

Walla Walla Co  
Bill Singers Chevron  
TCP VCP

RECEIVED

FEB 17 2012

DEPARTMENT OF ECOLOGY  
EASTERN REGIONAL OFFICE

**SITE INVESTIGATION  
and  
2<sup>nd</sup> QUARTER GROUNDWATER MONITORING REPORT**

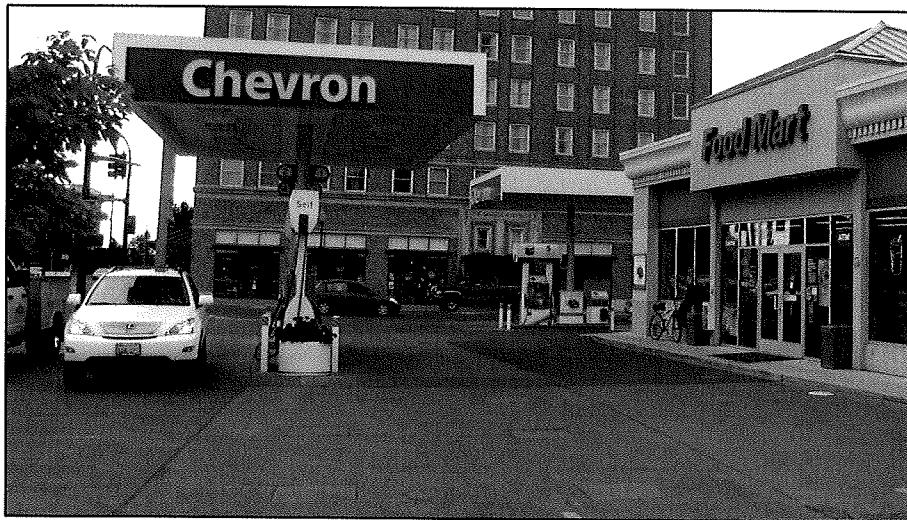
**SINGER'S CHEVRON FOOD MART LLC**

("Bill Singers Chevron")

7 E. Rose Street, Walla Walla, Washington 99362

WA DOE Facility ID: 70525886

VCP Project No. EA0219



*Prepared for:*

Washington State Department of Ecology  
Eastern Regional Office  
4601 N. Monroe Street  
Spokane, WA 99205-1295

*Prepared By:*

Plateau Geoscience Group LLC  
Post Office Box 1020  
Battle Ground, WA 98604  
(360) 521-2592

February 3, 2012



## Contents

1	INTRODUCTION .....	3
1.1	Landowner Contact.....	3
1.2	Purpose and Objectives .....	3
1.3	Location.....	3
1.4	Hydrogeologic Setting.....	4
2	PREVIOUS WORK.....	4
2.1	Phase I and Phase II Environmental Site Assessments .....	4
2.2	Monitor Well Installations .....	5
3	GROUNDWATER SAMPLING PROCEDURE.....	5
4	SAMPLING RESULTS .....	6
4.1	Data Quality Objectives and Sample Analysis.....	6
4.2	1 <sup>st</sup> Quarter Soil Analyses .....	6
4.3	Groundwater Analyses – 1 <sup>st</sup> and 2 <sup>nd</sup> Quarters.....	7
5	GROUNDWATER FLOW DIRECTION.....	9
6	CONCLUSIONS.....	9
7	RECOMMENDATIONS.....	10
8	REFERENCES .....	10
9	LIMITATIONS .....	12

### TABLES

Table 1 – Groundwater Sample Parameters – 2nd Quarter .....	6
Table 2 – Groundwater Analyses Results.....	8
Table 3 – Static Water Levels.....	9

### FIGURES

Figure 1 – Site Location Topographic and Image Maps .....	13
Figure 2 – Groundwater Monitor Wells and Previous Soil Sampling Locations .....	14
Figure 3 – Groundwater Monitor Well Locations and Flow Direction .....	15

### APPENDICES

A – 2 <sup>nd</sup> Quarter Groundwater Sample Field Logs .....	19
B – 2 <sup>nd</sup> Quarter Groundwater Laboratory Report .....	

## 1 INTRODUCTION

### 1.1 Landowner Contact

Bill D. and Loretta R. Singer  
650 Clay Street  
Walla Walla, WA 99362

### 1.2 Purpose and Objectives

Plateau Geoscience Group LLC (Plateau) has prepared this report on behalf of the landowner's business, Singer's Chevron Food Mart LLC, 7 East Rose Street, Walla Walla, WA (Site). The purpose is to determine whether petroleum constituents identified in soil may have impacted underlying groundwater.

This report is in response to a Further Remedial Action letter from Patti Carter, Washington Department of Ecology (DOE), ERO Toxics Cleanup Program, dated July 8, 2011 which requests additional site characterization by installing three groundwater monitor wells and sampling soil during installation, and groundwater from each well for two consecutive quarters (3 months apart).

In response to the July 8, 2011 DOE letter, a brief work plan was submitted and approved by DOE on September 21, 2011 which included proposed monitor well locations and well installation specifications.

Specific objectives of this investigation include:

- Install three groundwater monitor wells;
- Collect soil samples during the drilling of each monitor well and test the soil for chemicals of concern: gasoline-range hydrocarbons (TPH-Gx), benzene-toluene-ethylbenzene-xylenes (BTEX), and methyl tertiary butyl ether (MTBE);
- Collect a groundwater sample from each monitor well for two consecutive calendar quarters and test for chemicals of concern: TPH-Gx, BTEX, MTBE, and total lead;
- Prepare a summary report on the monitor well installations, results of testing the soil and groundwater, estimate groundwater flow direction and gradient, estimate extent of soil contamination, conclusions, and recommendations.

### 1.3 Location

The Site is located at 7 East Rose St. in downtown Walla Walla, Washington, at the northeast intersection of East Rose Street and North 2<sup>nd</sup> Avenue. The property is bounded to the northeast by a paved parking lot, to the southeast by Rose Street, and to the southwest by North 2<sup>nd</sup> Avenue. An office building abuts the northwest property boundary. The Site is an active petroleum fuel station offering gasoline and diesel at dispensers located under two canopies. The Food Mart building is a convenience store offering food and general merchandise. The Site is paved with asphalt and concrete. The Site is

approximately 10,146 square feet in area. The Walla Walla County tax parcel number is 360720574707 (Cains Tax 7 Blk C).

The Site has been operated by the current landowners since December 29, 1987 when purchased from Chevron U.S.A., Inc. The Site is surrounded by commercial businesses. The Site is shown in Figure 1 – Site Location Topographic and Image Maps.

## **1.4 Hydrogeologic Setting<sup>1</sup>**

The following is a summary of the hydrogeology of the Site. Further description can be found in the Plateau report titled “Monitor Wells Installation and First Quarter Groundwater Monitoring Report”, October 10, 2011.

The Site is underlain by alluvium consisting of discontinuous, unconsolidated deposits of clay, silt, fine sand, and gravel found in and adjacent to stream channels and on the flood plain adjacent to streams on the valley floor. The alluvium is primarily reworked, locally derived loess and flood deposits. Most of the alluvium has been interpreted as a series of coalescing fans with discontinuous and lenticular bedding.

Mill Creek, located within the city block immediately south of the Site, is flood controlled east of Walla Walla and converges with the Walla Walla River downstream of Walla Walla. Mill Creek has very little water as it flows in a concrete channel through the City of Walla Walla.

The hydrogeology of the Walla Walla region is controlled by the occurrence of three main geologic units: the Pleistocene gravel, the Pleistocene clay, and the underlying Miocene Columbia River Basalt (CRB). The Pleistocene gravel was deposited as coalescent alluvial fans filling in the structural basin of the underlying bedrock and were transported from upland sources by Mill Creek. The gravel is commonly interbedded with clay, which represents a fine-grained facies of the same alluvial fan deposits.

## **2 PREVIOUS WORK**

The following is a summary of previous work which is outlined in more detail in the Plateau report titled “Monitor Wells Installation and First Quarter Groundwater Monitoring Report”, October 10, 2011.

### **2.1 Phase I and Phase II Environmental Site Assessments**

A Phase I Environmental Site Assessment (ESA) for the Site was completed for Baker Boyer Bank on October 27, 2010. The Site was developed as a service station in 1930. New fiberglass underground storage tanks (USTs) were installed in 1981 and replaced existing USTs.

A Phase II ESA for the Site was completed for Baker Boyer Bank on December 1, 2010. Soil samples were analyzed at the previous locations of a heating oil UST, hydraulic

---

<sup>1</sup> Washington State Department of Ecology Eastern Regional Offices Open-File Technical Report 95-11 (Draft), May 5, 1995, “Initial Watershed Assessment Water Resources Inventory Area 22 Walla Walla River Watershed”.

lift, waste oil UST, and a gasoline UST. Soil samples from the gasoline UST location contained benzene, ethylbenzene, xylenes and gasoline above Washington State Department of Ecology Model Toxics Control Act (MTCA) cleanup levels for unrestricted land use (see Figure 2). The gasoline UST was decommissioned by excavation in 1981.

## 2.2 Monitor Well Installations

Three soil borings, MW-1, MW-2 and MW-3 were drilled on September 26-27, 2011 prior to the installation of groundwater monitor wells in each boring. Based on observations made during each soil boring, soil beneath the Site generally consists of, from ground surface downwards: fill, silt, and gravel. Fill occurs beneath the asphalt and concrete surface and consists of silt, sand, gravel and pea gravel at 2.5 to 4 feet thickness. A 2 to 3 foot thick layer of brown silt was encountered in each boring underlying the fill. Gravel with varying amounts of sand and silt was encountered in each boring from beneath the silt to the total depth of the boring.

A gray-black discolored zone of silty-sandy gravel was encountered in boring MW-2 from approximately 10 feet to 11.5 feet bgs. The zone had a strong petroleum odor and elevated PID reading. Groundwater was first encountered in the borings within the gravel.

Two soil samples were collected for analyses in each boring within the geologic unit overlying the water table and immediately above the water table.

Groundwater monitor well MW-1 was installed on September 26, 2011 and monitor wells MW-2 and MW-3 were installed on September 27, 2011 in borings described above. Each monitor well was designed to allow the collection of water samples from the water table below the first encounter of water beneath the Site, at depths of about 12-feet bgs.

The monitor well locations generally represent the upgradient (MW-1), downgradient (MW-2), and cross-gradient (MW-3) directions from the general area of soil contamination previously identified during the Phase II investigation in the proximity of the 1981 excavation of the gasoline UST (see Figure 2).

## 3 GROUNDWATER SAMPLING PROCEDURE

Groundwater samples were collected from the monitor wells on September 26-27, 2011 (1<sup>st</sup> Quarter) and January 7, 2012 (2<sup>nd</sup> Quarter). Groundwater Sample Field Logs were prepared during the sampling on January 7, 2012 (Appendix A). Sample field logs for the 1<sup>st</sup> Quarter sampling round are included in the Plateau report titled "Monitor Wells Installation and First Quarter Groundwater Monitoring Report", October 10, 2011.

Groundwater static water levels were measured prior to sampling of each monitor well. Groundwater was collected from each monitor well using a small-diameter submersible pump. Dedicated polyethylene tubing was attached to the pump which was lowered to the approximate center of the screened interval during sampling.

Groundwater samples collected on January 7, 2012 were placed in sample containers furnished by the laboratory. New disposable latex gloves were used during collection of each sample. A chain of custody accompanied the sample shipping container

with an approximate temperature of 4°C using packaged ice-gel. The following Table 1 is a summary of groundwater quality parameters measured during sampling on January 7, 2012.

**Table 1 - Groundwater Sample Parameters - 2nd Quarter**

Monitor Well No.	Turbidity ppm	Conductance µS	pH	Temperature °F	Color	Odor
MW-1	216	413	5.20	57.6	clear	none
MW-2	291	583	5.90	58.4	clear	slight
MW-3	242	487	5.36	58.0	clear	none

## 4 SAMPLING RESULTS

### 4.1 Data Quality Objectives and Sample Analysis

Data quality objectives for this groundwater investigation are to generate data of known and documented quality that can be used to determine whether chemicals of potential concern are present in groundwater above detection levels and at levels that pose an unacceptable risk to receptors. Data has been compared to MTCA Method A unrestricted land use to determine whether these levels are exceeded and to support decision-making regarding the need for further remediation or investigation.

### 4.2 1<sup>st</sup> Quarter Soil Analyses

All soil samples from the three soil borings, MW-1, MW-2 and MW-3 drilled on September 26-27, 2011 were submitted to TestAmerica, Beaverton, Oregon for analysis of gasoline, BTEX, and methyl tert-butyl ether (MTBE) using EPA Method 8260B - Selected Volatile Organic Compounds (including BTEX). The specific analyses were requested by DOE as chemicals of concern.

The following is a summary of the soil analysis which is discussed in more detail in the Plateau report titled "Monitor Wells Installation and First Quarter Groundwater Monitoring Report", October 10, 2011.

Gasoline range hydrocarbons were detected in the soil sample collected in MW-2 at 10.5 feet bgs at 261 mg/kg. The laboratory reported that the analysis resembled a blend of heavy gasoline/light diesel, which is typical of highly degraded gasoline. This gasoline concentration exceeds the DOE MTCA Method A cleanup criteria for unrestricted land use of 100 mg/kg, without benzene. Benzene was not detected in any of the monitor well boring soil samples at detection limits below the Method A soil cleanup level except sample MW-2-10.5 which is reported by the laboratory as not detected but with a raised reporting limit "due to high concentrations of non-target analytes". The detection limit for the MW-2 sample was 0.055, slightly above the benzene criteria of 0.030 mg/kg. Low concentrations of toluene and total xylenes were detected in a soil sample collected in MW-3 at 5 feet bgs, but well below MTCA cleanup levels. No other chemicals of concern were detected in soil samples above reporting limits that are below MTCA Method A cleanup levels for unrestricted land use.

### 4.3 Groundwater Analyses – 1st and 2nd Quarters

All groundwater samples were submitted to TestAmerica, Beaverton, Oregon for analysis of gasoline, BTEX, and MTBE using EPA Method 8260B – Selected Volatile Organic Compounds (including BTEX), and lead using EPA Method 6020-Total Metals per EPA 6000/7000 Series Methods. The specific analyses were requested by DOE as chemicals of concern.

The following Table 2 is a summary of the analyses on groundwater samples collected during the 1<sup>st</sup> and 2<sup>nd</sup> Quarters. No Site chemicals were detected at concentrations that exceed MTCA Method A cleanup levels for unrestricted land use.

Gasoline range hydrocarbons were only detected in the MW-2 groundwater sample during the 1<sup>st</sup> Quarter at 187 µg/l and at 583 µg/l (545 µg/l in the duplicate) during the 2<sup>nd</sup> Quarter. These concentrations do not exceed the DOE MTCA Method A cleanup criteria for unrestricted land use of 1,000 µg/l without benzene.

Ethylbenzene was detected only in the 2<sup>nd</sup> Quarter MW-2 groundwater sample at 0.55 µg/l (1.10 µg/l in the duplicate), which does not exceed the DOE MTCA Method A cleanup criteria for unrestricted land use of 700 µg/l. Total xylenes were detected only in the 2<sup>nd</sup> Quarter MW-2 groundwater sample at 1.85 µg/l (3.30 µg/l in the duplicate), which does not exceed the DOE MTCA Method A cleanup criteria for unrestricted land use of 1,000 µg/l.

Lead was detected only in the 2<sup>nd</sup> Quarter MW-2 groundwater sample at 1.11 µg/l (1.19 µg/l in the duplicate), which does not exceed the DOE MTCA Method A cleanup criteria for unrestricted land use of 15 µg/l.

No other chemicals of concern, particularly benzene, were detected in 1<sup>st</sup> or 2<sup>nd</sup> Quarter groundwater samples above their reporting limits which are well below the MTCA Method A cleanup levels for unrestricted land use. The 2<sup>nd</sup> Quarter groundwater laboratory report is included in Appendix B.

**Table 2 – Groundwater Analyses Results**

		Benzene µg/l	Toluene µg/l	Ethyl Benzene µg/l	Total Xylenes µg/l	Gasoline w/o Benzene µg/l	Gasoline w/Benzene µg/l	MTBE µg/l	Lead µg/l
	MTCA Method A Groundwater Cleanup Level <sup>3</sup>	5	1,000	700	1,000	1,000	800	20	15
	Sample Number <sup>1</sup>								
1 <sup>st</sup> Quarter	MW-1-10/20	ND<0.200 <sup>2</sup>	ND<0.500	ND<0.500	ND<1.00	ND<80.0	-	ND<2.00	ND<1.00
2 <sup>nd</sup> Quarter	MW-1-10/20	ND<0.200 <sup>2</sup>	ND<0.500	ND<0.500	ND<1.00	ND<80.0	-	ND<2.00	ND<1.00
1 <sup>st</sup> Quarter	MW-2-9/19	ND<0.200	ND<0.500	ND<0.500	ND<1.00	<b>187</b>	-	ND<2.00	ND<1.00
2 <sup>nd</sup> Quarter	MW-2-9/19	ND<0.200	ND<0.500	<b>0.550</b>	<b>1.85</b>	<b>583</b>	-	ND<2.00	<b>1.11</b>
2 <sup>nd</sup> Quarter duplicate	MW-2D-9/19 <sup>4</sup>	ND<0.200	ND<0.500	<b>1.10</b>	<b>3.30</b>	<b>545</b>		ND<2.00	<b>1.19</b>
1 <sup>st</sup> Quarter	MW-3-10/20	ND<0.200	ND<0.500	ND<0.500	ND<1.00	ND<80.0	-	ND<2.00	ND<1.00
2 <sup>nd</sup> Quarter	MW-3-10/20	ND<0.200	ND<0.500	ND<0.500	ND<1.00	ND<80.0	-	ND<2.00	ND<1.00

Notes:

1. Sample Number explanation: "MW-2" is monitor well number; "-10/20" is screen interval depths in feet bgs.
2. ND – not detected at Reporting Limit shown.
3. Cleanup criteria pursuant to Washington State Department of Ecology Model Toxics Control Act (MTCA) Cleanup Regulation Chapter 173-340 WAC (Method A), Part IX-Tables, Chapter 70.105D RCW (RCW Amended 2007), and Chapter 64.70 RCW (Adopted 2007).
4. Duplicate sample.
5. Detected chemicals are **bold**.



## 5 GROUNDWATER FLOW DIRECTION

The following Table 3 summarizes the static water levels measured in MW-1, MW-2 and MW-3 during the 1<sup>st</sup> Quarter, interim date, and 2<sup>nd</sup> Quarter.

**Table 3 - Static Water Levels**

Monitor Well No.	PVC Notch Elevation-ft <sup>1</sup>	Date	Static Water Level	Static Water Elevation-ft
MW-1	955.1516	1 <sup>st</sup> Qtr: 9-28-11	12.90	942.25
		10-14-11	12.61	942.54
		2 <sup>nd</sup> Qtr: 1-7-12	12.39	942.76
MW-2	953.7210	1 <sup>st</sup> Qtr: 9-28-11	11.67	942.05
		10-14-11	12.28	941.44
		2 <sup>nd</sup> Qtr: 1-7-12	12.20	941.52
MW-3	953.9260	1 <sup>st</sup> Qtr: 9-28-11	11.20	942.73
		10-14-11	11.33	942.60
		2 <sup>nd</sup> Qtr: 1-7-12	11.00	942.93

**Notes:**

<sup>1</sup>Well elevations in feet surveyed accurate by USKH surveyors, Walla Walla, Washington. Static water level elevations in feet measured from notch in the top of the PVC well casing.

Based on the static water levels shown in Table 3, the groundwater flow direction is west-northwest. The 1<sup>st</sup> Quarter flow direction is determined to be N70°W at a gradient of 0.02 ft/ft; the interim October flow direction was N70°W at a gradient of 0.02 ft/ft; and the 2<sup>nd</sup> Quarter flow direction was N68°W at a gradient of 0.03 ft/ft. The average flow direction and gradient is shown in Figure 3.

## 6 CONCLUSIONS

The following conclusions are based on the data collected during this groundwater site characterization investigation as requested in the Further Remedial Action letter from Patti Carter, Washington Department of Ecology (DOE), ERO Toxics Cleanup Program, dated July 8, 2011 to install three groundwater monitor wells and sample soil and groundwater from each well.

- A potential source of soil contamination was identified at 12 feet bgs during a Phase II Environmental Site Investigation completed in December 2010 at a previous location of an UST which held gasoline. The UST was excavated in 1981.
- Three groundwater monitor wells, MW-1, MW-2 and MW-3, were installed at the Site on September 26 and 27, 2011. Soil and groundwater samples were collected and analyzed from these wells.
- Benzene was not detected in soil or groundwater samples outside of the 1981 UST excavation.

- Three chemicals were detected in soil: toluene, xylenes, and gasoline. Toluene and xylenes were detected in the boring for MW-3 at less than 0.1 mg/kg, which is below the MTCA cleanup level for unrestricted land use. Gasoline was detected in the boring for MW-2 at 261 mg/kg, above the MTCA Method A cleanup level of 100 mg/kg without benzene.
- Four chemicals were detected in groundwater in MW-2 including ethylbenzene, xylenes, gasoline and lead. None of these chemicals exceeded their respective MTCA Method A cleanup levels.
- The groundwater flow direction is west-northwest at about N70°W at a gradient of approximately 0.02 ft/ft.
- The 10,000 gallon UST (removed in 1981) is the assumed source of contamination detected in two of the three borings/wells completed for this investigation. Plateau concludes that monitor well MW-1 represents upgradient groundwater, MW-3 represents cross-gradient groundwater, and MW-2 represents downgradient groundwater, based on measured water levels and the presence of gasoline, toluene and ethylbenzene in soil above the water table in monitor wells MW-2 and MW-3.
- Plateau concludes that no further action is necessary based on no benzene detected in soil or groundwater outside the 1981 UST excavation, the degraded state of the detected gasoline, and no chemicals detected in groundwater above MTCA Method A cleanup levels for unrestricted land use.

## 7 RECOMMENDATIONS

This site investigation has determined that petroleum constituents previously identified in soil within a 1981 gasoline UST decommissioning excavation have not impacted underlying groundwater above MTCA Method A groundwater cleanup levels for unrestricted land use.

It is therefore recommended that the Washington Department of Ecology issue a No Further Action (NFA) opinion for the site.

## 8 REFERENCES

- Baker Boyer Bank, Phase I Environmental Site Assessment Report, Singer Chevron, October 27, 2010.
- Baker Boyer Bank, Phase II Site Investigation, Singer's Chevron, December 1, 2010.
- GeoPro Geologic Services LLC, Groundwater Monitor Well Installation and Sampling Report, 325 E. Main St., Walla Walla, WA, May 31, 2007.
- GeoPro Geologic Services LLC, Groundwater and Soil Sampling Report, 705 W. Rose Street, Walla Walla, WA, October 19, 2007.
- GeoPro Geologic Services LLC, Groundwater Monitor Wells Installation and Sampling Report, 202 N. 2<sup>nd</sup> Ave., Walla Walla, WA, November 13, 2007.

- GeoPro Geologic Services LLC, Groundwater Monitor Biennial Report 2006, 811 W. Rose St., Walla Walla, WA, February 2008.
- GeoPro Geologic Services LLC, Conceptual Work Plan, 595 Offner Rd., Walla Walla, WA, February 10, 2009.
- GeoPro Geologic Services LLC, Soil Sampling Report, 811 W. Rose St., Walla Walla, WA, April 4, 2011.
- Plateau Geoscience Group LLC, Monitor Wells Installation and First Quarter Groundwater Monitoring Report, Singer's Chevron Food Mart LLC, 7 E. Rose St., Walla Walla, WA, October 10, 2011.
- Washington Department of Natural Resources, Geologic Map of the College Place and Walla Walla 7.5-minute Quadrangles, Walla Walla County, Washington, and Umatilla County, Oregon, Division of Geology and Earth Resources Geologic Map GM-62, June 2006.
- Washington State Department of Ecology Eastern Regional Office, Water Resource Program. (Draft) Initial Watershed Assessment, Water Resources Inventory Area 22, Walla Walla River Watershed, Open File Technical Report 95-11, May 5, 1995.
- Washington State Department of Ecology, Assessment of Surface Water and Groundwater Interchange in the Walla Walla River Watershed, Publication No. 05-03-020, August 2005.

## 9 LIMITATIONS

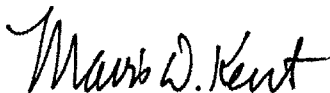
This report has been prepared for use by the Washington Department of Ecology and is not intended for use by others except the landowner(s) or landowner's agents. Each project and project site is unique and the information contained in this report is not applicable to other sites. Only the Washington Department of Ecology should rely upon this report and all others should contact Plateau Geoscience Group LLC before applying or interpreting any information in this report.

Plateau Geoscience Group LLC does not accept liability or responsibility for detachment, partial use, separation, or reproduction without color, if used, which may depict significant information, by third parties and such use shall be at user's sole risk.

Records, documentation, and personal communication have been relied upon in good faith; however, no responsibility is accepted for errors or omissions of work by others. Services were performed in accordance with generally accepted professional practices, in the same or similar localities, related to the nature of the work accomplished, at the time services are rendered. Plateau Geoscience Group LLC is not responsible for references to regulatory terms, practices, numeric data, practices or conditions that may lead to other conclusions if such references are not in final form.

Conclusions and findings apply only to present conditions, and opinions expressed are subject to revision when additional or new information is presented and reviewed. This warranty is in lieu of all other warranties, either expressed or implied. It is possible that explorations failed to reveal the presence of hazardous materials at areas where hazardous materials were assumed, suspected or expected to exist (hazardous as used herein shall also mean contaminated and polluted). Through use of this report it is understood that failure to sample soil or water, or install groundwater monitor wells at locations through appropriate and mutually agreed-upon techniques does not guarantee that hazardous materials have, or will be, detected at such locations. Similarly, areas which in fact are unaffected by hazardous materials at the time of this report, may later, due to natural causes or human intervention, become contaminated. Plateau Geoscience Group LLC is not responsible for failing to locate hazardous materials which have not discovered at the time of this report or in the future. This report should not be construed as presenting a value to neither the Site nor the condition as to construction capabilities. In the event of changes in future development plans as understood at the time of this report, the conclusions and recommendations made herein shall be invalid until given the opportunity to review and modify this report in writing. Portions of an Agreement to perform professional services may or may not be disclosed in this report.

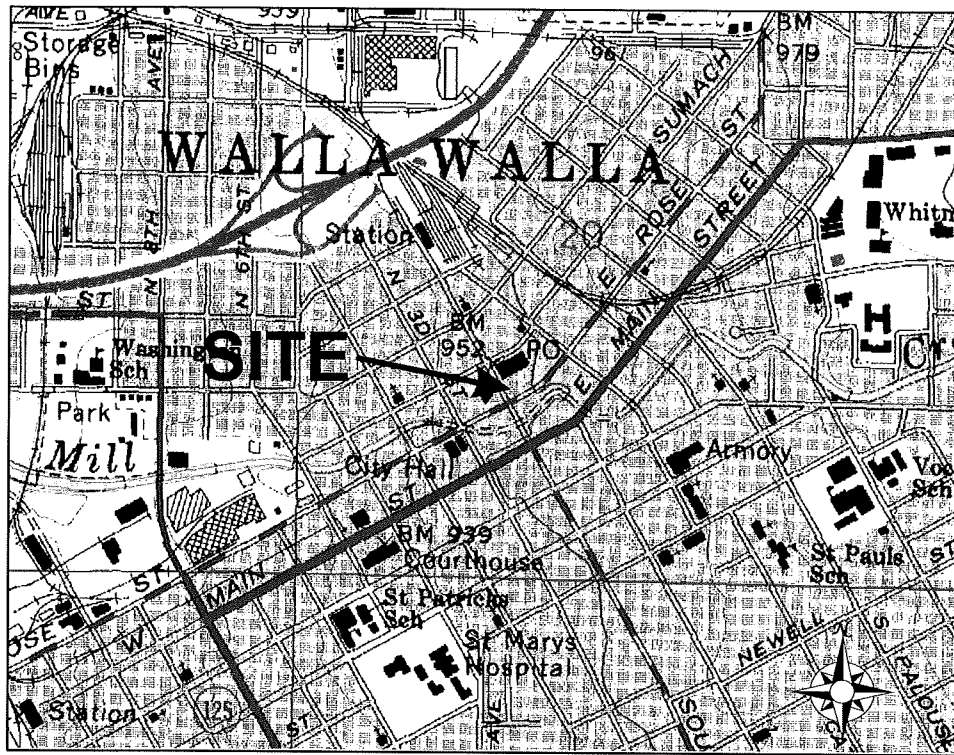
Respectfully submitted,



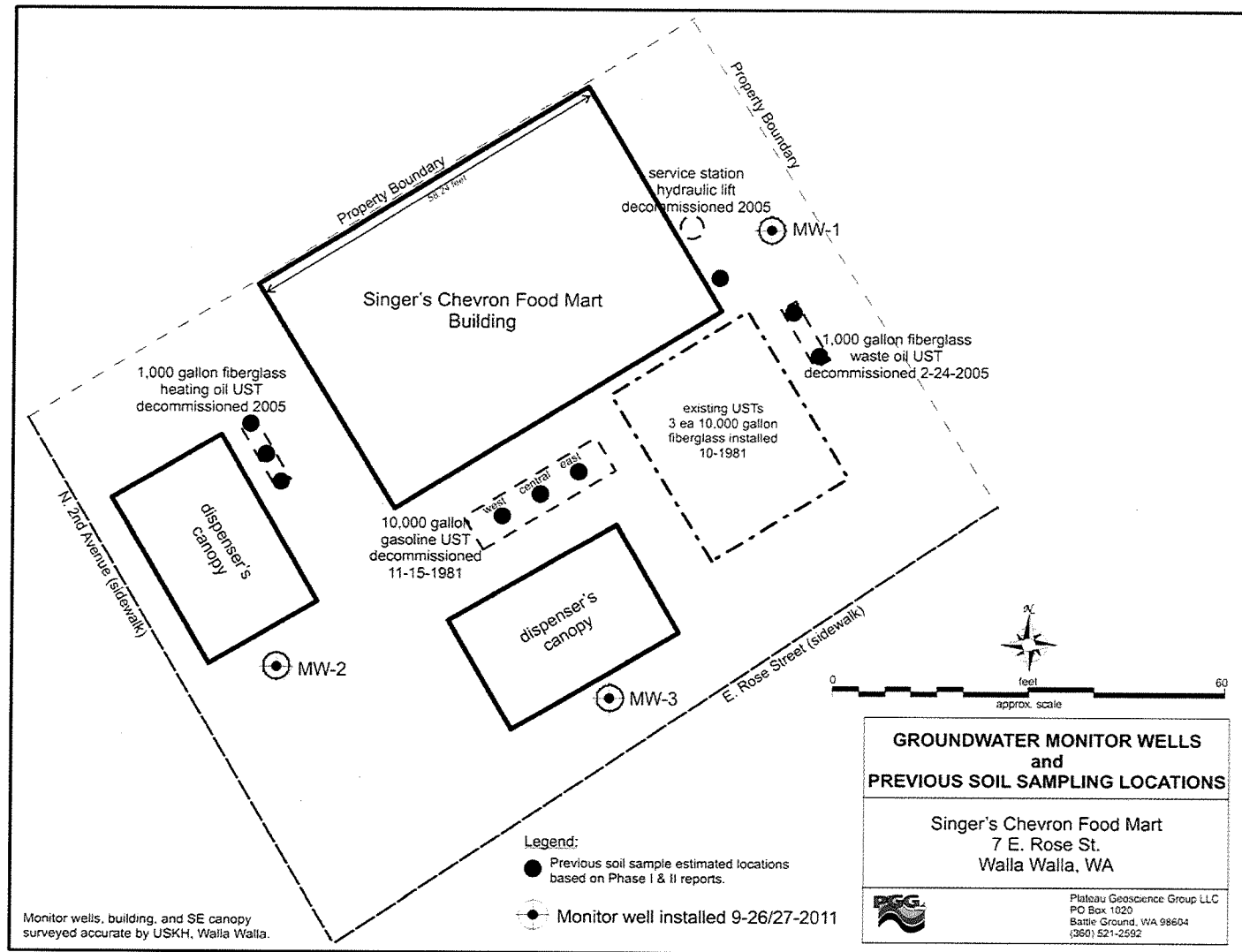
Mavis D. Kent, R.G.  
Plateau Geoscience Group LLC



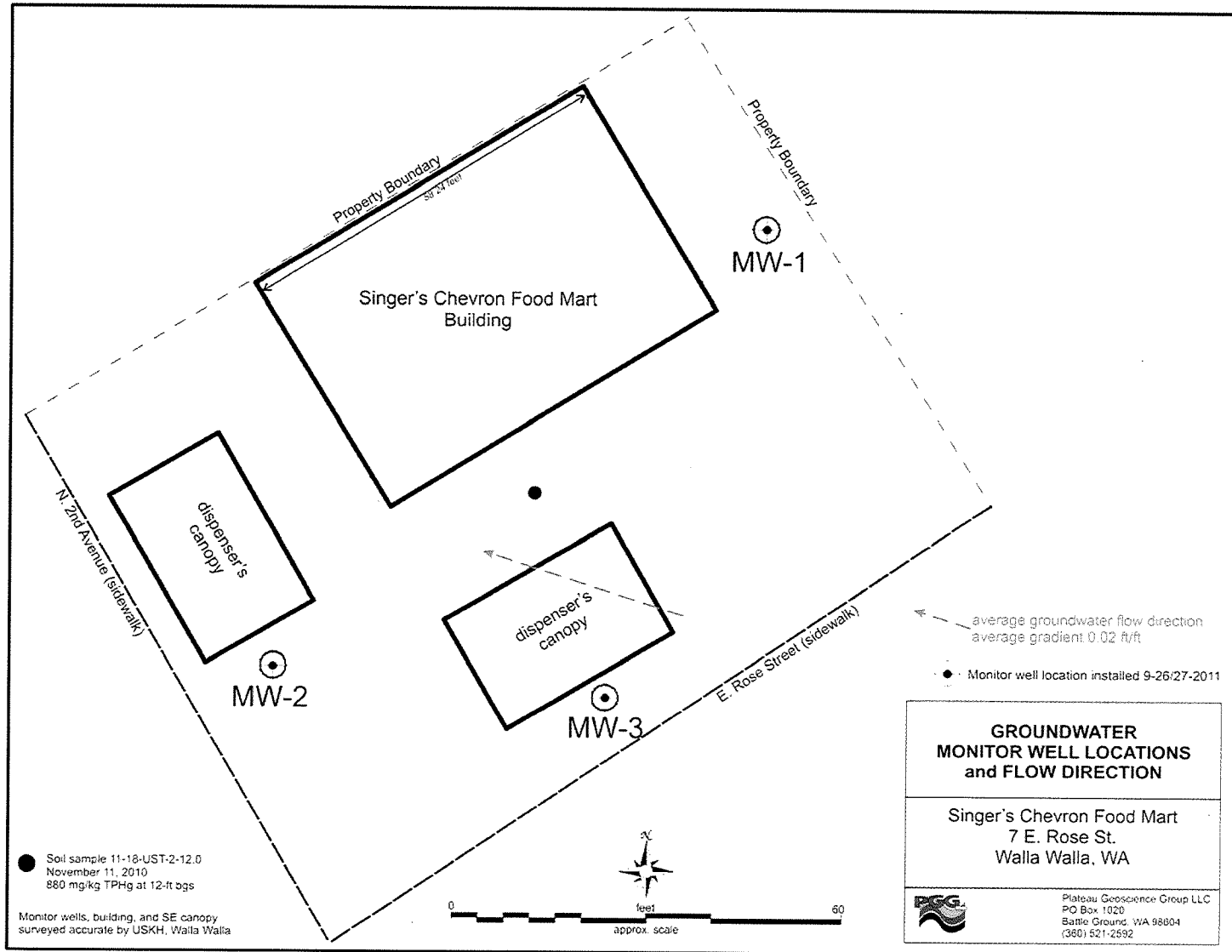
Mavis D. Kent



**Figure 1 - Site Location Topographic and Image Maps**



**Figure 2 - Groundwater Monitor Wells and Previous Soil Sampling Locations**



**Figure 3 – Groundwater Monitor Well Locations and Flow Direction**

---

# APPENDICES

---



# APPENDIX A

## GROUNDWATER SAMPLE FIELD LOGS







# APPENDIX B LABORATORY REPORT

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Portland  
9405 SW Nimbus Ave.  
Beaverton, OR 97008  
Tel: (503) 906-9200

TestAmerica Job ID: PVA0213

Client Project/Site: 110816

Client Project Description: Singer Chevron

For:

GeoPro Geologic Services  
P.O. Box 26  
Battle Ground, WA 98604

Attn: Richard Kent



Authorized for release by:  
1/23/2012 3:30:44 PM

Christina Woodcock  
Project Manager  
christina.woodcock@testamericainc.com

### LINKS

Review your project  
results through

Total Access

Have a Question?

Ask  
The  
Expert

Visit us at:

[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*



# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	2
Sample Summary . . . . .	3
Definitions . . . . .	4
Detection Summary . . . . .	5
Client Sample Results . . . . .	6
QC Sample Results . . . . .	12
Certification Summary . . . . .	16
Chain of Custody . . . . .	17

# Sample Summary

Client: GeoPro Geologic Services  
Project/Site: 110816

TestAmerica Job ID: PVA0213

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
PVA0213-01	MW-1-10/20	Water	01/07/12 10:20	01/09/12 14:15
PVA0213-02	MW-2-9/19	Water	01/07/12 12:33	01/09/12 14:15
PVA0213-03	MW-3-10/20	Water	01/07/12 11:35	01/09/12 14:15
PVA0213-04	MW-2D-9/19	Water	01/07/12 12:33	01/09/12 14:15





## Definitions/Glossary

Client: GeoPro Geologic Services  
Project/Site: 110816

TestAmerica Job ID: PVA0213

### Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

## Detection Summary

Client: GeoPro Geologic Services  
Project/Site: 110816

TestAmerica Job ID: PVA0213

Client Sample ID: MW-1-10/20

Lab Sample ID: PVA0213-01

No Detections

Client Sample ID: MW-2-9/19

Lab Sample ID: PVA0213-02

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Ethylbenzene	0.550		0.500		ug/l	1.00		EPA 8260B	Total
Xylenes (total)	1.85		1.00		ug/l	1.00		EPA 8260B	Total
Gasoline Range Hydrocarbons	583		80.0		ug/l	1.00		NW TPH-Gx	Total
Lead	0.00111		0.00100		mg/l	1.00		EPA 6020	Total

Client Sample ID: MW-3-10/20

Lab Sample ID: PVA0213-03

No Detections

Client Sample ID: MW-2D-9/19

Lab Sample ID: PVA0213-04

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Ethylbenzene	1.10		0.500		ug/l	1.00		EPA 8260B	Total
Xylenes (total)	3.30		1.00		ug/l	1.00		EPA 8260B	Total
Gasoline Range Hydrocarbons	545		80.0		ug/l	1.00		NW TPH-Gx	Total
Lead	0.00119		0.00100		mg/l	1.00		EPA 6020	Total

## Client Sample Results

Client: GeoPro Geologic Services  
Project/Site: 110816

TestAmerica Job ID: PVA0213

### Method: EPA 8260B - Selected Volatile Organic Compounds (Including BTEX) per EPA Method 8260B

Client Sample ID: MW-1-10/20  
Date Collected: 01/07/12 10:20  
Date Received: 01/09/12 14:15

Lab Sample ID: PVA0213-01  
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.200		ug/l		01/10/12 08:00	01/10/12 12:22	1.00
Toluene	ND		0.500		ug/l		01/10/12 08:00	01/10/12 12:22	1.00
Ethylbenzene	ND		0.500		ug/l		01/10/12 08:00	01/10/12 12:22	1.00
Xylenes (total)	ND		1.00		ug/l		01/10/12 08:00	01/10/12 12:22	1.00
Methyl tert-butyl ether	ND		2.00		ug/l		01/10/12 08:00	01/10/12 12:22	1.00
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dibromofluoromethane	93.4		80 - 120				01/10/12 08:00	01/10/12 12:22	1.00
1,2-DCA-d4	95.4		80 - 120				01/10/12 08:00	01/10/12 12:22	1.00
Toluene-d8	98.5		80 - 120				01/10/12 08:00	01/10/12 12:22	1.00
4-BFB	99.8		80 - 120				01/10/12 08:00	01/10/12 12:22	1.00

Client Sample ID: MW-2-9/19  
Date Collected: 01/07/12 12:33  
Date Received: 01/09/12 14:15

Lab Sample ID: PVA0213-02  
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.200		ug/l		01/10/12 08:00	01/10/12 13:12	1.00
Toluene	ND		0.500		ug/l		01/10/12 08:00	01/10/12 13:12	1.00
Ethylbenzene	0.550		0.500		ug/l		01/10/12 08:00	01/10/12 13:12	1.00
Xylenes (total)	1.85		1.00		ug/l		01/10/12 08:00	01/10/12 13:12	1.00
Methyl tert-butyl ether	ND		2.00		ug/l		01/10/12 08:00	01/10/12 13:12	1.00
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dibromofluoromethane	95.8		80 - 120				01/10/12 08:00	01/10/12 13:12	1.00
1,2-DCA-d4	97.0		80 - 120				01/10/12 08:00	01/10/12 13:12	1.00
Toluene-d8	103		80 - 120				01/10/12 08:00	01/10/12 13:12	1.00
4-BFB	98.9		80 - 120				01/10/12 08:00	01/10/12 13:12	1.00

Client Sample ID: MW-3-10/20  
Date Collected: 01/07/12 11:35  
Date Received: 01/09/12 14:15

Lab Sample ID: PVA0213-03  
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.200		ug/l		01/10/12 08:00	01/10/12 12:47	1.00
Toluene	ND		0.500		ug/l		01/10/12 08:00	01/10/12 12:47	1.00
Ethylbenzene	ND		0.500		ug/l		01/10/12 08:00	01/10/12 12:47	1.00
Xylenes (total)	ND		1.00		ug/l		01/10/12 08:00	01/10/12 12:47	1.00
Methyl tert-butyl ether	ND		2.00		ug/l		01/10/12 08:00	01/10/12 12:47	1.00
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dibromofluoromethane	94.6		80 - 120				01/10/12 08:00	01/10/12 12:47	1.00
1,2-DCA-d4	94.8		80 - 120				01/10/12 08:00	01/10/12 12:47	1.00
Toluene-d8	99.5		80 - 120				01/10/12 08:00	01/10/12 12:47	1.00
4-BFB	99.4		80 - 120				01/10/12 08:00	01/10/12 12:47	1.00

## Client Sample Results

Client: GeoPro Geologic Services  
Project/Site: 110816

TestAmerica Job ID: PVA0213

### Method: EPA 8260B - Selected Volatile Organic Compounds (Including BTEX) per EPA Method 8260B

Client Sample ID: MW-2D-9/19  
Date Collected: 01/07/12 12:33  
Date Received: 01/09/12 14:15

Lab Sample ID: PVA0213-04  
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.200		ug/l		01/10/12 08:00	01/10/12 13:37	1.00
Toluene	ND		0.500		ug/l		01/10/12 08:00	01/10/12 13:37	1.00
Ethylbenzene	1.10		0.500		ug/l		01/10/12 08:00	01/10/12 13:37	1.00
Xylenes (total)	3.30		1.00		ug/l		01/10/12 08:00	01/10/12 13:37	1.00
Methyl tert-butyl ether	ND		2.00		ug/l		01/10/12 08:00	01/10/12 13:37	1.00
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dibromofluoromethane	93.6		80 - 120				01/10/12 08:00	01/10/12 13:37	1.00
1,2-DCA-d4	94.6		80 - 120				01/10/12 08:00	01/10/12 13:37	1.00
Toluene-d8	101		80 - 120				01/10/12 08:00	01/10/12 13:37	1.00
4-BFB	96.7		80 - 120				01/10/12 08:00	01/10/12 13:37	1.00

## Client Sample Results

Client: GeoPro Geologic Services  
Project/Site: 110816

TestAmerica Job ID: PVA0213

### Method: NW TPH-Gx - Gasoline Hydrocarbons per NW TPH-Gx Method

Client Sample ID: MW-1-10/20  
Date Collected: 01/07/12 10:20  
Date Received: 01/09/12 14:15

Lab Sample ID: PVA0213-01  
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Hydrocarbons	ND		80.0		ug/l		01/11/12 10:08	01/11/12 13:45	1.00
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-BFB (FID)	80.8		50 - 150				01/11/12 10:08	01/11/12 13:45	1.00

Client Sample ID: MW-2-9/19  
Date Collected: 01/07/12 12:33  
Date Received: 01/09/12 14:15

Lab Sample ID: PVA0213-02  
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Hydrocarbons	583		80.0		ug/l		01/11/12 10:08	01/11/12 15:47	1.00
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-BFB (FID)	94.8		50 - 150				01/11/12 10:08	01/11/12 15:47	1.00

Client Sample ID: MW-3-10/20  
Date Collected: 01/07/12 11:35  
Date Received: 01/09/12 14:15

Lab Sample ID: PVA0213-03  
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Hydrocarbons	ND		80.0		ug/l		01/11/12 10:08	01/11/12 15:16	1.00
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-BFB (FID)	86.6		50 - 150				01/11/12 10:08	01/11/12 15:16	1.00

Client Sample ID: MW-2D-9/19  
Date Collected: 01/07/12 12:33  
Date Received: 01/09/12 14:15

Lab Sample ID: PVA0213-04  
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Hydrocarbons	545		80.0		ug/l		01/11/12 10:08	01/11/12 16:17	1.00
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-BFB (FID)	95.5		50 - 150				01/11/12 10:08	01/11/12 16:17	1.00

# Client Sample Results

Client: GeoPro Geologic Services  
Project/Site: 110816

TestAmerica Job ID: PVA0213

## Method: EPA 6020 - Dissolved Metals per EPA 6000/7000 Series Methods - Dissolved

Client Sample ID: MW-1-10/20  
Date Collected: 01/07/12 10:20  
Date Received: 01/09/12 14:15

Lab Sample ID: PVA0213-01  
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.00100		mg/l		01/13/12 08:41	01/13/12 20:08	1.00

Client Sample ID: MW-2-9/19  
Date Collected: 01/07/12 12:33  
Date Received: 01/09/12 14:15

Lab Sample ID: PVA0213-02  
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.00100		mg/l		01/13/12 08:41	01/13/12 20:11	1.00

Client Sample ID: MW-3-10/20  
Date Collected: 01/07/12 11:35  
Date Received: 01/09/12 14:15

Lab Sample ID: PVA0213-03  
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.00100		mg/l		01/13/12 08:41	01/13/12 20:15	1.00

Client Sample ID: MW-2D-9/19  
Date Collected: 01/07/12 12:33  
Date Received: 01/09/12 14:15

Lab Sample ID: PVA0213-04  
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.00100		mg/l		01/13/12 08:41	01/13/12 20:18	1.00

## Client Sample Results

Client: GeoPro Geologic Services  
Project/Site: 110816

TestAmerica Job ID: PVA0213

### Method: EPA 6020 - Total Metals per EPA 6000/7000 Series Methods

Client Sample ID: MW-1-10/20  
Date Collected: 01/07/12 10:20  
Date Received: 01/09/12 14:15

Lab Sample ID: PVA0213-01  
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.00100		mg/l		01/11/12 12:38	01/11/12 19:58	1.00

6

Client Sample ID: MW-2-9/19  
Date Collected: 01/07/12 12:33  
Date Received: 01/09/12 14:15

Lab Sample ID: PVA0213-02  
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.00111		0.00100		mg/l		01/11/12 12:38	01/11/12 20:06	1.00

Client Sample ID: MW-3-10/20  
Date Collected: 01/07/12 11:35  
Date Received: 01/09/12 14:15

Lab Sample ID: PVA0213-03  
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.00100		mg/l		01/11/12 12:38	01/11/12 20:19	1.00

Client Sample ID: MW-2D-9/19  
Date Collected: 01/07/12 12:33  
Date Received: 01/09/12 14:15

Lab Sample ID: PVA0213-04  
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.00119		0.00100		mg/l		01/11/12 12:38	01/11/12 20:32	1.00

## Client Sample Results

Client: GeoPro Geologic Services  
Project/Site: 110816

TestAmerica Job ID: PVA0213

### Method: NCA SOP - Lab Filtration

Client Sample ID: MW-1-10/20  
Date Collected: 01/07/12 10:20  
Date Received: 01/09/12 14:15

Lab Sample ID: PVA0213-01  
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lab Filtration	ND		1.00		N/A		01/11/12 19:37	01/11/12 19:46	1.00

Client Sample ID: MW-2-9/19  
Date Collected: 01/07/12 12:33  
Date Received: 01/09/12 14:15

Lab Sample ID: PVA0213-02  
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lab Filtration	ND		1.00		N/A		01/11/12 19:37	01/11/12 19:46	1.00

Client Sample ID: MW-3-10/20  
Date Collected: 01/07/12 11:35  
Date Received: 01/09/12 14:15

Lab Sample ID: PVA0213-03  
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lab Filtration	ND		1.00		N/A		01/11/12 19:37	01/11/12 19:46	1.00

Client Sample ID: MW-2D-9/19  
Date Collected: 01/07/12 12:33  
Date Received: 01/09/12 14:15

Lab Sample ID: PVA0213-04  
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lab Filtration	ND		1.00		N/A		01/11/12 19:37	01/11/12 19:46	1.00



## QC Sample Results

Client: GeoPro Geologic Services  
Project/Site: 110816

TestAmerica Job ID: PVA0213

### Method: EPA 8260B - Selected Volatile Organic Compounds (Including BTEX) per EPA Method 8260B

Lab Sample ID: 12A0202-BLK1  
Matrix: Water  
Analysis Batch: 12A0202

Client Sample ID: Method Blank  
Prep Type: Total  
Prep Batch: 12A0202\_P

Analyte	Blank	Blank	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,2-Dibromoethane	ND		0.500		ug/l		01/10/12 07:00	01/10/12 11:24	1.00
1,2-Dichloroethane	ND		0.500		ug/l		01/10/12 07:00	01/10/12 11:24	1.00
Benzene	ND		0.200		ug/l		01/10/12 07:00	01/10/12 11:24	1.00
Toluene	ND		0.500		ug/l		01/10/12 07:00	01/10/12 11:24	1.00
Ethylbenzene	ND		0.500		ug/l		01/10/12 07:00	01/10/12 11:24	1.00
Xylenes (total)	ND		1.00		ug/l		01/10/12 07:00	01/10/12 11:24	1.00
Methyl tert-butyl ether	ND		2.00		ug/l		01/10/12 07:00	01/10/12 11:24	1.00
Naphthalene	ND		2.00		ug/l		01/10/12 07:00	01/10/12 11:24	1.00
1,2,4-Trimethylbenzene	ND		1.00		ug/l		01/10/12 07:00	01/10/12 11:24	1.00
1,3,5-Trimethylbenzene	ND		0.500		ug/l		01/10/12 07:00	01/10/12 11:24	1.00
Isopropylbenzene	ND		2.00		ug/l		01/10/12 07:00	01/10/12 11:24	1.00
n-Propylbenzene	ND		0.500		ug/l		01/10/12 07:00	01/10/12 11:24	1.00

Surrogate	Blank	Blank	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Dibromofluoromethane	97.3		80 - 120	01/10/12 07:00	01/10/12 11:24	1.00
1,2-DCA-d4	98.0		80 - 120	01/10/12 07:00	01/10/12 11:24	1.00
Toluene-d8	100		80 - 120	01/10/12 07:00	01/10/12 11:24	1.00
4-BFB	101		80 - 120	01/10/12 07:00	01/10/12 11:24	1.00

Lab Sample ID: 12A0202-BS1  
Matrix: Water  
Analysis Batch: 12A0202

Client Sample ID: Lab Control Sample  
Prep Type: Total  
Prep Batch: 12A0202\_P

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2-Dibromoethane	20.0	19.1		ug/l		95.3	80 - 140
1,2-Dichloroethane	20.0	18.4		ug/l		92.1	75 - 135
Benzene	20.0	18.5		ug/l		92.4	80 - 120
Toluene	20.0	19.1		ug/l		95.4	80 - 125
Ethylbenzene	20.0	17.8		ug/l		89.2	80 - 130
Xylenes (total)	60.0	54.6		ug/l		91.0	80 - 130
Methyl tert-butyl ether	20.0	17.3		ug/l		86.4	80 - 135
Naphthalene	20.0	18.9		ug/l		94.5	60 - 150
1,2,4-Trimethylbenzene	20.0	18.5		ug/l		92.6	75 - 125
1,3,5-Trimethylbenzene	20.0	19.4		ug/l		96.8	75 - 135
Isopropylbenzene	20.0	18.6		ug/l		93.2	80 - 140
n-Propylbenzene	20.0	19.5		ug/l		97.5	80 - 130

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
Dibromofluoromethane	97.0		80 - 120
1,2-DCA-d4	94.1		80 - 120
Toluene-d8	102		80 - 120
4-BFB	105		80 - 120

7

## QC Sample Results

Client: GeoPro Geologic Services  
Project/Site: 110816

TestAmerica Job ID: PVA0213

### Method: EPA 8260B - Selected Volatile Organic Compounds (Including BTEX) per EPA Method 8260B (Continued)

Lab Sample ID: 12A0202-BSD1  
Matrix: Water  
Analysis Batch: 12A0202

Client Sample ID: Lab Control Sample Dup  
Prep Type: Total  
Prep Batch: 12A0202\_P

Analyte	Spike Added	LCS Dup Result	LCS Dup Qualifier	Unit	D	%Rec	Prep Batch: 12A0202_P		RPD Limit
							%Rec. Limits	RPD	
1,2-Dibromoethane	20.0	18.9		ug/l		94.4	80 - 140	0.896	25
1,2-Dichloroethane	20.0	18.6		ug/l		93.2	75 - 135	1.13	25
Benzene	20.0	18.4		ug/l		91.8	80 - 120	0.597	25
Toluene	20.0	18.6		ug/l		92.8	80 - 125	2.71	25
Ethylbenzene	20.0	17.2		ug/l		86.1	80 - 130	3.48	25
Xylenes (total)	60.0	53.4		ug/l		89.0	80 - 130	2.19	25
Methyl tert-butyl ether	20.0	17.6		ug/l		88.1	80 - 135	1.89	25
Naphthalene	20.0	19.0		ug/l		95.2	60 - 150	0.685	25
1,2,4-Trimethylbenzene	20.0	18.3		ug/l		91.3	75 - 125	1.47	25
1,3,5-Trimethylbenzene	20.0	19.0		ug/l		94.9	75 - 135	1.98	25
Isopropylbenzene	20.0	18.3		ug/l		91.4	80 - 140	1.95	25
n-Propylbenzene	20.0	18.9		ug/l		94.6	80 - 130	3.02	25

Surrogate	LCS Dup %Recovery	LCS Dup Qualifier	Limits
Dibromofluoromethane	99.4		80 - 120
1,2-DCA-d4	95.7		80 - 120
Toluene-d8	103		80 - 120
4-BFB	105		80 - 120

### Method: NW TPH-Gx - Gasoline Hydrocarbons per NW TPH-Gx Method

Lab Sample ID: 12A0223-BLK1  
Matrix: Water  
Analysis Batch: 12A0223

Client Sample ID: Method Blank  
Prep Type: Total  
Prep Batch: 12A0223\_P

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Hydrocarbons	ND		80.0		ug/l		01/11/12 10:08	01/11/12 12:13	1.00

Surrogate	Blank %Recovery	Blank Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-BFB (FID)	81.5		50 - 150	01/11/12 10:08	01/11/12 12:13	1.00

Lab Sample ID: 12A0223-BS1  
Matrix: Water  
Analysis Batch: 12A0223

Client Sample ID: Lab Control Sample  
Prep Type: Total  
Prep Batch: 12A0223\_P

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Gasoline Range Hydrocarbons	500	580		ug/l		116	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-BFB (FID)	83.7		50 - 150

Lab Sample ID: 12A0223-BSD1  
Matrix: Water  
Analysis Batch: 12A0223

Client Sample ID: Lab Control Sample Dup  
Prep Type: Total  
Prep Batch: 12A0223\_P

Analyte	Spike Added	LCS Dup Result	LCS Dup Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Gasoline Range Hydrocarbons	500	567		ug/l		113	70 - 130	2.32	35

## QC Sample Results

Client: GeoPro Geologic Services  
Project/Site: 110816

TestAmerica Job ID: PVA0213

### Method: NW TPH-Gx - Gasoline Hydrocarbons per NW TPH-Gx Method (Continued)

Lab Sample ID: 12A0223-BSD1  
Matrix: Water  
Analysis Batch: 12A0223

Client Sample ID: Lab Control Sample Dup  
Prep Type: Total  
Prep Batch: 12A0223\_P

Surrogate	LCS Dup	LCS Dup	Limits
	%Recovery	Qualifier	
4-BFB (FID)	82.3		50 - 150

Lab Sample ID: 12A0223-DUP1  
Matrix: Water  
Analysis Batch: 12A0223

Client Sample ID: MW-1-10/20  
Prep Type: Total  
Prep Batch: 12A0223\_P

Analyte	Sample	Sample	Duplicate	Duplicate	Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier				
Gasoline Range Hydrocarbons	ND		ND		ug/l			35

Surrogate	Duplicate	Duplicate	Limits
	%Recovery	Qualifier	
4-BFB (FID)	80.3		50 - 150

7

### Method: EPA 6020 - Dissolved Metals per EPA 6000/7000 Series Methods

Lab Sample ID: 12A0306-BLK1  
Matrix: Water  
Analysis Batch: 12A0306

Client Sample ID: Method Blank  
Prep Type: Dissolved  
Prep Batch: 12A0306\_P

Analyte	Blank	Blank	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Lead	ND		0.00100		mg/l		01/13/12 08:41	01/13/12 19:28	1.00

Lab Sample ID: 12A0306-BS1  
Matrix: Water  
Analysis Batch: 12A0306

Client Sample ID: Lab Control Sample  
Prep Type: Dissolved  
Prep Batch: 12A0306\_P  
%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits

Lab Sample ID: 12A0306-MS1  
Matrix: Water  
Analysis Batch: 12A0306

Client Sample ID: Matrix Spike  
Prep Type: Dissolved  
Prep Batch: 12A0306\_P  
%Rec.

Analyte	Sample	Sample	Spike	Matrix Spike	Matrix Spike	Unit	D	%Rec	Limits
	Result	Qualifier	Added	Result	Qualifier				
Lead	ND		0.100	0.0859		mg/l		85.9	75 - 125

Lab Sample ID: 12A0306-DUP1  
Matrix: Water  
Analysis Batch: 12A0306

Client Sample ID: Duplicate  
Prep Type: Dissolved  
Prep Batch: 12A0306\_P

Analyte	Sample	Sample	Duplicate	Duplicate	Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier				
Lead	ND		ND		mg/l			20

### Method: EPA 6020 - Total Metals per EPA 6000/7000 Series Methods

Lab Sample ID: 12A0233-BLK1  
Matrix: Water  
Analysis Batch: 12A0233

Client Sample ID: Method Blank  
Prep Type: Total  
Prep Batch: 12A0233\_P

Analyte	Blank	Blank	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Lead	ND		0.00100		mg/l		01/11/12 12:38	01/11/12 19:41	1.00

## QC Sample Results

Client: GeoPro Geologic Services  
Project/Site: 110816

TestAmerica Job ID: PVA0213

Lab Sample ID: 12A0233-BS1  
Matrix: Water  
Analysis Batch: 12A0233

Client Sample ID: Lab Control Sample  
Prep Type: Total  
Prep Batch: 12A0233\_P  
%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Lead	0.100	0.0999		mg/l		99.9	80 - 120

Lab Sample ID: 12A0233-MS1  
Matrix: Water  
Analysis Batch: 12A0233

Client Sample ID: MW-2-9/19  
Prep Type: Total  
Prep Batch: 12A0233\_P  
%Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Result	Matrix Spike Qualifier	Unit	D	%Rec	Limits
Lead	0.00111		0.100	0.0973		mg/l		96.2	75 - 125

Lab Sample ID: 12A0233-MS2  
Matrix: Water  
Analysis Batch: 12A0233

Client Sample ID: Matrix Spike  
Prep Type: Total  
Prep Batch: 12A0233\_P  
%Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Result	Matrix Spike Qualifier	Unit	D	%Rec	Limits
Lead	ND		0.100	0.0932		mg/l		93.2	75 - 125

Lab Sample ID: 12A0233-DUP1  
Matrix: Water  
Analysis Batch: 12A0233

Client Sample ID: MW-1-10/20  
Prep Type: Total  
Prep Batch: 12A0233\_P  
RPD

Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	Unit	D	RPD	Limit
Lead	ND		0.000790		mg/l		0.00	20

### Method: NCA SOP - Lab Filtration

Lab Sample ID: 12A0253-BLK1  
Matrix: Water  
Analysis Batch: 12A0253

Client Sample ID: Method Blank  
Prep Type: Total  
Prep Batch: 12A0253\_P

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lab Filtration	ND		1.00		N/A		01/11/12 19:37	01/11/12 19:46	1.00

## Certification Summary

Client: GeoPro Geologic Services  
Project/Site: 110816

TestAmerica Job ID: PVA0213

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Portland	Alaska	Alaska UST	10	UST-012
TestAmerica Portland	Alaska	State Program	10	OR00040
TestAmerica Portland	California	State Program	9	2597
TestAmerica Portland	Oregon	NELAC	10	OR100021
TestAmerica Portland	USDA	USDA		P330-11-00092
TestAmerica Portland	Washington	State Program	10	C586

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.



## Portland Sample Control Checklist

Work Order #: PVA0213 Date/Time Received: 1-9-12 1415

Client Name: GEORGO

Project Name: SINGERS CHEXRON

Time Zone:  
 EDT/EST     CDT/CST     MDT/MST     PPT/PST     AK     HI     OTHER

### Unpacking Checks:

Cooler (s): 1

Temperature (s): 5.6°C

Digi #1  Digi #2  IR Gun  (  Plastic  Glass )

IR Gun- Degree

Plastic

Ice used: (circle one) GEL \*  LOOSE     BLUE     NONE    OTHER: \_\_\_\_\_

Initials: JK

### Temperature out of Range:

Not enough or No Ice  
 Ice Melted  
 W/in 4 Hrs of collection  
 Ice Not Needed  
 Other: \_\_\_\_\_

N/A    Yes    No

1. If ESI client, were temp blanks received? If no, document on NOD.
2. Custody seals intact? If ESI client and no is checked, document on NOD.
3. Chain of Custody present? If no, document on NOD. Along with "received by" & "relinquished by" signatures with date & time?
4. Bottles received intact? If no, document on NOD.
5. Sample is not multiphasic? If no, document on NOD.
6. Sampler name/signature documented on COC?
7. Proper container and preservatives used? If no, document on NOD.
8. pH for ESI samples checked and meets requirements? If no, document on NOD.
9. Cyanide samples checked for sulfides and meets requirements? If no, notify PM.
10. HF Dilution required?
11. Sufficient volume provided for all analysis and requested MS/MSD? If no, document on NOD and consult PM before proceeding.
12. Did Chain of Custody agree with samples received? If no, document on NOD.
13. Were VOA vial samples received without headspace?
14. Did samples require preservation with sodium thiosulfate?
15. If yes to #14, was the residual chlorine test negative? If no, document on NOD.
16. Are dissolved/field filtered metals bottles sediment-free? If no, document on NOD.
17. Are analyses with short holding times received in hold?
18. Were special log- in instructions read and followed?
19. Were lab sample labels verified against the client sample labels?

Checklist Reviewed: \_\_\_\_\_ Log-in initials: sm    Labeler initials: sm

Trip Blank  
 not on cool  
 sm