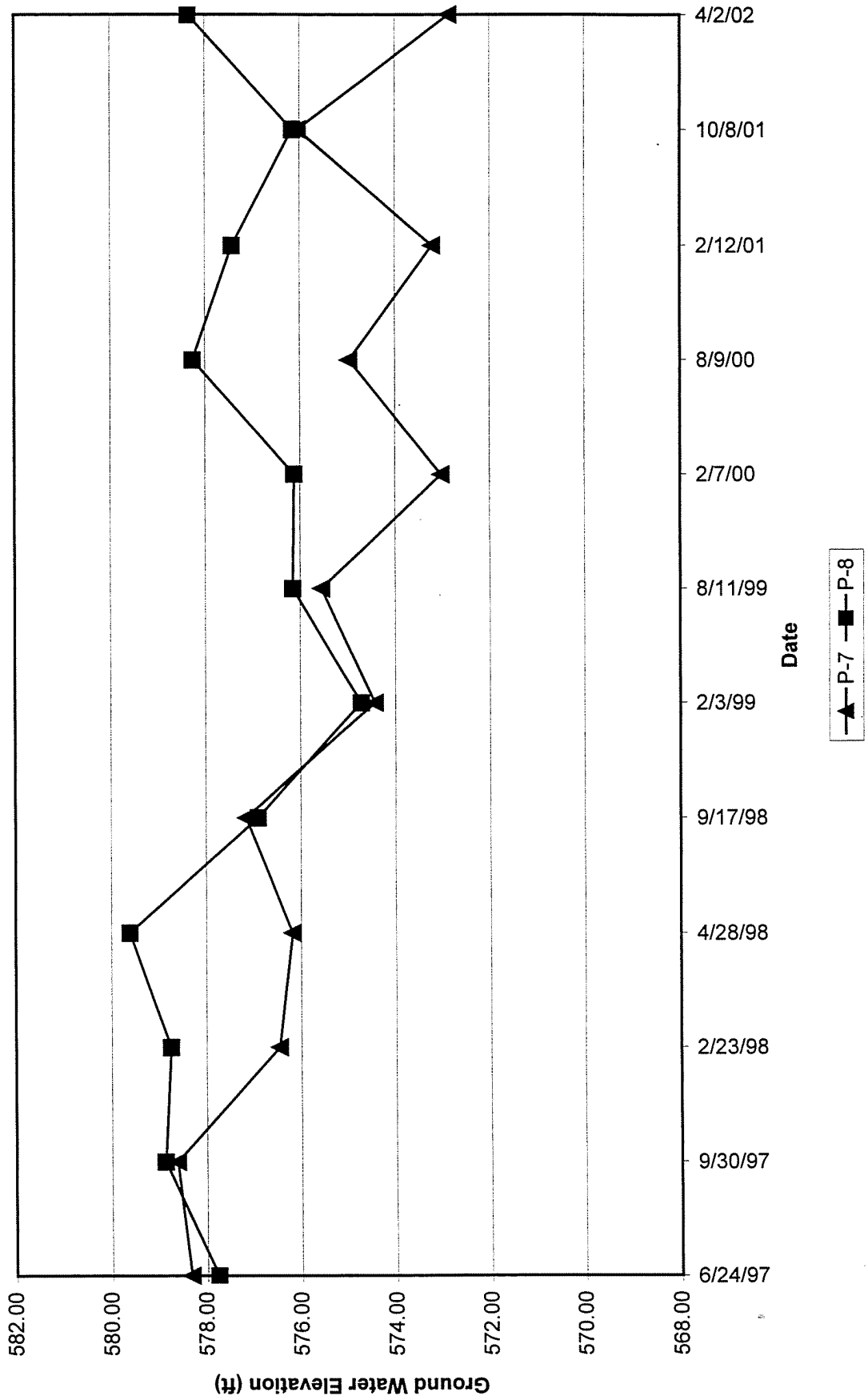


Figure 4 - Ground Water Elevations - Piezometers P-7 & P-8



APPENDICES

**Piezometer/monitoring well
inspection forms**

MONITORING WELL INTEGRITY CHECKLIST

Site Name: Frontier Chemical - Pendleton Site Well Identification : P-1

Personnel : C Bove, P. Pesaresi Date : 4.30.02

WELL SPECIFICATIONS

Protective Casing X Above Ground Flush Mounted

Well Construction X PVC Stainless Steel

Well Diameter X 2-inch 4-inch

Depth to Ground Water : 8.10

Well Depth: 16.42

WELL INTEGRITY

- 1. Well identification clearly marked ? yes no
- 2. Well covers and locks in good condition and secure ? yes no
- 3. Is the well stand pipe vertically aligned and secure ? yes no
- 4. Is the concrete pad and surface seal in good condition ? yes no
- 5. Are soils surrounding the well pad eroded ? yes no
- 6. Is the well casing in good condition ? yes no
- 7. Is the measuring point on casing well marked ? yes no
- 8. Is there standing water in the annular space ? yes no
- 9. Is the stand pipe vented at the base to allow drainage ? yes no
- 10. Does the total sounded depth correspond to the original well completion depth? yes no
- 11. Is the access down the well impeded or blocked? Explain. yes no

COMMENTS/RECOMMENDATIONS:

MONITORING WELL INTEGRITY CHECKLIST

Site Name: Frontier Chemical - Pendleton Site Well Identification : P-2

Personnel : C. Bove , P. Pesaresi Date : 4.3.02

WELL SPECIFICATIONS

Protective Casing Above Ground X Flush Mounted

Well Construction X PVC Stainless Steel

Well Diameter X 2-inch 4-inch

Depth to Ground Water : 660

Well Depth: 1572

WELL INTEGRITY

- 1. Well identification clearly marked ? yes no
- 2. Well covers and locks in good condition and secure ? yes no
- 3. Is the well stand pipe vertically aligned and secure ? yes no
- 4. Is the concrete pad and surface seal in good condition ? yes no
- 5. Are soils surrounding the well pad eroded ? yes no
- 6. Is the well casing in good condition ? yes no
- 7. Is the measuring point on casing well marked ? yes no
- 8. Is there standing water in the annular space ? yes no
- 9. Is the stand pipe vented at the base to allow drainage ? yes no
- 10. Does the total sounded depth correspond to the original well completion depth? yes no
- 11. Is the access down the well impeded or blocked? Explain. yes no

COMMENTS/RECOMMENDATIONS:

MONITORING WELL INTEGRITY CHECKLIST

Site Name: Frontier Chemical - Pendleton Site Well Identification : P-3

Personnel : C. Bove , P. Pesaresi Date : 4.3.02

WELL SPECIFICATIONS

Protective Casing Above Ground X Flush Mounted

Well Construction X PVC Stainless Steel

Well Diameter X 2-inch 4-inch

Depth to Ground Water : 27.54

Well Depth: 34.76

WELL INTEGRITY

- | | | |
|--|------------|-----------|
| 1. Well identification clearly marked ? | <u>yes</u> | no |
| 2. Well covers and locks in good condition and secure ? | <u>yes</u> | no |
| 3. Is the well stand pipe vertically aligned and secure ? | <u>yes</u> | no |
| 4. Is the concrete pad and surface seal in good condition ? | <u>yes</u> | no |
| 5. Are soils surrounding the well pad eroded ? | yes | <u>no</u> |
| 6. Is the well casing in good condition ? | <u>yes</u> | no |
| 7. Is the measuring point on casing well marked ? | <u>yes</u> | no |
| 8. Is there standing water in the annular space ? | yes | no NA |
| 9. Is the stand pipe vented at the base to allow drainage ? | yes | no |
| 10. Does the total sounded depth correspond to the original well completion depth? | <u>yes</u> | no |
| 11. Is the access down the well impeded or blocked? Explain. | yes | <u>no</u> |

COMMENTS/RECOMMENDATIONS:

MONITORING WELL INTEGRITY CHECKLIST

Site Name: Frontier Chemical - Pendleton Site Well Identification : P-4

Personnel : C. Bove, P. Pesaresi Date : 4.3.02

WELL SPECIFICATIONS

Protective Casing Above Ground X Flush Mounted

Well Construction X PVC Stainless Steel

Well Diameter X 2-inch 4-inch

Depth to Ground Water : 9.01

Well Depth: 16.97

WELL INTEGRITY

- | | | |
|--|------------|-----------|
| 1. Well identification clearly marked ? | <u>yes</u> | no |
| 2. Well covers and locks in good condition and secure ? | <u>yes</u> | no |
| 3. Is the well stand pipe vertically aligned and secure ? | <u>yes</u> | no |
| 4. Is the concrete pad and surface seal in good condition ? | <u>yes</u> | no |
| 5. Are soils surrounding the well pad eroded ? | yes | <u>no</u> |
| 6. Is the well casing in good condition ? | <u>yes</u> | no |
| 7. Is the measuring point on casing well marked ? | <u>yes</u> | no |
| 8. Is there standing water in the annular space ? | yes | <u>no</u> |
| 9. Is the stand pipe vented at the base to allow drainage ? | <u>yes</u> | no |
| 10. Does the total sounded depth correspond to the original well completion depth? | <u>yes</u> | no |
| 11. Is the access down the well impeded or blocked? Explain. | yes | <u>no</u> |

COMMENTS/RECOMMENDATIONS:

MONITORING WELL INTEGRITY CHECKLIST

Site Name: Frontier Chemical - Pendleton Site Well Identification : SP-1

Personnel : C. Bove, P. Pesaresi Date : 4.3.02

WELL SPECIFICATIONS

Protective Casing Above Ground X Flush Mounted
 Well Construction X PVC Stainless Steel X HDPE
 Well Diameter X 2-inch 4-inch X 6-inch
 Depth to Ground Water : Dix
 Well Depth: 14.91

WELL INTEGRITY

- 1. Well identification clearly marked ? yes no
- 2. Well covers and locks in good condition and secure ? yes no
- 3. Is the well stand pipe vertically aligned and secure ? yes no
- 4. Is the concrete pad and surface seal in good condition ? yes no
- 5. Are soils surrounding the well pad eroded ? yes no
- 6. Is the well casing in good condition ? yes no
- 7. Is the measuring point on casing well marked ? yes no
- 8. Is there standing water in the annular space ? yes no NA
- 9. Is the stand pipe vented at the base to allow drainage ? yes no NA
- 10. Does the total sounded depth correspond to the original well completion depth? yes no
- 11. Is the access down the well impeded or blocked? Explain. yes no

COMMENTS/RECOMMENDATIONS:

MONITORING WELL INTEGRITY CHECKLIST

Site Name: Frontier Chemical - Pendleton Site Well Identification : P-5

Personnel : C. Bove , P. Pesaresi Date : 4.3.02

WELL SPECIFICATIONS

Protective Casing X Above Ground Flush Mounted

Well Construction X PVC Stainless Steel

Well Diameter X 2-inch 4-inch

Depth to Ground Water : 4.55

Well Depth: 15.56

WELL INTEGRITY

- 1. Well identification clearly marked ? yes no
- 2. Well covers and locks in good condition and secure ? yes no
- 3. Is the well stand pipe vertically aligned and secure ? yes no
- 4. Is the concrete pad and surface seal in good condition ? yes no
- 5. Are soils surrounding the well pad eroded ? yes no
- 6. Is the well casing in good condition ? yes no
- 7. Is the measuring point on casing well marked ? yes no
- 8. Is there standing water in the annular space ? yes no
- 9. Is the stand pipe vented at the base to allow drainage ? yes no
- 10. Does the total sounded depth correspond to the original well completion depth? yes no
- 11. Is the access down the well impeded or blocked? Explain. yes no

COMMENTS/RECOMMENDATIONS:

MONITORING WELL INTEGRITY CHECKLIST

Site Name: Frontier Chemical - Pendleton Site Well Identification : P-6

Personnel : C. Bove, P. Pesaresi Date : 4.3.02

WELL SPECIFICATIONS

Protective Casing _____ Above Ground X Flush Mounted

Well Construction X PVC _____ Stainless Steel

Well Diameter X 2-inch _____ 4-inch

Depth to Ground Water : 6.45

Well Depth: 16.16

WELL INTEGRITY

- | | | |
|--|------------|-----------|
| 1. Well identification clearly marked ? | <u>yes</u> | no |
| 2. Well covers and locks in good condition and secure ? | <u>yes</u> | no |
| 3. Is the well stand pipe vertically aligned and secure ? | yes | <u>no</u> |
| 4. Is the concrete pad and surface seal in good condition ? | <u>yes</u> | no |
| 5. Are soils surrounding the well pad eroded ? | yes | <u>no</u> |
| 6. Is the well casing in good condition ? | <u>yes</u> | no |
| 7. Is the measuring point on casing well marked ? | <u>yes</u> | no |
| 8. Is there standing water in the annular space ? | yes | <u>no</u> |
| 9. Is the stand pipe vented at the base to allow drainage ? | <u>yes</u> | no |
| 10. Does the total sounded depth correspond to the original well completion depth? | <u>yes</u> | no |
| 11. Is the access down the well impeded or blocked? Explain. | yes | <u>no</u> |

COMMENTS/RECOMMENDATIONS:

Casing angled ~ 15° from vertical

MONITORING WELL INTEGRITY CHECKLIST

Site Name: Frontier Chemical - Pendleton Site Well Identification : P-7

Personnel : C. Bove, P. Pesaresi Date : 4.3.02

WELL SPECIFICATIONS

Protective Casing Above Ground X Flush Mounted

Well Construction X PVC Stainless Steel

Well Diameter X 2-inch 4-inch

Depth to Ground Water : 8.11

Well Depth: 16.64

WELL INTEGRITY

- | | | |
|--|------------|-----------|
| 1. Well identification clearly marked ? | <u>yes</u> | no |
| 2. Well covers and locks in good condition and secure ? | <u>yes</u> | no |
| 3. Is the well stand pipe vertically aligned and secure ? | <u>yes</u> | no |
| 4. Is the concrete pad and surface seal in good condition ? | <u>yes</u> | no |
| 5. Are soils surrounding the well pad eroded ? | yes | <u>no</u> |
| 6. Is the well casing in good condition ? | <u>yes</u> | no |
| 7. Is the measuring point on casing well marked ? | <u>yes</u> | no |
| 8. Is there standing water in the annular space ? | yes | <u>no</u> |
| 9. Is the stand pipe vented at the base to allow drainage ? | <u>yes</u> | no |
| 10. Does the total sounded depth correspond to the original well completion depth? | <u>yes</u> | no |
| 11. Is the access down the well impeded or blocked? Explain. | yes | <u>no</u> |

COMMENTS/RECOMMENDATIONS:

MONITORING WELL INTEGRITY CHECKLIST

Site Name: Frontier Chemical - Pendleton Site Well Identification : P-8

Personnel : C. Bove , P. Pesaresi Date : 4.3.02

WELL SPECIFICATIONS

Protective Casing X Above Ground Flush Mounted

Well Construction X PVC Stainless Steel

Well Diameter X 2-inch 4-inch

Depth to Ground Water : 4.48

Well Depth: 17.2

WELL INTEGRITY

- 1. Well identification clearly marked ? yes no
- 2. Well covers and locks in good condition and secure ? yes no
- 3. Is the well stand pipe vertically aligned and secure ? yes no
- 4. Is the concrete pad and surface seal in good condition ? yes no
- 5. Are soils surrounding the well pad eroded ? yes no
- 6. Is the well casing in good condition ? yes no
- 7. Is the measuring point on casing well marked ? yes no
- 8. Is there standing water in the annular space ? yes no
- 9. Is the stand pipe vented at the base to allow drainage ? yes no
- 10. Does the total sounded depth correspond to the original well completion depth? yes no
- 11. Is the access down the well impeded or blocked? Explain. yes no

COMMENTS/RECOMMENDATIONS:

MONITORING WELL INTEGRITY CHECKLIST

Site Name: Frontier Chemical - Pendleton Site Well Identification : URS-7D

Personnel : _____ Date : _____

WELL SPECIFICATIONS

Protective Casing X Above Ground Flush Mounted

Well Construction PVC X Stainless Steel

Well Diameter X 2-inch 4-inch

Depth to Ground Water : _____

Well Depth: _____

WELL INTEGRITY

- | | | |
|--|------------|-----------|
| 1. Well identification clearly marked ? | <u>yes</u> | no |
| 2. Well covers and locks in good condition and secure ? | <u>yes</u> | no |
| 3. Is the well stand pipe vertically aligned and secure ? | <u>yes</u> | no |
| 4. Is the concrete pad and surface seal in good condition ? | yes | <u>no</u> |
| 5. Are soils surrounding the well pad eroded ? | yes | <u>no</u> |
| 6. Is the well casing in good condition ? | <u>yes</u> | no |
| 7. Is the measuring point on casing well marked ? | <u>yes</u> | no |
| 8. Is there standing water in the annular space ? | yes | <u>no</u> |
| 9. Is the stand pipe vented at the base to allow drainage ? | <u>yes</u> | no |
| 10. Does the total sounded depth correspond to the original well completion depth? | <u>yes</u> | no |
| 11. Is the access down the well impeded or blocked? Explain. | yes | <u>no</u> |

COMMENTS/RECOMMENDATIONS:

Cement pad broke + shifted

MONITORING WELL INTEGRITY CHECKLIST

Site Name: Frontier Chemical - Pendleton Site Well Identification : 85-7R

Personnel : *Craig Bove, Pete Pesaresi* Date : *4-4-02*

WELL SPECIFICATIONS

Protective Casing X Above Ground _____ Flush Mounted
 Well Construction X PVC _____ Stainless Steel
 Well Diameter X 2-inch _____ 4-inch
 Depth to Ground Water : 4.95'
 Well Depth: 27.72'

WELL INTEGRITY

- | | | |
|--|------------|-----------|
| 1. Well identification clearly marked ? | <u>yes</u> | no |
| 2. Well covers and locks in good condition and secure ? | <u>yes</u> | no |
| 3. Is the well stand pipe vertically aligned and secure ? | <u>yes</u> | no |
| 4. Is the concrete pad and surface seal in good condition ? | yes | <u>no</u> |
| 5. Are soils surrounding the well pad eroded ? | yes | <u>no</u> |
| 6. Is the well casing in good condition ? | <u>yes</u> | no |
| 7. Is the measuring point on casing well marked ? | <u>yes</u> | no |
| 8. Is there standing water in the annular space ? | yes | <u>no</u> |
| 9. Is the stand pipe vented at the base to allow drainage ? | <u>yes</u> | no |
| 10. Does the total sounded depth correspond to the original well completion depth? | yes | no |
| 11. Is the access down the well impeded or blocked? Explain. | yes | <u>no</u> |

COMMENTS/RECOMMENDATIONS:

No cement @ casing base

MONITORING WELL INTEGRITY CHECKLIST

Site Name: Frontier Chemical - Pendleton Site Well Identification : 85-5R

Personnel : C Bove, P Pesaresi Date : 4.3.02

WELL SPECIFICATIONS

Protective Casing X Above Ground Flush Mounted

Well Construction X PVC Stainless Steel

Well Diameter X 2-inch 4-inch

Depth to Ground Water : 7.65

Well Depth: 38.0

WELL INTEGRITY

- 1. Well identification clearly marked ? yes no
- 2. Well covers and locks in good condition and secure ? yes no
- 3. Is the well stand pipe vertically aligned and secure ? yes no
- 4. Is the concrete pad and surface seal in good condition ? yes no
- 5. Are soils surrounding the well pad eroded ? yes no
- 6. Is the well casing in good condition ? yes no
- 7. Is the measuring point on casing well marked ? yes no
- 8. Is there standing water in the annular space ? yes no
- 9. Is the stand pipe vented at the base to allow drainage ? yes no
- 10. Does the total sounded depth correspond to the original well completion depth? yes no
- 11. Is the access down the well impeded or blocked? Explain. yes no

COMMENTS/RECOMMENDATIONS:

MONITORING WELL INTEGRITY CHECKLIST

Site Name: Frontier Chemical - Pendleton Site Well Identification : URS-5D

Personnel : C. Bove, P. Pesaresi Date : 4.3.02

WELL SPECIFICATIONS

Protective Casing X Above Ground Flush Mounted

Well Construction PVC X Stainless Steel

Well Diameter X 2-inch 4-inch

Depth to Ground Water : 7.75

Well Depth: 49.8

WELL INTEGRITY

- 1. Well identification clearly marked ? yes no
- 2. Well covers and locks in good condition and secure ? yes no
- 3. Is the well stand pipe vertically aligned and secure ? yes no
- 4. Is the concrete pad and surface seal in good condition ? yes no
- 5. Are soils surrounding the well pad eroded ? yes no
- 6. Is the well casing in good condition ? yes no
- 7. Is the measuring point on casing well marked ? yes no
- 8. Is there standing water in the annular space ? yes no
- 9. Is the stand pipe vented at the base to allow drainage ? yes no
- 10. Does the total sounded depth correspond to the original well completion depth? yes no
- 11. Is the access down the well impeded or blocked? Explain. yes no

COMMENTS/RECOMMENDATIONS:

Hinge on casing Broken - very rusty

MONITORING WELL INTEGRITY CHECKLIST

Site Name: Frontier Chemical - Pendleton Site Well Identification : URS-9I

Personnel : C. Bove, P. Pesaresi Date : 4.3.02

WELL SPECIFICATIONS

Protective Casing X Above Ground Flush Mounted

Well Construction PVC X Stainless Steel

Well Diameter X 2-inch 4-inch

Depth to Ground Water : 8.7

Well Depth: 45.74

WELL INTEGRITY

- 1. Well identification clearly marked ? yes no
- 2. Well covers and locks in good condition and secure ? yes no
- 3. Is the well stand pipe vertically aligned and secure ? yes no
- 4. Is the concrete pad and surface seal in good condition ? yes no
- 5. Are soils surrounding the well pad eroded ? yes no
- 6. Is the well casing in good condition ? yes no
- 7. Is the measuring point on casing well marked ? yes no
- 8. Is there standing water in the annular space ? yes no
- 9. Is the stand pipe vented at the base to allow drainage ? yes no
- 10. Does the total sounded depth correspond to the original well completion depth? yes no
- 11. Is the access down the well impeded or blocked? Explain. yes no

COMMENTS/RECOMMENDATIONS:

Well Casing (covec) settled hinge had broken - some muck in bottom of well

MONITORING WELL INTEGRITY CHECKLIST

Site Name: Frontier Chemical - Pendleton Site Well Identification : URS-9D

Personnel : C. Bove, P. Pesaresi Date : 4.3.02

WELL SPECIFICATIONS

Protective Casing X Above Ground Flush Mounted

Well Construction PVC X Stainless Steel

Well Diameter X 2-inch 4-inch

Depth to Ground Water : 8.0

Well Depth: 50.88

WELL INTEGRITY

- | | | |
|--|------------|-----------|
| 1. Well identification clearly marked ? | <u>yes</u> | no |
| 2. Well covers and locks in good condition and secure ? | <u>yes</u> | no |
| 3. Is the well stand pipe vertically aligned and secure ? | <u>yes</u> | no |
| 4. Is the concrete pad and surface seal in good condition ? | <u>yes</u> | no |
| 5. Are soils surrounding the well pad eroded ? | yes | <u>no</u> |
| 6. Is the well casing in good condition ? | <u>yes</u> | no |
| 7. Is the measuring point on casing well marked ? | <u>yes</u> | no |
| 8. Is there standing water in the annular space ? | yes | <u>no</u> |
| 9. Is the stand pipe vented at the base to allow drainage ? | <u>yes</u> | no |
| 10. Does the total sounded depth correspond to the original well completion depth? | <u>yes</u> | no |
| 11. Is the access down the well impeded or blocked? Explain. | yes | <u>no</u> |

COMMENTS/RECOMMENDATIONS:

MONITORING WELL INTEGRITY CHECKLIST

Site Name: Frontier Chemical - Pendleton Site Well Identification : URS-14D

Personnel : C. Bove , P. Pegasari Date : 4.2.02

WELL SPECIFICATIONS

Protective Casing Above Ground X Flush Mounted

Well Construction PVC X Stainless Steel

Well Diameter X 2-inch 4-inch

Depth to Ground Water : 7.65

Well Depth: 41.58

WELL INTEGRITY

- | | | |
|--|------------|-----------|
| 1. Well identification clearly marked ? | <u>yes</u> | no |
| 2. Well covers and locks in good condition and secure ? | <u>yes</u> | no |
| 3. Is the well stand pipe vertically aligned and secure ? | <u>yes</u> | no |
| 4. Is the concrete pad and surface seal in good condition ? | <u>yes</u> | no |
| 5. Are soils surrounding the well pad eroded ? | yes | <u>no</u> |
| 6. Is the well casing in good condition ? | <u>yes</u> | no |
| 7. Is the measuring point on casing well marked ? | <u>yes</u> | no |
| 8. Is there standing water in the annular space ? | <u>yes</u> | no |
| 9. Is the stand pipe vented at the base to allow drainage ? | FLUSH | yes no NA |
| 10. Does the total sounded depth correspond to the original well completion depth? | yes | no |
| 11. Is the access down the well impeded or blocked? Explain. | yes | <u>no</u> |

COMMENTS/RECOMMENDATIONS:

MONITORING WELL INTEGRITY CHECKLIST

Site Name: Frontier Chemical - Pendleton Site Well Identification : URS-14I

Personnel : C. Bove, P. Pesaresi Date : 4-2-02

WELL SPECIFICATIONS

Protective Casing Above Ground X Flush Mounted
 Well Construction PVC X Stainless Steel
 Well Diameter X 2-inch 4-inch
 Depth to Ground Water : 2.5
 Well Depth: 31.1

WELL INTEGRITY

- | | | |
|--|------------|-----------------------------|
| 1. Well identification clearly marked ? | <u>yes</u> | no |
| 2. Well covers and locks in good condition and secure ? | <u>yes</u> | no |
| 3. Is the well stand pipe vertically aligned and secure ? | <u>yes</u> | no |
| 4. Is the concrete pad and surface seal in good condition ? | <u>yes</u> | no |
| 5. Are soils surrounding the well pad eroded ? | yes | <u>no</u> |
| 6. Is the well casing in good condition ? | <u>yes</u> | no |
| 7. Is the measuring point on casing well marked ? | <u>yes</u> | no |
| 8. Is there standing water in the annular space ? | <u>yes</u> | no |
| 9. Is the stand pipe vented at the base to allow drainage ? | yes | no <i>Flush with ground</i> |
| 10. Does the total sounded depth correspond to the original well completion depth? | yes | no |
| 11. Is the access down the well impeded or blocked? Explain. | yes | <u>no</u> |

COMMENTS/RECOMMENDATIONS:

Flush mount well

MONITORING WELL INTEGRITY CHECKLIST

Site Name: Frontier Chemical - Pendleton Site Well Identification : 88-12C

Personnel : C. Bove, P. Pesaresi Date : 4-2-02

WELL SPECIFICATIONS

Protective Casing Above Ground Flush Mounted

Well Construction PVC Stainless Steel

Well Diameter 2-inch 4-inch

Depth to Ground Water : _____

Well Depth: _____

WELL INTEGRITY

- 1. Well identification clearly marked ? yes no
- 2. Well covers and locks in good condition and secure ? yes no
- 3. Is the well stand pipe vertically aligned and secure ? yes no
- 4. Is the concrete pad and surface seal in good condition ? yes no
- 5. Are soils surrounding the well pad eroded ? yes no
- 6. Is the well casing in good condition ? yes no
- 7. Is the measuring point on casing well marked ? yes no
- 8. Is there standing water in the annular space ? yes no
- 9. Is the stand pipe vented at the base to allow drainage ? yes no
- 10. Does the total sounded depth correspond to the original well completion depth? yes no
- 11. Is the access down the well impeded or blocked? Explain. yes no

COMMENTS/RECOMMENDATIONS:

MONITORING WELL INTEGRITY CHECKLIST

Site Name: Frontier Chemical - Pendleton Site Well Identification : 88-12D

Personnel : C. Bove, P. Pesaresi Date : 4-202

WELL SPECIFICATIONS

Protective Casing X Above Ground Flush Mounted

Well Construction PVC X Stainless Steel

Well Diameter X 2-inch 4-inch

Depth to Ground Water : 10.5

Well Depth: 51.5

WELL INTEGRITY

- | | | |
|--|----------------|--|
| 1. Well identification clearly marked ? | <u>yes</u> | no |
| 2. Well covers and locks in good condition and secure ? | <u>yes</u> | no |
| 3. Is the well stand pipe vertically aligned and secure ? | yes | <u>no</u> Some shifting
Bailer catches
once in a while |
| 4. Is the concrete pad and surface seal in good condition ? | <u>yes</u> | no |
| 5. Are soils surrounding the well pad eroded ? | yes | <u>no</u> |
| 6. Is the well casing in good condition ? | <u>yes</u> | no |
| 7. Is the measuring point on casing well marked ? | <u>yes</u> | no |
| 8. Is there standing water in the annular space ? | yes | <u>no</u> |
| 9. Is the stand pipe vented at the base to allow drainage ? | <u>yes</u> | no |
| 10. Does the total sounded depth correspond to the original well completion depth? | yes | no |
| 11. Is the access down the well impeded or blocked? Explain. | <u>yes</u> | no |

COMMENTS/RECOMMENDATIONS:

Some Shifting on stand pipe bailer catches now & then.

Ground water sampling logs

Standard Ground Water Sampling Log

Date 4-2-02
 Site Name Frontier Chemical Weather Cloudy 34° light snow
 Location Pendelton, NY Well # 88-12D
 Project No. 29820 Evacuation Method Disposable Bailer
 Personnel C. Bove, P. Pesaresi Sampling Method " "

Well Information:

Depth of Well * 51.5 ft.
 Depth to Water * 10.5 ft.
 Length of Water Column 41.0 ft.
 Volume of Water in Well 6.7 gal.(s)
 3X Volume of Water in Well 20.0 gal.(s)

Water Volume /ft. for:
 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 20.0 gal.(s)
 Did well go dry? NO

* Measurements taken from Well Casing Protective Casing (Other, Specify)

Instrument Calibration:

pH Buffer Readings
 4.0 Standard _____
 7.0 Standard _____
 10.0 Standard _____

Conductivity Standard Readings
 84 S Standard _____
 1413 S Standard _____

Water parameters:

Gallons Removed	Temperature Readings	pH Readings	Conductivity Readings uS/cm	Turbidity Readings Ntu
initial <u>0</u>	initial <u>8.0</u>	initial <u>7.42</u>	initial <u>4880</u>	initial <u>25.2</u>
<u>6.7</u>	<u>9.0</u>	<u>7.43</u>	<u>4760</u>	<u>10.6</u>
<u>13.5</u>	<u>8.5</u>	<u>7.31</u>	<u>2060</u>	<u>14.4</u>
<u>20.0</u>	<u>7.6</u>	<u>7.30</u>	<u>10/30</u>	<u>51.2</u>
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Water Sample: _____
 Time Collected 1050

Physical Appearance at Start	Physical Appearance at Sampling
Color <u>clear</u>	Color <u>cloudy</u>
Odor <u>light sulfur</u>	Odor <u>Sulfur 2. stronger</u>
Turbidity (> 100 NTU) <u>NO 25.2</u>	Turbidity (> 100 NTU) <u>NO 51.2</u>
Sheen/Free Product <u>NO</u>	Sheen/Free Product <u>NO</u>

Samples collected:

Container Size	Container Type	# Collected	Field Filtered <math>< 50 \mu\text{m}</math>	Preservative	Container pH
<u>40ml</u>	<u>Glass</u>	<u>3</u>	<u>NO</u>	<u>1:1 HCl</u>	
<u>liter</u>	<u>plastic</u>	<u>1</u>	<u>YES</u>	<u>HNO3</u>	
<u>pint</u>	<u>plastic</u>	<u>1</u>	<u>NO</u>	<u>NaOH</u>	

Notes: _____

Standard Ground Water Sampling Log

Date 4-2-02
 Site Name Frontier Chemical Weather Cloudy 34° rain
 Location Pendelton, NY Well # 88-12C
 Project No. 29820 Evacuation Method Disposable Bailer
 Personnel C. Bove, P. Pesaresi Sampling Method " "

Well Information:
 Depth of Well * 31.2 ft.
 Depth to Water * 9.8 ft.
 Length of Water Column 21.4 ft.
 Volume of Water in Well 3.5 gal.(s)
 3X Volume of Water in Well 10.5 gal.(s)

Water Volume /ft. for:

2" Diameter Well = 0.163 X LWC

4" Diameter Well = 0.653 X LWC

6" Diameter Well = 1.469 X LWC

Volume removed before sampling 10.5 gal.(s)
 Did well go dry? NO

* Measurements taken from Well Casing Protective Casing (Other, Specify)

Instrument Calibration:

pH Buffer Readings	Conductivity Standard Readings
4.0 Standard _____	84 S Standard _____
7.0 Standard _____	1413 S Standard _____
10.0 Standard _____	

Water parameters:

Gallons Removed	Temperature Readings	pH Readings	Conductivity Readings uS/cm	Turbidity Readings Ntu
initial <u>0</u>	initial <u>7.6</u>	initial <u>8.59</u>	initial <u>1003</u>	initial <u>27.5</u>
<u>3.5</u>	<u>7.9</u>	<u>8.34</u>	<u>1131</u>	<u>37.3</u>
<u>7.0</u>	<u>8.1</u>	<u>7.88</u>	<u>1285</u>	<u>121.5</u>
<u>10.5</u>	<u>8.7</u>	<u>7.71</u>	<u>1207</u>	<u>170.4</u>
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Water Sample:
 Time Collected 1140

Physical Appearance at Start	Physical Appearance at Sampling
Color <u>cloudy</u>	Color <u>Tan</u>
Odor <u>NO</u>	Odor <u>NO</u>
Turbidity (> 100 NTU) <u>NO 27.5</u>	Turbidity (> 100 NTU) <u>NO 170.4</u>
Sheen/Free Product <u>NO</u>	Sheen/Free Product <u>NO</u>

Samples collected:

Container Size	Container Type	# Collected	Field Filtered	Preservative	Container pH
40 ml	Glass	3	NO	HCL	
100 ml	plastic	1	NO	NaOH	
100 ml	plastic	1	YES	HNO3	

Notes:

Standard Ground Water Sampling Log

Date 4-2-02
 Site Name Frontier Chemical
 Location Pendleton, NY
 Project No. 29820
 Personnel CBIPP

Weather RAIN 36°
 Well # URS 141
 Evacuation Method Disposable Bailer
 Sampling Method " "

Well Information:

Depth of Well * 31.10 ft.
 Depth to Water * 2.5 ft.
 Length of Water Column 28.6 ft.
 Volume of Water in Well 4.66 gal.(s)
 3X Volume of Water in Well 13.98 gal.(s)

Water Volume /ft. for:	
<input checked="" type="checkbox"/>	2" Diameter Well = 0.163 X LWC
<input type="checkbox"/>	4" Diameter Well = 0.653 X LWC
<input type="checkbox"/>	6" Diameter Well = 1.469 X LWC

Volume removed before sampling 14 gal.(s)
 Did well go dry? NO

* Measurements taken from Well Casing Protective Casing (Other, Specify)

Instrument Calibration:

pH Buffer Readings	
4.0 Standard	_____
7.0 Standard	_____
10.0 Standard	_____

Conductivity Standard Readings	
84 S Standard	_____
1413 S Standard	_____

Water parameters:

Gallons Removed		Temperature Readings		pH Readings		Conductivity Readings uS/cm		Turbidity Readings Ntu	
initial	<u>0</u>	initial	<u>5.8</u>	initial	<u>8.29</u>	initial	<u>487</u>	initial	<u>22.8</u>
	<u>4.7</u>		<u>8.4</u>		<u>8.29</u>		<u>420</u>		<u>15.4</u>
	<u>9.5</u>		<u>8.98-2.4KB</u>		<u>8.24</u>		<u>641</u>		<u>80.8</u>
	<u>14.0</u>		<u>8.1</u>		<u>8.3</u>		<u>653</u>		<u>120.2</u>
	_____		_____		_____		_____		_____
	_____		_____		_____		_____		_____

Water Sample: 1340
 Time Collected

Physical Appearance at Start

Color Clear
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Physical Appearance at Sampling

Color ~~clear~~ Cloudy
 Odor no
 Turbidity (> 100 NTU) yes
 Sheen/Free Product no

Samples collected:

Container Size	Container Type	# Collected	Field	Filtered	Preservative	Container pH
<u>70ml</u>	<u>glass</u>	<u>5</u>		<u>NO</u>	<u>HCC</u>	
<u>1 pint</u>	<u>plastic</u>	<u>1</u>		<u>NO</u>	<u>NaOH</u>	
<u>1.5L</u>	<u>plastic</u>	<u>1</u>		<u>YES</u>	<u>HNO3</u>	

Notes: Clear - NO ODOR AT FIRST - TURNED LEMONADE COLOR @ 3 volume

Standard Ground Water Sampling Log

Date 4-2-02
 Site Name Frontier Chemical Weather Rain 36°
 Location Pendleton, NY Well # WES 14D
 Project No. 29820 Evacuation Method Disposable Bailer
 Personnel CB/PP Sampling Method " "

Well Information:

Depth of Well * 41.58 ft.
 Depth to Water * 7.65 ft.
 Length of Water Column 33.93 ft.
 Volume of Water in Well 5.53 gal.(s)
 3X Volume of Water in Well 16.59 gal.(s)

Water Volume /ft. for:
 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 16.6 gal.(s)
 Did well go dry? NO

* Measurements taken from Well Casing Protective Casing (Other, Specify)

Instrument Calibration:

pH Buffer Readings
 4.0 Standard _____
 7.0 Standard _____
 10.0 Standard _____

Conductivity Standard Readings
 84 S Standard _____
 1413 S Standard _____

Water parameters:

Gallons Removed		Temperature Readings		pH Readings		Conductivity Readings uS/cm		Turbidity Readings Ntu	
initial	<u>0</u>	initial	<u>7.8</u>	initial	<u>9.84</u>	initial	<u>918</u>	initial	<u>8.2</u>
	<u>5.5</u>		<u>8.4</u>		<u>9.86</u>		<u>934</u>		<u>12.2</u>
	<u>11</u>		<u>7.6</u>		<u>7.86</u>		<u>1728</u>		<u>7.4</u>
	<u>16.6</u>		<u>7.4</u>		<u>7.81</u>		<u>1508</u>		<u>5.2</u>
	_____		_____		_____		_____		_____
	_____		_____		_____		_____		_____

Water Sample:
 Time Collected 1430

Physical Appearance at Start		Physical Appearance at Sampling	
Color	<u>Clear</u>	Color	<u>Clear</u>
Odor	<u>NO</u>	Odor	<u>Sulfur</u>
Turbidity (> 100 NTU)	<u>8.2</u>	Turbidity (> 100 NTU)	<u>5.2</u>
Sheen/Free Product	<u>NO</u>	Sheen/Free Product	<u>NO</u>

Samples collected:

Container Size	Container Type	# Collected	Field	Filtered	Preservative	Container pH
<u>40ml</u>	<u>glass</u>	<u>3</u>	<u>NO</u>	<u>NO</u>	<u>HCL</u>	
<u>1 pint</u>	<u>plastic</u>	<u>1</u>	<u>NO</u>	<u>NO</u>	<u>NaOH</u>	
<u>1 liter</u>	<u>plastic</u>	<u>1</u>	<u>NO</u>	<u>NO</u>	<u>HNO3</u>	

Notes:

Standard Ground Water Sampling Log

Date 4-3-02
 Site Name Frontier Chemical Weather Cloudy 36° windy
 Location Pensletton, NY Well # 9D
 Project No. 29820 Evacuation Method DISASSEMBLE BAILEY
 Personnel CB/PP Sampling Method " "

Well Information:

Depth of Well * 50.88 ft.
 Depth to Water * 8.0 ft.
 Length of Water Column 42.88 ft.
 Volume of Water in Well 6.98 gal.(s)
 3X Volume of Water in Well 20.97 gal.(s)

Water Volume /ft. for:

2" Diameter Well = 0.163 X LWC

4" Diameter Well = 0.653 X LWC

6" Diameter Well = 1.469 X LWC

Volume removed before sampling 21 gal.(s)
 Did well go dry? NO

* Measurements taken from Well Casing Protective Casing (Other, Specify)

Instrument Calibration:

pH Buffer Readings	Conductivity Standard Readings
4.0 Standard _____	84 S Standard _____
7.0 Standard _____	1413 S Standard _____
10.0 Standard _____	

Water parameters:

Gallons Removed	Temperature Readings	pH Readings	Conductivity Readings uS/cm	Turbidity Readings Ntu
initial <u>0</u>	initial <u>7.6</u>	initial <u>8.38</u>	initial <u>1327</u>	initial <u>5.0</u>
<u>7</u>	<u>8.4</u>	<u>8.72</u>	<u>1784 1422</u>	<u>25.0 3.6</u>
<u>14</u>	<u>8.5</u>	<u>8.57</u>	<u>1302</u>	<u>1.7</u>
<u>21</u>	<u>8.0</u>	<u>7.48</u>	<u>1277</u>	<u>1.7</u>
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Water Sample:
Time Collected 1015

Physical Appearance at Start	Physical Appearance at Sampling
Color <u>CLEAR</u>	Color <u>CLEAR</u>
Odor <u>NO</u>	Odor <u>SULFUR</u>
Turbidity (> 100 NTU) <u>5.0</u>	Turbidity (> 100 NTU) <u>1.7</u>
Sheen/Free Product <u>NO</u>	Sheen/Free Product <u>NO</u>

Samples collected:

Container Size	Container Type	# Collected	Field Filtered	Preservative	Container pH
<u>40ml</u>	<u>GLASS</u>	<u>4</u>	<u>NO</u>	<u>HCL</u>	
<u>Liter</u>	<u>plastic</u>	<u>3</u>	<u>NO</u>	<u>HNO3</u>	
<u>flint</u>	<u>plastic</u>	<u>3</u>	<u>NO</u>	<u>NO</u>	

Notes: MS /MSD were collected

Standard Ground Water Sampling Log

Date 4-3-02
 Site Name Frontier Chemical
 Location Pendleton NY
 Project No. 29820
 Personnel CB/PP

Weather CLOUDY 36° windy
 Well # 9I
 Evacuation Method BAILER - DISPOSABLE
 Sampling Method H U

Well Information:

Depth of Well * 45.74 ft.
 Depth to Water * 8.7 ft.
 Length of Water Column 37.04 ft.
 Volume of Water in Well 6.04 gal.(s)
 3X Volume of Water in Well 18.11 gal.(s)

Water Volume /ft. for:
 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 18.0 gal.(s)
 Did well go dry? NO

* Measurements taken from Well Casing Protective Casing (Other, Specify)

Instrument Calibration:

pH Buffer Readings
 4.0 Standard _____
 7.0 Standard _____
 10.0 Standard _____

Conductivity Standard Readings
 84 S Standard _____
 1413 S Standard _____

Water parameters:

	Gallons Removed	Temperature Readings	pH Readings	Conductivity Readings uS/cm	Turbidity Readings Ntu
initial	<u>0</u>	initial <u>7.9</u>	initial <u>8.72</u>	initial <u>1184</u>	initial <u>25.4</u>
	<u>6</u>	<u>8.6</u>	<u>8.57</u>	<u>1153</u>	<u>41.5</u>
	<u>12</u>	<u>8.5</u>	<u>7.48</u>	<u>1129</u>	<u>44.3</u>
	<u>18</u>	<u>7.4</u>	<u>7.6</u>	<u>1105</u>	<u>35.3</u>
	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____

Water Sample:
 Time Collected 1030

Physical Appearance at Start

Color Clean
 Odor NO
 Turbidity (> 100 NTU) NO 25.4
 Sheen/Free Product NO

Physical Appearance at Sampling

Color Slightly cloudy
 Odor NO
 Turbidity (> 100 NTU) NO - 35.3
 Sheen/Free Product NO

Samples collected:

Container Size	Container Type	# Collected	Field Filtered	Preservative	Container pH
<u>40ml</u>	<u>GLASS</u>		<u>NO</u>	<u>HCL</u>	
<u>1L</u>	<u>PLASTIC</u>		<u>NO</u>	<u>HNO3</u>	
<u>100ml</u>	<u>PLASTIC</u>		<u>NO</u>	<u>NH4H</u>	

Notes:

Standard Ground Water Sampling Log

Date 4.3.02
 Site Name Frontier Chemical
 Location Randolph, NY
 Project No. 29820
 Personnel CA/AF

Weather Cloudy 38° in. dry
 Well # URS-5D
 Evacuation Method Disposable Bucket
 Sampling Method " "

Well Information:

Depth of Well * 49.8 ft.
 Depth to Water * 7.75 ft.
 Length of Water Column 42.05 ft.
 Volume of Water in Well 685 gal.(s)
 3X Volume of Water in Well 20.5 gal.(s)

Water Volume /ft. for:	
<input checked="" type="checkbox"/>	2" Diameter Well = 0.163 X LWC
<input type="checkbox"/>	4" Diameter Well = 0.653 X LWC
<input type="checkbox"/>	6" Diameter Well = 1.469 X LWC

Volume removed before sampling 20.5 gal.(s)
 Did well go dry? NO

* Measurements taken from Well Casing Protective Casing (Other, Specify)

Instrument Calibration:

pH Buffer Readings
 4.0 Standard _____
 7.0 Standard _____
 10.0 Standard _____

Conductivity Standard Readings
 84 S Standard _____
 1413 S Standard _____

Water parameters:

Gallons Removed		Temperature Readings		pH Readings		Conductivity Readings uS/cm		Turbidity Readings Ntu	
initial	<u>0</u>	initial	<u>8.0</u>	initial	<u>9.94</u>	initial	<u>1513</u>	initial	<u>5.4</u>
	<u>6.9</u>		<u>8.9</u>		<u>9.12</u>		<u>1580</u>		<u>17.1</u>
	<u>13.8</u>		<u>8.9</u>		<u>9.09</u>		<u>1999</u>		<u>22.3</u>
	<u>20.5</u>		<u>9.2</u>		<u>8.07</u>		<u>2320</u>		<u>21.1</u>
	_____		_____		_____		_____		_____
	_____		_____		_____		_____		_____

Water Sample:
 Time Collected 1300

Physical Appearance at Start		Physical Appearance at Sampling	
Color	<u>Clear</u>	Color	<u>Cloudy</u>
Odor	<u>NO</u>	Odor	<u>NO</u>
Turbidity (> 100 NTU)	<u>NO</u>	Turbidity (> 100 NTU)	<u>NO</u>
Sheen/Free Product	<u>NO</u>	Sheen/Free Product	<u>NO</u>

Samples collected:

Container Size	Container Type	# Collected	Field Filtered	Preservative	Container pH
<u>4L</u>	<u>glass</u>	<u>3</u>	<u>NO</u>	<u>HCl</u>	
<u>2L</u>	<u>plastic</u>	<u>1</u>	<u>NO</u>	<u>NaOH</u>	
<u>1L</u>	<u>plastic</u>	<u>1</u>	<u>NO</u>	<u>< 50 NTU</u>	<u>NAOH</u>

Notes:

Standard Ground Water Sampling Log

Date 4-3-02
 Site Name Frontier Chemical
 Location Wadellton, NY
 Project No. 29420
 Personnel CP/ff

Weather Cloudy windy 36°
 Well # 85-5R
 Evacuation Method Disposable Bag
 Sampling Method 11 11

Well Information:

Depth of Well * 38.0 ft.
 Depth to Water * 7.05 ft.
 Length of Water Column 30.95 ft.
 Volume of Water in Well 4.9 gal.(s)
 3X Volume of Water in Well 14.7 gal.(s)

Water Volume /ft. for:	
x	2" Diameter Well = 0.163 X LWC
	4" Diameter Well = 0.653 X LWC
	6" Diameter Well = 1.469 X LWC

Volume removed before sampling 15 gal.(s)
 Did well go dry? no

* Measurements taken from Well Casing Protective Casing (Other, Specify)

Instrument Calibration:

pH Buffer Readings

4.0 Standard _____
 7.0 Standard _____
 10.0 Standard _____

Conductivity Standard Readings

84 S Standard _____
 1413 S Standard _____

Water parameters:

Gallons Removed		Temperature Readings		pH Readings		Conductivity Readings uS/cm		Turbidity Readings Ntu	
initial	<u>0</u>	initial	<u>7.2</u>	initial	<u>7.75</u>	initial	<u>634</u>	initial	<u>35.3</u>
	<u>5</u>		<u>9.3</u>		<u>7.70</u>		<u>752</u>		<u>54.0</u>
	<u>10</u>		<u>8.9</u>		<u>7.51</u>		<u>808</u>		<u>226.0</u>
	<u>15</u>		<u>9.1</u>		<u>7.49</u>		<u>887</u>		<u>228.2</u>
	_____		_____		_____		_____		_____
	_____		_____		_____		_____		_____

Water Sample:
 Time Collected 1230

Physical Appearance at Start		Physical Appearance at Sampling	
Color	<u>light pink color</u>	Color	<u>light tan - turbid</u>
Odor	<u>NO</u>	Odor	<u>no</u>
Turbidity (> 100 NTU)	<u>35.3</u>	Turbidity (> 100 NTU)	<u>YES 228.2</u>
Sheen/Free Product	<u>NO</u>	Sheen/Free Product	<u>NO</u>

Samples collected:

Container Size	Container Type	# Collected	Field Filtered	Preservative	Container pH
<u>40ml</u>	<u>glass</u>	<u>2</u>	<u>NO</u>	<u>HCL</u>	
<u>pint</u>	<u>plastic</u>	<u>1</u>	<u>NO</u>	<u>NaOH</u>	
<u>liter</u>	<u>plastic</u>	<u>1</u>	<u>YES</u>	<u>HNO3</u>	

Notes:

Standard Ground Water Sampling Log

Date 4.4.02
 Site Name Frontier Chemical Weather partly cloudy windy 32°
 Location Pendleton, NY Well # E5-7R
 Project No. 29820 Evacuation Method Disposable Bag/ler
 Personnel CB/PP Sampling Method " "

Well Information:

Depth of Well * 27.72 ft.
 Depth to Water * 4.95 ft.
 Length of Water Column 22.77 ft.
 Volume of Water in Well 3.71 gal.(s)
 3X Volume of Water in Well 11.13 gal.(s)

Water Volume /ft. for:
 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 11 gal.(s)
 Did well go dry? NO

* Measurements taken from Well Casing Protective Casing (Other, Specify)

Instrument Calibration:

pH Buffer Readings

4.0 Standard _____
 7.0 Standard _____
 10.0 Standard _____

Conductivity Standard Readings

84 S Standard _____
 1413 S Standard _____

Water parameters:

	Gallons Removed	Temperature Readings	pH Readings	Conductivity Readings uS/cm	Turbidity Readings Ntu
initial	<u>0</u>	<u>8.5</u>	<u>12.06</u>	<u>2.65</u>	<u>0.90</u>
	<u>3.7</u>	<u>8.9</u>	<u>12.10</u>	<u>2.53</u>	<u>10.9</u>
	<u>7.5</u>	<u>9.1</u>	<u>9.52</u>	<u>1833</u>	<u>206</u>
	<u>11</u>	<u>9.2</u>	<u>9.98</u>	<u>1781</u>	<u>187</u>
	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____

Water Sample: 1915
 Time Collected

Physical Appearance at Start

Color clear
 Odor NO
 Turbidity (> 100 NTU) NO 190
 Sheen/Free Product NO

Physical Appearance at Sampling

Color cloudy
 Odor light sulfur
 Turbidity (> 100 NTU) Feb 187
 Sheen/Free Product NO

Samples collected:

Container Size	Container Type	# Collected	Field Filtered	Preservative	Container pH
<u>42 ml</u>	<u>Glass</u>	<u>3</u>	<u>NO</u>	<u>HCL</u>	
<u>1 pint</u>	<u>plastic</u>	<u>1</u>	<u>NO</u>	<u>NaOH</u>	
<u>liter</u>	<u>plastic</u>	<u>1</u>	<u>YES 187 NTU</u>	<u>HNO3</u>	

Notes: Very high pH @ Start - Dropped AS Volume was removed
re calibrated pH Meter - WASN'T out of calibration reading correct

Standard Ground Water Sampling Log

Date: 4/10/02
 Site Name: Frontier Chemical Weather: Partly cloudy 32°
 Location: Pendleton, NY Well #: URS 70
 Project No.: 29820 Evacuation Method: Disposable Barker
 Personnel: CB/PP Sampling Method: " "

Well Information:
 Depth of Well * 39.81 ft.
 Depth to Water * 6.35 ft.
 Length of Water Column 33.45 ft.
 Volume of Water in Well 5.45 gal.(s)
 3X Volume of Water in Well 16.14 gal.(s)

Water Volume /ft. for:

2" Diameter Well = 0.163 X LWC

4" Diameter Well = 0.653 X LWC

6" Diameter Well = 1.469 X LWC

Volume removed before sampling 16.5 gal.(s)
 Did well go dry? NO

* Measurements taken from Well Casing Protective Casing (Other, Specify)

Instrument Calibration:

pH Buffer Readings	Conductivity Standard Readings
4.0 Standard _____	84 S Standard _____
7.0 Standard _____	1413 S Standard _____
10.0 Standard _____	

Water parameters:

Gallons Removed	Temperature Readings	pH Readings	Conductivity Readings uS/cm	Turbidity Readings Ntu
initial <u>0</u>	initial <u>8.3</u>	initial <u>7.78</u>	initial <u>1538</u>	initial <u>2.5</u>
<u>5.5</u>	<u>9.7</u>	<u>7.78</u>	<u>1514</u>	<u>8.5</u>
<u>11.0</u>	<u>9.4</u>	<u>8.18</u>	<u>2010</u>	<u>4.2</u>
<u>16.5</u>	<u>9.3</u>	<u>7.82</u>	<u>1879</u>	<u>4.8</u>
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Water Sample: 1240
 Time Collected: _____

Physical Appearance at Start	Physical Appearance at Sampling
Color: <u>clear</u>	Color: <u>clear</u>
Odor: <u>sulfur</u>	Odor: <u>sulfur</u>
Turbidity (> 100 NTU): <u>3.5</u>	Turbidity (> 100 NTU): <u>NO 4.8</u>
Sheen/Free Product: <u>NO</u>	Sheen/Free Product: <u>NO</u>

Samples collected:

Container Size	Container Type	# Collected	Field	Filtered	Preservative	Container pH
<u>40ml</u>	<u>Glass</u>	<u>6</u>	<u>NO</u>	<u>NO</u>	<u>HCl</u>	
<u>1st</u>	<u>plastic</u>	<u>2</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	
<u>2nd</u>	<u>plastic</u>	<u>2</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

Notes: Duplicate SAMPLE ID: URS 70-1

Sample Description			Date Collected	Time Collected	Sample Matrix	Comp. or Grab	No. of Containers	Analysis/Method							
Sample Location	85-5R	4-3-02	1230	Aqueous	Grab	5	3	1	VOC 8260	GC 9010/9014	TCC METALS 6010/9010/9014				
URS-7D	4-4-02	1240	1			5	3	1				Filtered			
'85-7R	4-4-02	1315					3	1				Filtered			
EQUIPMENT BLANK	4-4-02	1520				1	3	1							
TRIP BLANK							1								
URS-7D-1	4-4-02	1250		Aqueous	Grab	5	3	1							

Relinquished by: *Craig K. Bove* Date: 4-4-02 Time: 1545 Received by: _____ Date: _____ Time: _____

Relinquished by: _____ Date: _____ Time: _____ Received by: _____ Date: _____ Time: _____

Relinquished by: _____ Date: _____ Time: _____ Received by: _____ Date: _____ Time: _____

Shipment Method: _____ Arbill Number: _____

Comments: Shipped VIA UPS # 1Z-F09447-2210001859

Turnaround Time Required: _____
Routine _____
Rush (Specify) _____
Cooler Temperature: _____

Client: Frontier Chemical
 Project: Pendleton, NY
 Sampled by: Craig K. Boer, Peter L...
 Client Contact: _____ Phone # _____

Analysis/Method

Meq/Liter (10/17/109)
1106/0106-ND
Loc. B268

Sample Description

Sample Location	Date Collected	Time Collected	Sample Matrix	Comp. or Grab	No. of Containers	Comments
88-12 D	4-2-02	1250	Aq	Grab	5	Field Filtered
88-12 C	4-2-02	1140			5	Field Filtered
URS-14 T	4-2-02	1340			5	Field Filtered
URS-14 D	4-2-02	1430			5	Field Filtered
URS-9 D MS/MSD	4-3-02	1015			15	
URS 9 T	4-3-02	1030			5	
URS 5 D	4-3-02	1300	Aq	Grab	5	
TRIP BLANK			Aq		1	

Relinquished by: Craig K. Boer Date: 4.3.02 Time: 1730
 Relinquished by: _____ Date: _____ Time: _____
 Relinquished by: _____ Date: _____ Time: _____
 Shipment Method: _____ Akbill Number: _____

Turnaround Time Required: _____
 Routine _____
 Rush (Specify) _____

Comments: UPS AIR 1ZFO9 447221001868

Cooler Temperature: _____

Data validation report

Data Validation Services

120 Cobble Creek Road P. O. Box 208

North Creek, N. Y. 12853

Phone 518-251-4429

Facsimile 518-251-4428

May 17, 2002

Dave Carnevale
O'Brien & Gere Engineers
5000 Brittonfield Parkway
Syracuse, NY 13221

RE: Validation of Frontier Chemical Site Data Packages
OBG Laboratory report for samples received April 2002

Dear Mr. Carnevale:

Review has been completed for the data package generated by OBG Laboratories which pertains to aqueous samples collected April 2 through April 4, 2002 at the Frontier Chemical Site. Eleven samples were processed for TCL volatiles and TAL metals/cyanide. Matrix spikes/duplicates, and equipment and trip blanks were also processed. Methodologies utilized are those of the USEPA SW846.

Data validation was performed with guidance from the most current editions of the USEPA CLP National Functional Guidelines for Organic and Inorganic Data Review and the USEPA SOPs HW-2 and HW-6. The following items were reviewed:

- * Data Completeness
- * Custody Documentation
- * Holding Times
- * Surrogate and Internal Standard Recoveries
- * Matrix Spike Recoveries/Duplicate Correlations
- * Field Duplicate Correlation
- * Preparation/Calibration Blanks
- * Control Spike/Laboratory Control Samples
- * Instrumental Tunes
- * Calibration Standards
- * Instrument IDLs
- * Method Compliance
- * Sample Result Verification

Those items showing deficiencies are discussed in the following sections of this report. All others were found to be acceptable as outlined in the above-mentioned validation procedures, and as applicable for the methodology. Unless noted specifically in the following text, reported results are substantiated by the raw data, and generated in compliance with protocol requirements.

In summary, sample processing was primarily conducted with compliance to protocol requirements and with adherence to quality criteria, and results are usable as reported, or with minor qualification. The laboratory summary data package, with recommended qualifiers applied in red ink to the sample result forms is attached to this narrative, and should be reviewed in conjunction with this text.

Volatile Analyses

Detections of carbon disulfide in URS-14I and 85-5R are edited to nondetection due to presence in associated trip blank.

Matrix spikes of URS-9D evaluate recoveries of all target analytes. Recoveries and duplicate correlation values were acceptable, with the exception of bromomethane (30% and 33%, below the recommended limit of 37%), trans-1,3-dichloropropene (54% and 56%, below 61% limit), and dibromodichloromethane, (64% and 66%, below 68%), and bromoform (41% and 40%, below 53%). The results for these analytes in the unspiked sample are therefore qualified estimated ("UJ" qualifier), possibly biased slightly low.

Spiked blank recoveries were acceptable, with the exception of that for bromomethane in the 4/16/02 analysis (48%, below 50%). Results for this analyte in the five associated samples, URS-5D, 85-5R, 85-7R, URS-7D, and URS-7D-1, and the two trip blanks are therefore qualified estimated ("UJ"). The level of bias is not expected to be great.

Field duplicate correlation for URS-7D and URS-7D-1 was acceptable.

Due to outlying calibration standard responses (30%D to 54%D), results for bromomethane, 4-methyl-2-pentanone, and 2-hexanone in the five associated samples, URS-5D, 85-5R, 85-7R, URS-7D, and URS-7D-1, and the two trip blanks, are qualified estimated ("UJ").

Due to low calibration standard response factors, results for acetone, 2-butanone, and 2-hexanone in all samples are qualified estimated ("UJ" or "J").

Processing was compliant, and results are substantiated by the raw data, with the exception that the matrix spike duplicate was processed beyond allowable holding time from tune.

Metals/CN Analyses

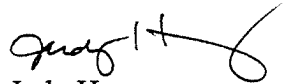
Matrix spike recoveries for URS-9D were acceptable, and LCS recoveries were within required ranges. With the exception of those for mercury and cyanide, duplicate correlations were performed on sample spikes, not the unspiked sample. Values were acceptable.

Field duplicate correlation for URS-7D and URS-7D-1 was acceptable.

The serial dilution determinations for URS-9D produced acceptable correlations, with the exception of that for manganese (10.6 %D). Results for that element in samples reporting concentrations above 7 ug/L are qualified estimated due to matrix.

Please do not hesitate to contact me if questions or comments arise during your review of this report.

Very truly yours,

A handwritten signature in black ink, appearing to read "Judy Harry", with a stylized flourish extending to the right.

Judy Harry

CROSS REFERENCE TABLE

Site	Sample Number	Date Collected	Time	Received	Package
88-12D	U3486	04/02/2002		04/04/2002	1715
88-12C	U3487	04/02/2002		04/04/2002	1715
URS-14I	U3488	04/02/2002		04/04/2002	1715
URS-14D	U3489	04/02/2002		04/04/2002	1715
URS-9D	U3490D	04/03/2002		04/04/2002	1715
URS-9D	U3490MS	04/03/2002		04/04/2002	1715
URS-9D	U3490MSD	04/03/2002		04/04/2002	1715
URS-9D	U3490	04/03/2002		04/04/2002	1715
URS 9I	U3491	04/03/2002		04/04/2002	1715
URS 5D	U3492	04/03/2002		04/04/2002	1715
QC Trip Blank	U3493	04/02/2002		04/04/2002	1715
85-5R	U3572	04/03/2002		04/05/2002	1735
URS-7D	U3573	04/04/2002		04/05/2002	1735
85-7R	U3574	04/04/2002		04/05/2002	1735
URS-7D-1	U3575	04/04/2002		04/05/2002	1735
Equipment Blank(Equipment Blank)	U3576	04/04/2002		04/05/2002	1735
QC Trip Blank	U3577	04/03/2002		04/05/2002	1735

NARRATIVE

INTRODUCTION/ANALYTICAL RESULTS

This report summarizes the laboratory results for samples from Frontier Chemical - Pendleton Site, Town of Pendleton, Niagara County, NY. Immediately following the narrative is the Cross Reference Table that lists the site descriptions, sample numbers, dates collected, dates received and package numbers.

CONDITION UPON RECEIPT/CHAIN OF CUSTODY

The coolers were received intact. When the coolers were received by the laboratory, the sample custodian(s) opened and inspected the shipments for damage, custody inconsistencies and proper preservation. The chain of custody forms documenting receipt are presented in the chain of custody section. Each sample was assigned a unique laboratory number and a custody file created. The samples were placed in a secured walk-in cooler and signed in and out by the chemists performing the tests. The sign out record, or lab chronicle, is presented in the chain of custody section.

No discrepancies were noted upon receipt. The cooler temperatures upon receipt were 3°C.

METHODOLOGY

The following methods were used to perform the analyses:

PARAMETER	METHOD	REFERENCE
Volatile Organics	8260B	1
ICP Metals	6010B	1
Mercury	7470A	1
Thallium	7841	1
Cyanide	9010B/9014	1

- 1) Test Methods for Evaluating Solid Wastes, SW-846 Third Edition, Final Update III, December 1996.

QUALITY CONTROL

The quality control for this program includes internal standards, surrogates, matrix spike (MS), matrix spike duplicate (MSD), laboratory duplicate (D), equipment blank, laboratory control sample (LCS), prep blank and trip blank samples. QA/QC results are summarized in the Sample Data Summary Package and are also included in the raw data.

RAW DATA

The raw data is organized in a format similar to the US EPA Contract Laboratory Program order of data requirements.

GC/MS Volatile Organics Case Narrative

Client: O'Brien & Gere Engineers, Inc.
 Job Number: 3435.017.31381
 Package #: 1715,1735
 Methodology: 8260B

Analyzed/Reviewed by (Initials/Date): TSG 4-22-02

Supervisor/Reviewed by (Initials/Date): @ 4-24-02

QA/QC Review (Initials/Date): [Signature] 4/25/7

File Name: C:\Documents 1715\vnar

GC/MS Volatile Organics

The GC/MS Volatile instruments used a Restek Rtx-502.2, 105 m x 0.53 mm ID capillary column and a Vocabr 3000 trap.

Holding Times and Sample Preservation

All samples were prepared and analyzed within the method and/or QAPP specified holding time requirements. Samples had a pH of < 2.

Laboratory Control Sample

The following compound(s) did not meet laboratory control sample recovery criteria:

LCS No.	Compound	Corrective Action
L041602W2	Bromomethane	1

- The recovery marginally exceeded the lower control limit and was not detected above the PQL/RL in the associated samples. No corrective action was taken.

MS/MSD

The following compound(s) did not meet matrix spike/matrix spike duplicate percent recovery and/or RPD criteria:

Sample Description	Sample #	Compound	% REC	RPD	Corrective Action
URS-9D	U3490	Bromomethane	X		1
		trans-1,3-Dichloropropene	X		1
		Dibromochloromethane	X		1
		Bromoform	X		1

- The recovery exceeded the lower control limit and was not detected above the PQL/RL in the associated samples. The recovery for this compound in the associated LCS was within acceptance limits. No corrective action was taken.

Client: O'Brien & Gere Engineers, Inc.
Job Number: 3435.017.31381
Package: 1715,1735
Methodology: 8260B

Surrogate Standards

All surrogate standard recoveries met method and/or project specific QC criteria.

Internal Standards

All internal standard areas met method and/or project specific QC criteria.

Calibrations

The following continuing calibration compound(s) exceeded method percent drift and/or RRF criteria:

Calibration Date	Instrument	Compound	%D	RRF	Corrective Action
4/16/02	GC/MS#2	Bromomethane	58%		1,2

- 1 The CCV was reanalyzed and results are similar.
- 2 The analyte is a non-CCC compound and was not detected in the associated samples. No corrective action was taken.

Preparation Blanks

All preparation blanks met method and/or project specific QC criteria.

Trace Metals Case Narrative

Client: O'Brien & Gere Engineers, Inc.
Job Number: 3435.017.31381
Package #: 1715,1735
Methodology: ICP metals - 6010B

Analyzed/Reviewed by (Date/Initials): 4-23-02 CT
Supervisor/Reviewed by (Date/Initials): 4-26-02 MT
QA/QC Review (Date/Initials): 4/3/2
File Name in G/ Drive: G:\NARRATIV\1715OBGEng.icp.wpd

Trace Metals

Holding Times

All samples were prepared and analyzed within the method and/or QAPP specified holding time requirements.

Laboratory Control Sample

All spike recoveries met method and/or project specific QC criteria.

MS/MSD AND MS/MSD RPD

The following analyte did not meet matrix spike/matrix spike duplicate percent recovery criteria:

Sample Description	Sample #	Analyte	% REC	Corrective Action
URS-9D	U3490	Calcium	X	1

1. The concentration of the analyte in the sample was much greater than the concentration of the spike added. A post-digestion spike was performed as required. No further corrective action was taken.

ICP Serial Dilution

The following analyte did not meet ICP serial dilution recovery criteria:

Sample Description	Sample #	Analyte	Corrective Action
URS-9D	U3490	Manganese	1

1. No corrective action was required.

Calibrations

All calibrations and calibration verifications met method and/or project specific QC criteria.

Preparation Blanks

All preparation blanks met method and/or project specific QC criteria.

Trace Metals Case Narrative

Client: O'Brien & Gere Engineers, Inc.
Job Number: 3435.017.31381
Package #: 1715,1735
Methodology: Mercury - 7470A

Analyzed/Reviewed by (Date/Initials): 4-26-02 MT

Supervisor/Reviewed by (Date/Initials): 4-26-02 MT

QA/QC Review (Date/Initials): JAB 4/30/02

File Name in G/ Drive: G:\NARRATIV\1715OBGEng.hg.wpd

Trace Metals

There were no excursions to note. All QC results were within established control limits.

Trace Metals Case Narrative

Client: O'Brien & Gere Engineers, Inc.
Job Number: 3435.017.31381
Package #: 1715,1735
Methodology: Thallium - 7841

Analyzed/Reviewed by (Date/Initials): 4-25-02 CT
Supervisor/Reviewed by (Date/Initials): 4-26-02 MT
QA/QC Review (Date/Initials): 4/20/2
File Name in G/ Drive: G:\NARRATIV\1715OBGEng.Tl.wpd

Trace Metals

Holding Times

All samples were prepared and analyzed within the method and/or QAPP specified holding time requirements.

Laboratory Control Sample

All spike recoveries met method and/or project specific QC criteria.

MS/MSD AND MS/MSD RPD

All spike recovery and RPD data met method and/or project specific QC criteria.

GFAA Dilution Test

All percent differences met method and/or project specific QC criteria.

GFAA Recovery Test

The following analyte did not meet GFAA recovery criteria:

Sample Description	Sample #	Analyte	Corrective Action
85-5R	U3572	Thallium	1

1. All associated samples were less than the detection limit. No corrective action was taken.

Calibrations

All calibrations and calibration verifications met method and/or project specific QC criteria.

Preparation Blanks

All preparation blanks met method and/or project specific QC criteria.

Wet Chemistry Case Narrative

Client: O'Brien & Gere Engineers, Inc.
Job Number: 3435.017.31381
Package #: 1715,1735
Methodology: Total cyanide - 9010B/9014

Analyzed/Reviewed by (Date/Initials): 04/25/02 RU

Supervisor/Reviewed by (Date/Initials): 4/26/02 MT

QA/QC Review (Date/Initials): 4/25/02

File Name in G/ Drive: G:\NARRATIVE\1715OBCN.WPD

Wet Chemistry

There were no excursions to note. All QC results were within established control limits.

C-2 Frontier Chemical – Pendleton Site
Town of Pendleton, Niagara County, NY Water Samples
Volume 1 of 3
O'Brien & Gere
April 2, 3, and 4, 2002

Laboratory Report

O'Brien & Gere Engineers, Inc.
Frontier Chemical
Pendleton Site
Town of Pendleton
Niagara County, NY
Water Samples
SDG 1715, 1735

Volume 1 of 3

April 2, 3, and 4, 2002



O'BRIEN & GERE
LABORATORIES, INC.

ANALYTICAL PACKAGE

for

**O'Brien & Gere Engineers, Inc.
Frontier Chemical
Pendleton Site
Town of Pendleton
Niagara County, NY
Water Samples**

Water samples collected: April 2, 3, and 4, 2002

Volume 1 of 3

Prepared for: O'Brien & Gere Engineers, Inc.
5000 Brittonfield Parkway
P.O. Box 4873
Syracuse, NY 13221

Prepared by: O'Brien & Gere Laboratories, Inc.
5000 Brittonfield Parkway
Suite 300, P.O. Box 4942
Syracuse, NY 13221

Authorized

Thomas Allen

Date

5.3.02

Reviewed

Joseph C. Hansen

Date

5/3/2

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Sample Data Summary Package

NARRATIVE

INTRODUCTION/ANALYTICAL RESULTS

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Thallium	7841	1
Cyanide	9010B/9014	1

- 1) Test Methods for Evaluating Solid Wastes, SW-846 Third Edition, Final Update III, December 1996.

QUALITY CONTROL

The quality control for this program includes internal standards, surrogates, matrix spike (MS), matrix spike duplicate (MSD), laboratory duplicate (D), equipment blank, laboratory control sample (LCS), prep blank and trip blank samples. QA/QC results are summarized in the Sample Data Summary Package and are also included in the raw data.

RAW DATA

The raw data is organized in a format similar to the US EPA Contract Laboratory Program order of data requirements.

GC/MS Volatile Organics Case Narrative

Client: O'Brien & Gere Engineers, Inc.
 Job Number: 3435.017.31381
 Package #: 1715,1735
 Methodology: 8260B

Analyzed/Reviewed by (Initials/Date): TSG 4-22-02

Supervisor/Reviewed by (Initials/Date): CA 4-24-02

QA/QC Review (Initials/Date): JA 4/25/7

File Name: C:\Documents 1715\vnar

GC/MS Volatile Organics

The GC/MS Volatile instruments used a Restek Rtx-502.2, 105 m x 0.53 mm ID capillary column and a Vocarb 3000 trap.

Holding Times and Sample Preservation

All samples were prepared and analyzed within the method and/or QAPP specified holding time requirements. Samples had a pH of < 2.

Laboratory Control Sample

The following compound(s) did not meet laboratory control sample recovery criteria:

LCS No.	Compound	Corrective Action
L041602W2	Bromomethane	1

- The recovery marginally exceeded the lower control limit and was not detected above the PQL/RL in the associated samples. No corrective action was taken.

MS/MSD

The following compound(s) did not meet matrix spike/matrix spike duplicate percent recovery and/or RPD criteria:

Sample Description	Sample #	Compound	% REC	RPD	Corrective Action
URS-9D	U3490	Bromomethane	X		1
		trans-1,3-Dichloropropene	X		1
		Dibromochloromethane	X		1
		Bromoform	X		1

- The recovery exceeded the lower control limit and was not detected above the PQL/RL in the associated samples. The recovery for this compound in the associated LCS was within acceptance limits. No corrective action was taken.

Client: O'Brien & Gere Engineers, Inc.
Job Number: 3435.017.31381
Package: 1715,1735
Methodology: 8260B

Surrogate Standards

All surrogate standard recoveries met method and/or project specific QC criteria.

Internal Standards

All internal standard areas met method and/or project specific QC criteria.

Calibrations

The following continuing calibration compound(s) exceeded method percent drift and/or RRF criteria:

Calibration Date	Instrument	Compound	%D	RRF	Corrective Action
4/16/02	GC/MS#2	Bromomethane	58%		1,2

- 1 The CCV was reanalyzed and results are similar.
- 2 The analyte is a non-CCC compound and was not detected in the associated samples. No corrective action was taken.

Preparation Blanks

All preparation blanks met method and/or project specific QC criteria.

Trace Metals Case Narrative

Client: O'Brien & Gere Engineers, Inc.
Job Number: 3435.017.31381
Package #: 1715,1735
Methodology: ICP metals - 6010B

Analyzed/Reviewed by (Date/Initials): 4-23-02 CT
Supervisor/Reviewed by (Date/Initials): 4-26-02 mt
QA/QC Review (Date/Initials): 5/3/2
File Name in G/ Drive: G:\NARRATIV\1715OBGEng.icp.wpd

Trace Metals

Holding Times

All samples were prepared and analyzed within the method and/or QAPP specified holding time requirements.

Laboratory Control Sample

All spike recoveries met method and/or project specific QC criteria.

MS/MSD AND MS/MSD RPD

The following analyte did not meet matrix spike/matrix spike duplicate percent recovery criteria:

Sample Description	Sample #	Analyte	% REC	Corrective Action
URS-9D	U3490	Calcium	X	I

1. The concentration of the analyte in the sample was much greater than the concentration of the spike added. A post-digestion spike was performed as required. No further corrective action was taken.

ICP Serial Dilution

The following analyte did not meet ICP serial dilution recovery criteria:

Sample Description	Sample #	Analyte	Corrective Action
URS-9D	U3490	Manganese	I

1. No corrective action was required.

Calibrations

All calibrations and calibration verifications met method and/or project specific QC criteria.

Preparation Blanks

All preparation blanks met method and/or project specific QC criteria.

Trace Metals Case Narrative

Client: O'Brien & Gere Engineers, Inc.
Job Number: 3435.017.31381
Package #: 1715,1735
Methodology: Mercury - 7470A

Analyzed/Reviewed by (Date/Initials): 4-26-02 MT

Supervisor/Reviewed by (Date/Initials): 4-26-02 MT

QA/QC Review (Date/Initials): JAB 4/30/02

File Name in G/ Drive: G:\NARRATIV\1715OBGEng.hg.wpd

Trace Metals

There were no excursions to note. All QC results were within established control limits.

Trace Metals Case Narrative

Client: O'Brien & Gere Engineers, Inc.
Job Number: 3435.017.31381
Package #: 1715,1735
Methodology: Thallium - 7841

Analyzed/Reviewed by (Date/Initials): 4-25-02 CT

Supervisor/Reviewed by (Date/Initials): 4-26-02 MT

QA/QC Review (Date/Initials): 4/20/2

File Name in G/ Drive: G:\NARRATIV\1715OBGEng.Tl.wpd

Trace Metals

Holding Times

All samples were prepared and analyzed within the method and/or QAPP specified holding time requirements.

Laboratory Control Sample

All spike recoveries met method and/or project specific QC criteria.

MS/MSD AND MS/MSD RPD

All spike recovery and RPD data met method and/or project specific QC criteria.

GFAA Dilution Test

All percent differences met method and/or project specific QC criteria.

GFAA Recovery Test

The following analyte did not meet GFAA recovery criteria:

Sample Description	Sample #	Analyte	Corrective Action
85-5R	U3572	Thallium	1

1. All associated samples were less than the detection limit. No corrective action was taken.

Calibrations

All calibrations and calibration verifications met method and/or project specific QC criteria.

Preparation Blanks

All preparation blanks met method and/or project specific QC criteria.

Wet Chemistry Case Narrative

Client: O'Brien & Gere Engineers, Inc.
Job Number: 3435.017.31381
Package #: 1715,1735
Methodology: Total cyanide - 9010B/9014

Analyzed/Reviewed by (Date/Initials): 04/25/02 RU

Supervisor/Reviewed by (Date/Initials): 4/26/02 MT

QA/QC Review (Date/Initials): [Signature] 4/29/02

File Name in G/ Drive: G:\NARRATIVE\1715OBCN.WPD

Wet Chemistry

There were no excursions to note. All QC results were within established control limits.

Analytical Results

CROSS REFERENCE TABLE

Site	Sample Number	Date Collected	Time Received	Package
88-12D	U3486	04/02/2002	04/04/2002	1715
88-12C	U3487	04/02/2002	04/04/2002	1715
URS-14I	U3488	04/02/2002	04/04/2002	1715
URS-14D	U3489	04/02/2002	04/04/2002	1715
URS-9D	U3490D	04/03/2002	04/04/2002	1715
URS-9D	U3490MS	04/03/2002	04/04/2002	1715
URS-9D	U3490MSD	04/03/2002	04/04/2002	1715
URS-9D	U3490	04/03/2002	04/04/2002	1715
URS 9I	U3491	04/03/2002	04/04/2002	1715
URS 5D	U3492	04/03/2002	04/04/2002	1715
QC Trip Blank	U3493	04/02/2002	04/04/2002	1715
85-5R	U3572	04/03/2002	04/05/2002	1735
URS-7D	U3573	04/04/2002	04/05/2002	1735
85-7R	U3574	04/04/2002	04/05/2002	1735
URS-7D-1	U3575	04/04/2002	04/05/2002	1735
Equipment Blank(Equipment Blank)	U3576	04/04/2002	04/05/2002	1735
QC Trip Blank	U3577	04/03/2002	04/05/2002	1735

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260


Client: O'Brien & Gere Engineers, Inc.
 Project: Frontier Chemical - Niagara County, NY
 Proj. Desc:
 Package#: 1715
 Sample: U3486
 Samp. Description: 88-12D
 Instrument: HP5970 GC/MS#2
 Units: ug/L
 Number of analytes: 38

Job No.: 3435.017.31381
 Certification NY No.: 10155

Collected: 04/02/02 Matrix: Water
 Received: 04/04/02 QC Batch: 041502W2
 Prepared: 04/15/02 %Solids:
 Purge volume: 25 mL

Parameter	Result	Surrog Limits Dilution	Analyzed Notes
Chloromethane	<1.0	1	04/15/02
Vinyl chloride	<1.0	1	04/15/02
Bromomethane	<1.0	1	04/15/02
Chloroethane	<1.0	1	04/15/02
Acetone	<10. J	1	04/15/02
1,1-Dichloroethene	<.50	1	04/15/02
Methylene chloride	<2.0	1	04/15/02
Carbon disulfide	1.4	1	04/15/02
trans-1,2-Dichloroethene	<.50	1	04/15/02
1,1-Dichloroethane	<.50	1	04/15/02
2-Butanone	<10. J	1	04/15/02
cis-1,2-Dichloroethene	<.50	1	04/15/02
Chloroform	<.50	1	04/15/02
1,2-Dichloroethane	<.50	1	04/15/02
1,1,1-Trichloroethane	<.50	1	04/15/02
Carbon tetrachloride	<.50	1	04/15/02
Benzene	<.50	1	04/15/02
1,2-Dichloropropane	<.50	1	04/15/02
Trichloroethene	<.50	1	04/15/02
Bromodichloromethane	<.50	1	04/15/02
cis-1,3-Dichloropropene	<.50	1	04/15/02
4-Methyl-2-pentanone	<5.0	1	04/15/02
trans-1,3-Dichloropropene	<.50	1	04/15/02
1,1,2-Trichloroethane	<.50	1	04/15/02
Toluene	<.50	1	04/15/02
Dibromochloromethane	<.50	1	04/15/02
2-Hexanone	<5.0 J	1	04/15/02

- Outside control limits J-Estimated value
 E - Concentration exceeded the calibration range and is estimated

Authorized: 
 Date: April 17, 2002 Thomas Alexander

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: Frontier Chemical - Niagara County, NY
Proj. Desc:
Package#: 1715
Sample: U3486
Samp. Description: 88-12D
Instrument: HP5970 GC/MS#2
Units: ug/L
Number of analytes: 38

Job No.: 3435.017.31381
Certification NY No.: 10155

Collected: 04/02/02 Matrix: Water
Received: 04/04/02 QC Batch: 041502W2
Prepared: 04/15/02 %Solids:
Purge volume: 25 mL

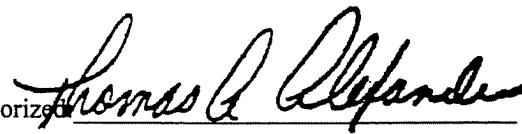
Parameter	Result	Surrog		Analyzed Notes
		Limits	Dilution	
Tetrachloroethene	<.50		1	04/15/02
Chlorobenzene	<.50		1	04/15/02
Ethylbenzene	<.50		1	04/15/02
Bromoform	<.50		1	04/15/02
Xylene (total)	<.50		1	04/15/02
Styrene	<.50		1	04/15/02
1,1,2,2-Tetrachloroethane	<.50		1	04/15/02
Dibromofluoromethane (surrogate)	98. %	71 - 130	1	04/15/02
1,2-Dichloroethane-d4 (surrogate)	101. %	76 - 126	1	04/15/02
Toluene-d8 (surrogate)	101. %	82 - 119	1	04/15/02
Bromofluorobenzene (surrogate)	100. %	75 - 119	1	04/15/02

Notes:

- Outside control limits J-Estimated value

E - Concentration exceeded the calibration range and is estimated

Authorized



Date: April 17, 2002

Thomas Alexander

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

Tentatively Identified Compound (LSC) summary

Operator ID: TSG Date Acquired: 15 Apr 2002 14:50
Data File: M:\HPCHEM\1\DATA\M8187.D
Name: U3486
Misc: V5783/V1
Method: C:\HPCHEM\1\METHODS\M415TCLU.M (RTE Integrator)
Title: VOC's w/Restek RTX-502.2, 0.53mm x 105m, 3.0 df
Library Searched: C:\DATABASE\NBS75K.L

TIC Top	Hit name	RT	EstConc	Units	Area	IntStd	ISRT	ISArea	ISConc
M8187.D	M415TCLU.M	Tue Apr 16	12:52:57	2002					

None

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
 Project: Frontier Chemical - Niagara County, NY
 Proj. Desc:
 Package#: 1715
 Sample: U3487
 Samp. Description: 88-12C
 Instrument: HP5970 GC/MS#2
 Units: ug/L
 Number of analytes: 38

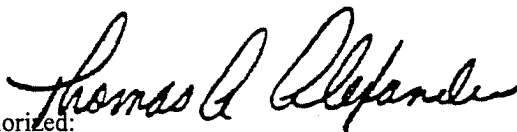
Job No.: 3435.017.31381
 Certification NY No.: 10155

Collected: 04/02/02 Matrix: Water
 Received: 04/04/02 QC Batch: 041502W2
 Prepared: 04/15/02 %Solids:
 Purge volume: 25 mL

Parameter	Result	Surrog		Analyzed Notes
		Limits	Dilution	
Chloromethane	<1.0		1	04/15/02
Vinyl chloride	<1.0		1	04/15/02
Bromomethane	<1.0		1	04/15/02
Chloroethane	<1.0		1	04/15/02
Acetone	<10.	J	1	04/15/02
1,1-Dichloroethene	<.50		1	04/15/02
Methylene chloride	<2.0		1	04/15/02
Carbon disulfide	12.		1	04/15/02
trans-1,2-Dichloroethene	<.50		1	04/15/02
1,1-Dichloroethane	<.50		1	04/15/02
2-Butanone	<10.	J	1	04/15/02
cis-1,2-Dichloroethene	<.50		1	04/15/02
Chloroform	<.50		1	04/15/02
1,2-Dichloroethane	<.50		1	04/15/02
1,1,1-Trichloroethane	<.50		1	04/15/02
Carbon tetrachloride	<.50		1	04/15/02
Benzene	<.50		1	04/15/02
1,2-Dichloropropane	<.50		1	04/15/02
Trichloroethene	<.50		1	04/15/02
Bromodichloromethane	<.50		1	04/15/02
cis-1,3-Dichloropropene	<.50		1	04/15/02
4-Methyl-2-pentanone	<5.0		1	04/15/02
trans-1,3-Dichloropropene	<.50		1	04/15/02
1,1,2-Trichloroethane	<.50		1	04/15/02
Toluene	<.50		1	04/15/02
Dibromochloromethane	<.50		1	04/15/02
2-Hexanone	<5.0	J	1	04/15/02

- Outside control limits J-Estimated value

E - Concentration exceeded the calibration range and is estimated

Authorized: 
 Date: April 17, 2002 Thomas Alexander

**O'Brien & Gere
Laboratories, Inc.**

**Analytical Results
Method: 8260**

Client: O'Brien & Gere Engineers, Inc.
Project: Frontier Chemical - Niagara County, NY
Proj. Desc:
Package#: 1715
Sample: U3487
Samp. Description: 88-12C
Instrument: HP5970 GC/MS#2
Units: ug/L
Number of analytes: 38

Job No.: 3435.017.31381
Certification NY No.: 10155


Collected: 04/02/02 Matrix: Water
Received: 04/04/02 QC Batch: 041502W2
Prepared: 04/15/02 %Solids:
Purge volume: 25 mL

<u>Parameter</u>	<u>Result</u>	<u>Surrog</u>	<u>Limits</u>	<u>Dilution</u>	<u>Analyzed</u>	<u>Notes</u>
Tetrachloroethene	<.50			1	04/15/02	
Chlorobenzene	<.50			1	04/15/02	
Ethylbenzene	<.50			1	04/15/02	
Bromoform	<.50			1	04/15/02	
Xylene (total)	<.50			1	04/15/02	
Styrene	<.50			1	04/15/02	
1,1,2,2-Tetrachloroethane	<.50			1	04/15/02	
Dibromofluoromethane (surrogate)	98. %		71 - 130	1	04/15/02	
1,2-Dichloroethane-d4 (surrogate)	99. %		76 - 126	1	04/15/02	
Toluene-d8 (surrogate)	104. %		82 - 119	1	04/15/02	
Bromofluorobenzene (surrogate)	101. %		75 - 119	1	04/15/02	

Notes:

- Outside control limits J-Estimated value

E - Concentration exceeded the calibration range and is estimated

Authorized: 
Date: April 17, 2002 Thomas Alexander

Tentatively Identified Compound (LSC) summary

Operator ID: TSG Date Acquired: 15 Apr 2002 15:30
Data File: M:\HPCHEM\1\DATA\M8188.D
Name: U3487
Misc: V5783/V1
Method: C:\HPCHEM\1\METHODS\M415TCLU.M (RTE Integrator)
Title: VOC's w/Restek RTX-502.2, 0.53mm x 105m, 3.0 df
Library Searched: C:\DATABASE\NBS75K.L

TIC	Top Hit name	RT	EstConc	Units	Area	IntStd	ISRT	ISArea	ISConc
M8188.D	M415TCLU.M								

None

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
 Project: Frontier Chemical - Niagara County, NY
 Proj. Desc:
 Package#: 1715
 Sample: U3488
 Samp. Description: URS-14I
 Instrument: HP5970 GC/MS#2
 Units: ug/L
 Number of analytes: 38


Job No.: 3435.017.31381
 Certification NY No.: 10155

Collected: 04/02/02 Matrix: Water
 Received: 04/04/02 QC Batch: 041502W2
 Prepared: 04/15/02 %Solids:
 Purge volume: 25 mL

Parameter	Result	Surrog		Analyzed Notes
		Limits	Dilution	
Chloromethane	<1.0		1	04/15/02
Vinyl chloride	<1.0		1	04/15/02
Bromomethane	<1.0		1	04/15/02
Chloroethane	<1.0		1	04/15/02
Acetone	<10. J		1	04/15/02
1,1-Dichloroethene	<.50		1	04/15/02
Methylene chloride	J .11		1	04/15/02
Carbon disulfide	<u>1.23</u> < 0.5		1	04/15/02
trans-1,2-Dichloroethene	<.50		1	04/15/02
1,1-Dichloroethane	<.50		1	04/15/02
2-Butanone	<10. J		1	04/15/02
cis-1,2-Dichloroethene	<.50		1	04/15/02
Chloroform	<.50		1	04/15/02
1,2-Dichloroethane	<.50		1	04/15/02
1,1,1-Trichloroethane	<.50		1	04/15/02
Carbon tetrachloride	<.50		1	04/15/02
Benzene	<.50		1	04/15/02
1,2-Dichloropropane	<.50		1	04/15/02
Trichloroethene	<.50		1	04/15/02
Bromodichloromethane	<.50		1	04/15/02
cis-1,3-Dichloropropene	<.50		1	04/15/02
4-Methyl-2-pentanone	<5.0		1	04/15/02
trans-1,3-Dichloropropene	<.50		1	04/15/02
1,1,2-Trichloroethane	<.50		1	04/15/02
Toluene	<.50		1	04/15/02
Dibromochloromethane	<.50		1	04/15/02
2-Hexanone	<5.0 J		1	04/15/02

- Outside control limits J-Estimated value

E - Concentration exceeded the calibration range and is estimated

Authorized: 
 Date: April 17, 2002 Thomas Alexander

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: Frontier Chemical - Niagara County, NY
Proj. Desc:
Package#: 1715
Sample: U3488
Samp. Description: URS-14I
Instrument: HP5970 GC/MS#2
Units: ug/L
Number of analytes: 38

Job No.: 3435.017.31381
Certification NY No.: 10155


Collected: 04/02/02 Matrix: Water
Received: 04/04/02 QC Batch: 041502W2
Prepared: 04/15/02 %Solids:
Purge volume: 25 mL

Parameter	Result	Surrog		Analyzed Notes
		Limits	Dilution	
Tetrachloroethene	<.50		1	04/15/02
Chlorobenzene	<.50		1	04/15/02
Ethylbenzene	<.50		1	04/15/02
Bromoform	<.50		1	04/15/02
Xylene (total)	<.50		1	04/15/02
Styrene	<.50		1	04/15/02
1,1,2,2-Tetrachloroethane	<.50		1	04/15/02
Dibromofluoromethane (surrogate)	97. %	71 - 130	1	04/15/02
1,2-Dichloroethane-d4 (surrogate)	95. %	76 - 126	1	04/15/02
Toluene-d8 (surrogate)	103. %	82 - 119	1	04/15/02
Bromofluorobenzene (surrogate)	102. %	75 - 119	1	04/15/02

Notes:

- Outside control limits J-Estimated value

E - Concentration exceeded the calibration range and is estimated

Authorized: 

Date: April 17, 2002

Thomas Alexander

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

Tentatively Identified Compound (LSC) summary

Operator ID: TSG Date Acquired: 15 Apr 2002 16:10
Data File: M:\HPCHEM\1\DATA\M8189.D
Name: U3488
Misc: V5783/V1
Method: C:\HPCHEM\1\METHODS\M415TCLU.M (RTE Integrator)
Title: VOC's w/Restek RTX-502.2, 0.53mm x 105m, 3.0 df
Library Searched: C:\DATABASE\NBS75K.L

TIC	Top Hit name	RT	EstConc	Units	Area	IntStd	ISRT	ISArea	ISConc
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M8189.D	M415TCLU.M	Tue Apr 16 12:54:20 2002							
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None

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260


Client: O'Brien & Gere Engineers, Inc.
 Project: Frontier Chemical - Niagara County, NY
 Proj. Desc:
 Package#: 1715
 Sample: U3489
 Samp. Description: URS-14D
 Instrument: HP5970 GC/MS#2
 Units: ug/L
 Number of analytes: 38

Job No.: 3435.017.31381
 Certification NY No.: 10155

Collected: 04/02/02 Matrix: Water
 Received: 04/04/02 QC Batch: 041502W2
 Prepared: 04/15/02 %Solids:
 Purge volume: 25 mL

Parameter	Result	Surrog Limits Dilution	Analyzed Notes
Chloromethane	<1.0	1	04/15/02
Vinyl chloride	<1.0	1	04/15/02
Bromomethane	<1.0	1	04/15/02
Chloroethane	<1.0	1	04/15/02
Acetone	<10. J	1	04/15/02
1,1-Dichloroethene	<.50	1	04/15/02
Methylene chloride	<2.0	1	04/15/02
Carbon disulfide	14.	1	04/15/02
trans-1,2-Dichloroethene	<.50	1	04/15/02
1,1-Dichloroethane	<.50	1	04/15/02
2-Butanone	<10. J	1	04/15/02
cis-1,2-Dichloroethene	<.50	1	04/15/02
Chloroform	<.50	1	04/15/02
1,2-Dichloroethane	<.50	1	04/15/02
1,1,1-Trichloroethane	<.50	1	04/15/02
Carbon tetrachloride	<.50	1	04/15/02
Benzene	<.50	1	04/15/02
1,2-Dichloropropane	<.50	1	04/15/02
Trichloroethene	<.50	1	04/15/02
Bromodichloromethane	<.50	1	04/15/02
cis-1,3-Dichloropropene	<.50	1	04/15/02
4-Methyl-2-pentanone	<5.0	1	04/15/02
trans-1,3-Dichloropropene	<.50	1	04/15/02
1,1,2-Trichloroethane	<.50	1	04/15/02
Toluene	<.50	1	04/15/02
Dibromochloromethane	<.50	1	04/15/02
2-Hexanone	<5.0 J	1	04/15/02

- Outside control limits J-Estimated value
 E - Concentration exceeded the calibration range and is estimated

Authorized: 
 Date: April 17, 2002 Thomas Alexander

**O'Brien & Gere
Laboratories, Inc.**

**Analytical Results
Method: 8260**

Client: O'Brien & Gere Engineers, Inc.
Project: Frontier Chemical - Niagara County, NY
Proj. Desc:
Package#: 1715
Sample: U3489
Samp. Description: URS-14D
Instrument: HP5970 GC/MS#2
Units: ug/L
Number of analytes: 38

Job No.: 3435.017.31381
Certification NY No.: 10155


Collected: 04/02/02 Matrix: Water
Received: 04/04/02 QC Batch: 041502W2
Prepared: 04/15/02 %Solids:
Purge volume: 25 mL

<u>Parameter</u>	<u>Result</u>	<u>Surrog</u> <u>Limits</u>	<u>Dilution</u>	<u>Analyzed</u>	<u>Notes</u>
Tetrachloroethene	<.50		1	04/15/02	
Chlorobenzene	<.50		1	04/15/02	
Ethylbenzene	<.50		1	04/15/02	
Bromoform	<.50		1	04/15/02	
Xylene (total)	<.50		1	04/15/02	
Styrene	<.50		1	04/15/02	
1,1,2,2-Tetrachloroethane	<.50		1	04/15/02	
Dibromofluoromethane (surrogate)	94. %	71 - 130	1	04/15/02	
1,2-Dichloroethane-d4 (surrogate)	97. %	76 - 126	1	04/15/02	
Toluene-d8 (surrogate)	102. %	82 - 119	1	04/15/02	
Bromofluorobenzene (surrogate)	101. %	75 - 119	1	04/15/02	

Notes:

- Outside control limits J-Estimated value

E - Concentration exceeded the calibration range and is estimated


Authorized: _____
Date: April 17, 2002 Thomas Alexander

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

Tentatively Identified Compound (LSC) summary

Operator ID: TSG Date Acquired: 15 Apr 2002 16:50
Data File: M:\HPCHEM\1\DATA\M8190.D
Name: U3489
Misc: V5783/V1
Method: C:\HPCHEM\1\METHODS\M415TCLU.M (RTE Integrator)
Title: VOC's w/Restek RTX-502.2, 0.53mm x 105m, 3.0 df
Library Searched: C:\DATABASE\NBS75K.L

TIC	Top Hit name	RT	EstConc	Units	Area	IntStd	ISRT	ISArea	ISConc
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M8190.D	M415TCLU.M						Tue Apr 16 12:55:12 2002		
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None

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

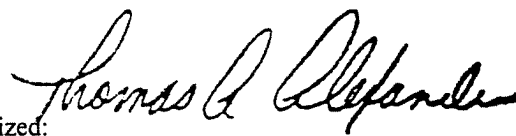
Client: O'Brien & Gere Engineers, Inc.
 Project: Frontier Chemical - Niagara County, NY
 Proj. Desc:
 Package#: 1715
 Sample: U3490
 Samp. Description: URS-9D
 Instrument: HP5970 GC/MS#2
 Units: ug/L
 Number of analytes: .38

Job No.: 3435.017.31381
 Certification NY No.: 10155

Collected: 04/03/02 Matrix: Water
 Received: 04/04/02 QC Batch: 041502W2
 Prepared: 04/15/02 %Solids:
 Purge volume: 25 mL

Parameter	Result	Surrog		Analyzed Notes
		Limits	Dilution	
Chloromethane	<1.0		1	04/15/02
Vinyl chloride	<1.0		1	04/15/02
Bromomethane	<1.0	J	1	04/15/02
Chloroethane	<1.0		1	04/15/02
Acetone	<10.	J	1	04/15/02
1,1-Dichloroethene	<.50		1	04/15/02
Methylene chloride	<2.0		1	04/15/02
Carbon disulfide	13.		1	04/15/02
trans-1,2-Dichloroethene	<.50		1	04/15/02
1,1-Dichloroethane	J .19		1	04/15/02
2-Butanone	<10.	J	1	04/15/02
cis-1,2-Dichloroethene	J .18		1	04/15/02
Chloroform	<.50		1	04/15/02
1,2-Dichloroethane	<.50		1	04/15/02
1,1,1-Trichloroethane	<.50		1	04/15/02
Carbon tetrachloride	<.50		1	04/15/02
Benzene	<.50		1	04/15/02
1,2-Dichloropropane	<.50		1	04/15/02
Trichloroethene	<.50		1	04/15/02
Bromodichloromethane	<.50		1	04/15/02
cis-1,3-Dichloropropene	<.50		1	04/15/02
4-Methyl-2-pentanone	<5.0		1	04/15/02
trans-1,3-Dichloropropene	<.50	J	1	04/15/02
1,1,2-Trichloroethane	<.50		1	04/15/02
Toluene	<.50		1	04/15/02
Dibromochloromethane	<.50	J	1	04/15/02
2-Hexanone	<5.0	J	1	04/15/02

- Outside control limits J-Estimated value
 E - Concentration exceeded the calibration range and is estimated

Authorized: 
 Date: April 17, 2002 Thomas Alexander

**O'Brien & Gere
Laboratories, Inc.**

**Analytical Results
Method: 8260**

Client: O'Brien & Gere Engineers, Inc.
 Project: Frontier Chemical - Niagara County, NY
 Proj. Desc:
 Package#: 1715
 Sample: U3490
 Samp. Description: URS-9D
 Instrument: HP5970 GC/MS#2
 Units: ug/L
 Number of analytes: 38

Job No.: 3435.017.31381
 Certification NY No.: 10155


Collected: 04/03/02 Matrix: Water
 Received: 04/04/02 QC Batch: 041502W2
 Prepared: 04/15/02 %Solids:
 Purge volume: 25 mL

<u>Parameter</u>	<u>Result</u>	<u>Surrog</u> <u>Limits</u>	<u>Dilution</u>	<u>Analyzed</u>	<u>Notes</u>
Tetrachloroethene	<.50		1	04/15/02	
Chlorobenzene	<.50		1	04/15/02	
Ethylbenzene	<.50		1	04/15/02	
Bromoform	<.50	J	1	04/15/02	
Xylene (total)	<.50		1	04/15/02	
Styrene	<.50		1	04/15/02	
1,1,2,2-Tetrachloroethane	<.50		1	04/15/02	
Dibromofluoromethane (surrogate)	96. %	71 - 130	1	04/15/02	
1,2-Dichloroethane-d4 (surrogate)	98. %	76 - 126	1	04/15/02	
Toluene-d8 (surrogate)	101. %	82 - 119	1	04/15/02	
Bromofluorobenzene (surrogate)	101. %	75 - 119	1	04/15/02	

Notes:

- Outside control limits J-Estimated value

E - Concentration exceeded the calibration range and is estimated

Authorized: 
 Date: April 17, 2002 Thomas Alexander

Tentatively Identified Compound (LSC) summary

Operator ID: TSG Date Acquired: 15 Apr 2002 17:30
Data File: M:\HPCHEM\1\DATA\M8191.D
Name: U3490
Misc: V5783/V1
Method: C:\HPCHEM\1\METHODS\M415TCLU.M (RTE Integrator)
Title: VOC's w/Restek RTX-502.2, 0.53mm x 105m, 3.0 df
Library Searched: C:\DATABASE\NBS75K.L

TIC Top Hit name	RT	EstConc	Units	Area	IntStd	ISRT	ISArea	ISConc
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M8191.D M415TCLU.M								
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None

**O'Brien & Gere
Laboratories, Inc.**

**Analytical Results
Method: 8260**

Client: O'Brien & Gere Engineers, Inc.
 Project: Frontier Chemical - Niagara County, NY
 Proj. Desc:
 Package#: 1715
 Sample: U3491
 Samp. Description: URS 9I
 Instrument: HP5970 GC/MS#2
 Units: ug/L
 Number of analytes: 38

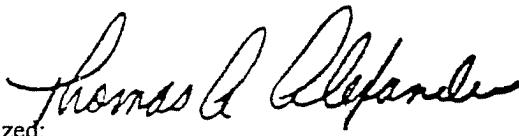
Job No.: 3435.017.31381
 Certification NY No.: 10155

Collected: 04/03/02 Matrix: Water
 Received: 04/04/02 QC Batch: 041502W2
 Prepared: 04/15/02 %Solids:
 Purge volume: 25 mL

Parameter	Result	Surrog		Analyzed Notes
		Limits	Dilution	
Chloromethane	<1.0		1	04/15/02
Vinyl chloride	<1.0		1	04/15/02
Bromomethane	<1.0		1	04/15/02
Chloroethane	<1.0		1	04/15/02
Acetone	<10. J		1	04/15/02
1,1-Dichloroethene	<.50		1	04/15/02
Methylene chloride	<2.0		1	04/15/02
Carbon disulfide	4.1		1	04/15/02
trans-1,2-Dichloroethene	<.50		1	04/15/02
1,1-Dichloroethane	<.50		1	04/15/02
2-Butanone	<10. J		1	04/15/02
cis-1,2-Dichloroethene	<.50		1	04/15/02
Chloroform	<.50		1	04/15/02
1,2-Dichloroethane	<.50		1	04/15/02
1,1,1-Trichloroethane	<.50		1	04/15/02
Carbon tetrachloride	<.50		1	04/15/02
Benzene	<.50		1	04/15/02
1,2-Dichloropropane	<.50		1	04/15/02
Trichloroethene	<.50		1	04/15/02
Bromodichloromethane	<.50		1	04/15/02
cis-1,3-Dichloropropene	<.50		1	04/15/02
4-Methyl-2-pentanone	<5.0		1	04/15/02
trans-1,3-Dichloropropene	<.50		1	04/15/02
1,1,2-Trichloroethane	<.50		1	04/15/02
Toluene	<.50		1	04/15/02
Dibromochloromethane	<.50		1	04/15/02
2-Hexanone	<5.0 J		1	04/15/02

- Outside control limits J-Estimated value

E - Concentration exceeded the calibration range and is estimated

Authorized: 

Date: April 17, 2002

Thomas Alexander

**O'Brien & Gere
Laboratories, Inc.**

**Analytical Results
Method: 8260**

Client: O'Brien & Gere Engineers, Inc.
 Project: Frontier Chemical - Niagara County, NY
 Proj. Desc:
 Package#: 1715
 Sample: U3491
 Samp. Description: URS 9I
 Instrument: HP5970 GC/MS#2
 Units: ug/L
 Number of analytes: 38

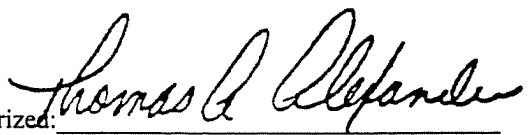
Job No.: 3435.017.31381
 Certification NY No.: 10155

Collected: 04/03/02 Matrix: Water
 Received: 04/04/02 QC Batch: 041502W2
 Prepared: 04/15/02 %Solids:
 Purge volume: 25 mL

<u>Parameter</u>	<u>Result</u>	<u>Surrog Limits</u>	<u>Dilution</u>	<u>Analyzed Notes</u>
Tetrachloroethene	<.50		1	04/15/02
Chlorobenzene	<.50		1	04/15/02
Ethylbenzene	<.50		1	04/15/02
Bromoform	<.50		1	04/15/02
Xylene (total)	<.50		1	04/15/02
Styrene	<.50		1	04/15/02
1,1,2,2-Tetrachloroethane	<.50		1	04/15/02
Dibromofluoromethane (surrogate)	98. %	71 - 130	1	04/15/02
1,2-Dichloroethane-d4 (surrogate)	101. %	76 - 126	1	04/15/02
Toluene-d8 (surrogate)	102. %	82 - 119	1	04/15/02
Bromofluorobenzene (surrogate)	103. %	75 - 119	1	04/15/02

Notes:

- Outside control limits J-Estimated value
 E - Concentration exceeded the calibration range and is estimated

Authorized: 
 Date: April 17, 2002 Thomas Alexander

Tentatively Identified Compound (LSC) summary

Operator ID: TSG Date Acquired: 15 Apr 2002 18:10
Data File: M:\HPCHEM\1\DATA\M8192.D
Name: U3491
Misc: V5783/V1
Method: C:\HPCHEM\1\METHODS\M415TCLU.M (RTE Integrator)
Title: VOC's w/Restek RTX-502.2, 0.53mm x 105m, 3.0 df
Library Searched: C:\DATABASE\NBS75K.L

TIC	Top Hit name	RT	EstConc	Units	Area	IntStd	ISRT	ISArea	ISConc
M8192.D	M415TCLU.M								

None

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
 Project: Frontier Chemical - Niagara County, NY
 Proj. Desc:
 Package#: 1715
 Sample: U3492
 Samp. Description: URS 5D
 Instrument: HP5970 GC/MS#2
 Units: ug/L
 Number of analytes: 38


Job No.: 3435.017.31381
 Certification NY No.: 10155

Collected: 04/03/02 Matrix: Water
 Received: 04/04/02 QC Batch: 041602W2
 Prepared: 04/16/02 %Solids:
 Purge volume: 25 mL

Parameter	Result	Surrog		Analyzed Notes
		Limits	Dilution	
Chloromethane	<1.0		1	04/16/02
Vinyl chloride	<1.0		1	04/16/02
Bromomethane	<1.0	J	1	04/16/02
Chloroethane	<1.0		1	04/16/02
Acetone	J 2.4		1	04/16/02
1,1-Dichloroethene	<.50		1	04/16/02
Methylene chloride	<2.0		1	04/16/02
Carbon disulfide	3.9		1	04/16/02
trans-1,2-Dichloroethene	<.50		1	04/16/02
1,1-Dichloroethane	<.50		1	04/16/02
2-Butanone	<10.	J	1	04/16/02
cis-1,2-Dichloroethene	<.50		1	04/16/02
Chloroform	<.50		1	04/16/02
1,2-Dichloroethane	<.50		1	04/16/02
1,1,1-Trichloroethane	<.50		1	04/16/02
Carbon tetrachloride	<.50		1	04/16/02
Benzene	<.50		1	04/16/02
1,2-Dichloropropane	<.50		1	04/16/02
Trichloroethene	<.50		1	04/16/02
Bromodichloromethane	<.50		1	04/16/02
cis-1,3-Dichloropropene	<.50		1	04/16/02
4-Methyl-2-pentanone	<5.0		1	04/16/02
trans-1,3-Dichloropropene	<.50		1	04/16/02
1,1,2-Trichloroethane	<.50		1	04/16/02
Toluene	<.50		1	04/16/02
Dibromochloromethane	<.50		1	04/16/02
2-Hexanone	<5.0	J	1	04/16/02

- Outside control limits J-Estimated value

E - Concentration exceeded the calibration range and is estimated

Authorized: 
 Date: April 17, 2002 Thomas Alexander

**O'Brien & Gere
Laboratories, Inc.**

**Analytical Results
Method: 8260**

Client: O'Brien & Gere Engineers, Inc.
 Project: Frontier Chemical - Niagara County, NY
 Proj. Desc:
 Package#: 1715
 Sample: U3492
 Samp. Description: URS 5D
 Instrument: HP5970 GC/MS#2
 Units: ug/L
 Number of analytes: 38


Job No.: 3435.017.31381
 Certification NY No.: 10155

Collected: 04/03/02 Matrix: Water
 Received: 04/04/02 QC Batch: 041602W2
 Prepared: 04/16/02 %Solids:
 Purge volume: 25 mL

<u>Parameter</u>	<u>Result</u>	<u>Surrog Limits</u>	<u>Dilution</u>	<u>Analyzed Notes</u>
Tetrachloroethene	<.50		1	04/16/02
Chlorobenzene	<.50		1	04/16/02
Ethylbenzene	<.50		1	04/16/02
Bromoform	<.50		1	04/16/02
Xylene (total)	<.50		1	04/16/02
Styrene	<.50		1	04/16/02
1,1,2,2-Tetrachloroethane	<.50		1	04/16/02
Dibromofluoromethane (surrogate)	99. %	71 - 130	1	04/16/02
1,2-Dichloroethane-d4 (surrogate)	100. %	76 - 126	1	04/16/02
Toluene-d8 (surrogate)	104. %	82 - 119	1	04/16/02
Bromofluorobenzene (surrogate)	101. %	75 - 119	1	04/16/02

Notes:

- Outside control limits J-Estimated value
 E - Concentration exceeded the calibration range and is estimated

Authorized: 
 Date: April 17, 2002 Thomas Alexander

Tentatively Identified Compound (LSC) summary

Operator ID: TSG Date Acquired: 16 Apr 2002 11:39
Data File: M:\HPCHEM\1\DATA\M8201.D
Name: U3492
Misc: V5783/V1
Method: C:\HPCHEM\1\METHODS\M415TCLU.M (RTE Integrator)
Title: VOC's w/Restek RTX-502.2, 0.53mm x 105m, 3.0 df
Library Searched: C:\DATABASE\NBS75K.L

TIC Top Hit name	RT	EstConc	Units	Area	IntStd	ISRT	ISArea	ISConc
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M8201.D M415TCLU.M			Mon Apr 22 06:36:48 2002					
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None

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260


Client: O'Brien & Gere Engineers, Inc.
 Project: Frontier Chemical - Niagara County, NY
 Proj. Desc:
 Package#: 1715
 Sample: U3493
 Samp. Description: QC Trip Blank
 Instrument: HP5970 GC/MS#2
 Units: ug/L
 Number of analytes: 38

Job No.: 3435.017.31381
 Certification NY No.: 10155

Collected: 04/02/02 Matrix: Water
 Received: 04/04/02 QC Batch: 041602W2
 Prepared: 04/16/02 %Solids:
 Purge volume: 25 mL

Parameter	Result	Surrog Limits Dilution	Analyzed Notes
Chloromethane	<1.0	1	04/16/02
Vinyl chloride	<1.0	1	04/16/02
Bromomethane	<1.0 J	1	04/16/02
Chloroethane	<1.0	1	04/16/02
Acetone	<10. J	1	04/16/02
1,1-Dichloroethene	<.50	1	04/16/02
Methylene chloride	<2.0	1	04/16/02
Carbon disulfide	J .16	1	04/16/02
trans-1,2-Dichloroethene	<.50	1	04/16/02
1,1-Dichloroethane	<.50	1	04/16/02
2-Butanone	<10. J	1	04/16/02
cis-1,2-Dichloroethene	<.50	1	04/16/02
Chloroform	<.50	1	04/16/02
1,2-Dichloroethane	<.50	1	04/16/02
1,1,1-Trichloroethane	<.50	1	04/16/02
Carbon tetrachloride	<.50	1	04/16/02
Benzene	<.50	1	04/16/02
1,2-Dichloropropane	<.50	1	04/16/02
Trichloroethene	<.50	1	04/16/02
Bromodichloromethane	<.50	1	04/16/02
cis-1,3-Dichloropropene	<.50	1	04/16/02
4-Methyl-2-pentanone	<5.0	1	04/16/02
trans-1,3-Dichloropropene	<.50	1	04/16/02
1,1,2-Trichloroethane	<.50	1	04/16/02
Toluene	<.50	1	04/16/02
Dibromochloromethane	<.50	1	04/16/02
2-Hexanone	<5.0 J	1	04/16/02

- Outside control limits J-Estimated value
 E - Concentration exceeded the calibration range and is estimated

Authorized: 
 Date: April 17, 2002 Thomas Alexander

**O'Brien & Gere
Laboratories, Inc.**

**Analytical Results
Method: 8260**

Client: O'Brien & Gere Engineers, Inc.
 Project: Frontier Chemical - Niagara County, NY
 Proj. Desc:
 Package#: 1715
 Sample: U3493
 Samp. Description: QC Trip Blank
 Instrument: HP5970 GC/MS#2
 Units: ug/L
 Number of analytes: 38


Job No.: 3435.017.31381
 Certification NY No.: 10155

Collected: 04/02/02 Matrix: Water
 Received: 04/04/02 QC Batch: 041602W2
 Prepared: 04/16/02 %Solids:
 Purge volume: 25 mL

Parameter	Result	Surrog		Analyzed Notes
		Limits	Dilution	
Tetrachloroethene	<.50		1	04/16/02
Chlorobenzene	<.50		1	04/16/02
Ethylbenzene	<.50		1	04/16/02
Bromoform	<.50		1	04/16/02
Xylene (total)	<.50		1	04/16/02
Styrene	<.50		1	04/16/02
1,1,2,2-Tetrachloroethane	<.50		1	04/16/02
Dibromofluoromethane (surrogate)	97. %	71 - 130	1	04/16/02
1,2-Dichloroethane-d4 (surrogate)	98. %	76 - 126	1	04/16/02
Toluene-d8 (surrogate)	102. %	82 - 119	1	04/16/02
Bromofluorobenzene (surrogate)	100. %	75 - 119	1	04/16/02

Notes:

- Outside control limits J-Estimated value
 E - Concentration exceeded the calibration range and is estimated


 Authorized: _____
 Date: April 17, 2002 Thomas Alexander

Tentatively Identified Compound (LSC) summary

Operator ID: TSG Date Acquired: 16 Apr 2002 12:19
Data File: M:\HPCHEM\1\DATA\M8202.D
Name: U3493
Misc: V5783/V1
Method: C:\HPCHEM\1\METHODS\M415TCLU.M (RTE Integrator)
Title: VOC's w/Restek RTX-502.2, 0.53mm x 105m, 3.0 df
Library Searched: C:\DATABASE\NBS75K.L

TIC Top Hit name	RT	EstConc	Units	Area	IntStd	ISRT	ISArea	ISConc

M8202.D M415TCLU.M			Mon Apr 22	06:42:39	2002			

None

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
 Project: Frontier Chemical - Niagara County, NY
 Proj. Desc:
 Package#: 1735
 Sample: U3572
 Samp. Description: 85-5R
 Instrument: HP5970 GC/MS#2
 Units: ug/L
 Number of analytes: 38

Job No.: 3435.017.31381
 Certification NY No.: 10155

Collected: 04/03/02 Matrix: Water
 Received: 04/05/02 QC Batch: 041602W2
 Prepared: 04/16/02 %Solids:
 Purge volume: 25 mL

Parameter	Result	Surrog		Analyzed Notes
		Limits	Dilution	
Chloromethane	<1.0		1	04/16/02
Vinyl chloride	<1.0		1	04/16/02
Bromomethane	<1.0	J	1	04/16/02
Chloroethane	<1.0		1	04/16/02
Acetone	J 2.9		1	04/16/02
1,1-Dichloroethene	<.50		1	04/16/02
Methylene chloride	<2.0		1	04/16/02
Carbon disulfide	J .33 <0.5		1	04/16/02
trans-1,2-Dichloroethene	<.50		1	04/16/02
1,1-Dichloroethane	<.50		1	04/16/02
2-Butanone	<10.	J	1	04/16/02
cis-1,2-Dichloroethene	<.50		1	04/16/02
Chloroform	<.50		1	04/16/02
1,2-Dichloroethane	<.50		1	04/16/02
1,1,1-Trichloroethane	<.50		1	04/16/02
Carbon tetrachloride	<.50		1	04/16/02
Benzene	<.50		1	04/16/02
1,2-Dichloropropane	<.50		1	04/16/02
Trichloroethene	<.50		1	04/16/02
Bromodichloromethane	<.50		1	04/16/02
cis-1,3-Dichloropropene	<.50		1	04/16/02
4-Methyl-2-pentanone	<5.0		1	04/16/02
trans-1,3-Dichloropropene	<.50		1	04/16/02
1,1,2-Trichloroethane	<.50		1	04/16/02
Toluene	<.50		1	04/16/02
Dibromochloromethane	<.50		1	04/16/02
2-Hexanone	<5.0	J	1	04/16/02



Authorized: _____
 Date: April 17, 2002 Thomas Alexander

- Outside control limits J-Estimated value
 E - Concentration exceeded the calibration range and is estimated

**O'Brien & Gere
Laboratories, Inc.**

**Analytical Results
Method: 8260**

Client: O'Brien & Gere Engineers, Inc.
 Project: Frontier Chemical - Niagara County, NY
 Proj. Desc:
 Package#: 1735
 Sample: U3572
 Samp. Description: 85-5R
 Instrument: HP5970 GC/MS#2
 Units: ug/L
 Number of analytes: 38


Job No.: 3435.017.31381
 Certification NY No.: 10155

Collected: 04/03/02 Matrix: Water
 Received: 04/05/02 QC Batch: 041602W2
 Prepared: 04/16/02 %Solids:
 Purge volume: 25 mL

<u>Parameter</u>	<u>Result</u>	<u>Surrog Limits</u>	<u>Dilution</u>	<u>Analyzed Notes</u>
Tetrachloroethene	<.50		1	04/16/02
Chlorobenzene	<.50		1	04/16/02
Ethylbenzene	<.50		1	04/16/02
Bromoform	<.50		1	04/16/02
Xylene (total)	<.50		1	04/16/02
Styrene	<.50		1	04/16/02
1,1,2,2-Tetrachloroethane	<.50		1	04/16/02
Dibromofluoromethane (surrogate)	99. %	71 - 130	1	04/16/02
1,2-Dichloroethane-d4 (surrogate)	101. %	76 - 126	1	04/16/02
Toluene-d8 (surrogate)	103. %	82 - 119	1	04/16/02
Bromofluorobenzene (surrogate)	98. %	75 - 119	1	04/16/02

Notes:

- Outside control limits J-Estimated value
 E - Concentration exceeded the calibration range and is estimated



Authorized: _____
 Date: April 17, 2002 Thomas Alexander

Tentatively Identified Compound (LSC) summary

Operator ID: TSG Date Acquired: 16 Apr 2002 13:38
Data File: M:\HPCHEM\1\DATA\M8204.D
Name: U3572
Misc: V5783/V1
Method: C:\HPCHEM\1\METHODS\M415TCLU.M (RTE Integrator)
Title: VOC's w/Restek RTX-502.2, 0.53mm x 105m, 3.0 df
Library Searched: C:\DATABASE\NBS75K.L

TIC Top Hit name	RT	EstConc	Units	Area	IntStd	ISRT	ISArea	ISConc
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M8204.D	M415TCLU.M					Mon Apr 22 06:44:15 2002		
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None

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260


Client: O'Brien & Gere Engineers, Inc.
 Project: Frontier Chemical - Niagara County, NY
 Proj. Desc:
 Package#: 1735
 Sample: U3573
 Samp. Description: URS-7D
 Instrument: HP5970 GC/MS#2
 Units: ug/L
 Number of analytes: 38

Job No.: 3435.017.31381
 Certification NY No.: 10155

Collected: 04/04/02 Matrix: Water
 Received: 04/05/02 QC Batch: 041602W2
 Prepared: 04/16/02 %Solids:
 Purge volume: 25 mL

Parameter	Result	Surrog		Analyzed Notes
		Limits	Dilution	
Chloromethane	<1.0		1	04/16/02
Vinyl chloride	<1.0		1	04/16/02
Bromomethane	<1.0 J		1	04/16/02
Chloroethane	<1.0		1	04/16/02
Acetone	<10. J		1	04/16/02
1,1-Dichloroethene	<.50		1	04/16/02
Methylene chloride	<2.0		1	04/16/02
Carbon disulfide	16.		1	04/16/02
trans-1,2-Dichloroethene	<.50		1	04/16/02
1,1-Dichloroethane	<.50		1	04/16/02
2-Butanone	<10. J		1	04/16/02
cis-1,2-Dichloroethene	<.50		1	04/16/02
Chloroform	<.50		1	04/16/02
1,2-Dichloroethane	<.50		1	04/16/02
1,1,1-Trichloroethane	<.50		1	04/16/02
Carbon tetrachloride	<.50		1	04/16/02
Benzene	<.50		1	04/16/02
1,2-Dichloropropane	<.50		1	04/16/02
Trichloroethene	<.50		1	04/16/02
Bromodichloromethane	<.50		1	04/16/02
cis-1,3-Dichloropropene	<.50		1	04/16/02
4-Methyl-2-pentanone	<5.0		1	04/16/02
trans-1,3-Dichloropropene	<.50		1	04/16/02
1,1,2-Trichloroethane	<.50		1	04/16/02
Toluene	<.50		1	04/16/02
Dibromochloromethane	<.50		1	04/16/02
2-Hexanone	<5.0 J		1	04/16/02

- Outside control limits J-Estimated value
 E - Concentration exceeded the calibration range and is estimated

Authorized: 
 Date: April 17, 2002 Thomas Alexander

**O'Brien & Gere
Laboratories, Inc.**

**Analytical Results
Method: 8260**

Client: O'Brien & Gere Engineers, Inc.
 Project: Frontier Chemical - Niagara County, NY
 Proj. Desc:
 Package#: 1735
 Sample: U3573
 Samp. Description: URS-7D
 Instrument: HP5970 GC/MS#2
 Units: ug/L
 Number of analytes: 38


Job No.: 3435.017.31381
 Certification NY No.: 10155

Collected: 04/04/02 Matrix: Water
 Received: 04/05/02 QC Batch: 041602W2
 Prepared: 04/16/02 %Solids:
 Purge volume: 25 mL

Parameter	Result	Surrog		Analyzed Notes
		Limits	Dilution	
Tetrachloroethene	<.50		1	04/16/02
Chlorobenzene	<.50		1	04/16/02
Ethylbenzene	<.50		1	04/16/02
Bromoform	<.50		1	04/16/02
Xylene (total)	<.50		1	04/16/02
Styrene	<.50		1	04/16/02
1,1,2,2-Tetrachloroethane	<.50		1	04/16/02
Dibromofluoromethane (surrogate)	98. %	71 - 130	1	04/16/02
1,2-Dichloroethane-d4 (surrogate)	101. %	76 - 126	1	04/16/02
Toluene-d8 (surrogate)	104. %	82 - 119	1	04/16/02
Bromofluorobenzene (surrogate)	100. %	75 - 119	1	04/16/02

Notes:

- Outside control limits J-Estimated value
 E - Concentration exceeded the calibration range and is estimated

Authorized: 
 Date: April 17, 2002 Thomas Alexander

Tentatively Identified Compound (LSC) summary

Operator ID: TSG Date Acquired: 16 Apr 2002 14:19
Data File: M:\HPCHEM\1\DATA\M8205.D
Name: U3573
Misc: V5783/V1
Method: C:\HPCHEM\1\METHODS\M415TCLU.M (RTE Integrator)
Title: VOC's w/Restek RTX-502.2, 0.53mm x 105m, 3.0 df
Library Searched: C:\DATABASE\NBS75K.L

TIC	Top Hit name	RT	EstConc	Units	Area	IntStd	ISRT	ISArea	ISConc
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M8205.D	M415TCLU.M	Mon Apr 22 06:44:56 2002							
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None

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260


Client: O'Brien & Gere Engineers, Inc.
 Project: Frontier Chemical - Niagara County, NY
 Proj. Desc:
 Package#: 1735
 Sample: U3574
 Samp. Description: 85-7R
 Instrument: HP5970 GC/MS#2
 Units: ug/L
 Number of analytes: 38

Job No.: 3435.017.31381
 Certification NY No.: 10155

Collected: 04/04/02 Matrix: Water
 Received: 04/05/02 QC Batch: 041602W2
 Prepared: 04/16/02 %Solids:
 Purge volume: 25 mL

Parameter	Result	Surrog		Analyzed Notes
		Limits	Dilution	
Chloromethane	<1.0		1	04/16/02
Vinyl chloride	<1.0		1	04/16/02
Bromomethane	<1.0	J	1	04/16/02
Chloroethane	<1.0		1	04/16/02
Acetone	<10.	J	1	04/16/02
1,1-Dichloroethene	<.50		1	04/16/02
Methylene chloride	<2.0		1	04/16/02
Carbon disulfide	4.9		1	04/16/02
trans-1,2-Dichloroethene	<.50		1	04/16/02
1,1-Dichloroethane	<.50		1	04/16/02
2-Butanone	<10.	J	1	04/16/02
cis-1,2-Dichloroethene	<.50		1	04/16/02
Chloroform	<.50		1	04/16/02
1,2-Dichloroethane	<.50		1	04/16/02
1,1,1-Trichloroethane	<.50		1	04/16/02
Carbon tetrachloride	<.50		1	04/16/02
Benzene	<.50		1	04/16/02
1,2-Dichloropropane	<.50		1	04/16/02
Trichloroethene	<.50		1	04/16/02
Bromodichloromethane	<.50		1	04/16/02
cis-1,3-Dichloropropene	<.50		1	04/16/02
4-Methyl-2-pentanone	<5.0		1	04/16/02
trans-1,3-Dichloropropene	<.50		1	04/16/02
1,1,2-Trichloroethane	<.50		1	04/16/02
Toluene	<.50		1	04/16/02
Dibromochloromethane	<.50		1	04/16/02
2-Hexanone	<5.0	J	1	04/16/02

- Outside control limits J-Estimated value
 E - Concentration exceeded the calibration range and is estimated

Authorized: 
 Date: April 17, 2002 Thomas Alexander

**O'Brien & Gere
Laboratories, Inc.**

**Analytical Results
Method: 8260**

Client: O'Brien & Gere Engineers, Inc.
Project: Frontier Chemical - Niagara County, NY
Proj. Desc:
Package#: 1735
Sample: U3574
Samp. Description: 85-7R
Instrument: HP5970 GC/MS#2
Units: ug/L
Number of analytes: 38

Job No.: 3435.017.31381
Certification NY No.: 10155

Collected: 04/04/02 Matrix: Water
Received: 04/05/02 QC Batch: 041602W2
Prepared: 04/16/02 %Solids:
Purge volume: 25 mL

Parameter	Result	Surrog		Analyzed Notes
		Limits	Dilution	
Tetrachloroethene	<.50		1	04/16/02
Chlorobenzene	<.50		1	04/16/02
Ethylbenzene	<.50		1	04/16/02
Bromoform	<.50		1	04/16/02
Xylene (total)	<.50		1	04/16/02
Styrene	<.50		1	04/16/02
1,1,2,2-Tetrachloroethane	<.50		1	04/16/02
Dibromofluoromethane (surrogate)	99. %	71 - 130	1	04/16/02
1,2-Dichloroethane-d4 (surrogate)	103. %	76 - 126	1	04/16/02
Toluene-d8 (surrogate)	101. %	82 - 119	1	04/16/02
Bromofluorobenzene (surrogate)	99. %	75 - 119	1	04/16/02

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated



Authorized: _____
Date: April 17, 2002 Thomas Alexander

Tentatively Identified Compound (LSC) summary

Operator ID: TSG Date Acquired: 16 Apr 2002 12:59
Data File: M:\HPCHEM\1\DATA\M8203.D
Name: U3574
Misc: V5783/V1
Method: C:\HPCHEM\1\METHODS\M415TCLU.M (RTE Integrator)
Title: VOC's w/Restek RTX-502.2, 0.53mm x 105m, 3.0 df
Library Searched: C:\DATABASE\NBS75K.L

TIC Top Hit name	RT	EstConc	Units	Area	IntStd	ISRT	ISArea	ISConc
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M8203.D M415TCLU.M			Mon Apr 22 06:43:28 2002					
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None

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260


Client: O'Brien & Gere Engineers, Inc.
 Project: Frontier Chemical - Niagara County, NY
 Proj. Desc:
 Package#: 1735
 Sample: U3575
 Samp. Description: URS-7D-1
 Instrument: HP5970 GC/MS#2
 Units: ug/L
 Number of analytes: 38

Job No.: 3435.017.31381
 Certification NY No.: 10155

Collected: 04/04/02 Matrix: Water
 Received: 04/05/02 QC Batch: 041602W2
 Prepared: 04/16/02 %Solids:
 Purge volume: 25 mL

Parameter	Result	Surrog		Analyzed Notes
		Limits	Dilution	
Chloromethane	<1.0		1	04/16/02
Vinyl chloride	<1.0		1	04/16/02
Bromomethane	<1.0	J	1	04/16/02
Chloroethane	<1.0		1	04/16/02
Acetone	<10.	J	1	04/16/02
1,1-Dichloroethene	<.50		1	04/16/02
Methylene chloride	<2.0		1	04/16/02
Carbon disulfide	15.		1	04/16/02
trans-1,2-Dichloroethene	<.50		1	04/16/02
1,1-Dichloroethane	<.50		1	04/16/02
2-Butanone	<10.	J	1	04/16/02
cis-1,2-Dichloroethene	<.50		1	04/16/02
Chloroform	<.50		1	04/16/02
1,2-Dichloroethane	<.50		1	04/16/02
1,1,1-Trichloroethane	<.50		1	04/16/02
Carbon tetrachloride	<.50		1	04/16/02
Benzene	<.50		1	04/16/02
1,2-Dichloropropane	<.50		1	04/16/02
Trichloroethene	<.50		1	04/16/02
Bromodichloromethane	<.50		1	04/16/02
cis-1,3-Dichloropropene	<.50		1	04/16/02
4-Methyl-2-pentanone	<5.0		1	04/16/02
trans-1,3-Dichloropropene	<.50		1	04/16/02
1,1,2-Trichloroethane	<.50		1	04/16/02
Toluene	<.50		1	04/16/02
Dibromochloromethane	<.50		1	04/16/02
2-Hexanone	<5.0	J	1	04/16/02

- Outside control limits J-Estimated value
 E - Concentration exceeded the calibration range and is estimated

Authorized: 
 Date: April 17, 2002 Thomas Alexander

**O'Brien & Gere
Laboratories, Inc.**

**Analytical Results
Method: 8260**


Client: O'Brien & Gere Engineers, Inc.
 Project: Frontier Chemical - Niagara County, NY
 Proj. Desc:
 Package#: 1735
 Sample: U3575
 Samp. Description: URS-7D-1
 Instrument: HP5970 GC/MS#2
 Units: ug/L
 Number of analytes: 38

Job No.: 3435.017.31381
 Certification NY No.: 10155

Collected: 04/04/02 Matrix: Water
 Received: 04/05/02 QC Batch: 041602W2
 Prepared: 04/16/02 %Solids:
 Purge volume: 25 mL

<u>Parameter</u>	<u>Result</u>	<u>Surrog</u> <u>Limits</u>	<u>Dilution</u>	<u>Analyzed</u>	<u>Notes</u>
Tetrachloroethene	<.50		1	04/16/02	
Chlorobenzene	<.50		1	04/16/02	
Ethylbenzene	<.50		1	04/16/02	
Bromoform	<.50		1	04/16/02	
Xylene (total)	<.50		1	04/16/02	
Styrene	<.50		1	04/16/02	
1,1,2,2-Tetrachloroethane	<.50		1	04/16/02	
Dibromofluoromethane (surrogate)	96. %	71 - 130	1	04/16/02	
1,2-Dichloroethane-d4 (surrogate)	99. %	76 - 126	1	04/16/02	
Toluene-d8 (surrogate)	102. %	82 - 119	1	04/16/02	
Bromofluorobenzene (surrogate)	98. %	75 - 119	1	04/16/02	

Notes:



Authorized: _____

- Outside control limits J-Estimated value
 E - Concentration exceeded the calibration range and is estimated

Date: April 17, 2002 Thomas Alexander

Tentatively Identified Compound (LSC) summary

Operator ID: TSG Date Acquired: 16 Apr 2002 14:59
Data File: M:\HPCHEM\1\DATA\M8206.D
Name: U3575
Misc: V5783/V1
Method: C:\HPCHEM\1\METHODS\M415TCLU.M (RTE Integrator)
Title: VOC's w/Restek RTX-502.2, 0.53mm x 105m, 3.0 df
Library Searched: C:\DATABASE\NBS75K.L

TIC Top Hit name	RT	EstConc	Units	Area	IntStd	ISRT	ISArea	ISConc
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M8206.D M415TCLU.M			Mon Apr 22 06:45:29 2002					
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None

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

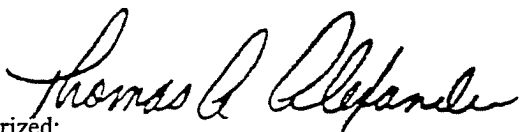
Client: O'Brien & Gere Engineers, Inc.
 Project: Frontier Chemical - Niagara County, NY
 Proj. Desc:
 Package#: 1735
 Sample: U3577
 Samp. Description: QC Trip Blank
 Instrument: HP5970 GC/MS#2
 Units: ug/L
 Number of analytes: 38

Job No.: 3435.017.31381
 Certification NY No.: 10155

Collected: 04/03/02 Matrix: Water
 Received: 04/05/02 QC Batch: 041602W2
 Prepared: 04/16/02 %Solids:
 Purge volume: 25 mL

Parameter	Result	Surrog		Analyzed Notes
		Limits	Dilution	
Chloromethane	<1.0		1	04/16/02
Vinyl chloride	<1.0		1	04/16/02
Bromomethane	<1.0 J		1	04/16/02
Chloroethane	<1.0		1	04/16/02
Acetone	<10. J		1	04/16/02
1,1-Dichloroethene	<.50		1	04/16/02
Methylene chloride	<2.0		1	04/16/02
Carbon disulfide	J .14		1	04/16/02
trans-1,2-Dichloroethene	<.50		1	04/16/02
1,1-Dichloroethane	<.50		1	04/16/02
2-Butanone	<10. J		1	04/16/02
cis-1,2-Dichloroethene	<.50		1	04/16/02
Chloroform	<.50		1	04/16/02
1,2-Dichloroethane	<.50		1	04/16/02
1,1,1-Trichloroethane	<.50		1	04/16/02
Carbon tetrachloride	<.50		1	04/16/02
Benzene	<.50		1	04/16/02
1,2-Dichloropropane	<.50		1	04/16/02
Trichloroethene	<.50		1	04/16/02
Bromodichloromethane	<.50		1	04/16/02
cis-1,3-Dichloropropene	<.50		1	04/16/02
4-Methyl-2-pentanone	<5.0		1	04/16/02
trans-1,3-Dichloropropene	<.50		1	04/16/02
1,1,2-Trichloroethane	<.50		1	04/16/02
Toluene	<.50		1	04/16/02
Dibromochloromethane	<.50		1	04/16/02
2-Hexanone	<5.0 J		1	04/16/02

- Outside control limits J-Estimated value
 E - Concentration exceeded the calibration range and is estimated

Authorized: 
 Date: April 17, 2002 Thomas Alexander

**O'Brien & Gere
Laboratories, Inc.**

**Analytical Results
Method: 8260**

Client: O'Brien & Gere Engineers, Inc.
Project: Frontier Chemical - Niagara County, NY
Proj. Desc:
Package#: 1735
Sample: U3577
Samp. Description: QC Trip Blank
Instrument: HP5970 GC/MS#2
Units: ug/L
Number of analytes: 38

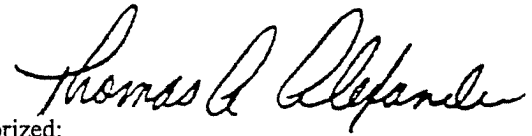
Job No.: 3435.017.31381
Certification NY No.: 10155

Collected: 04/03/02 Matrix: Water
Received: 04/05/02 QC Batch: 041602W2
Prepared: 04/16/02 %Solids:
Purge volume: 25 mL

Parameter	Result	Surrog		Analyzed Notes
		Limits	Dilution	
Tetrachloroethene	<.50		1	04/16/02
Chlorobenzene	<.50		1	04/16/02
Ethylbenzene	<.50		1	04/16/02
Bromoform	<.50		1	04/16/02
Xylene (total)	<.50		1	04/16/02
Styrene	<.50		1	04/16/02
1,1,2,2-Tetrachloroethane	<.50		1	04/16/02
Dibromofluoromethane (surrogate)	97. %	71 - 130	1	04/16/02
1,2-Dichloroethane-d4 (surrogate)	98. %	76 - 126	1	04/16/02
Toluene-d8 (surrogate)	101. %	82 - 119	1	04/16/02
Bromofluorobenzene (surrogate)	99. %	75 - 119	1	04/16/02

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated



Authorized: _____
Date: April 17, 2002 Thomas Alexander

Tentatively Identified Compound (LSC) summary

Operator ID: TSG Date Acquired: 16 Apr 2002 15:39
Data File: M:\HPCHEM\1\DATA\M8207.D
Name: U3577
Misc: V5783/V1
Method: C:\HPCHEM\1\METHODS\M415TCLU.M (RTE Integrator)
Title: VOC's w/Restek RTX-502.2, 0.53mm x 105m, 3.0 df
Library Searched: C:\DATABASE\NBS75K.L

TIC	Top Hit name	RT	EstConc	Units	Area	IntStd	ISRT	ISArea	ISConc
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M8207.D	M415TCLU.M	Mon Apr 22	06:46:02	2002					
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None

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
 Project: Frontier Chemical - Niagara County, NY
 Proj. Desc:
 Package#: 1715
 Sample: U3486
 Samp. Description: 88-12D
 Units: mg/L


Job No.: 3435.017.31381
 Certification NY No.: 10155

Collected: 04/02/02 Matrix: Water
 Received: 04/04/02 %Solids:
 Number of analytes: 21

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Aluminum	<.1	6010	04/16/02	04/22/02	041602W1		1
Antimony	<.005	6010	04/16/02	04/22/02	041602W1		1
Arsenic	<.005	6010	04/16/02	04/22/02	041602W1		1
Barium	J .003	6010	04/16/02	04/22/02	041602W1		1
Beryllium	<.003	6010	04/16/02	04/22/02	041602W1		1
Cadmium	<.001	6010	04/16/02	04/22/02	041602W1		1
Calcium	720.	6010	04/16/02	04/22/02	041602W1		1
Chromium	J .001	6010	04/16/02	04/22/02	041602W1		1
Cobalt	<.02	6010	04/16/02	04/22/02	041602W1		1
Copper	<.01	6010	04/16/02	04/22/02	041602W1		1
Iron	J .04	6010	04/16/02	04/22/02	041602W1		1
Lead	<.005	6010	04/16/02	04/22/02	041602W1		1
Magnesium	210.	6010	04/16/02	04/22/02	041602W1		1
Manganese	.01 J	6010	04/16/02	04/22/02	041602W1		1
Nickel	<.05	6010	04/16/02	04/22/02	041602W1		1
Potassium	16.	6010	04/16/02	04/22/02	041602W1		1
Selenium	<.005	6010	04/16/02	04/22/02	041602W1		1
Silver	J .001	6010	04/16/02	04/22/02	041602W1		1
Sodium	560.	6010	04/16/02	04/22/02	041602W1		1
Vanadium	J .0008	6010	04/16/02	04/22/02	041602W1		1
Zinc	J .01	6010	04/16/02	04/22/02	041602W1		1

Notes:

J-Estimated value

Authorized: 
 Date: April 23, 2002 Thomas Alexander

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
 Project: Frontier Chemical - Niagara County, NY
 Proj. Desc:
 Package#: 1715
 Sample: U3487
 Samp. Description: 88-12C
 Units: mg/L

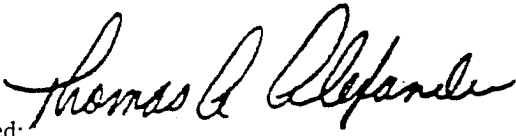
Job No.: 3435.017.31381
 Certification NY No.: 10155

Collected: 04/02/02 Matrix: Water
 Received: 04/04/02 %Solids:
 Number of analytes: 21

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Aluminum	<.1	6010	04/16/02	04/22/02	041602W1		1
Antimony	<.005	6010	04/16/02	04/22/02	041602W1		1
Arsenic	.009	6010	04/16/02	04/22/02	041602W1		1
Barium	J .01	6010	04/16/02	04/22/02	041602W1		1
Beryllium	<.003	6010	04/16/02	04/22/02	041602W1		1
Cadmium	<.001	6010	04/16/02	04/22/02	041602W1		1
Calcium	70.	6010	04/16/02	04/22/02	041602W1		1
Chromium	J .01	6010	04/16/02	04/22/02	041602W1		1
Cobalt	<.02	6010	04/16/02	04/22/02	041602W1		1
Copper	<.01	6010	04/16/02	04/22/02	041602W1		1
Iron	J .05	6010	04/16/02	04/22/02	041602W1		1
Lead	<.005	6010	04/16/02	04/22/02	041602W1		1
Magnesium	100.	6010	04/16/02	04/22/02	041602W1		1
Manganese	.02 J	6010	04/16/02	04/22/02	041602W1		1
Nickel	<.05	6010	04/16/02	04/22/02	041602W1		1
Potassium	J 3.	6010	04/16/02	04/22/02	041602W1		1
Selenium	<.005	6010	04/16/02	04/22/02	041602W1		1
Silver	J .0008	6010	04/16/02	04/22/02	041602W1		1
Sodium	45.	6010	04/16/02	04/22/02	041602W1		1
Vanadium	J .0008	6010	04/16/02	04/22/02	041602W1		1
Zinc	J .01	6010	04/16/02	04/22/02	041602W1		1

Notes:

J-Estimated value

Authorized: 
 Date: April 23, 2002 Thomas Alexander

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
 Project: Frontier Chemical - Niagara County, NY
 Proj. Desc:
 Package#: 1715
 Sample: U3488
 Samp. Description: URS-14I
 Units: mg/L

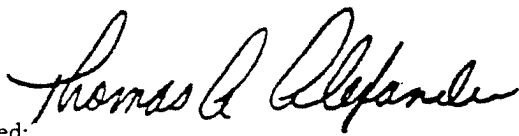
Job No.: 3435.017.31381
 Certification NY No.: 10155

Collected: 04/02/02 Matrix: Water
 Received: 04/04/02 %Solids:
 Number of analytes: 21

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Aluminum	J .05	6010	04/16/02	04/22/02	041602W1		1
Antimony	<.005	6010	04/16/02	04/22/02	041602W1		1
Arsenic	J .004	6010	04/16/02	04/22/02	041602W1		1
Barium	.07	6010	04/16/02	04/22/02	041602W1		1
Beryllium	<.003	6010	04/16/02	04/22/02	041602W1		1
Cadmium	<.001	6010	04/16/02	04/22/02	041602W1		1
Calcium	33.	6010	04/16/02	04/22/02	041602W1		1
Chromium	J .01	6010	04/16/02	04/22/02	041602W1		1
Cobalt	<.02	6010	04/16/02	04/22/02	041602W1		1
Copper	<.01	6010	04/16/02	04/22/02	041602W1		1
Iron	J .01	6010	04/16/02	04/22/02	041602W1		1
Lead	<.005	6010	04/16/02	04/22/02	041602W1		1
Magnesium	26.	6010	04/16/02	04/22/02	041602W1		1
Manganese	J .0007	6010	04/16/02	04/22/02	041602W1		1
Nickel	<.05	6010	04/16/02	04/22/02	041602W1		1
Potassium	J 3.	6010	04/16/02	04/22/02	041602W1		1
Selenium	<.005	6010	04/16/02	04/22/02	041602W1		1
Silver	<.01	6010	04/16/02	04/22/02	041602W1		1
Sodium	56.	6010	04/16/02	04/22/02	041602W1		1
Vanadium	J .001	6010	04/16/02	04/22/02	041602W1		1
Zinc	.02	6010	04/16/02	04/22/02	041602W1		1

Notes:

J-Estimated value

Authorized: 
 Date: April 23, 2002 Thomas Alexander

**O'Brien & Gere
Laboratories, Inc.**

**Analytical Results
Trace Metals**

Client: O'Brien & Gere Engineers, Inc.
 Project: Frontier Chemical - Niagara County, NY
 Proj. Desc:
 Package#: 1715
 Sample: U3489
 Samp. Description: URS-14D
 Units: mg/L


Job No.: 3435.017.31381
 Certification NY No.: 10155

Collected: 04/02/02 Matrix: Water
 Received: 04/04/02 %Solids:
 Number of analytes: 21

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Aluminum	<.1	6010	04/16/02	04/22/02	041602W1		1
Antimony	<.005	6010	04/16/02	04/22/02	041602W1		1
Arsenic	<.005	6010	04/16/02	04/22/02	041602W1		1
Barium	J .02	6010	04/16/02	04/22/02	041602W1		1
Beryllium	<.003	6010	04/16/02	04/22/02	041602W1		1
Cadmium	<.001	6010	04/16/02	04/22/02	041602W1		1
Calcium	260.	6010	04/16/02	04/22/02	041602W1		1
Chromium	J .01	6010	04/16/02	04/22/02	041602W1		1
Cobalt	<.02	6010	04/16/02	04/22/02	041602W1		1
Copper	<.01	6010	04/16/02	04/22/02	041602W1		1
Iron	.08	6010	04/16/02	04/22/02	041602W1		1
Lead	<.005	6010	04/16/02	04/22/02	041602W1		1
Magnesium	76.	6010	04/16/02	04/22/02	041602W1		1
Manganese	J .01	6010	04/16/02	04/22/02	041602W1		1
Nickel	<.05	6010	04/16/02	04/22/02	041602W1		1
Potassium	J 3.	6010	04/16/02	04/22/02	041602W1		1
Selenium	<.005	6010	04/16/02	04/22/02	041602W1		1
Silver	<.01	6010	04/16/02	04/22/02	041602W1		1
Sodium	35.	6010	04/16/02	04/22/02	041602W1		1
Vanadium	<.05	6010	04/16/02	04/22/02	041602W1		1
Zinc	J .01	6010	04/16/02	04/22/02	041602W1		1

Notes:

J-Estimated value

Authorized: 
 Date: April 23, 2002 Thomas Alexander

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
 Project: Frontier Chemical - Niagara County, NY
 Proj. Desc:
 Package#: 1715
 Sample: U3490
 Samp. Description: URS-9D
 Units: mg/L


Job No.: 3435.017.31381
 Certification NY No.: 10155

Collected: 04/03/02 Matrix: Water
 Received: 04/04/02 %Solids:
 Number of analytes: 21

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Aluminum	<.1	6010	04/16/02	04/22/02	041602W1		1
Antimony	<.005	6010	04/16/02	04/22/02	041602W1		1
Arsenic	<.005	6010	04/16/02	04/22/02	041602W1		1
Barium	J .01	6010	04/16/02	04/22/02	041602W1		1
Beryllium	<.003	6010	04/16/02	04/22/02	041602W1		1
Cadmium	<.001	6010	04/16/02	04/22/02	041602W1		1
Calcium	230.	6010	04/16/02	04/22/02	041602W1		1
Chromium	J .004	6010	04/16/02	04/22/02	041602W1		1
Cobalt	<.02	6010	04/16/02	04/22/02	041602W1		1
Copper	<.01	6010	04/16/02	04/22/02	041602W1		1
Iron	J .05	6010	04/16/02	04/22/02	041602W1		1
Lead	<.005	6010	04/16/02	04/22/02	041602W1		1
Magnesium	75.	6010	04/16/02	04/22/02	041602W1		1
Manganese	.01 J	6010	04/16/02	04/22/02	041602W1		1
Nickel	<.05	6010	04/16/02	04/22/02	041602W1		1
Potassium	J 4.	6010	04/16/02	04/22/02	041602W1		1
Selenium	<.005	6010	04/16/02	04/22/02	041602W1		1
Silver	<.01	6010	04/16/02	04/22/02	041602W1		1
Sodium	41.	6010	04/16/02	04/22/02	041602W1		1
Vanadium	<.05	6010	04/16/02	04/22/02	041602W1		1
Zinc	<.01	6010	04/16/02	04/22/02	041602W1		1

Notes:

J-Estimated value

Authorized: 
 Date: April 23, 2002 Thomas Alexander

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
 Project: Frontier Chemical - Niagara County, NY
 Proj. Desc:
 Package#: 1715
 Sample: U3491
 Samp. Description: URS 9I
 Units: mg/L

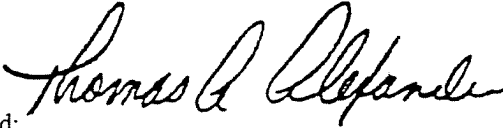
Job No.: 3435.017.31381
 Certification NY No.: 10155

Collected: 04/03/02 Matrix: Water
 Received: 04/04/02 %Solids:
 Number of analytes: 21

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Aluminum	.1	6010	04/16/02	04/22/02	041602W1	1	
Antimony	<.005	6010	04/16/02	04/22/02	041602W1	1	
Arsenic	<.005	6010	04/16/02	04/22/02	041602W1	1	
Barium	.02	6010	04/16/02	04/22/02	041602W1	1	
Beryllium	<.003	6010	04/16/02	04/22/02	041602W1	1	
Cadmium	<.001	6010	04/16/02	04/22/02	041602W1	1	
Calcium	500.	6010	04/16/02	04/22/02	041602W1	1	
Chromium	.01	6010	04/16/02	04/22/02	041602W1	1	
Cobalt	.17	6010	04/16/02	04/22/02	041602W1	1	
Copper	J .003	6010	04/16/02	04/22/02	041602W1	1	
Iron	.99	6010	04/16/02	04/22/02	041602W1	1	
Lead	<.005	6010	04/16/02	04/22/02	041602W1	1	
Magnesium	88.	6010	04/16/02	04/22/02	041602W1	1	
Manganese	.11 J	6010	04/16/02	04/22/02	041602W1	1	
Nickel	.07	6010	04/16/02	04/22/02	041602W1	1	
Potassium	6.	6010	04/16/02	04/22/02	041602W1	1	
Selenium	<.005	6010	04/16/02	04/22/02	041602W1	1	
Silver	<.01	6010	04/16/02	04/22/02	041602W1	1	
Sodium	100.	6010	04/16/02	04/22/02	041602W1	1	
Vanadium	J .001	6010	04/16/02	04/22/02	041602W1	1	
Zinc	.44	6010	04/16/02	04/22/02	041602W1	1	

Notes:

J-Estimated value

Authorized: 
 Date: April 23, 2002 Thomas Alexander

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
 Project: Frontier Chemical - Niagara County, NY
 Proj. Desc:
 Package#: 1715
 Sample: U3492
 Samp. Description: URS 5D
 Units: mg/L

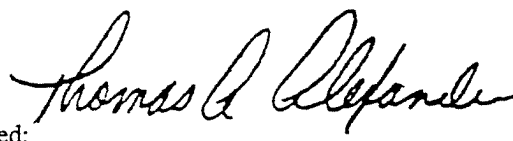
Job No.: 3435.017.31381
 Certification NY No.: 10155

Collected: 04/03/02 Matrix: Water
 Received: 04/04/02 %Solids:
 Number of analytes: 21

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Aluminum	.6	6010	04/16/02	04/22/02	041602W1	1	
Antimony	<.005	6010	04/16/02	04/22/02	041602W1	1	
Arsenic	<.005	6010	04/16/02	04/22/02	041602W1	1	
Barium	J .02	6010	04/16/02	04/22/02	041602W1	1	
Beryllium	<.003	6010	04/16/02	04/22/02	041602W1	1	
Cadmium	<.001	6010	04/16/02	04/22/02	041602W1	1	
Calcium	160.	6010	04/16/02	04/22/02	041602W1	1	
Chromium	J .01	6010	04/16/02	04/22/02	041602W1	1	
Cobalt	<.02	6010	04/16/02	04/22/02	041602W1	1	
Copper	<.01	6010	04/16/02	04/22/02	041602W1	1	
Iron	1.0	6010	04/16/02	04/22/02	041602W1	1	
Lead	<.005	6010	04/16/02	04/22/02	041602W1	1	
Magnesium	74.	6010	04/16/02	04/22/02	041602W1	1	
Manganese	.07 J	6010	04/16/02	04/22/02	041602W1	1	
Nickel	<.05	6010	04/16/02	04/22/02	041602W1	1	
Potassium	J 3.	6010	04/16/02	04/22/02	041602W1	1	
Selenium	<.005	6010	04/16/02	04/22/02	041602W1	1	
Silver	<.01	6010	04/16/02	04/22/02	041602W1	1	
Sodium	46.	6010	04/16/02	04/22/02	041602W1	1	
Vanadium	J .001	6010	04/16/02	04/22/02	041602W1	1	
Zinc	J .01	6010	04/16/02	04/22/02	041602W1	1	

Notes:

J-Estimated value

Authorized: 
 Date: April 23, 2002 Thomas Alexander

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
 Project: Frontier Chemical - Niagara County, NY
 Proj. Desc:
 Package#: 1735
 Sample: U3572
 Samp. Description: 85-5R
 Units: mg/L

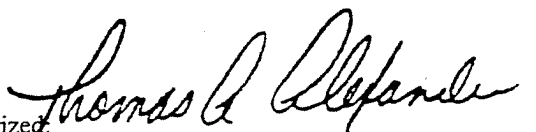
Job No.: 3435.017.31381
 Certification NY No.: 10155

Collected: 04/03/02 Matrix: Water
 Received: 04/05/02 %Solids:
 Number of analytes: 21

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Aluminum	<.1	6010	04/16/02	04/22/02	041602W1		1
Antimony	<.005	6010	04/16/02	04/22/02	041602W1		1
Arsenic	<.005	6010	04/16/02	04/22/02	041602W1		1
Barium	.05	6010	04/16/02	04/22/02	041602W1		1
Beryllium	<.003	6010	04/16/02	04/22/02	041602W1		1
Cadmium	<.001	6010	04/16/02	04/22/02	041602W1		1
Calcium	130.	6010	04/16/02	04/22/02	041602W1		1
Chromium	J .004	6010	04/16/02	04/22/02	041602W1		1
Cobalt	<.02	6010	04/16/02	04/22/02	041602W1		1
Copper	J .001	6010	04/16/02	04/22/02	041602W1		1
Iron	J .01	6010	04/16/02	04/22/02	041602W1		1
Lead	<.005	6010	04/16/02	04/22/02	041602W1		1
Magnesium	48.	6010	04/16/02	04/22/02	041602W1		1
Manganese	.03 J	6010	04/16/02	04/22/02	041602W1		1
Nickel	J .002	6010	04/16/02	04/22/02	041602W1		1
Potassium	J 2.	6010	04/16/02	04/22/02	041602W1		1
Selenium	<.005	6010	04/16/02	04/22/02	041602W1		1
Silver	<.01	6010	04/16/02	04/22/02	041602W1		1
Sodium	32.	6010	04/16/02	04/22/02	041602W1		1
Vanadium	<.05	6010	04/16/02	04/22/02	041602W1		1
Zinc	J .01	6010	04/16/02	04/22/02	041602W1		1

Notes:

J-Estimated value

Authorized: 
 Date: April 23, 2002 Thomas Alexander

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
 Project: Frontier Chemical - Niagara County, NY
 Proj. Desc:
 Package#: 1735
 Sample: U3573
 Samp. Description: URS-7D
 Units: mg/L


Job No.: 3435.017.31381
 Certification NY No.: 10155

Collected: 04/04/02 Matrix: Water
 Received: 04/05/02 %Solids:
 Number of analytes: 21

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Aluminum	J .02	6010	04/16/02	04/22/02	041602W1		1
Antimony	<.005	6010	04/16/02	04/22/02	041602W1		1
Arsenic	<.005	6010	04/16/02	04/22/02	041602W1		1
Barium	.02	6010	04/16/02	04/22/02	041602W1		1
Beryllium	<.003	6010	04/16/02	04/22/02	041602W1		1
Cadmium	<.001	6010	04/16/02	04/22/02	041602W1		1
Calcium	460.	6010	04/16/02	04/22/02	041602W1		1
Chromium	J .01	6010	04/16/02	04/22/02	041602W1		1
Cobalt	<.02	6010	04/16/02	04/22/02	041602W1		1
Copper	<.01	6010	04/16/02	04/22/02	041602W1		1
Iron	.13	6010	04/16/02	04/22/02	041602W1		1
Lead	<.005	6010	04/16/02	04/22/02	041602W1		1
Magnesium	140.	6010	04/16/02	04/22/02	041602W1		1
Manganese	.18 J	6010	04/16/02	04/22/02	041602W1		1
Nickel	<.05	6010	04/16/02	04/22/02	041602W1		1
Potassium	5.	6010	04/16/02	04/22/02	041602W1		1
Selenium	<.005	6010	04/16/02	04/22/02	041602W1		1
Silver	<.01	6010	04/16/02	04/22/02	041602W1		1
Sodium	70.	6010	04/16/02	04/22/02	041602W1		1
Vanadium	J .0007	6010	04/16/02	04/22/02	041602W1		1
Zinc	J .004	6010	04/16/02	04/22/02	041602W1		1

Notes:

J-Estimated value

Authorized: 
 Date: April 23, 2002 Thomas Alexander

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: Frontier Chemical - Niagara County, NY
Proj. Desc:

Job No.: 3435.017.31381
Certification NY No.: 10155

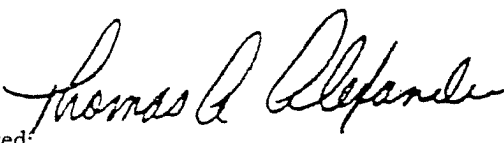
Package#: 1735
Sample: U3574
Samp. Description: 85-7R
Units: mg/L

Collected: 04/04/02 Matrix: Water
Received: 04/05/02 %Solids:
Number of analytes: 21

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Aluminum	<.1	6010	04/16/02	04/22/02	041602W1	1	
Antimony	<.005	6010	04/16/02	04/22/02	041602W1	1	
Arsenic	<.005	6010	04/16/02	04/22/02	041602W1	1	
Barium	.04	6010	04/16/02	04/22/02	041602W1	1	
Beryllium	<.003	6010	04/16/02	04/22/02	041602W1	1	
Cadmium	<.001	6010	04/16/02	04/22/02	041602W1	1	
Calcium	430.	6010	04/16/02	04/22/02	041602W1	1	
Chromium	J .005	6010	04/16/02	04/22/02	041602W1	1	
Cobalt	<.02	6010	04/16/02	04/22/02	041602W1	1	
Copper	<.01	6010	04/16/02	04/22/02	041602W1	1	
Iron	J .03	6010	04/16/02	04/22/02	041602W1	1	
Lead	<.005	6010	04/16/02	04/22/02	041602W1	1	
Magnesium	120.	6010	04/16/02	04/22/02	041602W1	1	
Manganese	.03 J	6010	04/16/02	04/22/02	041602W1	1	
Nickel	<.05	6010	04/16/02	04/22/02	041602W1	1	
Potassium	7.	6010	04/16/02	04/22/02	041602W1	1	
Selenium	<.005	6010	04/16/02	04/22/02	041602W1	1	
Silver	<.01	6010	04/16/02	04/22/02	041602W1	1	
Sodium	69.	6010	04/16/02	04/22/02	041602W1	1	
Vanadium	<.05	6010	04/16/02	04/22/02	041602W1	1	
Zinc	J .005	6010	04/16/02	04/22/02	041602W1	1	

Notes:

J-Estimated value

Authorized: 
Date: April 23, 2002 Thomas Alexander

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

FRONTIER CHEMICAL – PENDLETON SITE
Pretreatment System Operator's Log

What was the problem?

Details:	Met with Carrier Controls Representative On site.

Actions taken to correct problems:	<ol style="list-style-type: none"> 1. Set up a conference call with the RACO service department in California. 2. Worked our way through the different configurations of the dialer until we diagnosed the problem. 3. Reset channel "2" to the proper mode. 4. Tested the call out system & everything checked out OK. 5. Locked up and left site.
---	--

Recommended actions to prevent future problems:	
--	--

Other relevant information:	
------------------------------------	--

SYSTEM CHECK LIST	Arrival	Departure
#1 Vault Door	OK	OK
#2 Panel Door	OK	OK
#3 Vault Sump High	OK	OK
#4 Containment Pipe Alarm	OK	OK
#5 High Wet Well Alarm	OK	OK
#6 Pump #1 Fail (Yes / No)	NO	NO
#7 Pump # 2 Fail (Yes / No)	NO	NO
#8 Bag Filter Differential Pressure High	NO	NO
#9 Wet Well Level (Actual Measure Spoken)		
#10 Flow Rate	0	0
#11 #16; Reserved for future use		
FOR CURRENT STATUS CALL: (716) 743-1335		

Operator Name: Mike Walker

Operator Signature:

FRONTIER CHEMICAL – PENDLETON SITE
Pretreatment System Operator's Log

Date: 12-18-01

Time In: 9:00AM
Time Out: 11:00AM

Weather: Windy & Cloudy

Precipitation: None

Temperature: 33°F

Reason for Visit: Monthly Inspection

	Reading		Time
Flowmeter Totalization Reading (arrival)	547,921	Gal	09:00AM
Flowmeter Totalization Reading (departure)	548,083	Gal	10:45AM
Flow rate during test, Pump #1 @ 9.02 & Pump #2 @ 8.78		Gpm	9:48AM
Pump Hour Meter Readings: Pump #1	599.3	Hrs	9:20AM
Pump Hour Meter Readings: Pump #2	455.3	Hrs	9:20AM
Wet Well Level	2.044	Ft	9:20AM
Pressure Sensor Reading (Bar Graph) during test	21.19	Psi	9:48AM

	Influent Gauge, Psi	Effluent Gauge, Psi	Differential, Psi
BF1, During test	20	20	0
BF2	Off line	Off line	Off line
GAC1	19	10	9
GAC2	19	10	9

Change Filter Bags (Check One) **YES** X **NO** **TIME** 9:40AM

FRONTIER CHEMICAL – PENDLETON SITE
Pretreatment System Operator's Log

Details:	During start-up of testing, after changing bag filters, the bag filter housing #2 developed a leak seemingly caused by corrosion. My recommendation is to replace the whole housing, as the hole is in a place where it might not take repair patching or welding very well, due to internal pressure during use. In the meantime, I have bypassed the damaged bag filter unit and run the pressure test on the rest of the system with success.
-----------------	--

Actions taken to correct problems:	Bypassed the #2 bag filter unit until I receive instructions on how to proceed with repair or replacement of the unit.
---	--

Recommended actions to prevent future problems:	Use Non-corrosive bag filter housings in the future such as stainless steel, fiberglass, or plastic.
--	--

Other relevant information:	I'm starting to have my doubts about the lifespan of the granulated activated carbon units, as well.
------------------------------------	--

SYSTEM CHECK LIST	Arrival	Departure
#1 Vault Door	OK	OK
#2 Panel Door	OK	OK
#3 Vault Sump High	OK	OK
#4 Containment Pipe Alarm	OK	OK
#5 High Wet Well Alarm	OK	OK
#6 Pump #1 Fail (Yes / No)	NO	NO
#7 Pump # 2 Fail (Yes / No)	NO	NO
#8 Bag Filter Differential Pressure High	NO	NO
#9 Wet Well Level (Actual Measure Spoken)	2.04	OK
#10 Flow Rate	9 Gpm	9 Gpm
#11 #16; Reserved for future use		
FOR CURRENT STATUS CALL: (716) 743-1335		

Operator Name: Michael Walker

Operator Signature:

FRONTIER CHEMICAL – PENDLETON SITE
Pretreatment System Operator's Log

Date: 1-24-02

Time In:	2:00PM
Time Out:	4:00PM

Weather: Rain, snow

Precipitation: Trace

Temperature: 33°F

Reason for Visit: Monthly Inspection

	Reading		Time
Flowmeter Totalization Reading (arrival)	560,682	Gal	2:00PM
Flowmeter Totalization Reading (departure)	560,746	Gal	4:00PM
Flow rate during test, #1 @ 9.08 & #2 @ 8.89		Gpm	
Pump Hour Meter Readings: Pump #1	611.2	Hrs	2:00PM
Pump Hour Meter Readings: Pump #2	467.4	Hrs	2:00PM
Wet Well Level		Ft	
Pressure Sensor Reading (Bar Graph)	0.23	Psi	2:00PM

	Influent Gauge, Psi	Effluent Gauge, Psi	Differential, Psi
BF1	20	20	8
BF2	Off line	Off line	Off line
GAC1	17	3	14
GAC2	17	4	13

Change Filter Bags (Check One)	YES	<input checked="" type="checkbox"/>	NO	<input type="checkbox"/>	TIME:	2:30 PM
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**FRONTIER CHEMICAL – PENDLETON SITE
Pretreatment System Operator's Log**

Details:	No significant abnormalities or problems
-----------------	--

Actions taken to correct problems:	
---	--

Recommended actions to prevent future problems:	Replace bag filter # 2
--	------------------------

Other relevant information:	I have purchased and replenished the inventory of 5 and 25-micron filter bags.
------------------------------------	--

SYSTEM CHECK LIST	Arrival	Departure
#1 Vault Door	OK	OK
#2 Panel Door	OK	OK
#3 Vault Sump High	OK	OK
#4 Containment Pipe Alarm	OK	OK
#5 High Wet Well Alarm	OK	OK
#6 Pump #1 Fail (Yes / No)	NO	NO
#7 Pump # 2 Fail (Yes / No)	NO	NO
#8 Bag Filter Differential Pressure High	OK	OK
#9 Wet Well Level (Actual Measure Spoken)		
#10 Flow Rate	0	0
#11 #16; Reserved for future use		
FOR CURRENT STATUS CALL: (716) 743-1335		

Operator Name: Michael Walker & Craig Bove

FRONTIER CHEMICAL – PENDLETON SITE
Pretreatment System Operator's Log

Date: 2-03-02

Time In: 3:00PM
Time Out: 7:00PM

Weather: Windy

Precipitation: Trace of snow

Temperature: 28°F

Reason for Visit: Alarm Call – Pump #2 Failure

	Reading		Time
Flowmeter Totalization Reading (arrival)	597,586	Gal	
Flowmeter Totalization Reading (departure)	597,644	Gal	
Flow rate during test, #2 @ 8.90 after repair	0	Gpm	4:45PM
Pump Hour Meter Readings: Pump #1	645	Hrs	2:00PM
Pump Hour Meter Readings: Pump #2	503.9	Hrs	
Wet Well Level	2.7	Ft	3:00PM
Pressure Sensor Reading (Bar Graph)	30	Psi	5:00PM

	Influent Gauge, Psi	Effluent Gauge, Psi	Differential, Psi
BF1	30	28	2
BF2	Off line	Off line	Off line
GAC1	28	12	18
GAC2	28	12	18

Change Filter Bags (Check One)	YES	<input type="checkbox"/>	NO	<input checked="" type="checkbox"/>	TIME:	<input type="text"/>
---------------------------------------	------------	--------------------------	-----------	-------------------------------------	--------------	----------------------

**FRONTIER CHEMICAL – PENDLETON SITE
Pretreatment System Operator's Log**

Details:	The thermal units, (heaters), in the starter for pump #2 had tripped. Probably due to a "brown out" (fractional power failure), which causes line voltage to drop, but not cut out completely as in a black out. Most likely caused by the inclement weather (ice storm).
-----------------	---

Actions taken to correct problems:	Reset heater on motor starter for Pump #2, and tested system.
---	---

Recommended actions to prevent future problems:	Replace the bag filters and GAC units.
--	--

Other relevant information:	Bag filter #2 still offline, pressure starting to increase across the GAC units, possibly due to oxidation or calcification of carbon.
------------------------------------	--

SYSTEM CHECK LIST	Arrival	Departure
#1 Vault Door	OK	OK
#2 Panel Door	OK	OK
#3 Vault Sump High	OK	OK
#4 Containment Pipe Alarm	OK	OK
#5 High Wet Well Alarm	OK	OK
#6 Pump #1 Fail (Yes / No)	NO	OK
#7 Pump # 2 Fail (Yes / No)	YES	OK
#8 Bag Filter Differential Pressure High	NO	OK
#9 Wet Well Level (Actual Measure Spoken)	2.7'	
#10 Flow Rate	0	8.85
#11 #16; Reserved for future use		
FOR CURRENT STATUS CALL: (716) 743-1335		

Operator Name: Mike Walker

FRONTIER CHEMICAL – PENDLETON SITE
Pretreatment System Operator's Log

Date: 4-30-02

Time In: 2:00PM
Time Out: 5:00PM

Weather: Cloudy, windy, showers

Precipitation: 0.5"

Temperature: 48°F

Reason for Visit: Monthly Inspection

	Reading		Time
Flowmeter Totalization Reading (arrival)	597,586	Gal	2:00
Flowmeter Totalization Reading (departure)	597,644	Gal	5:00
Flow rate during test, #1 @ 9.01 & #2 @ 8.90	0	Gpm	2:00
Pump Hour Meter Readings: Pump #1	645	Hrs	2:00
Pump Hour Meter Readings: Pump #2	503.9	Hrs	2:00
Wet Well Level	1.62	Ft	4:00
Pressure Sensor Reading (Bar Graph)	0	Psi	2:00

	Influent Gauge, Psi	Effluent Gauge, Psi	Differential, Psi
BF1	30	22	8
BF2	Off line	Off line	Off line
GAC1	20	5	15
GAC2	20	5	15

Change Filter Bags (Check One) **YES** **NO** **TIME:** 3:30 PM

FRONTIER CHEMICAL – PENDLETON SITE
Pretreatment System Operator's Log

Date: 10-26-01

Time In: 8:40AM
Time Out: 12:40PM

Weather: High winds, Rain

Precipitation: 1"

Temperature: 45-50°F

Reason for Visit: Monthly Inspection

	Reading		Time
Flowmeter Totalization Reading (arrival)	531,664	Gal	8:40AM
Flowmeter Totalization Reading (departure)	531,697	Gal	12:30PM
Flow rate during test	0	Gpm	
Pump Hour Meter Readings: Pump #1	584.2	Hrs	
Pump Hour Meter Readings: Pump #2	440.2	Hrs	
Wet Well Level	1.8077	Ft	
Pressure Sensor Reading (Bar Graph)	.24	Psi	

	Influent Gauge, Psi	Effluent Gauge, Psi	Differential, Psi
BF1	0	0	0
BF2	0	0	0
GAC1	3	3	0
GAC2	3	3	0

Change Filter Bags (Check One) **YES** **NO** **TIME** **9:00AM**

FRONTIER CHEMICAL – PENDLETON SITE
Pretreatment System Operator's Log

Details	<ol style="list-style-type: none"> 1. Checked out alarm system with Steve Frank from Carrier Controls 2. Deleted all previous phone numbers on the autodialer and replaced them with Severson personnel numbers. 3. Changed bag filters 4. Ran the system on manual to check for leaks or other abnormalities.
----------------	--

Actions taken to correct problems:	
---	--

Recommended actions to prevent future problems:	Eventually the sealing surfaces on the bag filters 1&2 will have to be re-machined to prevent leaking, due to iron buildup and corrosion.
--	---

Other relevant information:	During the sampling event on 10-10-01, I filled in the varmint holes on the landfill cap. Since then there seems to be no varmint activity. It looks like the lawn crew also may have spread out some of the sand that had accumulated in that area.
------------------------------------	--

SYSTEM CHECK LIST	Arrival	Departure
#1 Vault Door	OK	OK
#2 Panel Door	OK	OK
#3 Vault Sump High	OK	OK
#4 Containment Pipe Alarm	OK	OK
#5 High Wet Well Alarm	OK	OK
#6 Pump #1 Fail (Yes / No)	NO	NO
#7 Pump # 2 Fail (Yes / No)	NO	NO
#8 Bag Filter Differential Pressure High	OK	OK
#9 Wet Well Level (Actual Measure Spoken)	1.8	
#10 Flow Rate	0	
#11 #16; Reserved for future use		
FOR CURRENT STATUS CALL: (716) 743-1335		

Operator Name: Michael Walker

Operator Signature:

**FRONTIER CHEMICAL – PENDLETON SITE
Pretreatment System Operator's Log**

Details:	Bag filter and GAC unit psi readings were taken during the operation of the system prior to the bag filter change out.
-----------------	--

Actions taken to correct problems:	GAC unit #1 is still leaking from the drain port on the bottom of the unit. I spent some time trying to repair the leakage using a "wet location" epoxy product that I have had success with on other jobs. I feel that inevitably the unit(s) will have to be replaced due to deterioration of the steel walls of the unit.
---	--

Recommended actions to prevent future problems:	Replace the bag filters and GAC units.
--	--

Other relevant information:	I have purchased and replenished the inventory of 5 and 25-micron filter bags.
------------------------------------	--

SYSTEM CHECK LIST	Arrival	Departure
#1 Vault Door	OK	OK
#2 Panel Door	OK	OK
#3 Vault Sump High	OK	OK
#4 Containment Pipe Alarm	OK	OK
#5 High Wet Well Alarm	OK	OK
#6 Pump #1 Fail (Yes / No)	NO	NO
#7 Pump # 2 Fail (Yes / No)	NO	NO
#8 Bag Filter Differential Pressure High	NO	NO
#9 Wet Well Level (Actual Measure Spoken)		1.62
#10 Flow Rate	0	0
#11 #16; Reserved for future use		
FOR CURRENT STATUS CALL: (716) 743-1335		

Operator Name: Mike Walker

ATTACHMENT C

ATTACHMENT C – Groundwater Data

C-1 Frontier Chemical – Pendleton Site
Semi-Annual Ground Water Monitoring Report
O'Brien & Gere
June 2002


C-2 Frontier Chemical – Pendleton Site
Town of Pendleton, Niagara County, NY Water Samples
Volume 1 of 3
O'Brien & Gere
April 2, 3, and 4, 2002

C-1 Frontier Chemical – Pendleton Site
Semi-Annual Ground Water Monitoring Report
O'Brien & Gere
June 2002

REPORT

**Frontier Chemical - Pendleton Site
Semi-Annual Ground Water
Monitoring Report**

Pendleton Site PRP Group



James R. Heckathorne, P.E.
Vice President

June 2002



5000 Brittonfield Parkway
Syracuse, New York 13221

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- 1 Piezometer ground water elevation summary table
- 2 Monitoring well ground water elevation summary table
- 3 Quarry Lake surface water elevation summary table
- 4 Summary of ground water analytical data – monitoring wells

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- 1 Hydraulic potential map
- 2 Ground Water Elevations – Piezometers P1 & P2
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- A Piezometer/monitoring well inspection forms
- B Ground water sampling logs
- C Data validation report (Volume 1 of 3 of the validated analytical data–separately bound)

1. Introduction

This Semi-Annual Ground Water Monitoring Report is for the Frontier Chemical - Pendleton Site (Site), located on Town Line Road in the Town of Pendleton, Niagara County, New York. This report is prepared based on the New York State Department of Environmental Conservation (NYSDEC)-approved Operation & Maintenance (O&M) Manual (O'Brien & Gere Engineers, 1997) for the Site, which addresses, among other items, long-term ground water monitoring at the Site.

This Semi-Annual Ground Water Monitoring Report presents a discussion of the following:

- Piezometer/monitoring well inspection
- Hydraulic evaluation of the capped area and collection trench
- Evaluation of ground water chemistry in the intermediate and deep ground water zones.

These items are described in the following sections.

1.1. Piezometer/monitoring well inspection

The piezometer/monitoring well inspection was conducted by Severson Environmental Services, Inc. on April 2 and 3, 2002. The inspections included piezometers (P-1 through P-8), standpipe (SP-1), and ground water monitoring wells (85-5R, URS-5D, 85-7R, URS-7D, URS-9I, URS-9D, 88-12C, 88-12D, URS-14I, and URS-14D) identified as the Site monitoring network in the O&M Manual for the Site.

Results of the inspection indicated that each piezometer and monitoring well was in an acceptable condition for collecting water elevation measurements and ground water samples. Similar maintenance issues to those identified in previous inspection reports were noted at the Site:

- Piezometer P-6 was angled +/-15 degrees from vertical.
- Monitoring Well 85-7R lacks concrete at the base of the casing.
- Monitoring Well URS-5D was found to have a broken hinge.
- Monitoring Well URS-7D has a broken and shifted concrete base.
- Monitoring Well URS-9I has a shifted casing and has a broken outer cap, and some settling was apparent, and there was approximately 0.25 ft of sediment in the bottom of the well.

April 2002 inspection forms are included in Appendix A.

1.2. Hydraulic evaluation of capped area and collection trench

In accordance with the O&M Manual, a complete round of static ground water elevations was collected from the piezometers (P-1 through P-8), standpipe (SP-1), and ground water monitoring wells (85-5R, URS-5D, 85-7R, URS-7D, URS-9I, URS-9D, 88-12C, 88-12D, URS-14I, and URS-14D). The ground water elevations were collected by Severson Environmental Services, Inc on April 2 and 3, 2002. Glynn Geotechnical Engineering, Inc. measured the surface water elevation of Quarry Lake on April 3, 2002. The ground water elevations measured in the piezometers and standpipe, and in the monitoring wells, are summarized on Tables 1 and 2, respectively. Quarry Lake elevations are summarized on Table 3. As shown on Table 3, the April 3, 2002 surface water elevation of Quarry Lake was recorded at 578.46 ft, which is above the constructed elevation of the outlet weir of between 577.2 ft and 577.5 ft.

The ground water elevations measured on April 2 and 3, 2002 are illustrated on Figure 1. These measurements are the twelfth round collected since remedial construction was substantially completed in August 1996. The water elevation data was used to evaluate the following:

- Whether an inward hydraulic gradient exists at the site by comparing water level measurements within the capped area (P-2, P-3, P-4, P-6, and P-7) to those measured outside the capped area (P-1, P-5, P-8, SP-1, and Quarry Lake)
- The ground water flow potential inside the capped area
- Whether the ground water collection trench is effectively controlling ground water migration away from the capped area.

The April 2002 ground water elevation data indicates that a hydraulic gradient exists at the site, except in the northern portion of the capped area, where the data indicates a slight outward hydraulic gradient. Figures 2, 3, and 4 illustrate the ground water elevation trend at piezometers P-1 and P-2, P-5 and P-6, and P-7 and P-8, respectively.

The ground water elevations in piezometers P-6 and P-7 inside the capped area are higher than the ground water elevations in piezometer P-1, installed outside the capped area.

An inward hydraulic gradient exists in the northern and southern portions of the capped area, as the ground water elevations inside the capped area (P-6 and P-7) are lower than the ground water elevations outside the capped area (P-5 and P-8, respectively). The ground water elevation in piezometer P-2, installed within the center of the capped area, is higher

than ground water elevations measured in piezometers P-1, P-5, and P-8 installed outside the capped area.

Although the data indicates an outward hydraulic gradient within the eastern portion of the capped area in the vicinity of piezometers P-1 and P-2, the ground water elevations collected in the piezometers installed within the capped area (P-2, P-3, P-4, P-6, and P-7) are lower than originally measured in June 1997 and continue to decline. The slight fluctuations in water elevations in the piezometers located within the capped area (P-2, P-3, P-4, P-6, and P-7) may be attributed to differences in: barometric pressure during sampling events; the movement of water within the capped area; and/or the low permeability of the materials. The fluctuations in water elevations in the piezometers located outside the capped area (P-1, P-5, and P-8) may be attributed to seasonal variations in addition to the factors cited for inside the capped area. In addition, analytical data collected during October 2001 from P-1 (located outside of the capped area) and P-2 (located within the capped area) did not contain concentrations of VOCs, SVOCs, PCBs or pesticides that exceeded New York State Class GA standards. Chromium in P-1, iron in P-1 and P-2, manganese in P-2, and sodium in P-1 and P-2 were the only inorganics detected at concentrations that exceeded New York State Class GA standards. Notwithstanding the absence of inward hydraulic gradients, potential contaminant migration in the P-1/P-2 area is not of concern given the analytical data for P-1 and P-2 collected during October 2001.

✓ Only one time sample don't
may be another
to more is necessary
before subsequent first

The contrasting fluctuations of ground water levels within and outside the capped area demonstrate that ground water within the capped area has been isolated. In addition, the ground water elevation in the standpipe (SP-1) in the ground water collection trench is lower than the water surface elevation of Quarry Lake, indicating that Quarry Lake is isolated from the capped area.

Ground water elevations in piezometers installed within the capped area along the northern (P-7), western (P-4), eastern (P-2), and southern (P-6) portions of the Site are higher than the invert elevations (bottom) of the ground water collection trench. The invert elevations of the ground water collection trench vary from 568.80 ft at its beginning to 563.37 ft at the wet well. This information indicates that the overall hydraulic gradient is to the west towards the ground water collection trench. In summary, the data indicates that the ground water collection trench is effectively removing ground water from within the capped area and that the water level within the capped area is decreasing.

As discussed in the March 1998 monitoring report (O'Brien & Gere Engineers, 1998), based on an average daily flow rate to the ground water collection trench of 170 gallons/day and a hydraulic conductivity adjacent to the ground water collection trench of 3.3×10^{-6} cm/sec, it is estimated that approximately 110 years will be required to dewater the containment area. However, the amount of water present within the capped area and the time to dewater beneath the capped area has minimal impact on the effectiveness of the containment, since hydraulic isolation

within the capped area has been established and ground water beneath the capped area is migrating towards the ground water collection trench.

1.3. Ground water sampling and chemistry

Sevenson Environmental Services, Inc. collected the tenth round of post-closure ground water samples between April 2 and 4, 2002. The ground water samples were collected in accordance with the protocols presented in the O&M Manual. Ground water samples were obtained from the ten ground water monitoring wells identified for sampling in the O&M Manual (85-5R, URS-5D, 85-7R, URS-7D, URS-9I, URS-9D, 88-12C, 88-12D, URS-14I, and URS-14D).

Following sample collection, the ground water samples were submitted to O'Brien & Gere Laboratories, Inc., for analysis of the parameters shown in Table 1-1.

Table 1-1. Ground water analytical methods.

Parameter	Method
VOCs	USEPA Method 8260B
Inorganics	USEPA Methods 6010B/7470A/7841
Cyanide	USEPA Method 9010B/9014

Source: O'Brien & Gere Engineers, Inc.

Ground water sampling logs and chain of custody forms are included in Appendix B.

In accordance with the O&M Manual and as approved by the NYSDEC, sampling and analysis target analytes include volatile organic compounds (VOCs) and polychlorinated biphenyls (PCBs)/pesticides. In accordance with the O&M Manual, sampling is to be continued semi-annually for TCL volatile organic compounds (VOCs) and target analyte list (TAL) metals during the second through fifth years of monitoring. In accordance with the NYSDEC-approved O&M Manual, the required sampling frequency will be re-evaluated after the fifth year of monitoring.

Purge water generated during sampling of the monitoring wells was contained, passed through a 25-micron bag filter, and discharged to manhole MH-3. The water in manhole MH-3 was conveyed through the on-site pre-treatment system prior to discharge to the Niagara County Sewer District (NCSD) interceptor system at manhole MH-16.

The laboratory analytical data was validated by Data Validation Services of North Creek, New York. The validation was performed in accordance with guidance from the most current editions of the United States

Environmental Protection Agency (USEPA) Contract Laboratory Procedures (CLP) National Functional Guidelines for Organic and Inorganic Data Review, and the USEPA Standard Operating Procedures (SOPs) HW-2 and HW-6. Results of the validation indicated that the samples were processed and analyzed in compliance with protocol requirements, and with adherence to quality criteria. All of the analytical results are useable, although minor qualifications are needed for some of the results. A copy of the data validation report is included in Appendix C.

Monitoring well analytical summary

Results of the ground water analyses (TCL VOCs and TAL Metals plus cyanide) from the monitoring wells, along with a comparison of the results with New York State Class GA standards, are summarized on Table 4. The New York State Class GA standards presented on Table 4 have been revised to reflect revisions to the New York State water quality standards (NYSDEC, 1999). In general, the April 2002 ground water chemistry is similar to previous sampling events.

Detected inorganic constituents that exceeded New York State Class GA standards from the ten monitoring wells sampled included iron at two locations (URS-5D and URS-9I) and sodium at ten locations (85-5R, URS-5D, 85-7R, URS-7D, URS-9I, URS-9D, 88-12C, 88-12D, URS-14I, and URS-14D). Concentrations of iron are similar to historical data. Concentrations of sodium exceeded New York State Class GA standards in background wells URS-14I and URS-14D at similar concentrations as detected in the monitoring wells. It is likely that the elevated concentrations of sodium and iron are naturally occurring and are not related to previous site activities.

VOCs were not detected in the Site monitoring wells above the New York State Class GA standards.

Statistical analysis

As specified in the O&M Manual, statistical analyses of the ground water chemistry data have been completed. A preliminary exploratory data analysis, using univariate statistics in SAS[®], was performed for nineteen analytes that have been detected a total of nine or more times in various monitoring wells since the initial post-construction sampling event in June 1997. Based on the results of the preliminary exploratory data analysis, concentrations for eighteen analytes (at $\alpha = 0.10$) do not appear to be normally distributed. Arsenic appears to be normally distributed.

The April 2002 data represents the results of the tenth baseline data collection effort. A t-test analysis was conducted based on the data collected from the post-construction sampling events, between June 1997 and April 2002, to evaluate whether downgradient concentrations exceed upgradient concentrations, based on a comparison of downgradient wells with the appropriate upgradient wells, URS-14I or URS-14D. Based on the results of the t-test, Table 1-2 presents a summary of locations where constituent concentrations in downgradient wells exceeded

concentrations at the appropriate upgradient comparison well, at a confidence level (α) equal to 0.05.

Table 1-2. Results of the t-test analysis.

Monitoring Well	Analytes with Higher Concentrations than in Upgradient Wells
85-5R	Calcium, Magnesium
URS-5D	Calcium, Manganese, Nickel, Sodium
85-7R	Calcium, Magnesium, Sodium
URS-7D	Calcium, Magnesium, Manganese, Potassium, Sodium
URS-9I	Calcium, Magnesium
88-12C	Calcium, Magnesium, Arsenic
88-12D	Calcium, Magnesium, Manganese, Potassium, Sodium

Source: O'Brien & Gere Engineers, Inc.

It should be noted that there are currently no New York State Class GA standards for calcium, magnesium, or potassium. Concentrations of arsenic and manganese have not been detected above the New York State Class GA standards during the post-construction sampling. Currently, nickel has not been detected above the New York State Class GA standard; however, since construction of the cap, nickel has been detected above the New York State Class GA standard twice in downgradient well URS-5D and once in the upgradient well URS-14I. In addition, it is likely that elevated concentrations of calcium, magnesium, manganese, potassium, and sodium are naturally occurring and are not related to previous site activities.

T-test analysis results indicate that sodium concentrations are greater in upgradient well URS-14I than in corresponding downgradient well 88-12C, at a confidence level of $\alpha=0.05$. T-test analysis results also indicate that calcium concentrations are greater in upgradient well URS-14D than in corresponding downgradient well URS-9D, at a confidence level of $\alpha=0.05$.

Also, t-test analysis results indicate that 1,2-dichloroethene concentrations are greater in upgradient well URS-14I than in corresponding downgradient well 85-7R and benzene concentrations are greater in upgradient well URS-14D than in corresponding downgradient well 88-12D. The detected concentrations of 1,2-dichloroethene and benzene do not exceed New York State Class GA standards for these compounds.

The number of constituents that are statistically different has increased because as the data set has become larger, the statistical analysis more precisely describes the variability at the Site, while decreasing the

uncertainty involved with these estimates. This is reflected in the lower calculated values for the standard error, which results in greater statistical power of the t-test. However, over time actual constituent concentrations have remained relatively constant and below Class GA ground water standards.

Although carbon disulfide was detected in some of the samples and was detected in the trip blanks at levels above typical laboratory contamination, it is not considered valid data. Many samples show evidence of sulfur dioxide, based on a review of the analytical spectrum by the data validator, which may be related to the detection of carbon disulfide. There are currently no New York State standards for carbon disulfide. In addition, carbon disulfide has been detected in the background wells.

2. Conclusions

Based on the data contained in this semi-annual report, the following conclusions are presented:

- The isolation of ground water within the capped area has been established and is being maintained by current operation and maintenance activities.
- The ground water elevation data indicates that ground water within the capped area is migrating to the west toward the ground water collection trench.
- The ground water elevation data indicates that the ground water collection trench is effectively removing shallow ground water from within the capped area.
- The April 2002 ground water chemistry collected from the monitoring wells is similar to previous sampling events.
- Results of the t-test analysis indicate that concentrations of arsenic (88-12C), calcium (85-5R, URS-5D, 85-7R, URS-7D, URS-9I, 88-12C, and 88-12D), magnesium (85-5R, 85-7R, URS-7D, URS-9I, 88-12C, and 88-12D), manganese (URS-5D, URS-7D, and 88-12D), nickel (URS-5D), potassium (URS-7D and 88-12D), and sodium (URS-5D, 85-7R, URS-7D, and 88-12D) exceed upgradient concentrations, based on a comparison of downgradient wells with the appropriate upgradient wells, URS-14I or URS-14D. There are currently no New York State Class GA standards for calcium, magnesium, or potassium. Concentrations of arsenic and manganese have not been detected above the New York State Class GA standards during the post-construction sampling. Nickel has been detected above New York State Class GA standards in both upgradient and downgradient wells since cap construction. It is likely that elevated concentrations of calcium, magnesium, manganese, potassium, and sodium are naturally occurring and are not related to previous site activities.
- Results of the t-test analysis indicated that several inorganic constituents and two VOCs (1,2-dichloroethene and benzene) were detected at higher concentrations in upgradient wells than in downgradient wells.
- From a statistical standpoint, the number of constituents that are statistically different has increased because as the data set has become larger, the statistical analysis more precisely describes the variability at the Site, while decreasing the uncertainty involved with

these estimates. This is reflected in the lower calculated values for the standard error, which results in greater statistical power of the t-test. However, over time actual constituent concentrations have remained relatively constant and below Class GA ground water standards.

- Iron was detected in two monitoring wells at concentrations above New York State Class GA standards. Concentrations of iron have previously been detected in the background wells at similar concentrations. In addition, results of the t-test analysis indicate that concentrations of iron are not statistically higher downgradient than upgradient at the Site, indicating that the capped area is not impacting ground water.
- Sodium was detected in ten monitoring wells at concentrations above New York State Class GA standards. It is likely that sodium is naturally occurring and is not related to previous site activities.
- Although carbon disulfide was detected in some of the samples at levels above typical laboratory contamination, many samples show evidence of sulfur dioxide, based on a review of the analytical spectrum by the data validator, which may be related to the detection of carbon disulfide. There are currently no New York State standards for carbon disulfide. In addition, carbon disulfide was detected in the background wells.
- Review of the ground water elevation data on Figure 1 indicates that inward hydraulic gradients were observed between piezometers within the capped area and piezometers outside of the capped area, with the exception of the vicinity of P-1 and P-2. Analytical data collected during October 2001 from P-1 (located outside of the capped area) and P-2 (located within the capped area) did not contain concentrations of VOCs, SVOCs, PCBs or pesticides that exceeded New York State Class GA standards. Chromium in P-1, iron in P-1 and P-2, manganese in P-2, and sodium in P-1 and P-2 were the only inorganics detected at concentrations that exceeded New York State Class GA standards. Notwithstanding the absence of inward hydraulic gradients, potential contaminant migration in the P-1/P-2 area is not of concern given the analytical data for P-1 and P-2 collected during October 2001.
- Since VOCs are more readily transported in ground water compared with SVOCs, PCBs, and inorganics, the absence of VOCs detected at concentrations above the New York State Class GA standards in the monitoring wells and piezometers surrounding the capped area provides further evidence that contaminants are not migrating from beneath the cap.

3. Recommendations

In accordance with the NYSDEC-approved O&M Manual, the required sampling frequency will be re-evaluated after the fifth year of monitoring. The April 2002 monitoring round represents the fifth year of post-closure monitoring, and as such, it is appropriate to revisit the sampling frequency for the Site at this time.

Since the initiation of the post-closure monitoring during 1997, VOCs and cyanide have not been detected at concentrations exceeding New York State Class GA ground water standards in the ground water monitoring wells. Also, the metal constituents detected, and their respective concentrations, have been relatively consistent over the previous five years. Given the consistency of the analytical data, the following proposed modifications to the current monitoring program are recommended:

- ✓ • Reduce the current semiannual analytical monitoring frequency for metals to an annual frequency. *OK*
- Discontinue cyanide analyses. *NO*
- Reduce the current semiannual analytical monitoring frequency for VOCs to once every two years. *NO*
- Maintain the current semiannual ground water elevation monitoring frequency to document hydraulic control of water beneath the capped area, and provide continued data for evaluation of potential modifications to the operation of the ground water collection system. *OK*

These proposed changes would be effective through the next five-year review period, which should occur during calendar year 2007, unless newly generated monitoring data indicates a different monitoring schedule is appropriate. Should the proposed modifications be acceptable to the NYSDEC, the first annual monitoring event would occur during the spring of 2003.

As the ground water elevations beneath the capped area are continuing to slowly decline, the operation of the ground water collection trench should continue in order to maintain the hydraulic control of water present within the capped area. Potential modifications to the operation of the ground water collection system will be evaluated during the next five-year review period, which should occur during 2007.

References

New York State Department of Environmental Conservation, 1999. Title 6, Chapter X, Subchapter A, Article 2, Part 703.5, Table 1, Water Quality Standards Surface Waters and Groundwater, Effective August 4, 1999.

O'Brien & Gere Engineers, 1997. Operation and Maintenance Manual, Frontier Chemical - Pendleton Site, Town of Pendleton, Niagara County, New York, Pendleton Site PRP Group, March 1997.

O'Brien & Gere Engineers, 1998. Frontier Chemical - Pendleton Site, Semi-Annual Ground Water Monitoring Report, Pendleton Site PRP Group, March 1998.

TABIES

Table 1
Frontier Chemical - Pendleton Site
Piezometer Ground Water Elevation Summary Table

Piezometer	Location	Top of Riser Elev. (ft)	Top of Cover Elev. (ft)	Depth (ft below riser)	Screened Elev. (ft)	Ground water elevation (ft)											
						6/24/97	9/30/97	2/23/98	4/28/98	9/17/98	2/9/99	8/11/99	2/7/00	8/9/00	2/12/01	10/8/01	4/2/02
P-1	(O) Eastern portion	583.21	583.30	16.4	576.8 - 566.8	579.54	577.09	579.25	579.60	575.62	572.97	575.83	573.76	576.66	577.24	574.27	575.11
P-2	(I) of capped area	582.90	583.20	15.7	577.2 - 567.2	579.60	579.24	578.20	578.37	578.76	578.96	578.27	575.59	577.60	577.24	577.36	576.30
P-3	(I) Center of capped area	606.33	606.64	39.7	586.6 - 566.6	580.36	580.38	580.06	579.94	579.80	579.96	579.38	579.29	578.95	577.24	578.64	578.79
P-4	(I) Adjacent to	582.31	583.85	15.6	576.7 - 566.7	577.15	577.43	576.70	575.11	575.96	574.58	575.56	573.96	575.11	573.90	576.51	573.30
SP-1	(T) Quarry Lake	579.86	580.07	15.0	bop = 564.9	<564.9	<564.9	<564.9	<564.9	<564.9	<564.9	<564.9	<564.9	<564.9	<564.9	<565.20	<564.95
P-5	(O) Southern portion	583.05	583.55	15.5	577.6 - 567.6	576.87	577.25	578.57	579.31	576.13	574.70	576.48	578.16	579.02	578.70	577.88	578.50
P-6	(I) of capped area	584.45	584.60	16.2	578.3 - 568.3	578.77	579.17	578.14	578.20	578.63	577.94	578.28	577.74	577.78	577.12	577.49	578.00
P-7	(I) Northern portion	580.97	582.00	15.9	575.0 - 565.0	578.33	578.62	576.45	576.17	577.15	574.43	575.55	573.02	574.97	573.21	576.04	572.86
P-8	(O) of capped area	582.83	583.00	17.3	575.5 - 565.5	577.76	578.87	578.75	579.61	576.90	574.72	576.15	576.12	578.26	577.43	576.15	578.35

Notes:

1. Elevation based on USGS Datum.
2. bop = bottom of pipe.
3. O = piezometer located outside of capped area.
4. I = piezometer located inside capped area.
5. T = standpipe located within the ground water collection trench.
6. The top of riser of piezometer P-4 was modified on 4/28/98 from 583.68 ft to 582.31 ft to allow clearance for the installation of a locking expansion plug beneath the flush-mounted cover.
7. The top of riser of piezometer P-7 was modified on 4/28/98 from 581.84 ft to 580.97 ft to allow clearance for the installation of a locking expansion plug beneath the flush-mounted cover.

Table 2
 Frontier Chemical - Pendleton Site
 Monitoring Well Ground Water Elevation Summary Table

Monitoring Well	Location	Top of Risers Elev. (ft)	Ground Elev. (ft)	Depth (ft below riser)	Screened Elev. (ft)	Ground water elevation (ft)											
						6/24/97	9/30/97	2/23/98	4/28/98	9/17/98	2/9/99	8/11/99	2/7/00	8/9/00	2/12/01	10/8/01	4/2/02
URS-14I	Upgradient well nest	581.14	580.84	31.0	550.1 - 555.1	577.15	578.77	580.24	580.14	574.76	577.35	575.42	577.68	577.74	579.58	573.49	578.64
URS-14D	in church parking lot	580.71	580.85	41.5	539.2 - 544.2	575.50	574.28	575.87	576.05	573.94	572.89	571.92	571.87	573.05	574.41	571.96	573.06
URS-9I	Southern well nest	581.68	579.90	46.0	535.6 - 540.6	575.38	574.22	575.69	575.91	573.76	572.67	571.82	571.78	572.98	574.17	571.95	572.98
URS-9D	along Town Line Road	580.80	579.00	46.5	534.3 - 539.3	575.36	574.21	575.68	575.89	573.64	572.66	571.24	571.66	572.94	574.15	571.91	572.80
85-5R	Middle well nest	580.84	578.70	40.0	540.9 - 542.9	574.70	573.97	575.39	575.70	574.98	572.78	571.92	571.10	572.95	573.76	571.78	573.19
URS-5D	along Town Line Road	580.60	578.00	49.9	530.8 - 535.8	574.73	574.02	575.42	575.74	573.80	572.12	571.97	571.39	572.89	573.80	571.98	572.85
85-7R	North well nest	577.90	576.60	27.8	550.2 - 552.2	575.09	574.21	575.53	575.87	573.74	572.30	572.04	571.52	573.10	573.95	571.80	572.95
URS-7D	along Town Line Road	579.35	575.50	39.9	539.5 - 544.5	575.15	574.35	575.60	575.99	573.75	572.40	571.99	571.57	573.13	574.14	571.80	573.00
88-12C	Well nest outside northeast	583.12	583.70	31.3	551.8 - 553.8	576.60	574.03	576.53	577.06	572.79	571.72	571.26	571.12	573.01	574.34	571.55	573.32
88-12D	portion of capped area	582.87	583.28	54.5	528.4 - 533.4	575.72	574.54	576.17	576.33	574.00	572.97	572.36	572.33	573.53	574.74	572.72	572.37

Notes:

1. Elevation based on USGS Datum.

Table 3
Frontier Chemical - Pendleton Site
Quarry Lake Surface Water Elevation Summary Table

Date	Quarry Lake Surface Water Elevation (ft) (1)
9/8/97	572.3
2/23/98	578.0
4/30/98	578.26
9/21/98	577.42
2/4/99	577.97
8/4/99	577.60
2/7/00	578.16 (2)
8/10/00	578.07
2/14/01	578.47
10/8/01	577.39
4/3/02	578.46

Notes:

1. Elevation based on USGS Datum.
2. Ice surface elevation.



Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA	85-SR	85-SR	85-SR	85-SR	85-SR	85-SR	85-SR
	Water Quality	Standards	08/01/90	02/01/91	10/01/92	06/25/97	02/24/98	09/18/98	
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
VOCs									
1,1,1-Trichloroethane	5	5 U	5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2,2-Tetrachloroethane	5	2 J	5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane	5	5 U	5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloroethane	5	5 U	5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-Butanone (MEK)	NC	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone (MIBK)	NC	2 J	10 U	10 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Acetone	NC	R	10 U	10 U	0.5 U	0.5 U	0.34 J	0.5 U	0.5 U
Benzene	1	[15]	5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromodichloromethane	NC	5 U	5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon disulfide	NC	5 U	5 U	5 U	0.5 U	0.74 U	0.11 U	0.5 U	0.5 U
Chlorobenzene	5	NA	NA	NA	NA	0.5 U	0.28 J	0.5 U	0.5 U
Chloroform	7	5 U	5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dibromochloromethane	5	5 U	5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	5	5 U	5 U	5 U	0.5 U	0.5 U	0.24 J	0.5 U	0.5 U
Methylene chloride	5	5 U	5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	5	5 U	5 U	5 U	0.5 U	0.5 U	0.14 J	0.5 U	0.5 U
Trichloroethene	5	5 U	5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl chloride	2	10 U	10 U	10 U	1 U	1 U	1 U	1 U	1 U
Xylene (total)	5	5 U	5 U	5 U	0.5 U	0.5 U	0.96	0.5 U	0.5 U
cis-1,2-Dichloroethene	5	NA	NA	NA	NA	0.5 U	0.5 U	0.5 U	0.5 U
Metals									
Aluminum	NC	214	37.8 B	153	100 U	100 U	300	100 U	100 U
Antimony	3	18 U	[42.4 B]	80 U	10 U	10 U	10 U	5 U	5 U
Arsenic	25	1 B	1 U	10 U	10 U	10 U	10 U	5 U	5 U
Barium	1000	73.5 B	23.4 B	15	40	40	80	50 J	50 J
Beryllium	NC	1 U	1 U	1 U	3 U	3 U	3 U	3 U	3 U
Cadmium	5	1 U	2 U	5 U	1 U	1 U	1 U	1 U	1 U
Calcium	NC	355000	378000	321000	270000	270000	220000	220000	220000
Chromium	50	7.5 B	4 U	5 U	10 U	10 U	30	10	10
Cobalt	NC	2 U	3 U	5 U	30 U	30 U	30 U	25 U	25 U
Copper	200	4 U	12 U	11	10 U	10 U	10 U	10 U	10 U
Cyanide	200	10 U	10 U	2 U	10 U	10 U	10 U	10 U	10 U
Iron	300	[669]	[915]	[419]	140	140	[2300]	190	190
Lead	25	1 U	1.2 B	10 U	10 U	10 U	10 U	5 U	5 U
Magnesium	NC	106000	170000	139000	130000	130000	85000	110000	110000

NOTES:
U - not detected, J.B - estimated value, R - unusable, NA - not analyzed, ND - not detected.
E - estimated, N - tentatively identified, NC - no criteria.
[] - exceeds standard.



Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA Water Quality Standards	85-5R	85-5R	85-5R	85-5R	85-5R	85-5R
	Sample Date	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	Units							
Manganese		300	40	42	50	260	40	
Mercury		0.7	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	
Nickel		100	48.1	5 U	50 U	50 U	50 U	
Potassium		NC	60700	6400	5000 U	5000 U	5000 U	
Selenium		10	2 U	5 U	10 U	10 U	5 U	
Silver		50	4 U	10 U	10 U	10 U	10 U	
Sodium		20000	[132000]	[100000]	[93000 J]	[58000]	[87000]	
Thallium		NC	1 U	80 U	10 U	8	1 UJ	
Vanadium		NC	4 B	5 U	50 U	50 U	50 U	
Zinc		NC	12.9 B	10 U	10 U	10 U	10 U	

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Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA Water Quality Standards	85-5R	85-5R	85-5R	85-5R	85-5R	85-5R
	Sample Date	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	Units							
VOCs								
1,1,1-Trichloroethane	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2,2-Tetrachloroethane	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloroethane	5	NA	NA	NA	NA	NA	NA	NA
2-Butanone (MEK)	NC	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
4-Methyl-2-pentanone (MIBK)	NC	5 U	5 UJ	5 U	5 U	5 U	5 U	5 U
Acetone	NC	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Benzene	1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromodichloromethane	NC	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon disulfide	NC	0.5 U	0.5 U	18	0.5 UJ	0.5 U	0.5 U	0.5 U
Chlorobenzene	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloroform	7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dibromochloromethane	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methylene chloride	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl chloride	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylene (total)	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	5	0.5 U	0.17 J	0.1 J	0.11 J	0.1 J	0.1 J	0.5 U
Metals								
Aluminum	NC	100 U	100 U	100 U	100 U	100 U	100 U	100 U
Antimony	3	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Arsenic	25	5 UJ	5 UJ	5 U	5 U	5 U	5 U	5 U
Barium	1000	100 U	60	60	60	60	60	50
Beryllium	NC	10 U	3 U	3 U	3 U	3 U	3 U	0.1 J
Cadmium	5	10 U	1 U	1 U	1 U	1 U	1 U	1 U
Calcium	NC	130000	220000	200000	190000	190000	140000	160000
Chromium	50	10 U	10 U	10 U	10 U	10 U	10 U	10 J
Cobalt	NC	50 U	25 U	25 U	20 U	20 U	25 U	20 U
Copper	200	10 U	10 U	10 U	10 U	10 U	10 U	1 J
Cyanide	200	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Iron	300	50 U	100	50 U	[420]	50 U	50 U	10 J
Lead	25	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Magnesium	NC	59000	99000	90000	85000	62000	61000	61000

NOTES:
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Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA Water Quality Standards	85-5R	85-5R	85-5R	85-5R	85-5R	85-5R
	Sample Date	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Manganese		300						
Mercury		0.7	50 U	110	130 J	50	50 J	
Nickel		100	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	10/11/01
Potassium		NC	50 U	50 U	50 U	50 U	10 J	
Selenium		10	5000 U	5000 U	5000 U	5000 U	4000 J	
Silver		50	5 UJ	5 UJ	5 UJ	5 UJ	5 U	
Sodium		20000	10 U	10 U	10 U	10 U	1 J	
Thallium		NC	[52000]	[67000]	[69000]	[62000]	[87000]	
Vanadium		NC	1 U	2 U	2 U	2 U	2 U	
Zinc		NC	50 U	50 U	50 U	50 U	2 J	
			10 U	10	10 U	20	10 U	

NOTES:
 U - not detected, J,B - estimated value, R - unusable, NA - not analyzed, ND - not detected.
 E - estimated, N - tentatively identified, NC - no criteria.
 [] - exceeds standard



Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA Water Quality Standards	85-5R	85-7R	85-7R	85-7R	85-7R	85-7R	85-7R
	Sample Date	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	Units								
VOCs									
1,1,1-Trichloroethane		5	0.5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2,2-Tetrachloroethane		5	0.5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane		5	0.5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloroethane		5	NA	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-Butanone (MEK)		NC	10 UJ	10 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
4-Methyl-2-pentanone (MIBK)		NC	5 U	10 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Acetone		NC	2.9 J	10 U	R	0.5 U	0.5 U	0.5 U	0.5 U
Benzene		1	0.5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromodichloromethane		NC	0.5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon disulfide		NC	0.5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chlorobenzene		5	0.5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloroform		7	0.5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dibromochloromethane		5	0.5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene		5	0.5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methylene chloride		5	2 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene		5	0.5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene		5	0.5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl chloride		2	1 U	10 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Xylene (total)		5	0.5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene		5	0.5 U	NA	NA	NA	0.14 J	0.19 U	0.19 U
Metals									
Aluminum		NC	100 U	277	265	249	100 U	100 U	100 U
Antimony		3	5 U	[28.3 B]	26 U	80 U	10 U	10 U	10 U
Arsenic		25	5 U	1.4 B	1.7 B	10 U	10 U	10 U	10 U
Barium		1000	50	91 B	143 B	106	100	80	80
Beryllium		NC	3 U	1 U	1 U	1 U	3 U	3 U	3 U
Cadmium		5	1 U	1 U	2 U	5 U	1 U	1 U	1 U
Calcium		NC	130000	354000	298000	389000	350000	350000	350000
Chromium		50	4 J	3 U	4 U	5 U	10 U	10 U	10 U
Cobalt		NC	20 U	2 U	3 U	5 U	30 U	30 U	30 U
Copper		200	1 J	4 U	12 U	8	10 U	10 U	10 U
Cyanide		200	10 U	10 U	10 U	2 U	10 UJ	10 U	10 U
Iron		300	10 J	[586]	[820]	[435]	190	[310]	[310]
Lead		25	5 U	1 U	2.6 B	10 U	10 U	10 U	10 U
Magnesium		NC	48000	119000	42600	124000	120000	120000	120000

NOTES:
U - not detected, J,B - estimated value, R - unusable, NA - not analyzed, ND - not detected.
E - estimated, N - tentatively identified, NC - no criteria.
[] - exceeds standard.



Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA Water Quality Standards	85-5R	85-7R	85-7R	85-7R	85-7R	85-7R
	Sample Date	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Manganese		300	30 J	40.5	31.5	30	70	80
Mercury		0.7	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel		100	2 J	7.4 B	13 U	5 U	50 U	50 U
Potassium		NC	2000 J	5540	5770	6700	5000	5000
Selenium		10	5 U	2 U	1 U	5 U	10 U	10 U
Silver		50	10 U	4 U	3 U	10 U	10 U	10 U
Sodium		20000	[32000]	[67900]	[38900]	[73100]	[66000 J]	[67000]
Thallium		NC	1 J	1 U	2 U	80 U	10 U	10
Vanadium		NC	50 U	2 U	2 U	5 U	50 U	50 U
Zinc		NC	10 J	3 U	21.5	10 U	10 U	10 U

NOTES: U - not detected, J,B - estimated value, R - unusable, NA - not analyzed, ND - not detected.
 E - estimated, N - tentatively identified, NC - no criteria.
 [] - exceeds standard.



Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA Water Quality Standards	85-7R	85-7R	85-7R	85-7R	85-7R	85-7R	85-7R
	Sample Date	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
VOCs									
1,1,1-Trichloroethane	5	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2,2-Tetrachloroethane	5	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane	5	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloroethane	5	5	NA	NA	NA	NA	NA	NA	NA
2-Butanone (MEK)	NC	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone (MIBK)	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acetone	NC	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromodichloromethane	NC	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon disulfide	NC	0.5 U	0.5 U	0.64 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chlorobenzene	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloroform	7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dibromochloromethane	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methylene chloride	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl chloride	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylene (total)	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	5	0.14 J	0.21 J	0.4 J	0.11 J	0.14 J	0.14 J	0.14 J	0.5 U
Metals									
Aluminum	NC	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U
Antimony	3	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Arsenic	25	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Barium	1000	50 J	100 U	100 U	40	40	80	80	50
Beryllium	NC	3 U	10 U	10 U	3 U	3 U	3 U	3 U	3 U
Cadmium	5	1 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U
Calcium	NC	420000	400000	440000	410000	390000	430000	430000	430000
Chromium	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Cobalt	NC	25 U	50 U	25 U	25 U	20 U	25 U	25 U	25 U
Copper	200	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Cyanide	200	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Iron	300	270	170	90	70	210	150	150	150
Lead	25	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Magnesium	NC	140000	140000	130000	130000	130000	140000	140000	140000

NOTES: U - not detected, J,B - estimated value, R - unusable, NA - not analyzed, ND - not detected.
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 [] - exceeds standard.



Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA Water Quality Standards	85-7R	85-7R	85-7R	85-7R	85-7R	85-7R	85-7R
	Sample Date	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Manganese		300	80	40	40	40	50 J	50	
Mercury		0.7	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	
Nickel		100	50 U	50 U	50 U	50 U	50 U	50 U	
Potassium		NC	6000	7000	6000	6000	6000	6000	
Selenium		10	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	
Silver		50	10 U	10 U	10 U	10 U	10 U	10 U	
Sodium		20000	[74000]	[85000]	[72000]	[71000]	[71000]	[69000]	
Thallium		NC	1 U	5 U	2 U	2 U	2 U	2 U	
Vanadium		NC	50 U	50 U	50 U	50 U	50 U	50 U	
Zinc		NC	10 U	10 U	10 U	10 U	10 U	10 U	

NOTES: U - not detected, JB - estimated value, R - unusable, NA - not analyzed, ND - not detected.
E - estimated, N - tentatively identified, NC - no criteria.
[] - exceeds standard.

Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA Water Quality Standards	85-7R	85-7R	85-7R	88-12C	88-12C	88-12C
	Sample Date	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	Units							
VOCs								
1,1,1-Trichloroethane	5	NA	0.5 U	0.5 U	5 U	5 U	5 U	0.5 U
1,1,2,2-Tetrachloroethane	5	NA	0.5 U	0.5 U	5 U	5 U	5 U	0.5 U
1,1-Dichloroethane	5	NA	0.5 U	0.5 U	5 U	5 U	5 U	0.5 U
1,2-Dichloroethane	5	NA	NA	NA	5 U	5 U	5 U	0.5 U
2-Butanone (MEK)	NC	NA	10 U	10 U	10 U	10 U	10 U	0.5 U
4-Methyl-2-pentanone (MIBK)	NC	NA	5 U	5 U	10 U	10 U	10 U	0.5 U
Acetone	NC	NA	10 U	10 U	10 U	10 U	10 U	0.5 U
Benzene	1	NA	0.5 U	0.5 U	5 U	5 U	5 U	0.5 U
Bromodichloromethane	NC	NA	0.5 U	0.5 U	5 U	5 U	5 U	0.5 U
Carbon disulfide	NC	NA	0.5 U	4.9	5 U	5 U	5 U	0.5 U
Chlorobenzene	5	NA	0.5 U	0.5 U	NA	NA	NA	NA
Chloroform	7	NA	0.5 U	0.5 U	5 U	5 U	5 U	0.5 U
Dibromochloromethane	5	NA	0.5 U	0.5 U	5 U	5 U	5 U	0.5 U
Ethylbenzene	5	NA	0.5 U	0.5 U	5 U	5 U	5 U	0.5 U
Methylene chloride	5	NA	2 U	2 U	5 U	5 U	5 U	0.5 U
Toluene	5	NA	0.5 U	0.5 U	5 U	5 U	5 U	0.5 U
Trichloroethene	5	NA	0.5 U	0.5 U	5 U	5 U	5 U	0.5 U
Vinyl chloride	2	NA	1 U	1 U	10 U	10 U	10 U	0.5 U
Xylene (total)	5	NA	0.5 U	0.5 U	5 U	5 U	5 U	0.5 U
cis-1,2-Dichloroethene	5	NA	0.12 J	0.5 U	NA	NA	NA	NA
Metals								
Aluminum	NC	100 U	NA	100 U	481	187 B	187 B	453
Antimony	3	5 U	NA	5 U	[19.2 B]	[28 B]	[28 B]	80 U
Arsenic	25	5 U	NA	5 U	10	12.3 B	14	14
Barium	1000	50	NA	40	11.4 B	17.3	14	14
Beryllium	NC	0.1 J	NA	3 U	1 U	1 U	1 U	1 U
Cadmium	5	1 U	NA	1 U	1 U	2 U	2 U	5 U
Calcium	NC	490000	NA	430000	62600	68500	68500	68900
Chromium	50	10 J	NA	5 J	21	4.6 B	4.6 B	5 U
Cobalt	NC	20 U	NA	20 U	2 U	3 U	3 U	5 U
Copper	200	10 U	NA	10 U	4.2 B	12 U	12 U	5
Cyanide	200	10 U	NA	10 U	10 U	10 U	10 U	2 U
Iron	300	100	NA	30 J	[1530]	[1040]	[1040]	[1560]
Lead	25	5 U	NA	5 U	1.5 B	1.2 B	1.2 B	10 U
Magnesium	NC	160000	NA	120000	88500	103000	103000	92500

NOTES:
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 E - estimated, N - tentatively identified, NC - no criteria.
 [] - exceeds standard.



Table 4
Frontier Chemical-Pendleton Site
Summary of Ground Water Analytical Data
April 2002

Compound	Sample ID	NYS Class GA Water Quality Standards	85-7R	85-7R	85-7R	88-12C	88-12C	88-12C
	Sample Date	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	Units							
Manganese		300	60 J	30 J	45.4	37.8	54	
Mercury		0.7	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	
Nickel		100	50 U	50 U	14.6 B	13 U	5 U	
Potassium		NC	7000	7000	2520 B	3200 B	3000	
Selenium		10	5 U	5 U	2 U	1 U	5 U	
Silver		50	10 U	10 U	4 U	3 U	10 U	
Sodium		20000	[81000]	[69000]	[34600]	[41100]	[41300]	
Thallium		NC	2 U	2 U	1 U	2 U	80 U	
Vanadium		NC	50 U	50 U	22.1 B	10 B	5 U	
Zinc		NC	10 U	5 J	10.1 B	15.7 B	10 U	

NOTES: U - not detected, J,B - estimated value, R - unusable, NA - not analyzed, ND - not detected.
 E - estimated, N - tentatively identified, NC - no criteria.
 [] - exceeds standard.

Date Printed: 05/29/02 16:29:16
 DBF File: N:\5829\22038\TEMPDATA.DBF
 FXP File: N:\5829\22038\TABLEPR.FXP

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File Number: 5829 22038

MONITORING WELL INTEGRITY CHECKLIST

Site Name: Frontier Chemical
Pendleton Site
Personnel: T.Prawel/ E.Rahn

Well Identification: URS-14D
Date: 9/17/98

WELL SPECIFICATIONS

Protective Casing: Above Ground Flush Mounted
Well Construction: PVC Stainless Steel
Well Diameter: 2-inch 4-inch
Depth to Ground Water: 6.77
Well Depth: 41.56

WELL INTEGRITY

- 1. Well identification clearly marked ? yes no
- 2. Well covers and locks in good condition and secure ? yes no
- 3. Is the well stand pipe vertically aligned and secure ? yes no
- 4. Is the concrete pad and surface seal in good condition ? yes no
- 5. Are soils surrounding the well pad eroded ? yes no
- 6. Is the well casing in good condition ? yes no
- 7. Is the measuring point on casing well marked ? yes no
- 8. Is there standing water in the annular space ? yes no
- 9. Is the stand pipe vented at the base to allow drainage ? ~~yes~~ ~~no~~ N/A

COMMENTS:

Ground water sampling logs

O'Brien & Gere Engineers, Inc.

Standard Ground Water Sampling Log

Date 9/8/98
 Site Name Frontier Chemical
 Location Pendleton, NY
 Project No 5829.003
 Personnel T.Prawel / E.Rahn

Weather Sunny 75°±
 Well # 85-5R
 Evacuation Method S.S. Bailer
 Sampling Method S.S. Bailer

Well Information:

Depth of Well * 37.97 ft.
 Depth to Water * 5.86 ft.
 Length of Water Column 32.11 ft.
 Volume of Water in Well 5.23 gal.(s)
 3X Volume of Water in Well 15.7 gal.(s)

Water Volume /ft. for:
 x 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 15 gal.(s)
 Did well go dry? No

* Measurements taken from Well Casing Protective Casing (Other, Specify)

Instrument Calibration:

pH Buffer Readings
 4.0 Standard _____
 7.0 Standard _____
 10.0 Standard _____

Conductivity Standard Readings
 84 S Standard _____
 1413 S Standard _____

Water parameters:

Gallons Removed
 initial 0
5
10

Temperature Readings
 initial 14.7
13.2
12.9

pH Readings
 initial 12.06
9.48
8.06

Conductivity Readings uS/cm
 initial 3270
1312
1630

Water Sample:

Time Collected 1455

Physical Appearance at Start

Color Dk Gray
 Odor None
 Turbidity (> 100 NTU) > 100
 Sheen/Free Product None

Physical Appearance at Sampling

Color _____
 Odor _____
 Turbidity (> 100 NTU) _____
 Sheen/Free Product _____

Samples collected:

Container Size	Container Type	# Collected	Field Filtered	Preservative	Container pH
40 ml (VOCs)	Glass	<u>23</u>	no	Yes - HCL	
1 liter (metals)	Plastic	1	yes	HNO3	
Quart (Cyanide)	Plastic	1	no	Na2So4	

Notes:

Dry @ 8:00's

* collected Blind Dup.

O'Brien & Gere Engineers, Inc.

Standard Ground Water Sampling Log

Date 9/18/98
 Site Name Frontier Chemical
 Location Pendleton, NY
 Project No 5829.003
 Personnel T.Prawel / E.Rahn

Weather Sunny 75°±
 Well # URS - 5D
 Evacuation Method S.S. Bailer
 Sampling Method S.S. Bailer

Well Information:

Depth of Well * 49.81 ft.
 Depth to Water * 6.80 ft.
 Length of Water Column 43.01 ft.
 Volume of Water in Well 7.01 gal.(s)
 3X Volume of Water in Well 21.0 gal.(s)

Water Volume /ft. for:
 x 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 18 gal.(s)
 Did well go dry? yes

* Measurements taken from Well Casing Protective Casing (Other, Specify)

Instrument Calibration:

pH Buffer Readings	Conductivity Standard Readings
4.0 Standard _____	84 S Standard _____
7.0 Standard _____	1413 S Standard _____
10.0 Standard _____	

Water parameters:

Gallons Removed	Temperature Readings	pH Readings	Conductivity Readings uS/cm
initial <u>0</u>	initial <u>21.4</u>	initial <u>8.20</u>	initial <u>1760</u>
<u>7</u>	<u>13.4</u>	<u>9.07</u>	<u>20120</u>
<u>14</u>	<u>13.9</u>	<u>8.60</u>	<u>2460</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Water Sample:

Time Collected 1430

Physical Appearance at Start

Color Clear
 Odor None
 Turbidity (> 100 NTU) >100
 Sheen/Free Product None

Physical Appearance at Sampling

Color _____
 Odor _____
 Turbidity (> 100 NTU) _____
 Sheen/Free Product _____

Samples collected:

Container Size	Container Type	# Collected	Field Filtered	Preservative	Container pH
40 ml (VOCs)	Glass	<u>23</u>	no	Yes - HCL	
1 liter (metals)	Plastic	1	yes	HNO3	
Quart (Cyanide)	Plastic	1	no	Na2So4	

Notes:
Dry @ 16 gal's

O'Brien & Gere Engineers, Inc.

Standard Ground Water Sampling Log

Date 9/18/98
 Site Name Frontier Chemical
 Location Pendleton, NY
 Project No 5829.003
 Personnel T.Prawel / E.Rahn

Weather sunny 80°
 Well # 05-7R
 Evacuation Method S.S. Bailer
 Sampling Method S.S. Bailer

Well Information:

Depth of Well * 27.70 ft.
 Depth to Water * 4.14 ft.
 Length of Water Column 23.54 ft.
 Volume of Water in Well 3.83 gal.(s)
 3X Volume of Water in Well 11.5 gal.(s)

Water Volume /ft. for:
 x 2" Diameter Well = 0.163 X LWC
4" Diameter Well = 0.653 X LWC
6" Diameter Well = 1.469 X LWC

Volume removed before sampling 12 gal.(s)
 Did well go dry? No

* Measurements taken from Well Casing Protective Casing (Other, Specify)

Instrument Calibration:

pH Buffer Readings
 4.0 Standard _____
 7.0 Standard _____
 10.0 Standard _____

Conductivity Standard Readings
 84 S Standard _____
 1413 S Standard _____

Water parameters:

Gallons Removed	Temperature Readings	pH Readings	Conductivity Readings uS/cm
initial <u>0</u>	initial <u>15.2</u>	initial <u>7.85</u>	initial <u>18.70</u>
<u>4</u>	<u>13.0</u>	<u>7.73</u>	<u>1740</u>
<u>3</u>	<u>11.9</u>	<u>7.02</u>	<u>2240</u>
<u>12</u>	<u>11.9</u>	<u>7.00</u>	<u>2220</u>
_____	_____	_____	_____
_____	_____	_____	_____

Water Sample:

Time Collected 1650

Physical Appearance at Start

Color lt Gray
 Odor None
 Turbidity (> 100 NTU) > 100
 Sheen/Free Product None

Physical Appearance at Sampling

Color Clear
 Odor Slight Sulphur
 Turbidity (> 100 NTU) 7100
 Sheen/Free Product None

Samples collected:

Container Size	Container Type	# Collected	Field Filtered	Preservative	Container pH
40 ml (VOCs)	Glass	<u>23</u>	no	Yes - HCL	
1 liter (metals)	Plastic	1	yes	HNO3	
Quart (Cyanide)	Plastic	1	no	Na2So4	

Notes:

Date 9/18/98
 Site Name Frontier Chemical
 Location Pendleton, NY
 Project No 5829.003
 Personnel T.Prawel / E.Rahn

Weather Sunny 80°±
 Well # URS-7B
 Evacuation Method S.S. Bailer
 Sampling Method S.S. Bailer

Well Information:

Depth of Well * 39.80 ft.
 Depth to Water * 5.60 ft.
 Length of Water Column 34.2 ft.
 Volume of Water in Well 5.57 gal.(s)
 3X Volume of Water in Well 16.7 gal.(s)

Water Volume /ft. for:
 x 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 17 gal.(s)
 Did well go dry? No

* Measurements taken from Well Casing Protective Casing (Other, Specify)

Instrument Calibration:

pH Buffer Readings
 4.0 Standard _____
 7.0 Standard _____
 10.0 Standard _____

Conductivity Standard Readings
 84 S Standard _____
 1413 S Standard _____

Water parameters:

Gallons Removed

Temperature Readings

pH Readings

Conductivity Readings uS/cm

initial 0
5.5
11
16.75

initial 15.8
12.8
12.5
12.9

initial 7.68
6.89
6.63
7.03

initial 1649
2620
2500
2540

Water Sample:

Time Collected 11:30

Physical Appearance at Start

Color Clear
 Odor Sulfur
 Turbidity (> 100 NTU) >100
 Sheen/Free Product None

Physical Appearance at Sampling

Color Clear
 Odor Sulfur
 Turbidity (> 100 NTU) >100
 Sheen/Free Product None

Samples collected:

Container Size	Container Type	# Collected	Field Filtered	Preservative	Container pH
40 ml (VOCs)	Glass	<u>23</u>	no	Yes - HCL	
1 liter (metals)	Plastic	1	yes	HNO3	
Quart (Cyanide)	Plastic	1	no	Na2So4	

Notes:

O'Brien & Gere Engineers, Inc.

Standard Ground Water Sampling Log

Date 9/17/98
 Site Name Frontier Chemical
 Location Pendleton, NY
 Project No 5829.003
 Personnel T.Prawel / E.Rahn

Weather Sunny 65° I
 Well # URS - ~~12~~ 9I TP
 Evacuation Method S.S. Bailer
 Sampling Method S.S. Bailer

Well Information:

Depth of Well * 46.33 ft.
 Depth to Water * 7.92 ft.
 Length of Water Column 38.41 ft.
 Volume of Water in Well 6.26 gal.(s)
 3X Volume of Water in Well 18.8 gal.(s)

Water Volume /ft. for:
 x 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 20 gal.(s)
 Did well go dry? No

* Measurements taken from Well Casing Protective Casing (Other, Specify)

Instrument Calibration:

pH Buffer Readings
 4.0 Standard _____
 7.0 Standard _____
 10.0 Standard _____

Conductivity Standard Readings
 84 S Standard _____
 1413 S Standard _____

Water parameters:

Gallons Removed	Temperature Readings	pH Readings	Conductivity Readings uS/cm
initial <u>0</u>	initial <u>11.8</u>	initial <u>8.10</u>	initial <u>1296</u>
<u>6</u>	<u>11.9</u>	<u>7.89</u>	<u>1235</u>
<u>12</u>	<u>11.9</u>	<u>7.64</u>	<u>1214</u>
<u>19</u>	<u>11.8</u>	<u>7.32</u>	<u>1139</u>
_____	_____	_____	_____
_____	_____	_____	_____

Water Sample:

Time Collected 10:00

Physical Appearance at Start

Color Dark Grey
 Odor None
 Turbidity (> 100 NTU) 7.00
 Sheen/Free Product None

Physical Appearance at Sampling

Color Lt Grey
 Odor Slight
 Turbidity (> 100 NTU) 7.00
 Sheen/Free Product None

Samples collected:

Container Size	Container Type	# Collected	Field Filtered	Preservative	Container pH
40 ml (VOCs)	Glass	<u>23</u>	no	Yes - HCL	
1 liter (metals)	Plastic	<u>1</u>	yes	HNO3	
Quart (Cyanide)	Plastic	<u>1</u>	no	Na2So4	

Notes:

Date 9/18/98
 Site Name Frontier Chemical
 Location Pendleton, NY
 Project No 5829.003
 Personnel T.Prawel / E.Rahn

Weather Sunny 65°
 Well # URS - ~~103~~ 9D7P
 Evacuation Method S.S. Bailer
 Sampling Method S.S. Bailer

Well Information:

Depth of Well * 50.83 ft.
 Depth to Water * 7.16 ft.
 Length of Water Column 43.72 ft.
 Volume of Water in Well 7.13 gal.(s)
 3X Volume of Water in Well 21.4 gal.(s)

Water Volume /ft. for:
 x 2" Diameter Well = 0.163 X LWC
4" Diameter Well = 0.653 X LWC
6" Diameter Well = 1.469 X LWC

Volume removed before sampling 21 gal.(s)
 Did well go dry? no

* Measurements taken from Well Casing Protective Casing (Other, Specify)

Instrument Calibration:

pH Buffer Readings	Conductivity Standard Readings
4.0 Standard _____	84 S Standard _____
7.0 Standard _____	1413 S Standard _____
10.0 Standard _____	

Water parameters:

Gallons Removed	Temperature Readings	pH Readings	Conductivity Readings uS/cm
initial <u>0</u>	initial <u>13.8</u>	initial <u>8.37</u>	initial <u>142.8</u>
<u>7</u>	<u>11.8</u>	<u>7.76</u>	<u>1313</u>
<u>14</u>	<u>12.3</u>	<u>7.51</u>	<u>1305</u>
<u>21</u>	<u>11.6</u>	<u>7.17</u>	<u>1344</u>
_____	_____	_____	_____
_____	_____	_____	_____

Water Sample:

Time Collected 1100

Physical Appearance at Start

Color Clear
 Odor None
 Turbidity (> 100 NTU) >100
 Sheen/Free Product None

Physical Appearance at Sampling

Color Clear
 Odor None
 Turbidity (> 100 NTU) < 100
 Sheen/Free Product None

Samples collected:

Container Size	Container Type	# Collected	Field Filtered	Preservative	Container pH
40 ml (VOCs)	Glass	<u>23</u>	no	Yes - HCL	
1 liter (metals)	Plastic	1	yes	HNO3	
Quart (Cyanide)	Plastic	1	no	Na2So4	

Notes:

* Collected MS/MSD

Date 9/1/98
 Site Name Frontier Chemical
 Location Pendleton, NY
 Project No 5829.003
 Personnel T.Prawel / E.Rahn

Weather Sunny 75° ±
 Well # 88-12 C
 Evacuation Method S.S. Bailer
 Sampling Method S.S. Bailer

Well Information:

Depth of Well * 31.29 ~~53.5~~ ft.
 Depth to Water * 10.33 ft.
 Length of Water Column 20.96 ft.
 Volume of Water in Well 3.41 gal.(s)
 3X Volume of Water in Well 10.2 gal.(s)

Water Volume /ft. for:
 x 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 10.2 gal.(s)
 Did well go dry? No

* Measurements taken from Well Casing Protective Casing (Other, Specify)

Instrument Calibration:

pH Buffer Readings	Conductivity Standard Readings
4.0 Standard _____	84 S Standard _____
7.0 Standard _____	1413 S Standard _____
10.0 Standard _____	

Water parameters:

Gallons Removed	Temperature Readings	pH Readings	Conductivity Readings uS/cm
initial <u>∅</u>	initial <u>06</u>	initial <u>8.92</u>	initial <u>846</u>
<u>3</u>	<u>13.3</u>	<u>8.72</u>	<u>9.48</u>
<u>7</u>	<u>12.7</u>	<u>8.16</u>	<u>10.41</u>
<u>10.2</u>	<u>11.8</u>	<u>7.45</u>	<u>10.8</u>
_____	_____	_____	_____
_____	_____	_____	_____

Water Sample:

Time Collected 1800

Physical Appearance at Start

Color lt Red Brown
 Odor None
 Turbidity (> 100 NTU) > 100
 Sheen/Free Product None

Physical Appearance at Sampling

Color lt Red Brown
 Odor Slight Sulphur
 Turbidity (> 100 NTU) > 100
 Sheen/Free Product None

Samples collected:

Container Size	Container Type	# Collected	Field Filtered	Preservative	Container pH
40 ml (VOCs)	Glass	<u>23</u>	no	Yes - HCL	
1 liter (metals)	Plastic	1	yes	HNO3	
Quart (Cyanide)	Plastic	1	no	Na2So4	

Notes:

O'Brien & Gere Engineers, Inc.

Standard Ground Water Sampling Log

Date 9/1/98
 Site Name Frontier Chemical
 Location Pendleton, NY
 Project No 5829.003
 Personnel T.Prawel / E.Rahn

Weather Sunny 75° ±
 Well # 88-12D
 Evacuation Method S.S. Bailer
 Sampling Method S.S. Bailer

Well Information:

Depth of Well * 53.39 ft.
 Depth to Water * 8.87 ft.
 Length of Water Column 44.52 ft.
 Volume of Water in Well 7.3 gal.(s)
 3X Volume of Water in Well 21.9 gal.(s)

Water Volume /ft. for:
 x 2" Diameter Well = 0.163 X LWC
4" Diameter Well = 0.653 X LWC
6" Diameter Well = 1.469 X LWC

Volume removed before sampling 21 gal.(s)
 Did well go dry? No

* Measurements taken from Well Casing Protective Casing (Other, Specify)

Instrument Calibration:

pH Buffer Readings	Conductivity Standard Readings
4.0 Standard _____	84 S Standard _____
7.0 Standard _____	1413 S Standard _____
10.0 Standard _____	

Water parameters:

Gallons Removed	Temperature Readings	pH Readings	Conductivity Readings uS/cm
initial <u>0</u>	initial <u>17.0C</u>	initial <u>7.30</u>	initial <u>3180</u>
<u>7</u>	<u>12.7</u>	<u>5.82</u>	<u>5730</u>
<u>14</u>	<u>13.0</u>	<u>5.61</u>	<u>7530</u>
<u>21</u>	<u>12.8</u>	<u>5.31</u>	<u>7620</u>
_____	_____	_____	_____
_____	_____	_____	_____

Water Sample:

Time Collected 1910

Physical Appearance at Start

Color DK Brown
 Odor None
 Turbidity (> 100 NTU) >100
 Sheen/Free Product None

Physical Appearance at Sampling

Color Clear
 Odor Sulphur
 Turbidity (> 100 NTU) >100
 Sheen/Free Product None

Samples collected:

Container Size	Container Type	# Collected	Field Filtered	Preservative	Container pH
40 ml (VOCs)	Glass	<u>23</u>	no	Yes - HCL	
1 liter (metals)	Plastic	<u>1</u>	yes	HNO3	
Quart (Cyanide)	Plastic	<u>1</u>	no	Na2So4	

Notes:

Date 9/17/98
 Site Name Frontier Chemical
 Location Pendleton, NY
 Project No 5829.003
 Personnel T.Prawel / E.Rahn

Weather Sunny 78°
 Well # URS-14I
 Evacuation Method S.S. Bailer
 Sampling Method S.S. Bailer

Well Information:

Depth of Well * 31.07 ft.
 Depth to Water * 6.38 ft.
 Length of Water Column 24.69 ft.
 Volume of Water in Well 4.02 gal.(s)
 3X Volume of Water in Well 12.07 gal.(s)

Water Volume /ft. for:
 x 2" Diameter Well = 0.163 X LWC
4" Diameter Well = 0.653 X LWC
6" Diameter Well = 1.469 X LWC

Volume removed before sampling 8 gal.(s)
 Did well go dry? yes

* Measurements taken from Well Casing Protective Casing (Other, Specify)

Instrument Calibration:

pH Buffer Readings		Conductivity Standard Readings	
4.0 Standard	_____	84 S Standard	_____
7.0 Standard	_____	1413 S Standard	_____
10.0 Standard	_____		

Water parameters:

Gallons Removed	Temperature Readings °C	pH Readings	Conductivity Readings uS/cm
initial <u>0</u>	initial <u>15.4C</u>	initial <u>9.38</u>	initial <u>511</u>
<u>4</u>	<u>13.0</u>	<u>9.33</u>	<u>446</u>
<u>8</u>	<u>13.2</u>	<u>9.30</u>	<u>421</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Water Sample:

Time Collected 1630

Physical Appearance at Start

Color Clear
 Odor None
 Turbidity (> 100 NTU) >100
 Sheen/Free Product None

Physical Appearance at Sampling

Color lt Brown
 Odor Slight Sulphur
 Turbidity (> 100 NTU) >100
 Sheen/Free Product None

Samples collected:

Container Size	Container Type	# Collected	Field Filtered	Preservative	Container pH
40 ml (VOCs)	Glass	<u>23</u>	no	Yes - HCL	
1 liter (metals)	Plastic	<u>1</u>	yes	HNO3	
Quart (Cyanide)	Plastic	<u>1</u>	no	Na2So4	

Notes:

O'Brien & Gere Engineers, Inc.

Standard Ground Water Sampling Log

Date 9/17/98
 Site Name Frontier Chemical
 Location Pendleton, NY
 Project No 5829.003
 Personnel T.Prawel / E.Rahn

Weather Sunny 78°
 Well # URS-14D
 Evacuation Method S.S. Bailer
 Sampling Method S.S. Bailer

Well Information:

Depth of Well * 41.56 ft.
 Depth to Water * 6.77 ft.
 Length of Water Column 34.79 ft.
 Volume of Water in Well 5.67 gal.(s)
 3X Volume of Water in Well 17.01 gal.(s)

Water Volume /ft. for:
 x 2" Diameter Well = 0.163 X LWC
4" Diameter Well = 0.653 X LWC
6" Diameter Well = 1.469 X LWC

Volume removed before sampling 17 gal.(s)
 Did well go dry? No

* Measurements taken from Well Casing Protective Casing (Other, Specify)

Instrument Calibration:

pH Buffer Readings	Conductivity Standard Readings
4.0 Standard _____	84 S Standard _____
7.0 Standard _____	1413 S Standard _____
10.0 Standard _____	

Water parameters:

Gallons Removed	Temperature Readings °C	pH Readings	Conductivity Readings uS/cm
initial <u>0</u>	initial <u>15.3</u>	initial <u>10.79</u>	initial <u>590</u>
<u>5.00</u>	<u>14.8</u>	<u>8.77</u>	<u>766</u>
<u>11.</u>	<u>14.2</u>	<u>4.09</u>	<u>1080</u>
<u>17</u>	<u>14.4</u>	<u>4.67</u>	<u>1760</u>
_____	_____	_____	_____
_____	_____	_____	_____

Water Sample:

Time Collected 16⁰⁰

Physical Appearance at Start

Color Clear
 Odor None
 Turbidity (> 100 NTU) >100
 Sheen/Free Product None

Physical Appearance at Sampling

Color Clear
 Odor Sulfur
 Turbidity (> 100 NTU) Low
 Sheen/Free Product None

Samples collected:

Container Size	Container Type	# Collected	Field Filtered	Preservative	Container pH
40 ml (VOCs)	Glass	<u>23</u>	no	Yes - HCL	
1 liter (metals)	Plastic	<u>1</u>	yes	HNO3	
Quart (Cyanide)	Plastic	<u>1</u>	no	Na2So4	

Notes:

O'Brien & Gere Laboratories, Inc.

5000 Brittonfield Parkway
 East Syracuse, New York 13057
 (315) 437-0200

Chain of Custody
 1 of 2

Client: FRONTIER CHEMICAL
 Project: PENDLETON SITE
 Sampled by: T. PEAWEL, E. RAHN
 Client Contact: _____ Phone #: _____

Sample Description				Analysis/Method	
Sample Location	Date Collected	Time Collected	Sample Matrix	Comp. or Grab	No. of Containers
BB-12C	9/17/98	1800	Water	Grab	5
BB-12D	9/17/98	1910	↓	↓	5
URS-14J	9/17/98	1630	↓	↓	5
URS-14D	9/17/98	1600	Water	Grab	5
Equipment Blank	9/18/98	0845	Water	Grab	5
URS-9I	9/18/98	1020	↓	↓	5
URS-9D	9/18/98	1100	↓	↓	5
BS-SR	9/18/98	1455	↓	↓	5
URS-5D	9/18/98	1430	↓	↓	5
BS-TR	9/18/98	1650	↓	↓	5
URS-7D	9/18/98	1630	Water	Grab	5

Relinquished by: Edwin B. Rahn Date: 9/18/98 Time: 2215
 Received by: _____ Date: _____ Time: _____
 Relinquished by: _____ Date: _____ Time: _____
 Received by: _____ Date: _____ Time: _____
 Relinquished by: _____ Date: _____ Time: _____
 Received by: Mark F. Jackson Date: 9/20/98 Time: 09:30
 Shipment Method: _____ Airbill Number: _____

Turnaround Time Required:
 Routine _____
 Rush (Specify) _____
 Cooler Temperature: 4°C

Comments: Loc's preserved w/ HCL
CW preserved w/ NaOH
Metals Filtered in field
Preserved w/ HNO3

O'Brien & Gere Laboratories, Inc.

5000 Brittonfield Parkway
East Syracuse, New York 13057
(315) 437-0200

Chain of Custody
2 of 2

Client: FRONTIER CHEMICAL
 Project: PENTLETON
 Sampled by: T. Praval, E. Rabin
 Client Contact: _____ Phone # _____

Sample Description

Sample Location	Date Collected	Time Collected	Sample Matrix	Comp. or Grab	No. of Containers	Analysis/Method	Comments
URS -9D ms/msd	9/18/98	1100	water	Grab	15	YOC's 8620 CN Metals	
Tap Blanks	-	6:30	water	15	3		
Blind Trip	-	-	Water Grab	5	3		

Relinquished by: *Edwin Blabin* Date: 9/18/98 Time: 2215 Received by: _____ Date: _____ Time: _____
 Relinquished by: _____ Date: _____ Time: _____ Received by: _____ Date: _____ Time: _____
 Relinquished by: _____ Date: _____ Time: _____ Received by: *Wanda F. Jackson* Date: 9/20/98 Time: 09:30
 Shipment Method: _____ Airbill Number: _____

Turnaround Time Required:
 Routine _____
 Rush (Specify) _____
 Cooler Temperature: 40°
 Comments: _____

ATTACHMENT D

Attachment D – Site Maintenance Work Items and Field Observation Reports

- 1 Site Maintenance Work Items
- 2 Field Observation Reports

- 1 Site Maintenance Work Items
 - Correspondence dated June 4, 1998 from Glynn Geotechnical Engineering



RECEIVED
APR 27 1998

June 4, 1998

Pendleton PRP Group
P.O. Box 248
1186 Lower River Road
Charleston, Tennessee 37310

Attn: Mr. John Burns

Subject: Frontier Chemical - Pendleton Site
Wetlands Planting/Site Maintenance Work Items
GGE 94-1014-O

Dear Mr. Burns:

This letter report is forwarded to summarize and document work activities completed during April, 1998 at the Frontier Chemical - Pendleton Site. Completed work items included planting the engineered wetlands along the north side of Quarry Lake and various site maintenance items. The wetland's planting and site maintenance items were completed by Severson Environmental Services, Inc. (SES) and by an SES landscaping subcontractor, Wolf's Nursery. Glynn Geotechnical Engineering (GGE) performed periodic site visits on April 27 - April 30, 1998 to document the completed activities and prepare this summary report.

SES and Wolf's Nursery crews mobilized to the Pendleton Site on April 27, 1998. Work was completed early on April 30, 1998 and the contractor's crews and equipment were demobilized from the site. The PPRP notified the New York State Department of Environmental Conservation (NYSDEC) prior to commencing the site work and a NYSDEC representative visited the site on April 27, 1998 to observe the wetlands planting. PPRP representatives were also on site periodically to observe the work activities and request completion of additional maintenance items.

GGE has revised and is enclosing the O'Brien & Gere record drawings G-5 and G-7 to note the completed work items. Photographs (Exhibits A-F) for the respective work items are also attached. Specific work items completed during the above referenced activities are described following:

Wetlands Planting

Wolf's Nursery completed the wetlands planting along the north edge of Quarry Lake to complete the final contract item of the Site Remediation Contract between the PPRP and SES. The planting completed wetlands replacement in the submerged zones A-C as described on the O'Brien & Gere "Final Site Plan" design drawing G-7. The A-C wetland zones are located in areas with a water depth of 0-3'. The design wetland zones A-C had become inundated during the previous winter to allow for completion of the submerged planting. These areas were seeded previously in accordance with the zone D (seasonally flooded area) planting schedule at the completion of construction in 1996. The earlier seeding provided temporary vegetative cover and a substrate for the subsequent wetlands. The planted wetlands included an area along approximately 900 l.f. of the north lake edge. Planting zones were dictated by water depths as indicated on the O'B&G design drawing. The wetland planting fulfilled the area requirements of the Remedial Design and complies with the created wetland area noted in a March 7, 1995 O'B&G correspondence to the ACCE.

The wetlands planting was completed in general compliance with O'B&G's project design specifications (section 02296). Wolf's crew used a gage pole to determine water depth and location markers along the shoreline for planting spacings. Tubers, rootstock and seed were supplied by a NYS Department of Agriculture Registered Nursery, Southern Tier Consulting. Planting packets were prepared on site by Wolf. Seeds, tubers and rootstock were hand spread / planted by Wolf's crew.

Capped Area Repairs

SES and Wolf's Nursery crews placed additional topsoil at and reseeded areas of the cap that were noted to be depressed and/or were thinly vegetated. The repairs included placing and handraking topsoil over the repair area and broadcasting grass seed. Larger repair areas were also covered with straw matting after seed placement. The repair areas were primarily at the south end of the cap and near midslope along the lakeside of the cap. Two loads (approximately 16 c.y.) of topsoil were delivered to site to complete the cap repairs. Topsoil was provided by Wolf Nurseries from a source approved by the NYSDOT. NYSDOT topsoil item 713-01 complies with the project contract specifications (Section 02981).

Piezometers P-4, P-7

SES trimmed the tops of the PVC risers at piezometers P-4 and P-7. The piezometer risers were trimmed to allow for installation of the locking J-plugs beneath the flush-mount covers. The trimmings were measured and drawing G-5 has been revised to note the new top of riser elevations.



URS Monitoring Wells 9S, 9L, and 9D

SES replaced the concrete surface pads at the URS #9 monitoring wells located south of the site entrance. The existing damaged concrete was removed and the soil was excavated to the top of the grout seal. Concrete was replaced to the surrounding surface grade and sloped away from the protective casing to provide an approximate 18" diameter pad. GGE has revised O'B&G drawing G-5 to note these repairs.

Gravel at Wells and Access Road

SES placed additional crushed stone to improve access to the URS monitoring well clusters #14 (behind the Church on Beach Ridge Road) and #9. Additional crushed stone was also placed along the site access road near the northeast corner of the cap to fill a low area along the road.

GGE also noted that the "stick-up" risers at the monitoring well #14 cluster wells have been replaced with flush-mount covers.

Trenches at Lakeside Cleanout Risers.

PPRP representatives requested SES to hand excavate small ditches around the cleanout riser surface-mount covers along the lakeside of the access road. The ditches were small (less than 4" deep) and were excavated around the concrete surface pads to direct runoff around the riser covers and prevent stormwater from entering the risers. This maintenance item has been noted on the revised drawing G-5.

Other Site Observations

Other items noted by GGE during site observations follows:

- Scheduling of these work items coincided with an O'Brien & Gere groundwater sampling / piezometer groundwater elevation observation event.
- GGE recorded the Quarry Lake water surface at elevation 578.26 via a level survey on April 30, 1998. The water surface was slightly above the overflow wier elevation and at the same elevation as standing water in the wetlands located north of the site perimeter fence.
- Groundwater pre-treatment system operation under a PPRP O&M site manager is ongoing.



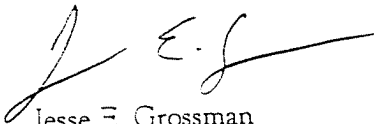
Frontier Chemical - Pendleton Site
Wetlands Planting/Site Maintenance Work Items
GGE 94-1014-O

June 4, 1998
Page 4

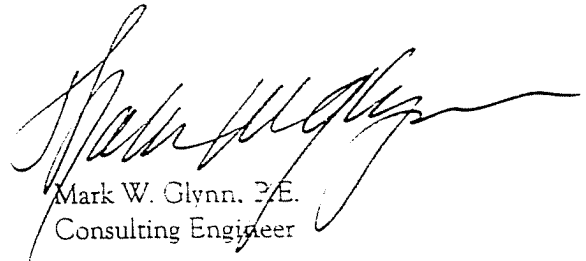
This report is forwarded for record documentation of the completed work items at the Pendleton Site. Respective GGE Field Observation Reports are also attached. Should you have any questions or require clarifications regarding the preceding information or attached drawings or reports, please contact this office.

Sincerely,

GLYNN GEOTECHNICAL ENGINEERING



Jesse E. Grossman
On Site Supervisor



Mark W. Glynn, P.E.
Consulting Engineer

/jg

enci:

cc: Jim Reed - PPRP
Steve Anagnost, P.E. - O'Brien & Gere

2 Field Observation Reports

- Field Observation Report Dated 27-Apr-98
- Field Observation Report Dated 28-Apr-98
- Field Observation Report Dated 30-Apr-98
- Field Observation Report Dated 24-Sep-98

PROJECT NO.: 94-1014-O REPORT NO.: 98-02 DATE: 27-Apr-98 PAGE: 1 OF 1
 PROJECT: Pendleton (Frontier Chemical) Site Remediation DAY: Monday
 SUBJECT: On Site Supervisor's Report PROJECT TIME: 8:00 am - 3:30 pm
 CLIENT: Pendleton Site PRP Group SITE TIME: 8:15 am - 3:15 pm
 WEATHER: Cool, Clear, Breezy (50° F) PHOTOS: YES X NO

- On site to document wetlands planting and maintenance items.
- With Jim Reed and SES representatives, walk capped area and note low subsidence areas requiring topsoil fill and reseeded. Note 5-6 locations on the north cap slope (lakeside) requiring fill. All locations are approximately 1/3 to 1/2 the way up the slope. Evidence of rodent damage noted at one location.
- Wolf nurseries delivers one load of topsoil to site which is not yet dumped.
- Observe monitoring wells URS-9I and 9D noted for concrete pad repair. With SES and Jim R., discuss repair to include removal of damaged concrete and casting a new pad, 6" deep pad contacting the grout seal using 18" dia. "Sonotube" forms.
- Observe piezometers P-4 and P-7. SES will trim top of PVC risers so that locking J-piug caps can be installed beneath the flush mount cover. Record dimension from flush mount casing to top of riser to determine the new top of rider elevation after rehabbing the risers.
- Note that lower 10-20' of the capped slope adjacent to the lakeside access road is wet - saturated and soft. The valve on the sump drain in the treatment vault is opened and the drain piping is noted to still be plugged.
- There is little evidence of groundwater seepage into the vault, however, there is some wetness due to a leaking vent at the top of GAC #2. Cumulative system discharge is 269,119 gal.
- Wolf nurseries crew is on site and begins planting the wetlands on the north side of the lake. Wolf crew completes planting the deeper zones (A & B) in accordance with the planting schedule on O'B&G drawing sheet G-7. The planted wetlands area is along approximately 900 lf. of the lake edge with planting patches @ 50' o.c.
- Note that the lake water elevation is above the overflow wier due to the water level outside of the berm. Wetland planting is by water depth vs. elevation.
- Wolf nurseries crew and SES will return to site tomorrow to complete wetlands planting and other site maintenance items.

PERSONNEL ON SITE / CONTACTED:

Jim Reed - PPRP
Jerry Castiglione, Tony Certo - SES
Larry Wolf - Wolf nurseries
Kevin Glaser - NYSDEC

DISTRIBUTION:

John Burns - PPRP
Jim Reed - PPRP
Man-hours: 4.5 (intermittent site visits)

REPORTED BY:

Jesse E. Grossman, Project Manager

REVIEWED BY:

Mark W. Glynn, P.E.

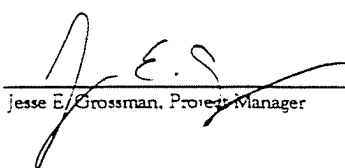
PROJECT NO.: 94-1014-O REPORT NO.: 98-03 DATE: 28-Apr-98 PAGE: 1 OF 1
 PROJECT: Pendleton (Frontier Chemical) Site Remediation DAY: Tuesday
 SUBJECT: On Site Supervisor's Report PROJECT TIME: 9:15 am - 3:30 pm
 CLIENT: Pendleton Site PRP Group SITE TIME: 9:30 am - 3:15 pm
 WEATHER: Mild, Clear, Breezy (60° F) PHOTOS: YES NO

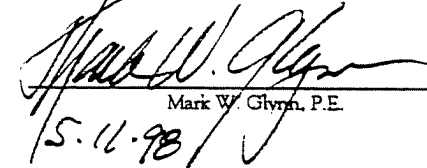
- Meet John Burns and Bill Witt (PPRP) on site in the am and observe capped area noting areas requiring topsoil fill and seeding. John B. and Bill W. note repair areas additional to those noted yesterday.
- Also discuss subcontractors progress re: wetlands planting and other maintenance issues. GGE to complete report documenting completed work items and noting cap repair locations.
- SES personnel have trimmed PVC risers @ P-4 and P-7 and measured trimmage to note new elevations.
- SES repairs concrete pads @ M.W.'s URS 9I, 9S, and 9D by digging down to grout seal around each protective casing (6-8") and placing concrete around casing to form an approx. 18" dia. pad.
- Wolf nurseries crew places topsoil on noted repair areas on the cap, seeds the areas with the seeding mix specified in the construction specifications and places straw matting over the repair areas. One load of topsoil (approx. 14 c.y.) is placed on the cap repair areas.
- Wolf nurseries crew plants zone C wetlands (0-1' depth) per the drawing G-7 planting schedule along the north edge of the lake. The wetland planting is complete to the contract specifications with the zone A-C planting over approximately 1.3 acres along the north edge of the lake.
- Return to site in the pm and note additional cap areas requiring topsoil and seeding per the PPRP's earlier site inspection. Notify John Scalfoni (SES) that additional topsoil is required to complete work. SES will return to site tomorrow to complete topsoil and seeding on the cap.

PERSONNEL ON SITE / CONTACTED:
John Burns, Bill Witt, Jim Reed - PPRP
John Scalfoni, Tony Certo - SES
Larry Wolf - Wolf nurseries

DISTRIBUTION:
John Burns - PPRP
Jim Reed - PPRP

 Man-hours: 4.5 (intermittent site visits)

REPORTED BY: 
 Jesse E. Grossman, Project Manager

REVIEWED BY: 
 Mark W. Glynn, P.E.
 5.11.98

PROJECT NO.: 94-1014-O REPORT NO.: 98-04 DATE: 30-Apr-98 PAGE: 1 OF 1
 PROJECT: Pendleton (Frontier Chemical) Site Remediation DAY: Thursday
 SUBJECT: On Site Supervisor's Report PROJECT TIME: 10:30 am - 12:30 pm
 CLIENT: Pendleton Site PRP Group SITE TIME: 10:45 am - 12:15 pm
 WEATHER: Warm, Mostly Sunny (65° F) PHOTOS: YES X NO

- After telephone discussions with Jim Reed (PPRP) and Jerry Castiglione (SES) visit site to note completed work items.
- SES crew has completed work and left site prior to GGE arrival.
- Note trimmed PVC risers @ P-4 and P-7 and measure an elevation change for the top of the PVC riser of minus 0.10' at P-4 and minus 0.08' at P-7.
- SES crew has placed additional crushed stone from the front gate to the URS 9S, 9I, 9D monitoring well cluster and to the URS 14S, 14I, 14D well cluster (behind the church) to improve access to these sample sites. Note that protective casings at the URS-14 S.I.D cluster have been replaced with flush-mount covers and new pads.
- SES has also placed additional crushed stone at locations on the site perimeter access road.
- SES has dug small ditches (4" deep) around the cleanouts on the lakeside of the access road to direct runoff to the lake and prevent ponding around the cleanout covers.
- SES has filled the remaining low areas on the cap with topsoil and seeded these locations. Additional low areas noted previously have been repaired. Smaller repair areas were not covered with straw matting.
- Record Quarry Lake water elevation by level survey. The lake elevation is recorded at 578.26.
- Observe and map all of the completed repair areas on the cap, noting locations on a cap plan drawing.
- Leave and secure site at 12:15 pm.

PERSONNEL ON SITE / CONTACTED:

 Via Telecon: Jerry Castiglione (SES)
Jim Reed (PPRP)

DISTRIBUTION:

John Burns - PPRP
Jim Reed - PPRP

 Man-hours: 2.0

REPORTED BY:

Jesse E. Grossman, Project Manager

REVIEWED BY:

Mark W. Glynn, P.E.

DOCFILE:98049804



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GEOTECHNICAL AND CIVIL ENGINEERING SERVICES

FIELD OBSERVATION REPORT

PROJECT NO.: 94-1014-O REPORT NO.: 98-06 DATE: 24Sep98 PAGE: 1 OF 4
 PROJECT: Pendleton (Frontier Chemical) Site Remediation DAY: Thursday
 SUBJECT: Semi-annual Inspection PROJECT TIME: 8:15 am - 11:00 am
 CLIENT: Pendleton Site PRP Group SITE TIME: 8:30 am - 10:30 am
 WEATHER: Mild, Cloudy (60° F) PHOTOS: YES X NO

- Meet Jim Reed on site for semi-annual site inspection.
- Perform site inspection per inspection checklist (copies attached pages 2-4).
- Jim Reed (PPRP) collects "make up" sample from pre-treatment discharge for 9/98 sampling event. Cumulative discharge from pre-treatment system is 293,771 gal. Jim Reed notes that groundwater discharge rates remain at approx. 120 gpd and continue to be influenced by precipitation events.
- Generally, the site is in good condition and no problems requiring corrective actions are noted.
- Leave and secure site at 10:30 am.

PERSONNEL ON SITE / CONTACTED:

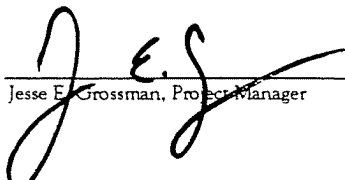
Jim Reed - PPRP

DISTRIBUTION:

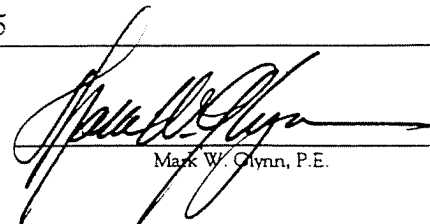
John Burns - PPRP
Jim Reed - PPRP
Jen Smith - O'Brien & Gere

Man-hours: 2.5

REPORTED BY:


 Jesse E. Grossman, Project Manager

REVIEWED BY:


 Mark W. Glynn, P.E.

DOC FILE: 98/072506

1 Site Maintenance Work Items

Attachment A – Site Inspection Reports and Quarry Lake Level Plot versus Time

1 Site Inspection Reports

- April 27-29, 1998
- September 21, 1998

2 Quarry Lake Level

- April 27-29, 1998
- September 21, 1998