



805 - 80<sup>th</sup> St. S.W., Everett, Washington 98203  
(425) 337-2700 \*\* FAX (425) 514-3499

RECEIVED  
DEC 15 2014  
DEPT OF ECOLOGY  
TCP - NWRO

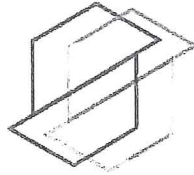
December 12, 2014

Mr. David South  
Northwest Regional Office  
Department of Ecology  
3190 160<sup>th</sup> Ave SE  
Bellevue, WA 98008

RE: Mill E/Koppers Site 2014 Ground Water Monitoring Summary Report

Dear Mr. South,  
Please find the enclosed Mill E/Koppers Site 2014 Ground Water Monitoring Summary Report. If you have any questions, feel free to contact me directly at (425) 337-2700.

Janusz Bajsarowicz  
Pacific Topsoils, Inc.



Technical Memorandum

**Date:** December 9, 2014      **From:** Jon N. Sondergaard, L.G., L.E.G.

**To:** Pacific Topsoils, Inc.  
805 80<sup>th</sup> Street SW      **Project Manager:** Jon N. Sondergaard, L.G., L.E.G.  
Everett, Washington 98203

**Principal in Charge:** Jon N. Sondergaard, L.G., L.E.G.

**Project Name:** Mill E Site

**Attn:** Mr. Januz Bajsarowicz      **Project No:** KV050654A

**Subject:** Mill E 2014 Ground Water Monitoring Summary

**GROUND WATER MONITORING**

Associated Earth Sciences, Inc. (AESI) performed annual ground water monitoring at the Mill E site on September 26, 2014, consistent with the Mill E's "Performance and Compliance Monitoring Plan" (PCMP) dated October 1998. During the September 2014 monitoring event, depth to water measurements were made in all of the site's six piezometers (PZ-1A, PZ-1B, PZ-2A, PZ-2B, PZ-3A, and PZ-3B). The depth to water measurements are summarized in Table 1. A site plan showing the approximate well locations is presented on Figure 1.

Table 1  
Depth to Ground Water<sup>(1)</sup>

Piezometer	Date	Reference Elevation (feet) Top of PVC <sup>(1)</sup>	Depth to Water (feet) <sup>(2)</sup>	Ground Water Elevation (feet) <sup>(3)</sup>
PZ-1A	9/26/2014	9.90	5.77	4.13
PZ-1B	9/26/2014	7.93	2.35	5.58
PZ-2A	9/26/2014	9.40	5.74	3.66
PZ-2B	9/26/2014	8.38	2.92	5.46
PZ-3A	9/26/2014	10.31	7.72	2.59
PZ-3B	9/26/2014	7.54	4.85	2.69

<sup>(1)</sup> Top of casing elevations referenced to mean sea level (Shaw Environmental, Inc., 2003).

<sup>(2)</sup> Measurements collected at outgoing tide.

<sup>(3)</sup> "A" wells are located inside the containment; "B" wells are located outside the containment.

Ground water samples were collected from piezometer PZ-3A only. Piezometer PZ-3A was purged and sampled using a disposable bailer, consistent with the facility's PCMP. Field measurements (depth to water, pH, conductivity, and temperature) were recorded at the time of sampling. The field measurements are summarized in Table 2. After purging and recording of field measurements, ground water samples were obtained for off-site analytical testing. The ground water samples were collected in laboratory-prepared bottles. The samples were placed in a cooler packed with ice and delivered under chain-of-custody (COC) procedures to Aquatic Research, Inc. in Seattle, Washington. The COC form outlining the requested analyses is attached. Well PA-3A was originally sampled on September 26, 2014. However, due to laboratory error, another sample was collected for analysis on November 19, 2014. The results of the November 19, 2014 sample are presented below.

Table 2  
Field Monitoring Parameters  
September 2014

Sample Location	Sample Date	Depth to Water (ft-BTOC)	Gallons Removed	pH (S.U.)	Specific Conductance ( $\mu\text{S}/\text{cm}$ )	Temperature ( $^{\circ}\text{C}$ )
PZ-3A	9/26/14	7.72	2	6.51	804	18.35
PZ-3A	11/19/14	4.81	2	6.59	815	15.74

ft-BTOC = feet below top of polyvinyl chloride (PVC) casing.

S.U. = standard pH units.

$\mu\text{S}/\text{cm}$  = microSiemens per centimeter.

$^{\circ}\text{C}$  = degrees Celsius.

## ASPHALT CAP AND SOIL COVER

An asphalt cap and soil cover inspection was performed on September 19, 2014 by a professional engineer from AESI. A copy of the field report from that visit is attached. All of the cap was visible at the time of our visit as no operations were occurring at the site. Where observed, the asphalt cap exhibited little evidence of deterioration and no signs of excessive settlement. Small shallow depressions in the cover were observed in some places. Photos taken at the time of our visit are included in the attached field report.

The areas to the south of the asphalt cap are covered with a 1-foot-thick soil cover with grass and some scattered brush. The soil cap appeared intact and was performing as intended, in our opinion.

## QUALITY ASSURANCE/QUALITY CONTROL

Laboratory quality assurance/quality control (QA/QC) analyses were performed in conjunction with the September 2014 ground water quality monitoring event. Routine laboratory QA procedures included analyzing surrogate spikes, matrix spikes, matrix duplicates, laboratory control samples, and

method blanks. The Lab Control Spike percent recovery for both the neutral blank and the samples analyzed are within the quality control limits. All other QA/QC results were judged to be acceptable for their intended use. The test results are presented in Table 3 below and the Aquatic Research, Inc. laboratory certificates are attached to this memorandum.

## WATER BALANCE

Elevations for the top of the well casings and historic ground water elevations were obtained by reviewing the "2003 Annual Ground Water Compliance Monitoring and Five Year Data Review Report," prepared by Shaw Environmental, Inc. (Shaw) and obtained from the Washington State Department of Ecology (Ecology). Ground water elevations for the year 2005 could not be found. All "A" series wells (PZ-1A, PZ-2A, and PZ-3A) are located inside of the barrier wall and all "B" series wells (PZ-1B, PZ-2B, and PZ-3B) are located outside of the barrier wall. Figures 2, 2A, and 2B show a comparison of historical ground water elevation data obtained for the site. Review of the data indicates that generally after 2001, ground water elevations outside of the barrier wall are higher than inside the barrier, with the exception of the 2007 measurement for well PZ-1A. The higher than expected water level in PZ-1A in 2007 was examined, and was determined to be a result of surface water collecting in the well monument. This problem has been corrected by raising the elevation of the top of the well monument to prevent surface water from seeping into the monument (Technical Memorandum dated December 17, 2009).

The data for wells PZ-1A/1B, PZ-2A/2B, and PZ-3A/3B suggests the barrier wall is generally performing as intended and isolating ground water inside the barrier from that outside the barrier.

## RESULTS AND CONCLUSIONS

The September 2014 ground water analytical results for the Mill E site were compared to the Model Toxics Control Act (MTCA) cleanup levels established in the 1998 Consent Decree. The results are presented in Table 3. Concentrations of all analytical parameters detected in the PZ-3A ground water sample were below the established MTCA cleanup standards, except for arsenic. The September 2014 PZ-3A result of 616 micrograms per liter ( $\mu\text{g/L}$ ) for arsenic is above the MTCA cleanup standard of 5  $\mu\text{g/L}$ . Review of historic ground water quality data for the site indicates the 2014 results are generally lower than 2013, but within the range of past measurements (Figures 3 through 5).



Table 3  
 Comparison of Ground Water Analytical Results  
 and MTCA Cleanup Standard for Ground Water  
 September 2014

Sample Location	Sample Date	TPH-D (µg/L)	TPH-G (µg/L)	TPH-M (µg/L)	PCP (µg/L)	Arsenic (µg/L)
PZ-3A	11/19/14	280	20	<100	0.4	<b>616</b>
<i>MTCA<sup>(1)</sup></i>		<i>10,000</i>	<i>10,000</i>	<i>10,000</i>	<i>7.29</i>	<i>5</i>

TPH-D = total petroleum hydrocarbons-diesel.  
 TPH-G = total petroleum hydrocarbons-gasoline.  
 TPH-M = total petroleum hydrocarbons-motor oil.  
 PCP = pentachlorophenol.  
 µg/L = micrograms per liter.

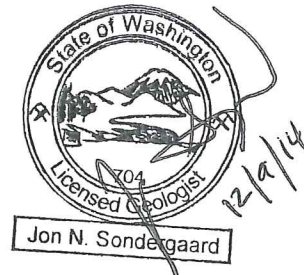
**Bold** denotes an exceedance of the MTCA cleanup standard for ground water.

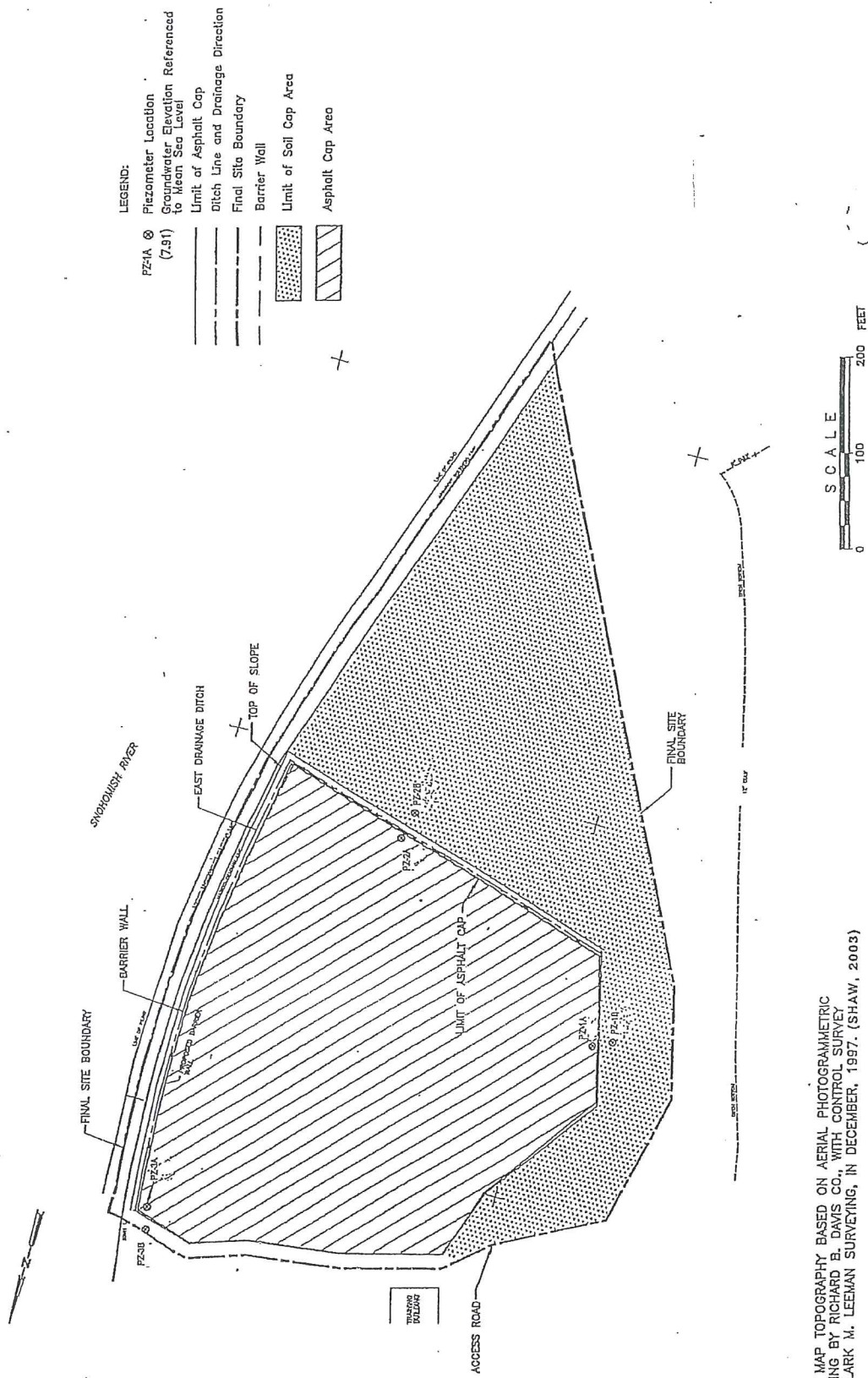
<sup>(1)</sup> MTCA = Model Toxics Control Act cleanup standards for ground water per the 1998 Consent Decree.

We trust the information presented meets your current needs. Please do not hesitate to contact us if you have any questions or require additional information.

- Attachments:
- Figure 1: Site Plan
  - Figure 2: Ground Water Elevations Wells PZ-1A and PZ-1B
  - Figure 2A: Ground Water Elevations Wells PZ-2A and PZ-2B
  - Figure 2B: Ground Water Elevations Wells PZ-3A and PZ-3B
  - Figure 3: TPH Concentrations in Well PZ-3A
  - Figure 4: PCP Concentrations in Well PZ-3A
  - Figure 5: Arsenic Concentrations in Well PZ-3A

Field Report of Cap Inspection  
 Laboratory Test Certificates and Chain of Custody





Associated Earth Sciences, Inc.



**FORMER MILL E/KOPPERS SITE PLAN**

FIGURE 1

DATE 9/2007

PROJ. NO. KE050654A

Projects

Figure 2 Mill E Groundwater Elevations Wells PZ-1A and PZ-1B  
 "A" Wells Inside Containment  
 "B" Wells Outside Containment

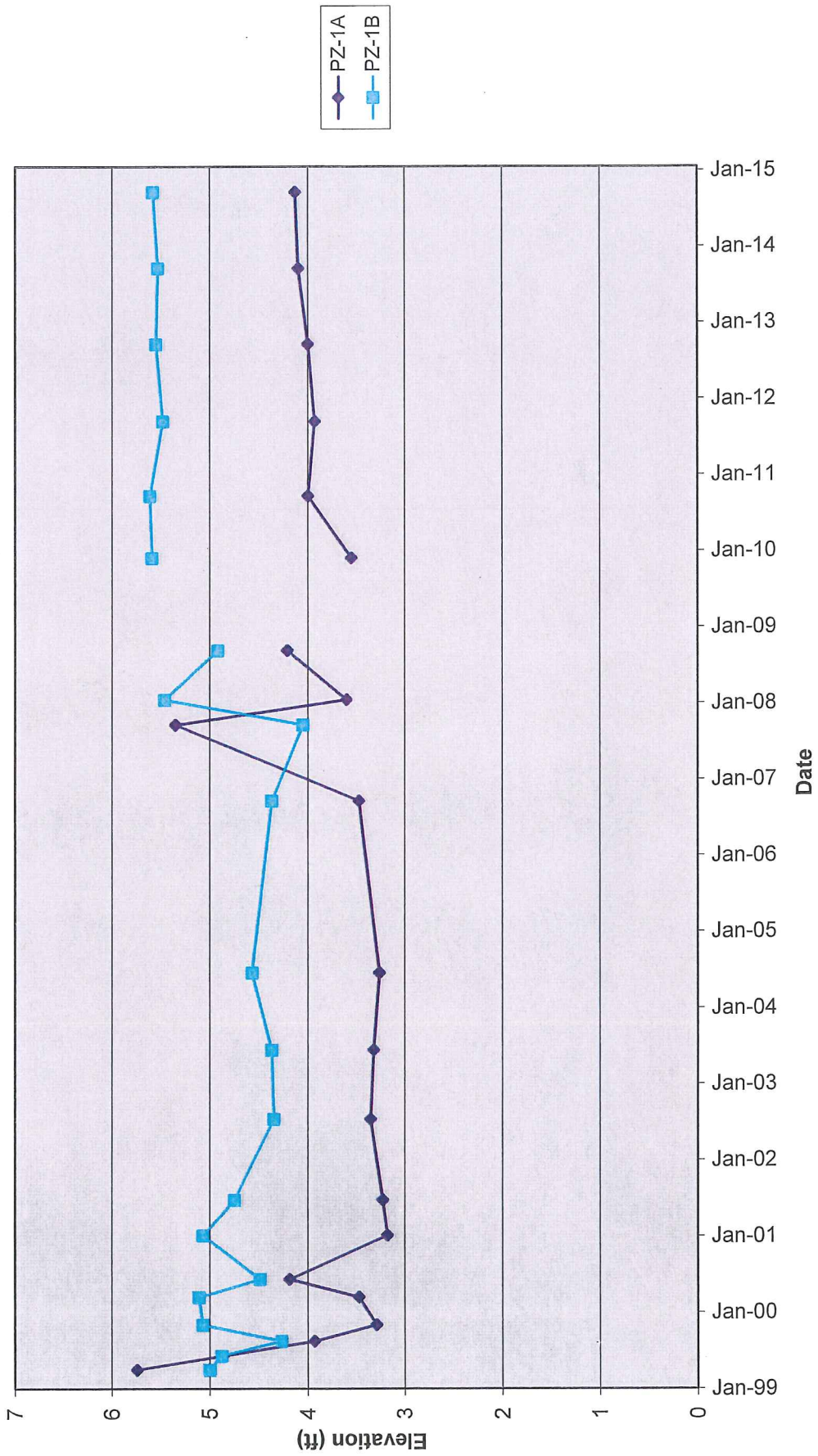




Figure 2A Mill E Ground Water Elevations Wells PZ-2A and PZ-2B  
 "A" Wells inside containment  
 "B" Wells outside containment

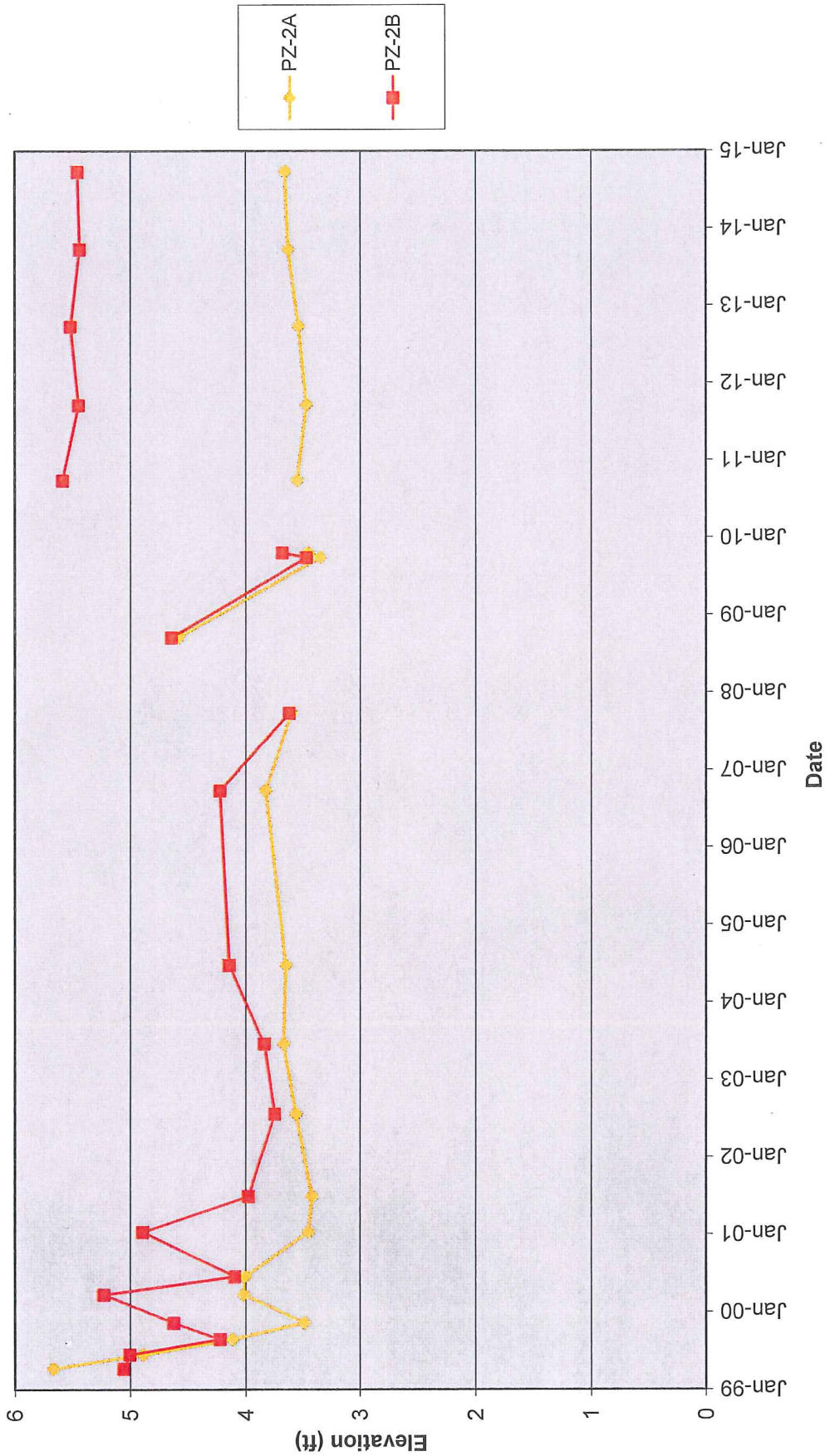




Figure 2B Groundwater Elevations Well PZ-3A and PZ-3B  
 "A" Wells Inside Containment  
 "B" Wells Outside Containment

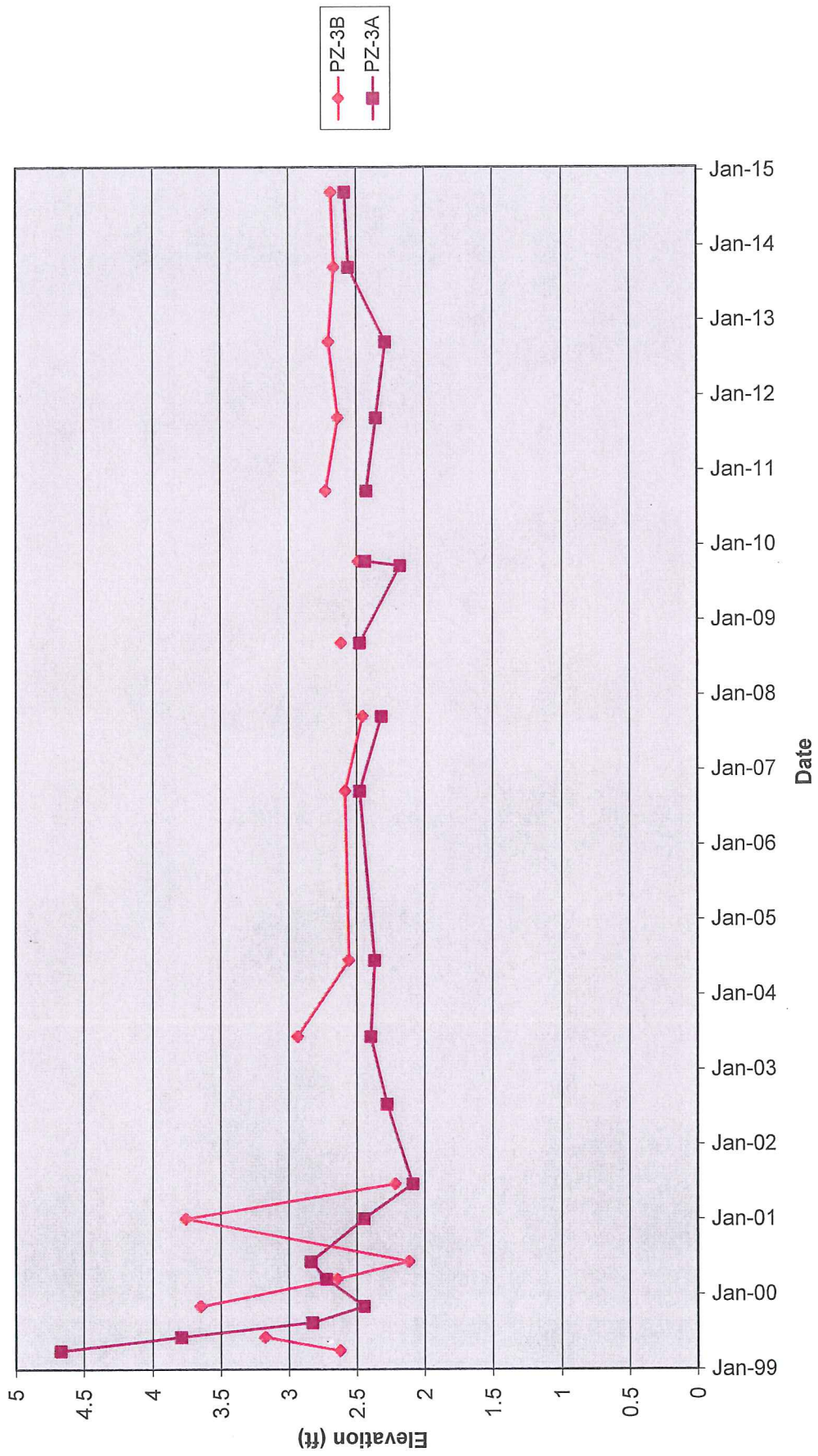


Figure 3 Mill E TPH Concentrations  
in Groundwater Well PZ-3A

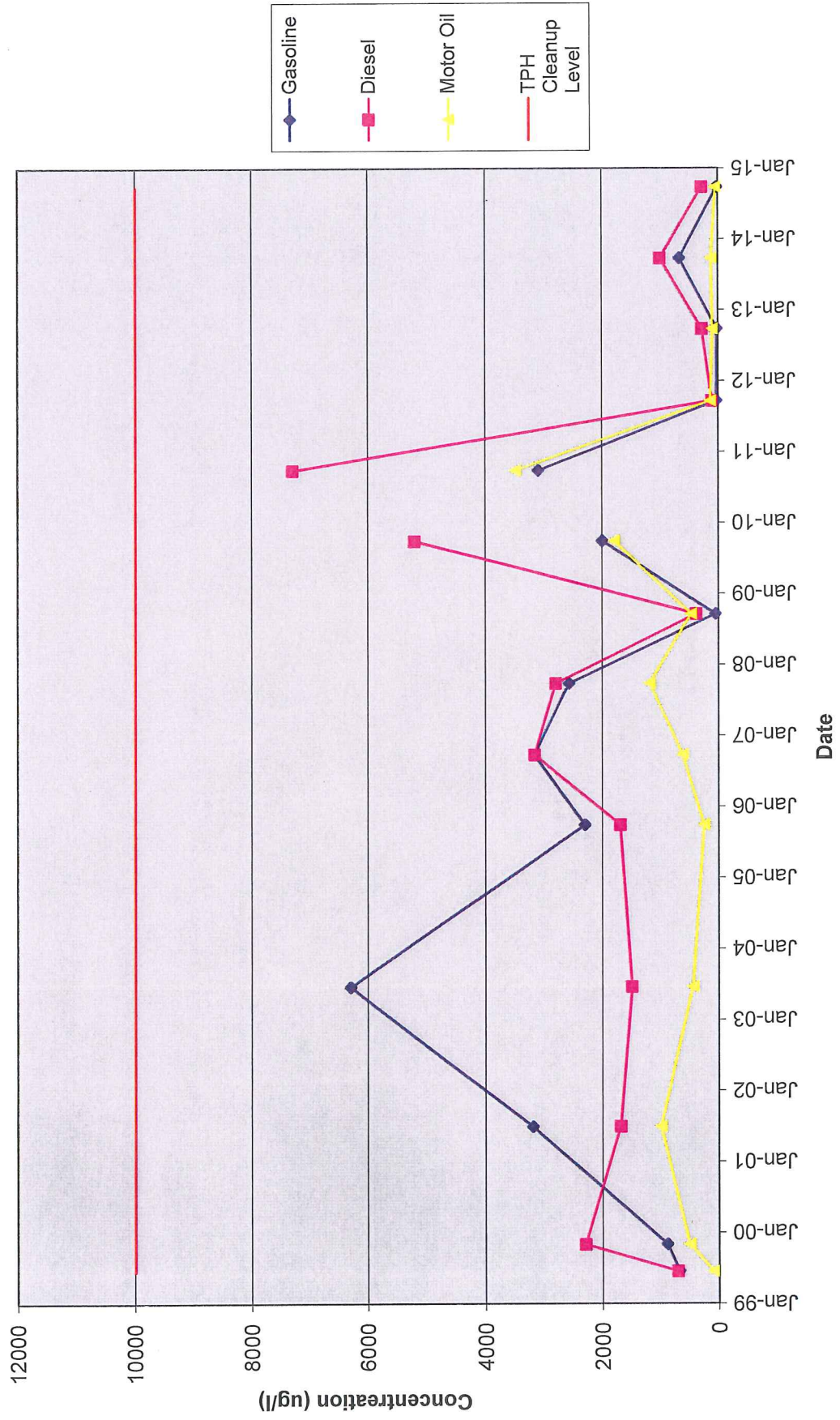




Figure 4 Mill E PCP Concentrations  
in Groundwater Well PZ-3A  
Non-detects plotted as 1/2 the reporting limit.

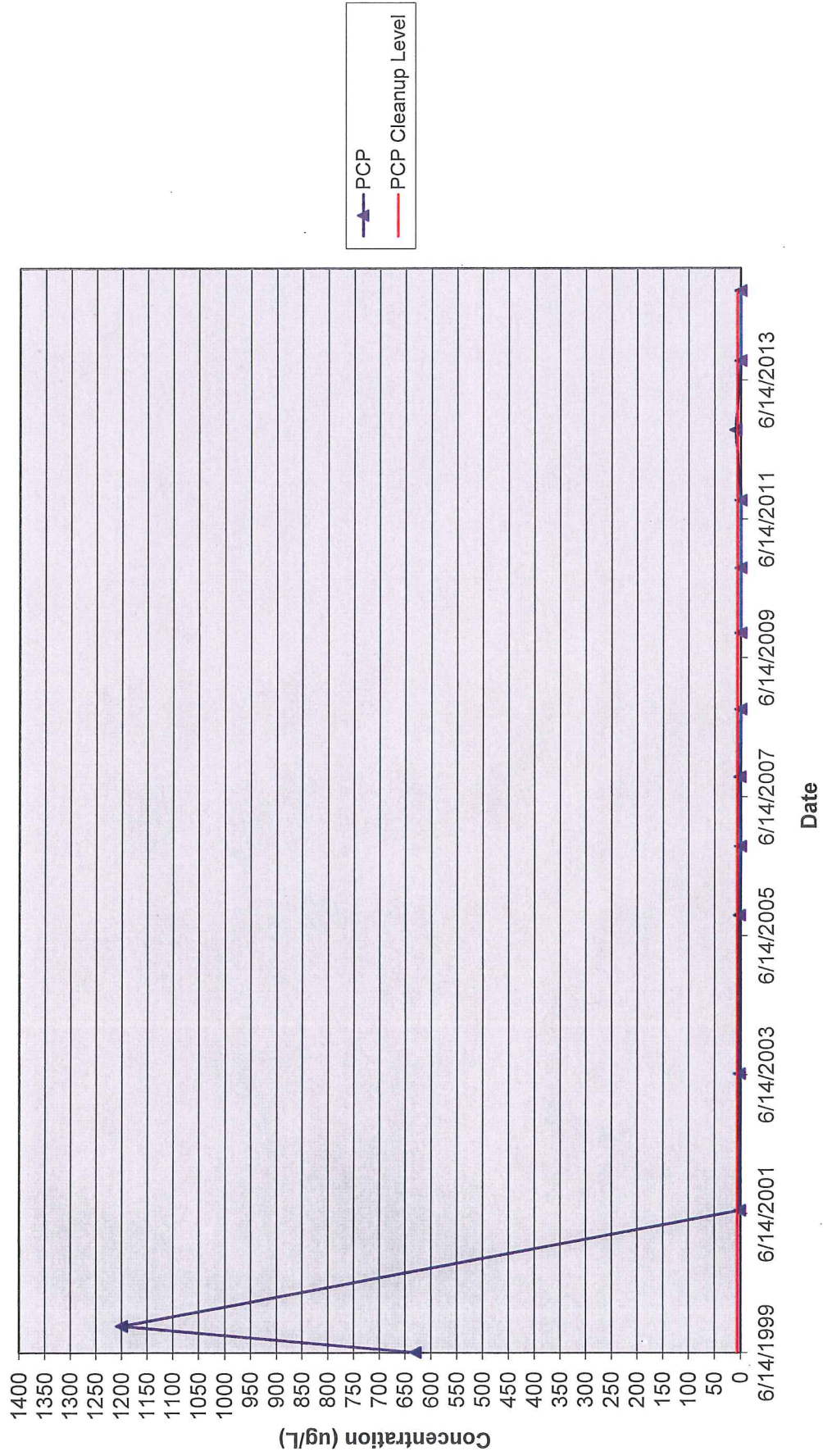
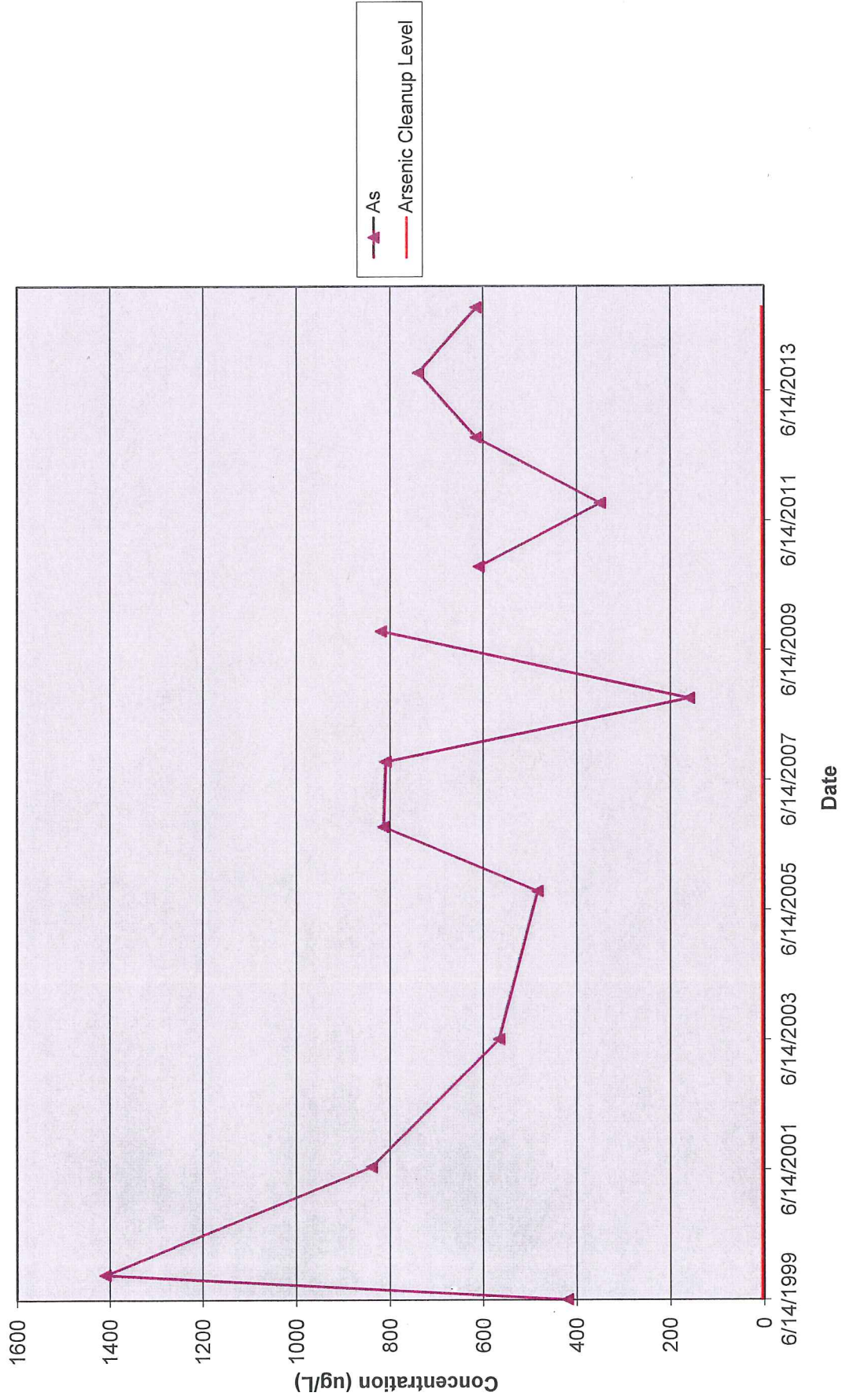
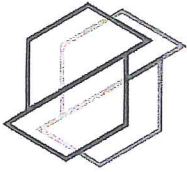




Figure 5 Mill E  
Arsenic Concentrations in Groundwater Well PZ-3A





associated  
earth sciences  
incorporated

# FIELD REPORT

Page 1 of 1

911 Fifth Avenue  
Kirkland, Washington 98033  
Phone: 425-827-7701  
Fax: 425- 827-5424  
www.aesgeo.com

<b>Date</b> 9/19/14	<b>Project Name</b> Mill E Site	<b>Project No.</b> KV050654	
<b>Location</b> Riverside Business Park		<b>Municipality</b> Everett	<b>Weather</b> 70s, Sunny
<b>Permit No.</b>	<b>DPD No.</b>	<b>Report No.</b> 6	
<b>Engineer/Architect</b> AESI			
<b>Client/Owner</b>			
<b>Excavator</b>			

**TO:** Pacific Topsoil Inc.  
805 80<sup>th</sup> Street SW  
Everett, WA 98203

**ATTN:** Mr. Januz Bajsarowicz

## Performance and Compliance Monitoring Plan Update

As part of the Mill E Performance and Compliance Monitoring Plan, Associated Earth Sciences, Inc. (AESI) arrived on site to observe the existing asphalt section and fill soil covering previously identified contaminated soils on site.

Matthew A. Miller, PE a professional engineer with our firm was on site and performed site observations. The property is currently vacant. During our site visit, the asphalt cap was observed to be in a serviceable condition with no obvious signs of cracking, fissures, or pumping. There are areas where shallow depressions were noted that result in bird baths on the asphalt. These are mainly in the areas noted previously. See Photos below looking towards the northeast to east at the entrance:

AESI should be contacted if indications of pavement distress are observed before our next scheduled site visit.



Copies To: \_\_\_\_\_

Field Rep:  \_\_\_\_\_

Date Mailed: \_\_\_\_\_

Principal / PM: Matthew A. Miller, P.E.



Aquatic Research Inc.  
3927 Aurora Ave. N., Seattle, WA 98103 | (206) 632-2715

## SEMI-VOLATILE ORGANIC CHEMICAL REPORT

Results of Analysis by EPA Method 8270  
Measurement of Extractable Organic Compounds in Water by Capillary Column  
Gas Chromatography/Mass Spectrometry

Case File Number:	<b>11/21/14-MB</b>	Matrix:	Water
Sample ID No.:	<b>Method Blank</b>	Sample Vol. (ml)	<b>1000</b>
Date Collected:	<b>n/a</b>	Final Volume (ml)	<b>1.0</b>
Date Received:	<b>n/a</b>	Dilution Factor:	<b>1</b>
Date Extracted:	<b>11/21/14</b>	Analyst:	<b>T. Meadows</b>
Date Analyzed:	<b>12/01/14</b>	Supervisor's Initials:	
Date of Report:	<b>12/02/14</b>	Data File Path:	<b>D:\5975 Data\8270\2014\120114\ 00401004.D</b>

CAS#	Name of Compound	Amount (ppb)	Flag
87-86-5	Pentachlorophenol	0.40	U

**FLAGS:**

- U Indicates compound was analyzed for, but not detected at the specified detection limit.
- B Blank contaminated with this analyte.
- J Estimated value - compound positively identified, but below specified detection limit.
- E Estimated value - compound exceeded calibration range.
- D Compound analyzed at a secondary dilution factor of \_\_\_\_\_ from data file: \_\_\_\_\_
- PP Compound Purges Poorly, requiring elevated detection limit.

NOTE: ppm Amounts are in mg/L or mg/KG dry weight.

Surrogate Recoveries	%Rec.	QC limits	
		Water	Soil
2,4,6-Tribromophenol	63%	0-183%	65-135%







# AQUATIC RESEARCH INCORPORATED

LABORATORY & CONSULTING SERVICES

3927 AURORA AVENUE NORTH, SEATTLE, WA 98103

PHONE: (206) 632-2715 FAX: (206) 632-2417

<b>CASE FILE NUMBER:</b>	<b>ASE001-39</b>	<b>PAGE 1</b>
<b>REPORT DATE:</b>	<b>11/07/14</b>	
<b>DATE SAMPLED:</b>	<b>09/26/14</b>	<b>DATE RECEIVED: 09/26/14</b>
<b>FINAL REPORT, LABORATORY ANALYSIS OF SELECTED PARAMETERS ON WATER SAMPLES FROM ASSOCIATED EARTH SCIENCES, INC</b>		

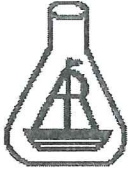
## CASE NARRATIVE

One water sample was received by the laboratory in good condition and analyzed according to the chain of custody. No difficulties were encountered in the preparation or analysis of this sample. Sample data follows while QA/QC data is contained on subsequent pages.

## SAMPLE DATA

	NWTPH-G	NWTPH-DX		
SAMPLE ID	GAS (mg/L)	DIESEL (mg/L)	MOTOR OIL (mg/L)	TOTAL ARSENIC (ug/L)
PZ-3A	0.02	0.28	<0.10	616

	BTEX COMPOUNDS			
SAMPLE ID	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	tot-Xylene (ug/L)
PZ-3A	4.0	0.9	3.0	4.6



# AQUATIC RESEARCH INCORPORATED

LABORATORY & CONSULTING SERVICES

3927 AURORA AVENUE NORTH, SEATTLE, WA 98103

PHONE: (206) 632-2715 FAX: (206) 632-2417

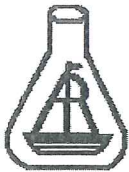
<b>CASE FILE NUMBER:</b>	<b>ASE001-39</b>	<b>PAGE 2</b>
<b>REPORT DATE:</b>	<b>11/07/14</b>	
<b>DATE SAMPLED:</b>	<b>09/26/14</b>	<b>DATE RECEIVED: 09/26/14</b>
<b>FINAL REPORT, LABORATORY ANALYSIS OF SELECTED PARAMETERS ON WATER</b>		
<b>SAMPLES FROM ASSOCIATED EARTH SCIENCES, INC</b>		

## QA/QC DATA

QC PARAMETER	GAS (mg/L)	DIESEL (mg/L)	MOTOR OIL (mg/L)	TOTAL ARSENIC (mg/L)
METHOD	NWTPH-GX	NWTPH-DX	NWTPH-DX	EPA 6020
DATE ANALYZED	10/01/14	10/02/14	10/02/14	10/10/14
DETECTION LIMIT	0.01	0.05	0.10	0.002
DUPLICATE				
SAMPLE ID				BATCH
ORIGINAL				<0.002
DUPLICATE				<0.002
RPD	NA	NA	NA	NC
SPIKE SAMPLE				
SAMPLE ID				BATCH
ORIGINAL				<0.002
SPIKED SAMPLE				0.062
SPIKE ADDED				0.050
% RECOVERY	NA	NA	NA	124.00%
QC CHECK				
FOUND	0.05	0.24	0.51	0.055
TRUE	0.05	0.25	0.50	0.050
% RECOVERY	100.00%	96.00%	102.00%	110.00%
PREP BLANK				
	<0.01	<0.05	<0.10	<0.002

RPD = RELATIVE PERCENT DIFFERENCE.  
 NA = NOT APPLICABLE OR NOT AVAILABLE.  
 NC = NOT CALCULABLE DUE TO ONE OR MORE VALUES BEING BELOW THE DETECTION LIMIT.  
 OR = RECOVERY NOT CALCULABLE DUE TO SPIKE SAMPLE OUT OF RANGE OR SPIKE TOO LOW RELATIVE TO SAMPLE CONCENTRATION.





# AQUATIC RESEARCH INCORPORATED

LABORATORY & CONSULTING SERVICES

3927 AURORA AVENUE NORTH, SEATTLE, WA 98103

PHONE: (206) 632-2715 FAX: (206) 632-2417

CASE FILE NUMBER:	ASE001-39	PAGE 3
REPORT DATE:	11/07/14	
DATE SAMPLED:	09/26/14	DATE RECEIVED: 09/26/14
FINAL REPORT, LABORATORY ANALYSIS OF SELECTED PARAMETERS ON WATER		
SAMPLES FROM ASSOCIATED EARTH SCIENCES, INC		

## QA/QC DATA

QC PARAMETER	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	tot-Xylene (ug/L)
METHOD	EPA 8260	EPA 8260	EPA 8260	EPA 8260
DATE ANALYZED	10/01/14	10/01/14	10/01/14	10/01/14
DETECTION LIMIT	0.4	0.4	0.4	1.2
DUPLICATE				
SAMPLE ID				
ORIGINAL				
DUPLICATE				
RPD	NA	NA	NA	NA
SPIKE SAMPLE				
MS/MSD				
SAMPLE ID				
MS %REC				
MSD %REC				
RPD %	NA	NA	NA	NA
QC CHECK				
ug/l				
FOUND	2.1	2.0	1.9	6.4
TRUE	2.0	2.0	2.0	6.0
% RECOVERY	104.50%	102.00%	95.50%	106.33%
BLANK	<0.4	<0.4	<0.4	<1.2

RPD = RELATIVE PERCENT DIFFERENCE.  
NA = NOT APPLICABLE OR NOT AVAILABLE.  
NC = NOT CALCULABLE DUE TO ONE OR MORE VALUES BEING BELOW THE DETECTION LIMIT.  
OR = RECOVERY NOT CALCULABLE DUE TO SPIKE SAMPLE OUT OF RANGE OR SPIKE TOO LOW RELATIVE TO SAMPLE CONCENTRATION.

SUBMITTED BY:

Damien Gadomski  
Project Manager



IEH - Aquatic Research  
 3927 Aurora Ave N • Seattle • WA • 98103  
 P: 206-632-2715 F: 206-632-2417



Chain of Custody Form

ATS EWR-54

REPORT TO:

Client:

Address:

Contact:

Email:

Phone:

Associated Earth Sciences, Inc.

911 - 5th Avenue

Kirkland, WA 98033

Walter Lam Keger cc: Sen Sondbergard

Walter.Lam@earthsci.com; Sondbergard@earthsci.com

Phone: 425-821-5101 Fax: 425-821-5424

INVOICE TO: (IF DIFFERENT FROM REPORT)

Client:

Address:

Contact:

Email:

Phone:

Fax:

PROJECT INFORMATION

Quote No.:

Client PO: KY0506544

Client Project: MILE

Reporting/Invoicing Format

QC Data Reported

Sample Disposal

Hold

Date (mm-dd-yy)

Time

Matrix\*\*

Time

Matrix\*\*

Time

Matrix\*\*

Time

Matrix\*\*

Time

Matrix\*\*

Time

Matrix\*\*

Time

Matrix\*\*

Time

Matrix\*\*

Time

Matrix\*\*

Time

Matrix\*\*

Time

Matrix\*\*

Time

Matrix\*\*

Time

Matrix\*\*

Time

Turn Around Time (TAT)\*

Next Day

3 Business Day

Standard

Specific Date:

\*Advanced notice required for Rush Analysis

SAMPLE DESCRIPTION

(This Will Appear On The Report)

PE-034

Number of Containers

- X TPH - Gasoline
- X TPH - Diesel
- X TPH - Motor Oil
- X PCP
- X Arsenic

Analysis Requested

Field pH (if applicable)

Field Temp (if applicable)

Metals Field Filtered (Y/N)

Containers Received

17 SPEC  
 17 TONAL

LAB USE ONLY

Case File Number

Temp

Lab ID

Comments:

Shipped By:

Received at Aquatic By:

Shipping Reference

Date

Time

\*\*Matrix: B=Biota, DW=Drinking Water, GW=Ground Water, P=Paint, S=Soil, SD=Sediment, SL=Sludge, SW=Surface Water, WW=Wastewater

Sampled By: *Walter Lam*

Date: 9/20/2011

Time: 13:35

Relinquished to Aquatic By (Signature): *Walter Lam*

Date

Time

Received at Aquatic By: *[Signature]*

Date: 9/21/11

Time: 13:35