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TIMPEL

Mr. Daniel King P. E. Division of Environmental Remediation New York State Department of Environmental Conversation 270 Michigan Avenue Buffalo, New York 14203-2999

Subject:

Frontier Chemical - Pendleton Site, Pendleton, New York

Order on Consent (#B9-0270-89-05) October 2001, Semi-Annual Report #9

Post Closure Operation, Maintenance, and Monitoring Activities,

Dear Mr. King:

In accordance with the approved Pendleton O & M Manual, enclosed are three copies of the Semi-Annual Report on the Post-Closure Operation, Maintenance, and Monitoring of the Closure Components for the Frontier Chemical-Pendleton Site by the Pendleton PRP Group.

The submittal of this report was delayed to allow the Pendleton PRP Group to respond primarily to NYSDEC comments dated May 30, 2001 relating to hydraulic containment. The letter requested that the Pendleton PRP Group collect groundwater samples from specific piezometers, analyze the samples for specific parameters and include the analytical results and a summary report in the subsequent semi-annual report. We regret that completion of this report has been delayed by including the requested information.

If you have any questions regarding the above submittals, please contact me by telephone at 423-336-4057, by facsimile at 423-336-4166 or by e-mail at jmburns@olin.com.

Sincerely,

Rendleton PRP Group

hairman, Technical Committee

Distribution

Daniel King, P. E. (3 copies)
Division of Environmental Remediation
NYSDEC
270 Michigan Avenue
Buffalo, New York 14203-2999

Mr. James Devald (1 copy)
Niagara County Health Department
Environmental Services Division
5460 Upper Mountain Road
Lockport, New York 14094

G. Anders Carlson, Ph.D., (2 Copies)
Director
Bureau of Environmental Exposure Investigation
New York State Department of Health
2 University Place, Room 205
Albany, New York 12203-3399

Pendleton PRP Technical Committee

David Cook, Esq. Nixon, Hargrave, Devans & Doyle 900 Clinton Square P.O. Box 1051 Rochester, NY 14604

Dave Moreira
Waste Management
Closed Sites Department
4 Liberty Lane West
Hampton, New Jersey 03842

John Graubman Law Offices of Ted Hadzi-Antich Key Center Suite 1230 50 Fountain Plaza Buffalo, NY 14202-2212

Tracy Goad Walter, Esq. Legal Department The Dow Chemical Company 2030 Dow Center Midland, MI 48674 Mark Piazza Elf ATOChem 2000 Market Street Philadelphia, PA 19103

Bill Snyder Honeywell, Inc. 101 Columbia Road P.O. Box 1139 Morristown, NJ 07962

Dennis P. Harkowitz, Esq. Jaeckle, Fleishman & Mugel Fleet Bank Building Twelve Fountain Plaza Buffalo, NY 14202-2292

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Attachment C – Frontier Chemical – Pendleton Site Semi-Annual Ground Water Monitoring Report; October 2001; Frontier Chemical - Pendleton Site Town of Pendleton, Niagara County, NY, Water Samples Volume 1 of 6, October 8, 9, 10, 11 and 18, 2001

 $Attachment \ D-Field \ Observation \ Reports$

Introduction

This ninth 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 March 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 Sevenson 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 semi-annual site was performed on October 8, 2001. A copy of the inspection report is included in Attachment D.

A water elevation chart is included in Attachment A. This water level chart depicts 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 monthly submittals to the Niagara Country Sewer District #1 detailing analytical and discharge flow data. The first semi-annual submittal to the Niagara County Sewer District occurred on November 8, 2001.

Operation, Maintenance, and Monitoring Activities for the site during this reporting period are summarized in Table B-3.

3. Regarding performance of a ground water monitoring program, the report "Frontier Chemical - Pendleton Site, Semi-Annual Ground Water Monitoring Report" dated October 2001 is included in Attachment C.

The main purpose of the groundwater monitoring program is to monitor on-site and offsite 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.

4. Recordkeeping

Records for site operation and maintenance activities are maintained at the site and the Olin Corporation Charleston Plant. These records include daily and weekly logs and charts. Glynn Geotechnical provides assistance to the site caretaker and updates O&M documentation.

O'Brien & Gere Engineers provide ground water level measurement, sampling, monitoring, 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.

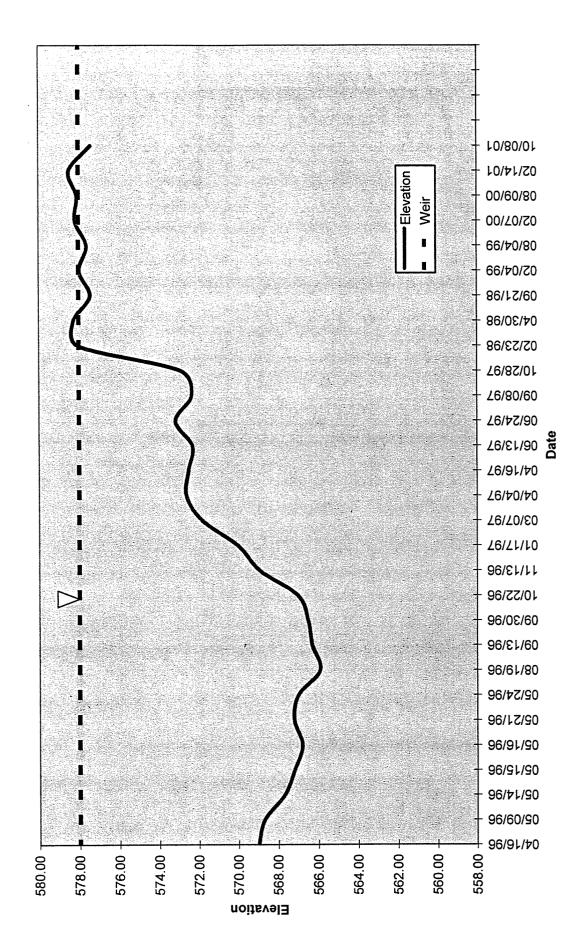
Conclusions

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

Attachment A – Quarry Lake Level – October 8, 2001 Quarry Lake Level Plot versus Time

TABLE A-1 Quarry Lake Level

Date	Elevation
4/16/96	569.00
5/9/96	568.70
5/14/96	567.70
5/15/96	567.20
5/16/96	566.80
5/21/96	567.20
5/24/96	567.00
8/19/96	565.92
9/13/96	566.30
9/30/96	566.50
10/22/96	567.00
11/13/96	568.90
1/17/97	570.00
3/7/97	571.80
4/4/97	572.60
4/16/97	572.50
6/13/97	. 572.30
6/24/97	573.15
9/8/97	572.34
10/28/97	572.88
2/23/98	578.00
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
8/9/00	578.07
2/14/01	578.47
10/8/01	577.39



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		
Semi-Annual Submittal Date	Sampling Date	
November 8, 2001	October 5, 2001	

B-2 Operation, Maintenance and Monitoring Activities

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

FILE COPY

November 8, 2001

VIA AIRBORNE EXPRESS

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

Subject:

Analytical Sampling Results (10/5/2001 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 October 5, 2001, 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 Daily Flow sheets.

A review of the analytical and flow data shows that all permit parameters are significantly below the permit discharge requirements.

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

of the Frontier Chemical - Pendleton Site PRP Group

Enclosures: as stated

David Cook, Esq. Nixon, Hargrave, Devans & Doyle 900 Clinton Square P.O. Box 1051 Rochester, NY 14604

Dave Moreira
Waste Management – Closed Sites
Department
4 Liberty Lane West
Hampton, New Jersey 03842

David Paley Honeywell 101 Columbia Road P.O. Box 1139 Morristown, NJ 07962 Mark Piazza Elf AtoChem 2000 Market Street Philadelphia, PA 19103

Colleen K. Sanson, Esq. Law Offices of Ted Hadzi-Antich Key Center Suite 1230 50 Fountain Plaza Buffalo, NY 14202-2212

Dennis P. Harkowitz. Esq. Jaecekle, Fleishman & Mugel Fleet Bank Building Twelve Fountain Plaza Buffalo, NY 14202-2292

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

October 2000 Analytical Summary for WS 001 Permit # 98-11

Groundwater Discharge Point: D 002

500,048 Gallons Discharged Prior To

10/5/2001

41,893 Gallons Since Last Report

179.8 Average Daily Flow Based on 233 days Between Samples

			10/5/2001
Parameters	Permit	Detection	Sample
	Limit	Limits	Results
reatment System Discharge	GPD		GPD
Discharge Rate (1)	662		ue/l
24 Analytes	ug/L	ug/L	ug/L <1.0 ∥
Toluene	10.0	1.0	< 1.0
1,2-Dichloroethane	10.0	1.0	< 5.0
4-Methyl-2-Pentanone	10.0	5.0	< 2.0
Vinyl Chloride	10.0	2.0	< 2.8
Methylene Chloride	10.0	2.8	< 1.0
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	< 1.0
Benzene	10.0		3.0
Chloromethane	1 1	2.0	< 2.0
Bromomethane		2.0 2.0	< 2.0
Chloroethane		1.0	< 1.0
Chloroform		1.0	< 1.0
Carbon Tetrachloride		1.0	< 1.0
1,1-Dichloroethene]	2.0	< 2.0
Trichlorofluoromethane		1.0	< 1.0
1,1-Dichloroethane	1	1.0	< 1.0
1,2-Dichloropropane		1.0	< 1.0
Bromodichloromethane	1	2.0	< 2.0
2-Chloroethylvinyl ether		1.0	< 1.0
cis-1,3-Dichloropropene		1.0	< 1.0
trans-1,3-Dichloropropene		1.0	< 1.0
1,1,2-Trichloroethane		1.2	< 1.2
Tetrachloroethene		1.0	2.8
Dibromochloromethane		1.Ó	< 1.0
Chlorobenzene		1.0	< 1.0
Ethylbenezene	_	1.0	< 1.0
Bromoform		1.0	< 1.0
1,1,2,2-Tetrachloroethane 1,3-Dichlorobenzene		1.0	< 1.0
1,3-Dichlorobenzene		1.0	< 1.0
1,4-Dictiorobezene 1,2-Dichlorobenzene		1.0	< 1.0
Sum of 624 Analytes		100.0	45.8
608 Pesticides (2)	ug/L	ug/L	ug/L
	10.0		
alpha BHC	, 20.0		
beta BHC delta BHC	10.0		
gamme BHC	10.0		
Heptachlor	8.0		
Aldrin ·	8.0		
Heptachlor Epoxide	9.0		
4,4-DDE	20.0		
Methoxychlor	18.0		
Metals	mg/L		mg/L
Antimony	0.1	0.011	< 0.011
Boron	4.00	0.012	0.359
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
			8.400

Legend:

Permit limit @ 662 GPD with maximum daily discharged @ 2500 GPD (1)

Discontinued per April 14, 1997 Letter from F. Narrone to PRP Group. (2)

(B) Detected in blank

Not applicable

DAILY FLOW DATA - PENDLETON SITE MARCH 2001

	TOTALIZER	DAILY	
DATE	READING	FLOW	COMMENTS
3/1/2001	456732	303.0	Average Flow
3/2/2001		288.7	Average Flow
3/3/2001		288.7	Average Flow
3/4/2001	457598	288.7	
3/5/2001	457912	314.0	
3/6/2001	458221	309.0	
3/7/2001	458532	311.0	
3/8/2001	458840	308.0	
3/9/2001		337.0	
3/10/2001		337.0	
3/11/2001	45 9851	337.0	
3/12/2001	460164	313.0	
3/13/2001	460725	561.0	
3/14/2001	461237	512.0	
3/15/2001	461754	517.0	Average Flow
3/16/2001		424.0	Average Flow
3/17/2001	·	424.0	
3/18/2001	463026	424.0	
3/19/2001	463397	371.0	
3/20/2001	463926	529.0	
3/21/2001	464233	307.0	Average Flow
3/22/2001		260.0	Average Flow
3/23/2001	464753	260.0	Average Flow
3/24/2001			GAC #1 Leak Tank Recirculating
3/25/2001			GAC #1 Leak Tank Recirculating
3/26/2001			GAC #1 Leak Tank Recirculating
3/27/2001			GAC #1 Leak Tank Recirculating
3/28/2001			GAC #1 Leak Tank Recirculating
3/29/2001	490452		GAC #1 Leak Tank Recirculating
3/30/2001		802.0	
3/31/2001	492057	802.5	

average daily flow in Gallons 320.3

= DRY VAULT GROUNDWATER RELIEF

| gallons | gallons | gallons |
| gallons | gallons |
| TOTAL GALLONS 0.0

DAILY FLOW DATA - PENDLETON SITE APRIL 2001

	TOTALIZER	DAILY	COMMENTS
DATE	READING	FLOW	COMMENTS
4/1/2001	492861	804.0	
4/2/2001	493066	205.0	
4/3/2001	493224	158.0	
4/4/2001	493434	210.0	O 1 O 11 d are signed/on line
4/5/2001		206.0	Average Flow, GAC # 1 repaired/on line
4/6/2001		206.0	Average Flow
4/7/2001		206.0	Average Flow
4/8/2001	494258	206.0	Average Flow
4/9/2001	494511	253.0	
4/10/2001	494763	252.0	
4/11/2001	494946	183.0	
4/12/2001	495207	261.0	
4/13/2001		189.7	Average Flow
4/14/2001		189.7	Average Flow
4/15/2001	495776	189.7	Average Flow
4/16/2001		204.0	
4/17/2001		260.0	
4/18/2001		263.0	
4/19/2001		294.0	
4/20/2001		155.3	Average Flow
4/21/2001		155.3	Average Flow
4/22/2001		155.3	Average Flow
4/23/200	<u> </u>	211.0	
4/24/200		157.0	Site Inspection
4/25/200		207.0	
4/26/200		151.0	
4/27/200		189.3	Average Flow
4/28/200		189.3	Average Flow
4/29/200		189.3	Average Flow
4/30/200		151.0	

AVERAGE DA	ILY FLOW IN GALLONS	221.7	
	= DRY VAULT GROUNDY	VATER RELIEF	
		gallons	
	TOTAL GALLONS	0.0	

DAILY FLOW DATA - PENDLETON SITE MAY 2001

	TOTALIZER	DAILY	COMMENTO
DATE	READING	FLOW	COMMENTS
5/1/2001	498914	206.0	
5/2/2001	499117	203.0	
5/3/2001	499322	205.0	
5/4/2001		172.7	Average Flow
5/5/2001		172.7	Average Flow
5/6/2001	499840	172.7	Average Flow
5/7/2001	500040	200.0	
5/8/2001	500194	154.0	
5/9/2001	500451	257.0	
5/10/2001	500605	154.0	
5/11/2001		224.7	Average Flow
5/12/2001		224.7	Average Flow
5/13/2001	501279	224.7	Average Flow
5/14/2001	501489	210.0	
5/15/2001	501745	256.0	
5/16/2001	501902	157.0	
5/17/2001		190.0	Average Flow
5/18/2001		190.0	Average Flow
5/19/2001		190.0	Average Flow & Site Inspection
5/20/2001	502662	190.0	Average Flow
5/21/2001	503023	361.0	
5/22/2001	503652	629.0	
5/23/2001	504402	750.0	
5/24/2001	504918	516.0	
5/25/2001		380.5	
5/26/2001		380.5	Average Flow
5/27/2001		380.5	Average Flow
5/28/2001	506440	380.5	Average Flow
5/29/2001	507071	631.0	
5/30/2001	507335	264.0	
5/31/2001	507541	206.0	

AVERAGE DAILY	FLOW IN GALLONS	284.9	-	
	= DRY VAULT GRO	UNDWATER REL	.IEF	
			gallons	
	TOTAL GALLONS	0.0	19	

DAILY FLOW DATA - PENDLETON SITE JUNE 2001

	TOTALIZER	DAILY	COMMENTO
DATE	READING	FLOW ·	COMMENTS
6/1/2001	507953	412.0	
6/2/2001		222.0	Average Flow
6/3/2001	508397	222.0	Average Flow
6/4/2001	508554	157.0	
6/5/2001	508758	204.0	
6/6/2001	508962	188.3	
6/7/2001	509212	250.0	
6/8/2001		204.3	Average Flow
6/9/2001		204.3	Average Flow
6/10/2001	509825	204.3	Average Flow
6/11/2001	510030	205.0	
6/12/2001		227.5	
6/13/2001	510485	227.5	
6/14/2001	510662	177.0	
6/15/2001		184.0	Average Flow
6/16/2001		184.0	Average Flow
6/17/2001	511214	184.0	Average Flow
6/18/2001	511420	206.0	
6/19/2001	511575	155.0	
6/20/2001	511725	150.0	
6/21/2001	511885	160.0	
6/22/2001		149.3	Average Flow
6/23/2001		149.3	Average Flow
6/24/2001	512333	149.3	Average Flow
6/25/2001	512539	206.0	
6/26/2001	512689	150.0	
6/27/2001	512885	196.0	
6/28/2001	513032	147.0	
6/29/2001		177.5	Average Flow
6/30/2001	513387	177.5	Average Flow

AVERAGE DAILY	FLOW IN GALLONS	188.1	
	= DRY VAULT GRO	OUNDWATER RELI	EF
			gallons
	` .		gallons
			gallons
			gallons
	TOTAL GALLONS		

DAILY FLOW DATA - PENDLETON SITE JULY 2001

DATE	TOTALIZER READING	DAILY FLOW	COMMENTS
DATE			COMMENTO
7/1/2001	513538	151.0	
7/2/2001	513736	222.0	A
7/3/2001		180.0	Average Flow
7/4/2001		180.0	Average Flow
7/5/2001		180.0	Average Flow
7/6/2001	514456	180.0	Average Flow
7/7/2001		150.0	Average Flow
7/8/2001	514756	150.0	Average Flow
7/9/2001	514907	151.0	
7/10/2001	515061	154.0	
7/11/2001	515234	173.0	
7/12/2001	515438	204.0	
7/13/2001		149.0	Average Flow
7/14/2001		149.0	Average Flow
7/15/2001	515885	149.0	Average Flow
7/16/2001	516038	153.0	
7/17/2001	516141	103.0	
7/18/2001	516238	97.0	
7/19/2001	516286	48.0	
7/20/2001		130.0	Average Flow
7/21/2001		130.0	Average Flow
7/22/2001	516676	130.0	Average Flow
7/23/2001	516776	100.0	
7/24/2001	516876	100.0	
7/25/2001	516974	98.0	•
7/26/2001	517059	85.0	
7/27/2001		109.3	Average Flow
7/28/2001		109.3	Average Flow & Site Inspection
7/29/2001	517387	109.3	Average Flow
7/30/2001		98.0	
7/31/2001	 	97.0	

AVERAGE DAILY	FLOW IN GALLONS	136.1	
	= DRY VAULT GRO	OUNDWATER RELI	EF
			gallons
	`		gallons
			gallons
			gallons
	TOTAL GALLONS	0.0	

DAILY FLOW DATA - PENDLETON SITE AUGUST 2001

	TOTALIZER	DAILY	COMMENTS
DATE	READING	FLOW	COMMENTS
8/1/2001	517679	97.0	
8/2/2001	517776	97.0	
8/3/2001		121.5	Average Flow
8/4/2001	518019	121.5	Average Flow
8/5/2001	518068	49.0	
8/6/2001	518162	94.0	·
8/7/2001	518260	98.0	
8/8/2001	518356	96.0	·
8/9/2001	518503	147.0	
8/10/2001		82.0	Average Flow
8/11/2001		82.0	Average Flow
8/12/2001	518749	82.0	Average Flow
8/13/2001		100.0	Average Flow
8/14/2001		100.0	Average Flow
8/15/2001	519049	100.0	Average Flow
8/16/2001	519146	97.0	
8/17/2001		84.0	Average Flow
8/18/2001		84.0	Average Flow
8/19/2001	519398	84.0	Average Flow
8/20/2001	519498	100.0	
8/21/2001	519596	98.0	
8/22/2001	519693	97.0	
8/23/2001	519791	98.0	
8/24/2001		99.0	Average Flow
8/25/2001	519989	99.0	Average Flow
8/26/2001	520086	97.0	
8/27/2001		82.3	Average Flow
8/28/2001		82.3	Average Flow
8/29/2001	520333	82.3	Average Flow & Site Inspection
8/30/2001		97.5	
8/31/2001	520528	97.5	

AVERAGE DAIL	Y FLOW IN GALLONS	95.0	_	
	= DRY VAULT GRO	UNDWATER RE	LIEF	
	,		gallons	
			gallons	
			gallons	
			gallons	
	TOTAL GALLONS	0.0		

DAILY FLOW DATA - PENDLETON SITE SEPTEMBER 2001

9/1/2001 82.3 Average Flow 9/2/2001 520775 82.3 Average Flow 9/3/2001 520775 82.3 Average Flow 9/5/2001 520873 98.0 9/5/2001 520947 74.0 9/6/2001 520996 49.0 9/7/2001 52143 147.0 9/8/2001 521443 147.0 9/8/2001 521240 97.0 9/9/2001 521289 49.0 9/10/2001 521339 50.0 9/11/2001 521339 50.0 9/11/2001 521441 102.0 9/12/2001 521588 49.0 9/13/2001 521588 49.0 9/14/2001 521687 99.0 9/15/2001 521885 100.0 9/16/2001 521885 100.0 9/18/2001 521885 100.0 9/18/2001 52232 49.0 9/19/2001 52232 49.0 9/20/2001 52232 49.0 9/20/2001 522327 49.0 Average Flow 9/21/2001 522327 49.0 Average Flow 9/22/2001 522327 49.0 Average Flow 9/22/2001 522327 49.0 Average Flow 9/23/2001 522582 127.5 Average Flow 9/24/2001 522582 127.5 Average Flow 9/25/2001 522898 316.0 Average Flow 9/25/2001 523157 259.0 9/26/2001 523157 259.0 9/27/2001 143.8 Average Flow 9/28/2001 523732 143.8 Average Flow & Site Inspection 9/29/20/2001 523732 143.8 Average Flow & Site Inspection 9/30/2001 523732 143.8 Average Flow & Site Inspection	DATE	TOTALIZER READING	DAILY FLOW	COMMENTS
9/2/2001 82.3 Average Flow 9/3/2001 520775 82,3 Average Flow 9/4/2001 520873 98.0 9/5/2001 520947 74.0 9/6/2001 520996 49.0 9/7/2001 521143 147.0 9/8/2001 521240 97.0 9/9/2001 521289 49.0 9/10/2001 521339 50.0 9/11/2001 521441 102.0 9/12/2001 521539 98.0 9/13/2001 521588 49.0 9/14/2001 521687 99.0 9/15/2001 49.0 Average Flow 9/18/2001 521885 100.0 9/18/2001 521885 100.0 9/18/2001 521885 100.0 9/18/2001 521885 100.0 9/18/2001 522032 49.0 9/20/2001 522327 49.0 9/21/2001 522327 49.0 9/22/2001 522582	DATE	READING		
9/3/2001 520775 82,3 Average Flow 9/4/2001 520873 98.0 9/5/2001 520947 74.0 9/6/2001 520996 49.0 9/7/2001 521143 147.0 9/8/2001 521240 97.0 9/9/2001 521289 49.0 9/10/2001 521339 50.0 9/11/2001 521539 98.0 9/11/2001 521539 98.0 9/13/2001 521588 49.0 9/13/2001 521588 49.0 9/14/2001 521687 99.0 9/14/2001 521885 100.0 9/18/2001 521885 100.0 9/18/2001 521885 100.0 9/18/2001 521983 98.0 9/18/2001 521983 98.0 9/18/2001 52185 49.0 Average Flow 9/18/2001 52185 100.0 9/18/2001 52185 100.0 9/18/2001 52193 98.0 9/19/20/2001 522032 49.0 9/20/2001 522229 197.0 9/21/2001 522327 49.0 Average Flow 9/22/2001 522327 49.0 Average Flow 9/23/2001 52288 316.0 Average Flow 9/24/2001 52289 316.0 Average Flow 9/25/2001 522898 316.0 Average Flow 9/25/2001 522898 316.0 Average Flow 9/26/2001 523157 259.0 9/27/2001 143.8 Average Flow 9/28/2001 143.8 Average Flow 9/28/2001 143.8 Average Flow 9/28/2001 143.8 Average Flow 9/28/2001 143.8 Average Flow				
9/4/2001 520873 98.0 9/5/2001 520947 74.0 9/6/2001 520996 49.0 9/7/2001 521143 147.0 9/8/2001 521240 97.0 9/9/2001 521289 49.0 9/10/2001 521339 50.0 9/11/2001 521539 98.0 9/13/2001 521539 98.0 9/13/2001 521588 49.0 9/14/2001 521588 49.0 9/14/2001 521687 99.0 Average Flow 9/16/2001 52185 49.0 Average Flow 9/16/2001 52185 100.0 9/18/2001 521885 100.0 9/18/2001 521983 98.0 9/19/2001 521983 98.0 9/19/2001 521983 98.0 9/19/2001 522032 49.0 9/20/2001 52229 197.0 9/21/2001 522229 197.0 Average Flow 9/22/2001 522327 49.0 Average Flow 9/23/2001 522327 49.0 Average Flow 9/23/2001 522582 127.5 Average Flow 9/24/2001 522898 316.0 Average Flow 9/26/2001 522898 316.0 Average Flow 9/26/2001 523157 259.0 9/27/2001 143.8 Average Flow 9/28/2001 143.8 Average Flow 9/28/2001 143.8 Average Flow 9/29/2001 143.8 Average Flow 9/29/2001 143.8 Average Flow 9/29/2001 143.8 Average Flow 9/29/2001 143.8 Average Flow Site Inspection 9/29				
9/5/2001 520947 74.0 9/6/2001 520996 49.0 9/7/2001 521143 147.0 9/8/2001 521240 97.0 9/9/2001 521289 49.0 9/10/2001 521339 50.0 9/11/2001 521341 102.0 9/12/2001 521539 98.0 9/13/2001 521588 49.0 9/13/2001 521588 49.0 9/14/2001 521588 49.0 9/14/2001 521687 99.0 9/15/2001 49.0 Average Flow 9/16/2001 521885 100.0 9/18/2001 521885 100.0 9/18/2001 521885 100.0 9/18/2001 522032 49.0 9/19/2001 522032 49.0 9/20/2001 52229 197.0 9/21/2001 522327 49.0 Average Flow 9/22/2001 522327 49.0 Average Flow 9/23/2001 522582 127.5 Average Flow 9/24/2001 522898 316.0 Average Flow 9/26/2001 522898 316.0 Average Flow 9/26/2001 523157 259.0 9/27/2001 143.8 Average Flow 9/28/2001 143.8 Average Flow 9/28/2001 143.8 Average Flow				Average Flow
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9/9/2001 521289 49.0 9/10/2001 521339 50.0 9/11/2001 521441 102.0 9/12/2001 521539 98.0 9/13/2001 521588 49.0 9/14/2001 521687 99.0 9/15/2001 49.0 Average Flow 9/16/2001 521885 100.0 9/18/2001 521983 98.0 9/19/2001 521983 98.0 9/19/2001 522032 49.0 9/20/2001 522032 49.0 9/21/2001 522327 49.0 Average Flow 9/22/2001 522327 49.0 Average Flow 9/23/2001 522582 127.5 Average Flow 9/24/2001 522898 316.0 Average Flow 9/25/2001 523157 259.0 9/27/2001 143.8 Average Flow 9/28/2001 143.8 Average Flow 9/29/2001 143.8 Average Flow	9/7/2001			
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9/13/2001 521588 49.0 9/14/2001 521687 99.0 9/15/2001 49.0 Average Flow 9/16/2001 521785 49.0 Average Flow 9/17/2001 521885 100.0 9/18/2001 521983 98.0 9/19/2001 522032 49.0 9/20/2001 522229 197.0 9/21/2001 49.0 Average Flow 9/22/2001 522327 49.0 Average Flow 9/23/2001 127.5 Average Flow 9/24/2001 522582 127.5 Average Flow 9/25/2001 522898 316.0 Average Flow 9/26/2001 523157 259.0 9/27/2001 143.8 Average Flow 9/28/2001 143.8 Average Flow 9/29/2001 143.8 Average Flow & Site Inspection	9/11/2001	521441	1	
9/14/2001 521687 99.0 Average Flow 9/15/2001 49.0 Average Flow 9/16/2001 521785 49.0 Average Flow 9/17/2001 521885 100.0 9/18/2001 521983 98.0 9/19/2001 522032 49.0 9/20/2001 522229 197.0 9/21/2001 49.0 Average Flow 9/22/2001 522327 49.0 Average Flow 9/23/2001 127.5 Average Flow 9/24/2001 522582 127.5 Average Flow 9/25/2001 522898 316.0 Average Flow 9/27/2001 143.8 Average Flow 9/28/2001 143.8 Average Flow 9/29/2001 143.8 Average Flow & Site Inspection	9/12/2001	521539		
9/15/2001 49.0 Average Flow 9/16/2001 521785 49.0 Average Flow 9/17/2001 521885 100.0 100.0 9/18/2001 521983 98.0 98.0 9/19/2001 522032 49.0 49.0 9/20/2001 522229 197.0 49.0 Average Flow 9/21/2001 522327 49.0 Average Flow 9/23/2001 127.5 Average Flow 9/24/2001 522582 127.5 Average Flow 9/25/2001 522898 316.0 Average Flow 9/26/2001 523157 259.0 9/27/2001 143.8 Average Flow 9/28/2001 143.8 Average Flow 9/29/2001 143.8 Average Flow & Site Inspection	9/13/2001	521588	49.0	
9/16/2001 521785 49.0 Average Flow 9/17/2001 521885 100.0 9/18/2001 521983 98.0 9/19/2001 522032 49.0 9/20/2001 522229 197.0 9/21/2001 49.0 Average Flow 9/22/2001 522327 49.0 Average Flow 9/23/2001 127.5 Average Flow 9/24/2001 522582 127.5 Average Flow 9/25/2001 522898 316.0 Average Flow 9/26/2001 523157 259.0 9/27/2001 143.8 Average Flow 9/28/2001 143.8 Average Flow 9/29/2001 143.8 Average Flow & Site Inspection	9/14/2001	521687	99.0	
9/17/2001 521885 100.0 9/18/2001 521983 98.0 9/19/2001 522032 49.0 9/20/2001 522229 197.0 9/21/2001 49.0 Average Flow 9/22/2001 522327 49.0 Average Flow 9/23/2001 127.5 Average Flow 9/24/2001 522582 127.5 Average Flow 9/25/2001 522898 316.0 Average Flow 9/26/2001 523157 259.0 9/27/2001 143.8 Average Flow 9/28/2001 143.8 Average Flow 9/29/2001 143.8 Average Flow & Site Inspection	9/15/2001		1	
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9/19/2001 522032 49.0 9/20/2001 522229 197.0 9/21/2001 49.0 Average Flow 9/22/2001 522327 49.0 Average Flow 9/23/2001 127.5 Average Flow 9/24/2001 522582 127.5 Average Flow 9/25/2001 522898 316.0 Average Flow 9/26/2001 523157 259.0 9/27/2001 143.8 Average Flow 9/28/2001 143.8 Average Flow & Site Inspection	9/17/2001	521885	100.0	
9/20/2001 522229 197.0 9/21/2001 49.0 Average Flow 9/22/2001 522327 49.0 Average Flow 9/23/2001 127.5 Average Flow 9/24/2001 522582 127.5 Average Flow 9/25/2001 522898 316.0 Average Flow 9/26/2001 523157 259.0 9/27/2001 143.8 Average Flow 9/28/2001 143.8 Average Flow 9/29/2001 143.8 Average Flow & Site Inspection	9/18/2001	521983	98.0	
9/21/2001 49.0 Average Flow 9/22/2001 522327 49.0 Average Flow 9/23/2001 127.5 Average Flow 9/24/2001 522582 127.5 Average Flow 9/25/2001 522898 316.0 Average Flow 9/26/2001 523157 259.0 9/27/2001 143.8 Average Flow 9/28/2001 143.8 Average Flow 9/29/2001 143.8 Average Flow & Site Inspection	9/19/2001	522032	49.0	
9/22/2001 522327 49.0 Average Flow 9/23/2001 127.5 Average Flow 9/24/2001 522582 127.5 Average Flow 9/25/2001 522898 316.0 Average Flow 9/26/2001 523157 259.0 9/27/2001 143.8 Average Flow 9/28/2001 143.8 Average Flow 9/29/2001 143.8 Average Flow & Site Inspection	9/20/2001	522229	197.0	
9/23/2001 127.5 Average Flow 9/24/2001 522582 127.5 Average Flow 9/25/2001 522898 316.0 Average Flow 9/26/2001 523157 259.0 9/27/2001 143.8 Average Flow 9/28/2001 143.8 Average Flow 9/29/2001 143.8 Average Flow & Site Inspection	9/21/2001		49.0	
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9/25/2001 522898 316.0 Average Flow 9/26/2001 523157 259.0 9/27/2001 143.8 Average Flow 9/28/2001 143.8 Average Flow 9/29/2001 143.8 Average Flow & Site Inspection			127.5	
9/25/2001 522898 316.0 Average Flow 9/26/2001 523157 259.0 9/27/2001 143.8 Average Flow 9/28/2001 143.8 Average Flow 9/29/2001 143.8 Average Flow & Site Inspection		522582	127.5	
9/26/2001 523157 259.0 9/27/2001 143.8 Average Flow 9/28/2001 143.8 Average Flow 9/29/2001 143.8 Average Flow & Site Inspection	9/25/2001	522898	316.0	Average Flow
9/27/2001 143.8 Average Flow 9/28/2001 143.8 Average Flow 9/29/2001 143.8 Average Flow & Site Inspection			259.0	
9/28/2001 143.8 Average Flow 9/29/2001 143.8 Average Flow & Site Inspection			143.8	
9/29/2001 143.8 Average Flow & Site Inspection			143.8	
			143.8	Average Flow & Site Inspection
		523732	143.8	Average Flow

AVERAGE DAILY	FLOW IN GALLONS	104.1	-	
	= DRY VAULT GRO	OUNDWATER REL	_IEF	
			gallons	
			gallons	
			gallons	
			galions	
	TOTAL GALLONS	0.0		

WASTE STREAM TECHNOLOGY, INC.

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



Analytical Data Report

Report Date: 10/19/01 Group Number: 2019-085

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

Site: Pendleton TW 707

Analytical Services	
Number of Samples	Turnaround Time
1	Standard
2 .	Standard
	•

Report Released By :_

Daniel W. Vollmer, Laboratory QA/QC Officer

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: 2019-085

Site: Pendleton TW 707

Field and Laboratory Information

WST ID	Client ID	Matrix	Date Sampled	Date Received	Time
WS87574	TW 707 100501	Aqueous	10/05/01	10/05/01	10:55
WS87575	Trip Blank	Aqueous	10/05/01	10/05/01	10:55



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. Metals Analysis Result Report

Site: Pendleton TW 707 Date Sampled: 10/05/01 Date Received: 10/05/01 Group Number: 2019-085

Units: mg/L Matrix: Aqueous

WST ID: WS87574 Client ID: TW 707 100501

Digestion Date: 10/11/01

Detection Limit	Result	Date Analyzed	Analysis Method
0.011	Not detected	10/11/01	EPA 200.7
0.012	0.359	10/11/01	EPA 200.7
0.005	Not detected	10/11/01	EPA 200.7
	0.011 0.012	0.011 Not detected 0.012 0.359	0.011 Not detected 10/11/01 0.012 0.359 10/11/01



Waste Stream Technology, Inc. Cyanide in Water EPA 335.2

Site: Pendleton TW 707 Date Sampled: 10/05/01 Date Received: 10/05/01 Group Number: 2019-085 Matrix: Aqueous Units: mg/L

WST ID	Client ID	Detection Limit	Result	Date Analyzed
WS87574	TW 707 100501	0.005	Not detected	10/10/01
			A STATE OF THE STA	



Waste Stream Technology, Inc. Total Recoverable Phenol EPA 420.1

Site: Pendleton TW 707 Date Sampled: 10/05/01 Date Received: 10/05/01 Group Number: 2019-085 Matrix: Aqueous Units: mg/L

WST ID	Client ID	Detection Limit	Result	Date Analyzed
WS87574	TW 707 100501	0.005	Not detected	10/11/01



Waste Stream Technology, Inc. Total Suspended Solids EPA 160.2

Site: Pendleton TW 707 Date Sampled: 10/05/01 Date Received: 10/05/01 Group Number: 2019-085 Matrix: Aqueous Units: mg/L

WST ID	Client ID	Detection Limit	Result	Date Analyzed
WS87574	TW 707 100501	4.0	8.4	10/09/01

Waste Stream Technology, Inc.

Volatile Organics in Water EPA 624

Site: Pendleton TW 707 Date Sampled: 10/05/01 Date Received: 10/05/01 Group Number: 2019-085

Units: µg/L Matrix: Aqueous

WST ID: WS87574 Client ID: TW 707 100501

Extraction Date: NA
Date Analyzed: 10/16/01

Compound	Detection Limit	Result	QC Limits (%)	Qualifier
chloromethane	2.0	3.0		
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	2.8		
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 (%)		101	76-119	
Toluene-d8 (%)		96	82-117	
Bromofluorobenzene (%)		97	80-117	

Dilution Factor

1



Waste Stream Technology, Inc.

Volatile Organics in Water EPA 624

Site: Pendleton TW 707 Date Sampled: 10/05/01 Date Received: 10/05/01 Group Number: 2019-085

Units: µg/L Matrix: Aqueous

WST ID: WS87575 Client ID: Trip Blank Extraction Date: NA Date Analyzed: 10/16/01

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 (%)		102	76-119	
Toluene-d8 (%)		96	82-117	
Bromofluorobenzene (%)		100	80-117	

Dilution Factor

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B-2 Operation, Maintenance, and Monitoring Activities

Table B-2

Operation, Maintenance, and Monitoring Activities							
Date	Event	Action Taken					
March 30, 2001	GAC #1 Tank Leak	By-Passed Tank					
April 24, 2001	GAC #1 Tank Leak	Repaired Tank					
June 28, 2001	 Grass needs cutting Varmint holes in cap between P-3 and P-4 	 Scheduled grass cutting Repaired varmint holes 					
August 30, 2001	Varmint holes in cap between P-3 and P-4	Repaired varmint holes					
October 5, 2001	Varmint holes in cap between P-3 and P-4	Repaired varmint holes					
October 8, 2001	Varmint holes in cap between P-3 and P-4	Repaired varmint holes					

ATTACHMENT C - Groundwater Data

- C-1 Frontier Chemical Pendleton Site Semi-Annual Ground Water Monitoring Report O'Brien & Gere October 2001
- C-2 Frontier Chemical Pendleton Site
 Town of Pendleton, Niagara County, NY Water Samples
 Volume 1 of 6
 O'Brien & Gere
 October 8, 9, 10, 11 and 18

C-1 Frontier Chemical – Pendleton Site Semi-Annual Ground Water Monitoring Report O'Brien & Gere October 2001 C-2 Frontier Chemical – Pendleton Site
Town of Pendleton, Niagara County, NY Water Samples
Volume 1 of 6
O'Brien & Gere
October 8,9,10, 11 and 18, 2001

REPORT

Frontier Chemical - Pendleton Site Semi-Annual Ground Water Monitoring Report

Pendleton Site PRP Group

October 2001

REPORT

Frontier Chemical - Pendleton Site Semi-Annual Ground Water Monitoring Report

Pendleton Site PRP Group

James R. Heckathorne, P.E. Vice President

October 2001



5000 Brittonfield Parkway Syracuse, New York 13221

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- B Ground water sampling logs
- C Data validation report (Volume 1 of 3 of the validated analytical dataseparately bound)

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A NYSDEC correspondence dated May 30, 2001

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.

In addition to the ground water samples collected as part of the long-term ground water monitoring covered by the O&M Manual, additional ground water samples were collected from six piezometers (P-1 through P-6). These additional samples were collected at the request of the NYSDEC in a letter dated May 30, 2001 to the Frontier Pendleton Technical Committee (Attachment A). The piezometers were sampled to evaluate potential migration of Site-related constituents from the capped area in general, and specifically in the area of the cap where inward hydraulic gradients are not readily observed.

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.
- Evaluation of ground water chemistry collected from piezometers within the capped area and those outside the capped area.

These items are described in the following sections.

1.1. Piezometer/monitoring well inspection

The piezometer/monitoring well inspection was conducted on October 8, 2001, and included 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) 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

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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 a broken outer cap, and some settling was apparent, and there was sediment in the bottom of the well.

October 2001 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 elevation measurements were collected on October 8, 2001. Glynn Geotechnical Engineering, Inc. measured the surface water elevation of Quarry Lake on October 8, 2001. 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 October 8, 2001 surface water elevation of Quarry Lake was recorded at 577.39 ft, which is above the outlet weir elevation of 577.2 ft.

The water level measurements collected on October 8, 2001 are illustrated on Figure 1. These measurements are the eleventh 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 data indicates that an inward hydraulic gradient exists at the site, except in the eastern 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 elevation in piezometer

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P-2, located inside the capped area, is higher than the ground water elevation 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-3, 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, 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. 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.

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 of 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 to 563.37 ft. 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.

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 x 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.

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1.3. Ground water sampling and chemistry

Between October 8 and 18, 2001, the ninth round of post-closure ground water samples was 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). In addition to the sampling of the monitoring wells, six piezometers (P-1, P-2, P-3, P-4, P-5, and P-6) were sampled at the request of the NYSDEC.

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 1,2	USEPA Method 8260B
Inorganics 1,2	USEPA Methods 6010B/7470A/7841
Cyanide ^{1,2}	USEPA Method 9010B/9014
SVOCs 2	USEPA Methods
Pesticides/PCBs ²	USEPA Method 8081/8082

Notes:

¹ Parameters analyzed from monitoring wells

² Parameters analyzed from piezometers

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 for target compound list (TCL) semi-volatile organic compounds (SVOCs) and polychlorinated biphenyls (PCBs)/pesticides were discontinued for the monitoring wells during the second through fifth years of monitoring. 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. As indicated in Table 1-1 above, the ground water samples collected from the piezometers were analyzed for TCL VOCs, TCL SVOCs, TCL PCB and pesticides, and TAL metals plus cyanide, as requested by NYSDEC.

Purge water generated during sampling of the monitoring wells and piezometers 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 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 October 2001 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 four locations (88-12C, URS-5D, URS-9D, 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, except for the iron concentration in well URS-5D. However, detected concentrations of iron at URS-5D are similar to previously detected concentrations of iron in background well URS-14I. In addition, 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.

Piezometer analytical summary

Results of the ground water analyses for TCL VOCs, TCL SVOCs, TCL PCB/Pesticides, and TAL Metals plus cyanide from the piezometers, along with a comparison of the results with New York State Class GA standards, are summarized on Tables 5, 6, 7, and 8, respectively.

As indicated on Table 5, VOCs detected in the piezometers that exceeded New York State Class GA Standards are summarized as follows:

- 1,1,1-trichloroethane (1,1,1-TCA) in P-4 and P-6
 - 1,1-dichloroethane (1,1-DCA) in P-3, P-4, and P-6
- 1,1-dichloroethene (1,1-DCE) in P-4 and P-6
- 1,2-dichloroethane (1,2-DCA) in P-3, P-4, and P-6
- benzene in P-3 and P-4
 - chloroform in P-3 and P-6
- 1,2-dichloroethene (1,2-DCE) in P-4 and P-6
- methylene chloride in P-6
- toluene in P-3 and P-6
- trichloroethene (TCE) in P-3, P-4, and P-6
- vinyl chloride in P-3 and P-4
- cis-1,2-dichloroethene (cis-1,2-DCE) in P-3, P-4, and P-6

The twelve VOCs identified above were detected in piezometers located within the capped area. VOCs were not detected above the New York State Class GA standards from piezometers located outside of the capped area.

As indicated on Table 6, SVOC constituents detected in the piezometers that exceeded New York State Class GA standards included 2-methylphenol, bis(2-chloroethoxy)methane, bis(2-chloroethyl)ether, and phenol in P-3 and 4-chloroaniline in P-6. Piezometers P-3 and P-6 are located within the capped area. SVOCs were not detected above New York State Class GA standards from piezometers located outside of the capped area.

As indicated on Table 7, PCBs and pesticides were not detected in the piezometer samples within or outside of the capped area.

As indicated on Table 8, inorganic constituents detected in the piezometers that exceeded New York State Class GA standards included iron at five locations (P-1, P-2, P-4, P-5, and P-6), sodium at all six locations, chromium at five locations (P-1, P-3, P-4, P-5, and P-6), manganese at three locations (P-2, P-4, and P-6), and arsenic at P-3. Similar to the monitoring wells, it is likely that the detected concentrations of iron, sodium, and manganese in the piezometers are related to naturally occurring concentrations of these constituents and not attributed to site-related activities. This is likely because upgradient wells URS-14I and URS-14D show similar concentrations of these constituents. While detected in one piezometer (P-3) located within the capped area, arsenic was not detected in piezometers outside of the capped area. Chromium was the only inorganic constituent detected outside of the capped area (P-1 and P-5) at concentrations above New York State Class GA standards.

As indicated in Section 1.2, inward hydraulic gradients have consistently been observed in the northeastern and southern portions of the capped area. However, inward gradients have not been readily observable in the vicinity of piezometers P-1 and P-2 along the eastern portion of the capped area. Although inward hydraulic gradients have not been observed in the vicinity of piezometers P-1 and P-2, evaluation of the

October 2001 analytical data from P-1 and P-2 indicates that VOCs, SVOCs, PCBs, pesticides were not detected at concentrations exceeding the New York State Class GA standards. Migration of these constituents via ground water in the vicinity of P-1 and P-2 is not supported by the analytical data. The concentration of chromium detected in P-1 is not likely due to migration of chromium from beneath the cap. If chromium is migrating from beneath the cap in the vicinity of P-1 and P-2, it would be expected that the concentration would be higher in P-2 (within the capped area) than the concentration at P-1 (outside the capped area). The concentration of chromium in P-2 is, however, lower than in P-1. In addition, the chromium concentration in P-5 (outside the capped area) is greater than in P-6 (within the capped area) even though inward hydraulic gradients have consistently been observed in the vicinity of these piezometers.

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 seventeen 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 sixteen analytes (at $\alpha = 0.10$) do not appear to be normally distributed. Arsenic appears to be normally distributed.

The October 2001 data represents the results of the ninth 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 October 2001, 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, Sodium
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.

Results of the t-test analysis indicate that barium concentrations are greater in upgradient well URS-14I than in corresponding downgradient wells URS-9I and 88-12C, and greater in upgradient well URS-14D than in corresponding downgradient wells 88-12D and URS-9D, at a confidence level of α =0.05. T-test analysis results also indicate that sodium concentrations are greater in upgradient well URS-14I than in corresponding downgradient wells URS-9I and 88-12C, at a confidence level of α =0.05. Concentrations of barium in URS-9I, URS-9D, 88-12C, 88-12D, URS-14I, and URS-14D are below the New York State Class GA standard.

T-test analysis results indicate that calcium concentrations are greater in upgradient well URS-14D than in corresponding downgradient well URS-9D, at a confidence level of α =0.05. In addition, t-test analysis results indicate that zinc concentrations are greater in upgradient well URS-14I than in corresponding downgradient well 85-7R, at a confidence level of α =0.05.

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 October 2001 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-9D), potassium (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 were detected at higher concentrations in upgradient wells than in downgradient wells.
- Iron was detected in four 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.
- Samples analyzed from the piezometers indicated that inorganics, VOCs, and SVOCs were detected at concentrations that exceeded New York State Class GA standards. However, other than chromium at P-1 and P-5, these constituents were detected from piezometers within the capped area. It is not unexpected to encounter detectable concentrations of these constituents within the capped area.
- Review of the ground water elevations data on Figure 1 indicate 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. P-1, which is located outside of the capped area, and P-2 located within the capped area did not contain concentrations of VOCs, SVOCs, PCBs, pesticides, or inorganics (other than chromium (P-1), iron (P-1 and P-2), manganese (P-2), and sodium (P-1 and P-2)) that exceeded New York State Class GA standards. Not withstanding 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.
- 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.

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.

Table 1

Frontier Chemical - Pendleton Site
Plezometer Ground Water Elevation Summary Table

		Top of Riser	Top of Riser Top of Cover	Depth (ft	Screened			٠		Ground v	Ground water elevation (ft)	ition (ft)				
Piezometer	Location	Elev. (ft)	Elev. (ft)	below riser)	Elev. (ft)	6/24/97	9/30/97	2/23/98	4/28/98	9/17/98	2/3/99	8/11/99	2/7/00	00/6/8	2/12/01	10/8/01
<u>-</u>	(O) Eastern portion	583.21	583.30	16.4	576.8 - 566.8	579.54	577.09	579.25	979.60	575.62	572.97	575.83	573.76	576.66	577.24	574.27
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	576.96	578.27	575.59	577.60	577.24	577.36
P-3	(i) Center of capped	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
	area															
4 4	(I) Adjacent to	582.31	583.85	15.6	576.7 - 566.7	577.15	577.43	57ė.70	575.11	575.96	574.58	575.56	573.96	575.11	573.90	576.51
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
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
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
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
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

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 - Pendieton Site
Monitoring Well Ground Water Elevation Summary Table

Monitoring		Top of Riser Ground	Ground	Depth (ft	Screened					Ground 1	Ground water elevation (ft)	tion (ft)				
Well	Location	Elev. (ft)	Elev. (ft)	below riser)	Elev. (ft)	6/24/97	9/30/97	2/23/98	4/28/98	9/17/98	2/3/89	8/11/89	2/7/00	00/6/8	2/12/01	10/8/01
URS-14I	URS-14l Upgradient well nest	581.14	580.84	31.0	550,1 - 555,1	577.15	578.77	580.24	580.14	574.78	577.35	575.42	577.68	577.74	579.58	573.49
URS-14D	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
URS-91	URS-9! Southern well nest	581.68	579.90	48.0	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
URS-9D	URS-9D along Town Line Road	580.80	579.00	46.5	534,3 - 539,3	575.38	574.21	575.68	575.89	573.64	572.66	571.24	571.66	572.94	574.15	571.91
85-5R	Middle well nest	580.84	578.70	40.0	540.9 - 542.9	574.70	573.97	675.39	575.70	574.98	572.78	571.92	571.10	572.95	573.76	571.78
URS-5D	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
85-7R	85-7R North well nest	577.90	578.60	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
URS-7D	URS-7D along Town Line Road	579.35	578.50	39.9	539.5 - 544.5	575.15	574,35	575.80	575.99	573.75	572.40	571.99	571.57	573.13	574.14	571.80
88-12C	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
88-12D	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	572.38	572.33	573.53	574.74	572.72

Notes:

1. Elevation based on USGS Datum.

5829/29820/4/12.xls

O'Brien Gere Engineers, Inc.

Table 3 Frontier Chemical - Pendleton Site Quarry Lake Surface Water Elevation Summary Table

	Quarry Lake
Date	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

Notes:

- Elevation based on USGS Datum.
 Ice surface elevation.



Summary of Ground Water Analytical Data Frontier Chemical-Pendleton Site October 2001 Table 4

Company Comp		Sample ID	NYS Class GA	85-5R	85-5R	85-5R	85-5R	85-5R	85-5R
Units Units upt	-	Sample Date	Standards	08/01/90	16/10/20	10/01/92	. 06/25/97	02/24/98	86/81/60
Oreclama 5 5 U U 6 U U		Units	ng/L	ug/L	ug/L	ug/L	J/gn	ng/L	7/8n
occidations 5 5 5 5 6 <th< td=""><td>Compound</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>,</td></th<>	Compound								,
Column	VOCs			1.7	+		***	**************************************	
State	1 1 2 2-Tetrachloroethane		٠	2.0	2.15	0.50	0.50	U.C.U	U.S.U
Second Colored Color	1.1-Dichloroethane			5.0	2.11	0.50	0.50	0.5.0) (°)
ORES() INC 101 100 630 100<	1,2-Dichloroethene		5	5 U	5 U	0.5 U	NA NA	NA) VV
National CMINK) NC 21 10 10 10 10 10 10 10	2-Butanone (MEK)		NC	101	10 C	0.5 C	Π01	10.0	0.01
NC R 10 U 65 U 10 U 10 U connectation NC 5 U 5 U 65 U 65 U 65 U 63 U filed NC 5 U 5 U 5 U 65 U 63 U 63 U 63 U filed NC 5 U 5 U 5 U 65 U 63 U	4-Methyl-2-pentanone (MIBK)	(NC	2.5	10 U	0.5 U	5 U	5 U	5 U
rondentiate 11 [151] 5 U 65 U 63 U	Acetone		NC	R	10 U	0.5 U	101	10 UI	10 UJ
NC S1U S1U 65U	Benzene			[15]	5 U	0.5 U	0.5 U	0,34 J	0.5 U
fifte NC 5 U 5 U 65 U 624 U 611 U sine 5 S NA NA 65 U 62 U <td>Bromodichloromethane</td> <td></td> <td>ž</td> <td>5.0</td> <td>0.5</td> <td>0.5 U</td> <td>0.5.0</td> <td>0.5 U</td> <td>0.5 U</td>	Bromodichloromethane		ž	5.0	0.5	0.5 U	0.5.0	0.5 U	0.5 U
init 5 NA NA NA 0.5U 0.53U connection 5 5U 5U 0.5U 0.5U 0.5U 0.5U connection 5 5U 5U 0.5U 0.5U 0.5U 0.5U connection 5 5U 5U 0.5U 0.5U 0.5U 0.5U ine 5 5U 5U 0.5U 0.5U 0.2U 0.5U ine 5 5U 5U 0.5U 0.5U 0.5U 0.5U circ 2 10U 10U 10U 0.5U 0.5U 0.5U circ 3 5U 5U 0.5U 0.5U 0.5U 0.5U circ 3 5U 5U 0.5U 0.5U 0.5U 0.5U circ 3 18 1.2AB 1.3A 1.0U 0.5U 0.5U circ 10 1.0U 1.0U 1.0U 1.0U 0.0U	Carbon disulfide		NC	5 U	5 U	0.5 U	0.74 U	0.11 U	0.5 U
occurrentation 7 5 U 5 U 6 JU 7 JU 7 JU 7 JU 7 JU	Chlorobenzene		5	NA	NA	NA	0.5 U	0.28.J	U.S.O.
e 5 5 U 65 U </td <td>Chloroform</td> <td></td> <td>7</td> <td>5 U</td> <td>5 U</td> <td>0.5 U</td> <td>0.5 U</td> <td>υ 5.0</td> <td>0.5 U</td>	Chloroform		7	5 U	5 U	0.5 U	0.5 U	υ 5.0	0.5 U
e 5 5 U 50 U 0.5 U 0.54 J Moride 5 5 U 5 U 0.5 U 0.5 U 0.5 U ene 5 5 U 5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U ene 5 5 U 5 U 0.5 U 0.	Dibromochloromethane		•	s u	su	D\$0	0.5 U	0.5.0	0.5.0
Monitale 5	Ethylbenzene		ς,	5.0	5.0	0.5 U	0.5 U	0.24 J	0.5 U
see 5 U 5 U 65 U 614 J ene 5 5 U 63 U 63 U 61 U 61 U de 2 10 U 10 U 63 U 63 U 63 U 63 U 63 U loroethene 5 5 U 5 U 63 U 63 U 63 U 63 U 63 U loroethene 5 5 U 8 U 63 U 63 U 63 U 63 U NC 214 37 B 153 80 U 10 U 10 U 10 U NC 12 U 10 U 10 U 10 U 10 U 10 U 10 U NC 135 B 12 U 10 U 10 U 10 U 10 U 10 U NC 15 B 10 U 10 U 10 U 10 U 10 U 10 U NC 10 U NC 2 U 12 U 12 U 10 U 10 U 10 U	Methylene chloride		5	5.0	5.0	0.50	0.5 U	0.5 U	0.5.0
set 5 5U 65U 65U 65U 65U 65U 65U 65U 10	Toluene		· ·	5 U	5 U	0.5 U	0.5 U	0.14 J	0.5 U
de 2 10 U 10 U 0.5 U 1 U 1 U 0,0 5 5 U 5 U 0.5 U 0.5 G 0.5 G 1 NA NA NA NA 0.5 U 0.5 G 0.5 G 1 1 1 1 1 1 0.5 G	Trichloroethene		5	5.0	5.0	0.5 U	0.50	0.5 U	0.50
I) 5 5 U 5 U 0.5 U 0.96 loroethene 5 NA NA NA 0.5 U 0.5 U 0.5 U loroethene 5 NA NA NA 0.5 U 0.5 U 0.5 U loroethene 3 18 U 17.4 Bj 80 U 10 U <td>Vinyl chloride</td> <td></td> <td>2</td> <td>10 U</td> <td>10 U</td> <td>0.5 U</td> <td>. 11</td> <td>n r</td> <td>n</td>	Vinyl chloride		2	10 U	10 U	0.5 U	. 11	n r	n
Incomplement 5 NA NA NA 0.5 U 0.5 U 0.5 U 1 121 37.8 B 153 100 U 3.00 3.00 2 1 18 U (42.4 B) 80 U 10 U <td>Xylene (total)</td> <td></td> <td>5</td> <td>5.0</td> <td>SU</td> <td>D 5.0</td> <td>0.5 U</td> <td>96'0</td> <td>0.5 U</td>	Xylene (total)		5	5.0	SU	D 5.0	0.5 U	96'0	0.5 U
NC 214 37.8 B 153 100 U 300 3 18 U [42.4 B] 80 U 10 U 10 U 1000 73.5 B 10 U 10 U 10 U 10 U NC 1 U 1 U 1 U 3 U 30 NC 35500 37800 321000 270000 22000 NC 20 7.5 B 4 U 5 U 10 U 10 U NC 20 4 U 3 U 30 U 30 U 30 U 200 10 U 10 U 10 U 2 U 10 U 10 U 10 U 200 10 U 10 U 12 U 10 U	cis-1,2-Dichloroethene		5	NA	NA	YN.	0.5 U	0.5 U	0.5 U
NC 214 37.8 B 153 100 U 300 3 18 U [42.4 B] 80 U 10	Metals								
3 18 U [424 B] 80 U 10 U 10 U 25 1 B 1 U 10 U 10 U 10 U 1000 73.5 B 23.4 B 15 40 80 NC 1 U 1 U 1 U 3 U 3 U 3 U NC 355000 378000 371000 270000 220000 220000 220000 220000 20000 20000 20000 30 U 30 U <td>Aluminum</td> <td></td> <td>NC</td> <td>214</td> <td>37.8 B</td> <td>153</td> <td>100 U</td> <td>300</td> <td>100 U</td>	Aluminum		NC	214	37.8 B	153	100 U	300	100 U
25 1 B 1 U 10 U 10 U 10 U 1000 73.5 B 23.4 B 15 40 80 NC 1 U 1 U 1 U 3 U 3 U 3 U NC 355000 378000 321000 270000 220000 220000 50 7.5 B 4 U 5 U 10 U 30 30 NC 2 U 3 U 5 U 30 U 30 U 30 U 200 4 U 12 U 11 10 U 10 U 10 U 200 10 U 10 U 2 U 10 U 10 U 10 U 200 10 U 10 U 10 U 10 U 10 U 10 U 25 1 U 12 B 10 U 10 U 10 U 10 U 25 1 U 12 B 10 U 10 U 10 U 10 U 25 1 U 10000 13000 13000 10 U 10 U	Antimony		3	18 U	[42.4 B]	80 U	10.0	10 U	50
NC	Arsenic		25	- B	ם	10 U	10 U	10 U	5 U
NC 1 U 1 U 1 U 3 U 3 U 3 U 3 U 3 U 3 U 3 U 3 U 3 U 1 U	Barium		1000	73.5 В	23.4 B	5	40	80	50.3
5 1 U 2 U 5 U 1 U 1 U NC 355000 378000 321000 270000 220000 50 7.5 B 4 U 5 U 10 U 30 NC 2 U 3 U 5 U 30 U 30 U 200 4 U 12 U 11 10 U 10 U 200 10 U 10 U 10 U 10 U 25 1 U 1.2 B 10 U 10 U 10 U 25 1 U 1.2 B 10 U 10 U 10 U NC 106000 170000 139000 85000	Beryllium		NC	1.0	10	D.I	3 U	3.0	3 U
NC 355000 378000 321000 270000 220000 50 7.5 B 4 U 5 U 10 U 30 NC 2 U 3 U 5 U 30 U 30 U 200 4 U 12 U 11 10 U 10 U 200 10 U 10 U 10 U 10 U 10 U 20 1 U 12 B 10 U 10 U 10 U 21 1 U 1.2 B 10 U 10 U 10 U 10 U 25 1 U 1.2 B 10 U 10 U 10 U 10 U MC 100000 170000 139000 85000 85000	Cadmium		5	10	2.0	5.0	ΩI	0.1	10
50 7.5 B 4 U 5 U 10 U 30 NC 2 U 3 U 5 U 30 U 30 U 200 4 U 12 U 11 10 U 10 U 200 10 U 10 U 2 U 10 U 10 U 20 10 U 10 U 10 U 10 U 25 1 U 1.2 B 10 U 10 U 10 U NC 106000 170000 139000 85000	Calcium		NC	355000	378000	321000	270000	220000	220000
NC 2 U 3 U 5 U 30 U 30 U 200 4 U 12 U 11 10 U 10 U 200 10 U 10 U 2 U 10 U 10 U 300 1669 I [669 I [615 J [419 I 140 [2300 I 25 1 U 1.2 B 10 U 10 U 10 U NC 106000 170000 139000 85000	Chromium		50	7.5B	4 U	5.0	Ω01	30	01
200 4 U 12 U 11 10 U 10 U 200 16 U 10 U 2 U 10 U 10 U 300 [669] [915] [419] 140 [2300] 25 1 U 1.2 B 10 U 10 U 10 U NC 106000 170000 139000 85000	Cobalt		NC	2 U	3 U	5 U	30 U	30 U	25 U
200 10 U 10 U 2 U 10 UJ 10 U 300 [669] [915] [419] 140 [2300] 25 1 U 1,2 B 10 U 10 U NC 106000 170000 139000 85000	Copper		200	40	12.0	-	10.0	10 U	10 U
300 [669] [915] [419] 140 [2300] 25 1 U 1,2 B 10 U 10 U NC 106000 170000 139000 130000 85000	Cyanide		200	10 U	10 U	2 U	. 10 UJ	10 U	10 U
25 1 U 1,2 B 10 U 10	Iron		300	[699]	[915]	[419]	140	[2300]	190
NC 106000 170000 139000 130000 85000 1	Lead		25	n n	1.2 B	10 U	10 U	10 U	5 U
			NC	106000	170000	139000	130000	85000	110000

E-estimated, N-tentatively identified, NC-no criteria.

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

October 2001

Name Outling Name		Sample ID	NYS Class GA	85-5R	85-5R	85-5R	85-5R	85-5R	85-5R
United U		Sample Date	Water Quality Standards	02/04/99	08/13/99	02/08/00	08/11/00	02/13/01	10/11/01
Control Cont		11.11	<i>H</i> ***	# - · ·	W	W ==		<i>V</i> ****	Į.
Comparison of the profession		Omis	7/8n	T/Sin	7.An	7/8n	189	1 66	200
Trichloroediume 5 6.5 U	Compound								
Transcriptionalities 5 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.	VOCs				0.611	118.0	1170	0.411	
A contractional colored by a color of colored by a color of colored by a color of colored by a c			^	U.C.V) 11 y c	7.70	0.50	777	0.5.0
citizate plane 5 0.0.1	I, I, 2, 2- I etrachioroethane		2	O C'O	O C'O	O co	0 C'0	O CO	D.C.9
Optionschipment 5 NA 10 UI 10 U	I,1-Dichloroethane		\$	0.5 U	0.5 U	0.5 U	0.5.0	0.5 U	0.5 U
And Conformation (ARRY) NC 10 U	1,2-Dichloroethene		5	NA	NA	NA	NA	VΑ	NA
Operations (MBK) NC SU	2-Butanone (MEK)		NC	, nor	10 UJ	10 UZ	0.01	10 OT	10 U
region of the control of the	4-Methyl-2-pentanone (MIBK	(;	NC	5 U	5 U	s uj	5 U	5 U	s U
objection of the control of	Acetone		NC	10 D	10 UJ	10 UJ	10.01	ID 01	10 UJ
Ocide/Informerlating NC 65 U 65 U <th>Benzene</th> <th></th> <th>—</th> <th>0.5 U</th> <th>0.1 J</th> <th>0.5 U</th> <th>0.5 U</th> <th>0.5 U</th> <th>0.5 U</th>	Benzene		—	0.5 U	0.1 J	0.5 U	0.5 U	0.5 U	0.5 U
obstanciate NC 0.5 U	Bromodichloromethane		NC	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	. 0.5 U
objectioned parameters 5 6.5 U 6.5 U <th>Carbon disulfide</th> <th></th> <th>NC</th> <th>0.5 U</th> <th>0,83 U</th> <th>18</th> <th>0.5 UJ</th> <th>0.59 U</th> <th>0.5 U</th>	Carbon disulfide		NC	0.5 U	0,83 U	18	0.5 UJ	0.59 U	0.5 U
offen 7 0,5 U 0,5	Chlorobenzene		5	U.S.U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
monthloromethlane 5 65 U	Chloroform		7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
beatzene 5 0.5 U	Dibromochloromethane		5	0.5.0	U 5'0	0.5.0	0.5 U	0.5 U	0.5 U
related time 5 6.5 U 6.5 U 5 U 5 U 5 U 5 U 5 U 5 U 5 U 5 U 5 U 5 U 5 U 5 U 6.5 U <	Ethylbenzene		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
nee 5 0.5 U	Methylene chloride		\$	0.5.0	0.5.U	2U.	50	2.U	2.0
challenge 5 0.5 U 0.5 U <th< td=""><td>Toluene</td><td></td><td>5</td><td>0.5 U</td><td>0.5 U</td><td>0.5 U</td><td>0.5 U</td><td>0.5 U</td><td>0.5 U</td></th<>	Toluene		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
edical) 2 1 1 U 1 U 1 U 1 U 1 U 1 U 1 U 1 U 1 U	Trichloroethene		5	0.5.0	0.50	0.50	U.\$.0	0.5 U	0.5 U
Companies Comp	Vinyl chloride		2	1 U	n	n l	2	n I	1.0
2-Dichloroethene 5 65 U 617 J 6117 6117 6117 62 U	Xylene (total)		2	0,5 U	0.5 U	0.5 U	0.5 U	0.50	0.5 U
num NC 100 U 100	cis-1,2-Dichloroethene		5	0.5 U	0.17 J	0.1 J	0.11.3	0.5 U	0.5 U
intum NC 100 U 5 U	Metals								
y 3 5 U 5 U 5 U 5 U 5 U 5 U 5 U 5 U 5 U 5 U 5 U 5 U 5 U 5 U 5 U 4 U	Aluminum		NC	. O 001	100 U	U 00 I	100 U	D 001	N 001
1000 1000 1000 1000 60 60 60 40 n NC 10 U 3 U 3 U 3 U 40 n S 10 U 1 U 1 U 1 U 1 U 1 U m SO 10 U 10 U <t< td=""><td>Antimony</td><td></td><td>3</td><td>5.0</td><td>5.0</td><td>5.0</td><td>5.0</td><td>5.0</td><td>5.0</td></t<>	Antimony		3	5.0	5.0	5.0	5.0	5.0	5.0
n 1000 100 U 60 60 40 n NC 10 U 3 U 3 U 3 U 3 U n S 10 U 1 U 1 U 1 U 1 U m 50 10 U 10 U 10 U 10 U 10 U m 50 10 U 10 U 10 U 10 U 10 U NC 50 U 25 U 25 U 20 U 25 U 25 U n NC 50 U 10 U 10 U 10 U 10 U 10 U n 200 10 U 10	Arsenic		25	5 U	s us	s U	5 U	5 U	5 U
n NC 10 U 3 U 3 U 3 U 3 U 3 U 3 U 3 U 3 U 3 U 3 U 3 U 3 U 3 U 3 U 3 U 3 U 3 U 3 U 3 U 4 U 1 U	Barium		1000	J 001	09	09	09	40	50
n 5 10 U 1 U 1 U 1 U NC 130000 220000 200000 190000 140000 m 50 10 U 10 U 10 U 10 U NC 50 U 25 U 25 U 20 U 25 U 200 10 U 10 U 10 U 10 U 10 U 200 10 U 10 U 10 U 10 U 10 U 300 50 U 50 U 50 U 50 U 50 U 25 5U 5U 5U 5U 5U 5U 40 50 U 50 U 5U 5U 5U 5U 80 50 U 5U 5U 5U 5U 7U 80 50 U 5U 5U 5U 5U 5U 80 50 U 5U 5U 5U 5U 5U 80 50 U 5U 5U 5U 5U 5U 80	Beryllium		NC	10 U	3 U	3.0	3 U ·	3 U	0.1 J
na 50 10 U 10	Cadmium		\$	100	1.0	1.0	10	Iυ	1.0
m 50 10 U 25 U 10 U	Calcium		NC	130000	220000	200000	190000	140000	160000
NC \$0.U \$25.U \$26.U \$25.U 200 10 U 10 U 10 U 10 U 200 10 U 10 U 10 U 10 U 300 50 U 50 U 50 U 50 U 25 5 U 5 U 5 U 5 U mm NC 59900 99000 90000 85000 62000	Chromium		90	10.0	10 U	D 01	10 U	D 01	101
200 10 U	Cobalt		NC	20 U	. 25 U	25 U	20 U	25 U	20 U
de 200 10 U 10	Coppet		200	10 D	10 C	10 U	10 U	10 U	Ĺ
300 50 U 100 50 U (420.) 50 U	Cyanide		200	10 O	10 O	10 U	10 U	10 U	N 01 ,
25 5 U 5 U 5 U 5 U 5 U 5 U 5 U NC 59000 99000 90000 85000 62000	пол		300	20 U	100	50 U	[420]	£0 D	r o j
NC 59000 99000 90000 85000 62000	Lead		25	su	s U	S U	5 U	5 U	, 5 U
	Magnesium		NC	59000	00066	00006	85000	62000	01000

U - not detected, J, B - estimated value, K - unusable, NA-E - estimated, N - tentatively identified, NC - no criteria. [] - exceeds standard.

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Summary of Ground Water Analytical Data Frontier Chemical-Pendleton Site October 2001

	Sample ID	NYS Class GA	85-5R	85-5R	85-5R	85-5K	85-5R	85-5K
***************************************	Sample Date	Water Quality Standards	02/04/99	66/11/80	02/08/00	08/11/00	02/13/01	10/11/01
•	Units	1/8n	ng/L	ug/L	ug/L	ug/L	ng/L	ug/L
Compound								
Manganese		300	50 U	80	110	130 J	50	50 J
Mercury		0.7	0.2 U	0.2 U	0.2 U	0.2 U	020	0.2 U
Nickel		100	50 U	101				
Potassium		NC	5000 U	2000	2000 U	D 0005	5000 U	4000.1
Selenium		10	5 UJ	s us	s UJ	5 U	s UJ	5 U
Silver		50	10 U	10.01	101	101	10.0	1.1
Sodium		20000	[52000]	[00096]	[67000]	[00069]	[62000]	[87000]
Thallium		NC	1.0	5.0	2.0	2.0	2.0	2.0
Vanadium		NC	50 U	50 U	50 U	20 U	50 U	2.5
Zinc		NC.	D 01	10.1	10	101	20	10 U

U - not detected, J.B - estimated value, R - unusable, NA - not analyzed, ND - not detected. E - estimated, NV - tentatively identified, NC - no criteria. NOTES:

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Summary of Ground Water Analytical Data Frontier Chemical-Pendleton Site October 2001 Table 4

5 U 100 1072 062497 022498 1 5 U 5 U 0.5 U <th></th> <th>Sample ID</th> <th>NYS Class GA</th> <th>85-7R</th> <th>85-7R</th> <th>85-7R</th> <th>85-7R</th> <th>85-7R</th> <th>85-7R</th> <th></th>		Sample ID	NYS Class GA	85-7R	85-7R	85-7R	85-7R	85-7R	85-7R	
Units Unit		Sample Date	Water Quality Standards	. 06/10/80	02/01/91	10/01/92	06/24/97	02/24/98	09/18/98	
Trichicocrobane 5 5 19 1 5 10 63 U 63	•	Units	up/L	uø/L	. Noti	. 1/011	11011	Į, an	1	
Tricultorications 5 5 9 0 5 9 0 5 9 0 6 5 9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Compound			a .	b	ļ.	l b	i b	i b	
Trigolecockness S S S S S S S S S	VOCs									
Comparison Com	1,1,1-Trichloroethane		\$	5.0	5.0	0.5 U	0.50	0.5 tr	0.411	
State Stat	1,1,2,2-Tetrachloroethane		5	5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U	
And Appropriese 5 51 54 65U NA NA Indepositions (MIRK) NC 10 U 10 U 65 U 10 U	1,1-Dichloroethane			5 U	\$ U	0.5 U	0.5 U	0.50	0.5 U	
Occidence (MINK) NC 10 U	1,2-Dichloroethene		5	5 U	5 U	0.5 U	NA	NA	NA	
by 2-portation of MIRKy NC 10 U 10 U 63 U 50 U 10 U toe 1 61 U 5 U 63 U	2-Butanone (MEK)		NC	10.0	10 0	U.S.U.	U 01	10 U	0.01	
NC 10 U R 0,5 U 10	4-Methyl-2-pentanone (MIBK)	(NC	10 U	10 U	0.5 U	5 U	5.0	5 U	
objections 1 (e) 5 U 0.5 U 0.5 U 0.5 U deficiencementation NC 5 U 5 U 0.5 U 0.5 U 0.5 U deficiencementation NC 5 U 5 U 0.5 U 0.5 U 0.5 U desiration 5 5 U 5 U 0.5 U 0.5 U 0.5 U desiration 5 5 U 5 U 0.5 U 0.5 U 0.5 U desiration 5 5 U 5 U 0.5 U 0.5 U 0.5 U encertheride 5 5 U 5 U 0.5 U 0.5 U 0.5 U encertheride 5 5 U 5 U 0.5 U 0.5 U 0.5 U encertheride 5 5 U 0.5 U 0.5 U 0.5 U 0.5 U encertheride 5 5 U 0.5 U 0.5 U 0.5 U 0.5 U encertheride 5 5 U 0.5 U 0.5 U 0.5 U 0.5 U clocked 5	Acetone		NC	101	R	0.5 U	10 U	10 OJ	IO OI	2
NC 5 U 5 U 65	Benzene		-	[9]	. 0.6	0.5 U	0.5 U	0.5 U	0.5 U	
containing of the properties of the potential obstancials of the properties of	Bromodichloromethane		Ş	50	5.0	U.S.U.	0.5.0	0.50	U \$ 0	
ofcontament 5 NAA NAA NAA NAA OST ULL	Carbon disulfide		NC	5 U	5 U	0.5 U	U 67	0.13 J	0.5 U	
form 7 5 U 5 U 65 U	Chlorobenzene		5	NA	NA	NA	0.5 U	0.5.0	0.5 U	
proposition of production of produc	Chloroform		7	5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U	
statement 5 5 U 5 U 0.5	Dibromochloromethane		5	5.0	5 U	0.5.0	0.5 U	0.5.0	0.5.0	
lear chloride 5 5 5 5 6 <	Ethylbenzene		5	5 U	s U	0.5 U	0.5 U	0.5 U	0.5 U	3
tent 5 5 U 11 6.5 U 6.5 U <td>Methylene chloride</td> <td></td> <td>2</td> <td>3.0</td> <td>5.U</td> <td>0.5 U</td> <td>0,5 U</td> <td>0.5.U</td> <td>0.5 U</td> <td></td>	Methylene chloride		2	3.0	5.U	0.5 U	0,5 U	0.5.U	0.5 U	
proceletation 5 5U 5U 65U 65U 65U 65U 65U 65U 1U chloride 2 10U 10U 65U 1U 1U 1U choldrorethene 5 NA NA NA NA NA 1U	Toluene		5	5 U	2	0.5 U	0.5 U	0.5 U	0.5 U	
Actional (coloral) 5 10 U 10 U 0.5 U 0.5 U 1 U 1 U Actional) 5 5 U 0.5 U 0.5 U 0.5 U 0.5 U 1 U Dichitorochleme 5 NA NA NA 0.14 J 0.19 U 0.10 U	Trichloroethene		5	5.0	5.0	0.50	0,5 U	0.5 U	0.5 U	
(folal) 5 5 5 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 7 6 5 7 6 5 7 6 6 7 6 7 6 7 6 7 6 7 6 7 10	Vinyl chloride		2	D OI	10 U	0.5 U	n I	n I	10	
Dicklotocethene 5 NA NA NA 0.14 J 0.19 J num NC 277 265 249 100 U 100 U num NC 277 265 249 100 U 100 U c 23 128 JB 26 U 80 U 100 U 100 U n 1000 91 B 143 B 166 U 100 U 10 U um NC 1 U 1 U 1 U 3 U 3 U 10 U n NC 1 U 2 U 5 U 1 U 1 U 1 U n NC 2 U 2 U 3 U 1 U 1 U 1 U im NC 2 U 2 U 1 U	Xylene (total)		'n	5.0	5.0	0.5 U	0.5 U	0.5 U	USO	
num NC 277 265 249 100 U 100 U num 3 [283 B] 26 U 80 U 100 U 100 U c 25 14 B 1.7 B 10 U 10 U 10 U n 1000 91 B 1.7 B 10 U 10 U 10 U n NC 1 U 1 U 1 U 3 U 3 U 10 U n NC 354000 2 U 5 U 1 U 1 U 1 U n NC 31 U 4 U 5 U 1 U 1 U 1 U n 50 31 U 4 U 5 U 1 U 1 U 1 U n 200 10 U 1 U 2 U 1 U 1 U 1 U n 200 10 U 1 U 2 U 1 U 1 U 1 U 1 U n 200 10 U 1 U 2 U 1 U 1 U 1 U 1 U <t< td=""><td>cis-1,2-Dichloroethene</td><td></td><td>5</td><td>NA</td><td>NA</td><td>NA</td><td>0.14 J</td><td>0.19 U</td><td>0.14 J</td><td></td></t<>	cis-1,2-Dichloroethene		5	NA	NA	NA	0.14 J	0.19 U	0.14 J	
um NC 277 265 249 100 U 100 U ny 3 [283 Bj 26 U 80 U 10 U 10 U x 148 17 B 10 U 10 U 10 U 10 U m X 100 11 B 143 B 10 G 10 U 10 U m NC 11 U 1 U 1 U 1 U 1 U 1 U m NC 354000 298000 389000 350000 30 U 1 U m NC 3 U 4 U 5 U 1 U 1 U m 50 3 U 4 U 5 U 10 U 10 U m 200 4 U 12 U 2 U 10 U 10 U m 200 10 U 10 U 10 U 10 U 10 U m 20 10 U 20 U 10 U 10 U 10 U m 20 10 U 10 U 10 U 10	Metals									
1y 3 [28.3 B] 26 U 89 U 10 U 10 U 100 100 17 B 10 U 10 U 10 U 100 100 91 B 143 B 10 C 10 U 10 U 1 1 U 1 U 1 U 3 U 3 U 3 U 1 NC 1 U 2 U 5 U 1 U 1 U 1 NC 350 3 U 4 U 5 U 10 U 10 U 1 NC 2 U 3 U 5 U 10 U 10 U 1 200 4 U 12 U 5 U 10 U 10 U 1 200 10 U 10 U 10 U 10 U 10 U 200 10 U 10 U 2 U 10 U 10 U 10 U 200 10 U 10 U 10 U 10 U 10 U 10 U 25 1 U 2 G 10 U 10 U 10 U 10 U 100<	Aluminum		NC	277	265	249	100 U	100 U	100 U	
mm 25 1.4 B 1.7 B 10 U 1	Antimony		3	[28.3 B]	26 U	N 08	10.0	10 U	5.0	
Marcoll 1000 91 B 143 B 166 100 80	Arsenic		25	1.4 B	1.7 B	10 U	10 U	10 U	\$ U	
mm NC 1 U 1 U 3 U 3 U 3 U 3 U 3 U 3 U 3 U 1 U	Barium		1000	91 B	143B	901	100	80	\$0.5	
iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii	Beryllium		NC	1 U	10	1.0	3 U	3 U	3.0	
NC 354000 298000 389000 350000 350000	Cadmium		v	10	2.0	5.0	2	n I	n.	
um 50 3 U 4 U 5 U 10 U 10 U NC 2 U 3 U 5 U 30 U 30 U 200 4 U 12 U 8 10 U 10 U 200 10 U 10 U 2 U 10 U 10 U 300 [586] [820] [435] 190 [310] 1 U 2.6 B 10 U 10 U 10 U 1 U 2.6 B 10 U 10 U 10 U 1 U 2.6 B 10 U 10 U 10 U 1 U 2.6 B 10 U 10 U 10 U 1 U 2.6 B 10 U 10 U 10 U	Calcium		NC	354000	298000	389000	350000	350000	420000	
NC 2 U 3 U 5 U 30 U 30 U 200 4 U 12 U 8 10 U 10 U 200 10 U 10 U 10 U 10 U 300 [586] [820] [435] 190 [310] 25 1 U 2.6 B 10 U 10 U 10 U ium NC 119000 124000 124000 120000 120000	Chromium		50	3.0	4 U	SU	D 0.1	D'01	10.0	200
; 200 4U 12U 8 10U	Cobalt		NC	2 U	3 U	5 U	30 U	30 U	25 U	
; 200 10 U	Copper		200	4U	12 U .	8	10.U	10 U	10 U	
300 [586] [820] [435] 190 [310]	Cyanide		200	10 U	10 U	2 U	10 UJ	10 O	10 U	
25 1U 2.6B 10U	Iron		300	[386]	[820]	[435]	190	[310]	270	
ium NC 119000 42600 124000 120000 120000	Lead		25	10	2.6 B	10 U	10 U	10 U	5 U	
	Magnesium		NC	119000	42600	124000	120000	120000	140000	
	T. Palmula. T	E - estimated N - tentatively identified NC - no criteri	no criteria							_

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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Summary of Ground Water Analytical Data Frontier Chemical-Pendleton Site October 2001 Table 4

	Sample ID	NYS Class GA	85-7R	88-12C	88-12C	88-12C	88-12C	88-12C
	Sample Date	Water Quality Standards	10/18/01	08/01/80	02/01/91	10/01/92	06/24/97	02/25/98
•	Units	ug/L	ng/L	J/gn	ug/L	ug/L	ng/L	ug/L
Compound	٠							
Manganese		300	NA	45.4	37.8	54	10	70
Mercury		2'0	NA.	0.2.U	0.2 U	0.2 U	020	0.2 U
Nickel		100	NA	14.6 B	13 U	5 U	50 U	50 U
Potassium		NC	NA	2520 B	3200 B	3000	0005 C	2000 U
Selenium		10	NA A	2 U	n I	5 U	10 U	10 U
Silver		50	NA	4 U	3.0	D 01	T0.T	10.0
Sodium		20000	NA	[34600]	[41100]	[41300]	[47000 J]	[43000]
Thallium		NC	NA	1.0	2.0	80 U	Ω01	13
Vanadium		NC	NA	22.1 B	10 B	s U	50 U	50 U
Zinc		2	NA	10.1 B	15.7 B	10 C	20	20
	*							

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Frontier Chemical-Pendleton Site Summary of Ground Water Analytical Data October 2001

	Sample Date	Water Quality Standards	. 86/L1/60	02/04/99	66/11/80	02/01/00	08/10/00	02/12/01
	Units	J/Bn	ug/L	ug/L	ug/L	ug/L	ng/L	ug/L
Compound								
VOCs			0.517	1150		0,5 U	0.5.0	D. F.O
1,1,1+1ficulorocume		Υ	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U
1,1,2,2-1 enacinor ociniane		,	n 5'0	0.5.U	0.5 UI	0.5 U	UžO	0.5 U
1.1-Dichlorochiane		\$	ŊĄ	NA	NA	NA	NA	NA
1,z-Diciliorocarene		NC	10.0	101	10.01	10 UI	10 T	10 th
Z-budmone (MEK)		N CX	5 U	5 U	s UJ	5 UJ	s u	s U
4-Melly1-2-pellanone (mass)) NC	10 UJ	Π01	mon.	10 UI	10 UJ	10 UI
Possessi		2. -	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U
Benzene F. J. H.		, DN	0.510	0.5.0	LU 5.0	0.5 U	0.5.0	0.5 U
Bromodichioromeniane) Z	0.517	0.5 U	0,5 UJ	0.84	0.5 UJ	0.72 U
Carbon disumde) ·	0.511	0.50	0.5 UJ	0.5 U	0.5.0	0.5 U
Chlorobenzene		7	0.517	0.5 U	0.5 UJ	0.5 U	U.S.U	0.5 U
Chioroform		· •	Û 5.0	0.50	0.5 UJ	0.5 U	U.S.U	0.5 U
Education of the February			0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U
Emylbenzene Merkulana eklonida			0.5 U	υ5:0	0.5 UJ	2.0	50	2.0
Toluna		5	0.5 U	0.5 U	0.5 UJ	0.19 J	0.5 U	0.5 U
Trichlorouthone			0.5.U	0.5 U	0,5 UJ	0.5 U	0.5 U	0.5.0
Vind obloride		2	1.0	10	100	חת	n1	n 1
Xvlene (foles)		2	0.5 U	0.5 U	0.5 UJ	0,15.1	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	009	D 001	100 U	D 001	0.001
Antimony		3	5.0	5.0	\$U	2 U	7.5) .
Arsenic		25	10	12	11.	12	12.5	
Barium		0001	20 U	20 U	20 U	20 U	20 U	
Bervllium		NC	3 U	3 U	3.0	3.0	3 U	310
miimpa		5	1.0	1.0	nΙ	ם	D.	n -
Calcium		NC	71000	26000	80000	78000	78000	76000
Chromitim		50	10	20	0.01	D 01	10 U	n or
Cohalt		SC	25 U	25 U	25 U	25 U	20 U	25 U
Conner		200	10 U	1001	10 U	100	10 U) 101
Cvanide		200	10 U	10 U	D 01	10 N	n o n	0.01
Tion		300	[330]	[1600]	100	200	[986]	30
Lead		25	s U	5.0	5.0	5 U	3 U	0.0
Magnesium		NC	110000	100000	110000	110000	110000	Tonono

E - estimated, N - tentatively identified, NC - no criteria.

[] - exceeds standard.

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Summary of Ground Water Analytical Data Frontier Chemical-Pendleton Site October 2001

								001 00
	Sample ID	NYS Class GA	88-12C	88-12C		88-12C		771-00
	Sample Date	Standards	86/11/60			02/07/00		02/12/01
•	Units	ug/L	ng/L	ng/L		ug/L	ug/L	ng/L
Compound								
Manganese		300	10					0.
Mercury		0.7	0.2 U		0,2 U		02U	u
Nickel		100	50 U					D 02
Potassium		NC	2000 U					1000 U
Selenium		01	s U					5
Silver		20	10 U					0.0
Sodium		20000	[40000]					43000]
Diallium		NC	1m					D
Vanadium		NC	20 U					O 0.
Zinc		NC	10 U	10 O				10 U
	·							
								-

U - not detected, J,B - estimated value, R - unusable, NA - not analyzed, ND - not detected. E - estimated, N - tentatively identified, NC - no criteria.

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Summary of Ground Water Analytical Data Frontier Chemical-Pendleton Site October 2001

Compound VOCs Units Units	Ann	ug/L NA NA NA NA NA NA NA NA NA	02/26/91 NA	06/24/97 ug/L 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 10 U 5 U 5 U 5 U 10 U 5 U 10 U 5 U 10 U 5 U 10	0.5 U	09/17/98 ug/L 0.5 U	
Units chloroethane ferachloroethane loroethane loroethane loroethane loroethane loroethane loroethane loroethane loroethane loroethane loricomathane lisulfide enzene om othloromethane	10 mg/L 10 mg	ug/L NA NA NA NA NA NA NA NA NA NA	NA NA NA NA NA NA NA NA NA NA	0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.0 U 0.5 U 0.0 U 0.5 U 0.0 U 0.5 U 0.0 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U	1,00,0 0,50 0,50 0,50 0,50 NA 1,00 5,0 1,00 1,00 1,00 1,00 1,00 1,00	л _б и U 8.0 U 8.0	
rehloroethane Terachloroethane Iloroethane Iloroethane Iloroethane One (MEK) 1-2-pentanone (MIBK) ichloromethane ichloromethane ishloromethane orm	0.5 UV 0.5 UV 0.5 UV 10 UV 10 UV 0.5 UV	AN	NA NA NA NA NA NA NA NA	0.5 U 0.5 U 0.5 U NA 10 U 5 U 10 U 10 U 0.5 U	0.5 U 0.5 U 0.5 U NA 10 U 5 U	U.8.0 U.8.0	
F.Triculoroethane 7,2-Terrachloroethane Dichloroethane Dichloroethane thanone (MEK) ethyl-2-pentanone (MIBK) tone and civil oromethane on disulfide robenzene robenzene robenzene onrobenzene	0.5 UJ 0.5 UJ 0.5 UJ NA 10 UJ 5 UJ 0.0 UJ 0.0 U	X	NA NA NA NA NA NA NA NA	050 050 050 050 NA 100 50 100 050	0.5 U 0.5 U 0.5 U NA 10 U 5 U	0.5 U 0.5 U	
ore (MIBK)	0.50 0.50 0.00 0.00 0.00 0.00 0.00	AN A	NA NA NA NA NA NA	0.5.0 0.5.0 0.5.0 10.0 5.0 10.0 0.5.0	0.50 0.50 0.50 0.00 0.00	U 5.0	
orectiane ane ane SK; anone (VIBK) anethane	0.50 0.80 0.00 0.00 0.00 0.00	t v v v v v v v v v v v v v v v v v v v	NA NA NA NA NA NA NA	0.50 NA 100 50 50 100 0.50	0.50 NA 10.0 S.U	0	
nne nne IK) Ianone (MIBK) aethaue ;	NA NA 16 U 19 U 10 U 10 C	A A A A A C AN	NA NA NA NA NA NA	0.5.0 NA 100 5.0 100 0.5.0	U CO NA 10 U 5 U 10 UT		
ence (MIBK) anone (MIBK) nethane	0.01 0.01 0.01 0.03	N AN U T AN AN AN AN AN	N N N N N N N N N N N N N N N N N N N	10 U 5 U 10 U 05 U 05 U	100 50 10UT	O GO	
ik) moone (VABK) nethane :	mot mot	AN AN U. I. AN AN AN AN	AN NA N	50 100 120 050	10 UZ	11,01	
ianone (VILBK.) nethane : : nethane	0.6 0.00 0.50	AN L N AN AN AN	NA NA 0.93 6 6 NA NA	10.0 0.5.0	non	200	
nethane ; ; qethane	0.5 U	AN L N	0.9.1 NA 6 6 NA	0.50 0.50	3	10.11	
nethane : : nethane	0.5 U	NA NA	NA 6 NA NA	0 C.O U S.O	1 7 1 0	10.0	
aethane ; nethane		NA NA	0 NA NA NA	0.5.0	0.13 J	0.15 J	
nethane.	n co	VΝ	o NA		0.5 U	0.5 U	
Chloroborizane 5 Chloroform 7 Dibromochloromethane 5	0.5 UJ		AA NA	0.63 U	0,13 U	0.56	ASSESSED STREET
Chloroform 7 Dibromochloromethane 5	U.S.U.	Vγ	ΝΑ	0.5 U	0.5 U	0.5 U	
Dibromochloromethane 5	U.5 UI	AN		0.5 U	0.5 U	0.5 U	
	U 2.0	NA	NA	0.5 U	0.5 U	0.5 U	
Ethylbenzene 5	U 5.0	NA	NA	0.5 U	0.11.5	0.5 U	
Methylene chloride 5	200	NA	NA	0.5 U	0.5 U	0.5 U	
Toluene 5	U) 5.0	R	[13]	0.5 U	0.5 U	0.5 U	
Trichloroethene 5	U) 5.01	NA	[9]	0.5 U	0.5 U	0,50	
Vinyl chloride 2	n I	NA	X	חר	10	J C	
Xylene (total) 5	U 2'0	AN	NA	U.S.U.	0,48.3	0.5 U	
cis-1,2-Dichloroethene 5	U) 5.0	ΥN	NA.	0.5 U	0.5 U	0.5 U	
Metals							
Aluminum NC	U001	50.7 B	172 B	100 U	100 U	100 U	,
Antimony 3	2.0	AN	[56.1 B]	10 t	10 C	50	
Arsenic 25	14	ΥN	1.3 BW	10 U	10 U	5 U	
Barium 1000	101	2.9 B	7,9 B	20 U	20 U	20 U	
Beryllium NC	3 U	Vγ	NA	3.0	3 U	3.0	
Cadmium 5	חת	NA	NA	n 1	ות	ח	
Calcium	70000	464000	623000 E	490000	480000	630000	
Chromium 50	101	7.6 B	27.8 E	01	30	30	
Cobalt	20 U	NA	NA	30 U	30 U	25 U	
Соррет 200	10 U	NA	NA	10 U	10 U	10 D	
Cyanide 200	10 U	AN	ΝΑ	. 10 UJ	10 U	10 U	
Iron 300	[540]	168	250	180	[480]	011	
Lead 25	5 U	NA	1.8 BW	D 01	Ω 01	\$ U	
Magnesium NC	100000	109000	199000 E	130000	110000	180000	

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Frontier Chemical-Pendleton Site Summary of Ground Water Analytical Data October 2001

•								
	Sample ID	NYS Class GA	88-12C	88-12D	88-12D	88-12D	88-12D	88-12D
	Sample Date	Water Quality Standards	10/11/01	08/23/90	02/26/91	06/24/97	02/25/98	86/11/60
•	Units	ng/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Compound					·			
Manganese		300	20 J					40
Mercury		2.0	0.2.0					12 U
Nickel		100	-					D 0.
Potassium		NC	2000 J					0000
Selenium	•	10	5 U				10 U	
Silver		20	10 U					0.0
Sodium		20000	[46000]					330000]
Thallium		NC	2U .		,			B
Vanadium		NC	50 U	51.6	2.4 B	50 U		50 U
Zinc		NC	10 C			10 U	10	10 D
	-							
							-	
				-				
		* * * * * * * * * * * * * * * * * * *			•			
NOTES: U-not detected, J.J. E-estimated, N-t	B - estimated value, R · tentatively identified, N	U - not detected, J.B - estimated value, R - unusable, NA - not analyzed, ND - not detected. E - estimated, N - tenutively identified, NC - no criteria.	not detected.					
STUBBLE STANDER	E							

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Summary of Ground Water Analytical Data Frontier Chemical-Pendleton Site October 2001 Table 4

Numerocality Nume		Sample ID	NYS Class GA	88-12D	88-12D	88-12D	88.120	88.12D	
The control of the		Comple Date	Water Quality				}		
Colored Units Web Web		Sample Date	Standards	02/04/99	08/11/80	02/01/00	08/10/00	02/12/01	10/11/01
Comparison of the comparison		Units	ug/L	ng/L	ug/L	ug/L	ng/L	ng/L	ug/L
The continue of the continue	Compound								
Transitionerelisms 5 620 050 050 050 050 050 050 050 050 050 0	VOCs		>	II ¥ V	1113.0				
Marcheller	1.1.2.2-Tetrachloroethane		, ,	0.5.0	0 5 111	U.5.0	D (7)	D CO	0.5.0
Main Processes Main	1 - Dichlomathana			0.50	(O C)	000	O C.O	O CO	ი.ა ე
Mode (MEG) NG 100 1	1 2-Dichloroethene		~ ~	O C'A	U.S. C.J.	U.S.U.	D 6.0	D.c.D	0.5 U
9/12-pertitation (MIBK) NC 10 50 10 10 10 e NC 10 10 10 10 10 10 e NC 10 10 10 10 10 10 defacilitée NC 0.50 0.50 0.50 0.50 0.50 0.50 désolitée NC 0.51 0.50 0.50 0.50 0.50 0.50 désolitée 7 0.50 0.50 0.50 0.50 0.50 0.50 désolitée 5 0.50 0.50 0.50 0.50 0.50 0.50 nomente 5 0.50	2-Hutanone (MEK)		, VV	1101	TI VI	TI, CI	NA Intr	NA 1ATT	NA.
e NC 10 U	4-Methyl-2-pentanone (MIBK)		S S	5 U	5 UI	10.UJ 5.III	10 U	10 UJ	10 U
ofference of the control of	Acetone		NC	1101	1000	III UI	10.11	10.11	96
Action of a point of	Benzene)	0.5 U	1,00	0.511	0.517	0.511	10.01 0.22 I
disalitide NC 0.71 0.58 um 77 0.50 um 2.70 disalitide NC 0.51 0.58 um 77 0.50 um 2.70 homenizacies 5 0.51 0.51 um 0.51 um 0.51 um 0.51 um 0.51 um 0.50 um	Bromodichloromethane		NO	0.5 U	11150	1150	0.50	0.55	, 22.0 0 411
contracted 5 6.5 U 6.5 U <t< th=""><th>Carbon disulfide</th><th></th><th>Z C</th><th>0.7 J</th><th>111890</th><th>77</th><th>0.5111</th><th>11.7.0</th><th>0.5.0</th></t<>	Carbon disulfide		Z C	0.7 J	111890	77	0.5111	11.7.0	0.5.0
tomm 7 0.5 U 0.5	Chlorobenzene			0.5.0	0.5111	1150	70.50	0 /:7	0.100
ocytication on continuous methods 5 0.5 U c. 0.5	Chloroform		7	0.517	0 5 111	0 5 11	0.5.0	0 4.11	7.70
matched 5 0.5 U 0	Dibromochloromethane		\$	U.S.U.	0.5 UJ	0.50	0.50	0.50	0.50
mm S 0.5 U 0.5 U 6 U 6 U <th>Ethylbenzene</th> <th></th> <th>5</th> <th>0.5 U</th> <th>0.5111</th> <th>0 5 11</th> <th>0 5 11</th> <th>0.5.0</th> <th>1140</th>	Ethylbenzene		5	0.5 U	0.5111	0 5 11	0 5 11	0.5.0	1140
st 6.5 U 6.	Methylene chloride			U.S.U	0.5 UJ	2.0	5.11	0.50	0.5.0
roethcate 5 0.5 U 0.5 U <th< th=""><th>Toluene</th><th></th><th>5</th><th>0.5 U</th><th>0.5 UJ</th><th>0.5 U</th><th>0.5 U</th><th>0.5 U</th><th>0.5 U</th></th<>	Toluene		5	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U
Honoride	Trichloroethene		S	U.S.U	0.5 UJ	0.50	0.5 U	0.5 U	0.5.0
Coloradia	Vinyl chloride		7	n I	Б .	1	10	10	1 U
Dichlorochlene 5 0.5 U 0.5 UJ 0.5 U	Xylene (total)		5	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U
um NC 100 U · . 5 U · .	cis-1,2-Dichloroethene		\$	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U
mm NC 100 U 5 U <th>Metals</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	Metals								
my 3 5U 5U </th <th>Aluminum</th> <th></th> <th>NC</th> <th>. O 001</th> <th>100 U</th> <th>100 U</th> <th>100 U</th> <th>100 U</th> <th>100 U</th>	Aluminum		NC	. O 001	100 U	100 U	100 U	100 U	100 U
25 5 U 5 U 6 5 U 5 U m 1000 20 U 3 U	Antimony		3	5.0	5.0	5U	50	2.0	su
Mark 1,000 2,0 U 3 U	Arsenic		25	5 U	5 UJ	9	S U	s u	9
Mathematical Mat	Barium		1000	20 U	20 U	20 U	20 U	20 U	10.1
m+ 55 1U	Beryllium		NC	3 U	3 U	3 U	3 U ·	3 U	3.0
NC 630000 720000 630000 620000	Cadmium +		2	בל	1.0	10	ΩI	nn	מ
um 50 [90] 10 U 20 10 U [60] NC 25 U 27 U	Calcium	2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	NC	630000	670000	720000	630000	620000	790000
NC 25 U 26 U 27 U 2	Chromiun		20	[06]	10.0	20	10 U	[09]	01
. 200 10 U	Cobalt		NC	25 U	25 U	25 U	20 U	25 U	. 20 U
; 200 10 U 12 10 U 10 U 10 U 10 U 10 U 10	Соррег		200	10 U	10.0	10 0	10 U		10.0
300 [650.] 90 70 50 U [1310.] 25 5 U 5 U 5 U 5 U NIM NIC 160000 180000 210000 160000 150000	Cyanide		200	10 U	12	10 U	Ω01	10 U	N 01
25 5 U 5 U 5 U 5 U 5 U 180000 II 80000 150000 150000 I 180000 I I I I I I I I I I I I I I I I I	Iron		300	[650]	06	70	20 U	[330]	
iúm NC 160000 180000 210000 160000 150000	Lead		25	5 U	s U	5 U	5 U	5 U	5 U
	Magnesium		NC	160000	180000	210000	160000	150000	240000

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Summary of Ground Water Analytical Data Frontier Chemical-Pendleton Site October 2001

				*				
	Sample ID	NYS Class GA	88-12D	88-12D	88-12D	88-12D	88-12D	88-12D
	Sample Date	Water Quality Standards	02/04/99	66/11/80	02/07/00	08/10/00	02/12/01	10/11/01
	Units	7/8n	ng/L	ug/L	ng/L	ng/L	ug/L	J/gn
Compound		200	03	0,0	<			
Merciliy		300 0.7	11.00	30	30 4.7.1	20.1	20	30 J
Nickel T		100	70	50 U	50 11	50 11	4.4.0 50 11	0.2.U
Potassium		NC	0006	0006	11000	0006	0006	19000
Selenium		10	5 UJ	5 UJ	5 UJ	5 U	5 UJ	5 U
Silver		50	10 U	non	JO J	0.01	10 0	10 U
Sodium		20000	[250000]	[330000]	[450000]	[240000]	[180000]	[690000]
Thallium		NC	1.0	5.0	20	žu .	żu .	żu ,
Vanadium		NC	50 U	50 U	50 U	50 U	50 U	50 U
Zinc		NC	D01	10.1	10	10.0	20	101
		-			*			

U - not detected, J,B - estimated value, R - unusable, NA - not analyzed, ND - not detected. E - estimated, N - tentatively identified, NC - no criteria.

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Summary of Ground Water Analytical Data October 2001 Table 4 Frontier Chemical-Pendleton Site

5 / 10 / 10 / 10 / 10 / 10 / 10 / 10 / 1		Sample ID	NYS Class GA	URS-14D	URS-14D	URS-14D	URS-14D	URS-14D	URS-14D	
Tricitoscentiane 1		Sample Date	Water Quality Standards	02/01/91	10/01/62	06/24/97	02/22/08	09/17/08	00/50/60	
Comparison			į		1			0611160		
Column C		Units	ng/L	ug/L	ng/L	T/8n	ng/L	ng/L	ug/L	
Trickloricelations 5 5 5 5 U 65 U 65 U 65 U 65 U 65 U 65	Compound				٠					
Trigination	VOCs									
Active colored page Active colored page	l,1,1-Trichloraethane		8	5.0	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UI	
March Marc	1,1,2,2-Tetrachloroethane		5	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	
Operation (ALEA) 5 5 U U Color (ALEA) NA	I,1-Dichloroethane		2	su.	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	
NC 10 U 0.5 U U	1,2-Dichloroethene		5	s U	0.5 U	NA	NA	NA	NA	
by1-2-perimone (MIRK) NC 10 U 63 U 5 U 60 U <th>2-Butanone (MEK)</th> <td></td> <td>ŠČ</td> <td>100</td> <td>0.5 U</td> <td>nor</td> <td>non-</td> <td>10 U</td> <td>IO OI</td> <td></td>	2-Butanone (MEK)		ŠČ	100	0.5 U	nor	non-	10 U	IO OI	
rest NC 10 U 65 U 10 U 65 U 10 U 65 U 6	4-Methyl-2-pentanone (MIBK)		NC	10 U	0.5 U	5 U	5 U	5 U	5 UJ	
match of the control of the	Acetone		NC	10.0	0.5 U	10 0	10 UJ	10.01	10 01	
October of control of sign of s	Benzene		_	SU	. 0.5 U	0,5 U	0.5 U	0.5 U	0.5 UJ	
definition NC 51 0.51 1.61 0.27U 0.471 obname 5 NA NA 0.40 0.5	Bromodichloramethane		NG.	5.0	0.5 U	0.5 U	U\$.0	0.5 U	0.5 UJ	
Obstraction 5 NA NA O.5 U 0.5	Carbon disulfide		NC	s U	0.5 U	1.6 U	0.27 U	0.47 J	7.1	
Optimum 7 5 U 0.5	Chlorobenzene		5	NA	NA	0.5 U	0.5 U	0.5.0	0.5 UJ	
machioconcitatione 5 5 U 0.5 U	Chloroform		7	5 U	0.5 U	0.5 U	0.5 U	0,5 U	0.5 UJ	
Activation of the editories 5 1 0.5 U 0.5 U <th>Dibromochloromethane</th> <td></td> <td>2</td> <td>20</td> <td>0.5.0</td> <td>0.5 U</td> <td>0.5 U</td> <td>0.5 U</td> <td>U.S.01</td> <td></td>	Dibromochloromethane		2	20	0.5.0	0.5 U	0.5 U	0.5 U	U.S.01	
feate-foliotide 5 R 6.5 U <	Ethylbenzene		5	5.0	0.5 U	0.5 U	0.5 U	0,5 U	0.5 UJ	
occupation of the controlled of the control	Methylene chloride		5	R	0.5.0	0.5 U	0.5 U	0.5 U	0.5 UJ	
ocycletions 5 5 U U O S U O	Toluene		5	5 U	0,5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	A 0 40 10 10 10 10 10 10 10 10 10 10 10 10 10
chloride 2 10 U 6.5 U 1	Trichloroethene		2	5.0	0,5 U	0.5.0	0.5 U	0.5 U	ID 5:0	
Column C	Vinyl chloride		2	10 U	0.5 U	1.0	10	10	5-	
NA NA NA NA O.5 U -Dichibroculticate 5 NA NA O.5 U -Dichibroculticate 5 NA NA O.5 U -Dichibroculticate 100 100 100 100 100	Xylene (total)		5	5.0	0.5.0	0.11.9	0.21.5	0,5 U	0.5 UJ	
num NC 99.8 100 U 200 U	cis-1,2-Dichloroethene		5	NA	NA	0.5 U	0.5 U	0.5 U	0.5 UJ	
mm NC 99.8 100 U 5 U 1 U	Metals									
my 3 [32.1 B] 80 U 10 U 10 U 5 U 1 U 2 U 2 U 2	Aluminum		NC	8.66	100 U					
25 2B 10 U 10 U 10 U 5 U 5 U 20 U 30 U<	Antimony		3	[32.1B]	80 U	10 Ω	10.0	5.0	5.0	
m 1000 25.5 B 23 20 20 U 20 U m NC 1 U 1 U 3 U 3 U 3 U 3 U i NC 25 000 25 000 21 0000 25 000 31 000 im NC 255 000 29 2000 21 0000 25 00 31 000 im NC 3 U 5 U 10 U 10 U 10 U i 200 12 L U 8 U 10 U 10 U 10 U i 200 12 L U 8 U 10 U 10 U 10 U i 200 137 J 193 50 U 50 U 50 U i 25 1.1 B 10 U 10 U 10 U 50 U 50 U i 25 1.200 78000 66000 66000 81000	Arsenic		25	2B	10 U	10 U	10 U	5 U	5 U	
mm NC 1U 1U 3U 3U 3U 3U 3U 3U 3U 3U 3U 1U 1U<	Вагит		1000	25.5 B	23	20	20 U	20 U	40	
m 5 2 U 5 U 1 U 1 U 1 U I NC 255000 292000 210000 250000 310000 Im NC 3 U 7 10 U 10 10 I 200 12 U 8 10 U 10 U 10 U I 200 12.2 U 8 U 10 U 10 10 I 300 1357 I 8 10 U 10 10 I 1.1 B 10 U 10 U 50 U 50 U 50 U Imm NC 75200 78000 61000 66000 81000	Beryllium		NC	1 U	1 U	3.0	3 U	3.0	3 U	
NC 255000 210000 250000 310000	Cadmium	***	\$	2 U	2.0	10	n-I	Π1	Ιŭ	
mm 50 10.3 7 10 U 10 U 10 NC 3 U 5 U 30 U 25 U 12 U 8 10 U 10 U 10 U 12 L 8 U 10 U 10 10 12 L 8 U 10 U 10 10 12 L 1357 J 193 50 U 50 U 50 U 11 B 10 U 10 U 10 U 50 U 50 U 50 U 10 W 75200 73500 66000 66000 81000	Calcium		NC	255000	292000	210000	250000	310000	280000	
NC 3 U 5 U 30 U 25 U 200 12 U 8 10 U 10 U 10 U 12.2 U 8 U 10 U 10 U 10.2 So U 50 U 12.3 MC 73200 73800 61000 66000 81000	Chromium		50	10.3	7	D 01	D 01	10	0.01	
. 200 12 U 8 10 U	Cobalt		NC	3 U	s u	30 U	30 U	25 U	25 U	
. 200 12.2 U 8 U 10 UJ 10 10 300 [357] 193 50 U 50 U 50 U 25 1.1 B 10 U 10 U 50 U 5 U mm NC 75200 78000 61000 66000 81000	Copper		200	12 U		100	10.0	10 U	10 U	
300 [357] 193 50 U 50 U 25 1.1 B 10 U 10 U 5 U num NC 75200 78000 61000 66000 81000	Cyanide		200	12.2 U	8 U	ID 01	10	10	10 U	
25 1.1B 10U 10U 5U 5U IIIB 78000 61000 66000 81000	Iron		300	[357]	193	\$0 D	50 U	\$0.U	- 80	
ium NC 75200 78000 61000 66000 81000	Lead		25	1,1 B	10 U	10 U	10 U	5 U	s U	
	Magnesium		NG	75200	78000	91000	00099	81000	71000	

E - estimated, N - tentatively identified, NC - no criteria.

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Summary of Ground Water Analytical Data Frontier Chemical-Pendleton Site October 2001

	Sample ID	NYS Class GA	URS-14D	URS-14D	URS-14D	URS-14D	URS-14D	URS-14D
	i	Water Quality						
	Sample Date	Standards	02/01/91	10/01/92	06/24/97	02/25/98	86/11/60	02/02/99
•	Units	ng/L	ug/L	ng/L	ug/L	ng/L	ug/L	ng/L
Compound								
Manganese		300	30.8	27	10 U	10 U	10 U	10 U
Mercury		2.0	0.2 U	0.2 U	0.2.U	0.2 U	0.2 U	0.2 U
Nickel		100	13 U	5 U	20 U	50 U	50 U	50 U
Potassium		NC	4250 B	3700	2000 U	2000 U	D 000\$	D 0005
Selenium		10	1.0	s U	10 U	10 01	5 U	s uj
Silver		50	3.0	0.01	no1	0.01	10.0	10 U
Sodium		20000	[40700]	[38700]	[52000 J]	[49000]	[50000]	[48000]
Thallium		NC	2.0	80 U	10 D	10.0	101	10
Vanadium		NC	2 U	s U	50 U	50 U	50 U	50 U
Zinc		NC	26.8	10 U	10.0	01	01	10 U

U - not detected, J,B - estimated value, R - unusable, NA - not analyzed, ND - not detected. E - estimated, N - tentatively identified, NC - no criteria.

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Summary of Ground Water Analytical Data October 2001 Frontier Chemical-Pendleton Site

Compound Water Quality VOCs Units ug/L VOCs 1,1,2,2-Terrach loroethane 5 1,1,2,2-Terrach loroethane 5 1,2-Dichloroethane 5 2-Butanone (MEK) NC 4-Methyl-2-pentanone (MIBK) NC Acetone NC Benzene 1 Brownodichloromethane 5 Carbon disulfide NC Carbon disulfide NC Chloroform 7 Dibromochioromethane 5 Ethylbenzene 5 Methylene ehloride 5 Trichloroethene ehloride 5 Vinyl ehloride 5 Vinyl ehloride 5 Cis-1,2-Dichloroethene 5	08/12/99 0.5 U 0.5 U 0.5 U 10 UJ 5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U	02/08/00 0.5 U 0.5 U 0.5 U 0.5 U 10 UJ 5 UJ 10 UJ 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U	08/10/00 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U	0.2013/01 0.293 0.5 U 0.5 U 0.5 U 10 UU 10 UU 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U	10/08/01 0.5 U 0.5 U 0.5 U 0.5 U 10 U 10 U 0.5 U 0.5 U 0.5 U	9201/91 100 100 100 100 100 100 100 1	
cidiorecthane cidiorecthane cidiorecthane correcthane correcthane correcthane correcthane correcthane correcthance correcthance correcthance correcthance correction	0.5 U 0.5 U 0.5 U 0.5 U NA 10 UJ 5 U 0.5 U	9.5 U 0.5 U 0.5 U 0.5 U 10 UJ 5. U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U	0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U	. 0.29.1 0.29.1 0.5.0 0.5.0 0.5.0 10.0.0 5.0 0.5.0 0.5.0 0.5.0 0.5.0 0.5.0	0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 10 U 0.5 U 0.5 U 0.5 U	8 U S S U S U S U S U S U S U S U S U S	
chiloroethane lorochiane	0.5 U 0.5 U 0.5 U 0.5 U 10 UI 5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U	0.5 U 0.5 U 0.5 U 0.5 U NA 10 W 5 UU 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U	0.5 U 0.5 U 0.5 U 0.5 U 10 U 5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U	0.29.3 0.5.0 0.5.0 0.3.0 NA 10.00 5.0 0.5.0 0.5.0 0.5.0 0.5.0 0.5.0 0.5.0	0.5 U 0.5 U 0.5 U NA 10 U 5 U 0.5 U 0.5 U	9 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	
F. Tricultoroethane 1,2-Terrachloroethane Dichloroethane Dichloroethane Hanone (WEK) ethyl-2-pentanone (MIBK) one con disulfide robenzene roform omochiloromethane on disulfide roform omochiloromethane 1 ethoride ne (total)	0.5 U 0.5 U 0.5 U 10 UJ 10 UJ 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U	0.5.U 0.5.U 0.5.U NA 10.UJ 5.UJ 0.5.U 0.5.U 0.5.U 0.5.U 0.5.U 0.5.U	0.5 U 0.5 U 0.5 U 0.5 U 10 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U	0.29.1 0.5.U 0.5.U NA 10.UJ 5.U 10.UJ 0.5.U 0.5.U 0.5.U 0.5.U	0.5 U 0.5 U 0.3 U NA 10 U 5 U 0.5 U 0.5 U	5 U 5 U 5 U 5 U 10 U 10 U 10 U 5 U 5 U 5 U 5 U 5 U 5 U 5 U 5 U 8	
ano (MIBK)	0.5.U 0.5.U 0.5.U NA 10.UI 5.U 0.5.U 0.5.U 0.5.U 0.5.U 0.5.U	0.5.0 0.5.0 0.5.0 NA 10.00 5.00 0.5.0 0.5.0 0.5.0 0.5.0	0.5 U 0.5 U 0.5 U 0.0 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U	0.29.1 0.5.0 0.3.0 NA 10.00 5.0 0.5.0 0.5.0 0.5.0 0.5.0 0.5.0 0.5.0	0.5 U 0.5 U 0.5 U NA 10 U 10 UJ 0.5 U 0.5 U	5 U 5 U 5 U 5 U 10 U 10 U 5 U 5 U 8 U 8 U 8 U 8 U 8 U 8 U	
(MIBK)	0.5 U 0.5 U NA 10 UJ 5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U	0.5 U 0.5 U NA 10 UJ 5 UJ 10 UJ 0.5 U	0.5.U 0.5.U NA 10.U 5.U 0.5.U 0.5.U 0.5.U 0.5.U 0.5.U	0.5 U 0.5 U NA 10 UI 5 U 10 UI 0.5 U 0.5 U 1.8 U 0.5 U	0.5 U 0.5 U NA 10 U 5 U 0.5 U 0.5 U	5 U 5 U 10 U 10 U 10 U 2 U 5 U 8 U 8 U 8 U 8 U	
(MIBK)	0.5 U NA 10 UJ 5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U	0.5 U NA 10 UJ 5 UJ 10 UJ 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U	0.5 U NA 10 U 5 U 10 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U	0.5 U NA 10 UJ 5 U 10 UJ 0.5 U 0.5 U 0.5 U 0.5 U	0.5 U NA 10 U 5 U 0.5 U 0.5 U 0.5 U	5 U 5 U 10 U 10 U 10 U 5 U 5 U 8 U 8 U 8 U 8 U 8 U 8 U 8 U 8	
(MIBK)	NA 19 UJ 5 U 10 UJ 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U	NA 10 UJ 5 UJ 10 UJ 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U	NA 10.0 5.0 10.00 0.5.0 0.5.0 0.5.0 0.5.0	NA 10 UJ 5 U 10 UJ 0.5 U 0.5 U 1.8 U 0.5 U	NA 10 U 5 U 10 UJ 0.5 U 0.5 U	5 U 10 U 10 U 5 U 5 U 5 U 8 U 8 U 8 U 8 U 8 U 8 U 8 U 8 U 8 U	
(MIBK)	10 UJ 5 U 10 UJ 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U	10 UJ 5 UJ 10 UJ 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U	100 5 U 1000 05 U 05 U 05 U 05 U 05 U	10 UJ 5 U 10 UJ 0.5 U 0.5 U 1.8 U 0.5 U	10 U 5 U 10 UI 0.5 U 0.5 U 0.5 U	10U 10U 5 U 5 U 5 U 5 U 8 U 8 U 8 U 8 U 8 U	
(MIBK)	5 U 10 UJ 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U	5 UJ 10 UJ 0.5 U 0.5 U 6.7 0.5 U 0.5 U 0.5 U	5 U 10 U 0 S U 0 S U 0 S U 0 S U 0 S U 0 S U	5 U 10 UI 0.5 U 0.5 U 1.8 U 0.5 U	5 U 10 UI 0.5 U 0.5 U 0.5 U	10U 10U 5 U 5 U 5 U 8 U 5 U 5 U	
	10 UJ 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U	16 UJ 0.5 U 0.5 U 6.7 0.5 U 0.5 U 0.5 U	10 W 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U	10 UJ 0.5 U 0.5 U 1.8 U 0.5 U	10 UJ 0.5 U 0.5 U 0.5 U	100 5 U 5 U 5 U NA NA 5 U	
.	0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U	0.5 U 0.5 U 6.7 0.5 U 0.5 U 0.5 U	0.5 U 0.5 U 0.5 U 0.5 U 0.5 U	0.5 U 0.5 U 1.8 U 0.5 U	0.5 U 0.5 U 0.5 U	5 U 5 U 5 U NA 5 U	
	0.5 U 0.5 U 0.5 U 0.5 U 0.5 U	0.5 U 6.7 0.5 U 0.5 U 0.5 U	0.50 0.50 0.50 0.50 0.50 0.50	0.5 U 0.5 U 0.5 U	0.5 U 0.5 U	\$U \$U NA \$U \$U	
· ·	0.5 U 0.5 U 0.5 U 0.5 U 0.5 U	6.7 0.5 U 0.5 U 0.5 U	0.5 UJ 0.5 U 0.5 U 0.5 U	1.8 U 0.5 U 0.5 U	0.5 U	5 U NA 5 U	
Chlorobenzene 5 Chloroform 7 Chloroform 7 Dibiomochloromethane 5 Ethylbenzene 5 Methylene chloride 5 Toluene 5 Trichlorocthene 5 Vinyl chloride 2 Xylene (total) 5 sis-1,2-Dichlorocthene 5	0.5 U 0.5 U 0.5 U 0.5 U	05 U 05 U 05 U 05 U	0.5.U 0.5.U 0.5.U 0.5.U	0.5 U 0.5 U		NA 5 U	
Chloroform 7 Dibromoethoromethane 5 Ethylbenzene 5 Methylene ehloride 5 Toluene 5 Trichloroethene 5 Vinyl chloride 2 Xylene (total) 5 sis-1,2-Dichloroethene 5	05U 05U 05U 05U	0.5 U 0.5 U 0.5 U	0.5 U 0.5 U 0.5 U	0.5 U	0.50	5 U	
Dibromochloromethane 5 Ethylbenzene 5 Methylene ethoride 5 Toluene 5 Trichloroethene 5 Vinyl chloride 2 Xylene (total) 5 dis-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		0.5 U		_
Ethylbenzene 5 Methylene ethoride 5 Toluene 5 Trichloroethene 5 Vinyl chloride 2 Xylene (total) 5 dis-1,2-Dichloroethene 5	0.5 U 0.5 U	0.5 U	0.5 U	0.5 U	0.5 U)	
Methylene ehloride 5 Toluene 5 Trichloroethene 5 Vinyl chloride 2 Xylene (total) 5 cis-1,2-Dichloroethene 5	0.5 U			0.5 U	0.5 U	5 U	
Toluene 5 Trichloroethene 5 Vinyl chloride 2 Xylene (total) 5 sis-1,2-Dichloroethene 5		2 U	5.0	2.0	2.0	5.0	
Trichloroethene 5 Vinyl chloride 2 Xylene (total) 5 cis-1,2-Dichloroethene 5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	
Vinyl chloride 2 Xylene (total) 5 cis-1,2-Dichloroethene 5	0.5 U	0.5.U	0.5 U	0.5 U	0.5.0	\$ 0	
Xyléne (total) 5 cis-1,2-Dichloroethene 5	ח	n n	10	. 01	n r	10 U	
cis-1,2-Dichloroethene 5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5.0	
	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA	
Metals							
	100 U	100 U	100	100 U	100 U	7140	
χ.	3.0	5.0	5.0	5.0	su.	26 U	
	s w	5 U	5 U	5 U	SU	7.2 B	
	30	30	30	20 U	20.1	115B	
:	3 U	3.0	3.0	3.0	3 U	1.2 B	
n .	nn	nn	1.0	ΩI	10	2.0	
	360000	310000	320000	260000	320000	73900	
Chromium 50	101	100	20	01	f 01	30.9	
	25 U	25 U	20 U	25 U	20 U	5.8 B	
	10 U	10 0	100	10 U	10.0	18.5 B	
de	10 U	10 U	10 U	Ω 0.1	10 U	10 U	
	50 U	50 U	[340]	110	40.3	[10400]	
	5 U	5 U	\$ U	5 U	5 U	7.5	
Magnesium NC 91000	91000	83000	84000	74000	88000	32800	

U - not detected, J,B - estimated value, R - unusable, NA - E - estimated, N - tentatively identified, NC - no criteria.

[] - exceeds standard.

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Summary of Ground Water Analytical Data Frontier Chemical-Pendleton Site October 2001 Table 4

	Sample ID	NYS Class GA	URS-14D	URS-14D	URS-14D	URS-14D	URS-14D	URS-141
	Sample Date	Vace Quanty Standards	08/12/99	02/08/00	. 08/10/00	02/13/01	10/80/01	02/01/91
•	Units	ng/L	ug/L	ng/L	ug/L	ug/L	ug/L	ug/L
Compound					•			
Manganese		300	10	10 U	20 J	01		[484]
Mercury		0.7	0.2 U	0.2 U	0.2 U	0.2 U		0.2.1
Nickel		100	50 U	50 U	50 U	50 U		30.4 B
Potassium		NC	5000 U	D 0005	D 000S	2000 U		17100
Selenium		10	5 UJ	s UJ	5 U	5 UJ		1
Silver		50	100	10 0	noi.	0.01		3.1
Sodium		20000	[28000]	[47000]	[45000]	[35000]		[44700]
Thallium		NC	5 U	2U		20		211
Vanadium		NC	50 U	50 U		50 U		16.1 B
Zinc		NC	100	10 U	10 U		Lot	523
	•							

U - not detected, J.B - estimated value, R - unusable, NA - not analyzed, ND - not detected. E - estimated, NY - tentatively identified, NC - no criteria.

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Companied Comp		Sample ID	NYS Class GA Water Quality	URS-14I	URS-14I	URS-14I	URS-141	URS-141	URS-14I
Unite Welf		Sample Date	Standards	10/01/92	06/26/97	02/25/98	09/11/68	02/02/99	08/13/99
instructions 5 0.3 U 0.5 U		Units	ug/L	ng/L	ng/L	ng/L	ug/L	ug/L	ng/L
orientation 5 0.55 U 0.51 U 0.51 U 0.51 U 0.51 U 0.50 U<	Compound							٠	
Column	VOCs		1						
March Continue	1,1,1+1 nchioroethane		5	0.5 U					
official 5 5 0 5 U 6.5 U 6.5 U 6.5 U 6.5 U 6.5 U NA 10 U 10 U <td>1,1,2,2-Tetrachloroethane</td> <td></td> <td>5</td> <td>0.5 U</td> <td>0.5 U</td> <td>0.5 U</td> <td>0.5 U</td> <td>0.5 U</td> <td>0.5.U</td>	1,1,2,2-Tetrachloroethane		5	0.5 U	0.5.U				
Officials 5 9.5 U NA OUT 10 U 10 U<	I,1-Dichloroethane		5	0.5 U	0.5 U	0.5 U	0.5 U	0.50	0.5 U
New York New	1,2-Dichloroethene		5	0.5 U	NA	NA	NA	NA	ŊĄ
perimone (MBK) NC 0.3 U 10 0 10 0 10 0 10 0 10 0 10 0 10 0 1	2-Butanone (MEK)		NG	0.5 U	10 (1	D01	10 U	10 U	10 UJ
NC 0.5 U 10 U	4-Methyl-2-pentanone (MIBK)		NC	0.5 U	5 U	5 U	5 U	5 U	5 U
rememblane 11 0.5 U <	Acetone		NC	0.5.0	10 U	10 UI	1001	10.0	10 UJ
NC 0.5 U 0.	Benzene		_	0.5 U	0.5 U	_	0.5 U	0.5 U	0,5 U
fifted NC 0.5 U 0	Bromodichloramethane		NG.	0.5 U	0.5.0	0.5 U	0.5 U	0.5.0	. 0,5 U
nie 5 NA 0.5 U 0.81 0.5 U 0.5 U <td>Carbon disulfide</td> <td></td> <td>NC</td> <td>0.5 U</td> <td>0.5 U</td> <td>1.8 U</td> <td>0.5 U</td> <td>0.5 U</td> <td>0.5 UJ</td>	Carbon disulfide		NC	0.5 U	0.5 U	1.8 U	0.5 U	0.5 U	0.5 UJ
operations 7 0.5 U 0.5 U <t< td=""><td>Chlorobenzene</td><td></td><td>5</td><td>NA</td><td>0.5.0</td><td>0.81</td><td>0.5 U</td><td>0.5 U</td><td>0.5 U</td></t<>	Chlorobenzene		5	NA	0.5.0	0.81	0.5 U	0.5 U	0.5 U
reconcellance 5 6.5 U	Chloroform		7	0.5 U					
eight 5 0.5 U 0.13 J 0.5 U 0.	Dibromochloromethane		•	0.5.U	0.5 U	U.S.U	0.5 U	0.5.0	0.50
Allouide 5 0.5 U	Ethylbenzene		5	0.5 U	0.5 U	0.13 J	0.5 U	0,5 U	0.5 U
seed 5 0.5 U 0.5 U 0.15 J 0.5 U <	Methylene chloride		\$	0.5.U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ
ene 5 0.5 U	Toluene		5	0.5 U	0.5 U	0.15 J	0.5 U	0.5 U	0.5 U
deb 2 0.5 U 1 U 1 U 1 U 1 U 1 U 1 U 1 U 1 U 1 U 1 U 1 U 1 U 1 U 1 U 1 U 1 U 1 U 1 U 0.5 U	Trichloroethene		\$	0.5 U	0.5 U	U\$.0	0.5.U	0.5 U	0.5 U
Josephsone	Vinyl chloride		2	0.5 U	n	n I	10	10	10
Incomplement 5 NA 0.5 U 0.5 U <th< td=""><td>Xylene (total)</td><td></td><td>5</td><td>0.5 U</td><td>0.5 U</td><td>U.S.U.</td><td>0.5 U</td><td>0.5 U</td><td>D 5 U</td></th<>	Xylene (total)		5	0.5 U	0.5 U	U.S.U.	0.5 U	0.5 U	D 5 U
NC 1170 1300 400 100 U 300 3 3 80 U 10 U 10 U 5 U 5 U 1000 47 50 40 40 J 40 1000 47 50 40 40 J 40 NC 1 U 3 U 3 U 3 U 3 U NC 5 U 1 U 1 U 1 U 1 U NC 5 U 10 U 10 U 10 U 10 U 10 U NC 5 U 10 U 1	cis-1,2-Dichloroethene		5	NA	0.5 U				
NC 1170 1300 400 100 U 300 25 10 U 10 U 10 U 5 U 5 U 1000 47 50 40 5 U 5 U NC 1 U 3 U 10 U 10 U 10 U 10 U NC 350 28000 21000 23000 26000 26000 NC 5 U 10 U 10 U 10 U 10 U 10 U NC 5 U 30 U 25 U 25 U 25 U 25 U 200 8 10 U 10 U 10 U 10 U 10 U 200 2 U 10 U 10 U 10 U 10 U 10 U 200 2 U 10 U 10 U 10 U 5 U 10 U 200 2 U 10 U 10 U 5 U 10 U 10 U 200 2 U 10 U 10 U 5 U 5 U 5 U 250 10 U 10 U	Metals								
3 80 U. 10 U 10 U 10 U 5 U 5 U 5 U 5 U 5 U 5 U 5 U 5 U 5 U 5 U 5 U 6 U 6 U 6 U 6 U 6 U 6 U 6 U 6 U 6 U 6 U 6 U 6 U 7 U<	Aluminum		NC	. 0/11	1300	400	100 U	300	100 U
25 10 U 10 U 10 U 5 G 40 5 G 40 40 J 40 40 40 J 40 40 40 40 J 40 J 40 J 40 J 40 J 40 J 10 J	Antimony		3	80 U	10 0	10.0	5.0	5.0	5.0
NC	Arsenic	***************************************	25	10 U	10 U	10 U	5 U	S	\$ UJ
NC 1 U 3 U 3 U 3 U 3 U 3 U 3 U 3 U 3 U 3 U 3 U 3 U 3 U 3 U 3 U 3 U 1 U	Barium		1000	47	50	40	40.1	40	50
5 5 U U U U U U U U U U U U U U U U U U U	Beryllium		NC	1.0	3 U	3 U	3 U ·	3.0	3 U
NC 35200 28000 21000 23000 26000 50 5 U 10 UJ [160] 10 U	Cadmium		2	5.0	nı	-	10	ΩŢ	ΩI
50 5U 10 UJ [160] 10 U 10 U NC 5U 30 U 25 U 25 U 200 2U 10 U 10 U 10 U 200 2U 10 UJ 10 U 10 U 300 [2060] [1800] 10 U 10 U 25 10 U 10 U 5 U 5 U A 22300 22300 21000 21000 23000	Calcium		NC	35200	28000	21000	23000	26000	30000
NC 5 U 30 U 25 U 25 U 200 8 10 U 10 U 10 U 200 2 U 10 U 10 U 10 U 300 [206] [1800] [1300] 50 U 50 U 25 10 U 10 U 5 U 5 U 5 U NC 22300 21000 1700 21000 23000	Chromium		50	5.0	10 OJ	[160]	10.0	D01	nor
200 8 10 U 13 Z D 13 Z D 10 U 10 U 5 U </td <td>Cobalt</td> <td></td> <td>NC</td> <td>5.0</td> <td>30 U</td> <td>30 U</td> <td>25 U</td> <td>25 U</td> <td></td>	Cobalt		NC	5.0	30 U	30 U	25 U	25 U	
200 2 U 10 UJ 10 U 10 U 10 U 300 [206] [1800] [2300] \$0 U [320] 25 10 U 10 U \$0 U \$ U NC 22300 21000 1700 21000 23000	Copper		200	8	10 U	- 10	10 U	10 Ω	10 U
300 [206] [1800] [2300] 25 10 U 10 U 5 U NC 22300 21000 17000 21000	Cyanide		200	2 U	10 OJ	10 U	10 U	10 U	10 U
25 10 U 10 U 5 U NC 22300 21000 17000 21000 23000	Iron		300	[2060]	[1800]	[2300]	20 U	[320]	50 U
NC 22300 21000 17000 21000 23000	Lead		25	D 01	10 U	10 U	5 U	SU	sυ
			NC	22300	21000	17000	21000	23000	25000

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	Sample ID	NVS Class GA	110 5 141	110 0 141	110 0 141	110011		,
	_	Water Quality	Thi-caro	141-600	UKS-141	UK2-141	UK3-141	UK3-141
	Sample Date	Standards	10/01/92	06/26/97	02/25/98	86/11/60	02/02/99	08/13/99
•	Units	ug/L	ug/L	ng/L	ng/L	ng/L	ug/L	ug/L
Compound								
Manganese		300	145	70				10 U
Mercury		2'0	0.2 U	0.2 U				0.2 U
Nickel		100	s U	50 U				50 U
Potassium		NC	5500	5000 UJ				2000
Selenium		10	5.0	10 U				s UJ
Silver		20	10 U	100				0.01
Sodium		20000	[42500]	[28000 J]				[62000]
Thallium		NC	80 U	10 U	9			5.0
Vanadium		NC	5 U	50 U				50 U
Zinc		NC	U01	10		10 U	10 Ω	30 J
	-							
				en a construención de la c				
		•			•	•		
				•	-			
							-	

U - not detected, J,B - estimated value, R - unusable, NA - not analyzed, ND - not detected. E - estimated, N - tentatively identified, NC - no criteria.

NOTES:

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Frontier Chemical-Pendleton Site Summary of Ground Water Analytical Data October 2001 Table 4

	Sample ID	NIVE CL. CA	100 147	141 241	1100 141	1100 148	0 391	1105 471
	ar aidima	Water Ouality	- 141-CNO	OK3-141	141-6310	UK3-141	dc-evo	GC-540
	Sample Date	Standards	05/09/00	08/11/00	02/14/01	10/00/01	06/10/80	02/01/91
•	Units	ug/L	ug/L	1/8n	T/Sin	ng/L	ug/L	ng/L
Compound				-				
VOCs			1.90					
1,1,1+1 richloroemane		C	n cn	O CA	D co	CO CO	0.01) a
1,1,2,2-Tetrachloroethane		2	0.5 U	0.5 U	0.5 U	0.5 UJ	10 U	5 U
1,1-Dichloroethane		2	0.5 U	0.5 U	0.5 U	0.5 UJ	T 01	5.0
1,2-Dichloroethene		\$	NA	NA	NA AN	ΑΝ	10 U	S U
2-Butanone (MEK)		NC	10 UJ	10 M	10.01	10.01	20 U	R
4-Methyl-2-pentanone (MIBK)		NC	5 UJ	5 U	5 U .	5 UJ	20 U	10 U
Acetone		NC	10.01	10 01	10.01	10.01	250	R
Benzene		-	0.5 U	0.5 U	0.5 U	0.5 UJ	10 U	5 U
Bromodichloromethane		NC	0.5 U	0.5 U	U.5.U	0.5 UJ	Ω-01	3.0
Carbon disulfide		NC	1.2	0.5 UJ	0.58 U	0.5 UJ	10 U	5 U
Chlorobenzene		5	0,5 U	0.5 U	0.5 U	0.5 UJ	NA	NA
Chloroform		7	0.5 U	0,5 U	0.5 U	0.5 UJ	10 U	s u
Dibromochloromethane		2	0.5 U	0.5 U	0.5 U	0.5 UJ	100	5.0
Ethylbenzene		2	0.5 U	0.5 U	0.5 U	0.5 UJ	10 U	s u
Methylene chloride		5	0.17.5	5.0	2.0	2 UJ	10.0	ĸ
Toluene		Ş	0.5 U	0.5 U	0.5 U	0.5 UJ	10 U	
Trichloroethene		5	0.5 U	0.5 U	U.S.U	0.5 UJ	101	5.0
Vinyl chloride		2	1.0	n	n 1	3	20 U	10 U
Xylene (total)		5	0.5 U	0.5 U	0.5 U	0.5 UJ	U 01	0.5 J
cis-1,2-Dichloroethene		2	0.5 U	0.5 U	0.5 U	0.5 UJ	NA	NA
Metals								
Aluminum		NC	100 U	100 U	200	100 U	104 U	35 U
Antimony		3	5.0	5.0	50	5.0	18.0	[31.5B]
Arsenic		. 25	9	5 U	5.0	5 J	1.3 B	1.8
Barium		1000	50	09	50	40	224	71.7 B
Beryllium		NC	3 U	3.0	3 U	3.0	10	10
Cadmium		•	2	21	nı	D.I	n I	2 U
Calcium		NC	34000	32000	32000	31000	378000	407000
Chromium		50	01	10 ft	0.01	10.1	3.B	4.0
Cobalt		NC	25 U	20 U .	25 U	20 U	2 U	3 U
Copper		200	10 U	10 0	10 U	0.7.1	40	2.0
Cyanide		200	10 U	U 01	10 U	10 U	10 U	10 U
Íron		300		50 U	220	101	188	143
Lead		25	5 U	5 U	5 U	5.0	nı	1.3 B
Magnesium		NC	29000	26000	25000	25000	33300	2450 B
NOTES: U-not detected, J,B.	U - not detected, J,B - estimated value, R - unusable, N/	U - not detected, J.B - estimated value, R - unusable, NA - not analyzed, ND - not detected.	VD - not detected.					

U - not detected, J.B - estimated value, R - unusable, NA - not analyzed, ND - not detected. E - estimated, NV - tentatively identified, NC - no criteria.

[] - exceeds standard.

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FXP File: N:\S829\22038\TABLEPR.FXP

File Number. 5829.22038

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	Sample ID	NYS Class GA	URS-141	URS-141	URS-14I	URS-14I	URS-5D	URS-SD
	Sample Date	Water Quality Standards	02/09/00	08/11/00	02/14/01	10/60/01	06/10/80	16/10/70
•	Units	T/gn	ng/L	ng/L	J/gu	ng/L	ug/L	ng/L
Compound								-
Manganese		300	10 U	250 J	20	20 J	8.8 B	3.5 B
Mercury		0.7	0.2 U	0.2.U	020	0.2 U	020	0.2 U
Nickel		100	50 U	50 U	50 U	101	11.4 B	13 U
Potassium		NC	5000 U	2000 U	2000 U	4000 J	22700	16900
Selenium		10	\$ UJ	5 U	5 UJ	5.0	2 U	1 U
Silver		20	10.0	0.01	D 01	D01	4.0	3.0
Sodium		20000	[67000]	[20006]	[2000]	[2000]	[192000]	[194000]
Thallium		NC	2.0	2 U	2.0	2.0	10	2 U
Vanadium		NC	S0 U	50 U	50 U	-	3.8 B	2 U
Zinc		NC	20	10 U	10	10 U	19.9 B	14.7 B

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

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File Number: 5829.22038

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URS-5D 08/13/99 10 UI 0.5 U NA 10 01 0.5 U 0.16 J 0,5 U 2.1 U 0.5 U 0.5 U 0.5 U 0.5.0 0.5 U 0.5 U 0.5 U 0.5 U ng/L 2 02/04/99 URS-5D 10 CI 0.5 U 1 U 0.50 ng/L 0.5 U 0.5 U 0.5 U 09/18/98 URS-SD 10 UJ 0.11J 0.5 U ng/L 1 02/24/98 URS-5D 10 UJ 0.31 J 0.5 U 0.5 U 0.5 U 0.5 U 0.32 J 0.25 J 0.5 U 0.19 J 0.5 U 5. ug/L <u>n</u> URS-5D 06/25/97 0.5 U 0.5 U 10 01 0.5 U ng/L 10/01/92 URS-5D 0.5 U 0.5 U 0.5.U 0.5 U 0.5 U 0.5 U 0.5 U 0.5.0 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U ng/L ¥ ٧ NYS Class GA Water Quality Standards ug/L 2 2 2 2 S Sample Date Sample ID Units 4-Methyl-2-pentanone (MIBK) 1,1,2,2-Tetrachloroethane Dibromochloromethane Bromodichloromethane 1,1,1-Trichloroethane cis-1,2-Dichloroethene I,1-Dichloroethane 2-Butanone (MEK) Methylene chloride 1,2-Dichloroethene Carbon disulfide Chlorobenzene Trichloroethene Xylene (total) Vinyl chloride Ethylbenzene Acetone Chloroform Compound Benzene Toluene

U - not detected, J,B - estimated value, R - unusable, NA - not analyzed, ND - not detected E - estimated, N - tentatively identified, NC - no criteria.

Magnesium

Lead

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490000

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300000

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5 U 5 U

5 NC S0 200 200

Chromium

Cobalt

Cadmium

Calcium

Barium Beryllium

Arsenic

Copper

Cyanide

5 U

32 1 U

1000 NC

10 U 30 U

nı

20 3 U

10 U

10 O

10 U

10 UJ

0.1

10 U 210

10 U 850

D 01

D 01

001

350

10 0

\$0 D

10 U

93000

n I

20 3 U

2 U

100 U 5 U 5 U

100 U 5 U 5 U

100 U 10 U

100 U 10 U 10 U

100 U

Aluminum Antimony

N 08

10 U

100

20 U 3 U

20 U 3 U

s na

100 U

Table 4



***************************************	Sample ID	NYS Class GA	URS-5D	URS-SD	URS-5D	URS-5D	URS-5D	URS-SD
	Sample Date	Water Quanty Standards	10/01/92	06/25/97	02/24/98	86/81/60	02/04/99	08/13/99
•	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ng/L
Compound								
Manganese		300	S U	50	10	70	70	
Mercury		2'0	. 0.2 U	0.2 U	0.2.U	0.2.0	0.2.0	11.60
Nickel		100	5 U	06	50 U	[180]	06	%
Potassium		NC	8500	D 0005	D 0005	, 000s	2000	2000
Selenium		01	5 U	N 01	10 U	5 U .	5 UJ	5 UJ
Silver		20	10 0	N 0 T	0.01	D 01	10 U	1,01
Sodium		20000	[114000]	[88000 J]	[93000]	[94000]	[120000]	[110000]
Thallium		NC	80 U	10 U	. 10 U	, iui	, ni	5.0
Vanadium		NC	5 U	50 U	20 U	50 U	50 U	50 U
Zinc		NC	D 01	10.0	10	101	10 Û	101
-				Approximately the second of th				
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U - not detected ,J.B - estimated value, R - unusable, NA - not analyzed, ND - not detected. E - estimated, NV - tentatively identified, NC - no criteria.

NOTES:

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File Number: 5829.22038 CONTINUED

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Frontier Chemical-Pendleton Site Summary of Ground Water Analytical Data October 2001

	Sample ID	NYS Class GA	URS-5D	URS-5D	URS-SD	URS-5D	URS-7D	URS-7D
		Water Quality						
•	Sample Date	Standards	02/08/00	08/11/00	02/13/01	10/11/01	08/01/30	02/01/91
	Units	ng/L	1/8n	1/8n	ng/L	ug/L	ng/L	ug/L
Compound							•	
VOCs					3	***	*************************************	000000000000000000000000000000000000000
1,1,1+1,1000000000000000000000000000000		^	D C O) (n)	J. C.D.	0.00	7, 5) }
1,1,2,2-1 enacinor ocurane			0.50	O C'O	O C.O	0.5.U) C	0.0
1.1-Dichloroethane		n v	U 5.0	0.50	0.5.U	D \$ 0	20	5.U 5.11
1,2-Diciriol Octubrie			W.	, , , , , , , , , , , , , , , , , , ,	WNI	**************************************	0.6	0.6
2-Butanone (MEK)		NC Si	10 Cl	D01	To m	n or :	D 01	nor.
4-Methyl-2-pentanone (MIBK)	_	NC ;	no c	0.00		,	0.01	0 01
Acetone		SC.	10 OT	3 : ·		mol.	120	-
Benzene		_	0.5 U	0.5 U	0.5 U	0.5 U	5 U	5 U
Bromodichloromethane		NC	0.5 U	0.5 U	0.5 U	0.5 U	5.0	. 5 U
Carbon disulfide		NC	4.2	0.5 UJ	0.73 U	0.5 U	0.5 J	sυ
Chlorobenzene		2	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	5.0	su
Dibromochloromethane		2	0.5 U	0.5 U	D.S.U	0.5 U	5.0	5.0
Ethylbenzene		5	0.5 U	0.5 U	0.5 U	0.5 U	5.0	5 U
Methylene chloride		5	2.0	5.0	2.0	2.0	5.0	5.0
Toluene		5	0.5 U	0.5 U	0.5 U	0.5 U	s U	s U
Trichloroethene		2	0.5 U	0.5 U	0,5 U	0.50	5.0	s u
Vinyl chloride		2	10	n I	n n	1.0	10 U	10 U
Xylene (total)		5	0.5 U	0.5 U	0.5 U	0.5 U	5.0	SU
cis-1,2-Dichloroethene		2	0.5 U	0.5 U	0.5 U	0,5 U	NA	NA
Metals								
Aluminum		NC	. D 001	300	200	200	167 B	52.5 B
Antimony		٣.	s U	50	5.0	5.0	[20.5 B]	[36.3 B]
Arsenic		25	5 U	5 U	5 U	5 U	1.0	10
Barium		1000	20 U	20	20	20	20.3 B	47.2 B
Beryllium		NC	3 U	3 U	3.0	0.2 J	1.0	10
Cadmium		5	1.0	10	1.0	ח.	n,	2.0
Calcium		NC	200000	430000	490000	490000	277000	333000
Chromium		50	10 D	20	30	30	3.0	40
Cobalt		NC	59	50	130	80	2 U	3.0
Copper		200	D 01	10 U	10.0	3.1	4.0	12 U
Cyanide		200	10 U	10 U	10 U	10 U	10 U	10 U
Loa		300	20 U	[410]	[1000]	[260]	[387]	283
Lead		25	5 U	5 U	5 U	5 U	Ω .	n n
Magnesium		NC	97000	52000	88000	90099	96200	115000
	- estimated value, R -	U - not detected, J.B - estimated value, R - unusable, NA - not analyzed, ND - not detected	, ND - not detected.					

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

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	Sample ID	NYS Class GA	URS-SD	URS-SD	URS-5D	URS-SD	URS-7D	URS-7D
	Sample Date	Water Quality Standards	02/08/00	08/11/00	02/13/01	10/11/01	08/01/80	02/01/91
•	Units	ng/L	ug/L	J/gn	ng/L	T/Bn	ng/L	ug/L
Compound								
Manganese		300	09	20 J	09	50 J	71.2	140
Mercury		0.7	0.2 U					
Nickel		100	50	50 U	[170]	06	23.5 B	13 U
Potassium		NC	5000 U	2000 U	2000 U	4000 J	9866	8550
Selenium		10	s W	S U	s UJ	5 U	2 U	n_
Silver		50	0.01	0.01	0.01	10.0	4 U	3.0
Sodium		20000	[120000]	[110000]	[97000]	[120000]	[82700]	[68900]
Thallium		NC	2.0	2 U	2.0	2.0	10	2.0
Vanadium		NC	50 U	50 U	50 U	2.3	4.2 B	6.7 B
Zinc		NC	10	06	180	190	53B	122B

U - not detected, J.B. - estimated value, R. - unusable, NA - not analyzed, ND - not detected. E - estimated, NV - tentatively identified, NC - no criteria. NOTES

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							CE CHI.	CF 361
	Sample ID	NYS Class GA Water Quality	URS-7D	URS-7D	URS-7D	UKS-7D	UKS-/D	UKS-1D
	Sample Date	Standards	10/01/92	06/24/97	02/24/98	09/18/98	02/04/99	08/17/99
	Units	ug/L	1/8n	ng/L	ng/L	ug/L	ug/L	ng/L
Compound					•			
VOCs								
1,1,1-Trichlomethane		2	0.5 U	0.5 U	0,5 U	0.5 U	0.5.0	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
1,1-Dichloroethane		\$	0.5 U	0.5 U	0.5 U	0.5.0	0.5 U	0.5 U
1,2-Dichloroethene		5	0.5 U	NA	NA	NA	NA	NA
2-Butanone (MEK)		NC	0.5 U	10 C	DOI	10 C	D01	10 tJ
4-Methyl-2-pentanone (MIBK)		NC	0.5 U	5 U	5 U .	5 U	5 U	5 U
Acetone		NC	0,5 U		10.01	61	63	10 UJ
Benzene			0.5 U	0.5 U	0.11.5	0.5 U	0.5 U	0.5 U
Bromodichloramethane		NC	0.5 U	U.S.U	0.5 U	0.5.0	0.5 U	0.5 U
Carbon disulfide		NC	0.5 U	0.5 U	0.24 U	0.5 U	1,3,1	3 U
Chlorobenzene		\$	NA	D 5'0	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	U 5.0	0.5 U
Dibromochloromethane			0.5 U	0.5 U	0.5.0	0.5 U	0.5 U	0.5 U
Ethylbenzene		2	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	0.5.0	0.5 U	0.5 U
Tolucio		5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene		\$	0.5 U	0.5 U	0.5 U	0.5 U	0.50	0.5 U
Vinyl chloride		2	0.5 U	n.	D	ΩI	n n	ΩI
Xylene (total)		5	0.5 U	0.5 U	0.37.J	0.5.U	0.5 U	0.5 U
cis-1,2-Dichloroethene		S	NA	0.5 U				
Metals								
Aluminum		NC	100 U	U 001	D 001	100 U	100 U	100 U
Antimony		3	80 U	10 U	100	5.0	5.0	50
Arsenic		2.5	10 U	10 U	10 N	5 U	\$ U	s w
Barium		1000	29	30	40	20 U	100 T	30
Beryllium		NC	ΩI	3 U	3 U	3.0	10 U	3.0
Cadmium		5	5.0	n1	nn	n I	D 01	n
Calcium		NC	403000	360000	300000	480000	400000	470000
Chromium		50	5.0	10 C	10 U	10	10	10 U
Cobalt		NC	5 U	30 U .	30 U	25 U	50 U	25 U
Copper		200	8	10 U	100	10 U	10 U	10 U
Cyanide		200	2 U	10 OJ	10 N	10 U	10 O	U 01
Lroa		300	. 63	50 U	70	50 U	001	20 U
Lead		25	10 U	10 U	10 U	5 U	5 U	S U
Magnesium		NC	140000	120000	89000	140000	130000	140000
NOTES: U-not detected, J,B	U - not detected, J.B - estimated value, R - unusable, N. Ennatively identified NC - no criteri	U - not detected, J.B - estimated value, R - unusable, NA - not analyzed, ND - not detected E - serimated N - tentatively identified NC - no criteria	ND - not detected.					

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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	Sample ID	NYS Class GA	URS-7D	URS-7D	URS-7D	URS-7D	URS-7D	URS-7D
	Sample Date	Water Quality Standards	10/01/92	06/24/97	02/24/98	86/18/08	02/04/99	08/17/99
•	Units	ug/L	ng/L	ug/L	ug/L	ng/L	ug/L	ug/L
Compound							٠	
Manganese		300	86	40	30	40		50
Mercury		20	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel		100	5 U	50 U	50 U	50 U		20 U
Potassium		NC	8300	2000	D 0005	0009		0009
Selenium		10	5 U	10 U	10 U	5 U		5 UJ
Silver		20	10 U	10 0	10 Cl	100		10.01
Sodium		20000	[78900]	[66000 J]	[54000]	[79000]		[81000]
Thallium		NC	80 U	10 U	10 U	- CG		5.0
Vanadium		NC	5 U	50 U	50 U	50 U		20 U
Zinc		NC	10 Ü	10 U	10 U	10 U		10 U

U - not detected, J,B - estimated value, R - unusable, NA - not analyzed, ND - not detected. E - estimated, N - tentatively identified, NC - no criteria.

NOTES

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	or ordinar	NO SCHOOL IN	7,000					
	Sample Date	Water Quality Standards	02/09/00	00/01/80	02/14/01	10/11/01	06/10/80	02/01/91
	Units	ng/L	1/8n	ng/L	ng/L	ug/L	ug/L	ug/L
Compound								
VOCs		Y	0.5 (1)	1150	0.5.0	0.5.0	3.0	3.0
1,1,1-1,10moteume 1 1 2 2-Tetrachloroethane		۶, ۲	0.5 U	0.5 U	0.5 U	0.5 U	5 U	5 U
1.1-Dichloroethane		5	0.5 U	0.5 U	0.5 U	0.5 U	s.u	5.0
1,2-Dichloroethene		5	NA	NA	NA	NA	5 U	5 U
2-Butanone (MEK)		NC	10 M	10.0	10 UJ	D01	D 01	6.1
4-Methyl-2-pentanone (MIBK)		NC	5 UJ	5 U	5 U	5 U	10 U	10 U
Acetone		NC	10 M	10 UJ	10 UJ	10.01	~	R
Benzene		-	0.5 U	0.5 U	0.5 U	0.5 U	5 U	5.0
Bromodichloromethane		NC	0.5 U	0.5 U	0.5 U	0.5 U	4.3	£0.
Carbon disulfide		NC	5.2	0.5 UJ	U 98.0	0.5 U	5 U	5 U
Chlorobenzene		5	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	[8]	S U
Dibromochloromethane		2	0.5 U	0.5 U	0.5 U	D\$0	IJ	50
Ethvibenzene		5	0.5 U	0.5 U	0.5 U	0.5 U	5 U	5 U
Methylene chloride		5	2.0	5.0	2.0	2.0	Sυ	5.0
Toluene		5	0.5 U	0.5 U	0.5 U	0.5 U	0.6 J	5 U
Trichloroethene		\$	U.5.U	0.5 U	0.5.0	0.5 U	\$ U	ns.
Vinyl chloride		2	10	10	nι	D.	10 U	10 U
Xylene (total)			0.5 U	0.5 U	0.5 U	0.5 U	S U	S.U
cis-1,2-Dichloroethene		5	0.5 U	0.5 U	0.5 U	0.5 U	Ϋ́Α	NA
Metals								
Aluminum		NC	100	100 U	100	50 J	128	64,2 B
Antimony		3	2.0	5.0	5.0	s u	18.U	[28 B]
Arsenic		25	S U	5 U	5.0	s U	1.6 B	חמ
Barium		1000	30	30	20	20	110B	38.2 B
Beryllium		NC	3 U	3 U	3 U	3.0	ות	n n
Cadmium	-	\$	1.0	1.0	n n	D.I	ΙΩ	2 n
Calcium		NC	420000	480000	450000	520000	26500	146000
Chromium		50	10	. 20	20	T01	3.0	40
Cobalt		NC	25 U	20 U	25 U	20 U	2 U	3.0
Copper		200	10.0	10 U	10 U	10 U	5.2 B	12 U
Cyanide		200	10 U	10 0	10 U	Ω 01 .	10 U	H.1B
Lon		300	180	170.1	240	100	127	[206]
Lead		25	5 U	5 U	5 U	5 U	0.1	0
Magnesium		NG	140000	150000	140000	160000	29900	70200

U - not detected. J.B. - estimated value, R. - unusable, NA - not analyzed, ND - not detected. E. - estimated, NV - tentatively identified, NC - no criteria.

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DBF File: N/5829/22038/TEMPDATA.DBF
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Summary of Ground Water Analytical Data October 2001 Frontier Chemical-Pendleton Site Table 4

	Sample ID	NYS Class GA	URS-7D	URS-7D	URS-7D	URS-7D	URS-9D	URS-9D
•	Sample Date	Standards	02/09/00	08/10/00	02/14/01	10/11/01	08/10/80	02/01/91
	Units	ug/L	ug/L	ug/L	ng/L	ug/L	ug/L	ug/L
Compound								
Manganese		300	. 0.	f 05	140	40 J	20.1	25.5
Mercury		2.0	0.2 U	0.3.1	0.2.0	0.2 U	0.2.0	0.2 U
Nickel		100	50 U	20 U	50 U	2.5	15.3 B	13 U
Potassium		2	2000 U	2000	2000	7000	9880	4170 B
Selenium	-	10	s UJ	5.0	s UJ	5.0	2 U	10
Silver		- 50	10 U	D 01	D 01	D 01	4 U	3.U
Sodium		20000	[00089]	[78000]	. [00069]	[83000]	[27400]	[37000]
Thallium		NG	2.υ	20	2.0	2 . 0	nn	2.0
Vanadium		NC	50 U	50 U	50 U	20 U	10.7 B	2 U
Zinc		NC NC	10 U	10 U	10 D	non	50.5	16.7 B
							•	

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

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DBF File: NAS829/22038/TEMPDATA.DBF
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URS-9D 08/12/99 210000 10.01 0.14.1 0.5 U 0.5.0 0.5 U 0.5 U 100 U 20 U 0.5 U 0.5 U 0.29 J 0.5 U s UJ n 10 U 10 U ı n ng/L 3 U 02/03/99 URS-9D 200000 0.5 U 10 U 0.5 U 0.5 U 0.5 U 0.21.3 0,5 U 0,35 J 100 U 0.5 U 0.5 U 0.5 U s U s U 2 86/81/60 URS-9D 0.11 NJ 190000 5U 5U 20U 3U . 0.5 U 0.5 U 0.50 0.2.3 0.5 U 100 U 0.5 U 0.33 J 0.5 U URS-9D 02/23/98 0.24 J 10 UJ [1.9] 0.5 U 0.35 U 190000 0.5 U 0.5 U 0.44 J 10 U 20 U 3 U 67.0 0.5 U 0.44 J 10 CL D 01 1.8 0.59 0.51 URS-9D 06/24/97 3 U 1 U 200000 0.5 U 0.5 U 0.36 J 100 U 10 U 10 U 20 U 0.5 U 0.26 J 0.5.U 0.66 0.5 U 0.5 U 10 C ug/L 10/01/92 URS-9D 120000 0.5 U 100 U 80 U 10 U 23 1 U 0.5 U 0.5 U 0.5 U ¥ NYS Class GA Water Quality Standards 1000 NC ng/L 200 200 200 S S Sample Date Sample ID Units 4-Methyl-2-pentanone (MIBK) 1,1,2,2-Tetrachloroethane Bromodichloramethane Dibromochloromethane 1,1,1-Trichloroethane cis-1,2-Dichloroethene 1,1-Dichloroethane 2-Butanone (MEK) 1,2-Dichloroethene Methylene chloride Trichloroethene Chlorobenzene Carbon disulfide Xylene (total) Vinyl chloride Ethylbenzene Chloroform Cadmium Chromium Acetone Aluminum Antimony Barium Copper Beryllium Toluene Benzene Compound Calcium Cyanide Arsenic Cobalt

U - not detected, J.B - estimated value, R - unusable, NA - not analyzed, ND - not detected E - estimated, N - tentatively identified, NC - no criteria.

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Summary of Ground Water Analytical Data October 2001 Frontier Chemical-Pendleton Site Table 4

	Sample ID	NYS Class GA	URS-9D	URS-9D	URS-9D	URS-9D	URS-91	URS-91
	Sample Date	Water Quality Standards	05/08/00	08/11/00	02/13/01	10/08/01	06/10/80	02/01/91
•	Units	ug/L	ng/L	ng/L	T/8n	ug/L	ug/L	ug/L
Compound								
VOCs			**************************************	**************************************				
		,) C. O	U.S.U.	0.28 J	U 6.0	2 : 5) ,
I, I, 2, 2-1 etrachloroethane		5	0.5.U	0.5 U	n co	O C'0	n c) U
I,I-Díchloroethane		\$	0.14 J	0,14 J	0,12,J	0.151	5.0	δυ
1,2-Dichloroethene		2	NA	NA	NA	Ϋ́	5 U	SU
2-Butanone (MEK)		NG C	10 UJ	D OT	10 UJ	10 U	10.0	2.5
4-Methyl-2-pentanone (MIBK)		NC	5 UJ	s U	5 U	5 U	10 U	10 U
Acetone		NC	10 UJ	10 UJ	10 W	10.01	R	×
Benzene			0.5 U	0.5 U	0.5 U	0.5 U	5 U	5 U
Bromodichloromethane		NC	0.5 U	0.5 U	0.5 U	0.5 U	5.0	5.0
Carbon disulfide		NC	16	0.5 UJ	1.2 U	0.5 U	5.0	S U
Chlorobenzene		8	0.5.0	0.5 U	0.5 U	D 5'0	NA	NA
Chloroform		7	0,5 U	0.5 U	0.5 U	0.5 U	5 U	su
Dibromochloromethane		5	0.5 U	U.S.U	0.5 U	0.5.0	ns	SU
Ethylbenzene		\$	0.5 U	0.5 U	0.5 U	0.5 U	5 U	s U
Methylene chloride		5	2.0	5.0	2.0	2.0	5.0	5.0
Toluene		5	0.5 U	0.5 U	0,5 U	0.5 U	0,7 J	s U
Trichloroethene		5	0,5 U	0.5 U	0.13.1	0.5.0	5.0	5.0
Vinyl chloride		2	n n	10	ΩI	n I	10 U	10 U
Xylene (total)		S	0.5 U	0.5 U	0.5 U	0.5 UJ	5.0	SU
cis-1,2-Dichloroethene		5	0.25 J	0.23 J	0.2 J	0.21 J	NA	NA
Metals								
Aluminum		NC	100 U	100 U	D 001	100	221	197
Antimony		3	5.0	5.0	5.0	5.0	18.0	26 Ü
Arsenic		25	5 U	5 U	S U	5 U	1.7 B	10
Barium		0001	20 U	20 U	20 U	101	30,1 B	22.8 B
Beryllium		NC	3 U	3 U	3 U	3 U	חח	n n
Cadmium			J U	10	10	n1	n.	2.0
Calcium	•	NC	220000	210000	200000	210000	000901	143000
Chromium		50	10.0	20	30	20	8.6 B	10.1
Cobalt		NC	25 U	20 U	25 U	20 U	2 U	30
Copper		200	10.0	. 0.01	10 U	0.8.1	12.7 B	12.0
Cyanide		200	10 U	U 0.1	10 U	U 0 I	10 U	10.5 U
Iron		300	50	220	200	[380]	[1020]	[1170]
Lead		25	s U	5 U	5 U	5.0	n I	1.8
Magnesium		NC	78000	75000	70000	85000	54500	71300
	- estimated value, R -	U - not detected, J,B - estimated value, R - unusable, NA - not analyzed, ND - not detected.	, ND - not detected.					

U - not detected, J,B - estimated value, K - unusable, NA - E - estimated, N - tentatively identified, NC - no criteria, [] - exceeds standard.

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	Sample ID	NYS Class GA	URS-9D	URS-9D	URS-9D	URS-9D	URS-91	URS-91
	Sample Date	Water Quality Standards	02/08/00	08/11/00	02/13/01	10/08/01	08/01/90	02/01/91
,	Units	ug/L	ng/L	ug/L	ng/L	ug/L	ug/L	ng/L
Compound								
Manganese		300	10	10 J	10	20 J	67.5	80
Mercury		2.0	0.2.U	0.2 U				
Nickel		100	20 U	50 U	50 U	10 J	7.6 B	13 U
Potassium		NC	2000 U	2000 U	D 0005	3000 J	3910B	4250 B
Selenium		10	s UJ	s U	s us	5 U	2 U	1 U
Silver		50	10 U	D 01	10 U	16.0	4 U	3.0
Sodium		20000	[48000]	[45000]	[38000]	[49000]	[34500]	[54000]
Thallium		NC	2.U	2.0	2.0	2.0	1.0	2.0
Vanadium		NC	50 U	50 U	50 U	11	2 U	9.6 B
Zinc		Ö	D01	101	101	5.3	19,3 B	34.6
				•				

U - not detected, J,B - estimated value, R - unusable, NA - not analyzed, ND - not detected. E - estimated, NV - tentatively identified, NC - no criteria. NOTES:

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	Sample ID	NYS Class GA	1,185-91	118.5-01	1185.01	1188.01	1196.01	In Soil
	,	Water Quality	:					6-540
	Sample Date	Standards	10/01/92	06/24/97	02/23/98	. 09/18/98	02/03/99	08/12/99
•	Units	ng/L	ng/L	ug/L	T/8n	ng/L	T/8n	ng/L
Compound								
VOCs								
1,1,1-1,ncmoremane		۰ م	0.5.U	0.5 U	0.5 U	0.5 U	0.50	0.5 UJ
1,1,2,2-1 etrachioroethane		•	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ
I,l-Dichloroethane		5	0,5 U	0.5 U	0.5 U	US.0	0.5.U	0.5 UJ
1,2-Dichloroethene		2	0.5 U	NA	NA	ΝΑ	NA	NA
2-Butanone (MEK)		NC	0.5 U	0.01	D 01	10.0	100	10 U
4-Methyl-2-pentanone (MIBK)		NC	0.5 U	5 U .	5 U	5 U	0 S	s w
Acetone		NG	0.5 U	10.0	10.01	10 UJ	10 U	10.01
Benzene			0.5 U	0.12 J	0.29 J	0.5 U	0.5 U	0,5 UJ
Bromodichloramethane		Ş	0.5 U	0.5 U	U.S.O.	U.S.U	0.5.0	0,5 UJ
Carbon disulfide		NC	0.5 U	0.5 U	0.16 U	0.13 J	0.5 U	6.3 UJ
Chlorobenzene		5	NA	0.5 U	0.2.1	U.S.U	0.5.0	0.5 UJ
Chloroform		7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ
Dibromochloromethane		5	0.5.0	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ
Ethylbenzene		5	0.5 U	0.5 U	0.14 J	0.5 U	0.5 U	0,5 UJ
Methylene chloride		\$	0.5 U	0.5 U	0.50	0.5 U	0.5 U	0.55 UJ
Toluene		\$	0.5 U	. 0.5 U	. 0.11.5	0.5 U	0.5 U	0.16 J
Trichloroethene		5	0.5 U	0.5 U	U.S.U	0.5.0	0.5.U	0.5 UJ
Vinyl chloride		2	0.5 U	n I	0.	. n	ΩI	
Xylene (total)		5	0.5 U	0.29 J	0.54	0.5 U	0.50	0.5 U
cis-1,2-Dichloroethene		5	NA	0.5 U	. 0.5 U	0.5 U	0,5 U	0.5 UJ
Metals								
Aluminum		NC	110	100 U	100 U	100 U	200	100 U
Antimony			N 08	0.01	101	5.0	5.0	su
Arsenic		25	10 U	10 U	. 10 U	5 U	s U	\$ m
Barium		0001	14	30	20 U	20 U	20 U	20 U
Beryllium		NC	10	3.0	3 U	3 U	3 U	3 U
Cadmium		2	5.0	10	1.0	ΩŢ	1.0	1.0
Calcium		NC	123	170000	150000	160000	160000	000091
Chromium		50	5.0	0.01	101	01	10	101
Cobalt		NC	s U	30 U ·	30 U	25 U	25 U	25 U
Copper		200	5.0	0.01	100	10 T	10 U	10.0
Cyanide		200	2 U	10 OJ	10 U	. 10 U	10 U	10 N
Iron		300	[808]	[460]	[440]	290	[266]	240
Lead		25	10 U	10 U	10 U	s u	s u	2 U
E		NC	63500	70000	00069	77000	70000	75000
NOTES: U - not detected, J,B	- estimated value, R -	U - not detected, J,B - estimated value, R - unusable, NA - not analyzed, ND - not detected.	ND - not detected.					

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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		NI 3 Ciabs OA	16-SNO	ORS-91	UKS-91	UKS-91	UKS-91	UKS-91	
	Sample Date	Water Quality Standards	10/01/92	06/24/97	02/23/98	86/81/60	02/03/99	08/12/99	
•	Units	ng/L	T/8n	ng/L	ug/L	ug/L	ng/L	ug/L	
Compound						•			
Manganese		300	75	50	30	40	50	40	
Mercury		<i>L</i> .0	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	
Nickel		100	5 U	\$0 D	50 U	20 U	20 U	20 U	
Potassium		NC	2900	5000 U	D 0005	2000 U	S000 U	D 0005	
Selenium	*	10	5 U	10 U	10 U	5 U	s W	5 WJ	
Silver		50	10 U	101	D 01	10 U	10 n	0.01	
Sodium		20000	[52400]	[43000 J]	[45000]	[49000]	[39000]	[54000]	
Thallium		NC NC	. D 08	10.0	10	. 101	10	5.0	
Vanadium		NC	S U	50 U	50 U	. 50 U	50 U	50 U	
Zinc		NC	10 ft	10 U	10 U	.20	101	101	

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

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Summary of Ground Water Analytical Data October 2001 Frontier Chemical-Pendleton Site Table 4

richlo Tetra Hororo Hororo Hororo Horida								
Simple Date Sample Date Search and se		Sample ID	NYS Class GA	URS-91	URS-91	URS-91	URS-91	
Units ug/L ug/L ug/L ug/L ug/L		Sample Date	Water Quality Standards	02/08/00	08/11/00	02/13/01	10/80/01	
Circulation S	•	Units	ug/L	ug/L	ug/L	ng/L	7/8n .	
Trichlocrethane 5 6.5 U	Compound							
Temporocalisme 5 50 CO	VOCs			1.3		***		
A	1 1 2 2. Tetrachloroethane		, v	D 6.9 11 8 0	0.5.0	U.S.O.	n co	
NA NA NA NA NA NA NA NA	1.1-Dichlorocthane		,	0.50	0.50	0.50	0.50	
NC 10 UJ 1	1.2-Dichloroethene		5	NA.	NA	NA	NA	
hyp.2-pentanone (MIBK) NC 5U 5U 5U 5U 10 UI <	2-Butanone (MEK)		NC	10 UI	10 U	10 UJ	D0I	
nee NC 10 UJ 10 U	4-Methyl-2-pentanone (MIBK)		NC	5 UJ	5 U	5 U	5 U	
neterine time 1 0.5 U 0.5 U 0.5 U obstractionmethane NC 6.5 U 0.5 U 0.5 U 0.5 U obstraction of the decision S 0.5 U 0.5 U 0.5 U 0.5 U stems chloride 5 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U stems chloride 5 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U innochloromethane 5 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U innochloromethane 5 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U innochloromethane 5 0.5 U 0.5 U </td <td>Acetone</td> <td></td> <td>NC</td> <td>10 UJ</td> <td>10 01</td> <td>10.01</td> <td>10 UJ</td> <td></td>	Acetone		NC	10 UJ	10 01	10.01	10 UJ	
Aignification NC 0.5 U 0.5 U 0.5 U n disurficide NC 8.5 0.5 U 0.68 U benerance 5 0.5 U 0.5 U 0.5 U stemanic 5 0.5 U 0.5 U 0.5 U stemation 5 0.5 U 0.5 U 0.5 U enzance 5 0.5 U 0.5 U 0.5 U nenzence 5 0.5 U 0.5 U 0.5 U nenzence 5 0.5 U 0.5 U 0.5 U nenzence 2 1 U 1 U 1 U nenzence 2 0.5 U 0.5 U 0.5 U 0.5 U chloride 2 0.7 U 0.5 U 0.5 U 0.5 U 0.5 U chloride 3 3 3 3	Benzene		_	0.5 U	0,5 U	0.5 U	0.5 U	
netaelifiete NC 8.5 0.5 UJ 0.68 U böenzeite 5 0.5 U 0.5 U 0.5 U stoombloomethane 5 0.5 U 0.5 U 0.5 U enzene 5 0.5 U 0.5 U 0.5 U ence chloride 5 0.5 U 0.5 U 0.5 U ence chloride 5 0.5 U 0.5 U 0.5 U chloride	Bromodichloromethane		NC	0.5 U	U 5.0	0.5.0	U\$0	
spentation 5 0.5 U 0.5 U 0.5 U stoom 0.5 U 0.5 U 0.5 U 0.5 U stoollowmethane 5 0.5 U 0.5 U 0.5 U enrotellorated 5 0.5 U 5 U 0.5 U ten ethloride 5 0.5 U 0.5 U 0.5 U ten ethloride 5 0.5 U 0.5 U 0.5 U stoolidistie 5 0.5 U 0.5 U 0.5 U choiside 5 0.5 U 0.5 U 0.5 U delioride 5 0.5 U 0.5 U 0.5 U 0.5 U nm NC 200 20 U 20 U 20 U 0.5 U nm NC 100 10 U 10 U 10 U nm NC 20 U <td>Carbon disulfide</td> <td></td> <td>NC</td> <td>8.5</td> <td>0.5 UJ</td> <td>0.68 U</td> <td>0.5 U</td> <td></td>	Carbon disulfide		NC	8.5	0.5 UJ	0.68 U	0.5 U	
storm 7 0.5 U 0.5 U 0.5 U nucklioromethane 5 0.5 U 0.5 U 0.5 U enzizane 5 0.5 U 0.5 U 0.5 U enzizane 5 0.4 U 5.0 U 0.5 U tene chloride 5 0.4 U 5.0 U 0.5 U ne coorditate 5 0.5 U 0.5 U 0.5 U chloride 2 1 U 1 U 1 U chloride 2 0.5 U 0.5 U 0.5 U chloride 2 1 U 1 U 1 U chloride 2 0.5 U 0.5 U 0.5 U chloride 3 0.5 U 0.5 U 0.5 U chloride 3 0.5 U 0.5 U 0.5 U chloride 3 3 3 3 3 chloride 3 3 3 3 3 chloride 3 3 3 3 3 chlo	Chlorobenzene		2	0.5 U	0.5 U	0.5 U	0.5 Ü	
nocklock concentence 5 0.5 U 0.5 U 0.5 U restracte 5 0.5 U 0.5 U 0.5 U tene calloride 5 0.5 U 5 U 0.5 U eccutions 5 0.5 U 0.5 U 0.5 U coolidiscentence 2 1 U 1 U 1 U clotal 5 0.5 U 0.5 U 0.5 U 0.5 U clotal 5 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U clotal 3 0.5 U 0.5 U 0.5 U 0.5 U 0.5 U clotal 3 3 3 U 3 U 3 U 0.5 U	Chloroform		7	0.5 U	0.5 U	0.5 U	0.5 U	
tenzene 5 0.5 U 0.5 U 0.5 U ten chloride 5 2 U 5 U 2 U 2 U ten chloride 5 0.5 U 5 U 2 U	Dibromochloromethane		•	0.5 U	0.5 U	0.5 U	0.5.U	
lene chiloride 5 2 U 5 U 2 U ne chiloride 5 0.5 U 0.5 U 0.5 U acocationate 5 0.5 U 0.5 U 0.5 U choloride 2 1 U 1 U 1 U choloride 5 0.5 U 0.5 U 0.5 U choloride 5 0.5 U 0.5 U 0.5 U choloride 5 0.5 U 0.5 U 0.5 U num NC 200 100 U 0.5 U 0.5 U num NC 200 20 U 5 U 5 U num NC 1 U 1 U 1 U 1 U num NC 1 U 2 U 2 U 2 U num NC 1 U 1 U 1 U 1 U num NC 1 U 1 U 1 U 1 U num NC 1 U 1 U 1 U 1 U num NC 1 U 1 U	Ethylbenzene		5	0.5 U	0.5 U	0.5 U	0.5 U	
ret 5 0.5 U	Methylene chloride		٠.	2.0	5.0	2.0	2.0	
orocatione 5 0.5 U 0.5 U 0.5 U chloride 2 1 U 1 U 1 U c (total) 5 0.5 U 0.5 U 0.5 U c (total) 5 0.5 U 0.5 U 0.5 U -Dichlorocathene 5 0.5 U 0.5 U 0.5 U -Dichlorocathene 5 0.5 U 0.5 U 0.5 U num NC 200 100 U 100 U 100 U num NC 20 U 5 U 5 U 5 U num NC 170000 10 U 10 U 10 U m NC 170000 10 U 10 U 10 U m NC 170000 10 U 10 U 10 U r 20 10 U 10 U 10 U 10 U r 20 10 U 10 U 10 U 10 U r 20 10 U 10 U 10 U 10 U r 20	Toluene		5	0,5 U	0.5 U	0.5 U	0.5 U	
e (total) 5	Trichloroethene			0.5 U	0.5.0	0.5 U	U.5.0	
e (folds) 5 0.5 U 0.5 U 0.5 U Dickloroethene 5 5 U 5 U 0.5 U Dickloroethene 5 1 U 1 U 1 U Dickloroethene 5 5 U 5 U 5 U Dickloroethene 1 U 1 U 1 U 1 U	Vinyl chloride		2	>	n -	10	n	
-Dichloroethene	Xylene (total)		5	0.5 U	0.5 U	0.5 U	0.5 U	
num NC 200 100 U 100 U ony 3 5 U 5 U 5 U c 25 5 U 5 U 5 U n 1000 20 U 20 U 5 U n NC 3 U 3 U 3 U um NC 1 U 1 U 1 U m NC 1 U 1 U 1 U m NC 1 U 1 U 1 U r 50 1 U 1 U 1 U r 20 1 U 1 U	cis-1,2-Dichloroethene		2	0.5 U	0.5 U	0.5 U	0.5 U	
um NC 260 100 U 100 U cyy 3 5 U 5 U 5 U m 1000 20 U 5 U 5 U m NC 3 U 3 U 3 U n NC 1 U 1 U 1 U n NC 1 0 U 1 U 1 U nm 50 1 0 U 1 U 1 U nm NC 1 0 U 1 U 1 U NC 25 U 20 U 25 U NC 25 U 20 U 25 U NC 25 U 20 U 25 U NC 25 U 10 U 10 U NC 25 U 20 U 25 U 200 10 U 10 U 10 U 300 10 U 10 U 10 U 25 5U 5U 5U 25 5U 5U 5U 100 10 U 10 U 10 U <	Metals							
ty 3 5 U 6 U 0 U	Aluminum		NC	. 500	100 U	100 U	400	
25 5 U \$ U	Antimony		m	5.0	5.0	şu	5.0	
m NC 30 0 20 0 20 0 20 0 20 0 20 0 20 0 20	Arsenic		25	s U	5 U	5 U	2.0	
mm NC 3 U 3 U 3 U m 5 1 U 1 U 1 U i NC 170000 160000 150000 im 50 10 U 10 U 10 U im NC 25 U 20 U 25 U i 200 10 U 10 U 10 U i 200 10 U 10 U 10 U i 200 10 U 10 U 10 U i 300 [520] 5 U 5 U imm NC 76000 75000 69000	Barium		. 0001	20 U	20 U	20 U	20 J	
m NC 170000 150000 150000 150000 150000 150000 150000 150000 150000 150000 150000 150000 150000 150000 150000 150000 150000 150000 15000 1	Beryllium		NC	3 U	3 U	3 U	3U .	
NC 170000 150000 150000	Cadmium		2	10	1.0	ות	ΩT	
um \$0 10 U 10 U NC 25 U 20 U 25 U \$200 10 U 10 U 10 U \$200 10 U 10 U 10 U \$200 10 U 10 U 10 U \$20 [520] 21 U 5 U \$25 5 U 5 U 5 U sim NC 76000 69000	Calcium		NC	170000	000091	150000	140000	
NC 25 U 25	Chromium		50	10.0	D01	D 0.1	10 J	
, 200 10 U	Cobalt		NC	25 U	20 U	25 U	20 U	•
; 200 10 U	Copper		200	10 U	10 U	10 U	11	
300 [520] 210 [190] 25 5U 5	Cyanide		200	10 U	10 U	10 U	10 U	
25 5 U 5 U 5 U 5 U 5 U 5 U 5 U 5 U 5 U 5	Iron		300	[520]	210	[390]	[480]	
ium NC 76000 75000 69000	Lead		25	5 U	5 U	5 U	5 U	
	ᄩ		NC	76000	75000	00069	70000	
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	our aidina	NYS Class GA	URS-91	URS-9I	URS-91	URS-91	
	Sample Date	water Quanty Standards	02/08/00	08/11/00	02/13/01	10/80/01	
•	Units	ug/L	ug/L	ug/L	ug/L	ng/L	
Compound							
Manganese		300	50	40 J	40	\$0 J	
Mercury		0.7	0.2 U	0.2 U	0.2 U	0,09.1	
Nickel		100	50 U	50 U	50 U		
Potassium		NC	5000 U	D 0005	2000 U	2000 J	
Selenium		01	5 UJ	5 U	5 UJ	5 U	
Silver		50	10 U	TO T	nor	non.	
Sodium		20000	[48000]	[48000]	[41000]	[48000]	
Thallium		NC	2.0	2.U	2.0	2U .	
Vanadium		NC	50 U	50 U	50 U	f 6.0	
Zinc		NC	100	101	10 C	10.0	

U - not detected, J.B - estimated value, R - unusable, NA - not analyzed, ND - not detected. E - estimated, N - tentatively identified, NC - no caleria. NOTES:

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FXP File: N/S829/22038/TABLEPR.FXP

File Number: 5829.22038 CONTINUED

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Method 8260 Volatile Organic Compound Data Frontier Chemical-Pendleton Site Piezometers - October 2001

Sa	Sample ID	NYS Class GA	P-1	P-2	P-3	7	P-5	P-6
Sa	Sample Date	Standards	10/10/01	10/10/01	10/10/01	10/60/01	10/10/01	10/10/01
'n,	Units	ng/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Compound								
1,1,1-Trichloroethane	7)	5	0.28 J	0.5 U	250 U	[91]	0.5 U	[35000]
1,1,2,2-Tetrachloroethane		'n	0.5 U	0.5.0	250 U	0.5 U	0.50	250 U
1,1,2-Trichloroethane	1		0.5 U	0,5 U	250 U	0.5 U	0.5 U	250 U
1,1-Dichloroethane	•1		0.5 U	0.39 J	[190.1]	[19]	0,43.1	[1500]
1,1-Dichloroethene	4)	2	0.5 U	0,5 U	250 U	[14]	0.5 U	[10000]
1,2-Diahloroethane	•	9.0	0.5 U	0.5 U	[4600]	[1.2]	0.34 J	[150.1]
1,2-Dichloropropane	-	1	0.5 U	0.5 U	250 U	0.5 U	0,5 U	250 U
2-Butanone (MEK)	-	NG	10 U	10 0	9290	10.0	10 U	5000 U
2-Hexanone	-	NC	5 U	5 U	2500 U	5 U ·	5 U	2500 U
4-Methyl-2-pentanone (MIBK)	•	NC	5.0	5.0	0886	5.0	5.0	2500 U
Acetone	-	NC	10 OT	10 UI	22000 J	10 UI	10 UJ	5000 UJ
Benzene		1	0.5 U	0.5 U	[800]	[13]	0.12.1	250 U
Bromodichloromethane		NC	0.5 U	0.5 U	250 U	0.5 U	0.5 U	250 U
Bromaform		Ş	0.5 U	0.5 U	250 U	0.5 U	0.5 U	250 U
Bromomethane	યો	2	10.1	I UI	500 UJ	I UI	ı m	500 UJ
Carbon disulfide	~	NG	0.5 U	0,5,0	250 U	0.5 U	0.5 U	200 U
Carbon tetrachloride	4)	2	0.5 U	0.5 U	250 U	0.5 U	0.5 U	250 U
Chlorobenzene	ν)	5	0.5 U	0.5 U	250 U	0.5 U	U.S.U	250 U
Chloroethane	4)	5	1.0	10	200 U	1 U	n	500 U
Chloroform	•	1	0.5 U	0.5 U	[210.7]	0.23 J	0.5 U	[350]
Chloromethane	<u>~</u>	NC	1.0	10	200 U	10	0.31 J	200 U
Dibromochloromethane	•0	5	0.5 U	0.5 U	250 U	0.5 U	0.5 U	250 U
Ethene, 1,2-dichloro-, (E)-	\$7	S	0.5 U	0.5 U	250 U	[22]	0.45 J	[1.75]
Ethylbenzene	Ψ1	2	0.5 U	0.5 U	250 U	0.4 J	0.5.U	250 U
Methylene chloride	41	<u>د</u>	2 U	2 U	1000 U	2 U	2 U	[0066]
Siyrene	~		0.5 U	0.5 U	250 U	0.5 U	0.5 U	250 U
Tetrachloroethene	4	NC	0.78	0.4 J	250 U	1200	1.5	2000
Toluene	•	2	0,23.1	0.27.1	[1600]		0.26.1	[65.1]
Trichloroethene	\$		0.57	0.17 J	[260]	[930]	2.1	[15000]
Vinyl chloride	74	2	n-	0.38.1	[260.1]	Ξ.	n1	200 U
Xylene (total)	\$	2	0.5 U	0.5 U	250 U	0.24 J	0.5 U	250 U
cis-1,2-Dichloroethene	5	2	0.28 J	0.12.1	[2300]	[880]	4.3	[1000]
cis-1,3-Dichloropropylene	J	7.4	0.5 U	0.5 U	250 U	0.5 U	0.5 U	250 U
	•		11 70	0.4.17	74 n T1	0.6.11	11.70	

U - not detected, J.B - estimated value, R - unusable, NA - not analyzed, ND - not detected. E - estimated, N - tentatively identified, NC - no criteria.

NOTES:

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Method 8270 Semivolatile Organic Compound Data Frontier Chemical-Pendleton Site Piezometers - October 2001

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	D 01	10 U
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U - not detected, J,B - estimated value, R - unusable, NA - not analyzed, ND - not detected. E - estimated, NV - tentatively identified, NC - no criteria. [] - exceeds standard.

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File Number: 5829,22038

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Method 8270 Semivolatile Organic Compound Data Frontier Chemical-Pendleton Site Piezometers - October 2001

Symple Dies (Auchsteinschieder) (Auchsteins		Sample ID	NYS Class GA	P-1	P-2	P-3	P.4	P-5	P-6	
Units Unit		Sample Date	Vialet Quality Standards	10/10/01	10/01/01	10/1/01	10/00/01	10/10/01	10/10/01	
tocology/judications 5 11 U 10 U <th>,</th> <th>Units</th> <th>ug/L</th> <th>ug/L</th> <th>1/8n</th> <th>ug/L</th> <th>ng/L</th> <th>1/8n</th> <th>ng/L</th> <th></th>	,	Units	ug/L	ug/L	1/8n	ug/L	ng/L	1/8n	ng/L	
10	Compound									
(coeth)/stefer 1 11 U 10 U	Bis(2-chloroethoxy)methane		5	11.0	10 U	[52]	10 U	10 U	10 U	
NC 11 11 10 10 10 10 10 1	Bis(2-chloroethyl)ether		1	0.11	10.0	[66]	10 U	101	10 U	
Marie Restate Marie Mari	Bis(2-chloroisopropyl) ether		NC	n II	10 U	10 U	10 U	10 U	10 U	
y) plutidation NC 11 U 10 U	Bis(2-ethylhexyl)phthalate (BE	(all:	Ş	2.4 J	10 U	2.2.1	2.1.3	2,4.3	3,41	
NC 11 U 10 U 1	Butyl benzyl phthalate		NC	חבת	10 U	10 U	10 U	10 U	10 U	
typ phthalate 50 11 U 10 U 10 U 10 U styl phthalate NC 11 U 10 U 10 U 10 U ofurian NC 11 U 10 U 10 U 10 U ofurian NC 11 U 10 U 10 U 10 U phthalate NC 11 U 10 U 10 U 10 U phthalate NC 11 U 10 U 10 U 10 U phthalate NC 11 U 10 U 10 U 10 U phthalate NC 11 U 10 U 10 U 10 U phthalate NC 11 U 10 U 10 U 10 U phthalate NC 11 U 10 U 10 U 10 U phthalate NC 11 U 10 U 10 U 10 U problement NC 11 U 10 U 10 U 10 U 10 U problement S 11 U 10 U 10 U 10 U 10 U	Chrysene		NC	11.0	10.0	10 0	10 (1	10 U	T0T	
tyly phthalatie NC 11 U 10 U	Di-n-butyl phthalate		50	חב	10 U	10 U	10 U	10 U	10 U	
Ochean NC 11 U 10 U <th< th=""><th>Di-n-octyl phthalate</th><th></th><th>NC</th><th>110</th><th>10.0</th><th>10.0</th><th>10.0</th><th>10.0</th><th>10.0</th><th></th></th<>	Di-n-octyl phthalate		NC	110	10.0	10.0	10.0	10.0	10.0	
Officiarie NC 11 U 10 U 10 U 10 U phthalate NC 11 U 10 U 10 U 10 U y-phthalate NC 11 U 10 U 10 U 10 U y-phthalate NC 11 U 10 U 10 U 10 U pothalate NC 11 U 10 U 10 U 10 U responsable NC 11 U 10 U 10 U 10 U torobetzane 0.04 11 U 10 U 10 U 10 U torobetzane 0.04 11 U 10 U 10 U 10 U torobetzane 0.05 11 U 10 U 10 U 10 U torobetzane 0.05 11 U 10 U 10 U 10 U torocettane 5 11 U 10 U 10 U 10 U torocettane 5 11 U 10 U 10 U 10 U torocettane NC 11 U 10 U 10 U 10 U	Dibenzo(a,h)anthracene		NC	11 U	10 U	10 U	10 U	10 U	10 U	
phthalate NC 11 U 10 U	Dibenzofuran		NC.	11.0	10 U	10.0	10 U	10 U	10 D	
NC 11 U 10 U 1	Diethyl phthalate		NC	חב	10 U	10 U	10 U	N 01	10 U	
three NC 11 U 10 U	Dimethyl phthalate		NC	110	10 U	10 U	10 U	10 U	Ω01	
tet NC 11 U 10	Fluoranthene		NC	11 0	10 U	10 U	10 U	10 U	10 U	
lorobenzene 0.04 11 U 10 U	Fluorene		NC	11.0	J) 01	D 01	D.01	D 01	101	
lorobutadiene 0.5 11 U 10 U 10 U 10 U lorocyclopentadiene 5 11 U 10 U 10 U 10 U lorocethane 5 11 U 10 U 10 U 10 U 1/2,3-cd)pyrene NC 11 U 10 U 10 U 10 U sodiphenylamine NC 11 U 10 U 10 U 10 U sodiphenylamine NC 11 U 10 U 10 U 10 U sodiphenylamine NC 11 U 10 U 10 U 10 U sodiphenylamine NC 11 U 10 U 10 U 10 U sodiphenylamine NC 11 U 10 U 10 U 10 U sodiphenylamine NC 11 U 10 U 10 U 10 U sodiphenylamine NC 11 U 10 U 10 U 10 U sodiphenylamine NC 11 U 10 U 10 U 10 U sodiphenylamine NC 11 U 10 U 10 U	Hexachlorobenzene		0.04	חות	10 U	10 U	10 U	10 U	10 U	
lorocyclopentadiene 5 11 U 10 U 10 U 10 U lorocethane 5 11 U 10 U 10 U 10 U 10 U (1,2,3-cd)pyrene NC 11 U 10 U 10 U 10 U 10 U one NC 11 U 10 U 10 U 10 U 10 U 10 U sodiphenylamine NC 11 U 10 U 10 U 10 U 10 U 10 U sodiphenylamine NC 11 U 10 U 10 U 10 U 10 U 10 U sodiphenylamine NC 11 U 10 U	Hexachlorobutadiene		0.5	11.0	10 U	10 U	10 U	10.0		
11 U 10 U	Hexachlorocyclopentadiene			11 0	10 U	10 U	10 U	10 U	10 U	
(1,2,3-cd)pyrene NC 11 U 10 U 10 U 10 U one NC 11 U 10 U 10 U 10 U 10 U sodiphenylamine NC 11 U 10 U 10 U 10 U 10 U sedipropylamine NC 11 U 10 U 10 U 10 U 10 U sedipropylamine NC 11 U 10 U 10 U 10 U 10 U sedipropylamine NC 11 U 10 U 10 U 10 U 10 U sedipropylamine NC 11 U 10 U 10 U 10 U 10 U sedipropylamine NC 11 U 10 U 10 U 10 U 10 U sedipropylamine NC 11 U 10 U 10 U 10 U 10 U sedipropylamine NC 11 U 10 U 10 U 10 U 10 U sedipropylamine NC 11 U 10 U 10 U 10 U 10 U sedipropylamine NC 1	Hexachloroethane		5	n n	10 O	10 D	101	101	101	
NG 11 U 10 U 1	Indeno(1,2,3-cd)pyrene		NC	11 U	10 U	10 U	10 U	10 U	D 01	
Sodiphenylamine NC 11 U 10 U 10 U 10 U sødipropylamine NC 11 U 10 U 10 U 10 U alene NC 11 U 10 U 10 U 10 U inzene 0.4 11 U 10 U 10 U 10 U lorophenol 1 54 U 50 U 50 U 50 U threine NC 11 U 10 U 10 U 10 U threine NC 11 U 10 U 10 U 10 U NC 11 U 10 U 10 U 10 U 10 U	Isophorone		NC	11 U	10 U	. 10 U	101	10.0	101	
sedipropylamine NC 11 U 10 U 10 U 10 U alene NC 11 U 10 U 10 U 10 U rizzare 0.4 11 U 10 U 10 U 10 U lorophenol 1 54 U 50 U 50 U 50 U threate NC 11 U 10 U 10 U 10 U threate NC 11 U 10 U 10 U 10 U NC 11 U 10 U 10 U 10 U 10 U	N-Nitrosodiphenylanine		NC	N II U	10 U	· 10 U	10 U	10 U	D 01	
NC 11 U 10 U 1	N-Nitrosodipropylanine		NC	11.0	10 (1	10 01	10.0	100	10.0	
nizzine 0.4 11 U 10 U <	Naphthalene		NC	11 U	10 U	10 U	10 U	10 U	10 N	
Introphenol 1 54 U 50 U 50 U 50 U Africane NC 11 U 10 U 10 U 10 U 10 U AC 11 U 10 U 10 U 10 U 10 U 10 U	Nitrobenzene		0.4	110	10 U	10 U	1011	10.0	10 U	
threne NC 11 U 10	Pentachlorophenol			54 U	20 U	51 U	20 U	50 U	50 U	
. 1 11U 10U (300) 10U 10U	Phenanthrene		NC	110	10 U	10 U	101	101	101	
NC 11 U 10 10 10 10 10 10 10 10 10 10 10 10 10	Phenol		_	11 0	10 U	[300]	10 U	10 U	10 U	
	Pyrene		NC	11.0	10 U		10 U	D 01	0.01	

U - not detected, J.B - estimated value, R - unusable, NA - not analyzed, ND - not detected. E - estimated, NV - tentatively identified, NC - no criteria.

NOTES:

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File Number: 5829.22038 CONTINUED



Method 8081/8082 Pesticide/PCB Data Frontier Chemical-Pendleton Site Piezometers - October 2001

	Sample ID	NYS Class GA	P-1	P-2	P-3	P.4	P-5	P-6
	Sample Date	Water Quanty Standards	10/10/01	10/10/01	10/10/01	10/60/01	10/10/01	10/10/01
	Units	ug/L	ng/L	ng/L	ug/L	ng/L	ug/L	ng/L
Compound								
Aroclor 1016		60.0	0.5 U	0.51 U				
Arector 1221		60'0	0.5.0	0.5.U	0.5 U	0,5 U	0.5 U	0.51 U
Aroclor 1232		60.0	0.5 U	0.51 U				
Aroclor 1242		60'0	0.5.0	0.5.0	0.5 U	0.5 U	0.5.U	0.51 U
Aroclor 1248		60.0	0.5 U	0.5 U	0.5 U	0.5 U.	0.5 U	0.51 U
Aroclar 1254		60'0	0.5.U	0.5 U	0.5 U	0.5 U	0.5 U	0.51 U
Aroclor 1260		60.0	0.5 U	0.51 U				
4,4'-DDD		6.3	0.1 U	0.1.0	0.1 U	0.1 U	0.1.0	0.1 U
4,4'-DDE		0.2	0.1 U					
4,4'-DDT		0,2	0.1.0	0.1.0	0.1.U	Ú 1.0	0.1.0	0.1 U
Aldrin		NC	0.05 U	0.051 U				
Dieldrin		0,004	0.10	D I.0	0,1 U	0.1.0	0.1.0	0.1 U
Endosulfan I		NC	0.05 U	0.051 U				
Endosulfan II		NC	0.1.U	D.1.0	0.10	0.1 U	0.1 U	0.1 U
Endosulfan sulfate		NC	0.1 U					
Endrin		NC	0.1.0	0.1.0	0.1 U	0.1 U	0.1.0	0.1 U
Endrin aldehyde		2	0.1 U	0.1 U	0.1 U	0.1 U	. O.1.0	0.1 U
Endrin ketone		SC	U.I.U	0.1.0	0.1.0	0.1.0	0.1.0	0.10
Heptachlor		0.04	0.05 U	0.051 U				
Heptachlor epoxide		6,03	0,05 U	0.05 U	U 50.0	0,05 U	0.05 U	0.051 U
Lindane		NC	0.05 U	0.051 U				
Methoxyahlor		35	U.S.U.	0.5 U	0.5 U	0.5 U	0.5 U	0.51 U
Toxaphene		90.0	0.5 U	0.51 U				
a-Chlordane		ŊĊ	D.005 U.	0,05 U	0.05 U	0.05 U	0.05 U	0,051 U
alpha-BHC		NC .	0.05 U	0.051 U				
beta-BHC		NO.	0.05 U	0.05 U	0.05 U	U 50'0	0.05 U	0.051 U
delta-BHC		NC	0.05 U	0.051 U				
gamma-Chlordane		NC C	0,05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.051 U
		÷.			•			

U - not detected, J.B - estimated value, R - unusable, NA - not analyzed, ND - not detected. E - estimated, NV - tentatively identified, NC - no criteria. NOTES:

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Frontier Chemical-Pendleton Site Piezometers - October 2001

Method 6010/7470/7841/9010B/9014 Inorganic Compound Data

	Sample ID	NYS Class GA	P-1	P-2	P-3			P-6
	Sample Date	Standards	10/10/01	10/10/01	10/10/01	10/60/01	10/10/01	10/10/01
•	Units	ug/L	ng/L	ng/L	ug/L			ug/L
Compound								
Aluminum		NC	400	400	100 U			100
Antimony		3	50	nç.	5.0			5.0
Arsenic		25	S U	4 J	[62]			9
Barium		1000	30	20.7	f01			10.1
Beryllium		NC	3 U	0.1 J	0.4 J			3 U
Cadmium		5	n n		1.0			2
Calcium		NC	270000	420000	390000			200000
Chromium		20	[60]	20	[00006]			[60]
Cobalt		NC	20 U	20 U	20 U			3.3
Copper		200	2.1	2.1	101			4.1
Cyanide		200	10 U	10 U	130			10 U
Iron		300	[1800]	[6400]	S0 U			[3400]
Lead		25	5 U	\$ U	5 U			5 U
Magnesium		NC	190000	320000	310000			440000
Manganese		300	110 J	[640 J]	20 J			[820 J]
Mercury		0,7	0.2 U	0,2 U	0.2 U			0.2 U
Nickel		001	20 J	10 J	10 J			20 J
Potassium		S.	3000 J	2000 J	5000			2000 J
Selenium		01	5 U	5 U	5 U			5 U
Silver		50	10 U	10 U	1.			10 U
Sodium		20000	[00069]	[64000]	[380000]			[110000]
Thallium		NC	2 U	2 U	20			2 U
Vanadium		NC		2 J	3.5			0.6 J
Zinc		NC	10	10 U	10.1			10.0
					0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			

U - not detected, J,B - estimated value, R - unusable, NA - not analyzed, ND - not detected. E - estimated, N - tentatively identified, NC - no criteria.

NOTES:

Date Printed: 01/03/02 05:58:44
DBF File: N:\S829\22038\TEMPDATA.DBF
FXP File: N:\S829\22038\TABLEPRC.FXP

File Number: 5829.22038

l of

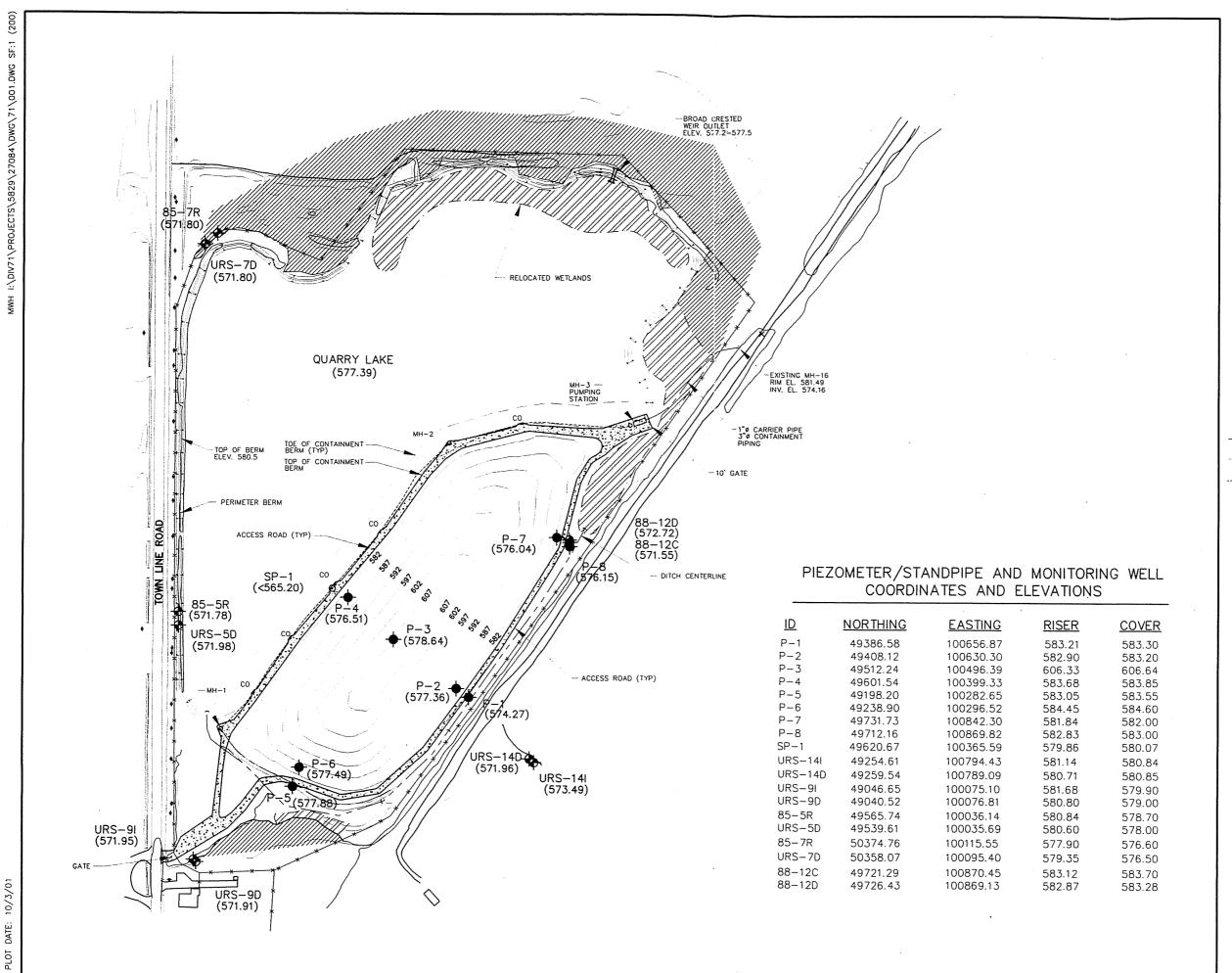


FIGURE 1



LEGEND

PIEZOMETER

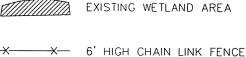
URS-7D

MONITORING WELL

(577.39)

WATER ELEVATION

CREATED WETLAND AREA



CO

0

GRADE ELEVATION CONTOUR GROUND WATER COLLECTION

TRENCH & CLEAN OUT STANDPIPE

UTILITY POLE

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

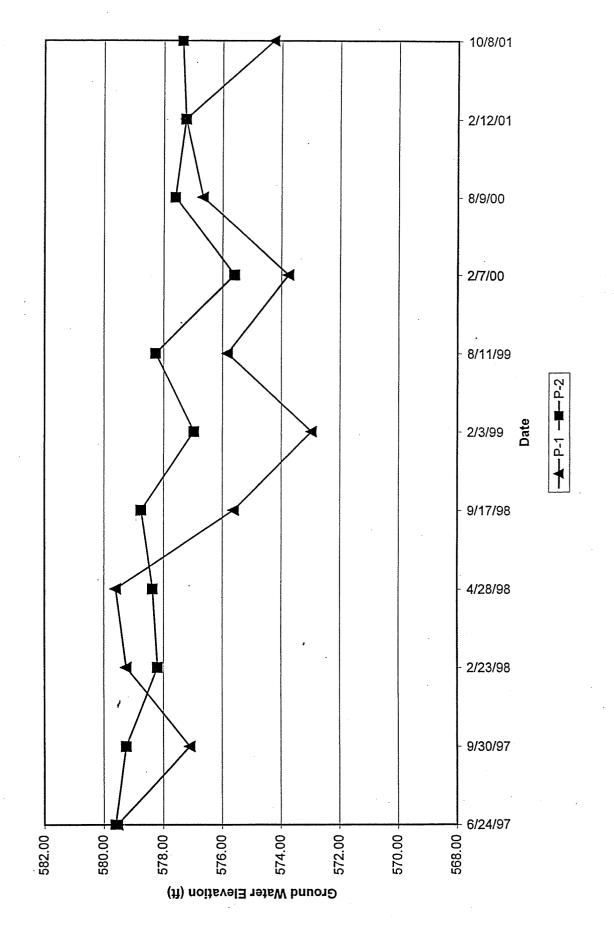
HYDRAULIC POTENTIAL MAP (OCTOBER 8, 2001)



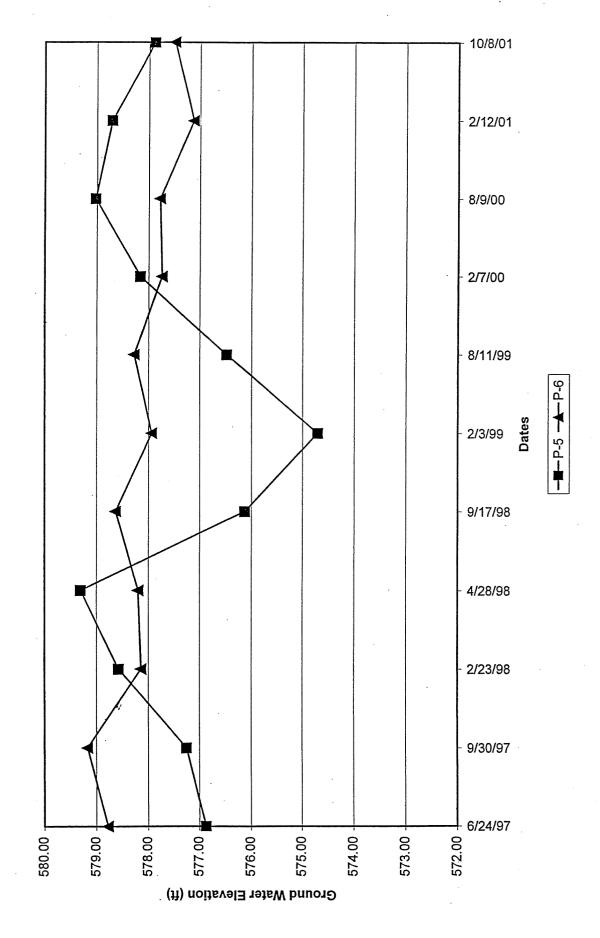
SCALE IN FEET

FILE NO. 5829.27084.001 DATE: MARCH 2001

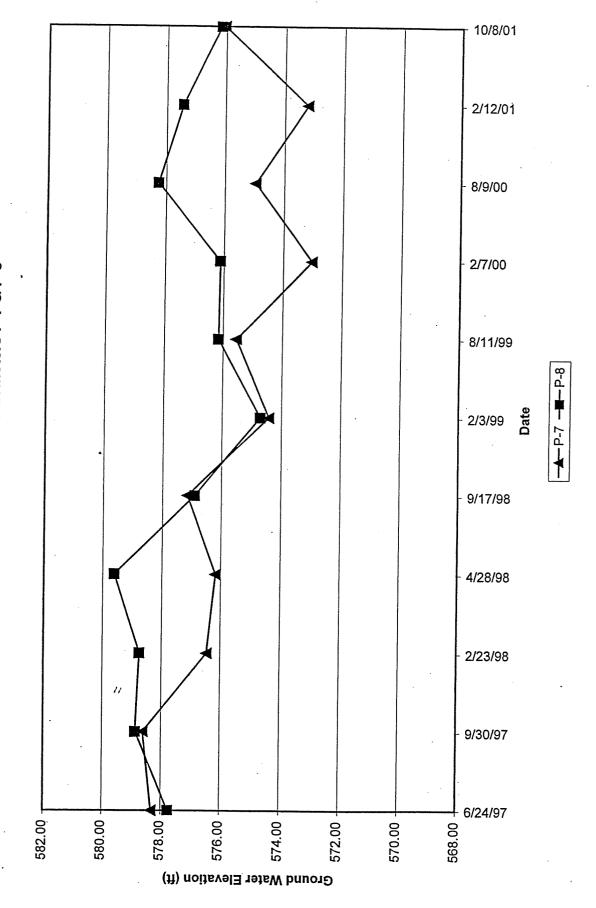




Ground Water Elevations - Piezometers P-1 & P-2



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



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

Appendix A

Piezometer/monitoring well inspection forms

Site Name: Frontier Chemical, Pendelton NY

Well Identification:

P-1

6

yes

Personnel: TPP/DEC

Date: 10-8-01

WELL SPECIFICATIONS

Protective Casing

Above Ground

Flush Mounted

.Well Construction

Stainless Steel

Well Diameter

2-inch

4-inch

Depth to Ground Water:

Well Depth:

WELL INTEGRITY

Well identification clearly marked ?	(es)	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?	(TES)	no
7. Is the measuring point on casing well marked?	Ves	no
8. Is there standing water in the annular space?	yes	(10)
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
The state of the s		

COMMENTS/RECOMMENDATIONS:

11. Is the access down the well impeded or blocked? Explain.

Site Name: Frontier Chemical, Pendelton NY

Well Identification:

P-2

Personnel: TPP/DEC

Date: 10-8-01

WELL SPECIFICATIONS

Protective Casing

Above Ground

Flush Mounted

Well Construction

Stainless Steel

Well Diameter

4-inch

Depth to Ground Water:

Well Depth:

WELL INTEGRITY

Well identification clearly marked ?	(yes)	no
2. Well covers and locks in good condition and secure ?	Tes	no
3. Is the well stand pipe vertically aligned and secure ?	yes	no
4. Is the concrete pad and surface seal in good condition?	ves	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	100
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	<u>no</u>

COMMENTS/RECOMMENDATIONS:

Site Name: Frontier Chemical, Pendelton NY

Well Identification:

P-3

yes

Personnel: TPP/DEC

Date: |0-8-01

WELL SPECIFICATIONS

Protective Casing

Above Ground

(Flush Mounted

Well Construction

Stainless Steel

Well Diameter

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	<u>no</u>
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	RO
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

COMMENTS/RECOMMENDATIONS:

11. Is the access down the well impeded or blocked? Explain.

Site Name: Frontier Chemical, Pendelton NY

Well Identification:

P-4

no

no

no

Personnel: TPP/DEC

Date: 10-8-01

WELL SPECIFICATIONS

Protective Casing

Above Ground

Elush Mounted)

Well Construction

Stainless Steel

Well Diameter

4-inch

Depth to Ground Water:

Well Depth:

WELL INTEGRITY

1.	. Well identification clearly marked ?
2	. Well covers and locks in good condition and secure ?
. 3	. Is the well stand pipe vertically aligned and secure ?

yes 4. Is the concrete pad and surface seal in good condition? no

5. Are soils surrounding the well pad eroded? yes

no 6. Is the well casing in good condition?

no 7. Is the measuring point on casing well marked? (yes)

110 8. Is there standing water in the annular space? yes

no NA yes 9. Is the stand pipe vented at the base to allow drainage?

no 10. Does the total sounded depth correspond to the original yes well completion depth?

11. Is the access down the well impeded or blocked? Explain. yes ·

COMMENTS/RECOMMENDATIONS:

Site Name: Frontier Chemical, Pendelton NY

Well Identification:

P-5

Personnel: TPP/DEC

Date: 10-8-01

WELL SPECIFICATIONS

Protective Casing

Above Ground

Flush Mounted

Well Construction

Stainless Steel

Well Diameter

4-inch

Depth to Ground Water:

Well Depth:

WELL INTEGRITY

1. Well identification clearly marked?

no

2. Well covers and locks in good condition and secure?

3. Is the well stand pipe vertically aligned and secure?

no

4. Is the concrete pad and surface seal in good condition?

no

5. Are soils surrounding the well pad eroded?

yes

6. Is the well casing in good condition?

no

7. Is the measuring point on casing well marked?

8. Is there standing water in the annular space?

yes)

no

yes

(10) no

10. Does the total sounded depth correspond to the original well completion depth?

9. Is the stand pipe vented at the base to allow drainage?

no

11. Is the access down the well impeded or blocked? Explain.

yes

COMMENTS/RECOMMENDATIONS:

Site Name: Frontier Chemical, Pendelton NY

Well Identification:

P-6

yes

Personnel: TPP/DEC

Date: 10-8-01

WELL SPECIFICATIONS

Protective Casing

Above Ground

Flush Mounted

Well Construction

Stainless Steel

Well Diameter

4-inch

Depth to Ground Water:

Well Depth:

WELL INTEGRITY

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?	Ves	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	10
9. Is the stand pipe vented at the base to allow drainage?	yes	no
10. Does the total sounded depth correspond to the original	yes	no

COMMENTS/RECOMMENDATIONS:

11. Is the access down the well impeded or blocked? Explain.

well completion depth?

Casing agled +/- 15 degrees from vertical

Site Name: Frontier Chemical, Pendelton NY

Well Identification:

P-7

MA

no

yes

yes

Personnel: TPP/DEC

Date: 10-8-01

WELL SPECIFICATIONS

Protective Casing

Above Ground

Flush Mounted

Well Construction

Stainless Steel

Well Diameter

4-inch

Depth to Ground Water:

Well Depth:

WELL INTEGRITY

Well identification clearly marked ?	(Yes)	no
2. Well covers and locks in good condition and secure?	(TES)	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?	des)	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

COMMENTS/RECOMMENDATIONS:

well completion depth?

10. Does the total sounded depth correspond to the original

11. Is the access down the well impeded or blocked? Explain.

Site Name: Frontier Chemical, Pendelton NY

Well Identification:

P-8

no

no

no

no

no)

no

no

100

no

yes

Personnel: TPP/DEC

Date: (0-8-01

WELL SPECIFICATIONS

Protective Casing

Above Ground

Flush Mounted

Well Construction

Stainless Steel

Well Diameter

4-inch

Depth to Ground Water:

Well Depth:

17.21

WELL INTEGRITY

Well identification clearly marked ?	Ves	
2. Well covers and locks in good condition and secure?	AES)	
3. Is the well stand pipe vertically aligned and secure ?	(Yes)	
4. Is the concrete pad and surface seal in good condition?	Æ ^{es}	
5. Are soils surrounding the well pad eroded?	yes	(
6. Is the well casing in good condition?	Ves	
7. Is the measuring point on casing well marked?	yes)	
8. Is there standing water in the annular space?	yes	
9. Is the stand pipe vented at the base to allow drainage?	yes	
10. Does the total sounded depth correspond to the original well completion depth?	yes	

COMMENTS/RECOMMENDATIONS:

11. Is the access down the well impeded or blocked? Explain.

Site Name: Frontier Chemical, Pendelton NY

Well Identification:

85-5R

Personnel: TPP/DEC

Date: 10- 9-01

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?

no

no

2. Well covers and locks in good condition and secure?

3. Is the well stand pipe vertically aligned and secure?

no

4. Is the concrete pad and surface seal in good condition?

no

5. Are soils surrounding the well pad eroded?

no

6. Is the well casing in good condition?

no

7. Is the measuring point on casing well marked?

no

8. Is there standing water in the annular space?

yes

(no)

9. Is the stand pipe vented at the base to allow drainage?

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

Site Name: Frontier Chemical, Pendelton NY

Well Identification:

85-7R

Personnel: TPP/DEC

Date: 10-8-01

WELL SPECIFICATIONS

Protective Casing

Above Ground

Flush Mounted

Well Construction

Stainless Steel

Well Diameter

4-inch

Depth to Ground Water:

Well Depth:

WELL INTEGRITY

1. Well identification clearly marked?

no

2. Well covers and locks in good condition and secure?

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

15. Are soils surrounding the well pad eroded?

6. Is the well casing in good condition?

no

7. Is the measuring point on casing well marked?

no

(8. Is there standing water in the annular space?

yes

(no

59. 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

(COMMENTS/RECOMMENDATIONS:

No concrete at BIST of CASING.

Site Name: Frontier Chemical, Pendelton NY

Well Identification:

URS-7D

Personnel: TPP/DEC

Date:

WELL SPECIFICATIONS

Protective Casing

Above Ground

Flush Mounted

Well Construction

PVC

Stainless Steel

Well Diameter

4-inch

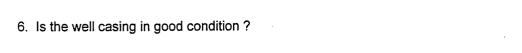
Depth to Ground Water:

Well Depth:

WELL INTEGRITY

1.	Well identification clearly marked ?
2.	Well covers and locks in good condition and secure?
3.	Is the well stand pipe vertically aligned and secure?

4.	is the concrete pad and surface seal in good condition?
5.	Are soils surrounding the well pad eroded?



7.	Is the measuring point on casing well marked?
8.	Is there standing water in the annular space ?

9. Is the stand pipe vented at the base to allow drainage?	
10. Does the total sounded depth correspond to the original	

11.	Is the	access	down	the well	impeded	or	blocked?	Explain.
		40000	401111			•.		

no





no















yes

no

COMMENTS/RECOMMENDATIONS:

well completion depth?

Concrete Bra Broken and shifted

Site Name: Frontier Chemical, Pendelton NY

Well Identification:

SP-1

Personnel: TPP/DEC

Date: 10-8-01

WELL SPECIFICATIONS

Protective Casing

Above Ground

Flush Mounted

Well Construction

PYG HOPE

Stainless Steel

Well Diameter

2-inch

Depth to Ground Water:

Well Depth:

WELL INTEGRITY

1. Well identification clearly marked?	•
2. Well covers and locks in good condition and secure ?	Ç
3. Is the well stand pipe vertically aligned and secure ?	Ç
4. Is the concrete pad and surface seal in good condition?	
5. Are soils surrounding the well pad eroded?	
6. Is the well casing in good condition?	4
7. Is the measuring point on casing well marked?	<

no yes

yes ⊘ýes

no

no

no

no

no

no

8. Is there standing water in the annular space?

yes

(no)

9. Is the stand pipe vented at the base to allow drainage? 10. Does the total sounded depth correspond to the original yes

no NA

yes

no

11. Is the access down the well impeded or blocked? Explain.

yes

COMMENTS/RECOMMENDATIONS:

well completion depth?

Site Name: Frontier Chemical, Pendelton NY Well Identification:

10/8/01 Personnel: TPP/DEC

WELL SPECIFICATIONS

Above Ground Flush Mounted **Protective Casing**

PVC Stainless Steel Well Construction

2-inch 4-inch Well Diameter

Depth to Ground Water:

Well Depth:

WELL INTEGRITY

	Well identification clearly marked ?	Yes	no
:	2. Well covers and locks in good condition and secure ?	yes	10
	3. Is the well stand pipe vertically aligned and secure?	<u>yes</u>	ю
	4. Is the concrete pad and surface seal in good condition?	yes	no
:	5. Are soils surrounding the well pad eroded?	yes	no
. 1	6. Is the well casing in good condition?	yes	no
	7. Is the measuring point on casing well marked ?	yes	no
٠.	8. Is there standing water in the annular space ?	yes	(TIO)

URS-91

yes

yes

yes

10. Does the total sounded depth correspond to the original well completion depth?

9. Is the stand pipe vented at the base to allow drainage?

11. Is the access down the well impeded or blocked? Explain.

COMMENTS/RECOMMENDATIONS:

(2) Casing his settled, outre cap his broken off.

(c) some settling

Site Name: Frontier Chemical, Pendelton NY

Well Identification:

URS-9D

Personnel: TPP/DEC

10/8/01

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:

50.88

WELL INTEGRITY

1. Well identification clearly marked?

no

2. Well covers and locks in good condition and secure?

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?

(no)

6. Is the well casing in good condition?

no no

7. Is the measuring point on casing well marked? 8. Is there standing water in the annular space?

yes

/no)

9. Is the stand pipe vented at the base to allow drainage?

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

Site Name: Frontier Chemical, Pendelton NY

Well Identification:

URS-14I

Personnel: TPP/DEC

Date: 10-8-01

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?

no

2. Well covers and locks in good condition and secure?

no

3. Is the well stand pipe vertically aligned and secure?

· no

4. Is the concrete pad and surface seal in good condition?

no

5. Are soils surrounding the well pad eroded?

yes

(ng)

6. Is the well casing in good condition?

no

7. Is the measuring point on casing well marked?

no

8. Is there standing water in the annular space?

no

9. Is the stand pipe vented at the base to allow drainage?

yes

no MA

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)

Site Name: Frontier Chemical, Pendelton NY

Well Identification:

URS-14D

Personnel: TPP/DEC

Date: (1) - 9 - 0 1

WELL SPECIFICATIONS

Protective Casing

Above Ground

Flush Mounted

Well Construction

PVC

Stainless Steel

Well Diameter

2-inch

4-inch

Depth to Ground Water:

9.75

Well Depth:

41.58

WELL INTEGRITY

1. Well identification clearly marked?

ves)

no

2. Well covers and locks in good condition and secure?

yes

no

3. Is the well stand pipe vertically aligned and secure?

_

no

4. Is the concrete pad and surface seal in good condition?

yes

no

•

5. Are soils surrounding the well pad eroded?



6. Is the well casing in good condition?

yes

no

7. Is the measuring point on casing well marked?

yes

no

no

no

8. Is there standing water in the annular space?

no NA

10. Does the total sounded depth correspond to the original well completion depth?

9. Is the stand pipe vented at the base to allow drainage?

yes yes

11. Is the access down the well impeded or blocked? Explain.

yes

10)

Ground water sampling logs

O'Brien 8	<u> Gere Engine</u>	ers. inc.	ow Ground Water Sampling Log					
Date	10/9/01	Persor	nel	DEC/	TPP	Weather		
Site Name	Contrec	- Evacu	ation Method			- Well#	P-1	
	Pendleton	- .j(∕ Sampl	ing Method	Low F		Project #	29820	
Sile Location	Pladuton	si j			<u> </u>	- '		
Well informat								
Depth of Well	* > <u> le.l</u>			* Measure	ments taken from	7	_	
Depth to Wate		95 ft.			2	Top of Well Cas	_	
Length of Wat	er Column 5, 2	<u>-17 </u>			×	Top of Protective (Other, Specify)	_	
						(Other, opecity)	126 145	
Start Purge Ti	me: /0.00							
	Depth				Oxidation	Dissolved	T T	
Elapsed	То				Reduction	Oxygen	Turbidity	Flow
Time	Water	Temperature	pН	Conductivity	Potential	(mg/l)	(NTU)	Rate (ml/min).
0:00	10.97	14.6	7.07	14/3/35	84.2	3.66	14	400
3:00	12.81	16.6	4.8	146418	61-2	1,04	1 //	1/0
6:00	12.83	17	6.77	147495	51.0	0.79	7.5	25
9.50	13,09	19.4	6.74	152977	23.8	0.57	3,4	710
12:00	13.15	21.84	6.79	154395	12.7	0.41	2.2	25
15:100	<u> 13,41</u>	21.89	9.7	1) /- 3 3	- 7.3	0.91	- 3.0	
	- DIZY	19.93	6.89				·	
	/3.2							
		,						
16:00	13,65	- 10/9/0			1	lected	<u> </u>	-
<u> </u>					CACC	ecci.		
8:20	13,40	16/10/0	1			neta	1 1/0/6	
						1.4.40	The roca	
	14,38					PCE	/Pest-	
	1.1.0-							
						the 1	1 mulie	DEC
							1/st	Dec
					<u> </u>		John	-
	حرل ۱۰	1						
End Purge Tin	ne: <u>1145</u>							
Water sample	9:							
Time collected	1: 9',50			Total volume of	purged water re	moved:		
Physical appe	arance at start				Physical appea	rance at samplin	g	
1	Color Clean					Color	Chens	_
	Odor nhe					Odor	rine	-
Sheen/Free P	roduct new	<u> </u>			Sheen/Fre	ee Product	None	-
Field Test Re		d ferrous iron:			-			
		d total iron:			-			
	Dissolve	d total manganese	; ;		•			
Applytical Pa	rameters: VOCs							
Allalyucal Pa	manieters. 1003							
Container	Size Conta	iner Type	# Collec	ted Fie	ld Filtered	Preserva	tive (Container pH
j:\71\r	projects\6510\25561\4	notes\microloa.xls						April 25, 1997

O Brien & Gere Engineers, inc. Low Flow Ground Water Sampling Log											
Date / 5 / 9 / 6 i Personnel						Weather Cloudy 50 - Well # P-Z					
Site Name	Frontrer	- Evacu:	ation Method	Grant	^ < <	Well#	P-Z				
				Flow	Project #	2990					
Site Location	Pendetin	- Sampi	ing Method	Low	Plow	. Froject#	<u> </u>				
Well informa	tien:										
Depth of Well	· 15.	72 ft.		* Measure	ments taken fron	ը					
1 '	Depth to Water * 5.54 ft. Top of Well Casing										
Length of Wat	er Column /o.	€ ft.				Top of Protectiv	e Casing				
					X	(Other, Specify)	LOIS DAC				
	77										
Start Purge Ti	me: <u>/155</u>				·	,					
	Depth		•		Oxidation	Dissolved					
Elapsed	То				Reduction	Oxygen	Turbidity	Flow			
Time	Water	Temperature	pH	Conductivity	Potential	(mg/l)	(NTU)	Rate (ml/min).			
Ø	4.84	13,62	6.65	253196	55	,22	30	189			
3:00	4.75	14.88	6.52	709376	-68.8	4,2	25	150			
6:00	7,12	16.02	652	221628	-74.	4.1	5.4	150			
9:00	7.82	16.78	6.51	223181	-60, Z	0.07	5.6	158			
12:00	7,85 798	17,62	6.50	224733	-80.0	0.09	7.3	125			
15:00	1 2	20,31	6.49	2396748	-84.6	•/	18:7	150			
21000	9,2	19.52	6.49	2378520	-84.2	.09	5.4	200			
14:	912	1935	6.40	238341	- × 3. 1	-09	2 /2	150			
1-1-1-	77-				12						
	-DRV-										
				Α							
			-	44	a led	Metal	 				
18 10	9.96			+		VOCS	E				
7						PCB/I	Pest she	 le			
10/10/	9,20	8:40					gvocs,				
	· · · · · · · · · · · · · · · · · · ·					Lante	Votans				
	14:35					 	E				
<u> </u>								·			
End Purge Tir	ne: 12:3	٥									
Water sample	•										
Time collected	25	ń		Total volume of	purged water re	moved:					
1					Physical appear	rance at sampling	0				
	arance at start Color <u>Clear</u>				,,	Color	Clear				
1	Odor Var					Odor	None	-			
Sheen/Free P					Sheen/Fre	e Product	No				
Silectiff fee i	1000001 108200							- .			
Field Test Re	sults: Dissolve	d ferrous iron:									
1031116		d total iron:			•						
		d total manganese	e :		•						
l	2.0007.00										
Analytical Pa	rameters: VOCs										
•											
Container	Size Conta	iner Type	# Collect	ed Fie	d Filtered	Preserva	tive	Container pH			
		noto al miamina de						April 25, 1997			
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C Brien	<u>& Gere Engine</u>	<u>ers, inc.</u>		LOW F	iow Groun	a water Sa	ampling Lo				
Date	10/9/01	Person	nnel	,		Weather	Clorely	50,			
Site Name	Frontier	- Evacu	ation Metho	d Grante	555	- Well#	Closely P-3				
i	Pendleton	ing Method	P1.~	- Project#							
Sile Location	renderton	-		<u> </u>		_					
Well informa	tion:										
Depth of Well	39. 26.	78 ft.		* Measure	ments taken from	m T					
Depth to Wate						Top of Well Cas					
Length of Wa	ter Column /3 -	.O 0 ft.				Top of Protective	re Casing	DUZ			
	·				У	(Other, Specify)	re Casing of	100			
			, ⁻								
Start Purge T	ime: /3./5										
	Depth				Oxidation	Dissolved					
Elapsed	То				Reduction	Oxygen	Turbidity	Flow			
Time	Water	Temperature	pН	Conductivity	Potential	(mg/l)	(NTU)	Rate (ml/min).			
سيمبص	26.70	24-16	632	1	1/0 1/		7 11-	1710			
0:60	26.70	15.00	7.65	250353	-40,4	0,32	2 45	210			
3 00	29.25	13-45	8.13	250760	7.0	0,05	45	210			
6:00	30.53	13,60	8.20	249 68	12,3	0.05	36	135			
ි වෙ	31.49 32.40	14.40	8.22	25-4672	17.1	0.04	32	400			
12:00	33.62	17.04	819	270231	21.6	0.04	40	200			
15:00	34.01	19.48	8.14	278 461	24.0	0.16	36	/35			
21:00	34.60	18.34	8.13	278188	24.7	0,08	40	2 = 0			
24:∞	35.06	17.26	8,10	271150	21.1	0.05	56	210			
27:00	36.58	21.22	8.05	298220	1.9	0,12	40	150			
30:00	37.11	20.26	8.06	206632	0.06	0.06	34	190			
33.00	37.95	20.33	8,07	286823	-3.3	0.05	27	180			
36,00	38,54	23.00	8,08	307483	0.3	0,12	55	200			
						<u> </u>	,				
1120	-30.81										
						1					
End Purge Tir	me:	55						,			
Water sample	e:										
Time collected	d: 11,45			Total volume of	purged water re	moved:					
1	earance at start				Physical appea	rance at samplin	g	_			
i ilysical appe	Color Flours	cen +			•	Color	Floures	cut			
	Odor Ane					Odor	Floures.				
Sheen/Free P	Product Nan				Sheen/Fr	ee Product	Nac				
Field Test Re	esults: Dissolve	d ferrous iron:			_		• "				
	Dissolve	d total iron:			_			:			
	Dissolved total manganese:										
Analytical Pa	arameters: VOCs										
						10: 5	En.	Containera			
Container	Size Conta	iner Type	# Collec	ted Fie	ld Filtered	Preserva	uve	Container pH			
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1.17 / 4	,				······································						

C Brien & Gere Engineers, Inc. Low Flow Ground Water Sampling Log								
Date	1.19/0:	Perso	nnel	1080		Weather	C/00	aly 50°
Site Name	Funtrer Pendleton, A	– Evacu	ation Metho	Goon	fiss	- Well#	29820	7
Site Mairie	Pontes			1 (7 .	Project #	25820	
Site Location	J'endleton, A	29 Samp	ing Method	<u>40ω↑</u>	·100	-	<u> </u>	
Well informa	tion:							
Depth of Well	16.6	12 ft.		* Measure	ments taken fror	n ·		
Depth to Wate	er *	52 ft.				Top of Well Car	sing	
Length of Wa	ter Column / 6	. 4 0 ft.				Top of Protectiv	ve Casing	^· .
						(Other, Specify) 75P of	- PVC
O. J. D T	ime: 14.00	·						
Start Purge T	ime: / 9.00				·		_	
	Depth				Oxidation	Dissolved		
Elapsed	То				Reduction	Oxygen	Turbidity	Flow
Time	Water	Temperature	pH	Conductivity	Potential	(mg/l)	(NTU)	Rate (ml/min).
0:00	6.52	12.83	6.96	332235	-3,3	0.63	8.5	150
3:00	8.56	13,24	6.67	312063		0.02	6.4	116
6:00 9:00	8.60	15,82	6.67	308749	-32.7 -44.2	0.02	4.5	75
12:00	8.65	15.90		30 2810		0,02	3.6	150
15:00	8.68	16.90	6.68	300607	-62.5	0.04	3.8	100
10,00	8,89	17,19	6.65	398 449	-64.5	0.04	3.5	75
70.00	8,01	1 / / / / / -	<i>u.o.</i> ,	2101(1				
·								
		<u> </u>				<u> </u>		
					L		1	
End Purge Tir	me: 143							
Water sample	e.							
Time collected				Total volume of	purged water re	moved:		
'				Total Tolamo of	Physical appear			
	earance at start	^			Priysical appear	Color		
	Color Clear					Odor	None	
	Odor None				Sheen/Fre		1100	
Sheen/Free P	roduct None				Oliccial ic		1000	
pr 1 . 1	Disable	d ferrous iron:						
Field Test Re					-			
		d total iron:	٠.•		-			
	DISSOIVE	d total manganese	••		-			
Analytical Pa	rameters: VOCs							
milaly ucal Pa								
Container	Size Conta	iner Type	# Collect	ed Fie	ld Filtered	Preserva	tive	Container pH
Containees		• F						
1								
								April 25 1007
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O'Brien	& Gere Engine	<u>ers, ınc.</u>		Low F	low Groun	<u>d Water S</u>	<u>ampling Loc</u>	1
			nel	DEC		Weather		65°
Sito Name	10/10/01 Frontier Pendletar	- Evacua	ation Method			Well#	P-5	
Site Ivaille	P. In L	- Samnli	ng Method	Low F		Project #	29820	
Site Location	Tenaletas	- Campi	ing Michiod	<u> </u>				
Well informa								
Depth of Well		<u>56 </u>		* Measure	ments taken fron	•		
Depth to Wate	er* <u>5.5</u>	5 <i>∔</i> ft.				Top of Well Ca		
Length of Wat		02 ft.	•			Top of Protecti		_
					L. <u>×</u>	(Other, Specing	1) TOP OF PU	
Charl Divers T	ime: /3:2	<u>ی</u>						
Start Purge Ti		<u> </u>		т			T	
	Depth				Oxidation	Dissolved	Turbidity	Flow
Elapsed	То				Reduction	Oxygen	(NTU)	Rate (ml/min).
Time	Water	Temperature	pH	Conductivity	Potential -36.6	(mg/l) /. 5 /	450	250
0'.00	5,10	17.38	6.47 6.44	150665	-57.7	1.02	330	100
3:00	6.12	17.39	6.43	155 39 3	-57.9	1.00	220	70
9:00	6.18	18.07	6.43	156302	-58.5	1.01	190	rio
12:00	6.37	19.15	6.44		-56.7	1.07	110	110
15360	6.47	20.04	6.45		-54.1	1.16	75	75
18:00	6.50	21.15	6.44	144990		1.25	55	7.5
21:00	6.52	21.38	6.45	138642	- 34.7	1.27	39	60
	•							
		-						
111:	7.93							
क्षान् ।	7.00							
ļ								
					<u> </u>			
		<u> </u>		<u> </u>				
					<u> </u>			
			<u> </u>					
					-			
End Purge Ti	me: <u>/345</u>							
Water sampl	e:							
Time collecte	. 7 ~~-			Total volume of	f purged water re	moved:		
1	earance at start				Physical appea	rance at sampli	ing	
i ilyaloai appi	Color hove					Color	<u>clear</u>	
	Odor none					Odor	none	W-W
Sheen/Free F					Sheen/Fr	ee Product	none	
1 13								•
Field Test Re	esults: Dissolve	ed ferrous iron:			-			
I		ed total iron:			_			
	Dissolve	ed total manganes	e:					
^I Analytical Pa	arameters: VOCs							
	Circuit Carette	rinos Tyros	# Collec	ted a la Care Fie	eld Filtered	Preserv	ative	Container pH
Container	Size Conta	ainer Type	# Collec	COLOR POR COLOR DE LA COLOR DE				
			 					
<u> </u>								April 25, 1997
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O 3rien 8	<mark> Gerե Engine</mark>	ers,1c.		Low F	נא Ground	d Wuter Sa	amplir. J Lo	g
Date	10/10/41	Persor	nel	DEC,	mike	Weather	Sunny	650
Site Name	Frontrer	Evacu	ation Method	_ ·		Well#	P-6	
Site Name Site Location	Pendleton	•	ing Method	ر سوک		Project#	29820	•
Site Location	1211 acc 104					•		
Well informat	ion:	(1)		* * * *		_		
Depth of Well	·	. 16 ft.		Measure	ments taken fron	Top of Well Ca	eina	
Depth to Wate		, 88 ft. 2,8 ft.				Top of Protective		
Length of Wat	er Column /.	<u> </u>			<u> </u>		TOP of	PVC
Start Purge Ti	me: 14:3 0)						
	Depth				Oxidation	Dissolved		
Elapsed	То				Reduction	Oxygen	Turbidity	Flow
Time (min.)	Water	Temperature	pH	Conductivity	Potential	(mg/l)	(NTU)	Rate (ml/min).
0:00	7.23 7.36	17.40	6.39	244484 250379	-43.5	0.62	50 21	120
3/00	7.54	15.06	10.39	251999	-27.9	6.33	\$15	60
9:00	7.57	16.74	6.41	257993	-28,2	0.25	45	60
12:00	7.65	1757	6.413	262781	-30.9	0,22	24	90
15:00	7.72	18:22	6.45	267088	-32.2	6.21	32	60
18:00	7 79	18.58	6.45	269575	-32.0 -32.2	0.21	13	50
21:00 24:00	7.90 7.94	1958	6.43	274362	- 30.4	6,21	12	50
27:00	7,98	19 95	6.43	275600	- 30.5	0.20	12	570
30:00	8.04	20.56	Ce.43	277628		0.20	12	60
33:00	8.09	a1.03	6,43	279483	- 34.1	0,25	14	50
36:00	8.13	21.13	6,44	278587	77.8	0, 4	1 - / - 2 -	
-								
								· · · · · · · · · · · · · · · · · · ·
End Purge Tir	ne: /5:/0	·						
.								
Water sample	^ -			Total volume of	f purged water re	moved:		
1					Physical appea		ng	
•	arance at start Color <u>Clear</u>	-			, ,	Color	Clear	
1	Odor // ow					Odor	None	
Sheen/Free P					Sheen/Fre	ee Product	None	
Field Test Re		d ferrous iron:			-			
ı		d total iron:	.		_			
1	DISSOIVE	d total manganes	J.		-			
Analytical Pa	rameters: VOCs							
•							otiva.	Container pH
Container	Size Conta	iner:Type	# Collec	ted Fie	eld Filtered	Preserva	auve	Sourcement Press
	-							
	micoto 6510\25561\4							April 25, 1997

O'Brien & Gere Engine	eers, Inc.		Standard Gro	und Water Sa	mpling Lo	g
Date /0/11/6						
Site Name Frontier Chemical			Weather	Clordy	600	
			Well #	85-7R		•
	JIK		Evacuation Method		oilor	•
Project No. 29820						-
Personnel TPP/DEC			Sampling Method	Stainless Steel B	ailer	·
Well Information:						
Depth of Well *	<u>27.72</u> ft.	Water V	olume /ft. for:			
Depth to Water *	6,07 t.	×	_2" Diameter Well =	0.163 X LWC		
Length of Water Column	21.65 ft.		4" Diameter Well =	0.653 X LWC		
Volume of Water in Well	3.53 gal.(s)		6" Diameter Well =	1.469 X LWC		
3X Volume of Water in Well		<u> </u>				
3X Volume of Water in Well	ga(o/	Volume	removed before san	npling	1/0	gal.(s)
		Did well	go dry?		_//	-
						(Other, Specify)
* Measurements taken from	X Well Ca	asing	Protective	Casing]
Wicasarchiona taxon nom						
Instrument Calibration:						
	pH Buffer Readings		Conductivity Standard	ard Readings		
	4.0 Standard 7.0 Standard		84 S Standard 1413 S Standard			
	10.0 Standard		1410 0 010110010			
Water parameters:						
Gallons	Temperature	pН		Conductivity		Turbidity
Removed	Readings	Readin	gs	Readings uS/cm		Readings Ntu
1	() II	4	97	2080	:-11:-1	110
initial <u>Q</u>	initial 5/.4	initial $\frac{7}{1}$	initial initial		initial	
3	<u>54.3</u>	7.	<u> </u>	2150		600
	<u> </u>		<u>85</u>	2680	 ,	550
	53. /	<u>4.</u>	14 <u> </u>	<u>2700</u>	********	<u>370 </u>
		-				
					<u>.</u>	
Water Sample:						
Time Collected	1500					
Physical Appearance at Start	7		Physical /	Appearance at San	npling]
			Oalaa		01.1	- lot have
Color	Clear / Clovery	•	Color		1.1	-lgts brown sulfur
Odor	worl	•	Odor	(> 400 PUT! !\	LICT	<i>>∪1,7∪∀</i>)
Turbidity (> 100 NTU)		•	-	(> 100 NTU)	470	
Sheen/Free Product	None	•	Sheen/Fr	ee Product		~
Samples collected:						
Container Size	Container Type	# Collected	Field Filtered	Preservati		Container pH
40 ml	Glass	3	No		1 HCL	-
Liter	Plastic	1 1	Not if < 50 m		HNO3 NaOH	
Pint	Plastic	11	140		14011	
Notes:		•				
1						

O'Brien & Gere Engine	ers, Inc.		Standard Grou	und W	/ater S	ampling L	og
Date (0/11/61						* .	
Site Name Frontier Chemical	Manufactura Control Co		Weather	Ch	oody	60"	
Location Pendelton, New York			Well #	URS-7			_
	<u> </u>		Evacuation Method			Pailer	-
							_
Personnel TPP/DEC			Sampling Method	Stanne	ess Steel	Baller	
Well Information:	2001						
Depth of Well *	<u>39.8(</u> ft.		/olume /ft. for:				
Depth to Water *	<u>7,53</u> ft.		_				
Length of Water Column	32.28 ft.		_4" Diameter Well = (0.653 X	LWC		
Volume of Water in Well	gal.(s)		6" Diameter Well =	1.469 X	LWC		
3X Volume of Water in Well			removed before sam i go dry?	npling		12,5 Yes	gal.(s)
* Measurements taken from	X Well Casing		Protective	: Casing			(Other, Specify)
Instrument Calibration:							
I	pH Buffer Readings 4.0 Standard	ı	Conductivity Standard 84 S Standard	ard Read	dings		
İ	4.0 Standard 7.0 Standard		1413 S Standard				• •
	10.0 Standard		Title & E				
Water parameters:							
Gallons Removed	Temperature Readings	pH Reading	gs		uctivity ngs uS/c	m	Turbidity Readings Ntu
initial	initial 58.8 initial 54.6 54.7 54.4	5,0	52 initial 07 25 90	37	240 700 330 130	initial	36 29 37 280
Water Sample: Time Collected	(20						
Physical Appearance at Start	J		Physical A	Appeara	nce at Sa	ımpling	
Color .	100ac		Color			Cle	
Odor .	Inht sulfor		Odor				At sulfir
Turbidity (> 100 NTU)	36		Turbidity ((> 100 N	1TU)	2	3
Sheen/Free Product	None		Sheen/Fre	•		No	m.
Samples collected:							
Container Size		ollected	Field Filtered		Preserva		Container pH
40 ml	Glass	3	No Not if < 50 nt			1:1 HCL HNO3	
Liter Pint	Plastic Plastic	<u>1</u>	Not if < 50 nt	<u>"u</u>		NaOH	
Filit	Flasuv					11	
					 		
					 		
Notes:					<u> </u>		
Notes.							

Date Site Name Frontier Chemical Location Pendelton, New York Project No. 29820 Personnel TPP/DEC Well Information: Depth of Well * 4/1.58 Depth to Water * 2.75 Length of Water Column Volume of Water in Well 3X Volume of Water in Well 3X Volume of Water in Well * Measurements taken from X Instrument Calibration: PH Buffer Reading 4.0 Standard 7.0 Standard 10.0 Standard 10.	gal.(s) Volume removed before sampling Did well go dry? Gother, Specify) Well Casing
Depth of Well * Depth to Water * Length of Water Column Volume of Water in Well 3 2 8 3 5 3 5 * Measurements taken from * Measurements taken from Instrument Calibration: PH Buffer Reading 4.0 Standard 7.0 Standard 10.0 Standard Water parameters: Gallons Removed Temperatur Readings initial 5 9 5 9 4 5 0 4	ft. X 2" Diameter Well = 0.163 X LWC ft. 4" Diameter Well = 0.653 X LWC gal.(s) 6" Diameter Well = 1.469 X LWC gal.(s) Volume removed before sampling Did well go dry? Well Casing Conductivity Standard Readings 84 S Standard
Length of Water Column Volume of Water in Well 32.83 5.35 3X Volume of Water in Well * Measurements taken from Instrument Calibration: PH Buffer Reading	gal.(s) gal.(s) gal.(s) Volume removed before sampling Did well go dry? Well Casing Conductivity Standard Readings 84 S Standard
Instrument Calibration: PH Buffer Reading	Well Casing Protective Casing gs Conductivity Standard Readings 84 S Standard
PH Buffer Reading 4.0 Standard 7.0 Standard 10.0 Standard 10.0 Standard Water parameters: Gallons Removed initial 5 10.5 Fig. 4 50.4	84 S Standard
Gallons Temperature Readings	
initial	
<u> </u>	pH Conductivity Turbidity Readings Readings uS/cm Readings Ntu
	initial $\frac{7.39}{6.47}$ initial $\frac{978}{13.79}$ initial $\frac{19}{34}$ $\frac{34}{5.68}$ $\frac{15.47}{15.61}$ $\frac{14}{22}$
Water Sample: Time Collected	
Physical Appearance at Start Color	Physical Appearance at Sampling Color Odor SULTAGE Turbidity (> 100 NTU) Sheen/Free Product
Samples collected:	•
Container Size Container Type 40 ml Glass Liter Plastic Pint Plastic	
Notes:	

O'Brien & Gere Engine	ers, Inc.	Stand	lard Ground	Water Sampling	Log
Date Site Name Frontier C Location Project No. 29820 Personnel PEL, M	homical		tion Method	125-9D stainless Steel B	Bails alv
Well Information: Depth of Well * Depth to Water * Length of Water Column Volume of Water in Well 3X Volume of Water in Well * Measurements taken from	50.88 ft. 8,89 ft. 41.99 ft. 6,84 gal.(s) 20.52 gal.(s)	4" Diam 6" Diam Volume remove Did well go dry?	neter Well = 0.163 neter Well = 0.653 neter Well = 1.469 d before sampling	EX LWC EX LWC Zo No	gal.(s) (Other, Specify)
Instrument Calibration:	pH Buffer Readings 4.0 Standard 7.0 Standard 10.0 Standard	84 9	ctivity Standard R S Standard Standard	eadings	
Water parameters: Gallons Removed initial 7 14 20	Temperature Readings initial 547 initial 53.4 52.1	pH Readings al	initial//	1473 initial 447 394/	Turbidity Readings Ntu \$ \circ\ \ \c
Water Sample: Time Collected Physical Appearance at Start Color Odor Turbidity (> 100 NTU) Sheen/Free Product	150 - Clear - None - 5.8 - None		Physical Appe Color Odor Turbidity (> 10 Sheen/Free Pr	/ <i>j/</i> 0 NTU)	lear of solfer
Samples collected: Container Size Notes:	Container Type # C	Collected Field	Filtered	Preservative	Container pH

O'Brien & Gere Enginee	rs, Inc.	Standard Ground Water Sampling Log
Date /0/1/ 6:		
		Weather Cloudy 60°
Site Name Frontier Chemical	, and the second	Well # 88-12D
Location Pendelton, New York		Evacuation Method Stainless Steel Bailer
Project No. 29820		
Personnel TPP/DEC	<u> </u>	Sampling Method Stainless Steel Bailer
Well Information:		
Depth of Well *	<u>51,48 ft.</u>	Water Volume /ft. for:
Depth to Water *	10.43 ft.	X 2" Diameter Well = 0.163 X LWC
Length of Water Column	41.05 ft.	4" Diameter Well = 0.653 X LWC
Volume of Water in Well	6.7 gal.(s)	6" Diameter Well = 1.469 X LWC
3X Volume of Water in Well	20 gal.(s)	0
ox volume of trate, in troi		Volume removed before samplinggal.(s)
		Did well go dry?
		(Other, Specify)
* Measurements taken from	X Well Casi	ing Protective Casing
Instrument Calibration:	pH Buffer Readings	Conductivity Standard Readings
. 1	4.0 Standard	84 S Standard
	7.0 Standard	1413 S Standard
	10.0 Standard	
1 Markara na managana 1		
Water parameters:		
Gallons	Temperature	pH Conductivity Turbidity Readings Readings uS/cm Readings Ntu
Removed	Readings	Readings uS/cm Readings Ntu
,	<i>"</i>	24
initial	initial Storl ini	itial 5 \ initial initial 3850 initialinitial
	54.B	5.09 U728 14.0
01 33	55.0	5.16 11570 80.0
20		
•		
Water Sample:	215	
Time Collected	<u> </u>	
Physical Appearance at Start		Physical Appearance at Sampling
Color	CKAR	Color
Color Odor	SULFUR	Odor Sultur
Turbidity (> 100 NTU)	2,9	Turbidity (> 100 NTU)
Sheen/Free Product	Ø	Sheen/Free Product
Samples collected:		
Container Size		Collected Field Filtered Preservative Container pH No 1:1 HCL
40 ml	Glass Plastic	3 No 1:1 HCL 1 Not if < 50 ntu HNO3
Liter Pint	Plastic	1 No NaOH
Notes:		
Notes:	1 >> Blind	Dope (Filtered)

O'Brien & Gere Engine	eers, Inc.	Standard Ground Water Sampling Log
Date	Tourse of	Weather Sonay 60°
Location Pendletin, W		Weather
•	en Acit	Evacuation Method Stainless Steel Bailer
Project No. <u>29820</u>		Sampling Method Sturiless Itel Bailer
Personnel DEC		Sampling Method States proces proces
Well Information:	'3.1	
Depth of Well *	<u>45.74</u> ft.	Water Volume Ift. for:
Depth to Water *	<u>9.73</u> ft.	2" Diameter Well = 0.163 X LWC
Length of Water Column	<u> 36.01</u> ft.	4" Diameter Well = 0.653 X LWC
Volume of Water in Well	5.87gal.(s)	6" Diameter Well = 1.469 X LWC
3X Volume of Water in Well		Volume removed before sampling / 8 gal.(s)
		Volume removed before sampling gal.(s) Did well go dry?
		•
	Tuest Coning	(Other, Specify)
* Measurements taken from	Well Casing	g Protective Casing L
Instrument Calibration:		
	pH Buffer Readings	Conductivity Standard Readings
·	4.0 Standard	84 S Standard 1413 S Standard
	7.0 Standard 10.0 Standard	1410 O Staintain
	10.0 Standard	
Water parameters:		
Gallons	Temperature	pH Conductivity Turbidity
Removed	Readings	Readings uS/cm Readings Ntu
	initial 58,2 initial	ial 8. Zo initial <u>//75</u> initial <u>/26</u>
initial ϕ		70.
	<u>54.6</u>	7.45 1166 756
	<u>53.8</u>	7.36 /08/ 600
	51.5	<u></u>
Water Sample:	505	
Time Collected	5 -	
Physical Appearance at Start		Physical Appearance at Sampling
	Clear	Color Gray /19t Brown
Color	None	Odor <u>Vone</u>
Odor	120	Turbidity (> 100 NTU)
Turbidity (> 100 NTU) Sheen/Free Product	None	Sheen/Free Product None
Samples collected:		ii lContainor pH
Container Size		Collected Field Filtered Preservative Container pH
40 ml	12/955.	1 Notific SO HNO3.
Port	Plastic	1 No NaOlt
		·
Notes:		
	•	

O'Brien & Gere Engine	ers, Inc.		Standard Gro	und Water	Sampling L	og
Date /0/11/01						
Site Name Frontier Chemical			Weather	Plonde	1 60'	
Location Pendelton, New Yo	ark		Well #	88-12C		
	IK.		Evacuation Method		ool Railer	_
	nine militari di Cara		Sampling Method	Stainless Ste		
Personnel TPP/DEC			Sampling Mediod	Oldiniess ou	36i Daliei	
Well Information:						•
Depth of Well *	<u>31,29</u> ft.	Water \	Volume /ft. for:			
Depth to Water *	<u>11,43 </u>	X	_2" Diameter Well =	0.163 X LWC		
Length of Water Column	<u>19.86</u> ft.		_4" Diameter Well =	0.653 X LWC		
Volume of Water in Well	3,24 gal.(s)		6" Diameter Well =	1.469 X LWC		J
3X Volume of Water in Well		\$ f = 1, 1mm m		. 	10	
			e removed before san Il go dry?	npling	100	gal.(s)
			1 go a., .			-
	Well Cools	_	The stocking	Casina	<u> </u>	(Other, Specify)
* Measurements taken from	X Well Casin	9	Protective	Casing		
Instrument Calibration:						
	pH Buffer Readings		Conductivity Standard	ard Readings		J
	4.0 Standard 7.0 Standard		84 S Standard 1413 S Standard		•	
	10.0 Standard		1410 0 0101.00.0	****		
Water parameters:						•
Gallons	Temperature	рН		Conductivit		Turbidity
Removed	Readings	Readin	ıgs	Readings u	S/cm	Readings Ntu
,						
initial	initial 61,4 initi	al 4.6	e (initial	1059	initial	ERR -
3	549	<u>''</u> 4,-	77	1043		ERK-
G	54.4	4.5	54	1101		ERK-
10	54.0	4.5	76	1156		EILR
			_			
						
Water Sample: Time Collected	14 50					
			Physical	Appearance at	t Sampling	一
Physical Appearance at Start			[Filysloar,	Appearance a		 J
Color	19th brown		Color			bwn
Odor	none		- Odor			<u>~</u>
Turbidity (> 100 NTU)	7100			(> 100 NTU)	•	100
Sheen/Free Product	None		Sheen/Fr	ree Product		me
Samples collected:						
Container Size	Container Type # C	Collected	Field Filtered	Prese	ervative	Container pH
40 mi	Glass	3	No		1:1 HCL	
Liter	Plastic	1	Not if < 50 n	tu	HNO3 NaOH	
Pint	Plastic		1 10		148011	
Notes:						
	•					

O'Brien & Gere Engine	ers, inc.		Standard Gro	und Water San	pling Lo	g
Date /0//1/01			•			
Site Name Frontier Chemical			Weather			
Location Pendelton, New Yo	rk		Well #	85-5R		•
Project No. 29820	And the second s		Evacuation Method	Stainless Steel Bai	ler	-
Personnel TPP/DEC			Sampling Method	Stainless Steel Bai		-
Personnel TPP/DEC			Cumpung memer	<u> </u>		•
Well Information:	20 2		/- L		7	
Depth of Well *	38,03 ft.	ļ	olume /ft. for:		1	
Depth to Water *	<u>8.92</u> ft.	X	_2" Diameter Well =			
Length of Water Column	29.11 ft.		_4" Diameter Well =			
Volume of Water in Well	4.74 gal.(s)		6" Diameter Well =	1.469 X LWC	J	
3X Volume of Water in Well		Valuma	removed before san	anling	7	gal.(s)
			go dry?	iping	V5.5	_gai.(5)
					7-	-
	L V JWell Casi		Protective	Casina		(Other, Specify)
* Measurements taken from	X Well Casi	rig		Casing	L	
Instrument Calibration:					7	
	pH Buffer Readings		Conductivity Standard	ard Readings	_	
	4.0 Standard フィッ		84 S Standard 1413 S Standard		-	
,	10.0 Standard		141000000000		-	
Water parameters:						
Gallons	Temperature	рН		Conductivity		Turbidity
Removed	Readings	Readin	gs	Readings uS/cm	J	Readings Ntu
initial	initial 57.7 in 54.1	itial <u>7.</u> <u>9.</u> 8.	6) initial 57 .36	95000 1037.0 1248.6	_ initial 	70 . 950 EROOR - 0/L
Water Sample:						
Time Collected / C	25					
Physical Appearance at Start			Physical /	Appearance at Samp	oling]
Calaa	cloudy		Color	•	Clos	dy
Color Odor	<u>C1800C1</u>		Odor		N	ne ,
Turbidity (> 100 NTU)	70			(> 100 NTU)	8	~O
Sheen/Free Product	Ø			ee Product	No	πφ
Samples collected:						
Container Size		Collected	Field Filtered	Preservative		Container pH
40 mi	Glass Plastic	<u>3</u> 1	No Not if < 50 n		HCF.	
Liter Pint	Plastic	1	No.		OH	
						+
Notes:				l		

1510151100

O'Brien & Gere Engine	ers, Inc.		Standard Grou	und Water Sampling L	og
Date /0/11/01					
Site Name Frontier Chemical			Weather	Claude Ca	<i>م</i> د
				Cloudy le	_
Location Pendelton, New Yor	<u>'k</u>		Well #	URS-5D	_
Project No. 29820			Evacuation Method	Stainless Steel Bailer	
Personnel TPP/DEC			Sampling Method	Stainless Steel Bailer	-
Well information:					
Depth of Well *	<u>49.83</u> ft.	Water V	olume /ft. for:		
Depth to Water *	8,62 ft.	l x	2" Diameter Well = (0.163 X LWC	
Length of Water Column	41.21 ft.		4" Diameter Well = (
	/ -		_		
Volume of Water in Well			6" Diameter Well = 1	1.469 X LVVC	
3X Volume of Water in Well	gal.(s)		removed before sam go dry?	pling 8.5	gal.(s)
* Measurements taken from	X Well Ca	sing	Protective	Casing	(Other, Specify)
Instrument Calibration:					
	pH Buffer Readings 4.0 Standard		Conductivity Standa 84 S Standard	rd Readings	
	7.0 Standard		1413 S Standard		
	10.0 Standard		. To o diamound		
Water parameters:					
Gallons	Temperature	pН	1	Conductivity	Turbidity
Removed	Readings	Reading	gs	Readings uS/cm	Readings Ntu
initial <u>#</u>	initial <u>57.5</u> in	nitial <u>7, </u>	7initial	2380 initial	
6	54.2	_ පු .	68	2490	_ 3૯
D¥ 8.5	54-1	6.	20	3770	60
20					
	* ***				
Water Sample: Time Collected	0:00				
Physical Appearance at Start	7		Physical A	ppearance at Sampling	7
	J (*)				
Color	Clear		Color		lear
Odor .	More		Odor		orie
Turbidity (> 100 NTU)	17		Turbidity (>	100 1410)	4
Sheen/Free Product	More		Sheen/Free	e Product $ u$	me
Samples collected:					
Container Size		Collected	Field Filtered	Preservative	Container pH
40 ml Liter	Glass Plastic	<u>3</u> 1	No Not if < 50 ntu	1:1 HCL HNO3	
Pint	Plastic	1	No	NaOH	
			,		
Notes:			<u> </u>		1
. 10100.					

O'Prion & Goro Engine	ore inc		Standard Crav	nd Water Cor		
O'Brien & Gere Engine	:c13, 1116.		Standard Grou	ng water Sar	npiing Lo)g
Date <u>/0/0/01</u>			•		ه م	
Site Name Frontier Chemical			Weather	Sunny	00	_
Location Pendelton, New Yor	<u>rk</u>		Well#	URS-14!		-
Project No. 29820			Evacuation Method	Stainless Steel Ba	iler	
Personnel TPP/DEC	**************************************		Sampling Method	Stainless Steel Ba	iler	_
Well Information:						
Depth of Well *	31, 10 ft.	Water \	/olume /ft. for:		1	
Depth to Water *	7,65 ft.	X	2" Diameter Well = 0.	.163 X LWC		
Length of Water Column	23.45 ft.		 _4" Diameter Well = 0.	.653 X LWC		
Volume of Water in Well	3,82 gal.(s)		- 6" Diameter Well = 1.			
3X Volume of Water in Well	11,5 gal.(s)	L				
or volumo or realor in viol	ga(0)	Volume	removed before samp	ling	\$2 8	gal.(s)
		Did wel	l go dry?		1/25	-
					1	(Other, Specify)
* Measurements taken from	X Well Ca	sing	Protective C	Casing		(Other, Specify)
		_	-	-		•
Instrument Calibration:	pH Buffer Readings		Conductivity Standard	d Doodings	٦	
i e	4.0 Standard		84 S Standard	u neauings		
	7.0 Standard		1413 S Standard			
	10.0 Standard		**		_	
Water parameters:						
	<u></u>					
Gallons	Temperature	рН		Conductivity		Turbidity
Removed	Readings	Readin	gs	Readings uS/cm	_	Readings Ntu
A	initial 50 %	(1 :	· V initial	236		34
initial \mathcal{L}	initial 400 i	nitial $\frac{4}{3}$	initial _	- - 1 /0/0	_initial .	
<u> </u>	31.0		<u>83</u> -	400	_	500
<u> </u>	<u> 50.0</u>		. 35	-499	***	## 110C
					-	
<u> </u>					- ,	
***************************************	***************************************					
Water Sample: Time Collected /5	745 (10/9/01)					
	7					1
Physical Appearance at Start]		Physical Ap	pearance at Samp	ling	10 mg/m -
Color	Clear		Color		Clove	<u> </u>
Odor	No		Odor		<u> 70</u>	
Turbidity (> 100 NTU)	34		Turbidity (>	100 NTU)	240	
Sheen/Free Product	No		Sheen/Free	Product	<u> </u>)
Samples collected:						
Container Size	Container Type	Collected	Field Filtered	Preservative	!	Container pH
40 ml	Glass	3	No	1:1	HCL	
Liter Pint	Plastic Plastic	<u>1</u>	Not if < 50 ntu No	HN	O3 OH	
THU.	Flasuc		140	iva	OI 1	
Notes:	1		<u> </u>			

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

November 27, 2001

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 October 2001

Dear Mr. Carnevale:

Review has been completed for the data package generated by OBG Laboratories which pertains to aqueous samples collected October 9 through October 18, 2001 at the Frontier Chemical Site. Six samples were analysed for full TCL/TAL parameters, and eleven were processed for TCL volatiles and TAL metals/cyanide. Matrix spikes/duplicates, and field 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 (volatiles and metals)
- * 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 adherance to quality criteria, and most reported results are usable 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

Only the reanalysis results for URS-14I should be used due to potential contamination in the initial analysis.

Results for URS-14I and 88-12C are qualified estimated due to low recoveries of surrogate standard d8-toluene (70% and 75%, below 83% limit). Matrix effects are indicated.

Due to low calibration standard responses (42%D to 60%D), results for bromomethane in all project samples are qualified estimated, and are possibly biased low.

Due to low responses in the calibration standards (mean RRF of 0.036), results for acetone in all samples are qualified estimated. The level of bias is not expected to be great.

Results for analytes reported initially with the "E" flag are derived from the dilution analysis.

Detections of acetone, methylene chloride, and carbon disulfide, with the exceptions of acetone in P-3 and methylene chloride in P-6, are edited to nondetection due to presence in associated blanks.

Matrix spikes of URS-9D evaluate recoveries of all target analytes. Recoveries and duplicate correlation values were acceptable, with the exception of bromomethane (76% and 67%, below the recommended limit of 78%), cis-1,2-dichoropropene (50% and 49%, below 65% limit), and styrene (26% and 28%, below the recommended limit of 88%). The results for these analytes in the unspiked sample are therefore qualified estimated ("J" qualifier), possibly biased slighty low. Spiked blank recoveries were acceptable.

Field duplicate correlation for 88-12D and X-1 was acceptable.

Processing was compliant, and results are substantiated by the raw data.

Semivolatile Analyses

Detected results for di-n-butylphthalate are edited to nondetection due to presence in associated blanks. Detected concentrations of bis(2-ethylhexyl)phthalate are at levels typical of contamination.

The matrix spikes of batch QC produced acceptable recoveries and duplicate correlations, with the exception of low recoveries for n-nitrosodi-n-propylamine (51% and 56%, below 61%). One spiked blank showed acceptable recoveries, the spiked duplicate showed five slightly low recoveries; reported results for samples are unaffected.

Results for analytes reported initially with the "E" flag are derived from the dilution analysis.

Tentatively Identified Compounds (TICs) with retention times of 16.0' should be considered as contamination (due to presence in the associated blanks), and are rejected as sample components.

Processing was compliant, and results are substantiated by the raw data.

Pesticide/PCB Analyses

Accuracy and precision were determined from spiked blanks, and showed acceptable values. Matrix effect is not evaluated.

Processing was compliant, and results are substantiated by the raw data.

Metals/CN Analyses

Detection of calcium in the equipment blank does not affect sample results, the concentrations of which were greatly in excess of that of the blank.

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

Field duplicate results for 88-12D and X-1 showed acceptable correlations.

The serial dilution determinations for URS-9D produced acceptable correlations, with the exception of that for manganese (12%D). Results for that element in samples reporting concentrations above 7 ug/L are qualified estimated due to matrix.

Method blanks were reported with reporting limits only down to the CRDL, while samples were reported to the IDL. Qualification of results is not affected.

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

Very truly yours,

Judy Harry

CROSS REFERENCE TABLE

Site	Sample Number	Date Collected	Time	Received	Package
2116					400
URS-9D	T33130	10/08/2001		10/10/2001	190
URS-90	T3313MS	10/08/2001		10/10/2001	190
URS-90	T3313MSD			10/10/2001	190
URS-90	T3313	10/08/2001		10/10/2001	190
URS-91	T3314	10/08/2001		10/10/2001	190 190
URS-14D	T3315	10/08/2001		10/10/2001	190
P-4	T3316	10/09/2001		10/10/2001	
URS-14I	T3317	10/09/2001		10/10/2001	
QC Trip Blank	T3318	10/08/2001		10/10/2001	
P-1	T3420	10/10/2001		10/11/2001	
P-2	T3421	10/10/2001		10/11/2001	
P-3	T3422	10/10/2001		10/11/2001	_
P-5	T3423	10/10/2001		10/11/2001	
P-6	T3424	10/10/2001		10/11/2001	
QC Trip Blank	T3425			10/11/2001	
Grundfos Equip Blank(Equipment Blank)	T3524	10/11/2001		10/12/2001	
URS-5D	T3525	10/11/2001		10/12/2001	
85-5R	T3526	10/11/2001		10/12/2001	
88-12C	T3527	10/11/200		10/12/2001	-
88-12D	T3528	10/11/200		10/12/2001	
85-7R	T3529	10/11/200		10/12/200	
URS-70	T3530	10/11/200		10/12/200	
Stainless Steel Bailer Equip Blank	T3531	10/11/200		10/12/200	
Blind Dup. X-1	T3532	10/11/200		10/12/200	
QC Trip Blank	T3533	10/11/200		10/12/200	
85-7R - Preserved	T3857	10/18/200		10/19/200	
85-7R - Non-Preserved	T3858	10/18/200	1	10/19/200	1 279

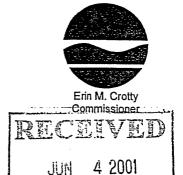
NYSDEC Correspondence Dated May 30, 2001

New York State Department of Environmental Conservation Division of Environmental Remediation, Region 9

270 Michigan Avenue, Buffalo, New York, 14203-2999

Phone: (716) 851-7220 • FAX: (716) 851-7226

Website: www.dec.state.ny.us



OLIVENVINORMENTAL

REMEDIATION GROUP

May 30, 2001



Mr. John Burns Chairman Frontier Pendleton Technical Committee Olin Corporation P.O. Box 248 1186 Lower River Road Charleston, TN 37310

Dear Mr. Burns:

Frontier Pendleton Site # 932043 Operation and Maintenance (O&M)

We have reviewed Semi-Annual Operation & Maintenance Report # 8 submitted by your letter dated May 3, 2001 and offer the following comments for your consideration:

Hydraulic Containment

Ground water monitoring has been continuing on a semi-annual basis since June 1997. The June 1997 data showed that ground water elevations within the containment cell were higher than than outside, indicating that no inward hydraulic gradient existed at the site when monitoring began. Monitoring data collected since that time shows that while an inward hydraulic gradient seems to have been established and is being maintained by the operation of the leachate collection, treatment and pumping facility, there is still no inward hydraulic gradient near the mid-portion of the eastern site border. (Refer to groundwater elevations in piezometers P-1/ outside containment and P-2/inside containment). Due to the absence of an inward hydraulic gradient at the mid-eastern border of the site, there is some concern of migration of contaminants from the containment cell in that area.

In order to better evaluate the effectiveness of the containment, particularly along the eastern site boundary, a comparison of groundwater quality within the containment and immediately outside the containment is necessary. For this purpose, we recommend the following actions:

- In addition to the routine O&M monitoring of groundwater, collect groundwater samples from piezometers P-3, P-1, P-2, P-4, P-5 and P-6 during the next monitoring event.
- Analyze the samples from the above-mentioned piezometers for the parameters as specified for the first year of O&M monitoring, including VOCs, SVOCs, PCBs and Pesticides.
- Include the analytical results and a summary report in the subsequent semi-annual report.

 Provide detailed evaluation and recommendations, as appropriate.

While the above-outlined sampling of groundwater from the piezometers within the containment cell and in the areas immediately offsite is not routinely required per the approved O&M manual, it is critical that this be undertaken so as to better evaluate the eastern boundary hydraulic containment and potential contaminant migration. In addition, the five-year in-depth evaluation of effectiveness of the remedial actions at the site will take place in 2002. Collection of the groundwater quality data as outlined above is needed prior to 2002 so that needed evaluations can be completed. Currently the only groundwater data for areas within the containment is prior to construction of the landfill in 1996 and therefore insufficient in performing the eastern boundary evaluation.

Other specific comments on the subject report are as following:

Attachment D - Site Maintenance

<u>Table B - 3</u>: GAC # 1 is reported to be leaking. The report must provide details of the actions taken to correct this situation.

Operator's Log: The system check list shows the word "Fail" in items #6 and #7 for pumps #1 and #2. This is confusing as pump #2 was found ok on arrival. Therefore, the word "Fail" against it does not appear applicable. Clarification or revision should be made in future reports.

Groundwater Monitoring

<u>Table I</u>: For other long-term monitoring projects, we have found it very useful to graph data to clearly depict trends, highlight changes and track remedial progress. It is requested that future reports include such a graph of groundwater monitoring data as tabulated in Table I. An example of such graphing is attached for your information.

Mr. John Burns May 30, 2001 Page 3

Should you have any questions on the above, please contact-me on (716) 851-7220.

Sincerely,

Abul Barkat, P.E. Project Manager

account h Oct

AB/tml Attachment

cc: Mr. Glen May, NYSDEC

Mr. Brian Sadowski, NYSDEC

Attachment D – Site Maintenance Work Items and Field Observation Reports

D-1 Field Observation Reports

March 30, 2001 April 24, 2001 June 28, 2001 August 30, 2001 October 5, 2001 October 8, 2001

• March 30, 2001, Field Observation Report

Date:	3/30/01

Time In:	10:00am
Time Out:	12:00pm

Weather: Overcast, cloudy, light rain

Precipitation: Yes

Temperature: 35 deg. f

Reason for Visit: Change out filter bags, by-pass GAC #1

	Reading		Time
Flowmeter Totalization Reading (upon arrival)	464232	Gal	10:00am
Flowmeter Totalization Reading (upon departure)	464232	Gal	11:55am
Flow rate	8.78	GPM	
Pump Hour Meter Readings: Pump #1	495.6	Hours	
Pump Hour Meter Readings: Pump #2	402.3	Hours	
Wet Well Level	3.03	Ft	
Pressure Sensor Reading (Bar Graph)	31.94	PSI	

	Influent Gauge	Effluent Gauge	Differential
BF1	28	24	4
BF2	. 26	24	2
GAC1	Off-line		
GAC2	22	7	15

				· · · · · · · · · · · · · · · · · · ·
Change Filter Bags (Check One)	YES	l x	NO	TIME
Change I need Dags (Chook One)	120			

Details: Replaced filter bags, by-passed GAC #1, and put both pumps on auto. Maintenance will repair tank on 4/2/01.

Actions taken to correct problems: By-passed GAC#1 until hole is repaired.

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	tripped	ok
#7 Pump # 2 Fail	ok	ok
#8 Bag Filter Differential Pressure High	ok	In alarm
#9 Wet Well Level (Actual Measure Spoken)	3.03	3.03
#10 Flow Rate	0	0
#11 #16; Reserved for future use		

Operator Name: Ben Brayley

• April 24, 2001, Field Observation Report

Date:	4/24/01

Time In:	8:00am
Time Out:	9:00am

Weather: Clear & cool

Precipitation: No

Temperature: 34 deg. f

Reason for Visit: Monthly Inspection.

	Reading		Time
Flowmeter Totalization Reading (upon arrival)	496949	Gal	8:00am
Flowmeter Totalization Reading (upon departure)	496949	Gal	9:00am
Flow rate	0.0	GPM	
Pump Hour Meter Readings: Pump #1	551.7	Hours	
Pump Hour Meter Readings: Pump #2	407.4	Hours	
Wet Well Level	1.9	Ft	
Pressure Sensor Reading (Bar Graph)	0.0	PSI	

	Influent Gauge	Effluent Gauge	Differential
BF1			
BF2			
GAC1	•		
GAC2			

7 (61 1 0)	XZEC	1	NTO	v	I
Change Filter Bags (Check One)	LYES		NO	λ	1
Change The Dags (Check One)		į į	1,0		
	1				

D-4-:1	
Details:	

Actions taken to correct problems:	
,	
Recommended actions to prevent future problems:	
<u> </u>	

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	ok	ok
#7 Pump # 2 Fail	ok	ok
#8 Bag Filter Differential Pressure High	ok	ok
#9 Wet Well Level (Actual Measure Spoken)	1.9	1.9
#10 Flow Rate	0	0
#11 #16; Reserved for future use		
FOR CURRENT STATUS CALL: (716) 743-1335		

Operator Name: Ben Brayley

• June 28, 2001, Field Observation Report

Date:	6/28/01

Time In:	8:15 am
Time Out:	9:15 am

Weather: clear & sunny

Precipitation: 0

Temperature: 76' f

Reason for Visit: Monthly inspection & chart change

	Reading		Time
Flowmeter Totalization Reading (upon arrival)	512309	Gal	8:15am
Flowmeter Totalization Reading (upon departure)	512309	Gal	8:15am
Flow rate	0	GPM	
Pump Hour Meter Readings: Pump #1	566.2	Hours	
D Have Mater Deadings Dynam #2	421.9	Hours	
Pump Hour Meter Readings: Pump #2	421.9	Tiouis	
Wet Well Level	1.7	Ft	
Pressure Sensor Reading (Bar Graph)	0.0	PSI	

		,	
	Influent Gauge	Effluent Gauge	Differential
BF1			
BF2			
GAC1			
GAC2			

Change Filter Bags (Check One)	YES	NO	X	TIME	

Details: Grass needs cutting. Varmint holes (2) still show activity.

Actions taken to correct problems:	
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	OK	OK
#9 Wet Well Level (Actual Measure Spoken)	1.7	1.7
#10 Flow Rate	0	0
#11 #16; Reserved for future use		
FOR CURRENT STATUS	CALL: (716) 74	3-1335

Operator Name: Ben Brayley

• August 30, 2001, Field Observation Report

Date:	8/30/01	

Time In:	7:00am
Time Out:	8:00am

Weather: clear & sunny

Precipitation: 0

Temperature: 67' f

Reason for Visit: Monthly inspection & chart change.

	Reading		Time
Flowmeter Totalization Reading (upon arrival)	519688	Gal	7:00 am
Flowmeter Totalization Reading (upon departure)	519688	Gal	8:00 am
		ļ	
Flow rate	0	GPM	
Pump Hour Meter Readings: Pump #1	573.1	Hours	
Pump Hour Meter Readings: Pump #2	428.3	Hours	
XX / XX 11 T1	1.7	Ft	
Wet Well Level	1./	1 1 1	
Pressure Sensor Reading (Bar Graph)	0.0	PSI	

	Influent Gauge	Effluent Gauge	Differential
BF1			
BF2			
GAC1			
GAC2			

Change Filter Bags (Check One)	YES	NO	X	TIME	

Details: Varmint holes (2) still show activity.

Actions taken to correct problems:	
Recommended actions to prevent future problems:	
Other relevant information:	

Departure
OK
NO
NO
OK
1.7
0

Operator Name: Ben Brayley

• October 5, 2001, Field Observation Report

Date:	10/05/01		

Time In:	8:10am
Time Out:	9:55 am

Weather: rain & cloudy

Precipitation: Yes

Temperature: 52' f

Reason for Visit: Monthly inspection, sampling, & chart change. Meet w/Sevenson (Mike Walker) turnover.

	Reading		Time
Flowmeter Totalization Reading (upon arrival)	523558	Gal	8:30 am
Flowmeter Totalization Reading (upon departure)	523705	Gal	9:30 am
Flow rate	8.22	GPM	
Pump Hour Meter Readings: Pump #1	576.8	Hours	
Pump Hour Meter Readings: Pump #2	432.5	Hours	
	1.50		
Wet Well Level	1.79	Ft	
D. Carrow Booding (Box Croph)	20.2	PSI	
Pressure Sensor Reading (Bar Graph)	20.2	1 27	<u> </u>

	Influent Gauge	Effluent Gauge	Differential
BF1	. 19#	17.5#	1.5#
BF2	17.5#	16.0#	1.5#
GAC1	13#	5#	8#
GAC2	13#	5#	8#

				·	
Change Filter Bags (Check One)	YES	NO	X	TIME	

Details: Varmint holes (2) still show activity.

Actions taken to correct problems:
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	OK	OK		
#9 Wet Well Level (Actual Measure Spoken)	1.79	0.7		
#10 Flow Rate	0	0		
#11 #16; Reserved for future use				
FOR CURRENT STATUS CALL: (716) 743-1335				

Operator Name: Ben Brayley

• October 8, 2001, Field Observation Report



FIELD OBSERVATION REPORT

PROJECT I	NO.: 94-1014-O REPORT NO.: 01-2	DATE: 10/8/01 PAGE: 1 OF 1
PROJECT:	Pendleton – Frontier Chemical Site	DAY: Monday
SUBJECT:	Semi-Annual Sampling	PROJECT TIME: 1:00 pm – 2:45 pm
CLIENT:	Pendleton PRP Group	SITE TIME: 1:30 pm – 2:15 pm
WEATHER:	Cool, Clear (55°F)	PHOTOS: YES X NO

- As notified by Dave Carnevale (O'B&G) regarding scheduled semi-annual sampling event, GGE visits site to record Quarry Lake water level coincidental with groundwater sampling.
- Record the Quarry Lake water level at El. 577.39' by level survey using the top of the pre-treatment vault (El. 580.50) as a BM.
- O'Brien & Gere sampling team is on site as well as a sampling technician from Sevenson Environmental Services (SES). SES has been contracted to take over sampling and treatment system operation after this sampling event.
- Briefly observe general site conditions: (1) note standing water in the wetlands area east of the treatment vault, (2) the lake water level is below the overflow weir invert elevation, (3) lake shore evidences previous, below normal water levels which may have adversely affected wetlands plantings along the north shore, (4) the lakeside slope along the access road is fully vegetated and the stone fill placed 9/97 is in good condition (no sign of erosion), (5) the capped area is in good condition and turf is well-maintained. Two woodchuck holes in the cap barrier noted previously on the mid lakeside slope between P-3 and P-4 remain. It is not apparent if woodchucks are still active.
- Leave site at 2:15 pm.

PERSONNEL ON SITE / CONTACTED:	distribution:
Tim Prawel, Don Canestrari – O'B&G	Jim Young, John Burns – PPRP
Mike Walker – SES	Dave Carnevale – O'Brien & Gere
	DAILY MANHOURS: 1.75
1 8.1	Marl Algo
Jess E. Grossman, Plet Project Manager	Mark W. Glynn, P.E.