Groundwater Compliance Monitoring Data Summary Report – August 2011

318 State Avenue NE Property
Olympia, Washington

for
City of Olympia

October 10, 2011

GeoEngineers
Earth Science + Technology

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318 State Avenue NE Property
Olympia, Washington

File No. 0415-049-06

October 10, 2011

Prepared for:

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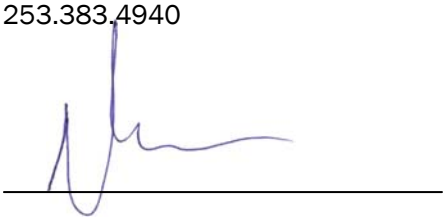

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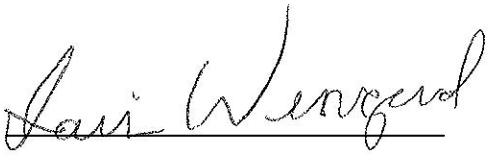

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GeoEngineers

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INTRODUCTION

This data summary report presents the results of groundwater compliance monitoring performed by the City of Olympia (City) in August 2011 at the 318 State Avenue NE property in Olympia, Washington (Property) (Figure 1). Groundwater compliance monitoring at the Property is intended to monitor the natural attenuation of chlorinated organic solvents and associated degradation products identified as chemicals of concern (COCs) in groundwater after completion of the soil remedial action performed in September and October 2009. Remediation of soil and groundwater at the Property is being performed to support the goal of achieving a No Further Action (NFA) determination for the Property under the Washington State Department of Ecology (Ecology) Voluntary Cleanup Program (VCP).

The chlorinated solvents being monitored for natural attenuation as part of groundwater compliance monitoring include tetrachloroethene (PCE) and trichloroethene (TCE) as well as associated degradation products. Monitoring also includes measurement of water quality parameters that are indicators of the natural attenuation. Monitoring of chlorinated solvents, degradation products and natural attenuation parameters is being performed in accordance with the Groundwater Compliance Monitoring Plan (CMP) for the Property (GeoEngineers, 2010a).

Groundwater samples were collected on August 24, 2011 from five monitoring wells that included MW-03, MW-08 and MW-16 through MW-18 (Figure 2). These samples were submitted to TestAmerica Laboratories of Seattle, Washington, for analysis. Additionally, collection of data to estimate groundwater gradients at the Property was performed by measuring the water levels in all monitoring wells at the site. Groundwater samples were collected from selected monitoring wells and groundwater levels were measured in all wells at the site in accordance with the CMP for the Property (GeoEngineers, 2010a).

The following sections summarize the background for compliance monitoring, field sampling activities, groundwater gradients at the Property and results of groundwater sampling and analysis.

BACKGROUND

Remedial actions were performed in September and October 2009 to remove soil and fill material containing volatile organic compounds (VOCs) including chlorinated solvents, metals and carcinogenic polycyclic aromatic compounds (cPAHs) at concentrations greater than MTCA CULs. Soil samples were subsequently collected from the boundary of remedial action areas to assess if soil and fill with contaminant concentrations greater than cleanup levels were present at the limits of the remedial excavation. The results of the soil remedial action are presented in the Remedial Action Construction Report prepared for the Property (GeoEngineers, 2010b).

Compliance monitoring is being performed after completion of soil remedial actions to evaluate the concentrations and natural attenuation of chlorinated organic solvents in groundwater at the Property. The concentrations are compared to the MTCA groundwater CULs for unrestricted land use (ULU). The natural attenuation of chlorinated organic solvents is being monitored via quarterly monitoring that has included the following:

- Installation of two new monitoring wells in May 2010 during the first compliance groundwater monitoring event. Monitoring well MW-17 was installed within Contaminated Soil Zone 1 (CSZ 1) where soil remediation was performed in September and October 2009, and MW-18 was installed north of the CSZ 1 (Figure 2).
- Quarterly groundwater sampling at eight monitoring wells including MW-03, MW-04, MW-08, MW-09, MW-13 and MW-16 through MW-18 in May 2010, August 2010, November 2010 and February 2011.
- Quarterly groundwater sampling at five monitoring wells including MW-03, MW-08 and MW-16 through MW-18 in May 2011 and August 2011.
- Analysis for chlorinated organic solvents and associated degradation products including PCE, TCE, 1,1-dichloroethene (1,1-DCE), cis-dichloroethene (cis-DCE), trans-dichloroethene (trans-DCE) and vinyl chloride (VC).
- Monitoring for indicators of natural attenuation including ferrous iron, sulfate, dissolved oxygen (DO), pH, electrical conductivity and oxidation-reduction potential (ORP).
- Monitoring of groundwater gradients by measuring water levels at all existing wells at the site.

Additionally, analysis for arsenic was performed in accordance with the CMP between May 2010 and February 2011 to provide additional information concerning arsenic concentrations in the area. Arsenic analysis was discontinued after the February 2011 groundwater compliance monitoring event because the arsenic results for sampling performed between May 2010 and February 2011 indicate that arsenic concentrations are less than the MTCA Method A CUL in groundwater on the Property (Table 1). Arsenic concentrations were detected at concentrations greater than the MTCA CUL in locations upgradient of the Property that are likely related to area-wide groundwater conditions or an upgradient source. Ecology concurrence for discontinuing arsenic analysis was provided in an email from Eugene Radcliff, Ecology to Iain Wingard, GeoEngineers dated May 16, 2011.

Ecology also previously requested that groundwater be analyzed for constituents associated with a petroleum hydrocarbon release during the May 2010 groundwater compliance monitoring event to evaluate the potential impacts from a UST encountered at the Property during the remedial action for soil. The sampling and analysis requirements to assess potential impacts from the former UST were documented in an email from Iain Wingard, GeoEngineers to Eugene Radcliff, Ecology dated May 11, 2010. The additional analyses requested by Ecology were performed during the May 2010 compliance monitoring event (GeoEngineers, 2010c). Only benzene was detected in two samples at concentrations well below the MTCA Method A groundwater CUL. Based on the May 2010 sample results, no additional monitoring was necessary to assess potential impacts from the UST or petroleum hydrocarbons at the Property. However, Ecology requested in an email from Eugene Radcliff of Ecology to Iain Wingard of GeoEngineers dated July 19, 2010 that compliance groundwater monitoring include benzene analysis. Therefore, groundwater compliance monitoring performed between May 2010 and February 2011 continued to include analysis for benzene. Benzene analysis was discontinued after the February 2011 compliance monitoring event because the results for sampling performed between May 2010 and February 2011 indicate that benzene is not present at concentrations greater than the MTCA Method A CUL (Table 1). Ecology

concurrence for discontinuing benzene analysis was provided in an email from Eugene Radcliff, Ecology to Iain Wingard, GeoEngineers dated May 16, 2011.

Eight groundwater wells were sampled during the May 2010, August 2010, November 2010 and February 2011 groundwater compliance monitoring events. The number of groundwater monitoring locations were reduced from eight to five during the May 2011 compliance monitoring event as the results of groundwater compliance monitoring performed between May 2010 and February 2011 indicate that the concentrations of chlorinated organic solvents and associated degradation products are less than the MTCA CULs at monitoring well locations MW-13, MW-04, MW-17 and MW-09 (Table 1). Ecology concurrence for discontinuing groundwater monitoring at monitoring well locations MW-13, MW-04, and MW-09 was provided in an email from Eugene Radcliff, Ecology to Iain Wingard, GeoEngineers dated May 16, 2011. Groundwater compliance monitoring is continuing to be performed at MW-17 to monitoring upgradient/background conditions on the Property.

FIELD ACTIVITIES

Groundwater compliance monitoring samples were collected on August 24, 2011 using low-flow/low-turbidity sampling techniques to minimize the suspension of particulates in the samples. Groundwater samples were obtained from the wells using dedicated submersible electric pumps (Whale Pump Brand) with dedicated flexible vinyl tubing. Groundwater was pumped at approximately 0.5 liters per minute from the approximate mid-point of the screened interval to collect the samples.

Water quality parameters were measured during purging using a Horiba U-22 with a flow-through-cell. The measured water quality parameters included electrical conductivity, DO, pH, turbidity, ORP and temperature. Groundwater samples were collected once the water quality parameters varied by less than 10 percent on three consecutive measurements. All field measurements were documented on the field logs.

Following well purging, the flow-through-cell was disconnected and the groundwater samples were collected in appropriate laboratory-prepared and -provided containers. The samples were placed into a cooler with ice and delivered to TestAmerica Laboratory in Fife, Washington, for analysis following appropriate chain-of-custody procedures. Purge water was stored in labeled 55-gallon drums for future off-site disposal. The groundwater samples were submitted for the following analyses to provide results for chlorinated organic solvents and associated degradation products as well as water quality parameters as specified in the CMP:

- VOCs by Environmental Protection Agency (EPA) Method 8260
- Sulfate by EPA Method 300.0

Ferrous iron concentrations were evaluated in the field using a Hach field test kit and the results were recorded on the field logs prior to collection of samples for laboratory analysis.

GROUNDWATER GRADIENTS

Information necessary to estimate groundwater gradients at the Property were obtained during the August 2011 sampling event by collecting depth to water measurements at all existing monitoring wells. The depth to water measurements were collected from all existing monitoring wells within a close timeframe (i.e., within approximately 20 minutes) prior to performing any groundwater sampling. The groundwater gradients measured in August 2011 indicate a northerly to northwesterly groundwater flow direction (Figure 3), which is generally consistent with previous groundwater gradients measured at the Property.

ANALYTICAL RESULTS

The results from groundwater sample collection and analysis performed in August 2011 are summarized in the following sections. Table 1 summarizes the results for the chemical analyses performed as part of groundwater compliance monitoring in August 2011. Table 1 also includes the results from groundwater compliance monitoring performed in May 2010, August 2010, November 2010, February 2011 and May 2011 for comparison purposes. Table 2 summarizes water quality and natural attenuation parameter measurements collected in August 2011 and also includes the results from May 2010, August 2010, November 2010, February 2011 and May 2011 for comparison. Finally, Appendix A contains the laboratory analytical reports and Appendix B contains the Data Quality Assessment Report presenting the results of data validation of the chemical analyses performed in August 2011.

Groundwater Compliance Monitoring Analyses

Natural Attenuation Parameters

The geochemical indicators of natural attenuation measured in August 2011 are generally similar to the August 2010 compliance event, which indicate that reductive conditions are returning in groundwater downgradient of soil remediation area CSZ 1 (Table 2). The return of reductive conditions are indicated by lower sulfate and higher ferrous iron concentrations in groundwater collected from monitoring wells MW-03, MW-08, MW-16, and MW-18. The reductive conditions measured downgradient of the soil remediation area CSZ 1 are likely related to seasonal groundwater conditions in August resulting from decreased precipitation and associated decrease in stormwater infiltration on and around the Property. The groundwater conditions in August 2011 are generally more favorable for degradation of chlorinated solvents (i.e., trichloroethene)..

Chlorinated Organic Solvents and Associated Degradation Products

TCE, cis-DCE, trans-DCE and/or VC were detected in groundwater samples collected from monitoring wells MW-17, MW-03, MW-08, MW-16 and MW-18 in August 2011 (Table 1). The detected concentrations of TCE, cis-DCE and trans-DCE at the Property continue to be well below the MTCA groundwater CULs.

The detected concentration of VC in groundwater from monitoring well MW-17 was less than the MTCA Method A CUL. VC was detected in the groundwater samples collected from monitoring wells MW-03, MW-08, MW-16 and MW-18 during the August 2011 sampling event at concentrations greater than the MTCA Method A CUL (Table 1 and Figure 4).

DISCUSSION

Natural Attenuation of Chlorinated Solvents and Associated Degradation Products in Groundwater

Soil remedial actions were performed at CSZ 1 in September and October 2009 to remove material with chemical concentrations greater than soil cleanup levels that was a source of chlorinated compounds in groundwater. Prior to remedial actions for soil, TCE and VC were detected at concentrations greater than CULs in groundwater. As previously stated, VC is the remaining chlorinated compound present in groundwater at the Property at a concentration greater than CULs. The results of the August 2011 compliance monitoring indicate that the VC concentrations rebounded to concentrations similar to May and August 2010.

Continued temporal analysis of the detected concentrations of chlorinated compounds present in groundwater at the Property was performed to assess trends in chlorinated compound concentrations. The detected chlorinated compound concentrations plotted through time are presented in Figures 5 through 9. The data presented for monitoring wells MW-03, MW-08 and MW-16 include the results of the groundwater monitoring event performed prior to remedial actions for soil (i.e., March 2009) as well as the six groundwater monitoring events that have been performed after the completion of soil remedial actions (i.e., May 2010, August 2010, November 2010, February 2011, May 2011 and August 2011). The data presented for monitoring wells MW-17 and MW-18 include the six groundwater monitoring events performed after the soil remedial actions (i.e., May 2010, August 2010, November 2010, February 2011, May 2011 and August 2011) as these wells were installed after completion of the soil remedial actions. The following summarizes the results of the trend analysis:

- MW-17 – Monitoring well MW-17 is located within CSZ 1 and was installed after the completion of remedial actions for soil (Figure 4). Residual concentrations of PCE, TCE, and cis-DCE have been detected in groundwater from MW-17 at concentrations at least and order of magnitude less than the CULs (Figure 5 and Table 1). VC has also been detected in groundwater from MW-17 at a concentration less than the CUL. VC concentrations decreased and then VC was not detected in groundwater during the November 2010 and February 2011 monitoring events following soil remedial actions. VC was detected during the May 2011 event but at a concentration an order of magnitude below the MTCA CUL and at the detection limit. VC was not detected during the August 2011 event.
- MW-03 – Monitoring well MW-03 is located downgradient/crossgradient of soil remedial action area CSZ 1 (Figure 4). The concentrations of VC, TCE and cis-DCE in groundwater from MW-03 decreased after completion of soil remedial actions at CSZ 1 in samples collected in May and August 2010 and the concentration of VC was detected at a concentration less than the MTCA Method A CUL in August 2010 (Figure 6 and Table 1). The concentrations of VC, TCE and cis-DCE in groundwater increased between August 2010 and November 2010 likely related to higher groundwater levels at the Property. The concentration of VC has been observed to decrease in samples collected during the February, May, and August 2011 events. The concentrations of TCE, cis-DCE, and trans-DCE also decreased in concentration in groundwater from monitoring well MW-03 between February and August 2011 and were less than the MTCA CUL.

- MW-08 – Monitoring well MW-08 is located downgradient of soil remedial action area CSZ 1 (Figure 4). Chlorinated organic compounds have not been detected in groundwater from MW-08, except for VC. The concentration of VC in groundwater from MW-08 decreased to concentrations below the CUL after completion of soil remedial actions at CSZ 1 and was not detected in the sample collected in February 2011 (Figure 7 and Table 1). VC was also detected at a concentration less than the MTCA CUL during the May 2011 compliance monitoring event. The concentration of VC in groundwater from MW-08 in August 2011 (i.e., 0.21 µg/L) increased to just above the MTCA CUL (i.e., 020 µg/L) during the August 2011 compliance monitoring event.
- MW-16 – Monitoring well MW-16 is located downgradient of soil remedial action area CSZ 1 (Figure 4). Similar to MW-08, the concentration of VC in groundwater from MW-16 decreased after completion of soil remedial actions at CSZ 1. VC was detected MW-16 at a concentration less than the MTCA Method A CUL during the May 2011 monitoring event (Figure 8 and Table 1). VC was detected at a concentration greater than the MTCA CUL during the August 2011 event. The concentrations of TCE, cis-DCE, and trans-DCE remain at least an order of magnitude less than the CULs for these compounds.
- MW-18 – Monitoring well MW-18 is located downgradient of soil remedial action area CSZ 1 (Figure 4). The concentration of VC in groundwater from MW-18 decreased between May 2010 and February 2011 after completion of soil remedial actions at CSZ 1 (Figure 9 and Table 1). The VC concentration at monitoring well MW-18 increased during the May 2011 and August 2011 compliance events which is most likely attributed to residual VC concentrations migrating from the upgradient monitoring well location MW-03. The concentrations of TCE, cis-DCE and trans-DCE remain less than the CULs for these compounds.

Overview of Groundwater Compliance Monitoring Results

The results of six quarters of post-soil remedial action groundwater compliance monitoring indicate that the concentrations of VC have generally decreased in groundwater on the Property. VC has been detected at a concentration less than the MTCA Method A CUL in groundwater from monitoring wells MW-17, MW-03, MW-08, and MW-16 during at least one monitoring event. The observed concentrations of PCE and TCE and associated degradation products cis-DCE and trans-DCE in groundwater samples collected from the Property remain well below the CULs for these compounds.

Four locations had VC concentrations greater than the MTCA CUL in groundwater during the August 2011 monitoring event (i.e., MW-03, MW-08, MW-16 and MW-18) (Figure 4 and Table 1). The concentrations of VC increased in groundwater from MW-08, MW-16, and MW-18 during the August 2011 monitoring event and decreased in MW-03. The observed VC concentrations during the August 2011 compliance event were similar to the VC concentrations detected during the May and August 2010 compliance monitoring events.

Geochemical indicators of natural attenuation have fluctuated between reductive and oxidative conditions during previous compliance monitoring events. Reductive conditions appear to have returned during the August 2011 compliance monitoring event. We anticipate that more oxidative conditions will return during the fall months and will be observed during the November 2011 compliance monitoring event. The groundwater conditions observed during the August 2011 event

and previously observed at the Property (i.e., fluctuation between reductive and oxidative conditions) are anticipated to be favorable to the continued breakdown of chlorinated solvents and associated degradation products.

Future Groundwater Compliance Monitoring

It is our opinion that the concentrations of chlorinated organic solvents and associated degradation products will continue to naturally attenuate in groundwater at the Property. The next round of groundwater compliance monitoring is scheduled to be performed in November 2011 in accordance with the CMP.

REFERENCES

Email from Iain Wingard, GeoEngineers to Eugene Radcliff, Ecology "Subject: City of Olympia Groundwater Compliance Monitoring," dated May 11, 2010.

Email from Eugene Radcliff of Ecology to Iain Wingard of GeoEngineers, "Subject: State Avenue Property May 2010 Groundwater Compliance Monitoring Report," dated July 19, 2010.

Email from Eugene Radcliff, Ecology to Iain Wingard, GeoEngineers, "Subject: Ecology response to the February 2011 Groundwater Monitoring Report," dated May 16, 2011.

GeoEngineers 2010a, Groundwater Compliance Monitoring Plan, 318 State Avenue NE, Olympia, Washington, April 16, 2010.

GeoEngineers 2010b, Remedial Action Construction Report, 318 State Avenue NE, Olympia, Washington, January 5, 2010.

GeoEngineers 2010c, Groundwater Compliance Monitoring Data Summary Report – May 2010, 318 State Avenue NE, Olympia, Washington, July 16, 2010.

LIMITATIONS

This Groundwater Monitoring Report has been prepared for use by the City of Olympia. GeoEngineers has performed these services in general accordance with the scope and limitations of our proposal.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with the generally accepted environmental science practices for groundwater monitoring in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

TABLE 1

SUMMARY OF GROUNDWATER COMPLIANCE MONITORING PARAMETERS[1] - AUGUST 2011

318 STATE AVENUE NE

OLYMPIA, WASHINGTON

			Volatile Organic Compounds							Total Metals
		Analyte	**Tetrachloroethene**	**Trichloroethene**	**1,1-Dichloroethene**	**Cis-1,2-Dichloroethene**	**Trans-1,2-Dichloroethene**	**Vinyl Chloride**	**Benzene**	**Arsenic**
		Unit	**(µg/l)**	**(µg/l)**	**(µg/l)**	**(µg/l)**	**(µg/l)**	**(µg/l)**	**(µg/l)**	**(mg/L)**
		MTCA Method A Cleanup Level	**5**	**5**	**4,000,000 [2]**	**800,000 [2]**	**1,600,000 [2]**	**0.2**	**5**	**0.005**
Location	**Sample ID**	**Sample Date**								
MW-13[9]	MW13-052510-W	05/25/10	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.02 U	NA	**0.0041 J**
	MW13-082410-W	08/24/10	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.02 U	0.1 U	**0.058 J**
	MW13-112210-W	11/22/10	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.02 U	0.1 U	0.0004 UJ
	MW13-022211-W	02/22/11	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.02 U	0.1 U	**0.0012**
MW-04[9]	MW4-052510-W	05/25/10	0.1 U	**0.28**	0.1 U	**0.11**	0.1 U	**0.12**	NA	**0.0045 J**
	MW4-082410-W	08/24/10	0.1 U	**0.14**	0.1 U	**0.14**	0.1 U	**0.074**	0.1 U	**0.0051 J**
	MW4-112210-W	11/22/10	0.1 U	**0.34**	0.1 U	0.1 U	0.1 U	**0.065**	0.1 U	**0.00067 J**
	MW4-022211-W	02/22/11	0.1 U	**0.25**	0.1 U	0.1 U	0.1 U	**0.053**	0.1 U	**0.0023**
MW-17	MW17-052410-W	05/24/10	0.1 UJ	**0.26 J**	0.1 UJ	0.1 UJ	0.1 UJ	**0.084 J**	**0.17 J**	**0.0031 J**
	MW17-082410-W	08/24/10	0.1 U	0.1 U	0.1 U	**0.11**	0.1 U	**0.025**	0.1 U	0.002 UJ
	MW17-112210-W	11/22/10	0.1 U	**0.22**	0.1 U	0.1 U	0.1 U	0.02 U	0.1 U	**0.0016 J**
	MW17-022211-W	02/22/11	0.1 U	**0.18**	0.1 U	0.1 U	0.1 U	0.02 U	0.1 U	**0.0012**
	MW17-052511-W	05/25/11	**0.1**	**0.21**	0.1 U	0.1 U	0.1 U	**0.02**	NA[10]	NA[10]
	MW17-082411-W	08/24/11	0.1 U	**0.18**	0.1 U	0.1 U	0.1 U	0.02 U	NA[10]	NA[10]
MW-09[9]	MW9-052510-W	05/25/10	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.02 U	NA	**0.0016 J**
	MW9-082410-W	08/24/10	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.02 U	0.1 U	0.002 UJ
	MW9-112210-W	11/22/10	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.02 U	0.1 U	0.0004 UJ
	MW9-022211-W	02/22/11	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.02 U	0.1 U	**0.00059**
MW-03	MW3-052410-W	05/24/10	0.1 U	**0.48**	0.1 U	**0.14**	0.1 U	**0.48**	0.1 U	**0.002 J**
	MW3-082510-W	08/25/10	0.1 U	**0.26**	0.1 U	**0.11**	0.1 U	**0.12**	0.1 U	0.002 UJ
	MW3-112410-W	11/24/10	0.1 U	**1.3**	0.1 U	**0.28**	0.1 U	**1.1**	0.1 U	0.0004 UJ
	MW3-022311-W	02/23/11	0.1 U	**1.6**	0.1 U	**0.59**	0.1 U	**0.92**	0.1 U	**0.0010**
	MW3-052511-W	05/25/11	0.1 U	**1.5**	0.1 U	**0.6**	**0.15**	**0.83**	NA[10]	NA[10]
	DUP-052511-W[7]	05/25/11	0.1 U	**1.2**	0.1 U	**0.36**	**0.12**	**0.69**	NA[10]	NA[10]
	MW3-082411-W	08/24/11	0.1 U	**0.64 J**	0.1 U	**0.31**	**0.11**	**0.37 J**	NA[10]	NA[10]
	DUP-082411-W[8]	08/24/11	0.1 U	**0.49 J**	0.1 U	**0.23**	0.1 U	**0.27 J**	NA[10]	NA[10]
MW-08	MW8-052410-W	05/24/10	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**0.21**	0.1 U	**0.0027 J**
	DUP-1-052410-W[3]	05/24/10	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**0.23**	0.1 U	**0.0027 J**
	MW8-082510-W	08/25/10	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**0.29**	0.1 U	**0.0045 J**
	DUP-1-082510-W[4]	08/25/10	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**0.29**	0.1 U	**0.0045 J**
	MW8-112410-W	11/24/10	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**0.066**	0.1 U	0.0004 UJ
	MW8-022311-W	02/23/11	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.02 U	0.1 U	**0.0019**
	MW8-052511-W	05/25/11	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**0.04**	NA[10]	NA[10]
	MW8-082411-W	08/24/11	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**0.21**	NA[10]	NA[10]

MW-16	MW16-052410-W	05/24/10	0.1 U	**0.44**	0.1 U	**0.2**	**0.18**	**0.76**	0.1 U	**0.0019 J**
	MW16-082510-W	08/25/10	0.1 U	**0.46**	0.1 U	**0.32**	**0.34**	**1.0**	**0.12**	0.002 UJ
	MW16-112410-W	11/24/10	0.1 U	**0.49**	0.1 U	**0.17**	**0.19**	**0.33**	0.1 U	**0.0013 J**
	DUP-1-112410-W[5]	11/24/10	0.1 U	**0.50**	0.1 U	**0.16**	**0.21**	**0.38**	0.1 U	0.0004 UJ
	MW16-022311-W	02/23/11	0.1 U	**0.42**	0.1 U	**0.13**	**0.13**	**0.22**	0.1 U	**0.0014**
	DUP-1-022311-W[6]	02/23/11	0.1 U	**0.43**	0.1 U	**0.11**	**0.15**	**0.2**	0.1 U	**0.0015**
	MW16-052511-W	05/25/11	0.1 U	**0.47**	0.1 U	0.1 U	**0.16**	**0.18**	NA[10]	NA[10]
	MW16-082411-W	08/24/11	0.1 U	**0.41**	0.1 U	**0.26**	**0.24**	**0.70**	NA[10]	NA[10]
MW-18	MW18-052410-W	05/24/10	0.1 U	**0.62**	0.1 U	**0.28**	**0.16**	**2.3**	**0.2**	**0.0038 J**
	MW18-082510-W	08/25/10	0.1 U	**0.25**	0.1 U	**0.22**	**0.13**	**1.9**	**0.19**	**0.0028 J**
	MW18-112410-W	11/24/10	0.1 U	**0.81**	0.1 U	**0.34**	**0.23**	**1.7**	**0.11**	**0.0032 J**
	MW18-022311-W	02/23/11	0.1 U	**0.72**	0.1 U	**0.3**	**0.16**	**0.9**	0.1 U	**0.0045**
	MW18-052511-W	05/25/11	0.1 U	**0.63**	0.1 U	**0.21**	**0.14**	**1.2**	NA[10]	NA[10]
	MW18-082411-W	08/24/11	0.1 U	**0.4**	0.1 U	**0.39**	**0.24**	**2.3**	NA[10]	NA[10]

See Notes on Page 2

Notes:

[1] The parameters presented are the groundwater compliance monitoring parameters specified in the Groundwater Compliance Monitoring Plan (GeoEngineers 2010) and benzene as requested by Ecology in an email from Eugene Radcliff, Ecology to Iain Wingard, GeoEngineers dated July 19, 2010. Analysis for benzene and arsenic were discontinued as benzene was never detected at a concentration greater than cleanup levels and arsenic concentrations are less than cleanup levels and appear to be associated with regional conditions. Ecology concurrence for discontinuing benzene and arsenic analysis was provided in an email from Eugene Radcliff, Ecology, to Iain Wingard, GeoEngineers, dated May 16, 2011.

[2] A MTCA Method A groundwater cleanup level has not been established; therefore, the MTCA Method B groundwater cleanup level has been provided.

[3] Sample DUP-1-052410-W is a field duplicate of sample MW8-052410-W.

[4] Sample DUP-1-082510-W is a field duplicate of sample MW8-082510-W.

[5] Sample DUP-1-112410-W is a field duplicate of sample MW16-112410-W.

[6] Sample DUP-1-022311-W is a field duplicate of sample MW16-022311-W.

[7] Sample DUP-052511-W is a field duplicate of sample MW3-052511-W.

[8] Sample DUP-082411-W is a field duplicate of sample MW3-082411-W.

[9] Groundwater sampling and analysis at this monitoring well location is no longer a part of the compliance monitoring program. Therefore, groundwater samples were not collected during the current monitoring event. Concurrence for discontinuing sampling and analysis at this monitoring well location was provided in an email from Eugene Radcliff, Ecology, to Iain Wingard, GeoEngineers, dated May 16, 2011.

[10] See Footnote 1.

MTCA = Model Toxics Control Act

µg/l = microgram per liter

U = The analyte was not detected at a concentration greater than the identified reporting limit

UJ = The analyte was not detected at a concentration greater than the identified reporting limit and the reporting limit concentration is estimated

NA = Not analyzed

Green shading indicates sample results for current quarter of monitoring

mg/L = milligram per liter

J = The analyte concentration is estimated

NC = Not Collected.

Bold indicates analyte was detected

Gray shading indicates concentration is greater than cleanup level

TABLE 2

SUMMARY OF GROUNDWATER QUALITY PARAMETERS[1] - AUGUST 2011

318 STATE AVENUE NE
OLYMPIA, WASHINGTON

Location ID	Sample Date	Ferrous Iron (mg/l)	Sulfate (mg/l)	Dissolved Oxygen (mg/l)	pH	Conductivity (uS/m)	Salinity (%)	Total Dissolved Solids (g/l)	Turbidity (NTU)	Temperature (C)	ORP[2] (mv)	Water Level (ft btoc)
MW-13[3]	05/25/10	2.2	6.0	1.23	8.34	156,000	0.1	1	4.74	14.4	-97	2.91
	08/24/10	3.8	1.6	2.21	6.58	999,000	0	0.72	4.16	21.07	-115	3.82
	11/22/10	1.2	8.1	0.98	6.63	400,000	0	0.26	8.97	14.79	6	2.24
	02/22/11	1.0	6.3	0.81	6.56	407,000	0	0.26	0.8	11.12	-43	2.62
	05/25/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	2.85
	08/24/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	3.61
MW-04[3]	05/25/10	4.5	6.7	1.34	7.34	59,500	0	0.38	0.99	13.9	-80	3.29
	08/24/10	3.6	1.2 U	0.72	6.15	645,000	0	0.41	1.82	21.12	-75	4.23
	11/22/10	3.8	3.8	1.97	6.52	371,000	0	0.24	1.8	12.64	-57	2.61
	02/22/11	2.2	2.6	0.99	6.56	255,000	0	0.17	1.08	10.11	-70	2.95
	05/25/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	3.15
	08/24/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	4.11
MW-17	05/24/10	0.0	31	1.78	7	45,700	0	0.3	2.49	13.5	-23	3.83
	08/24/10	0.0	28	0.58	7.04	999,000	0	0.79	9.03	21.5	54	4.53
	11/22/10	0.2	28	0.00	7.16	509,000	0	0.33	10.5	15.64	39	3.32
	02/22/11	0.0	36	0.39	6.78	364,000	0	0.24	7.2	11.39	73	3.62
	05/25/11	0.0	23	0.28	6.65	404,000	NC	NC	5.49	12.48	114	3.67
	08/24/11	0.0	11.9	0.40	6.99	549,000	0	0.35	3.54	19.28	239	4.41
MW-09[3]	05/25/10	1.6	9.1	1.22	8.8	99,900	0	0.6	0.96	14.8	-157	3.65
	08/24/10	2.2	1.2 U	0.99	6.74	1,450,000	0.1	0.9	1.48	23.16	-89	4.44
	11/22/10	0.4	1.9	1.32	7.01	447,000	0	0.29	1.99	15.08	-76	2.92
	02/22/11	0.4	1.7	0.15	7.06	472,000	0	0.31	0	12.73	-114	3.35
	05/25/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	3.42
	08/24/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	4.31
MW-03	05/24/10	0.9	7.5	4.38	9.79	272,000	0.1	1.4	0.89	16.2	-211	4.27
	08/25/10	1.4	1.2 U	0.31	6.96	750,000	0	0.48	0.94	21.32	-133	4.99
	11/24/10	0.8	6.6	0.00	7.04	667,000	0	0.43	0.84	15.53	-94	3.80
	02/23/11	0.6	2.5	0.01	7.1	463,000	0	0.3	2.51	11.26	-117	4.05
	05/25/11	0.8	2.4	0.01	7.07	467,000	NC	NC	0.59	15.12	-130	4.10
	08/24/11	1.1	1 U	0.40	7.2	723,000	0	0.46	0.44	21.02	-90	4.82
MW-08	05/24/10	0.3	10.0	1.30	8.45	245,000	0.1	1.6	0.73	14.9	-145	3.45
	08/25/10	3.0	2.5	0.11	7.06	692,000	0	0.44	1.25	21.68	-155	4.50
	11/24/10	0.6	17	2.33	7.21	546,000	0	0.35	1.24	15.08	-67	3.14
	02/23/11	0.0	7.9	2.04	7.27	332,000	0	0.22	4.98	11.59	-37	3.51
	05/25/11	0.0	8.4	0.73	7.16	374,000	NC	NC	1.02	13.85	37	3.59
	08/24/11	1.4	1.6	0.30	7.25	686,000	0	0.44	0.61	20.04	-117	4.39

MW-16	05/24/10	0.0	20.0	2.44	8.19	26,600	0	0.17	2.9	15.1	-116	4.24
	08/25/10	0.4	42.0	0.04	7.26	698,000	0	0.44	1.2	21.91	-106	5.02
	11/24/10	0.0	28	1.93	7.54	498,000	0	0.36	1.16	15.42	-34	3.68
	02/23/11	0.0	17	5.08	7.53	375,000	0	0.24	2.58	11.53	-9	4.04
	05/25/11	0.0	11	1.02	7.55	331,000	NC	NC	2.28	13.87	64	4.06
	08/24/11	1.2	4.9	1.00	7.66	510,000	0	0.33	1.28	20.26	-56	4.86
MW-18	05/24/10	0.0	34.0	3.92	9.16	90,000	0	0.5	1.9	14.3	-194	4.39
	08/25/10	0.2	11.0	0.00	6.81	719,000	0	0.46	4.12	21.82	-75	5.09
	11/24/10	0.0	38	0.01	7.11	479,000	0	0.31	0.61	15.52	39	3.87
	02/23/11	0.0	23	0.17	7.22	403,000	0	0.26	0.99	11.7	55	4.15
	05/25/11	0.0	17	0.00	7.15	408,000	NC	NC	1.07	12.8	31	4.21
	08/24/11	0.2	18.5	0.50	7.33	741,000	0	0.47	0.48	19.54	-48	4.97

Notes:

[1] Groundwater quality parameters include the analytes ferrous iron and sulfate to evaluate and monitor natural attenuation.

[2] ORP field readings are considered to be an estimate.

[3] Groundwater samplilng and analysis at this monitoring well location is no longer a part of the compliance monitoring program. Therefore, groundwater quality parameters were not collected during the current monitoring event. However, the water level was collected to access the groundwater gradient. Concurrence for discontinuing sampling and analysis at this monitoring well location was provided in an email from Eugene Radcliff, Ecology, to Iain Wingard, GeoEngineers, dated May 16, 2011.

ORP = Oxidation/reduction potential

mg/l = milligrams per liter

g/l = grams per liter

% = percent

mv = Millivolts

uS/m = microSiemens per meter

C = celcius

U = The analyte was not detected at a concentration greater than the identified reporting limit

NTU = nephelometric turbidity unit

Green shading indicates sample results for current quarter of monitoring.

ft btoc = feet below the top of monitoring well casing

NS = Not Sampled. Monitoring well location no longer apart of compliance monitoring program. See Footnote 3.

NC = Not Collected.

N
W E
S

2,000 0 2,000

Feet

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: 2008 Shaded Relief from ESRI, 2008 Topographic Maps from National Geographic Society
Projection: NAD_1983_StatePlane_Washington_North_FIPS_4601_Feet
Datum: D_North_American_1983

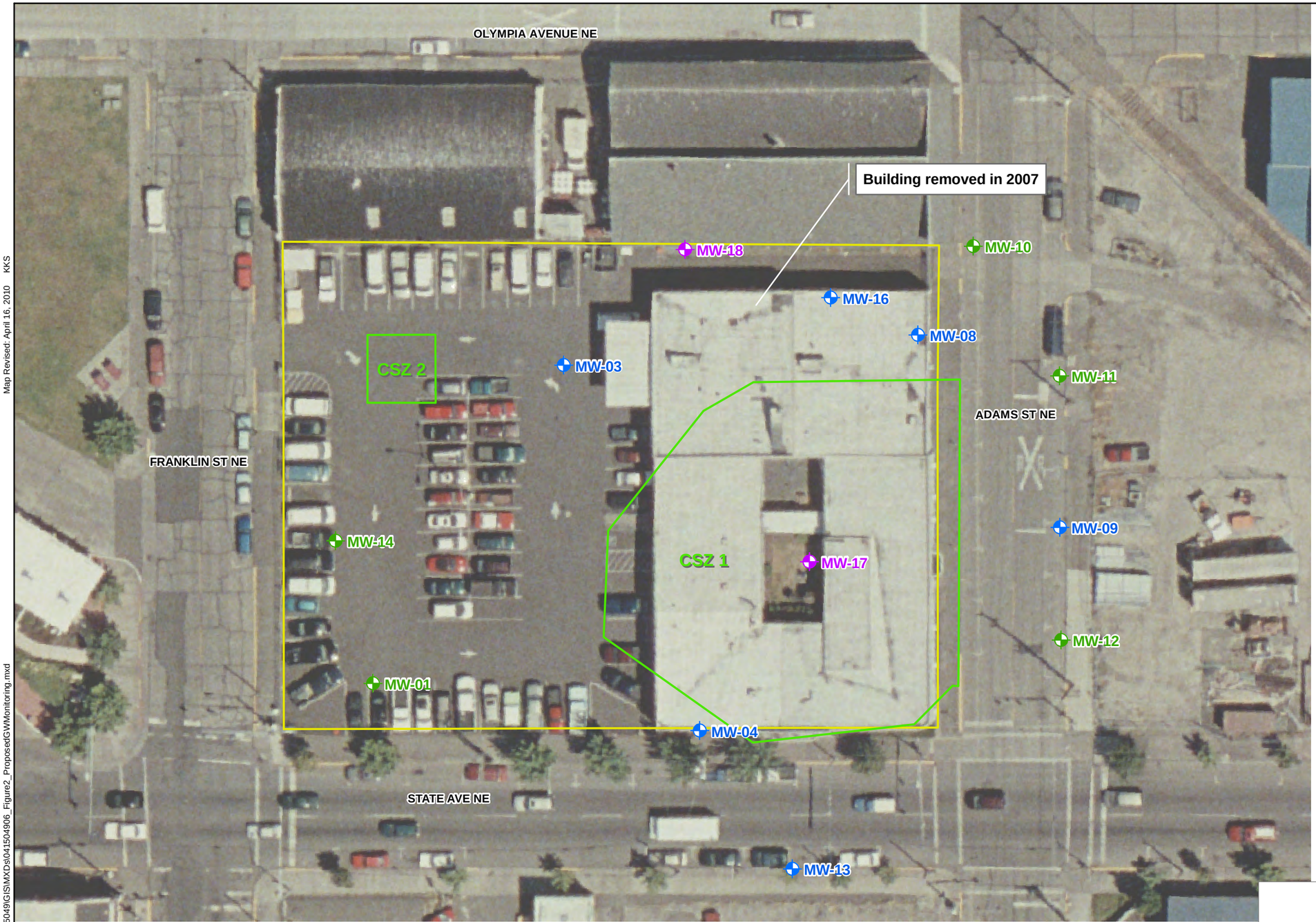
Vicinity Map

318 State Avenue NE
Olympia, Washington

GeoEngineers

Figure 1

Office: TAC Path: \P:\0\0415049\GIS\MXDs\041504906_Figure1_VicinityMap.mxd Map Revised: April 13, 2010 KKS



Legend

- Approximate Property Boundary
- MW-04 — Existing Monitoring Well to be Sampled for Groundwater Analysis
- MW-17 — New Monitoring Well to be Sampled for Groundwater Analysis
- MW-01 — Existing Monitoring Well to be Used to Monitor Groundwater Gradients
- CSZ 1 — Contaminated Soil Zones (CSZ) Remediated in September-October 2009

N
W E
S

40 0 40
Feet

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Sources: Approximate Property Boundary from Thurston County parcels (revised by GeoEngineers).
Aerial photograph (2003) from Thurston County Data Center. Data Frame Rotated 356 degrees.

Projection: NAD_1983_StatePlane_Washington_South_FIPS_4602_Feet
Datum: D_North_American_1983

Groundwater Compliance Monitoring Locations

318 State Avenue NE
Olympia, Washington

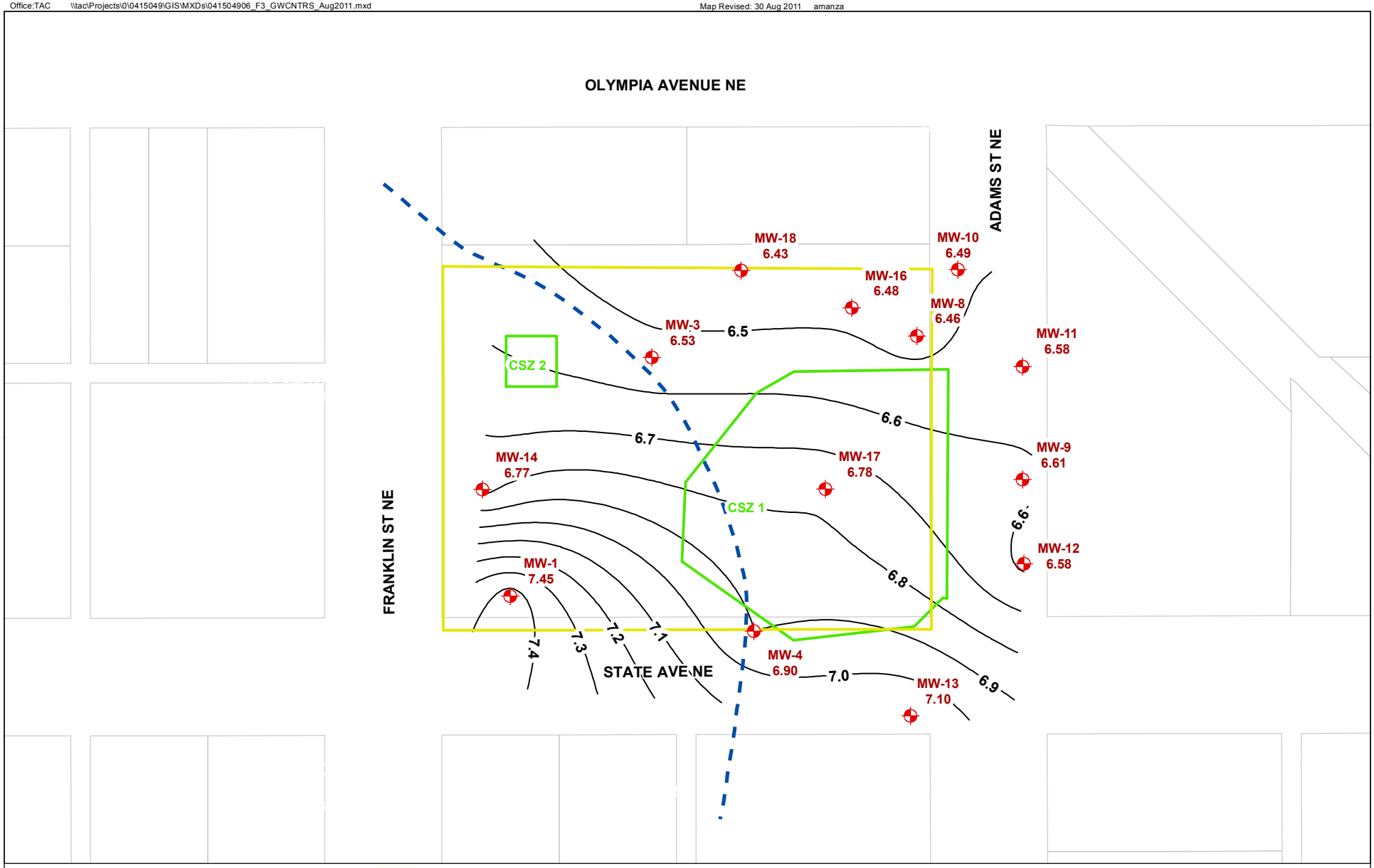
GeoEngineers

Figure 2

Map Revised: April 16, 2010 KKS

Path: P:\0\04150491\GIS\MXDs\041504906_Figure2_ProposedGWMonitoring.mxd

Office: TAC



MW-1
7.45

GeoEngineers Monitoring Well Location, ID and Groundwater Elevations (August 2011) based on mean sea level

Approximate Property Boundary

Parcel Boundary

Historic Shoreline

Remediation Areas

Reference: Approximate Property Boundary from Thurston County parcels (revised by GeoEngineers). Parcels from Thurston County.

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

70 0 70
Feet

Potentiometric Surface Map - August 2011 Measurements

318 State Avenue NE
Olympia, Washington

GeoEngineers

Figure 3

Legend

- MW-03 — Monitoring Well Sampled for Groundwater Analysis and used to Monitor Groundwater Gradients
- MW-01 — Monitoring Well used to Monitor Groundwater Gradients
- Vinyl Chloride at concentrations greater than MTCA Method A (0.2 ug/L)
- CSZ 1 — Contaminated Soil Zones (CSZ) Remediated in September-October 2009
- Approximate Property Boundary

Well	Event	Result *
MW-03		
Vinyl Chloride	August-11	0.37 ug/L
MW-08		
Vinyl Chloride	August-11	0.21 ug/L
MW-16		
Vinyl Chloride	August-11	0.70 ug/L
MW-18		
Vinyl Chloride	August-11	2.3 ug/L

N W E S

40 0 40
Feet

Notes:
1. MTCA = Model Toxics Control Act, mg/L = milligrams per liter, ug/L = micrograms per liter
2. The locations of all features shown are approximate.
3. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Sources: Approximate Property Boundary from Thurston County parcels (revised by GeoEngineers). Aerial photograph (2009) from Thurston County Data Center. Data Frame Rotated 356 degrees.

Projection: NAD_1983_StatePlane_Washington_South_FIPS_4602_Feet
Datum: D_North_American_1983

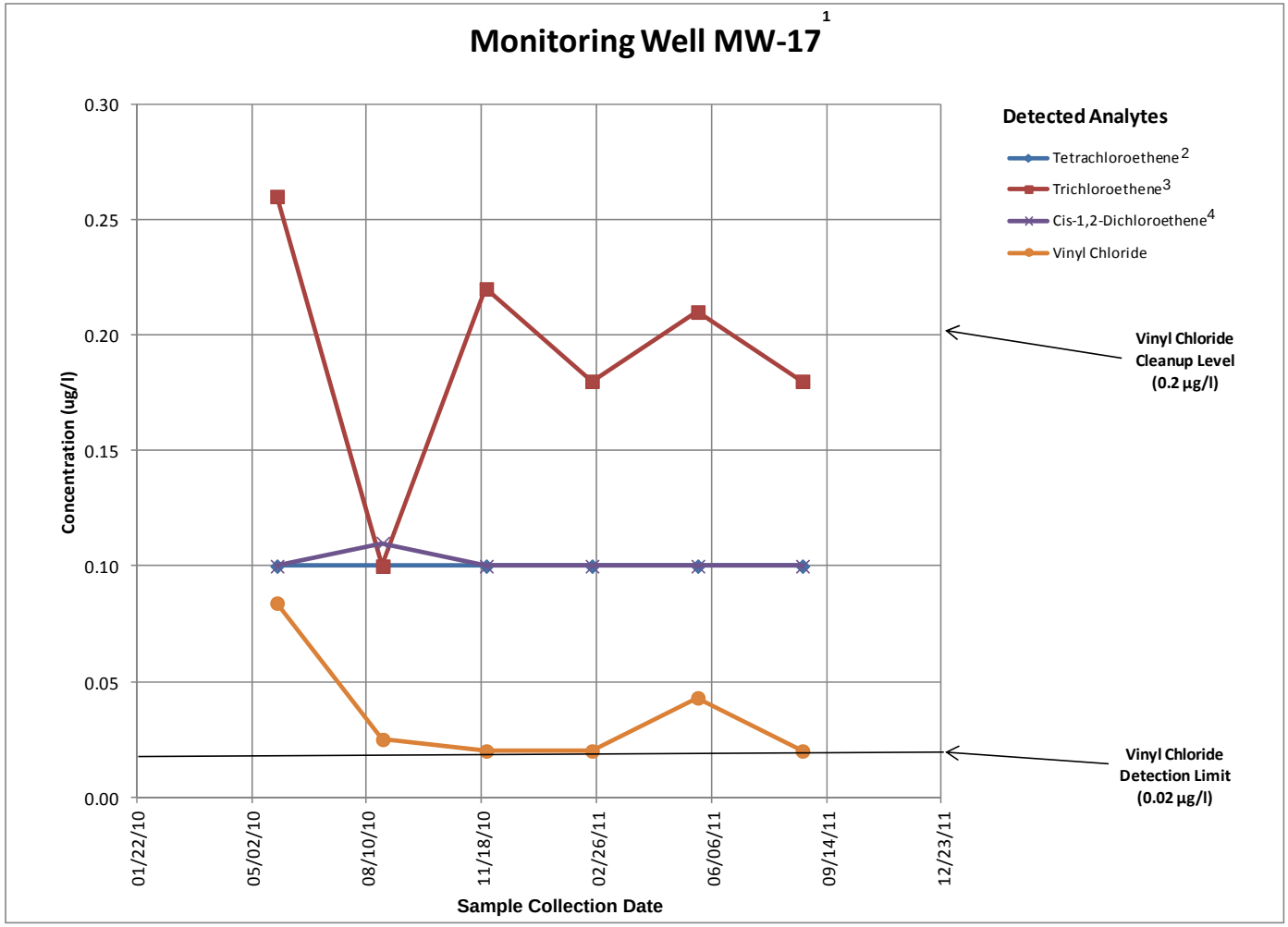
Chemical Analytical Results Exceeding Groundwater Compliance Criteria

318 State Avenue NE
Olympia, Washington

GeoEngineers

Figure 4

Map Revised: April 14, 2011 AMM:TCK
Path: P:\0\0415049\GIS\MXDs\0415049 06_F4_CHEM_EXCEEDANCES_FEB2011.mxd
Office: TAC



Notes:

[1] MW-17 was installed in the Contaminated Soil Zone 1 (CSZ 1) after remedial actions for soil were completed on October 14, 2009.

[2] The concentrations of Tetrachloroethene (PCE) are less than the PCE cleanup level of 5 µg/l.

[3] The concentrations of trichloroethene (TCE) are less than the TCE cleanup level of 5 µg/l.

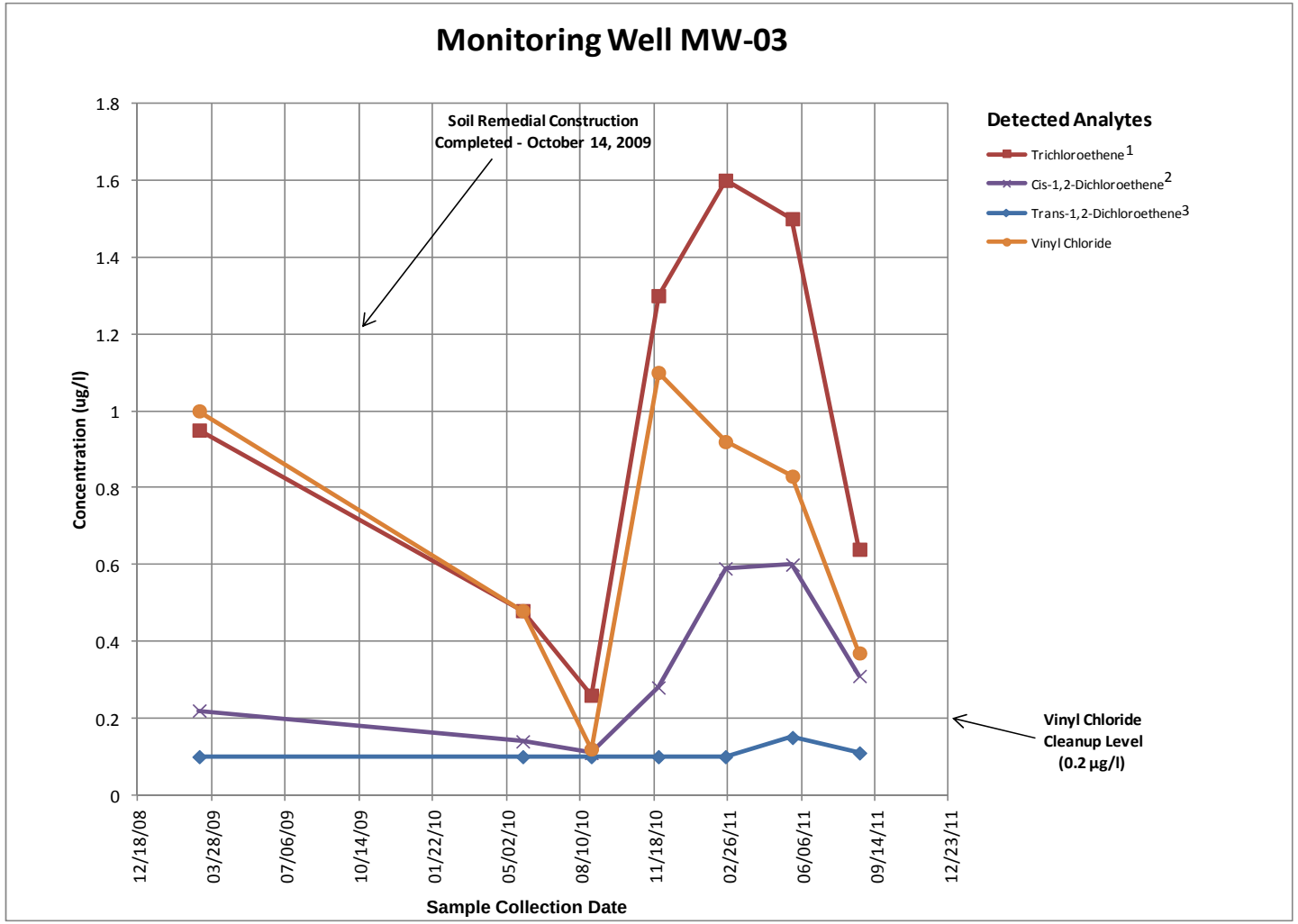
[4] The concentrations of Cis-1,2-Dichloroethene (Cis-DCE) are less than the Cis-DCE cleanup level of 800,000 µg/l.

Trend Analysis – August 2011

318 State Avenue NE
Olympia, Washington

GeoEngineers

Figure 5



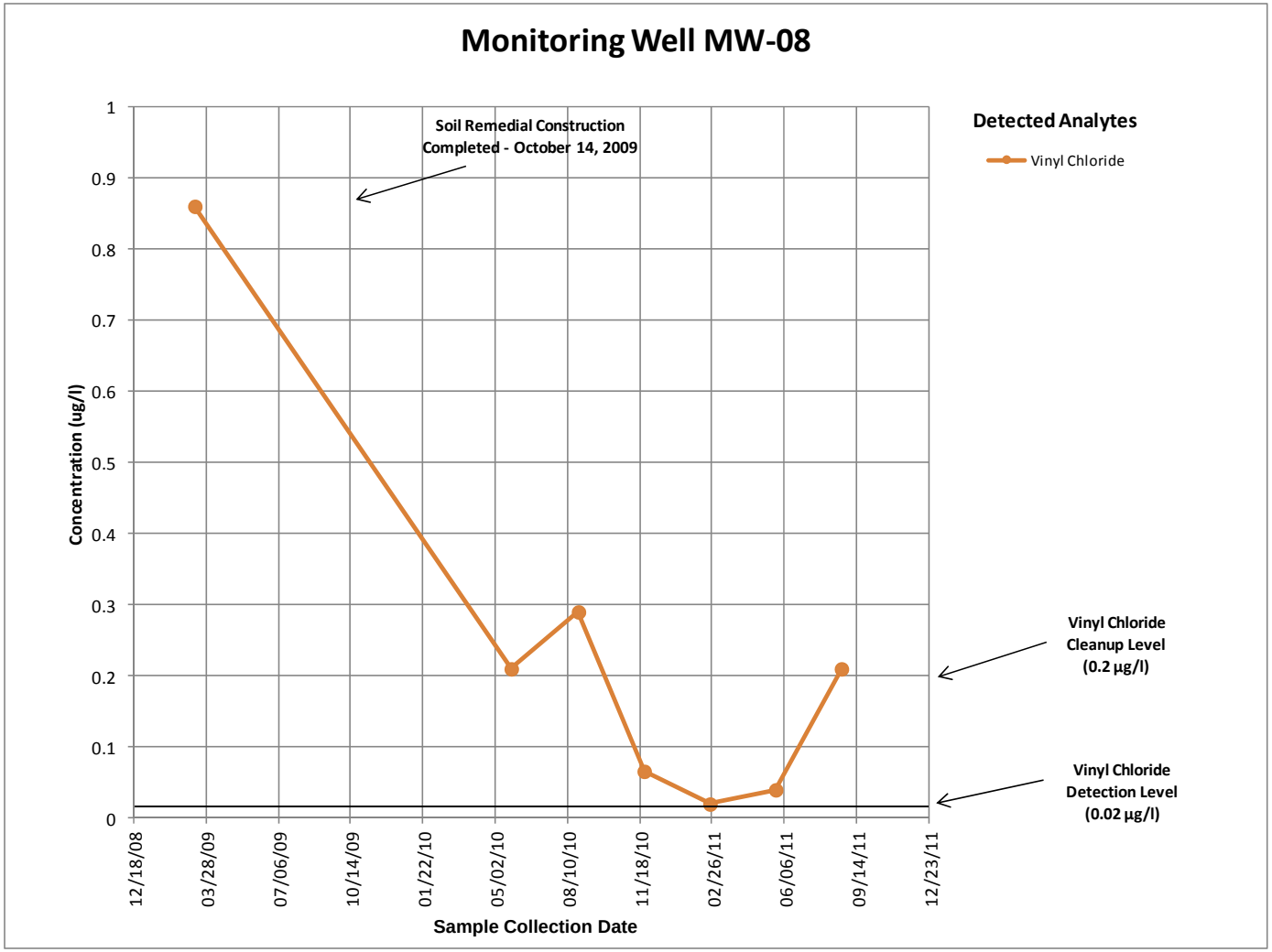
Notes:
[1] The concentrations of trichloroethene (TCE) are less than the TCE cleanup level of 5 µg/l.
[2] The concentrations of Cis-1,2-Dichloroethene (Cis-DCE) are less than the Cis-DCE cleanup level of 800,000 µg/l.
[3] The concentration of trans-1,2-Dichloroethene (trans-DCE) detected during the August 2011 event is less than the trans-DCE cleanup level of 1,600,000 µg/l.

Trend Analysis – August 2011

318 State Avenue NE
Olympia, Washington

GeoEngineers

Figure 6

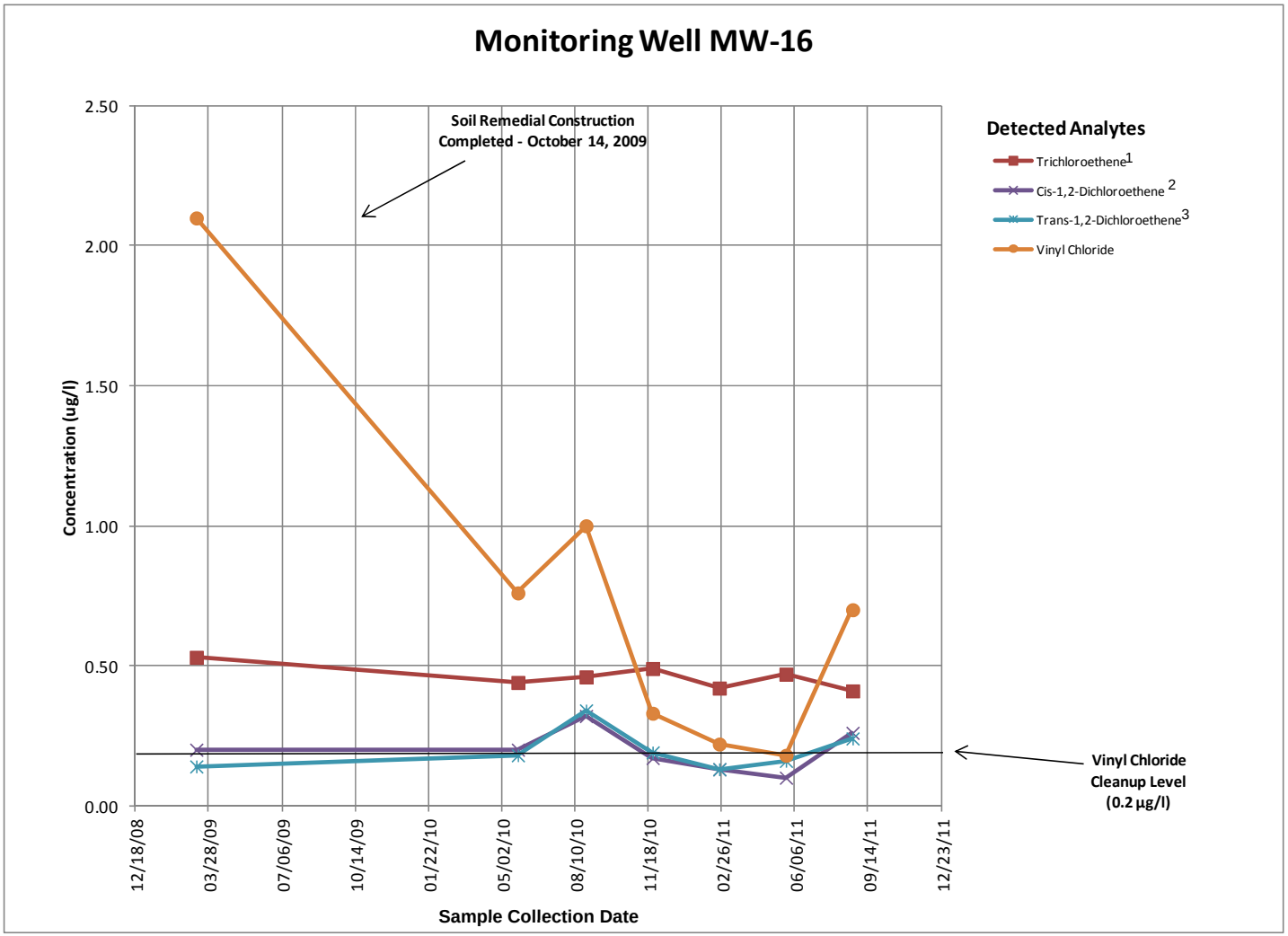


Trend Analysis – August 2011

318 State Avenue NE
Olympia, Washington

GeoEngineers

Figure 7



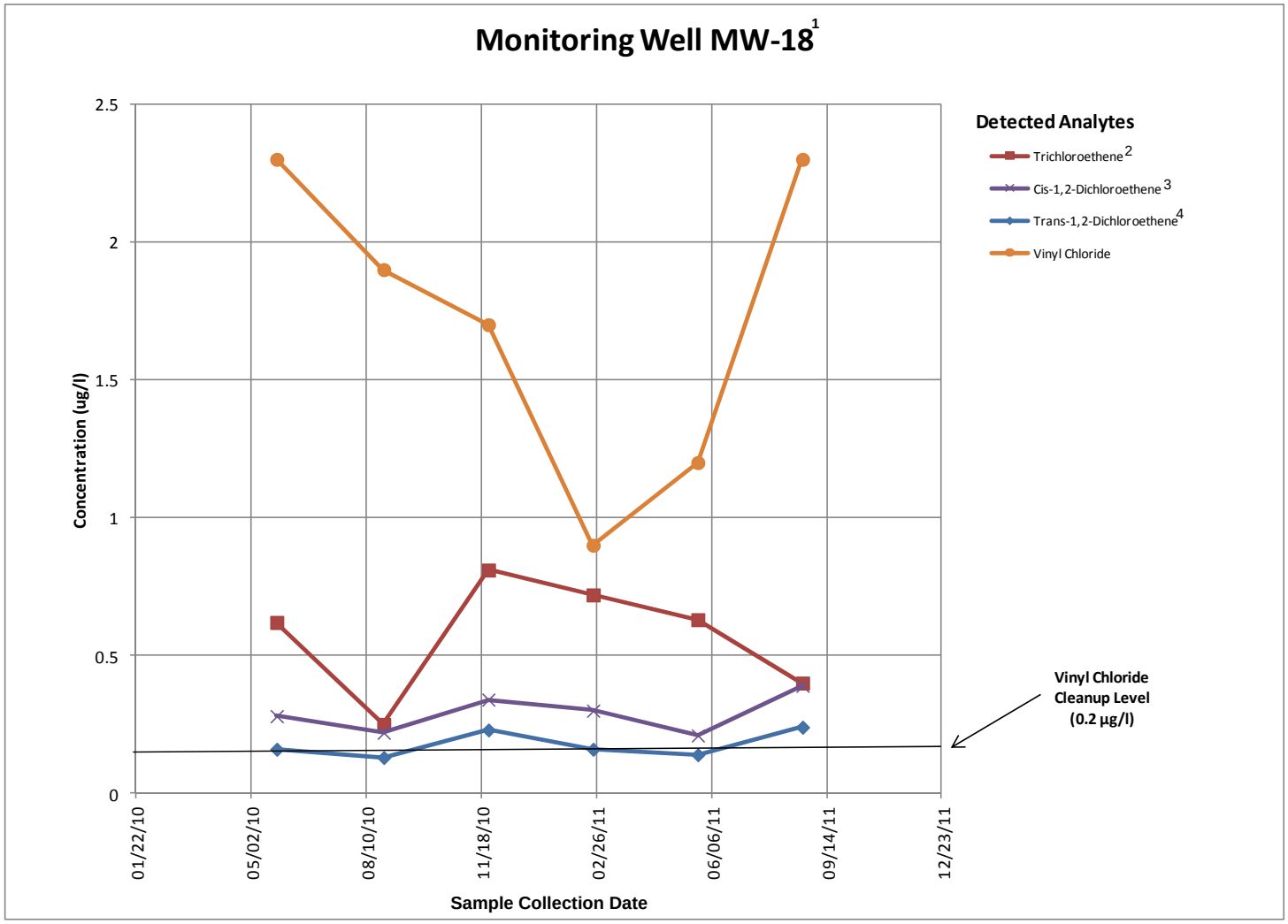
Notes:
[1] The concentrations of trichloroethene (TCE) are less than the TCE cleanup level of 5 µg/l.
[2] The concentrations of Cis-1,2-Dichloroethene (Cis-DCE) are less than the Cis-DCE cleanup level of 800,000 µg/l.
[3] The concentrations of trans-1,2-Dichloroethene (trans-DCE) are less than the trans-DCE cleanup level of 1,600,000 µg/l.

Trend Analysis – August 2011

318 State Avenue NE
Olympia, Washington

GeoEngineers

Figure 8



Notes:
[1] MW-18 was installed after remedial actions for soil were completed on October 14, 2009.
[2] The concentrations of trichloroethene (TCE) are less than the TCE cleanup level of 5 µg/l.
[3] The concentrations of Cis-1,2-Dichloroethene (Cis-DCE) are less than the cis-DCE cleanup level of 800,000 µg/l.
[4] The concentrations of trans-1,2-Dichloroethene (trans-DCE) are less than the trans-DCE cleanup level of 1,600,000 µg/l.

Trend Analysis – August 2011

318 State Avenue NE
Olympia, Washington

GeoEngineers

Figure 9

APPENDIX A
Laboratory Reports

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

Job Number: 580-28246-1

Job Description: City of Olympia

For:
GeoEngineers Inc
1101 Fawcett, Suite 200
Tacoma, WA 98402

Attention: Mr. Iain Wingard

Approved for release.
Melissa Armstrong
Project Manager I
9/8/2011 5:42 PM

Melissa Armstrong
Project Manager I
melissa.armstrong@testamericainc.com
09/08/2011

cc: Garrett Leque
Nick Rohrbach

TestAmerica Tacoma is a part of TestAmerica Laboratories, Inc.

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan and meet all requirements of NELAC. All data have been found to be compliant with laboratory protocol, with the exception of any items noted in the case narrative.

Table of Contents

Table of Contents

CASE NARRATIVE

Client: GeoEngineers Inc
Project: City of Olympia
Report Number: 580-28246-1

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

It should be noted that samples with elevated Reporting Limits (RLs) resulting from a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the RLs are an unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes within the calibration range of the instrument or that reduces the interferences thereby enabling the quantification of target analytes.

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

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 08/24/2011; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 8.0 C.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

VOLATILE ORGANIC COMPOUNDS (GC-MS) LOW LEVEL
Samples MW-3-082411-W (580-28246-1), MW-8-082411-W (580-28246-2), MW-16-082411-W (580-28246-3), MW-17-082411-W (580-28246-4), MW-18-082411-W (580-28246-5), DUP-082411-W (580-28246-6) and TRIP BLANK (580-28246-7) were analyzed for volatile organic compounds (GC-MS) low level in accordance with EPA SW-846 8260B. The samples were analyzed on 09/03/2011.

The %RPD of the laboratory control sample (LCS) and laboratory control standard duplicate (LCSD) for preparation batch 580-94507 exceeded control limits for the analyte Tetrachloroethene. The analyte passed in both the LCS and LCSD, it was also passing in the MS an MSD with a passing RPD. Samples were qualified and reported.

No other difficulties were encountered during the volatile organic compounds (GC-MS) low level analyses.

All other quality control parameters were within the acceptance limits.

SUBCONTRACT
The associated samples have been subcontracted to TestAmerica Portland for methods 300.0 (Sulfate). The subcontract certifications are different from those listed on the TestAmerica cover page of this final report. These results are located in the subcontract section of the report.

GC/MS VOA MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Seattle Job No.: 580-28246-1

SDG No.:

Instrument ID: SEA015 Analysis Batch Number: 90913

Lab Sample ID: STD 580-90913/3 IC Client Sample ID:

Date Analyzed: 07/21/11 12:34 Lab File ID: I0325261.D GC Column: ZB-624short ID: 0.18(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
trans-1,4-Dichloro-2-butene	4.47	Assign Peak	kreiderma chers	07/21/11 13:31

SAMPLE SUMMARY

Client: GeoEngineers Inc

Job Number: 580-28246-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
580-28246-1	MW-3-082411-W	Water	08/24/2011 1417	08/24/2011 1625
580-28246-2	MW-8-082411-W	Water	08/24/2011 1139	08/24/2011 1625
580-28246-3	MW-16-082411-W	Water	08/24/2011 1228	08/24/2011 1625
580-28246-4	MW-17-082411-W	Water	08/24/2011 1050	08/24/2011 1625
580-28246-5	MW-18-082411-W	Water	08/24/2011 1315	08/24/2011 1625
580-28246-5MSMS	MW-18-082411-W	Water	08/24/2011 1315	08/24/2011 1625
580-28246-5MSDMSD	MW-18-082411-W	Water	08/24/2011 1315	08/24/2011 1625
580-28246-6	DUP-082411-W	Water	08/24/2011 0000	08/24/2011 1625
580-28246-7	TRIP BLANK	Water	08/24/2011 0000	08/24/2011 1625

EXECUTIVE SUMMARY - Detections

Client: GeoEngineers Inc

Job Number: 580-28246-1

Lab Sample ID / Analyte	Client Sample ID	Result	Qualifier	Reporting Limit	Units	Method
580-28246-1	**MW-3-082411-W**					
cis-1,2-Dichloroethene		0.31		0.10	ug/L	8260B
trans-1,2-Dichloroethene		0.11		0.10	ug/L	8260B
Trichloroethene		0.64		0.10	ug/L	8260B
Vinyl chloride		0.37		0.020	ug/L	8260B
580-28246-2	**MW-8-082411-W**					
Vinyl chloride		0.21		0.020	ug/L	8260B
580-28246-3	**MW-16-082411-W**					
cis-1,2-Dichloroethene		0.26		0.10	ug/L	8260B
trans-1,2-Dichloroethene		0.31		0.10	ug/L	8260B
Trichloroethene		0.41		0.10	ug/L	8260B
Vinyl chloride		0.70		0.020	ug/L	8260B
580-28246-4	**MW-17-082411-W**					
Trichloroethene		0.18		0.10	ug/L	8260B
580-28246-5	**MW-18-082411-W**					
cis-1,2-Dichloroethene		0.39		0.10	ug/L	8260B
trans-1,2-Dichloroethene		0.24		0.10	ug/L	8260B
Trichloroethene		0.40		0.10	ug/L	8260B
Vinyl chloride		2.3		0.020	ug/L	8260B
580-28246-6	**DUP-082411-W**					
cis-1,2-Dichloroethene		0.23		0.10	ug/L	8260B
Trichloroethene		0.49		0.10	ug/L	8260B
Vinyl chloride		0.27		0.020	ug/L	8260B

METHOD SUMMARY

Client: GeoEngineers Inc

Job Number: 580-28246-1

Description	Lab Location	Method	Preparation Method
Matrix: Water			
Volatile Organic Compounds (GC/MS)	TAL SEA	SW846 8260B	
Purge and Trap	TAL SEA		SW846 5030B
Anions, Ion Chromatography	TAL PRT	MCAWW 300.0	

Lab References:

TAL PRT = TestAmerica Portland

TAL SEA = TestAmerica Seattle

Method References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

METHOD / ANALYST SUMMARY

Client: GeoEngineers Inc

Job Number: 580-28246-1

Method	Analyst	Analyst ID
SW846 8260B	Theisen, Michael A	MAT

Client: GeoEngineers Inc

Job Number: 580-28246-1

Client Sample ID: **MW-3-082411-W**

Lab Sample ID: 580-28246-1
Client Matrix: Water

Date Sampled: 08/24/2011 1417
Date Received: 08/24/2011 1625

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	580-94507	Instrument ID:	SEA015
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	I0325911.D
Dilution:	1.0			Initial Weight/Volume:	10 mL
Analysis Date:	09/03/2011 1742			Final Weight/Volume:	10 mL
Prep Date:	09/03/2011 1742				

Analyte	Result (ug/L)	Qualifier	RL	RL
cis-1,2-Dichloroethene	0.31		0.10	0.10
1,1-Dichloroethene	ND		0.10	0.10
Tetrachloroethene	ND	*	0.10	0.10
trans-1,2-Dichloroethene	0.11		0.10	0.10
Trichloroethene	0.64		0.10	0.10
Vinyl chloride	0.37		0.020	0.020

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene (Surr)	109		75 - 120
Ethylbenzene-d10	103		75 - 125
Fluorobenzene (Surr)	101		70 - 130
Trifluorotoluene (Surr)	100		80 - 125
Toluene-d8 (Surr)	97		75 - 125

Client: GeoEngineers Inc

Job Number: 580-28246-1

Client Sample ID: **MW-8-082411-W**

Lab Sample ID: 580-28246-2
Client Matrix: Water

Date Sampled: 08/24/2011 1139
Date Received: 08/24/2011 1625

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	580-94507	Instrument ID:	SEA015
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	I0325912.D
Dilution:	1.0			Initial Weight/Volume:	10 mL
Analysis Date:	09/03/2011 1808			Final Weight/Volume:	10 mL
Prep Date:	09/03/2011 1808				

Analyte	Result (ug/L)	Qualifier	RL	RL
cis-1,2-Dichloroethene	ND		0.10	0.10
1,1-Dichloroethene	ND		0.10	0.10
Tetrachloroethene	ND	*	0.10	0.10
trans-1,2-Dichloroethene	ND		0.10	0.10
Trichloroethene	ND		0.10	0.10
Vinyl chloride	0.21		0.020	0.020

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene (Surr)	95		75 - 120
Ethylbenzene-d10	86		75 - 125
Fluorobenzene (Surr)	93		70 - 130
Trifluorotoluene (Surr)	99		80 - 125
Toluene-d8 (Surr)	95		75 - 125

Client: GeoEngineers Inc

Job Number: 580-28246-1

Client Sample ID: **MW-16-082411-W**

Lab Sample ID: 580-28246-3
Client Matrix: Water

Date Sampled: 08/24/2011 1228
Date Received: 08/24/2011 1625

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	580-94507	Instrument ID:	SEA015
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	I0325913.D
Dilution:	1.0			Initial Weight/Volume:	10 mL
Analysis Date:	09/03/2011 1833			Final Weight/Volume:	10 mL
Prep Date:	09/03/2011 1833				

Analyte	Result (ug/L)	Qualifier	RL	RL
cis-1,2-Dichloroethene	0.26		0.10	0.10
1,1-Dichloroethene	ND		0.10	0.10
Tetrachloroethene	ND	*	0.10	0.10
trans-1,2-Dichloroethene	0.31		0.10	0.10
Trichloroethene	0.41		0.10	0.10
Vinyl chloride	0.70		0.020	0.020

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene (Surr)	100		75 - 120
Ethylbenzene-d10	102		75 - 125
Fluorobenzene (Surr)	96		70 - 130
Trifluorotoluene (Surr)	107		80 - 125
Toluene-d8 (Surr)	94		75 - 125

Client: GeoEngineers Inc

Job Number: 580-28246-1

Client Sample ID: **MW-17-082411-W**

Lab Sample ID: 580-28246-4
Client Matrix: Water

Date Sampled: 08/24/2011 1050
Date Received: 08/24/2011 1625

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	580-94507	Instrument ID:	SEA015
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	I0325914.D
Dilution:	1.0			Initial Weight/Volume:	10 mL
Analysis Date:	09/03/2011 1859			Final Weight/Volume:	10 mL
Prep Date:	09/03/2011 1859				

Analyte	Result (ug/L)	Qualifier	RL	RL
cis-1,2-Dichloroethene	ND		0.10	0.10
1,1-Dichloroethene	ND		0.10	0.10
Tetrachloroethene	ND	*	0.10	0.10
trans-1,2-Dichloroethene	ND		0.10	0.10
Trichloroethene	0.18		0.10	0.10
Vinyl chloride	ND		0.020	0.020

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene (Surr)	90		75 - 120
Ethylbenzene-d10	89		75 - 125
Fluorobenzene (Surr)	92		70 - 130
Trifluorotoluene (Surr)	104		80 - 125
Toluene-d8 (Surr)	98		75 - 125

Client: GeoEngineers Inc

Job Number: 580-28246-1

Client Sample ID: **MW-18-082411-W**

Lab Sample ID: 580-28246-5
Client Matrix: Water

Date Sampled: 08/24/2011 1315
Date Received: 08/24/2011 1625

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	580-94507	Instrument ID:	SEA015
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	I0325915.D
Dilution:	1.0			Initial Weight/Volume:	10 mL
Analysis Date:	09/03/2011 1924			Final Weight/Volume:	10 mL
Prep Date:	09/03/2011 1924				

Analyte	Result (ug/L)	Qualifier	RL	RL
cis-1,2-Dichloroethene	0.39		0.10	0.10
1,1-Dichloroethene	ND		0.10	0.10
Tetrachloroethene	ND	*	0.10	0.10
trans-1,2-Dichloroethene	0.24		0.10	0.10
Trichloroethene	0.40		0.10	0.10
Vinyl chloride	2.3		0.020	0.020

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene (Surr)	94		75 - 120
Ethylbenzene-d10	100		75 - 125
Fluorobenzene (Surr)	98		70 - 130
Trifluorotoluene (Surr)	106		80 - 125
Toluene-d8 (Surr)	101		75 - 125

Client: GeoEngineers Inc

Job Number: 580-28246-1

Client Sample ID: **DUP-082411-W**

Lab Sample ID: 580-28246-6
Client Matrix: Water

Date Sampled: 08/24/2011 0000
Date Received: 08/24/2011 1625

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	580-94507	Instrument ID:	SEA015
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	I0325916.D
Dilution:	1.0			Initial Weight/Volume:	10 mL
Analysis Date:	09/03/2011 1950			Final Weight/Volume:	10 mL
Prep Date:	09/03/2011 1950				

Analyte	Result (ug/L)	Qualifier	RL	RL
cis-1,2-Dichloroethene	0.23		0.10	0.10
1,1-Dichloroethene	ND		0.10	0.10
Tetrachloroethene	ND	*	0.10	0.10
trans-1,2-Dichloroethene	ND		0.10	0.10
Trichloroethene	0.49		0.10	0.10
Vinyl chloride	0.27		0.020	0.020

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene (Surr)	98		75 - 120
Ethylbenzene-d10	96		75 - 125
Fluorobenzene (Surr)	98		70 - 130
Trifluorotoluene (Surr)	110		80 - 125
Toluene-d8 (Surr)	98		75 - 125

Client: GeoEngineers Inc

Job Number: 580-28246-1

Client Sample ID: **TRIP BLANK**

Lab Sample ID: 580-28246-7
Client Matrix: Water

Date Sampled: 08/24/2011 0000
Date Received: 08/24/2011 1625

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	580-94507	Instrument ID:	SEA015
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	I0325910.D
Dilution:	1.0			Initial Weight/Volume:	10 mL
Analysis Date:	09/03/2011 1707			Final Weight/Volume:	10 mL
Prep Date:	09/03/2011 1707				

Analyte	Result (ug/L)	Qualifier	RL	RL
cis-1,2-Dichloroethene	ND		0.10	0.10
1,1-Dichloroethene	ND		0.10	0.10
Tetrachloroethene	ND	*	0.10	0.10
trans-1,2-Dichloroethene	ND		0.10	0.10
Trichloroethene	ND		0.10	0.10
Vinyl chloride	ND		0.020	0.020

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene (Surr)	87		75 - 120
Ethylbenzene-d10	89		75 - 125
Fluorobenzene (Surr)	97		70 - 130
Trifluorotoluene (Surr)	101		80 - 125
Toluene-d8 (Surr)	92		75 - 125

Client: GeoEngineers Inc

Job Number: 580-28246-1

Surrogate Recovery Report

8260B Volatile Organic Compounds (GC/MS)

Client Matrix: Water

Lab Sample ID	Client Sample ID	FB %Rec	TFT %Rec	TOL %Rec	EBD10 %Rec	BFB %Rec
580-28246-1	MW-3-082411-W	101	100	97	103	109
580-28246-2	MW-8-082411-W	93	99	95	86	95
580-28246-3	MW-16-082411-W	96	107	94	102	100
580-28246-4	MW-17-082411-W	92	104	98	89	90
580-28246-5	MW-18-082411-W	98	106	101	100	94
580-28246-6	DUP-082411-W	98	110	98	96	98
580-28246-7	TRIP BLANK	97	101	92	89	87
MB 580-94507/5		91	101	92	89	91
LCS 580-94507/6		98	101	95	92	97
LCSD 580-94507/7		92	106	91	89	105
580-28246-5 MS	MW-18-082411-W MS	99	112	98	93	100
580-28246-5 MSD	MW-18-082411-W MSD	97	109	99	87	95

Surrogate	Acceptance Limits
FB = Fluorobenzene (Surr)	70-130
TFT = Trifluorotoluene (Surr)	80-125
TOL = Toluene-d8 (Surr)	75-125
EBD10 = Ethylbenzene-d10	75-125
BFB = 4-Bromofluorobenzene (Surr)	75-120

Client: GeoEngineers Inc

Job Number: 580-28246-1

Method Blank - Batch: 580-94507

Method: 8260B
Preparation: 5030B

Lab Sample ID:	MB 580-94507/5	Analysis Batch:	580-94507	Instrument ID:	SEA015
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	I0325905.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	10 mL
Analysis Date:	09/03/2011 1459	Units:	ug/L	Final Weight/Volume:	10 mL
Prep Date:	09/03/2011 1459				
Leach Date:	N/A				

Analyte	Result	Qual	RL	RL
cis-1,2-Dichloroethene	ND		0.10	0.10
1,1-Dichloroethene	ND		0.10	0.10
Tetrachloroethene	ND		0.10	0.10
trans-1,2-Dichloroethene	ND		0.10	0.10
Trichloroethene	ND		0.10	0.10
Vinyl chloride	ND		0.020	0.020

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene (Surr)	91	75 - 120
Ethylbenzene-d10	89	75 - 125
Fluorobenzene (Surr)	91	70 - 130
Trifluorotoluene (Surr)	101	80 - 125
Toluene-d8 (Surr)	92	75 - 125

Client: GeoEngineers Inc

Job Number: 580-28246-1

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 580-94507

Method: 8260B
Preparation: 5030B

LCS Lab Sample ID:	LCS 580-94507/6	Analysis Batch:	580-94507	Instrument ID:	SEA015
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	I0325906.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	10 mL
Analysis Date:	09/03/2011 1524	Units:	ug/L	Final Weight/Volume:	10 mL
Prep Date:	09/03/2011 1524				
Leach Date:	N/A				

LCSD Lab Sample ID:	LCSD 580-94507/7	Analysis Batch:	580-94507	Instrument ID:	SEA015
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	I0325907.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	10 mL
Analysis Date:	09/03/2011 1550	Units:	ug/L	Final Weight/Volume:	10 mL
Prep Date:	09/03/2011 1550				
Leach Date:	N/A				

Analyte	% Rec. LCS	% Rec. LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
cis-1,2-Dichloroethene	104	111	71 - 144	6	20		
1,1-Dichloroethene	112	120	78 - 151	6	20		
Tetrachloroethene	126	101	54 - 161	22	20		*
trans-1,2-Dichloroethene	111	117	73 - 135	5	20		
Trichloroethene	107	109	79 - 131	2	20		
Vinyl chloride	108	110	47 - 160	1	20		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
4-Bromofluorobenzene (Surr)	97	105	75 - 120
Ethylbenzene-d10	92	89	75 - 125
Fluorobenzene (Surr)	98	92	70 - 130
Trifluorotoluene (Surr)	101	106	80 - 125
Toluene-d8 (Surr)	95	91	75 - 125

Laboratory Control/
Laboratory Duplicate Data Report - Batch: 580-94507

Method: 8260B
Preparation: 5030B

LCS Lab Sample ID:	LCS 580-94507/6	Units:	ug/L	LCSD Lab Sample ID:	LCSD 580-94507/7
Client Matrix:	Water			Client Matrix:	Water
Dilution:	1.0			Dilution:	1.0
Analysis Date:	09/03/2011 1524			Analysis Date:	09/03/2011 1550
Prep Date:	09/03/2011 1524			Prep Date:	09/03/2011 1550
Leach Date:	N/A			Leach Date:	N/A

Analyte	LCS Spike Amount	LCSD Spike Amount	LCS Result/Qual	LCSD Result/Qual	
cis-1,2-Dichloroethene	5.00	5.00	5.20	5.53	
1,1-Dichloroethene	4.95	4.95	5.56	5.93	
Tetrachloroethene	5.01	5.01	6.31	5.05	*
trans-1,2-Dichloroethene	5.01	5.01	5.55	5.86	
Trichloroethene	5.00	5.00	5.34	5.43	
Vinyl chloride	5.00	5.00	5.42	5.49	

Client: GeoEngineers Inc

Job Number: 580-28246-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 580-94507

Method: 8260B
Preparation: 5030B

MS Lab Sample ID:	580-28246-5	Analysis Batch:	580-94507	Instrument ID:	SEA015
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	I0325921.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	10 mL
Analysis Date:	09/03/2011 2157			Final Weight/Volume:	10 mL
Prep Date:	09/03/2011 2157				
Leach Date:	N/A				

MSD Lab Sample ID:	580-28246-5	Analysis Batch:	580-94507	Instrument ID:	SEA015
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	I0325922.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	10 mL
Analysis Date:	09/03/2011 2222			Final Weight/Volume:	10 mL
Prep Date:	09/03/2011 2222				
Leach Date:	N/A				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
cis-1,2-Dichloroethene	105	101	71 - 144	4	20		
1,1-Dichloroethene	120	119	78 - 151	1	30		
Tetrachloroethene	83	89	64 - 161	7	20		
trans-1,2-Dichloroethene	118	113	73 - 135	3	20		
Trichloroethene	111	106	79 - 131	4	30		
Vinyl chloride	109	110	47 - 160	1	20		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
4-Bromofluorobenzene (Surr)	100	95	75 - 120
Ethylbenzene-d10	93	87	75 - 125
Fluorobenzene (Surr)	99	97	70 - 130
Trifluorotoluene (Surr)	112	109	80 - 125
Toluene-d8 (Surr)	98	99	75 - 125

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 580-94507

Method: 8260B
Preparation: 5030B

MS Lab Sample ID:	580-28246-5	Units:	ug/L	MSD Lab Sample ID:	580-28246-5
Client Matrix:	Water			Client Matrix:	Water
Dilution:	1.0			Dilution:	1.0
Analysis Date:	09/03/2011 2157			Analysis Date:	09/03/2011 2222
Prep Date:	09/03/2011 2157			Prep Date:	09/03/2011 2222
Leach Date:	N/A			Leach Date:	N/A

Analyte	Sample Result/Qual	MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
cis-1,2-Dichloroethene	0.39	5.00	5.00	5.64	5.42
1,1-Dichloroethene	ND	4.95	4.95	5.96	5.88
Tetrachloroethene	ND	5.01	5.01	4.16	4.47
trans-1,2-Dichloroethene	0.24	5.01	5.01	6.13	5.92
Trichloroethene	0.40	5.00	5.00	5.94	5.71
Vinyl chloride	2.3	5.00	5.00	7.75	7.81

DATA REPORTING QUALIFIERS

Client: GeoEngineers Inc

Job Number: 580-28246-1

Lab Section	Qualifier	Description
GC/MS VOA		
	*	RPD of the LCS and LCSD exceeds the control limits

Client: GeoEngineers Inc

Job Number: 580-28246-1

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
GC/MS VOA					
Analysis Batch:580-94507					
LCS 580-94507/6	Lab Control Sample	T	Water	8260B	
LCSD 580-94507/7	Lab Control Sample Duplicate	T	Water	8260B	
MB 580-94507/5	Method Blank	T	Water	8260B	
580-28246-1	MW-3-082411-W	T	Water	8260B	
580-28246-2	MW-8-082411-W	T	Water	8260B	
580-28246-3	MW-16-082411-W	T	Water	8260B	
580-28246-4	MW-17-082411-W	T	Water	8260B	
580-28246-5	MW-18-082411-W	T	Water	8260B	
580-28246-5MS	Matrix Spike	T	Water	8260B	
580-28246-5MSD	Matrix Spike Duplicate	T	Water	8260B	
580-28246-6	DUP-082411-W	T	Water	8260B	
580-28246-7	TRIP BLANK	T	Water	8260B	

Report Basis

T = Total

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Seattle Job No.: 580-28246-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
V-SurTFTWk_00013	08/04/11	11/04/10	MeOH, Lot CR013	200 mL	V-TFTStk_00014	800 uL	Trifluorotoluene (Surr)	39.984 mg/L
.V-TFTStk_00014	10/21/11	07/26/10	Fisher, Lot 096181	50 mL	TFTneat_00004	420 uL	Trifluorotoluene (Surr)	9996 mg/L
..TFTneat_00004	10/21/11	Sigma-Aldrich, Lot 96397PJ			(Purchased Reagent)		Trifluorotoluene (Surr)	1190000 mg/L
V-SurTFTWk_00014	10/21/11	08/04/11	MeOH, Lot CR013	200 mL	V-TFTStk_00014	800 uL	Trifluorotoluene (Surr)	39.984 mg/L
.V-TFTStk_00014	10/21/11	07/26/10	Fisher, Lot 096181	50 mL	TFTneat_00004	420 uL	Trifluorotoluene (Surr)	9996 mg/L
..TFTneat_00004	10/21/11	Sigma-Aldrich, Lot 96397PJ			(Purchased Reagent)		Trifluorotoluene (Surr)	1190000 mg/L
V_LCS_G_50w_00035	07/21/11	07/14/11	fisher MeOH, Lot 110412	50 mL	vscvG_stk_00002	1250 uL	Vinyl chloride	50 mg/L
.vscvG_stk_00002	06/24/12	Accustandard, Lot 209061278			(Purchased Reagent)		Vinyl chloride	2000 ug/mL
V_LCS_G_50w_00044	09/09/11	09/02/11	fisher MeOH, Lot 110412	50 mL	vscvG_stk_00002	1250 uL	Vinyl chloride	50 mg/L
.vscvG_stk_00002	06/24/12	Accustandard, Lot 209061278			(Purchased Reagent)		Vinyl chloride	2000 ug/mL
V_LCS_L_50_00029	12/20/11	06/20/11	fisher MeOH, Lot 110412	10 mL	8260 LiqS_00014	2500 uL	1,1-Dichloroethene	49.5 mg/L
							cis-1,2-Dichloroethene	49.95 mg/L
							Tetrachloroethene	50.05 mg/L
							trans-1,2-Dichloroethene	50.05 mg/L
							Trichloroethene	50.025 mg/L
.8260 LiqS_00014	09/10/13	AccuStandard, Inc, Lot 210081381			(Purchased Reagent)		1,1-Dichloroethene	198 ug/mL
							cis-1,2-Dichloroethene	199.8 ug/mL
							Tetrachloroethene	200.2 ug/mL
							trans-1,2-Dichloroethene	200.2 ug/mL
							Trichloroethene	200.1 ug/mL
V_LCS_L_50_00031	02/14/12	08/14/11	fisher MeOH, Lot 110412	10 mL	8260 LiqS_00014	2500 uL	1,1-Dichloroethene	49.5 mg/L
							cis-1,2-Dichloroethene	49.95 mg/L
							Tetrachloroethene	50.05 mg/L
							trans-1,2-Dichloroethene	50.05 mg/L
							Trichloroethene	50.025 mg/L
.8260 LiqS_00014	09/10/13	AccuStandard, Inc, Lot 210081381			(Purchased Reagent)		1,1-Dichloroethene	198 ug/mL
							cis-1,2-Dichloroethene	199.8 ug/mL
							Tetrachloroethene	200.2 ug/mL
							trans-1,2-Dichloroethene	200.2 ug/mL
							Trichloroethene	200.1 ug/mL
vcal_L_50_00015	11/25/11	05/25/11	fisher MeOH, Lot 104737	50 mL	8260 Pfull_00005	1250 uL	1,1,1,2-Tetrachloroethane	50.15 mg/L
							1,1,1-Trichloroethane	49.975 mg/L
							1,1,2,2-Tetrachloroethane	50.125 mg/L
							1,1,2-Trichloro-1,2,2-trifluoroethane	49.875 mg/L
							1,1,2-Trichloroethane	50.1 mg/L
							1,1-Dichloroethane	49.975 mg/L
							1,1-Dichloroethene	49.95 mg/L
							1,1-Dichloropropene	49.525 mg/L
							1,2,3-Trichlorobenzene	49.65 mg/L
							1,2,3-Trichloropropane	50.525 mg/L
							1,2,4-Trichlorobenzene	49.65 mg/L
							1,2,4-Trimethylbenzene	50.275 mg/L
							1,2-Dibromo-3-Chloropropane	50.15 mg/L
							1,2-Dichlorobenzene	50.025 mg/L
							1,2-Dichloroethane	49.975 mg/L
							1,2-Dichloropropane	51.1 mg/L
							1,3,5-Trichlorobenzene	49.75 mg/L

Lab Name: TestAmerica Seattle Job No.: 580-28246-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							1,3,5-Trimethylbenzene	50.05 mg/L
							1,3-Dichlorobenzene	50.025 mg/L
							1,3-Dichloropropane	49.95 mg/L
							1,4-Dichlorobenzene	49.95 mg/L
							2,2-Dichloropropane	50 mg/L
							2-Chlorotoluene	50.225 mg/L
							4-Chlorotoluene	50.125 mg/L
							4-Isopropyltoluene	49.95 mg/L
							Acrylonitrile	250.25 mg/L
							Benzene	49.95 mg/L
							Bromobenzene	50.35 mg/L
							Bromoform	50.75 mg/L
							Carbon disulfide	50.075 mg/L
							Carbon tetrachloride	50.075 mg/L
							Chlorobenzene	49.9 mg/L
							Chlorobromomethane	50.075 mg/L
							Chlorodibromomethane	49.625 mg/L
							Chloroform	50.05 mg/L
							cis-1,2-Dichloroethene	50.1 mg/L
							cis-1,3-Dichloropropene	49.6 mg/L
							Dibromomethane	50.3 mg/L
							Dichlorobromomethane	50.05 mg/L
							Ethylbenzene	49.975 mg/L
							Ethylene Dibromide	50.15 mg/L
							Hexachlorobutadiene	50 mg/L
							Hexachloroethane	50.15 mg/L
							Hexane	50.125 mg/L
							Iodomethane	251.25 mg/L
							Isopropylbenzene	50.025 mg/L
							m-Xylene & p-Xylene	100.125 mg/L
							Methylene Chloride	49.875 mg/L
							n-Butylbenzene	50 mg/L
							N-Propylbenzene	50 mg/L
							Naphthalene	50.075 mg/L
							o-Xylene	50.05 mg/L
							sec-Butylbenzene	50.075 mg/L
							Styrene	50.2 mg/L
							tert-Butylbenzene	49.975 mg/L
							Tetrachloroethene	50.075 mg/L
							Toluene	49.975 mg/L
							trans-1,2-Dichloroethene	50 mg/L
							trans-1,3-Dichloropropene	51 mg/L
							trans-1,4-Dichloro-2-butene	250 mg/L
							Trichloroethene	50 mg/L
.8260 Pfull_00005	09/26/12		o2si, Lot 164150		(Purchased Reagent)		1,1,1,2-Tetrachloroethane	2006 mg/L
							1,1,1-Trichloroethane	1999 mg/L
							1,1,2,2-Tetrachloroethane	2005 mg/L
							1,1,2-Trichloro-1,2,2-trifluoroethane	1995 mg/L
							1,1,2-Trichloroethane	2001 mg/L

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Seattle Job No.: 580-28246-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							1,1-Dichloroethane	1999 mg/L
							1,1-Dichloroethene	1998 mg/L
							1,1-Dichloropropene	1981 mg/L
							1,2,3-Trichlorobenzene	1986 mg/L
							1,2,3-Trichloropropane	2021 mg/L
							1,2,4-Trichlorobenzene	1986 mg/L
							1,2,4-Trimethylbenzene	2011 mg/L
							1,2-Dibromo-3-Chloropropane	2006 mg/L
							1,2-Dichlorobenzene	2001 mg/L
							1,2-Dichloroethane	1999 mg/L
							1,2-Dichloropropane	2044 mg/L
							1,3,5-Trichlorobenzene	2000 mg/L
							1,3,5-Trimethylbenzene	2002 mg/L
							1,3-Dichlorobenzene	2001 mg/L
							1,3-Dichloropropane	1998 mg/L
							1,4-Dichlorobenzene	1998 mg/L
							2,2-Dichloropropane	2000 mg/L
							2-Chlorotoluene	2009 mg/L
							4-Chlorotoluene	2005 mg/L
							4-Isopropyltoluene	1998 mg/L
							Acrylonitrile	10010 mg/L
							Benzene	1998 mg/L
							Bromobenzene	2014 mg/L
							Bromoform	2030 mg/L
							Carbon disulfide	2003 mg/L
							Carbon tetrachloride	2003 mg/L
							Chlorobenzene	1996 mg/L
							Chlorobromomethane	2003 mg/L
							Chlorodibromomethane	1985 mg/L
							Chloroform	2002 mg/L
							cis-1,2-Dichloroethene	2004 mg/L
							cis-1,3-Dichloropropene	1984 mg/L
							Dibromomethane	2012 mg/L
							Dichlorobromomethane	2002 mg/L
							Ethylbenzene	1999 mg/L
							Ethylene Dibromide	2006 mg/L
							Hexachlorobutadiene	2000 mg/L
							Hexachloroethane	2006 mg/L
							Hexane	2005 mg/L
							Iodomethane	10050 mg/L
							Isopropylbenzene	2001 mg/L
							m-Xylene & p-Xylene	4005 mg/L
							Methylene Chloride	1995 mg/L
							n-Butylbenzene	2000 mg/L
							N-Propylbenzene	2000 mg/L
							Naphthalene	2003 mg/L
							o-Xylene	2002 mg/L
							sec-Butylbenzene	2003 mg/L
							Styrene	2008 mg/L
							tert-Butylbenzene	2011 mg/L

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Seattle Job No.: 580-28246-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Tetrachloroethene	2003 mg/L
							Toluene	1999 mg/L
							trans-1,2-Dichloroethene	2000 mg/L
							trans-1,3-Dichloropropene	2040 mg/L
							trans-1,4-Dichloro-2-butene	10000 mg/L
							Trichloroethene	2000 mg/L
vcal_L_50_00016	01/26/12	07/26/11	fisher MeOH, Lot 110412	25 mL	8260 Pfull_00005	625 uL	1,1-Dichloroethene	49.95 mg/L
							cis-1,2-Dichloroethene	50.1 mg/L
							Tetrachloroethene	50.075 mg/L
							trans-1,2-Dichloroethene	50 mg/L
							Trichloroethene	50 mg/L
.8260 Pfull_00005	09/26/12		o2si, Lot 164150		(Purchased Reagent)		1,1-Dichloroethene	1998 mg/L
							cis-1,2-Dichloroethene	2004 mg/L
							Tetrachloroethene	2003 mg/L
							trans-1,2-Dichloroethene	2000 mg/L
							Trichloroethene	2000 mg/L
vcalg50w_00039	07/26/11	07/20/11	fisher MeOH, Lot 110412	50 mL	8260 Pmix1_00005	1250 uL	Bromomethane	50.0108 mg/L
							Chloroethane	49.966 mg/L
							Chloromethane	50.0268 mg/L
							Dichlorodifluoromethane	49.9688 mg/L
							Trichlorofluoromethane	49.9963 mg/L
							Vinyl chloride	50.007 mg/L
					8260P VOA1_00006	2500 uL	2-Butanone (MEK)	250 mg/L
							2-Hexanone	250 mg/L
							4-Methyl-2-pentanone (MIBK)	250 mg/L
							Acetone	250 mg/L
					8260PCalO1_00006	1250 uL	2-Methyl-2-propanol	250 mg/L
							Methyl tert-butyl ether	50 mg/L
							Tert-amyl methyl ether	50 mg/L
							Tert-butyl ethyl ether	50 mg/L
					V-Acrolein_00001	15 uL	Acrolein	252 mg/L
					V-TFTStk_00014	250 uL	Trifluorotoluene (Surr)	49.98 mg/L
					vcalneat13_00002	13.5 uL	Vinyl acetate	251.64 mg/L
					vLCSneat25_00001	12 uL	2-Chloroethyl vinyl ether	251.52 mg/L
.8260 Pmix1_00005	05/31/17		Restek, Lot A076677		(Purchased Reagent)		Bromomethane	2000.43 ug/mL
							Chloroethane	1998.64 ug/mL
							Chloromethane	2001.07 ug/mL
							Dichlorodifluoromethane	1998.75 ug/mL
							Trichlorofluoromethane	1999.85 ug/mL
							Vinyl chloride	2000.28 ug/mL
.8260P VOA1_00006	07/31/13		Restek, Lot A073997		(Purchased Reagent)		2-Butanone (MEK)	5000 ug/mL
							2-Hexanone	5000 ug/mL
							4-Methyl-2-pentanone (MIBK)	5000 ug/mL
							Acetone	5000 ug/mL
.8260PCalO1_00006	06/30/15		Restek, Lot A075112		(Purchased Reagent)		2-Methyl-2-propanol	10000 ug/mL
							Methyl tert-butyl ether	2000 ug/mL
							Tert-amyl methyl ether	2000 ug/mL
							Tert-butyl ethyl ether	2000 ug/mL
.V-Acrolein_00001	03/21/12		Alfa Aesar, Lot K03R001		(Purchased Reagent)		Acrolein	0.84 g/mL
.V-TFTStk_00014	10/21/11	07/26/10	Fisher, Lot 096181	50 mL	TFTneat_00004	420 uL	Trifluorotoluene (Surr)	9996 mg/L

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Seattle Job No.: 580-28246-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..TFTneat_00004	10/21/11	Sigma-Aldrich, Lot 96397PJ			(Purchased Reagent)		Trifluorotoluene (Surr)	1190000 mg/L
.vcalneat13_00002	03/13/12	Aldrich, Lot 12801TD			(Purchased Reagent)		Vinyl acetate	0.932 g/mL
.vLCSneat25_00001	12/31/12	Aldrich, Lot 08402CH			(Purchased Reagent)		2-Chloroethyl vinyl ether	1.048 g/mL
vcalg50w_00048	09/03/11	08/28/11	fisher MeOH, Lot 110412	50 mL	8260 Pmix1_00006	1250 uL	Vinyl chloride	50.02 mg/L
					V-TFTStk_00014	250 uL	Trifluorotoluene (Surr)	49.98 mg/L
.8260 Pmix1_00006	11/30/17	Restek, Lot A076677			(Purchased Reagent)		Vinyl chloride	2000.8 ug/mL
.V-TFTStk_00014	10/21/11	07/26/10	Fisher, Lot 096181	50 mL	TFTneat_00004	420 uL	Trifluorotoluene (Surr)	9996 mg/L
..TFTneat_00004	10/21/11	Sigma-Aldrich, Lot 96397PJ			(Purchased Reagent)		Trifluorotoluene (Surr)	1190000 mg/L
vwrkIS&sur_00041	10/21/11	04/25/11	fisher MeOH, Lot 104737	100 mL	V-ISStk_00011	1250 uL	1,4-Dichlorobenzene-d4	250 mg/L
							1,4-Difluorobenzene	250.088 mg/L
							Pentafluorobenzene	249.81 mg/L
					V-SurStk_00009	250 uL	4-Bromofluorobenzene (Surr)	50.1072 mg/L
							Toluene-d8 (Surr)	50.0733 mg/L
							Ethylbenzene-d10	50.0123 mg/L
							Fluorobenzene (Surr)	50.02 mg/L
.V-ISStk_00011	10/21/11	10/27/10	fisher MeOH, Lot 096181	50 mL	V-ISneat#1_00003	1000 mg	1,4-Dichlorobenzene-d4	20000 mg/L
					V-ISneat#2_00004	855 uL	1,4-Difluorobenzene	20007 mg/L
					V-ISneat#3_00006	660 uL	Pentafluorobenzene	19984.8 mg/L
..V-ISneat#1_00003	10/21/11	Isotec, Lot ST0037			(Purchased Reagent)		1,4-Dichlorobenzene-d4	1 g/mL
..V-ISneat#2_00004	10/21/11	Aldrich, Lot 13105AO			(Purchased Reagent)		1,4-Difluorobenzene	1.17 g/mL
..V-ISneat#3_00006	10/21/11	Aldrich, Lot MKBC7851			(Purchased Reagent)		Pentafluorobenzene	1.514 g/mL
.V-SurStk_00009	10/21/11	10/27/10	fisher MeOH, Lot 096181	25 mL	V-Surnea3_00004	312 uL	4-Bromofluorobenzene (Surr)	20042.9 mg/L
					V-Surneat2_00003	531 uL	Toluene-d8 (Surr)	20029.3 mg/L
					V-Surneat4_00003	527 uL	Ethylbenzene-d10	20004.9 mg/L
					V-Surneat5_00003	488 uL	Fluorobenzene (Surr)	20008 mg/L
..V-Surnea3_00004	10/21/11	Aldrich, Lot 01127CO			(Purchased Reagent)		4-Bromofluorobenzene (Surr)	1.606 g/mL
..V-Surneat2_00003	10/21/11	Aldrich, Lot 07726DH			(Purchased Reagent)		Toluene-d8 (Surr)	0.943 g/mL
..V-Surneat4_00003	10/21/11	Aldrich, Lot 19510HA			(Purchased Reagent)		Ethylbenzene-d10	0.949 g/mL
..V-Surneat5_00003	10/21/11	Aldrich, Lot 0001448118			(Purchased Reagent)		Fluorobenzene (Surr)	1.025 g/mL

Certification Summary

Client: GeoEngineers Inc
Project/Site: City of Olympia

TestAmerica Job ID: 580-28246-1

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Seattle	Alaska	Alaska UST	10	UST-022
TestAmerica Seattle	Alaska	TA-Port Heiden Mobile Lab	10	UST-093
TestAmerica Seattle	California	NELAC	9	1115CA
TestAmerica Seattle	Florida	NELAC	4	E871074
TestAmerica Seattle	L-A-B	DoD ELAP		L2236
TestAmerica Seattle	L-A-B	ISO/IEC 17025		L2236
TestAmerica Seattle	Louisiana	NELAC	6	05016
TestAmerica Seattle	Montana	MT DEQ UST	8	N/A
TestAmerica Seattle	Oregon	NELAC	10	WA100007
TestAmerica Seattle	USDA	USDA		P330-11-00222
TestAmerica Seattle	Washington	State Program	10	C553
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.

Method 8260B Low Level

Volatile Organic Compounds (GC/MS) by Method 8260B Low Level

FORM II
GC/MS VOA SURROGATE RECOVERY

Lab Name: TestAmerica Seattle Job No.: 580-28246-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): ZB-624short ID: 0.18 (mm)

Client Sample ID	Lab Sample ID	FB #	TFT #	TOL #	EBD10 #	BFB #
MW-3-082411-W	580-28246-1	101	100	97	103	109
MW-8-082411-W	580-28246-2	93	99	95	86	95
MW-16-082411-W	580-28246-3	96	107	94	102	100
MW-17-082411-W	580-28246-4	92	104	98	89	90
MW-18-082411-W	580-28246-5	98	106	101	100	94
DUP-082411-W	580-28246-6	98	110	98	96	98
TRIP BLANK	580-28246-7	97	101	92	89	87
	MB 580-94507/5	91	101	92	89	91
	LCS 580-94507/6	98	101	95	92	97
	LCSD 580-94507/7	92	106	91	89	105
MW-18-082411-W MS	580-28246-5 MS	99	112	98	93	100
MW-18-082411-W MSD	580-28246-5 MSD	97	109	99	87	95

	QC LIMITS
FB = Fluorobenzene (Surr)	70-130
TFT = Trifluorotoluene (Surr)	80-125
TOL = Toluene-d8 (Surr)	75-125
EBD10 = Ethylbenzene-d10	75-125
BFB = 4-Bromofluorobenzene (Surr)	75-120

Column to be used to flag recovery values

FORM II 8260B

FORM III
GC/MS VOA LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Seattle Job No.: 580-28246-1

SDG No.:

Matrix: Water Level: Low Lab File ID: I0325906.D

Lab ID: LCS 580-94507/6 Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
cis-1,2-Dichloroethene	5.00	5.20	104	71-144	
1,1-Dichloroethene	4.95	5.56	112	78-151	
Tetrachloroethene	5.01	6.31	126	54-161	
trans-1,2-Dichloroethene	5.01	5.55	111	73-135	
Trichloroethene	5.00	5.34	107	79-131	
Vinyl chloride	5.00	5.42	108	47-160	

Column to be used to flag recovery and RPD values

FORM III 8260B

FORM III
GC/MS VOA LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Seattle Job No.: 580-28246-1

SDG No.:

Matrix: Water Level: Low Lab File ID: I0325907.D

Lab ID: LCSD 580-94507/7 Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
cis-1,2-Dichloroethene	5.00	5.53	111	6	20	71-144	
1,1-Dichloroethene	4.95	5.93	120	6	20	78-151	
Tetrachloroethene	5.01	5.05	101	22	20	54-161	*
trans-1,2-Dichloroethene	5.01	5.86	117	5	20	73-135	
Trichloroethene	5.00	5.43	109	2	20	79-131	
Vinyl chloride	5.00	5.49	110	1	20	47-160	

Column to be used to flag recovery and RPD values

FORM III 8260B

FORM III
GC/MS VOA MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Seattle Job No.: 580-28246-1

SDG No.:

Matrix: Water Level: Low Lab File ID: I0325921.D

Lab ID: 580-28246-5 MS Client ID: MW-18-082411-W MS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC	QC LIMITS REC	#
cis-1,2-Dichloroethene	5.00	0.39	5.64	105	71-144	
1,1-Dichloroethene	4.95	ND	5.96	120	78-151	
Tetrachloroethene	5.01	ND	4.16	83	64-161	
trans-1,2-Dichloroethene	5.01	0.24	6.13	118	73-135	
Trichloroethene	5.00	0.40	5.94	111	79-131	
Vinyl chloride	5.00	2.3	7.75	109	47-160	

Column to be used to flag recovery and RPD values

FORM III 8260B

FORM III
GC/MS VOA MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Seattle Job No.: 580-28246-1

SDG No.:

Matrix: Water Level: Low Lab File ID: I0325922.D

Lab ID: 580-28246-5 MSD Client ID: MW-18-082411-W MSD

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
cis-1,2-Dichloroethene	5.00	5.42	101	4	20	71-144	
1,1-Dichloroethene	4.95	5.88	119	1	30	78-151	
Tetrachloroethene	5.01	4.47	89	7	20	64-161	
trans-1,2-Dichloroethene	5.01	5.92	113	3	20	73-135	
Trichloroethene	5.00	5.71	106	4	30	79-131	
Vinyl chloride	5.00	7.81	110	1	20	47-160	

Column to be used to flag recovery and RPD values

FORM III 8260B

FORM IV
GC/MS VOA METHOD BLANK SUMMARY

Lab Name: TestAmerica Seattle Job No.: 580-28246-1

SDG No.:

Lab File ID: I0325905.D Lab Sample ID: MB 580-94507/5

Matrix: Water Heated Purge:(Y/N) N

Instrument ID: SEA015 Date Analyzed: 09/03/2011 14:59

GC Column: ZB-624short ID: 0.18(mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 580-94507/6	I0325906.D	09/03/2011 15:24
	LCSD 580-94507/7	I0325907.D	09/03/2011 15:50
TRIP BLANK	580-28246-7	I0325910.D	09/03/2011 17:07
MW-3-082411-W	580-28246-1	I0325911.D	09/03/2011 17:42
MW-8-082411-W	580-28246-2	I0325912.D	09/03/2011 18:08
MW-16-082411-W	580-28246-3	I0325913.D	09/03/2011 18:33
MW-17-082411-W	580-28246-4	I0325914.D	09/03/2011 18:59
MW-18-082411-W	580-28246-5	I0325915.D	09/03/2011 19:24
DUP-082411-W	580-28246-6	I0325916.D	09/03/2011 19:50
MW-18-082411-W MS	580-28246-5 MS	I0325921.D	09/03/2011 21:57
MW-18-082411-W MSD	580-28246-5 MSD	I0325922.D	09/03/2011 22:22

FORM V
GC/MS VOA INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: TestAmerica Seattle Job No.: 580-28246-1

SDG No.:

Lab File ID: I0325260.D BFB Injection Date: 07/21/2011

Instrument ID: SEA015 BFB Injection Time: 12:08

Analysis Batch No.: 90913

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15.0 - 40.0 % of mass 95	17.8	
75	30.0 - 60.0 % of mass 95	45.6	
95	Base Peak, 100% relative abundance	100.0	
96	5.0 - 9.0 % of mass 95	7.0	
173	Less than 2.0 % of mass 174	0.5	(0.6)1
174	50.0 - 120.00 % of mass 95	91.3	
175	5.0 - 9.0 % of mass 174	6.6	(7.2)1
176	95.0 - 101.0 % of mass 174	89.1	(97.6)1
177	5.0 - 9.0 % of mass 176	5.6	(6.3)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	STD 580-90913/3	I0325261.D	07/21/2011	12:34
	STD 580-90913/4	I0325262.D	07/21/2011	13:00
	STD 580-90913/5	I0325263.D	07/21/2011	13:25
	STD 580-90913/6	I0325264.D	07/21/2011	13:51
	STD001 580-90913/7	I0325265.D	07/21/2011	14:16
	ICIS 580-90913/8	I0325266.D	07/21/2011	14:41
	STD010 580-90913/9	I0325267.D	07/21/2011	15:07
	STD025 580-90913/10	I0325268.D	07/21/2011	15:32
	STD050 580-90913/11	I0325269.D	07/21/2011	15:57
	STD080 580-90913/12	I0325270.D	07/21/2011	16:23
	ICV 580-90913/13	I0325271.D	07/21/2011	16:48
	ICV 580-90913/14	I0325272.D	07/21/2011	17:13
	ICV 580-90913/15	I0325273.D	07/21/2011	17:39

FORM V
GC/MS VOA INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: TestAmerica Seattle Job No.: 580-28246-1

SDG No.:

Lab File ID: I0325902.D BFB Injection Date: 09/03/2011

Instrument ID: SEA015 BFB Injection Time: 13:42

Analysis Batch No.: 94507

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15.0 - 40.0 % of mass 95	18.9	
75	30.0 - 60.0 % of mass 95	49.9	
95	Base Peak, 100% relative abundance	100.0	
96	5.0 - 9.0 % of mass 95	6.8	
173	Less than 2.0 % of mass 174	0.5	(0.6)1
174	50.0 - 120.00 % of mass 95	90.1	
175	5.0 - 9.0 % of mass 174	6.1	(6.7)1
176	95.0 - 101.0 % of mass 174	88.7	(98.4)1
177	5.0 - 9.0 % of mass 176	6.2	(7.0)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	CCVIS 580-94507/3	I0325903.D	09/03/2011	14:08
	MB 580-94507/5	I0325905.D	09/03/2011	14:59
	LCS 580-94507/6	I0325906.D	09/03/2011	15:24
	LCSD 580-94507/7	I0325907.D	09/03/2011	15:50
TRIP BLANK	580-28246-7	I0325910.D	09/03/2011	17:07
MW-3-082411-W	580-28246-1	I0325911.D	09/03/2011	17:42
MW-8-082411-W	580-28246-2	I0325912.D	09/03/2011	18:08
MW-16-082411-W	580-28246-3	I0325913.D	09/03/2011	18:33
MW-17-082411-W	580-28246-4	I0325914.D	09/03/2011	18:59
MW-18-082411-W	580-28246-5	I0325915.D	09/03/2011	19:24
DUP-082411-W	580-28246-6	I0325916.D	09/03/2011	19:50
MW-18-082411-W MS	580-28246-5 MS	I0325921.D	09/03/2011	21:57
MW-18-082411-W MSD	580-28246-5 MSD	I0325922.D	09/03/2011	22:22

FORM VIII
GC/MS VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Seattle Job No.: 580-28246-1

SDG No.:

Sample No.: ICIS 580-90913/8 Date Analyzed: 07/21/2011 14:41

Instrument ID: SEA015 GC Column: ZB-624short ID: 0.18(mm)

Lab File ID (Standard): I0325266.D Heated Purge: (Y/N) N

Calibration ID: 8521

		PFB		DFB		DCB	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT		2200676	2.48	3257920	2.77	1568208	4.94
UPPER LIMIT		4401352	2.98	6515840	3.27	3136416	5.44
LOWER LIMIT		1100338	1.98	1628960	2.27	784104	4.44
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICV 580-90913/13		2555818	2.48	3471116	2.77	1666314	4.94
ICV 580-90913/14		2418124	2.48	3537826	2.77	1729434	4.94
ICV 580-90913/15		2347884	2.48	3408945	2.77	1671833	4.94

PFB = Pentafluorobenzene
DFB = 1,4-Difluorobenzene
DCB = 1,4-Dichlorobenzene-d4

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8260B

FORM VIII
GC/MS VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Seattle Job No.: 580-28246-1

SDG No.:

Sample No.: CCVIS 580-94507/3 Date Analyzed: 09/03/2011 14:08

Instrument ID: SEA015 GC Column: ZB-624short ID: 0.18(mm)

Lab File ID (Standard): I0325903.D Heated Purge: (Y/N) N

Calibration ID: 8521

		PFB		DFB		DCB	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1709924	2.48	2666224	2.77	1384789	4.94
UPPER LIMIT		3419848	2.98	5332448	3.27	2769578	5.44
LOWER LIMIT		854962	1.98	1333112	2.27	692395	4.44
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 580-94507/5		1829370	2.48	2685780	2.77	1384814	4.94
LCS 580-94507/6		1863464	2.48	2802299	2.77	1423184	4.94
LCSD 580-94507/7		1908984	2.48	2804402	2.77	1395962	4.94
580-28246-7	TRIP BLANK	1810274	2.48	2597611	2.77	1360204	4.94
580-28246-1	MW-3-082411-W	1356177	2.48	2175826	2.77	991584	4.94
580-28246-2	MW-8-082411-W	1833495	2.48	2876289	2.77	1469769	4.94
580-28246-3	MW-16-082411-W	1658909	2.48	2667861	2.77	1211454	4.94
580-28246-4	MW-17-082411-W	1874758	2.48	2795769	2.77	1467528	4.94
580-28246-5	MW-18-082411-W	1836465	2.48	2706915	2.77	1321511	4.94
580-28246-6	DUP-082411-W	1650719	2.48	2637784	2.77	1282919	4.94
580-28246-5 MS	MW-18-082411-W MS	1794015	2.48	2641556	2.77	1320182	4.94
580-28246-5 MSD	MW-18-082411-W MSD	1874475	2.48	2933443	2.77	1539916	4.94

PFB = Pentafluorobenzene
DFB = 1,4-Difluorobenzene
DCB = 1,4-Dichlorobenzene-d4

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8260B

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Seattle | Job No.: 580-28246-1

SDG No.:

Client Sample ID: MW-3-082411-W | Lab Sample ID: 580-28246-1

Matrix: Water | Lab File ID: I0325911.D

Analysis Method: 8260B | Date Collected: 08/24/2011 14:17

Sample wt/vol: 10(mL) | Date Analyzed: 09/03/2011 17:42

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: ZB-624short ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 94507 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
156-59-2	cis-1,2-Dichloroethene	0.31		0.10	0.10
75-35-4	1,1-Dichloroethene	ND		0.10	0.10
127-18-4	Tetrachloroethene	ND	*	0.10	0.10
156-60-5	trans-1,2-Dichloroethene	0.11		0.10	0.10
79-01-6	Trichloroethene	0.64		0.10	0.10
75-01-4	Vinyl chloride	0.37		0.020	0.020

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	109		75-120
25837-05-2	Ethylbenzene-d10	103		75-125
462-06-6	Fluorobenzene (Surr)	101		70-130
98-08-8	Trifluorotoluene (Surr)	100		80-125
2037-26-5	Toluene-d8 (Surr)	97		75-125

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Seattle | Job No.: 580-28246-1

SDG No.:

Client Sample ID: MW-8-082411-W | Lab Sample ID: 580-28246-2

Matrix: Water | Lab File ID: I0325912.D

Analysis Method: 8260B | Date Collected: 08/24/2011 11:39

Sample wt/vol: 10(mL) | Date Analyzed: 09/03/2011 18:08

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: ZB-624short ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 94507 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
156-59-2	cis-1,2-Dichloroethene	ND		0.10	0.10
75-35-4	1,1-Dichloroethene	ND		0.10	0.10
127-18-4	Tetrachloroethene	ND	*	0.10	0.10
156-60-5	trans-1,2-Dichloroethene	ND		0.10	0.10
79-01-6	Trichloroethene	ND		0.10	0.10
75-01-4	Vinyl chloride	0.21		0.020	0.020

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	95		75-120
25837-05-2	Ethylbenzene-d10	86		75-125
462-06-6	Fluorobenzene (Surr)	93		70-130
98-08-8	Trifluorotoluene (Surr)	99		80-125
2037-26-5	Toluene-d8 (Surr)	95		75-125

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Seattle | Job No.: 580-28246-1

SDG No.:

Client Sample ID: MW-16-082411-W | Lab Sample ID: 580-28246-3

Matrix: Water | Lab File ID: I0325913.D

Analysis Method: 8260B | Date Collected: 08/24/2011 12:28

Sample wt/vol: 10(mL) | Date Analyzed: 09/03/2011 18:33

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: ZB-624short ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 94507 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
156-59-2	cis-1,2-Dichloroethene	0.26		0.10	0.10
75-35-4	1,1-Dichloroethene	ND		0.10	0.10
127-18-4	Tetrachloroethene	ND	*	0.10	0.10
156-60-5	trans-1,2-Dichloroethene	0.31		0.10	0.10
79-01-6	Trichloroethene	0.41		0.10	0.10
75-01-4	Vinyl chloride	0.70		0.020	0.020

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	100		75-120
25837-05-2	Ethylbenzene-d10	102		75-125
462-06-6	Fluorobenzene (Surr)	96		70-130
98-08-8	Trifluorotoluene (Surr)	107		80-125
2037-26-5	Toluene-d8 (Surr)	94		75-125

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Seattle | Job No.: 580-28246-1

SDG No.:

Client Sample ID: MW-17-082411-W | Lab Sample ID: 580-28246-4

Matrix: Water | Lab File ID: I0325914.D

Analysis Method: 8260B | Date Collected: 08/24/2011 10:50

Sample wt/vol: 10(mL) | Date Analyzed: 09/03/2011 18:59

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: ZB-624short ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 94507 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
156-59-2	cis-1,2-Dichloroethene	ND		0.10	0.10
75-35-4	1,1-Dichloroethene	ND		0.10	0.10
127-18-4	Tetrachloroethene	ND	*	0.10	0.10
156-60-5	trans-1,2-Dichloroethene	ND		0.10	0.10
79-01-6	Trichloroethene	0.18		0.10	0.10
75-01-4	Vinyl chloride	ND		0.020	0.020

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	90		75-120
25837-05-2	Ethylbenzene-d10	89		75-125
462-06-6	Fluorobenzene (Surr)	92		70-130
98-08-8	Trifluorotoluene (Surr)	104		80-125
2037-26-5	Toluene-d8 (Surr)	98		75-125

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Seattle | Job No.: 580-28246-1

SDG No.:

Client Sample ID: MW-18-082411-W | Lab Sample ID: 580-28246-5

Matrix: Water | Lab File ID: I0325915.D

Analysis Method: 8260B | Date Collected: 08/24/2011 13:15

Sample wt/vol: 10(mL) | Date Analyzed: 09/03/2011 19:24

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: ZB-624short ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 94507 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
156-59-2	cis-1,2-Dichloroethene	0.39		0.10	0.10
75-35-4	1,1-Dichloroethene	ND		0.10	0.10
127-18-4	Tetrachloroethene	ND	*	0.10	0.10
156-60-5	trans-1,2-Dichloroethene	0.24		0.10	0.10
79-01-6	Trichloroethene	0.40		0.10	0.10
75-01-4	Vinyl chloride	2.3		0.020	0.020

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	94		75-120
25837-05-2	Ethylbenzene-d10	100		75-125
462-06-6	Fluorobenzene (Surr)	98		70-130
98-08-8	Trifluorotoluene (Surr)	106		80-125
2037-26-5	Toluene-d8 (Surr)	101		75-125

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Seattle | Job No.: 580-28246-1

SDG No.:

Client Sample ID: DUP-082411-W | Lab Sample ID: 580-28246-6

Matrix: Water | Lab File ID: I0325916.D

Analysis Method: 8260B | Date Collected: 08/24/2011 00:00

Sample wt/vol: 10(mL) | Date Analyzed: 09/03/2011 19:50

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: ZB-624short ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 94507 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
156-59-2	cis-1,2-Dichloroethene	0.23		0.10	0.10
75-35-4	1,1-Dichloroethene	ND		0.10	0.10
127-18-4	Tetrachloroethene	ND	*	0.10	0.10
156-60-5	trans-1,2-Dichloroethene	ND		0.10	0.10
79-01-6	Trichloroethene	0.49		0.10	0.10
75-01-4	Vinyl chloride	0.27		0.020	0.020

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	98		75-120
25837-05-2	Ethylbenzene-d10	96		75-125
462-06-6	Fluorobenzene (Surr)	98		70-130
98-08-8	Trifluorotoluene (Surr)	110		80-125
2037-26-5	Toluene-d8 (Surr)	98		75-125

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Seattle | Job No.: 580-28246-1

SDG No.:

Client Sample ID: TRIP BLANK | Lab Sample ID: 580-28246-7

Matrix: Water | Lab File ID: I0325910.D

Analysis Method: 8260B | Date Collected: 08/24/2011 00:00

Sample wt/vol: 10(mL) | Date Analyzed: 09/03/2011 17:07

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: ZB-624short ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 94507 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
156-59-2	cis-1,2-Dichloroethene	ND		0.10	0.10
75-35-4	1,1-Dichloroethene	ND		0.10	0.10
127-18-4	Tetrachloroethene	ND	*	0.10	0.10
156-60-5	trans-1,2-Dichloroethene	ND		0.10	0.10
79-01-6	Trichloroethene	ND		0.10	0.10
75-01-4	Vinyl chloride	ND		0.020	0.020

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	87		75-120
25837-05-2	Ethylbenzene-d10	89		75-125
462-06-6	Fluorobenzene (Surr)	97		70-130
98-08-8	Trifluorotoluene (Surr)	101		80-125
2037-26-5	Toluene-d8 (Surr)	92		75-125

FORM VI
GC/MS VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD CURVE EVALUTION

Lab Name: TestAmerica Seattle Job No.: 580-28246-1 Analy Batch No.: 90913

SDG No.:

Instrument ID: SEA015 GC Column: ZB-624short ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/21/2011 12:34 Calibration End Date: 07/21/2011 16:23 Calibration ID: 8521

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 580-90913/3	I0325261.D
Level 2	STD 580-90913/4	I0325262.D
Level 3	STD 580-90913/5	I0325263.D
Level 4	STD 580-90913/6	I0325264.D
Level 5	STD001 580-90913/7	I0325265.D
Level 6	ICIS 580-90913/8	I0325266.D
Level 7	STD010 580-90913/9	I0325267.D
Level 8	STD025 580-90913/10	I0325268.D
Level 9	STD050 580-90913/11	I0325269.D
Level 10	STD080 580-90913/12	I0325270.D

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10		B	M1	M2								
Dichlorodifluoromethane	 0.4269	0.4193 0.4285	0.4056 0.4414	0.4194 0.4249	0.4365 0.3975	Ave		0.4219				3.3		15.0			
Chloromethane	0.7212 0.4322	0.4881 0.4220	0.4462 0.4259	0.4508 0.3952	0.4751 0.3506	Lin2	0.0061	0.4183			0.1000				0.9940		0.9900
Vinyl chloride	0.1938 0.3427	0.3205 0.3514	0.3451 0.3577	0.3791 0.3349	0.3797 0.3087	Lin2	-0.003	0.3526							0.9960		0.9900
Bromomethane	 0.2307	0.3957 0.2323	0.3296 0.2287	0.2543 0.2108	0.2632 0.1885	Lin2	0.0183	0.2208							0.9920		0.9900
Chloroethane	 0.0598	0.1684 0.0566	0.0597 0.0538	0.0620 0.0495	0.0669 0.0420	Qua	0.0002	0.0604	0						1.0000		0.9900
Trichlorofluoromethane	0.1441 0.4644	0.4483 0.4775	0.5033 0.4916	0.4231 0.4659	0.4751 0.4015	Lin2	-0.006	0.4727							0.9930		0.9900
Acrolein	0.0468 0.0291	0.0471 0.0283	0.0267 0.0315	0.0246 0.0287	0.0283 0.0257	Qua1	0.0010	0.0315	0						0.9980		0.9900
1,1,2-Trichloro-1,2,2-trifluoroethane	0.0922 0.2644	0.2466 0.2435	0.2496 0.2599	0.2804 0.2478	0.2635 0.2092	Lin2	-0.003	0.2574							0.9920		0.9900
1,1-Dichloroethene	0.3005 0.2671	0.2809 0.2451	0.2945 0.2675	0.2865 0.2522	0.2883 0.2159	Ave		0.2696				9.7		15.0			
Acetone	 0.0398	 0.0337	0.0885 0.0397	0.0729 0.0357	0.0519 0.0283	Qua	-0.075	0.0458	0						0.9980		0.9900
Iodomethane	0.4380 0.6054	0.6270 0.5774	0.6106 0.5934	0.5937 0.5528	0.6352 0.4224	Qua2	-0.019	0.6303	0						0.9980		0.9900
Carbon disulfide	0.6123 0.5883	0.5602 0.5945	0.5279 0.6507	0.5306 0.6682	0.5524 0.5770	Ave		0.5858				8.0		15.0			
Methylene Chloride	 0.2879	0.6541 0.2529	0.4397 0.2709	0.3762 0.2614	0.3364 0.2261	Lin2	0.0388	0.2633							0.9920		0.9900

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD CURVE EVALUTION

Lab Name: TestAmerica Seattle Job No.: 580-28246-1 Analy Batch No.: 90913

SDG No.:

Instrument ID: SEA015 GC Column: ZB-624short ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/21/2011 12:34 Calibration End Date: 07/21/2011 16:23 Calibration ID: 8521

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10		B	M1	M2								
2-Methyl-2-propanol	0.0125	0.0117	0.0181 0.0141	0.0142 0.0128	0.0158 0.0111	Qua1	0.0021	0.0141	0						0.9960		0.9900
Methyl tert-butyl ether	0.5774 0.6566	0.6755 0.5990	0.6557 0.6488	0.6182 0.6312	0.6813 0.5693	Ave		0.6308				6.2		15.0			
trans-1,2-Dichloroethene	0.3002 0.3023	0.3667 0.2753	0.2948 0.2767	0.2775 0.2760	0.3318 0.2387	Ave		0.2938				12.0		15.0			
Acrylonitrile	0.0500	0.1015 0.0465	0.0510 0.0506	0.0464 0.0471	0.0524 0.0422	Lin1	0.0214	0.0452							0.9950		0.9900
n-Hexane	0.3797 0.2876	0.3338 0.2673	0.3218 0.2751	0.3070 0.2706	0.3036 0.2407	Qua2	0.0017	0.2996	-0.001						0.9980		0.9900
1,1-Dichloroethane	0.6096 0.4700	0.5084 0.4398	0.4968 0.4620	0.4946 0.4341	0.5099 0.3702	Qua2	0.0025	0.4849	-0.001		0.1000				0.9990		0.9900
Vinyl acetate	0.0297 0.0351	0.0350 0.0365	0.0409 0.0413	0.0323 0.0388	0.0358 0.0374	Ave		0.0363				9.9		15.0			
Tert-butyl ethyl ether	0.1685 0.2943	0.3117 0.2805	0.2674 0.3047	0.2681 0.3018	0.3169 0.2814	Ave		0.2793				15.0		15.0			
2,2-Dichloropropane	0.3454 0.2595	0.3191 0.2277	0.2621 0.2411	0.2146 0.2449	0.2721 0.2026	Lin1	0.0051	0.2238							0.9910		0.9900
cis-1,2-Dichloroethene	0.2847 0.3559	0.4210 0.3176	0.3690 0.3548	0.3196 0.3547	0.3780 0.3236	Ave		0.3476				11.0		15.0			
2-Butanone	0.0226	0.0264 0.0198	0.0238 0.0244	0.0214 0.0217	0.0236 0.0220	Ave		0.0229				8.4		15.0			
Chlorobromomethane	0.2163	0.2248 0.1996	0.2333 0.2186	0.1952 0.2163	0.2063 0.2131	Ave		0.2135				5.6		15.0			
Chloroform	0.4637 0.5823	0.6607 0.5429	0.5072 0.5664	0.5213 0.5639	0.5697 0.5301	Ave		0.5504				9.5		15.0			
1,1,1-Trichloroethane	0.4302	0.4551 0.4386	0.3960 0.4389	0.4195 0.4527	0.4334 0.4263	Ave		0.4320				4.1		15.0			
1,1-Dichloropropene	0.6467 0.4234	0.5067 0.4269	0.5019 0.4358	0.4554 0.4323	0.4480 0.4078	Ave		0.4681				15.0		15.0			
Carbon tetrachloride	1.3913 0.3584	0.5175 0.3790	0.4524 0.4094	0.3890 0.4256	0.3632 0.4112	Lin2	0.0201	0.3710							0.9900		0.9900
Benzene	1.1451 1.1419	1.3239 1.1537	1.2083 1.1878	1.1445 1.1864	1.2072 1.0209	Ave		1.1711				6.5		15.0			
1,2-Dichloroethane	0.2337 0.3514	0.4175 0.3421	0.3914 0.3613	0.3511 0.3538	0.3699 0.3366	Ave		0.3506				14.0		15.0			
Tert-amyl methyl ether	0.3672 0.6765	0.5608 0.6826	0.6413 0.7228	0.5902 0.7257	0.6968 0.7128	Lin2	-0.007	0.6828							0.9960		0.9900
Trichloroethene	0.2066	0.2291 0.2085	0.1999 0.2121	0.2313 0.2202	0.2115 0.2214	Ave		0.2157				4.9		15.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD CURVE EVALUTION

Lab Name: TestAmerica Seattle Job No.: 580-28246-1 Analy Batch No.: 90913

SDG No.:

Instrument ID: SEA015 GC Column: ZB-624short ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/21/2011 12:34 Calibration End Date: 07/21/2011 16:23 Calibration ID: 8521

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10		B	M1	M2								
1,2-Dichloropropane	0.1795	0.3896 0.1850	0.2710 0.1933	0.2286 0.1969	0.2037 0.1863	Lin2	0.0202	0.1847							0.9980		0.9900
Dibromomethane	0.1068 0.1170	0.1538 0.1229	0.1142 0.1254	0.1275 0.1227	0.1288 0.1325	Ave		0.1252				10.0		15.0			
Dichlorobromomethane	0.1624 0.2230	0.2420 0.2380	0.2018 0.2530	0.1948 0.2682	0.2128 0.2791	Qua2	-0.001	0.2209	0.0008						0.9950		0.9900
2-Chloroethyl vinyl ether	0.0303 0.0576	0.0529 0.0665	0.0528 0.0632	0.0554 0.0693	0.0604 0.0797	Qua2	-0.003	0.0583	0.0001						0.9980		0.9900
cis-1,3-Dichloropropene	0.1795 0.2228	0.2721 0.2523	0.1935 0.2734	0.2027 0.3005	0.2126 0.3193	Qua2	-0.001	0.2260	0.0013						0.9900		0.9900
4-Methyl-2-pentanone	0.0461 0.0482	0.0542 0.0532	0.0505 0.0539	0.0514 0.0503	0.0497 0.0565	Qua2	0	0.0512	0						0.9980		0.9900
Toluene	0.6645 0.7095	0.8309 0.7371	0.7230 0.7281	0.8288 0.7787	0.7890 0.7068	Ave		0.7499				7.3		15.0			
trans-1,3-Dichloropropene	0.0990 0.1529	0.1805 0.1748	0.1312 0.1942	0.1395 0.2063	0.1323 0.2403	Qua2	-0.001	0.1521	0.0011						0.9900		0.9900
1,1,2-Trichloroethane	0.1258	0.2135 0.1319	0.1440 0.1300	0.1440 0.1447	0.1408 0.1508	Qua2	0.0081	0.1234	0.0004						0.9950		0.9900
Tetrachloroethene	0.1792 0.1610	0.2257 0.1732	0.2055 0.2140	0.2211 0.2179	0.1683 0.1964	Ave		0.1963				12.0		15.0			
1,3-Dichloropropane	0.2131	0.3179 0.2228	0.2544 0.2201	0.2195 0.2291	0.2275 0.2487	Qua2	0.0104	0.2081	0.0005						0.9990		0.9900
2-Hexanone	0.0395	0.0549 0.0443	0.0397 0.0438	0.0435 0.0399	0.0425 0.0472	Qua2	0.0060	0.0401	0						0.9930		0.9900
Chlorodibromomethane	0.1370	0.1557 0.1509	0.1102 0.1695	0.1126 0.1871	0.1212 0.2030	Qua1	-0.006	0.1487	0.0007						0.9990		0.9900
1,2-Dibromoethane	0.0958 0.1387	0.2151 0.1435	0.1333 0.1429	0.1283 0.1441	0.1400 0.1566	Lin1	-0.001	0.1496							0.9980		0.9900
Chlorobenzene	6.8813 1.0712	2.4282 1.0705	1.6041 1.1187	1.2866 1.1528	1.1851 1.1284	Lin	-0.040	1.1341			0.3000				1.0000		0.9900
Ethylbenzene	1.6009 1.7648	2.0225 1.7664	1.7092 1.8861	1.6375 1.9197	1.7873 1.6128	Ave		1.7707				7.9		15.0			
1,1,1,2-Tetrachloroethane	0.3689	0.4774 0.3919	0.3397 0.4371	0.2835 0.4552	0.3428 0.4500	Qua1	-0.014	0.4121	0.0006						0.9990		0.9900
m-Xylene & p-Xylene	1.3231	1.5314 1.3659	1.2193 1.4658	1.2781 1.1560	1.3284 +++++	Qua2	0.0224	1.3227	-0.001						0.9910		0.9900
o-Xylene	1.4165	1.5662 1.4087	1.3768 1.5593	1.3658 1.5601	1.3791 1.4202	Ave		1.4503				5.9		15.0			
Styrene	0.7625 0.9774	1.3218 1.0307	0.9297 1.0985	0.9340 1.1498	0.9699 1.1171	Ave		1.0291				15.0		15.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD CURVE EVALUTION

Lab Name: TestAmerica Seattle Job No.: 580-28246-1 Analy Batch No.: 90913

SDG No.:

Instrument ID: SEA015 GC Column: ZB-624short ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/21/2011 12:34 Calibration End Date: 07/21/2011 16:23 Calibration ID: 8521

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10		B	M1	M2								
Bromoform		0.2033	0.1489	0.1092	0.1222	Qua1	-0.005	0.1618	0.0010		0.1000				0.9990		0.9900
	0.1395	0.1632	0.1960	0.2137	0.2378												
Isopropylbenzene	1.2791	1.6249	1.4809	1.5284	1.5579	Qua2	-0.006	1.5978	0.0062						0.9980		0.9900
	1.6560	1.7008	1.8287	1.8568	+++++												
1,1,2,2-Tetrachloroethane		1.1422	0.8400	0.5160	0.4433	Qua2	0.0780	0.3816	0.0005		0.3000				0.9900		0.9900
	0.4022	0.4035	0.4213	0.4051	0.4163												
Bromobenzene		0.7183	0.5186	0.4683	0.4599	Qua2	0.0261	0.4309	0.0014						0.9970		0.9900
	0.4542	0.4664	0.4886	0.5045	0.5362												
trans-1,4-Dichloro-2-butene	0.0132	0.1058	0.0904	0.0514	0.0630	Lin1	-0.006	0.0775							0.9980		0.9900
	0.0657	0.0712	0.0773	0.0768	0.0796												
1,2,3-Trichloropropane		0.2909	0.2175	0.1118	0.1082	Qua1	0.0180	0.1000	0.0001						0.9990		0.9900
	0.1034	0.1033	0.1075	0.1061	0.1126												
N-Propylbenzene	1.7330	2.2707	1.9944	2.0836	2.1147	Ave		2.0877				10.0		15.0			
	2.1433	2.1782	2.2858	2.3255	1.7476												
2-Chlorotoluene	0.4849	0.6263	0.4799	0.4634	0.4512	Ave		0.4887				10.0		15.0			
	0.4569	0.4568	0.4810	0.4884	0.4980												
1,3,5-Trimethylbenzene	1.2814	1.5860	1.3207	1.3867	1.3603	Ave		1.4631				8.5		15.0			
	1.4233	1.5187	1.5896	1.6406	1.5241												
4-Chlorotoluene	0.4580	0.6159	0.5283	0.4528	0.4646	Ave		0.4856				11.0		15.0			
	0.4508	0.4526	0.4595	0.4760	0.4980												
tert-Butylbenzene	0.7313	1.2570	1.1267	1.0533	1.1471	Qua2	-0.010	1.2350	0.0038						0.9910		0.9900
	1.1803	1.3746	1.4951	1.5576	1.3972												
1,2,4-Trimethylbenzene	1.2910	1.7715	1.3644	1.3261	1.3931	Ave		1.4875				11.0		15.0			
	1.4640	1.5235	1.6213	1.6709	1.4490												
sec-Butylbenzene	1.2947	1.9433	1.5717	1.6600	1.6509	Ave		1.7780				14.0		15.0			
	1.7955	1.9478	2.0715	2.0784	1.7661												
4-Isopropyltoluene	1.2700	1.6255	1.4191	1.3418	1.4607	Ave		1.5326				11.0		15.0			
	1.5140	1.6241	1.7419	1.7576	1.5717												
1,3-Dichlorobenzene		1.5012	1.1927	0.9438	0.9437	Qua2	0.0599	0.8846	0.0019						0.9980		0.9900
	0.9178	0.9393	0.9687	0.9979	1.0129												
1,4-Dichlorobenzene		1.5821	1.2554	1.1105	0.9953	Qua2	0.0628	0.9489	0.0012						1.0000		0.9900
	0.9582	0.9854	0.9915	1.0197	1.0377												
n-Butylbenzene	0.2050	0.4260	0.4106	0.3671	0.3885	Lin2	-0.004	0.4132							0.9960		0.9900
	0.3900	0.4099	0.4162	0.4197	0.4255												
1,2-Dichlorobenzene		1.7688	1.3658	0.9961	0.9430	Lin2	0.0863	0.8943							0.9960		0.9900
	0.8975	0.9004	0.9423	0.9337	0.9284												
Hexachloroethane		0.2352	0.1524	0.1272	0.1657	Qua1	-0.016	0.2326	0.0009						0.9970		0.9900
	0.1908	0.2159	0.2661	0.2888	0.2955												
1,2-Dibromo-3-Chloropropane		0.1579	0.1262	0.0617	0.0586	Qua1	0.0078	0.0633	0.0001						0.9980		0.9900
	0.0568	0.0608	0.0699	0.0676	0.0685												

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD CURVE EVALUTION

Lab Name: TestAmerica Seattle Job No.: 580-28246-1 Analy Batch No.: 90913

SDG No.:

Instrument ID: SEA015 GC Column: ZB-624short ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/21/2011 12:34 Calibration End Date: 07/21/2011 16:23 Calibration ID: 8521

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10		B	M1	M2								
1,3,5-Trichlorobenzene	0.6120 0.7210	1.2150 0.7624	0.9261 0.8103	0.7726 0.7829	0.7445 0.7906	Lin1	0.0038	0.7874							0.9990		0.9900
1,2,4-Trichlorobenzene	0.6784 0.6774	1.3421 0.6892	1.1052 0.7315	0.7209 0.7045	0.6624 0.7274	Lin1	0.0125	0.7173							0.9990		0.9900
Hexachlorobutadiene	0.4158 0.3008	0.4777 0.3236	0.3640 0.3285	0.3235 0.3229	0.2965 0.3322	Lin1	0.0031	0.3273							0.9990		0.9900
Naphthalene	1.3820 1.1935	2.9829 1.2830	2.3849 1.3844	1.4245 1.2923	1.1676 1.3314	Lin1	0.0382	1.3201							0.9980		0.9900
1,2,3-Trichlorobenzene	0.6592 0.5844	1.3142 0.6091	1.0663 0.6384	0.7322 0.6145	0.5973 0.6404	Lin1	0.0168	0.6290							0.9980		0.9900
Fluorobenzene (Surr)	1.7162 1.7234	1.7234 1.7700	1.7285 1.7876	1.6771 1.7463	1.7508 1.6286	Ave		1.7239				2.6		15.0			
Trifluorotoluene (Surr)	0.2647 0.3027	0.3519 0.3348	0.3152 0.3430	0.3198 0.3599	0.3258 0.3788	Ave		0.3298				9.8		15.0			
Toluene-d8 (Surr)	1.0459 1.0426	1.0811 1.0499	1.0516 1.0594	1.1000 1.0676	1.0447 +++++	Ave		1.0607				1.8		15.0			
Ethylbenzene-d10	0.8069 0.8259	0.7625 0.8218	0.8030 +++++	0.7648 +++++	0.7782 +++++	Ave		0.7947				3.3		15.0			
4-Bromofluorobenzene (Surr)	0.7179 0.7246	0.7167 0.7254	0.7244 +++++	0.7329 +++++	0.7152 +++++	Ave		0.7224				0.9		15.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Seattle Job No.: 580-28246-1 Analy Batch No.: 90913

SDG No.:

Instrument ID: SEA015 GC Column: ZB-624short ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/21/2011 12:34 Calibration End Date: 07/21/2011 16:23 Calibration ID: 8521

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 580-90913/3	I0325261.D
Level 2	STD 580-90913/4	I0325262.D
Level 3	STD 580-90913/5	I0325263.D
Level 4	STD 580-90913/6	I0325264.D
Level 5	STD001 580-90913/7	I0325265.D
Level 6	ICIS 580-90913/8	I0325266.D
Level 7	STD010 580-90913/9	I0325267.D
Level 8	STD025 580-90913/10	I0325268.D
Level 9	STD050 580-90913/11	I0325269.D
Level 10	STD080 580-90913/12	I0325270.D

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10	LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10
Dichlorodifluoromethane	PFB	Ave	187762	3788 401325	7157 1000740	15406 2063266	38576 3457685	5.00	0.0999 9.99	0.200 25.0	0.400 50.0	0.999 80.0
Chloromethane	PFB	Lin2	1452 190347	4415 395699	7883 966699	16579 1921252	42038 3053158	0.0200 5.00	0.100 10.0	0.200 25.0	0.400 50.0	1.00 80.0
Vinyl chloride	PFB	Lin2	390 150865	2898 329302	6094 811493	13938 1627450	33578 2687426	0.0200 5.00	0.100 10.0	0.200 25.0	0.400 50.0	1.00 80.0
Bromomethane	PFB	Lin2	101540	3578 217693	5822 518841	9349 1024361	23281 1640691	5.00	0.100 10.0	0.200 25.0	0.400 50.0	1.00 80.0
Chloroethane	PFB	Qua	26323	1521 53027	1054 121902	2279 240600	5911 365199	5.00	0.0999 9.99	0.200 25.0	0.400 50.0	0.999 79.9
Trichlorofluoromethane	PFB	Lin2	290 204389	4053 447455	8886 1115266	15551 2263577	42010 3493856	0.0200 5.00	0.1000 10.00	0.200 25.0	0.400 50.0	1.000 80.0
Acrolein	PFB	Qua1	475 64589	2148 133469	2376 360045	4566 701735	12628 1129369	0.101 25.2	0.504 50.4	1.01 126	2.02 252	5.04 403
1,1,2-Trichloro-1,2,2-trifluoroetha ne	PFB	Lin2	185 116075	2224 227609	4397 588136	10281 1201063	23243 1816061	0.0200 4.99	0.0998 9.98	0.200 24.9	0.399 49.9	0.998 79.8
1,1-Dichloroethene	PFB	Ave	604 117464	2537 229418	5195 606272	10520 1224343	25473 1877174	0.0200 5.00	0.0999 9.99	0.200 25.0	0.400 50.0	0.999 79.9
Acetone	PFB	Qua	87665	157788	7813 450752	13394 868182	22958 1232822	25.0	50.0	1.00 125	2.00 250	5.00 400
Iodomethane	PFB	Qua2	4429 1338962	28483 2718851	54178 6764812	109667 13497962	282276 18473010	0.101 25.1	0.503 50.3	1.01 126	2.01 251	5.03 402
Carbon disulfide	PFB	Ave	1234 259330	5072 557956	9335 1478334	19532 3251526	48922 5029070	0.0200 5.01	0.100 10.0	0.200 25.0	0.401 50.1	1.00 80.1
Methylene Chloride	PFB	Lin2	126393	5899 236367	7745 613102	13794 1266759	29669 1963187	4.99	0.0998 9.98	0.200 24.9	0.399 49.9	0.998 79.8
2-Methyl-2-propanol	PFB	Qua1	27521	54861	1597 160038	2615 310472	6987 482632	25.0	50.0	1.00 125	2.00 250	5.00 400

FORM VI
GC/MS VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Seattle Job No.: 580-28246-1 Analy Batch No.: 90913

SDG No.:

Instrument ID: SEA015 GC Column: ZB-624short ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/21/2011 12:34 Calibration End Date: 07/21/2011 16:23 Calibration ID: 8521

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10
Methyl tert-butyl ether	PFB	Ave	1162 288983	6107 561338	11579 1471781	22724 3067105	60249 4954568	0.0200 5.00	0.100 10.0	0.200 25.0	0.400 50.0	1.00 80.0
trans-1,2-Dichloroethene	PFB	Ave	604 133048	3315 258020	5206 627769	10200 1340965	29337 2077296	0.0200 5.00	0.100 10.0	0.200 25.0	0.400 50.0	1.00 80.0
Acrylonitrile	PFB	Lin1	 110121	4593 218205	4506 574071	8541 1146258	23178 1839381	 25.0	0.501 50.1	1.00 125	2.00 250	5.01 400
n-Hexane	PFB	Qua2	766 126903	3025 251098	5696 625734	11312 1318242	26913 2099976	0.0201 5.01	0.100 10.0	0.201 25.1	0.401 50.1	1.00 80.2
1,1-Dichloroethane	PFB	Qua2	1226 206768	4594 411889	8769 1047474	18169 2108191	45069 3220674	0.0200 5.00	0.1000 10.00	0.200 25.0	0.400 50.0	1.000 80.0
Vinyl acetate	PFB	Ave	301 77750	1594 172270	3639 471834	5982 949374	15939 1639195	0.101 25.2	0.503 50.3	1.01 126	2.01 252	5.03 403
Tert-butyl ethyl ether	PFB	Ave	339 129542	2818 262903	4722 691169	9855 1466369	28027 2448768	0.0200 5.00	0.100 10.0	0.200 25.0	0.400 50.0	1.00 80.0
2,2-Dichloropropane	PFB	Lin1	695 114218	2885 213400	4629 546994	7888 1190207	24064 1763118	0.0200 5.00	0.100 10.0	0.200 25.0	0.400 50.0	1.00 80.0
cis-1,2-Dichloroethene	PFB	Ave	574 156979	3814 298199	6529 806571	11771 1727214	33497 2821749	0.0200 5.01	0.100 10.0	0.200 25.1	0.401 50.1	1.00 80.2
2-Butanone	PFB	Ave	 49762	1195 92923	2100 276669	3941 528202	10436 956612	 25.0	0.500 50.0	1.00 125	2.00 250	5.00 400
Chlorobromomethane	PFB	Ave	 95327	2035 187367	4125 496611	7186 1052694	18268 1857330	 5.01	0.100 10.0	0.200 25.0	0.401 50.1	1.00 80.1
Chloroform	PFB	Ave	934 256543	5979 509286	8965 1286280	19182 2742685	50431 4618035	0.0200 5.01	0.100 10.0	0.200 25.0	0.400 50.1	1.00 80.1
1,1,1-Trichloroethane	PFB	Ave	 189265	4112 410785	6990 995126	15412 2198643	38307 3708689	 5.00	0.1000 10.00	0.200 25.0	0.400 50.0	1.000 80.0
1,1-Dichloropropene	PFB	Ave	1289 184585	4537 396289	8778 979228	16581 2080614	39237 3515622	0.0198 4.95	0.0991 9.91	0.198 24.8	0.396 49.5	0.991 79.2
Carbon tetrachloride	PFB	Lin2	2804 157996	4686 355689	8001 930123	14320 2071210	32170 3584102	0.0200 5.01	0.100 10.0	0.200 25.0	0.401 50.1	1.00 80.1
Benzene	PFB	Ave	2302 502096	11957 1080052	21316 2691886	42025 5759097	106643 8875801	0.0200 5.00	0.0999 9.99	0.200 25.0	0.400 50.0	0.999 79.9
1,2-Dichloroethane	PFB	Ave	470 154585	3773 320464	6908 819330	12899 1718385	32698 2927863	0.0200 5.00	0.1000 10.00	0.200 25.0	0.400 50.0	1.000 80.0
Tert-amyl methyl ether	PFB	Lin2	739 297735	5070 639680	11325 1639682	21695 3526268	61616 6203126	0.0200 5.00	0.100 10.0	0.200 25.0	0.400 50.0	1.00 80.0
Trichloroethene	DFB	Ave	 134646	3078 275525	5107 737832	11875 1607907	27259 2737534	 5.00	0.100 10.0	0.200 25.0	0.400 50.0	1.00 80.0
1,2-Dichloropropane	DFB	Lin2	 119522	5349 249855	7075 687025	11992 1469724	26821 2354508	 5.11	0.102 10.2	0.204 25.6	0.409 51.1	1.02 81.8
Dibromomethane	DFB	Ave	312 76677	2079 163385	2934 438767	6584 901555	16699 1647985	0.0201 5.03	0.101 10.1	0.201 25.2	0.402 50.3	1.01 80.5

FORM VI
GC/MS VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Seattle Job No.: 580-28246-1 Analy Batch No.: 90913

SDG No.:

Instrument ID: SEA015 GC Column: ZB-624short ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/21/2011 12:34 Calibration End Date: 07/21/2011 16:23 Calibration ID: 8521

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10
Dichlorobromomethane	DFB	Qua2	472 145465	3255 314830	5162 880841	10012 1960916	27442 3454761	0.0200 5.01	0.100 10.0	0.200 25.0	0.400 50.1	1.00 80.1
2-Chloroethyl vinyl ether	DFB	Qua2	443 188715	3572 442051	6789 1105017	14317 2546433	39182 4960044	0.101 25.2	0.503 50.3	1.01 126	2.01 252	5.03 402
cis-1,3-Dichloropropene	DFB	Qua2	517 144033	3626 330668	4903 943467	10320 2177084	27179 3916577	0.0198 4.96	0.0992 9.92	0.198 24.8	0.397 49.6	0.992 79.4
4-Methyl-2-pentanone	DFB	Qua2	669 157115	3640 351759	6446 938050	13183 1835232	32046 3494229	0.100 25.0	0.500 50.0	1.00 125	2.00 250	5.00 400
Toluene	DFB	Ave	1928 462094	11158 973505	18464 2531158	42521 5684155	101611 8736010	0.0200 5.00	0.1000 10.00	0.200 25.0	0.400 50.0	1.000 80.0
trans-1,3-Dichloropropene	DFB	Qua2	293 101623	2473 235654	3418 689179	7305 1536369	17385 3031078	0.0204 5.10	0.102 10.2	0.204 25.5	0.408 51.0	1.02 81.6
1,1,2-Trichloroethane	DFB	Qua2	 82142	2874 174595	3686 452921	7405 1058677	18179 1868512	 5.01	0.100 10.0	0.200 25.1	0.401 50.1	1.00 80.2
Tetrachloroethene	DFB	Ave	521 105083	3037 229158	5258 745482	11364 1593813	21721 2431755	0.0200 5.01	0.100 10.0	0.200 25.0	0.401 50.1	1.00 80.1
1,3-Dichloropropane	DFB	Qua2	 138706	4267 294067	6492 764866	11254 1671737	29283 3072567	 5.00	0.0999 9.99	0.200 25.0	0.400 50.0	0.999 79.9
2-Hexanone	DFB	Qua2	 128654	3687 292653	5076 762468	11170 1455713	27383 2920605	 25.0	0.500 50.0	1.00 125	2.00 250	5.00 400
Chlorodibromomethane	DFB	Qua1	 88603	2076 197913	2795 585043	5738 1356094	15495 2490795	 4.96	0.0993 9.93	0.199 24.8	0.397 49.6	0.993 79.4
1,2-Dibromoethane	DFB	Lin1	279 90616	2899 190124	3416 498605	6608 1055371	18091 1942609	0.0201 5.02	0.100 10.0	0.201 25.1	0.401 50.2	1.00 80.2
Chlorobenzene	DCB	Lin	9348 335289	16156 698682	20483 1795012	33131 4022254	75405 6772385	0.0200 4.99	0.0998 9.98	0.200 25.0	0.399 49.9	0.998 79.8
Ethylbenzene	DCB	Ave	2178 553234	13477 1154541	21857 3030863	42228 6708105	113895 9694220	0.0200 5.00	0.1000 10.00	0.200 25.0	0.400 50.0	1.000 80.0
1,1,1,2-Tetrachloroethane	DCB	Qua1	 116052	3192 257079	4359 704873	7337 1596315	21924 2714592	 5.02	0.100 10.0	0.201 25.1	0.401 50.2	1.00 80.2
m-Xylene & p-Xylene	DCB	Qua2	 831010	20445 1788652	31239 4719038	66037 8092816	169598 +++++	 10.0	0.200 20.0	0.401 50.1	0.801 100	2.00 +++++
o-Xylene	DCB	Ave	 444714	10452 922145	17633 2509498	35276 5459892	88013 8549101	 5.01	0.100 10.0	0.200 25.0	0.400 50.1	1.00 80.1
Styrene	DCB	Ave	1042 307780	8847 676728	11942 1773186	24196 4035913	62086 6745156	0.0201 5.02	0.100 10.0	0.201 25.1	0.402 50.2	1.00 80.3
Bromoform	DCB	Qua1	 44406	1376 108355	1934 319769	2859 758198	7907 1451388	 5.08	0.102 10.2	0.203 25.4	0.406 50.8	1.02 81.2
Isopropylbenzene	DCB	Qua2	1742 519637	10838 1112838	18957 2941636	39455 6494904	99375 +++++	0.0200 5.00	0.100 10.0	0.200 25.0	0.400 50.0	1.00 +++++
1,1,2,2-Tetrachloroethane	DCB	Qua2	 126470	7634 264536	10774 679113	13347 1419678	28336 2509817	 5.01	0.100 10.0	0.201 25.1	0.401 50.1	1.00 80.2

FORM VI
GC/MS VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Seattle Job No.: 580-28246-1 Analy Batch No.: 90913

SDG No.:

Instrument ID: SEA015 GC Column: ZB-624short ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/21/2011 12:34 Calibration End Date: 07/21/2011 16:23 Calibration ID: 8521

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10	LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10
Bromobenzene	DCB	Qua2	143448	4822 307165	6682 791015	12168 1776001	29524 3247457	5.04	0.101 10.1	0.201 25.2	0.403 50.4	1.01 80.6
trans-1,4-Dichloro-2-butene	DCB	Lin1	90 102988	3528 232965	5781 621264	6632 1343201	20088 2393176	0.100 25.0	0.500 50.0	1.00 125	2.00 250	5.00 400
1,2,3-Trichloropropane	DCB	Qua1	32757	1960 68258	2812 174685	2915 374769	6972 684399	5.05	0.101 10.1	0.202 25.3	0.404 50.5	1.01 80.8
N-Propylbenzene	DCB	Ave	2359 672217	15138 1424472	25517 3675025	53761 8130064	134824 10509387	0.0200 5.00	0.100 10.0	0.200 25.0	0.400 50.0	1.00 80.0
2-Chlorotoluene	DCB	Ave	663 143942	4194 300043	6168 776782	12010 1715060	28898 3008288	0.0201 5.02	0.100 10.0	0.201 25.1	0.402 50.2	1.00 80.4
1,3,5-Trimethylbenzene	DCB	Ave	1746 446839	10584 994178	16915 2558300	35814 5741499	86811 9174868	0.0200 5.01	0.100 10.0	0.200 25.0	0.400 50.1	1.00 80.1
4-Chlorotoluene	DCB	Ave	625 141757	4116 296697	6776 740601	11713 1668292	29695 3002377	0.0201 5.01	0.100 10.0	0.201 25.1	0.401 50.1	1.00 80.2
tert-Butylbenzene	DCB	Qua2	995 369997	8376 898487	14408 2402485	27163 5442836	73096 8398179	0.0200 5.00	0.1000 10.00	0.200 25.0	0.400 50.0	1.000 80.0
1,2,4-Trimethylbenzene	DCB	Ave	1767 461705	11875 1001809	17553 2621009	34404 5873921	89308 8761825	0.0201 5.03	0.101 10.1	0.201 25.1	0.402 50.3	1.01 80.4
sec-Butylbenzene	DCB	Ave	1765 564000	12975 1275690	20139 3335511	42895 7277168	105415 10636620	0.0200 5.01	0.100 10.0	0.200 25.0	0.401 50.1	1.00 80.1
4-Isopropyltoluene	DCB	Ave	1727 474378	10826 1061009	18139 2797692	34585 6138505	93033 9442229	0.0200 5.00	0.0999 9.99	0.200 25.0	0.400 50.0	0.999 79.9
1,3-Dichlorobenzene	DCB	Qua2	288006	10013 614560	15268 1558228	24363 3490690	60199 6094395	5.00	0.100 10.0	0.200 25.0	0.400 50.0	1.00 80.0
1,4-Dichlorobenzene	DCB	Qua2	300244	10537 643744	16046 1592458	28624 3561465	63392 6234118	5.00	0.0999 9.99	0.200 25.0	0.400 50.0	0.999 79.9
n-Butylbenzene	DCB	Lin2	279 122326	2840 268032	5253 669197	9473 1467458	24769 2558614	0.0200 5.00	0.100 10.0	0.200 25.0	0.400 50.0	1.00 80.0
1,2-Dichlorobenzene	DCB	Lin2	281628	11798 589108	17483 1515723	25714 3266042	60154 5586225	5.00	0.100 10.0	0.200 25.0	0.400 50.0	1.00 80.0
Hexachloroethane	DCB	Qua1	60016	1573 141636	1956 429143	3292 1012638	10597 1782173	5.02	0.100 10.0	0.201 25.1	0.401 50.2	1.00 80.2
1,2-Dibromo-3-Chloropropane	DCB	Qua1	17856	1056 39871	1619 112661	1597 237155	3750 413177	5.02	0.100 10.0	0.201 25.1	0.401 50.2	1.00 80.2
1,3,5-Trichlorobenzene	DCB	Lin1	833 226147	8100 498582	11849 1302814	19935 2737008	47463 4754540	0.0200 5.00	0.100 10.0	0.200 25.0	0.400 50.0	1.00 80.0
1,2,4-Trichlorobenzene	DCB	Lin1	917 210988	8885 447546	14041 1167780	18471 2445936	41938 4343941	0.0199 4.97	0.0993 9.93	0.199 24.8	0.397 49.7	0.993 79.4
Hexachlorobutadiene	DCB	Lin1	566 94341	3185 211645	4657 528108	8346 1128849	18902 1997903	0.0200 5.00	0.100 10.0	0.200 25.0	0.400 50.0	1.00 80.0
Naphthalene	DCB	Lin1	1884 374893	19916 840291	30559 2229137	36810 4524731	74551 8018577	0.0200 5.01	0.100 10.0	0.200 25.0	0.401 50.1	1.00 80.1

FORM VI
GC/MS VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Seattle Job No.: 580-28246-1 Analy Batch No.: 90913

SDG No.:

Instrument ID: SEA015 GC Column: ZB-624short ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/21/2011 12:34 Calibration End Date: 07/21/2011 16:23 Calibration ID: 8521

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10
1,2,3-Trichlorobenzene	DCB	Lin1	891	8700	13547	18759	37815	0.0199	0.0993	0.199	0.397	0.993
			182001	395515	1019243	2133309	3824388	4.97	9.93	24.8	49.7	79.4
Fluorobenzene (Surr)	PFB	Ave	863708	779337	763351	770872	774437	5.00	5.00	5.00	5.00	5.00
			758816	829675	811416	848896	886202	5.00	5.00	5.00	5.00	5.00
Trifluorotoluene (Surr)	DFB	Ave	768	4726	8050	16409	41964	0.0200	0.1000	0.200	0.400	1.000
			197133	442269	1192537	2626981	4682289	5.00	10.00	25.0	50.0	80.0
Toluene-d8 (Surr)	DFB	Ave	760088	727269	672680	706847	674046	5.01	5.01	5.01	5.01	5.01
			680314	694702	738090	780777	+++++	5.01	5.01	5.01	5.01	+++++
Ethylbenzene-d10	DCB	Ave	274664	254229	256902	246728	248123	5.00	5.00	5.00	5.00	5.00
			259102	268780	+++++	+++++	+++++	5.00	5.00	+++++	+++++	+++++
4-Bromofluorobenzene (Surr)	DCB	Ave	244807	239415	232213	236888	228470	5.01	5.01	5.01	5.01	5.01
			227757	237708	+++++	+++++	+++++	5.01	5.01	+++++	+++++	+++++

Curve Type Legend:

Ave = Average ISTD
Lin = Linear ISTD
Lin1 = Linear 1/conc ISTD
Lin2 = Linear 1/conc^2 ISTD
Qua = Quadratic ISTD
Qua1 = Quadratic 1/conc ISTD
Qua2 = Quadratic 1/conc^2 ISTD

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Seattle Job No.: 580-28246-1

SDG No.:

Lab Sample ID: ICV 580-90913/13 Calibration Date: 07/21/2011 16:48

Instrument ID: SEA015 Calib Start Date: 07/21/2011 12:34

GC Column: ZB-624short ID: 0.18(mm) Calib End Date: 07/21/2011 16:23

Lab File ID: I0325271.D Conc. Units: ug/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Acrolein	Qua1		0.0174		22.3	40.0	-44.3*	40.0
Acrylonitrile	Lin1		0.0417		37.0	40.6	-8.9	40.0
Fluorobenzene (Surr)	Ave	1.724	1.644		4.77	5.00	-4.6	25.0
Toluene-d8 (Surr)	Ave	1.061	1.079		5.09	5.01	1.7	25.0
Ethylbenzene-d10	Ave	0.7947	0.7822		4.92	5.00	-1.6	25.0
4-Bromofluorobenzene (Surr)	Ave	0.7224	0.7310		5.07	5.01	1.2	25.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Seattle Job No.: 580-28246-1

SDG No.:

Lab Sample ID: ICV 580-90913/14 Calibration Date: 07/21/2011 17:13

Instrument ID: SEA015 Calib Start Date: 07/21/2011 12:34

GC Column: ZB-624short ID: 0.18(mm) Calib End Date: 07/21/2011 16:23

Lab File ID: I0325272.D Conc. Units: ug/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dichlorodifluoromethane	Ave	0.4219	0.3209		6.08	8.00	-23.9	25.0
Chloromethane	Lin2		0.3692	0.1000	7.05	8.00	-11.9	25.0
Vinyl chloride	Lin2		0.3232		7.34	8.00	-8.3	25.0
Bromomethane	Lin2		0.2273		8.15	8.00	1.9	25.0
Chloroethane	Qua		0.0564		7.70	8.00	-3.8	25.0
Trichlorofluoromethane	Lin2		0.4619		7.83	8.00	-2.1	25.0
1,1,2-Trichloro-1,2,2-triflu oroethane	Lin2		0.3021		9.35	7.96	17.5	40.0
1,1-Dichloroethene	Ave	0.2696	0.2767		8.13	7.92	2.6	25.0
Acetone	Qua		0.0682		26.1	16.0	63.0*	25.0
Iodomethane	Qua2		0.6383		16.2	15.8	2.8	40.0
Carbon disulfide	Ave	0.5858	0.6898		18.8	16.0	17.8	25.0
Methylene Chloride	Lin2		0.2910		8.70	8.00	8.7	25.0
2-Methyl-2-propanol	Qua1		0.0117		33.8	40.0	-15.5	40.0
Methyl tert-butyl ether	Ave	0.6308	0.6120		7.76	8.00	-3.0	25.0
trans-1,2-Dichloroethene	Ave	0.2938	0.3067		8.36	8.01	4.4	25.0
1,1-Dichloroethane	Qua2		0.4656	0.1000	7.76	7.92	-2.0	25.0
Vinyl acetate	Ave	0.0363	0.0299		13.2	16.0	-17.5	40.0
Tert-butyl ethyl ether	Ave	0.2793	0.2722		7.80	8.00	-2.6	40.0
2,2-Dichloropropane	Lin1		0.2393		8.54	8.01	6.6	25.0
cis-1,2-Dichloroethene	Ave	0.3476	0.3551		8.16	7.99	2.2	25.0
2-Butanone	Ave	0.0229	0.0290		20.3	16.0	26.9*	25.0
Chlorobromomethane	Ave	0.2135	0.2205		8.19	7.94	3.2	25.0
Chloroform	Ave	0.5504	0.5640		8.20	8.00	2.5	25.0
1,1,1-Trichloroethane	Ave	0.4320	0.4522		8.38	8.00	4.7	25.0
1,1-Dichloropropene	Ave	0.4681	0.4475		7.62	7.97	-4.4	25.0
Carbon tetrachloride	Lin2		0.3941		8.46	8.01	5.6	25.0
Benzene	Ave	1.171	1.205		8.20	7.96	2.9	25.0
1,2-Dichloroethane	Ave	0.3506	0.3781		8.55	7.93	7.8	25.0
Tert-amyl methyl ether	Lin2		0.6569		7.71	8.00	-3.6	40.0
Trichloroethene	Ave	0.2157	0.2304		8.55	8.00	6.8	25.0
1,2-Dichloropropane	Lin2		0.2045		8.75	8.00	9.4	25.0
Dibromomethane	Ave	0.1252	0.1263		7.96	7.89	0.9	25.0
Dichlorobromomethane	Qua2		0.2427		8.42	7.90	6.6	25.0
2-Chloroethyl vinyl ether	Qua2		0.0464		12.6	15.9	-20.9	40.0
cis-1,3-Dichloropropene	Qua2		0.2394		8.49	8.40	1.0	25.0
4-Methyl-2-pentanone	Qua2		0.0495		15.3	15.9	-3.8	25.0
Toluene	Ave	0.7499	0.7616		8.13	8.00	1.6	25.0
trans-1,3-Dichloropropene	Qua2		0.1681		7.94	7.60	4.5	25.0
1,1,2-Trichloroethane	Qua2		0.1444		8.94	7.90	13.2	25.0
Tetrachloroethene	Ave	0.1963	0.2110		8.61	8.01	7.5	25.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Seattle Job No.: 580-28246-1

SDG No.:

Lab Sample ID: ICV 580-90913/14 Calibration Date: 07/21/2011 17:13

Instrument ID: SEA015 Calib Start Date: 07/21/2011 12:34

GC Column: ZB-624short ID: 0.18(mm) Calib End Date: 07/21/2011 16:23

Lab File ID: I0325272.D Conc. Units: ug/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
1,3-Dichloropropane	Qua2		0.2292		8.58	8.00	7.3	25.0
2-Hexanone	Qua2		0.0489		18.9	15.7	20.5	25.0
Chlorodibromomethane	Qua1		0.1466		7.58	7.93	-4.4	25.0
1,2-Dibromoethane	Lin1		0.1430		7.65	8.00	-4.3	25.0
Chlorobenzene	Lin		1.037	0.3000	7.35	8.00	-8.1	25.0
1,1,1,2-Tetrachloroethane	Qua1		0.3943		7.51	7.89	-4.8	25.0
Ethylbenzene	Ave	1.771	1.768		7.93	7.94	-0.1	25.0
m-Xylene & p-Xylene	Qua2		1.381		16.8	16.0	5.1	25.0
o-Xylene	Ave	1.450	1.503		8.29	8.00	3.7	25.0
Styrene	Ave	1.029	1.084		8.40	7.98	5.4	25.0
Bromoform	Qua1		0.1624	0.1000	7.68	7.97	-3.7	25.0
Isopropylbenzene	Qua2		1.578		7.68	8.00	-4.0	25.0
1,1,2,2-Tetrachloroethane	Qua2		0.4248	0.3000	8.60	8.00	7.5	25.0
Bromobenzene	Qua2		0.4945		8.82	7.96	10.8	25.0
1,2,3-Trichloropropane	Qua1		0.1098		8.37	7.88	6.2	25.0
trans-1,4-Dichloro-2-butene	Lin1		0.0700		7.30	8.00	-8.8	40.0
N-Propylbenzene	Ave	2.088	2.153		8.25	8.00	3.1	25.0
2-Chlorotoluene	Ave	0.4887	0.4977		8.06	7.92	1.8	25.0
1,3,5-Trimethylbenzene	Ave	1.463	1.572		8.60	8.00	7.5	25.0
4-Chlorotoluene	Ave	0.4856	0.4741		7.69	7.88	-2.4	25.0
tert-Butylbenzene	Qua2		1.306		8.23	7.97	3.3	25.0
1,2,4-Trimethylbenzene	Ave	1.487	1.597		8.60	8.01	7.4	25.0
sec-Butylbenzene	Ave	1.778	1.979		8.91	8.00	11.3	25.0
4-Isopropyltoluene	Ave	1.533	1.613		8.37	7.96	5.3	25.0
1,3-Dichlorobenzene	Qua2		0.9517		8.37	7.98	4.8	25.0
1,4-Dichlorobenzene	Qua2		1.001		8.28	7.99	3.6	25.0
n-Butylbenzene	Lin2		0.4260		8.17	7.92	3.2	25.0
1,2-Dichlorobenzene	Lin2		0.9612		8.35	7.86	6.3	25.0
Hexachloroethane	Qua1		0.2045		6.92	7.99	-13.4	40.0
1,2-Dibromo-3-Chloropropane	Qua1		0.0655		8.09	8.00	1.1	25.0
1,2,4-Trichlorobenzene	Lin1		0.7501		8.29	7.95	4.3	25.0
Hexachlorobutadiene	Lin1		0.3488		8.51	8.00	6.4	25.0
Naphthalene	Lin1		1.382		8.35	8.00	4.3	25.0
1,2,3-Trichlorobenzene	Lin1		0.6568		8.33	8.00	4.1	25.0
Fluorobenzene (Surr)	Ave	1.724	1.716		4.98	5.00	-0.5	25.0
Trifluorotoluene (Surr)	Ave	0.3298	0.3644		2.21	2.00	10.5	25.0
Toluene-d8 (Surr)	Ave	1.061	1.046		4.94	5.01	-1.4	25.0
Ethylbenzene-d10	Ave	0.7947	0.7724		4.86	5.00	-2.8	25.0
4-Bromofluorobenzene (Surr)	Ave	0.7224	0.7080		4.91	5.01	-2.0	25.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Seattle Job No.: 580-28246-1

SDG No.:

Lab Sample ID: ICV 580-90913/15 Calibration Date: 07/21/2011 17:39

Instrument ID: SEA015 Calib Start Date: 07/21/2011 12:34

GC Column: ZB-624short ID: 0.18(mm) Calib End Date: 07/21/2011 16:23

Lab File ID: I0325273.D Conc. Units: ug/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Acetone	Qua		0.0485		18.9	16.0	18.1	25.0
Iodomethane	Qua2		0.6321		16.0	15.8	1.6	40.0
Carbon disulfide	Ave	0.5858	0.7064		19.3	16.0	20.6	25.0
Vinyl acetate	Ave	0.0363	0.0272		12.0	16.0	-25.1	40.0
2-Butanone	Ave	0.0229	0.0205		14.4	16.0	-10.2	25.0
2-Chloroethyl vinyl ether	Qua2		0.0472		12.8	15.9	-19.6	40.0
4-Methyl-2-pentanone	Qua2		0.0462		14.3	15.9	-10.1	25.0
2-Hexanone	Qua2		0.0468		18.1	15.7	15.4	25.0
Fluorobenzene (Surr)	Ave	1.724	1.709		4.96	5.00	-0.9	25.0
Trifluorotoluene (Surr)	Ave	0.3298	0.3580		2.17	2.00	8.6	25.0
Toluene-d8 (Surr)	Ave	1.061	1.035		4.89	5.01	-2.4	25.0
Ethylbenzene-d10	Ave	0.7947	0.7904		4.97	5.00	-0.5	25.0
4-Bromofluorobenzene (Surr)	Ave	0.7224	0.7103		4.93	5.01	-1.7	25.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Seattle Job No.: 580-28246-1

SDG No.:

Lab Sample ID: CCVIS 580-94507/3 Calibration Date: 09/03/2011 14:08

Instrument ID: SEA015 Calib Start Date: 07/21/2011 12:34

GC Column: ZB-624short ID: 0.18(mm) Calib End Date: 07/21/2011 16:23

Lab File ID: I0325903.D Conc. Units: ug/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dichlorodifluoromethane	Ave	0.4219	0.3519		4.17	5.00	-16.6	50.0
Chloromethane	Lin2		0.3794	0.1000	4.52	5.00	-9.6	50.0
Vinyl chloride	Lin2		0.3605		5.12	5.00	2.4	20.0
Bromomethane	Lin2		0.2577		5.75	5.00	15.0	50.0
Chloroethane	Qua		0.0616		5.20	5.00	4.0	50.0
Trichlorofluoromethane	Lin2		0.5979		6.33	4.99	26.8	50.0
Acrolein	Qua1		0.0319		25.8	25.2	2.4	50.0
1,1,2-Trichloro-1,2,2-triflu oroethane	Lin2		0.3192		6.20	4.99	24.3	50.0
1,1-Dichloroethene	Ave	0.2696	0.3241		6.00	5.00	20.2*	20.0
Acetone	Qua		0.0757		44.8	25.0	79.2*	50.0
Iodomethane	Qua2		0.7275		29.7	25.1	18.2	50.0
Carbon disulfide	Ave	0.5858	0.7276		6.22	5.01	24.2	50.0
Methylene Chloride	Lin2		0.3311		6.12	4.99	22.7	40.0
2-Methyl-2-propanol	Qua1		0.0148		26.6	25.0	6.4	50.0
Methyl tert-butyl ether	Ave	0.6308	0.7312		5.80	5.00	15.9	30.0
trans-1,2-Dichloroethene	Ave	0.2938	0.3460		5.89	5.00	17.8	30.0
Acrylonitrile	Lin1		0.0617		33.7	25.0	34.7	50.0
1,1-Dichloroethane	Qua2		0.5828	0.1000	6.10	5.00	22.1	30.0
Vinyl acetate	Ave	0.0363	0.0413		28.6	25.2	13.8	50.0
Tert-butyl ethyl ether	Ave	0.2793	0.3145		5.63	5.00	12.6	30.0
2,2-Dichloropropane	Lin1		0.2738		6.10	5.00	22.0	40.0
cis-1,2-Dichloroethene	Ave	0.3476	0.3739		5.39	5.01	7.5	30.0
2-Butanone	Ave	0.0229	0.0291		31.8	25.0	27.2	50.0
Chlorobromomethane	Ave	0.2135	0.2377		5.57	5.01	11.3	40.0
Chloroform	Ave	0.5504	0.6629		6.03	5.01	20.4*	20.0
1,1,1-Trichloroethane	Ave	0.4320	0.5019		5.81	5.00	16.2	30.0
1,1-Dichloropropene	Ave	0.4681	0.4677		4.95	4.95	-0.1	30.0
Carbon tetrachloride	Lin2		0.4411		5.90	5.01	17.8	30.0
Benzene	Ave	1.171	1.251		5.34	5.00	6.8	30.0
1,2-Dichloroethane	Ave	0.3506	0.4323		6.16	5.00	23.3	30.0
Tert-amyl methyl ether	Lin2		0.6837		5.02	5.00	0.4	40.0
Trichloroethene	Ave	0.2157	0.2048		4.75	5.00	-5.1	30.0
1,2-Dichloropropane	Lin2		0.2038		5.53	5.11	8.2	20.0
Dibromomethane	Ave	0.1252	0.1192		4.79	5.03	-4.8	30.0
Dichlorobromomethane	Qua2		0.2546		5.65	5.01	12.9	30.0
2-Chloroethyl vinyl ether	Qua2		0.0450		19.1	25.2	-24.1	50.0
cis-1,3-Dichloropropene	Qua2		0.2449		5.22	4.96	5.2	30.0
4-Methyl-2-pentanone	Qua2		0.0497		24.1	25.0	-3.6	50.0
Toluene	Ave	0.7499	0.7282		4.85	5.00	-2.9	20.0
trans-1,3-Dichloropropene	Qua2		0.1778		5.72	5.10	12.2	30.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Seattle Job No.: 580-28246-1

SDG No.:

Lab Sample ID: CCVIS 580-94507/3 Calibration Date: 09/03/2011 14:08

Instrument ID: SEA015 Calib Start Date: 07/21/2011 12:34

GC Column: ZB-624short ID: 0.18(mm) Calib End Date: 07/21/2011 16:23

Lab File ID: I0325903.D Conc. Units: ug/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
1,1,2-Trichloroethane	Qua2		0.1301		5.14	5.01	2.6	30.0
Tetrachloroethene	Ave	0.1963	0.1885		4.81	5.01	-4.0	40.0
1,3-Dichloropropane	Qua2		0.2103		4.94	5.00	-1.1	30.0
2-Hexanone	Qua2		0.0429		26.4	25.0	5.6	50.0
Chlorodibromomethane	Qua1		0.1562		5.13	4.96	3.4	40.0
1,2-Dibromoethane	Lin1		0.1413		4.74	5.02	-5.5	30.0
Chlorobenzene	Lin		0.998	0.3000	4.43	4.99	-11.2	30.0
1,1,1,2-Tetrachloroethane	Qua1		0.3826		4.66	5.02	-7.1	30.0
Ethylbenzene	Ave	1.771	1.530		4.32	5.00	-13.6	20.0
m-Xylene & p-Xylene	Qua2		1.195		9.07	10.0	-9.4	30.0
o-Xylene	Ave	1.450	1.266		4.37	5.01	-12.7	30.0
Styrene	Ave	1.029	0.8630		4.21	5.02	-16.1	30.0
Bromoform	Qua1		0.1608	0.1000	4.93	5.08	-2.9	40.0
Isopropylbenzene	Qua2		1.496		4.61	5.00	-7.8	30.0
1,1,2,2-Tetrachloroethane	Qua2		0.3802	0.3000	4.76	5.01	-5.0	30.0
Bromobenzene	Qua2		0.4081		4.64	5.04	-7.8	30.0
1,2,3-Trichloropropane	Qua1		0.0950		4.59	5.05	-9.2	30.0
trans-1,4-Dichloro-2-butene	Lin1		0.0768		24.9	25.0	-0.4	50.0
N-Propylbenzene	Ave	2.088	1.961		4.70	5.00	-6.1	30.0
2-Chlorotoluene	Ave	0.4887	0.4031		4.14	5.02	-17.5	30.0
1,3,5-Trimethylbenzene	Ave	1.463	1.290		4.41	5.01	-11.8	30.0
4-Chlorotoluene	Ave	0.4856	0.3944		4.07	5.01	-18.8	30.0
tert-Butylbenzene	Qua2		1.028		4.11	5.00	-17.8	30.0
1,2,4-Trimethylbenzene	Ave	1.487	1.312		4.43	5.03	-11.8	30.0
sec-Butylbenzene	Ave	1.778	1.620		4.56	5.01	-8.9	30.0
4-Isopropyltoluene	Ave	1.533	1.388		4.52	5.00	-9.5	30.0
1,3-Dichlorobenzene	Qua2		0.8859		4.89	5.00	-2.2	30.0
1,4-Dichlorobenzene	Qua2		0.9122		4.71	5.00	-5.7	30.0
n-Butylbenzene	Lin2		0.3174		3.85	5.00	-23.0	30.0
1,2-Dichlorobenzene	Lin2		0.7854		4.30	5.00	-14.0	30.0
Hexachloroethane	Qua1		0.2080		4.48	5.02	-10.7	40.0
1,2-Dibromo-3-Chloropropane	Qua1		0.0547		4.19	5.02	-16.5	50.0
1,3,5-Trichlorobenzene	Lin1		0.6356		4.03	5.00	-19.4	30.0
1,2,4-Trichlorobenzene	Lin1		0.5550		3.82	4.97	-23.1	40.0
Hexachlorobutadiene	Lin1		0.2725		4.15	5.00	-17.0	40.0
Naphthalene	Lin1		0.9279		3.49	5.01	-30.3	40.0
1,2,3-Trichlorobenzene	Lin1		0.5032		3.94	4.97	-20.6	40.0
Fluorobenzene (Surr)	Ave	1.724	1.648		4.78	5.00	-4.4	
Trifluorotoluene (Surr)	Ave	0.3298	0.2989		4.53	5.00	-9.4	
Toluene-d8 (Surr)	Ave	1.061	0.9840		4.65	5.01	-7.2	
Ethylbenzene-d10	Ave	0.7947	0.7066		4.45	5.00	-11.1	

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Seattle Job No.: 580-28246-1

SDG No.:

Lab Sample ID: CCVIS 580-94507/3 Calibration Date: 09/03/2011 14:08

Instrument ID: SEA015 Calib Start Date: 07/21/2011 12:34

GC Column: ZB-624short ID: 0.18(mm) Calib End Date: 07/21/2011 16:23

Lab File ID: I0325903.D Conc. Units: ug/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
4-Bromofluorobenzene (Surr)	Ave	0.7224	0.7028		4.87	5.01	-2.7	

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Seattle | Job No.: 580-28246-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 580-94507/5

Matrix: Water | Lab File ID: I0325905.D

Analysis Method: 8260B | Date Collected:

Sample wt/vol: 10(mL) | Date Analyzed: 09/03/2011 14:59

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: ZB-624short ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 94507 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
156-59-2	cis-1,2-Dichloroethene	ND		0.10	0.10
75-35-4	1,1-Dichloroethene	ND		0.10	0.10
127-18-4	Tetrachloroethene	ND		0.10	0.10
156-60-5	trans-1,2-Dichloroethene	ND		0.10	0.10
79-01-6	Trichloroethene	ND		0.10	0.10
75-01-4	Vinyl chloride	ND		0.020	0.020

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	91		75-120
25837-05-2	Ethylbenzene-d10	89		75-125
462-06-6	Fluorobenzene (Surr)	91		70-130
98-08-8	Trifluorotoluene (Surr)	101		80-125
2037-26-5	Toluene-d8 (Surr)	92		75-125

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Seattle | Job No.: 580-28246-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCS 580-94507/6

Matrix: Water | Lab File ID: I0325906.D

Analysis Method: 8260B | Date Collected:

Sample wt/vol: 10(mL) | Date Analyzed: 09/03/2011 15:24

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: ZB-624short ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 94507 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
156-59-2	cis-1,2-Dichloroethene	5.20		0.10	0.10
75-35-4	1,1-Dichloroethene	5.56		0.10	0.10
127-18-4	Tetrachloroethene	6.31		0.10	0.10
156-60-5	trans-1,2-Dichloroethene	5.55		0.10	0.10
79-01-6	Trichloroethene	5.34		0.10	0.10
75-01-4	Vinyl chloride	5.42		0.020	0.020

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	97		75-120
25837-05-2	Ethylbenzene-d10	92		75-125
462-06-6	Fluorobenzene (Surr)	98		70-130
98-08-8	Trifluorotoluene (Surr)	101		80-125
2037-26-5	Toluene-d8 (Surr)	95		75-125

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Seattle | Job No.: 580-28246-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCSD 580-94507/7

Matrix: Water | Lab File ID: I0325907.D

Analysis Method: 8260B | Date Collected:

Sample wt/vol: 10(mL) | Date Analyzed: 09/03/2011 15:50

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: ZB-624short ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 94507 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
156-59-2	cis-1,2-Dichloroethene	5.53		0.10	0.10
75-35-4	1,1-Dichloroethene	5.93		0.10	0.10
127-18-4	Tetrachloroethene	5.05		0.10	0.10
156-60-5	trans-1,2-Dichloroethene	5.86		0.10	0.10
79-01-6	Trichloroethene	5.43		0.10	0.10
75-01-4	Vinyl chloride	5.49		0.020	0.020

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	105		75-120
25837-05-2	Ethylbenzene-d10	89		75-125
462-06-6	Fluorobenzene (Surr)	92		70-130
98-08-8	Trifluorotoluene (Surr)	106		80-125
2037-26-5	Toluene-d8 (Surr)	91		75-125

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Seattle | Job No.: 580-28246-1

SDG No.:

Client Sample ID: MW-18-082411-W MS | Lab Sample ID: 580-28246-5 MS

Matrix: Water | Lab File ID: I0325921.D

Analysis Method: 8260B | Date Collected: 08/24/2011 13:15

Sample wt/vol: 10(mL) | Date Analyzed: 09/03/2011 21:57

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: ZB-624short ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 94507 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
156-59-2	cis-1,2-Dichloroethene	5.64		0.10	0.10
75-35-4	1,1-Dichloroethene	5.96		0.10	0.10
127-18-4	Tetrachloroethene	4.16		0.10	0.10
156-60-5	trans-1,2-Dichloroethene	6.13		0.10	0.10
79-01-6	Trichloroethene	5.94		0.10	0.10
75-01-4	Vinyl chloride	7.75		0.020	0.020

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	100		75-120
25837-05-2	Ethylbenzene-d10	93		75-125
462-06-6	Fluorobenzene (Surr)	99		70-130
98-08-8	Trifluorotoluene (Surr)	112		80-125
2037-26-5	Toluene-d8 (Surr)	98		75-125

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Seattle | Job No.: 580-28246-1

SDG No.:

Client Sample ID: MW-18-082411-W MSD | Lab Sample ID: 580-28246-5 MSD

Matrix: Water | Lab File ID: I0325922.D

Analysis Method: 8260B | Date Collected: 08/24/2011 13:15

Sample wt/vol: 10(mL) | Date Analyzed: 09/03/2011 22:22

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: ZB-624short ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 94507 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
156-59-2	cis-1,2-Dichloroethene	5.42		0.10	0.10
75-35-4	1,1-Dichloroethene	5.88		0.10	0.10
127-18-4	Tetrachloroethene	4.47		0.10	0.10
156-60-5	trans-1,2-Dichloroethene	5.92		0.10	0.10
79-01-6	Trichloroethene	5.71		0.10	0.10
75-01-4	Vinyl chloride	7.81		0.020	0.020

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	95		75-120
25837-05-2	Ethylbenzene-d10	87		75-125
462-06-6	Fluorobenzene (Surr)	97		70-130
98-08-8	Trifluorotoluene (Surr)	109		80-125
2037-26-5	Toluene-d8 (Surr)	99		75-125

GC/MS VOA ANALYSIS RUN LOG

Lab Name: TestAmerica Seattle Job No.: 580-28246-1

SDG No.:

Instrument ID: SEA015 Start Date: 07/21/2011 11:42

Analysis Batch Number: 90913 End Date: 07/22/2011 00:25

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
ZZZZZ		07/21/2011 11:42	1		ZB-624short 0.18(mm)
BFB 580-90913/2		07/21/2011 12:08	1	I0325260.D	ZB-624short 0.18(mm)
STD 580-90913/3 IC		07/21/2011 12:34	1	I0325261.D	ZB-624short 0.18(mm)
STD 580-90913/4 IC		07/21/2011 13:00	1	I0325262.D	ZB-624short 0.18(mm)
STD 580-90913/5 IC		07/21/2011 13:25	1	I0325263.D	ZB-624short 0.18(mm)
STD 580-90913/6 IC		07/21/2011 13:51	1	I0325264.D	ZB-624short 0.18(mm)
STD001 580-90913/7 IC		07/21/2011 14:16	1	I0325265.D	ZB-624short 0.18(mm)
ICIS 580-90913/8		07/21/2011 14:41	1	I0325266.D	ZB-624short 0.18(mm)
STD010 580-90913/9 IC		07/21/2011 15:07	1	I0325267.D	ZB-624short 0.18(mm)
STD025 580-90913/10 IC		07/21/2011 15:32	1	I0325268.D	ZB-624short 0.18(mm)
STD050 580-90913/11 IC		07/21/2011 15:57	1	I0325269.D	ZB-624short 0.18(mm)
STD080 580-90913/12 IC		07/21/2011 16:23	1	I0325270.D	ZB-624short 0.18(mm)
ICV 580-90913/13		07/21/2011 16:48	1	I0325271.D	ZB-624short 0.18(mm)
ICV 580-90913/14		07/21/2011 17:13	1	I0325272.D	ZB-624short 0.18(mm)
ICV 580-90913/15		07/21/2011 17:39	1	I0325273.D	ZB-624short 0.18(mm)
ZZZZZ		07/21/2011 18:04	1		ZB-624short 0.18(mm)
ZZZZZ		07/21/2011 18:30	1		ZB-624short 0.18(mm)
ZZZZZ		07/21/2011 18:55	1		ZB-624short 0.18(mm)
ZZZZZ		07/21/2011 19:20	1		ZB-624short 0.18(mm)
ZZZZZ		07/21/2011 19:45	1		ZB-624short 0.18(mm)
ZZZZZ		07/21/2011 20:11	1		ZB-624short 0.18(mm)
ZZZZZ		07/21/2011 20:37	1		ZB-624short 0.18(mm)
ZZZZZ		07/21/2011 21:02	1		ZB-624short 0.18(mm)
ZZZZZ		07/21/2011 21:27	1		ZB-624short 0.18(mm)
ZZZZZ		07/21/2011 21:53	1		ZB-624short 0.18(mm)
ZZZZZ		07/21/2011 22:18	1		ZB-624short 0.18(mm)
ZZZZZ		07/21/2011 22:44	1		ZB-624short 0.18(mm)
ZZZZZ		07/21/2011 23:09	1		ZB-624short 0.18(mm)
RINSE 580-90913/29		07/21/2011 23:35	1		ZB-624short 0.18(mm)
RINSE 580-90913/30		07/22/2011 00:00	1		ZB-624short 0.18(mm)
RINSE 580-90913/31		07/22/2011 00:25	1		ZB-624short 0.18(mm)

GC/MS VOA ANALYSIS RUN LOG

Lab Name: TestAmerica Seattle Job No.: 580-28246-1

SDG No.:

Instrument ID: SEA015 Start Date: 09/03/2011 13:17

Analysis Batch Number: 94507 End Date: 09/03/2011 23:13

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
ZZZZZ		09/03/2011 13:17	1		ZB-624short 0.18(mm)
BFB 580-94507/2		09/03/2011 13:42	1	I0325902.D	ZB-624short 0.18(mm)
CCVIS 580-94507/3		09/03/2011 14:08	1	I0325903.D	ZB-624short 0.18(mm)
ZZZZZ		09/03/2011 14:33	1		ZB-624short 0.18(mm)
MB 580-94507/5		09/03/2011 14:59	1	I0325905.D	ZB-624short 0.18(mm)
LCS 580-94507/6		09/03/2011 15:24	1	I0325906.D	ZB-624short 0.18(mm)
LCSD 580-94507/7		09/03/2011 15:50	1	I0325907.D	ZB-624short 0.18(mm)
ZZZZZ		09/03/2011 16:16	1		ZB-624short 0.18(mm)
ZZZZZ		09/03/2011 16:41	1		ZB-624short 0.18(mm)
580-28246-7	TRIP BLANK	09/03/2011 17:07	1	I0325910.D	ZB-624short 0.18(mm)
580-28246-1	MW-3-082411-W	09/03/2011 17:42	1	I0325911.D	ZB-624short 0.18(mm)
580-28246-2	MW-8-082411-W	09/03/2011 18:08	1	I0325912.D	ZB-624short 0.18(mm)
580-28246-3	MW-16-082411-W	09/03/2011 18:33	1	I0325913.D	ZB-624short 0.18(mm)
580-28246-4	MW-17-082411-W	09/03/2011 18:59	1	I0325914.D	ZB-624short 0.18(mm)
580-28246-5	MW-18-082411-W	09/03/2011 19:24	1	I0325915.D	ZB-624short 0.18(mm)
580-28246-6	DUP-082411-W	09/03/2011 19:50	1	I0325916.D	ZB-624short 0.18(mm)
ZZZZZ		09/03/2011 20:15	1		ZB-624short 0.18(mm)
ZZZZZ		09/03/2011 20:40	1		ZB-624short 0.18(mm)
ZZZZZ		09/03/2011 21:05	1		ZB-624short 0.18(mm)
ZZZZZ		09/03/2011 21:31	1		ZB-624short 0.18(mm)
580-28246-5 MS	MW-18-082411-W MS	09/03/2011 21:57	1	I0325921.D	ZB-624short 0.18(mm)
580-28246-5 MSD	MW-18-082411-W MSD	09/03/2011 22:22	1	I0325922.D	ZB-624short 0.18(mm)
ZZZZZ		09/03/2011 22:48	1		ZB-624short 0.18(mm)
ZZZZZ		09/03/2011 23:13	1		ZB-624short 0.18(mm)

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: PUH0962
Client Project/Site: 580-28246-1
Client Project Description: General Subcontract

For:
TestAmerica Seattle
5755 8th Street East
Tacoma, WA 98424

Attn: Melissa Armstrong

Christina M. Woodcock

Authorized for release by:
09/08/2011 04:15:31 PM

Christina Woodcock
Project Manager
christina.woodcock@testamericainc.com

Links

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

Table of Contents

Sample Summary

Client: TestAmerica Seattle
Project/Site: 580-28246-1

TestAmerica Job ID: PUH0962

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
PUH0962-01	MW-3-082411-W	Water	08/24/11 14:17	08/25/11 16:45
PUH0962-02	MW-8-082411-W	Water	08/24/11 11:39	08/25/11 16:45
PUH0962-03	MW-16-082411-W	Water	08/24/11 12:28	08/25/11 16:45
PUH0962-04	MW-17-082411-W	Water	08/24/11 10:50	08/25/11 16:45
PUH0962-05	MW-18-082411-W	Water	08/24/11 13:15	08/25/11 16:45
PUH0962-06	DUP-082411-W	Water	08/24/11 00:00	08/25/11 16:45

Definitions/Glossary

Client: TestAmerica Seattle
Project/Site: 580-28246-1

TestAmerica Job ID: PUH0962

Qualifiers

Wet Chem

Qualifier	Qualifier Description
M8	The MS and/or MSD were below the acceptance limits. See Blank Spike (LCS).

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
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit (Dioxin)
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or method detection limit if shown)
PQL	Practical Quantitation Limit
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: TestAmerica Seattle
Project/Site: 580-28246-1

TestAmerica Job ID: PUH0962

Client Sample ID: MW-3-082411-W — Lab Sample ID: PUH0962-01

No Detections

Client Sample ID: MW-8-082411-W — Lab Sample ID: PUH0962-02

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	1.63		1.00		mg/l	1.00		EPA 300.0	Total

Client Sample ID: MW-16-082411-W — Lab Sample ID: PUH0962-03

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	4.99		1.00		mg/l	1.00		EPA 300.0	Total

Client Sample ID: MW-17-082411-W — Lab Sample ID: PUH0962-04

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	11.9		1.00		mg/l	1.00		EPA 300.0	Total

Client Sample ID: MW-18-082411-W — Lab Sample ID: PUH0962-05

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	18.5		1.00		mg/l	1.00		EPA 300.0	Total

Client Sample ID: DUP-082411-W — Lab Sample ID: PUH0962-06

No Detections

Client: TestAmerica Seattle
Project/Site: 580-28246-1

TestAmerica Job ID: PUH0962

Method: EPA 300.0 - Anions per EPA Method 300.0

Client Sample ID: MW-3-082411-W
Date Collected: 08/24/11 14:17
Date Received: 08/25/11 16:45

Lab Sample ID: PUH0962-01
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		1.00		mg/l		08/26/11 11:17	08/26/11 15:17	1.00

Client Sample ID: MW-8-082411-W
Date Collected: 08/24/11 11:39
Date Received: 08/25/11 16:45

Lab Sample ID: PUH0962-02
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**1.63**		1.00		mg/l		08/26/11 11:17	08/26/11 15:32	1.00

Client Sample ID: MW-16-082411-W
Date Collected: 08/24/11 12:28
Date Received: 08/25/11 16:45

Lab Sample ID: PUH0962-03
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**4.99**		1.00		mg/l		08/26/11 11:17	08/26/11 15:48	1.00

Client Sample ID: MW-17-082411-W
Date Collected: 08/24/11 10:50
Date Received: 08/25/11 16:45

Lab Sample ID: PUH0962-04
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**11.9**		1.00		mg/l		08/26/11 11:17	08/26/11 16:35	1.00

Client Sample ID: MW-18-082411-W
Date Collected: 08/24/11 13:15
Date Received: 08/25/11 16:45

Lab Sample ID: PUH0962-05
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**18.5**		1.00		mg/l		08/26/11 11:17	08/26/11 17:37	1.00

Client Sample ID: DUP-082411-W
Date Collected: 08/24/11 00:00
Date Received: 08/25/11 16:45

Lab Sample ID: PUH0962-06
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		1.00		mg/l		08/26/11 11:17	08/26/11 17:53	1.00

Client: TestAmerica Seattle
Project/Site: 580-28246-1

TestAmerica Job ID: PUH0962

Method: EPA 300.0 - Anions per EPA Method 300.0

Lab Sample ID: 11H0892-BLK1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total**
Analysis Batch: U002657 — **Prep Batch: 11H0892_P**

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		1.00		mg/l		08/26/11 11:17	08/26/11 13:27	1.00

Lab Sample ID: 11H0892-BS1 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total**
Analysis Batch: U002657 — **Prep Batch: 11H0892_P**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Sulfate	30.0	31.4		mg/l		105	90 - 110

Lab Sample ID: 11H0892-MS1 — **Client Sample ID: MW-18-082411-W**
Matrix: Water — **Prep Type: Total**
Analysis Batch: U002657 — **Prep Batch: 11H0892_P**

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Result	Matrix Spike Qualifier	Unit	D	% Rec	% Rec. Limits
Sulfate	18.5		4.00	20.8	M8	mg/l		58.0	80 - 120

Lab Sample ID: 11H0892-MSD1 — **Client Sample ID: MW-18-082411-W**
Matrix: Water — **Prep Type: Total**
Analysis Batch: U002657 — **Prep Batch: 11H0892_P**

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Dup Result	Matrix Spike Dup Qualifier	Unit	D	% Rec	% Rec. Limits	RPD	RPD Limit
Sulfate	18.5		4.00	20.7	M8	mg/l		54.7	80 - 120	0.626	20

Lab Sample ID: 11H0892-DUP1 — **Client Sample ID: MW-18-082411-W**
Matrix: Water — **Prep Type: Total**
Analysis Batch: U002657 — **Prep Batch: 11H0892_P**

Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	Unit	D	RPD	RPD Limit
Sulfate	18.5		18.6		mg/l		0.485	20

Certification Summary

Client: TestAmerica Seattle
Project/Site: 580-28246-1

TestAmerica Job ID: PUH0962

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.

PW H09962

TestAmerica Seattle
5755 8th Street East
Tacoma, WA 98424
Phone (253) 922-2310 Fax (253) 922-5047

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Armstrong, Melissa	Carrier Tracking No(s):	COC No: 580-6729.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: melissa.armstrong@testamericainc.com		Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc				Job #: 580-28246-1
Address: 9405 SW Nimbus Ave.,	Due Date Requested: 9/8/2011			
City: Beaverton	TAT Requested (days):			
State, Zip: OR, 97008				
Phone: 503-906-9200(Tel)	PO #:			
Email:	WO #:			
Project Name: City of Olympia	Project #: 58003899			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)
Other:

Sample Identification - Client ID	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	300.0_28D/ (MOD) Local Method	8260B_LL/5030B (MOD) custom list	Total Number of Containers	Special Instructions/Note:
			Preservation Code:							
MW-3-082411-W	8/24/11	14:17 Pacific		Water			X	X	4	
MW-8-082411-W	8/24/11	11:39 Pacific		Water			X	X	4	
MW-16-082411-W	8/24/11	12:28 Pacific		Water			X	X	4	
MW-17-082411-W	8/24/11	10:50 Pacific		Water			X	X	4	
MW-18-082411-W	8/24/11	13:15 Pacific		Water			X	X	4	
MW-18-082411-W	8/24/11	13:15 Pacific	MS	Water			X	X	4	
MW-18-082411-W	8/24/11	13:15 Pacific	MSD	Water			X	X	4	
DUP-082411-W	8/24/11	Pacific		Water			X	X	4	
TRIP BLANK	8/24/11	Pacific		Water				X	3	

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	8/25/11 1700	TAS	[signature]	8/25/11 1645	TAP
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks: 4 - 5

09/08/2011

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Portland Sample Control Checklist

Work Order #: PVH0962 **Date/Time Received:** 8/25/11 @1645
Client Name: TA-Seattle
Project Name: 580-28246-1
Time Zone:
☐EDT/EST ☐CDT/CST ☐MDT/MST ☑PDT/PST ☐AK ☐HI ☐OTHER

Unpacking Checks:
Cooler (s): 1
Temperature (s): 4.5
Digi #1 ☐ Digi #2 ☐ IR Gun ☑ (☐Plastic ☑Glass)
Raytek ☐ (☐Plastic ☐Glass)
Ice used: (circle one) GEL LOOSE BLUE NONE OTHER: _____ Initials: JM

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. Cooler Seals intact? (N/A if hand delivered) if no and ESI client, 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 HN03/ESI samples checked and meet requirements? If no, document on NOD.
☑	☐	☐	9. Cyanide samples checked for sulfides and meet 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 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?

Checklist Reviewed: **Log-in initials:** JM **Labeler initials:** JM

9405 SW Nimbus Ave, Beaverton OR 97008 tel 503.906.9200 fax 503.906.9210 www.testamericainc.com

Subcontract Data

Shipping and Receiving Documents

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Seattle
5755 8th Street E.
Tacoma, WA 98424
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Fax 253-922-5047
www.testamericainc.com

☐ Rush
☐ Short Hold

Chain of Custody Record

Client	Client Contact	Date	Chain of Custody Number
GEI	IAIN WINGARD	08-24-11	12423
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page**
1101 S. FAWCETT AVE	253-383-4940	28246	1 of 1
City / State / Zip Code	**Sampler / Lab Contact**	**Analysis (Attach list if more space is needed)**	
TACOMA / WA / 98402	NICK ROHRBACH / MELISSA ARMSTRONG	VOCs 8260B; SULFATE B4 EPA 300.0	
Project Name and Location (State)	**Billing Contact**		
318 STATE AVE OLYMPIA	SAA		
Contract/Purchase Order/Quote No. GEO JOB # 0415-049-06			

Sample I.D. and Location/Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH
MW-3-082411-W	08-24-11	2:17 PM		X			X			X		
MW-8-082411-W		11:39 AM										
MW-16-082411-W		12:28 PM										
MW-17-082411-W		10:50 AM										
MW-18-082411-W		1:15 PM										
DUP-082411-W		—										
MS-082411-W (MW-18)		1:15PM										
MSD-082411-W (MW-18)		1:15PM										
TRIP BLANK		—										

Special Instructions/ Conditions of Receipt

* REPORTING LIMITS / ANALYTE LIST / QA & QC TO BE ACHIEVED: SEE B-1 → B-4 TABLES OF COMPLIANCE MONITORING PLAN

Cooler: ☑ Yes ☐ No Cooler Temp:_____

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required (business days): ☐ 24 Hours ☐ 48 Hours ☐ 5 Days ☒ 10 Days ☐ 15 Days ☐ Other _____

QC Requirements (Specify)

	Date	Time
1. Relinquished By Sign/Print: NICK ROHRBACH	08-24-11	4:25 PM
2. Relinquished By Sign/Print:		
3. Relinquished By Sign/Print:		

	Date	Time
1. Received By Sign/Print: Tom Blankinship	8/24/11	1625
2. Received By Sign/Print:		
3. Received By Sign/Print:		

Comments: Client drop IR = 8.0/8.3 Same day on ice Med Red/ish wet foam

Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 580-28246-1

Login Number: 28246

List Source: TestAmerica Seattle

List Number: 1

Creator: Blankinship, Tom

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	N/A	Not present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	Recieved same day of collection; chilling process has begun.
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	Not needed.
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	No analysis requiring residual chlorine check assigned.

APPENDIX B
Data Quality Assessment Summary

DATA QUALITY ASSESSMENT SUMMARY
VOLATILE ORGANIC COMPOUNDS BY METHOD SW8260, SULFATE ANIONS BY METHOD SW300.0

TestAmerica Laboratory SDG	Samples Validated (Bold indicates the sample was qualified)
580-28246-1	**MW-3-082411-W**, MW-8-082411-W, MW-16-082411-W, MW-17-082411-W, MW-18-082411-W, **DUP-082411-W**, Trip Blank

PROJECT: 318 CITY OF OLYMPIA (0415-049-06)

This report documents the results of an Environmental Protection Agency (EPA) level 2a data validation of analytical data from the analyses of groundwater samples and the associated laboratory and field quality control (QC) samples. The review included the following:

- Chain of Custody
- Holding Times
- Surrogates
- Method and Trip Blanks
- Laboratory Control Samples
- Matrix Spikes/Matrix Spike Duplicates
- Laboratory and Field Duplicates
- Interference Check Standards

DATA PACKAGE COMPLETENESS

TestAmerica, located in Tacoma, Washington, analyzed the groundwater samples evaluated as part of this data quality assessment. The laboratory provided all required deliverables for the assessment according to the National Functional Guidelines. The laboratory followed adequate corrective action processes and all identified anomalies were discussed in the case narrative.

The following sections discuss the data and the qualified results.

OBJECTIVE

The objective of the data validation was to review laboratory analytical procedures and quality control (QC) results to evaluate whether:

- The samples were analyzed using well-defined and acceptable methods that provide detection limits below applicable regulatory criteria;
- The precision and accuracy of the data are well defined and sufficient to provide defensible data; and

- The quality assurance/quality control (QA/QC) procedures utilized by the laboratory meet acceptable industry practices and standards.

Five (5) groundwater samples, one field duplicate, and one trip blank were analyzed by one or more of the analytical methods listed in the title of this appendix.

DATA QUALITY ASSESSMENT SUMMARY

The results for each of the QC elements are summarized below. The data assessment was performed using guidance in the USEPA Contract Laboratory Program *National Functional Guidelines for Inorganic Data Review* (USEPA, 2002) and USEPA Contract Laboratory Program *National Functional Guidelines for Organic Data Review* (USEPA, 2008).

Chain-of-Custody Documentation

Chain-of-custody (COC) forms were provided with the laboratory analytical reports. There were no anomalies noted on the COC forms; proper COC protocols appear to have been followed for this sampling event.

Holding Times

The holding time is defined as the time that elapses between sample collection and sample analysis. Maximum holding time criteria exist for each analysis to help ensure that the analyte concentrations found at the time of analysis reflect the concentration present at the time of sample collection. Established holding times were met for all analyses.

Surrogate Recoveries

A surrogate compound is a compound that is chemically similar to the analytes of interest, but unlikely to be found in any environmental sample. Surrogates are used for organic analyses and are added to all samples, standards and blanks to serve as an accuracy and specificity check of each analysis. The surrogates are added at a known concentration and percent recoveries are calculated following analysis. All surrogate recoveries for field samples were within the laboratory control limits.

Method and Trip Blanks

Method blanks are analyzed to ensure that laboratory procedures and reagents do not introduce measurable concentrations of the analytes of interest. Method blanks were analyzed with each batch of samples, at a frequency of 1 per 20 samples. For all sample batches, method blanks for all applicable methods were analyzed at the required frequency. None of the analytes of interest were detected above the reporting limits in any of the method blanks.

Trip blanks are analyzed to ensure that the methods of storage and transportation to and from the site do not introduce measureable concentrations of the volatile analytes of interest. One Trip blank is usually analyzed per sample cooler. In this sampling event, one trip blank was analyzed at the required frequency. None of the volatile analytes were detected above the reporting limits in this blank.

Matrix Spikes/Matrix Spike Duplicates (MS/MSD)

Because the actual analyte concentration in an environmental sample is not known, the accuracy of a particular analysis is usually inferred by performing a matrix spike (MS) analysis. One aliquot of sample is analyzed in the normal manner, and then a second aliquot of the sample is spiked with a known amount

of analyte concentration and analyzed. From these analyses, a percent recovery (%R) is calculated. Matrix spike duplicates (MSD) analyses are generally performed for organic analyses as a precision check.

For inorganics methods, the matrix spike (referred to as a "spiked sample") is typically followed by a post spike sample if any element recoveries were outside the control limits in the "spike sample". In this case, it was not necessary to analyze a post spike sample as there were no positive results in the "spiked sample".

Matrix spike analyses should be performed once per analytical batch or every 20 field samples, whichever is more frequent. The recovery criteria for matrix spikes and laboratory control samples are specified in the laboratory documents as are the relative percent difference values. The frequency requirements were met for all analyses and the %R/RPD values were within the proper control limits.

Laboratory Control Samples/Laboratory Control Sample Duplicates (LCS/LCSD)

A laboratory control sample is essentially a blank sample that is spiked with a known amount of analyte concentration and analyzed. It is to be treated much like a matrix spike, without the possibility for matrix interference. As there is no actual sample matrix in the analysis, the analytical expectations for accuracy and precision are usually more rigorous and qualification would apply to all samples in the batch, instead of the parent sample only.

Laboratory control sample analyses should be performed once per analytical batch or every 20 field samples, whichever is more frequent. The recovery criteria for laboratory control samples are specified in the laboratory documents as are the relative percent difference values. The frequency requirements were met for all analyses, and the %R/RPD values were within the proper control limits, with the exception below:

All Samples: The RPD value for tetrachloroethene (22%) was greater than the control limit (20%) in the LCS/LCSD extracted on 9/3/11. There were no positive results for this target analyte in any of the laboratory associated batched samples. No action was required for this precision outlier.

Laboratory Duplicates (Metals and Anions only)

Internal laboratory duplicate analyses are performed to monitor the precision of the analyses. Two separate aliquots of a sample are analyzed as distinct samples in the laboratory, and the RPD between the two results is calculated. Duplicate analyses should be performed once per analytical batch. If one or more of the samples used has a concentration greater than five times the reporting limit for that sample, the absolute difference is used instead of the RPD.

Laboratory duplicates were analyzed at the proper frequency and the specified acceptance criteria were met in all cases.

Field Replicates/Duplicates

Field duplicate samples were collected and analyzed along with the reviewed sample batches. The duplicate samples were analyzed for the same parameters as the associated parent samples. As mentioned above for the laboratory duplicates the RPD is used as the criteria for assessing precision, unless one or more of the samples used has a concentration greater than five times the reporting limit for that sample, the absolute difference is used instead of the RPD.

Sample DUP-1-022311-W: This sample was a field duplicate of Sample MW-3-082411-W. The absolute difference values for trichloroethene and vinyl chloride exceeded the control limits. For this reason, the positive results for these compounds were qualified (J) in both samples.

Interference Check Standard

The metals ICP/MS analysis requires the use of an interference check sample which verifies the instruments ability to overcome isobaric interferences (unrelated ions with the same mass as the target ions) typical of those found in environmental samples. The check standard consists of two solutions which are to be analyzed consecutively before every analytical batch. The purpose of the first solution is to determine whether any unspiked interferences exist in the analysis, the purpose of the second solution is to determine whether the accuracy of the instrumentation is consistent with a known spiked concentration of a target analyte.

Interference check standards were analyzed at the proper frequency and the specified acceptance criteria were met in all cases.

OVERALL ASSESSMENT

As was determined by this data quality assessement, the laboratory followed the specified analytical methods. Accuracy was acceptable, as demonstrated by the surrogate, LCS/LCSD, and MS/MSD %R values. Precision was acceptable, as demonstrated by the field duplicate, laboratory duplicate, LCS/LCSD and MS/MSD RPD and absolute difference values, with the exceptions identified above. As identified above, the results for trichloroethene and vinyl chloride were qualified because the results for the field duplicate exceeded the control limits.

The data are acceptable for use as qualified.